



<b>Project:</b>	Balbriggan Harbour Dredging						
<b>Client</b>	Fingal County Council						
<b>Subject</b>	MARA MUL Application – Proposed Maritime Usage						
<b>Orig. by</b>	DM	<b>Appr. by</b>	AA	<b>Date</b>	13/02/2026	<b>Doc. Ref:</b>	C0203-AYE-XX-ZZ-TN-MA-0301

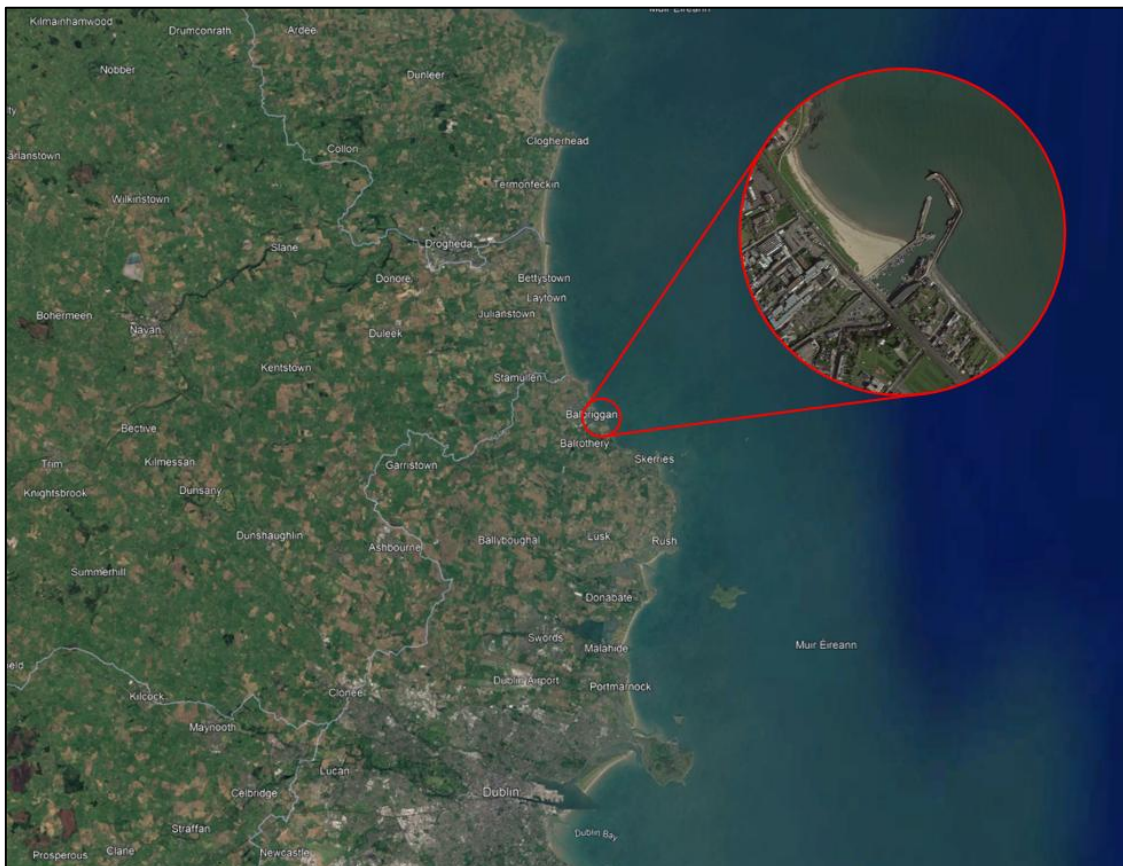
**Proposed Maritime Usage**

Maintenance dredging works are proposed for the removal of approximately 3,000 to 4,000 cubic metres of accumulated sediment per dredging campaign from the inner harbour basin to restore navigational depths to -1.5 m ODM.

**Existing Site**

Balbriggan Harbour is located in County Dublin, Ireland, situated at the mouth of the Bracken River, approximately 30 kilometres north of Dublin city. The harbour occupies a strategic coastal position, providing maritime access to the historic town of Balbriggan, and serves as an important local fishing harbour.

Balbriggan Harbour is located on the east coast in County Dublin, Ireland, as shown in Figure 1.



**Figure 1: Site Location**



The harbour has a rich maritime heritage, dating back to the 17th century. The harbour has undergone continuous development over time, reflecting the evolving needs of the local fishing community. The harbour infrastructure comprises several distinct construction phases (as shown in Figure 2):

- Salt Works and Quay (1756-57)
- East Pier (1762-69)
- West Pier (1826-29)
- Inner Harbour (1847-48)
- West Pier Extension (1871-72)

Balbriggan Harbour functions primarily as a working fishing harbour, serving the local commercial fishing fleet. Under the current harbour bylaws, vessel access is restricted to craft not exceeding 18 metres in length. The harbour accommodates:

- Medium-sized commercial fishing vessels (up to 18m LOA).
- Smaller leisure craft and recreational vessels.
- Service and maintenance vessels.

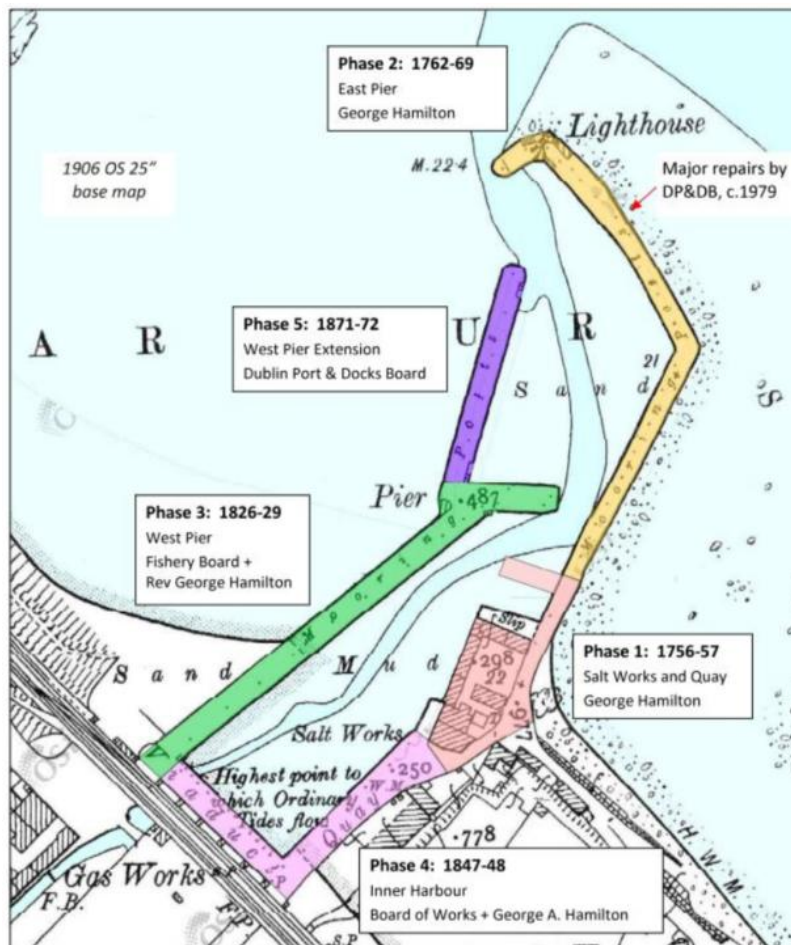


Figure 2: Harbour Layout - Construction Phases



## Dredging Need

The harbour basin has experienced significant sediment accumulation, with the last recorded maintenance dredging campaign undertaken in 1996. This prolonged interval without maintenance has resulted in:

- Substantial reduction in navigational depths throughout the basin.
- Restricted access for fishing vessels, particularly at lower tidal states.
- Compromised berthing options within the Inner Harbour.
- Accumulation of sediment levels exceeding +1.0m ODM (January 2023) in localised areas.

## Works Breakdown

Maintenance dredging was proposed over a duration of 8 years, with the removal of sediment in the region of 3,000-4,000m<sup>3</sup> on a semi-annual basis (2026 – 2036). Each dredging campaign is expected to take c. 30 No. days to complete and is tide and weather dependent. The proposed depth around the Pier is -1.5 m ODM and encompass an area of approximately 14,000m<sup>2</sup>.

It is envisaged that land-based plant will be used to excavate sediments from the harbour. The material was classified as contaminated/unsuitable for disposal at sea and therefore will be disposed of at a licensed waste disposal facility. Excavators will deposit the material into either bunds located along the quay for temporary storage and possible treatment or drying, or into a barge within the harbour basin for dewatering/stabilising or for removal to another site for dewatering/treatment. Following this, the material will need to be moved from the bunds or the barge into suitably licenced trucks for transport to the waste disposal facilities.

## Maintenance Dredging Evidence

Ayesa has undertaken studies to ensure the stability of the harbour prior to, during and after the dredging works, including a Structural Assessment and Dredging Assessment Report (attached as additional information).

These studies also examined the history of the harbour and previous dredging campaigns carried out during the life cycle of the harbour, with evidence indicating that historic dredging campaigns at approximately -1.5 m ODM depth have occurred before with no indication of structural implications.



## Additional Information: Dredging Assessment



# Dredging Assessment Report

Balbriggan Harbour Dredging

Report No. CM1407-MA-RP-002

20 June 2024

Revision 00

Fingal County Council

Comhairle Contae  
Fhine Gall  
Fingal County  
Council



# Document Control

## Project

Balbriggan Harbour Dredging

## Client

Fingal County Council

## Document

Dredging Assessment Report

## Report Number:

CM1407-MA-RP-002

## Document Checking:

Date	Rev	Details of Issue	Prepared by	Checked by	Approved by
20 June 2024	00	For Issue to Client	CM	POC	SG

**Disclaimer: Please note that this report is based on specific information, instructions, and information from our Client and should not be relied upon by third parties.**



[www.ayesaeng.com](http://www.ayesaeng.com)

[www.ayesa.com/en](http://www.ayesa.com/en)

# Contents

<b>Table of Figures .....</b>	<b>iv</b>
<b>Table of Tables v</b>	
<b>[1] Introduction.....</b>	<b>1</b>
[1.1] Project Overview.....	1
[1.2] Report Objectives .....	1
[1.3] Site Overview.....	1
<b>[2] Site Conditions .....</b>	<b>3</b>
[2.1] Project Datum .....	3
[2.1.1] Vertical Datum .....	3
[2.1.2] Horizontal Datum .....	3
[2.2] Astronomical Tides .....	3
[2.3] Wave Climate .....	4
[2.3.1] Nearshore Extreme.....	4
[2.4] Bathymetric Conditions .....	4
[2.4.1] Current Bathymetry.....	4
[2.4.2] Original Design Bed Depths .....	6
[2.5] Geotechnical Information.....	6
[2.6] Siltation .....	8
<b>[3] Historical Dredging.....</b>	<b>10</b>
[3.1.1] 1910 Dredging .....	10
[3.1.2] 1910s-1930s Maintenance Dredging.....	10
[3.1.3] 1996 Dredging .....	11
<b>[4] Dredging Considerations .....</b>	<b>13</b>
[4.1] Target Areas .....	13
[4.2] Fleet Characteristics .....	14
[4.3] Under-Keel Clearance: Required Water Depth .....	15
[4.4] Dredge Volumes .....	22
[4.5] Maintenance Dredging Requirements .....	22

<b>[5] Material Investigation .....</b>	<b>23</b>
[5.1] Physical Characteristics.....	23
[5.2] Contamination.....	24
[5.2.1] Contaminant Testing Methodology .....	24
[5.2.2] Testing for Disposal at Sea.....	24
[5.2.3] Testing for Disposal on Land.....	28
[5.2.4] Interpretation.....	28
<b>[6] Dredging and Disposal Methodology .....</b>	<b>30</b>
[6.1] Dredging .....	30
[6.1.1] Land-Based Machinery.....	30
[6.1.2] Alternative Methodologies .....	30
[6.2] Disposal .....	31
[6.2.1] Contaminated Materials.....	31
[6.2.2] Non-Contaminated Materials.....	36
<b>[7] Capital Cost Estimate .....</b>	<b>39</b>
<b>[8] Consenting Processes .....</b>	<b>40</b>
<b>[9] Discussion and Way Forward .....</b>	<b>41</b>
[9.1] Discussion.....	41
[9.1.1] Dredge Level Risk Assessment.....	41
[9.1.2] Cost-Benefit Dredge Assessment .....	41
[9.2] Summary.....	42
[9.2.1] Summary.....	42
[9.2.2] Way Forward.....	43
<b>[10] References</b>	<b>44</b>
<b>Appendix A Bathymetric Survey: HSL 2023 .....</b>	<b>A</b>
<b>Appendix B Waste Classification Report: GII 2024 .....</b>	<b>B</b>

## Table of Figures

Figure 1-1: Balbriggan Harbour [1].....	2
Figure 2-1: RPS Output Point 5 Location [2] .....	4
Figure 2-2: Balbriggan Harbour Bathymetric Survey [3] .....	5
Figure 2-3: Glover Site Investigation (2005).....	6
Figure 2-4: HSL Sediment Survey Trial Pit Locations .....	8
Figure 3-1: Dredging and Ballast Pier Modification Layout in 1910 [7].....	10
Figure 3-2: 1996 Dredging Campaign (Viaduct Walls).....	12
Figure 3-3: 1996 Dredging Campaign (Salt Works).....	12
Figure 4-1: Target areas for dredging campaign.....	14
Figure 4-2: -0.5m ODM Dredge Layout .....	17
Figure 4-3: -1.0m ODM Dredge Layout .....	18
Figure 4-4: -1.5m ODM Dredge Layout .....	19
Figure 4-5: -2.0m ODM Dredge Layout .....	20
Figure 4-6: -3.0m ODM Dredge Layout .....	21
Figure 5-1: HSL Sediment Sample Locations (2024).....	23
Figure 5-2: Contamination Zoning .....	29
Figure 6-1: Location of Clashford Recovery Facilities [16] .....	32
Figure 6-2: Location of IMS Waste Management Facility [16].....	33
Figure 6-3: Location of Panda Facility [16] .....	34
Figure 6-4: Location of Enva Portlaoise Facility [16].....	35
Figure 6-5: Location of Enva Rathcoole Facility [16] .....	36
Figure 6-6: Location of Augean's Port Clarence Disposal Facility in the UK .....	37
Figure 8-1: High-Level Consenting Process Flowchart.....	40

## Table of Tables

Table 2-1: Horizontal Datum Parameters .....	3
Table 2-2: Astronomical Tides .....	3
Table 2-3: Estimated Original Bed Levels.....	6
Table 2-4: Borehole Log Summary (2005).....	7
Table 2-5: Trial Pit Log Summary .....	8
Table 4-1: Vessel parameters used within Dredging Assessment.....	14
Table 4-2: Recommended water depth for Vessels 1-4 under berthing and navigation scenarios..	15
Table 4-3: Required Dredge Level for Safe Berthing .....	15
Table 4-4: Required Dredge Level for Safe Navigation.....	16
Table 4-5: Berthing Dredging Depth Verification (-0.5m ODM) .....	17
Table 4-6: Navigation Dredging Depth Verification (-0.5m ODM).....	17
Table 4-7: Berthing Dredging Depth Verification (-1.0m ODM) .....	18
Table 4-8: Navigation Dredging Depth Verification (-1.0m ODM).....	18
Table 4-9: Berthing Dredging Depth Verification (-1.5m ODM) .....	19
Table 4-10: Navigation Dredging Depth Verification (-1.5m ODM).....	19
Table 4-11: Berthing Dredging Depth Verification (-2.0m ODM).....	20
Table 4-12: Navigation Dredging Depth Verification (-2.0m ODM).....	20
Table 4-13: Berthing Dredging Depth Verification (-3.0m ODM) .....	21
Table 4-14: Navigation Dredging Depth Verification (-3.0m ODM).....	21
Table 4-15: Proposed dredge layouts with associated volumes.....	22
Table 5-1: Harbour Basin Sediment Characteristics [12] .....	24
Table 5-2: Marine Institute Testing Suite Results .....	26
Table 5-3: Sediment Contamination Results [11], [12] .....	28
Table 7-1: High-level Cost Estimates for Dredging & Disposal in Ireland.....	39
Table 7-2: High-level Cost Estimates for Dredging & Disposal Overseas .....	39

## [1] Introduction

### [1.1] Project Overview

Balbriggan Harbour has experienced issues with sediment build-up restricting navigation to and from the harbour and berthing within the basin. Ayesa (formerly ByrneLooby) has been commissioned by Fingal County Council, the Client, to investigate the feasibility of dredging Balbriggan Harbour and remediating the existing quay walls where necessary to facilitate the proposed design dredge depths.

The high-level scope items to this end are as follows:

- Assess historical information to determine previous dredging campaigns, structural information, and any data gaps.
- Assess the material within the harbour in terms of physical characteristics and contamination levels.
- Determine dredge depth scenarios applicable to Balbriggan Harbour basin.
- Outline dredge spoil volumes, disposal pathways, planning and consenting processes, and costs.
- Undertake a structural assessment of the existing quay walls.
- Determine if remedial/strengthening works are required before dredging.
- Compile and assess the various options for proceeding dredging of Balbriggan Harbour.

### [1.2] Report Objectives

The purpose of this Dredging Assessment is to assess historic and present-day site conditions at Balbriggan Harbour and propose dredging scenarios for consideration, with a view to alleviating access restrictions due to current bed levels.

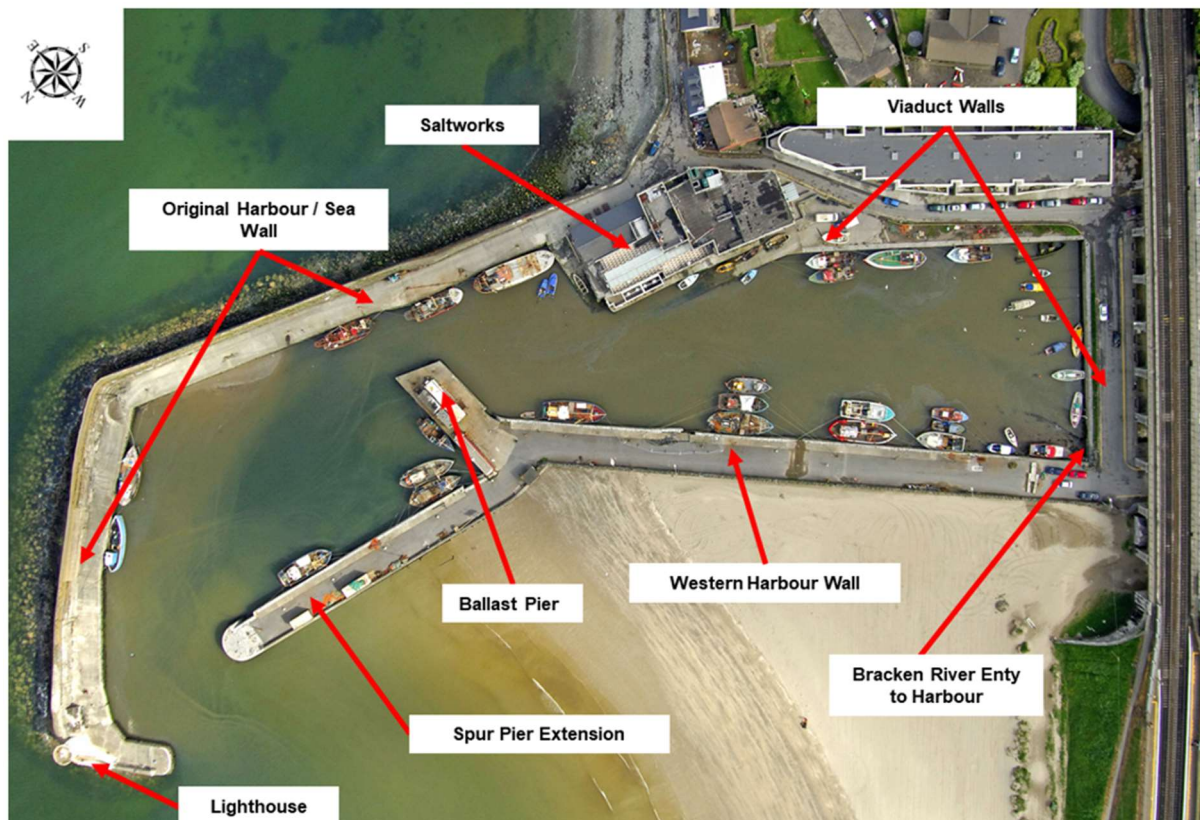
The Dredging Assessment report, in parallel with the Structural Assessment File Note provides a baseline for the Preliminary Assessment Report which will outline the preferred development scenario – to be developed in conjunction with FCC. As such, this report does not offer a final recommendation for dredging depths in the harbour – instead it lays the groundwork for future options and pathways to meet the functional requirements of Balbriggan Harbour requirements.

### [1.3] Site Overview

Balbriggan Harbour, originally constructed in the late 18<sup>th</sup> century (circa 1760-1790), is located at the mouth of the Bracken River north of Dublin. The harbour has undergone various stages of construction over the last 250 years described in this report.

Today, the harbour is flanked by two main piers: the East Pier comprising the Original Harbour / Sea Wall and the West Pier comprising the Western Harbour Wall, the Ballast Pier and a Spur Pier extension. Additional features include slipways, stairways, a notable lighthouse, and

other buildings. The northern area of the Ballast Pier is referred to as the Outer Harbour, while the southern side of this pier is referred to as the Inner Harbour, as shown in Figure 1-1 below.



**Figure 1-1: Balbriggan Harbour [1]**

The orientation of the harbour provides shelter from southerly and western waves. Medium-sized fishing vessels and smaller leisure craft predominantly utilise the harbour, with most finding berths within the more sheltered Inner Harbour basin. The Spur pier currently accommodates containers, serving a dual purpose of storage for fishermen and icehouses. The fishing community generally uses the quaysides but are open to the general public.

Based on the information provided, the estimated construction sequence of the harbour piers is provided below:

- Original Harbour / Sea Wall (circa 1760-1790)
- Western Harbour Wall (circa 1820)
- Viaduct Walls (circa 1848)
- Pier Extension (circa 1870)

A more detailed illustration of the sequence of historic works is provided in Gap Analysis Report by Ayesa (CM1407-MA-RP-001).

## [2] Site Conditions

### [2.1] Project Datum

#### [2.1.1] Vertical Datum

The vertical datum used for the project is meters OD Malin (m ODM), where +0.0m ODM = +2.9m CD (Chart Datum).

#### [2.1.2] Horizontal Datum

Unless otherwise stated in this report, all horizontal datum is referenced to Easting and Northing coordinates to Irish Transverse Mercator (ITM). The relative datum parameters utilised are shown in Table 2-1 below.

**Table 2-1: Horizontal Datum Parameters**

Parameter	Description
Datum	World Geodetic System (WGS) 1984
Projection	Irish Transverse Mercator (ITM)
Linear Unit	Meter (m)

### [2.2] Astronomical Tides

The tide table for Balbriggan Harbour is obtained from the ADP Admiralty Tide Tables by the UK Hydrographic Office and is shown in Table 2-2 below. Owing to the harbour drying out on the lower segment of the tidal range, the admiralty tide tables cannot provide tidal levels for the tidal scenarios of LAT, mean low water spring (MLWS) or mean low water neap (MLWN).

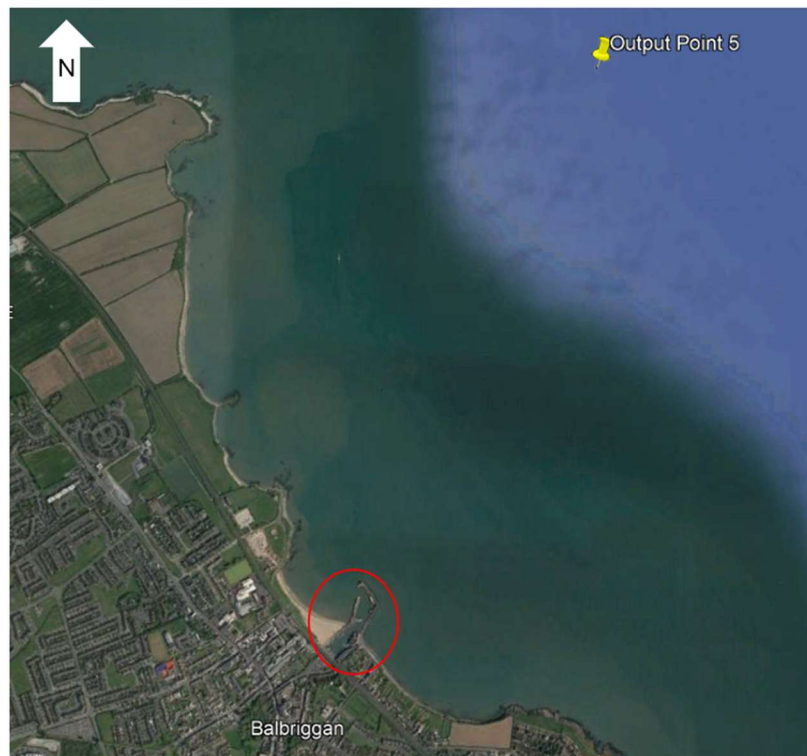
**Table 2-2: Astronomical Tides**

Tidal level	Abbreviation	Level (m CD)	Level (m ODM)
Highest Astronomical Tide	HAT	+4.9	+2.0
Mean High Water Spring	MHWS	+4.4	+1.5
Mean High Water Neap	MHWN	+3.6	+0.7

## [2.3] Wave Climate

### [2.3.1] Nearshore Extreme

Nearshore extreme wave data at approximately 2.3km NE of Balbriggan Harbour has been obtained from the Irish Coastal Protection Strategy Study – Phase 3 – Northeast Coast (6° 9'51.10"W, 53°37'51.60"N) [2]. The location of Output Point 5, the closest point relative to Balbriggan Harbour, is presented in Figure 2-1 with Balbriggan Harbour circled in red.



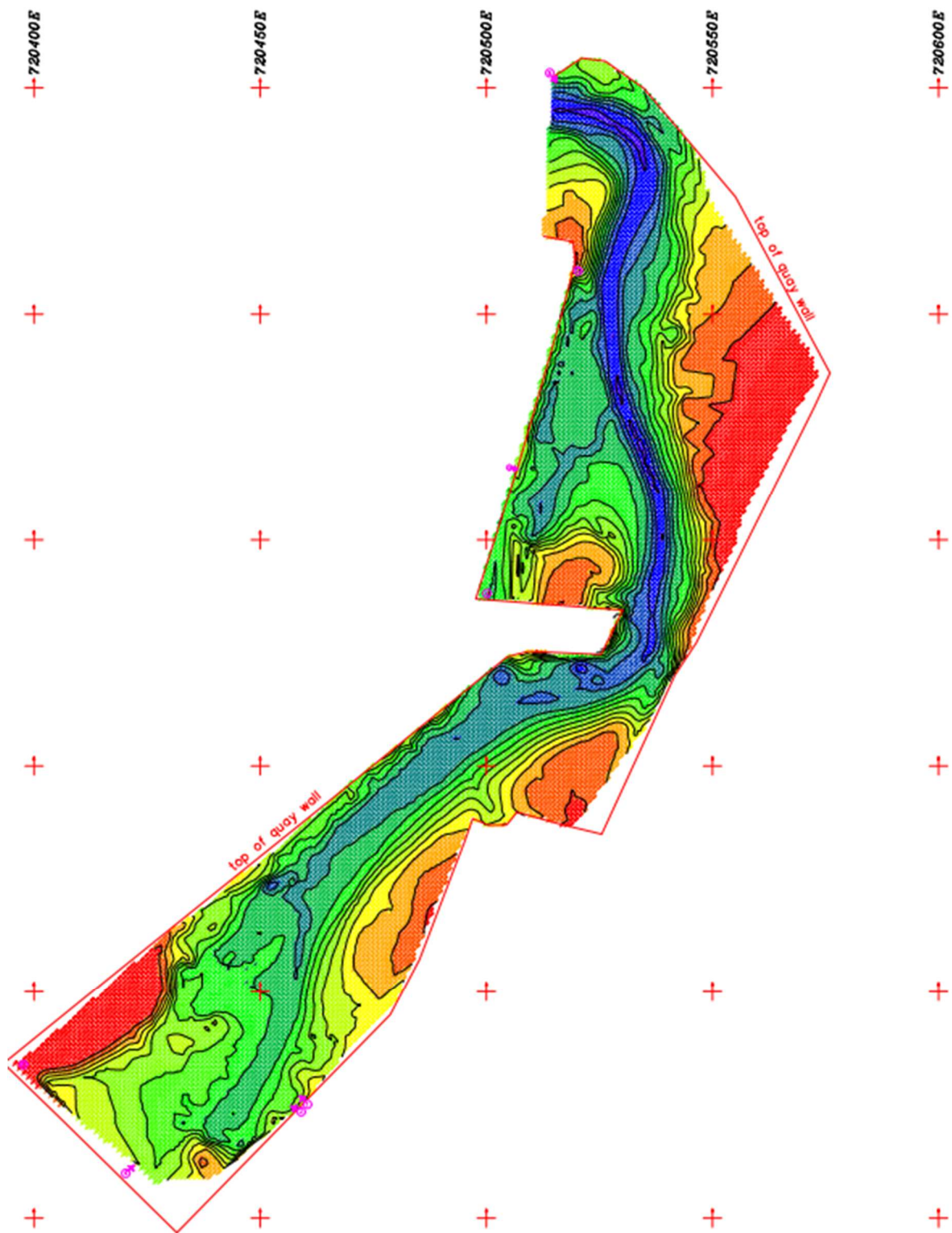
**Figure 2-1: RPS Output Point 5 Location [2]**

The 1 in 100-year Annual Recurrence Interval (ARI) significant wave height from a direction within the N to NE sector was  $H=3.8\text{m}$ , with a mean period of  $T=6.9$  seconds. These values were averaged from the Output Point 5 data, extracted from Appendix 4 of the RPS report [2]. Only the N to NE sector wave directions were considered due to Balbriggan Harbour being sheltered from the directions South of East by the Eastern Pier. These wave parameters do not directly impact the dredging of the harbour basin but may become relevant if offshore dumping of the material is to be considered.

## [2.4] Bathymetric Conditions

### [2.4.1] Current Bathymetry

The most recent bathymetric survey available for Balbriggan Harbour was undertaken by HydroSurvey Ltd (HSL) in January 2023. The survey reveals clearly identifiable areas of higher sediment buildup that are likely to impact navigability and berthing options within the harbour basin. It should be noted that the HSL Bathymetric Survey was undertaken using a vertical datum of  $+0.0\text{m ODM} = +3.0\text{ ODM}$ , differing from the vertical datum used in this report. The bathymetric survey is presented in Figure 2-2 and included as Appendix A.



**Figure 2-2: Balbriggan Harbour Bathymetric Survey [3]**

As shown in blue within Figure 2-2, the Bracken River flows through the harbour basin. This constant flow of water flushes any sediment in the river course out past the harbour entrance, keeping the seabed level along the river course deeper than the rest of the harbour basin.

### [2.4.2] Original Design Bed Depths

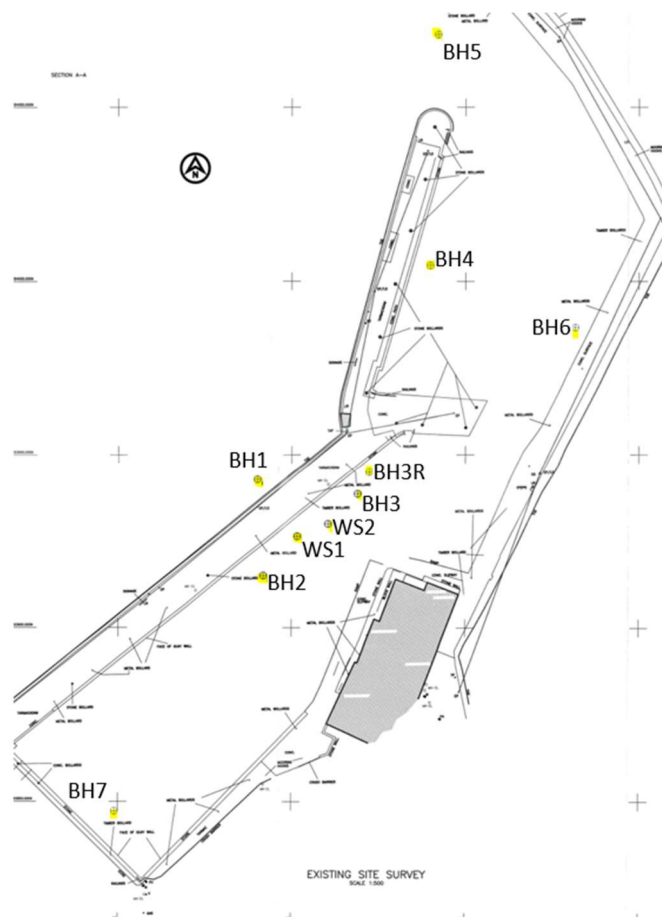
Bed levels were estimated for the harbour using the earliest available historical information. The sources and calculations behind these levels is further discussed within the GAP Report [4]. The estimated original bed levels are presented within Table 2-3.

**Table 2-3: Estimated Original Bed Levels**

Harbour Region	Seabed Level (m ODM)	Level (m CD)
Original Harbour Wall (1896)	-2.7	+0.2
Spur Pier Extension (1871)	-1.5	+1.4
Viaduct Walls (1848)	-2.7	+0.2

### [2.5] Geotechnical Information

In June 2005, Glover Site Investigations Ltd undertook a ground investigation, with the results presented in a Factual Report compiled by Royal Haskoning [5]. Seven boreholes (BH#) and two window samples (WS#) were completed, with the borehole layout plan presented in Figure 2-3.



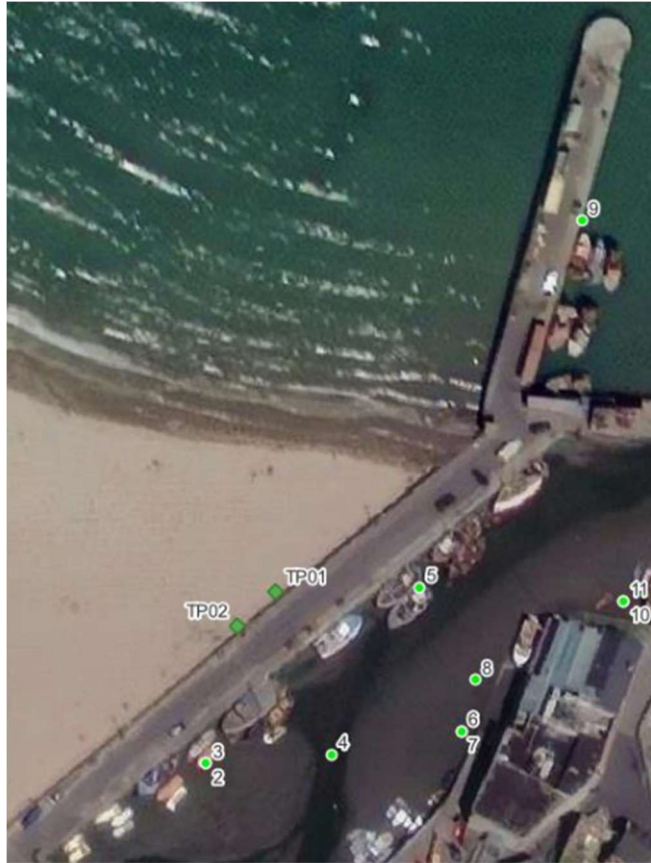
**Figure 2-3: Glover Site Investigation (2005)**

A high-level summary of each borehole log is also presented in Table 2-4. This information does not confirm the foundation levels; however, it does provide indicative levels at which rock is expected to be encountered within the harbour basin.

**Table 2-4: Borehole Log Summary (2005)**

<b>Borehole No.</b>	<b>Summary</b>
01	Boulder/rockhead encountered at approximately -3.53 m ODM.
02	Refusal at -12.95m ODM at brown sandy/ silty clay with the overburden material predominantly sandy silts with some small pockets of gravel.
03R	Boulder/rockhead encountered – 5.93 m ODM.
04	Refusal at -17.05 m ODM with the overburden material predominantly sandy silts with some small gravel pockets.
05	Boulder/rockhead encountered at -7.3 m ODM.
06	Boulder/rockhead encountered at -2.4 m ODM.
07	Refusal at -15.33 m ODM with the overburden material predominantly sandy silts with some small gravel pockets.

In January 2024, Hydro Survey Limited (HSL) undertook a sediment sampling campaign, which included two trial pits along the outside of the western harbour wall. The locations of these pits are shown in Figure 2-4.



**Figure 2-4: HSL Sediment Survey Trial Pit Locations**

These trial pits were undertaken to gain an understanding of the founding conditions the foundation depths of the existing harbour quay walls. The results of the trial pits are presented within Table 2-5.

**Table 2-5: Trial Pit Log Summary**

Trial Pit No.	Summary
TP01	Masonry wall is located atop a gravel bed. The wall consists of horizontal stone, changing to vertically orientated stone. No toe for the wall found.
TP02	Possible foundation footing encountered at -0.58m ODM below the surface level, with possible bottom of this footing encountered at -0.98m below the surface level.

## [2.6] Siltation

Siltation of the Balbriggan Harbour entrance and inner basins occurs regularly and can be seen to follow a pattern of build-up, based on historical information. As noted in these historical records, sediment build-up primarily occurs along the quay walls and alongside the spur pier head in the harbour entrance.

The difference between the *estimated* seabed levels in the harbour based on historical sources (i.e. accounts of previous dredging works in 1896) and that seen in the 2023 bathymetric survey indicate a siltation build-up of between 1.3m to 1.7m [4].

As will be discussed in Section [3], several dredging campaigns have been undertaken historically within the harbour, confirming that siltation within the harbour occurs relatively quickly, indicating a need for regular maintenance dredging. Anecdotal evidence also confirms that the harbour has been known to silt up shortly after dredging, in the case where NE storms succeed the dredge campaign. FCC should be aware that, due to natural process (namely sediment transport from north to south), the harbour has historically been and will continue to be prone to siltation.

### [3] Historical Dredging

Since the completion of the harbour, siltation at the harbour entrance has been recorded as an ongoing maintenance issue. This section identifies previous dredging campaigns, focusing on the information available in the historical sources that will assist in providing evidence of maintenance dredging within the harbour.

There have been numerous maintenance dredging campaigns in the harbour historically. The port authority frequently sent barges and other equipment to assist in dredging the Harbour since taking ownership of the harbour in 1867 [6].

#### [3.1.1] 1910 Dredging

Despite sand within the inner harbour proving problematic to its operation since its construction in the 1750s, the earliest record of dredging operations at Balbriggan Harbour is listed as 1910 [7]. The dredging process involved around 30 manual labourers, and involved the modification of what is now known as the ballast pier to increase the space within the inner harbour. This modification was in the form of the removal of the tip of the ballast pier and is highlighted in yellow within Figure 3-1.

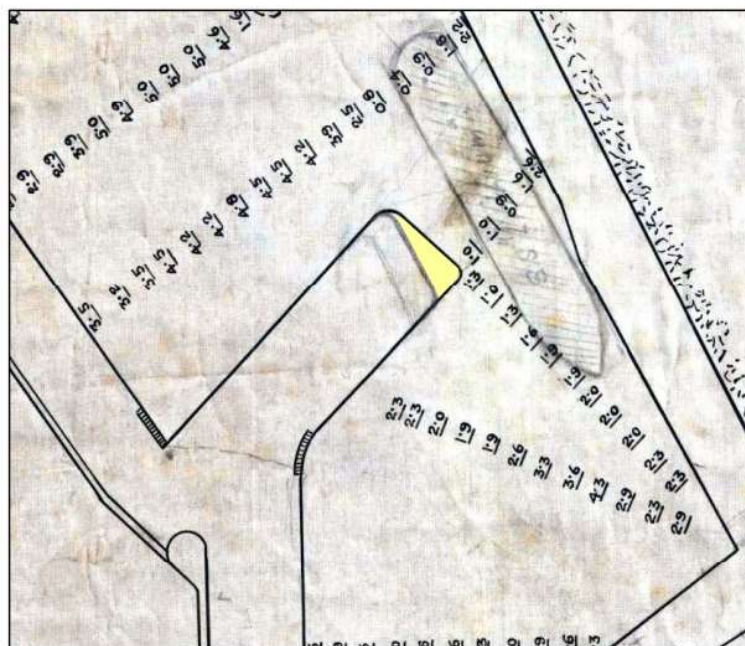


Figure 3-1: Dredging and Ballast Pier Modification Layout in 1910 [7].

#### [3.1.2] 1910s-1930s Maintenance Dredging

After the 1910 dredging works, it was reported that periodic maintenance dredging was undertaken within Balbriggan Harbour from around 1912 to sometime within the 1930s, or possibly the early 1940s [7].

Historical correspondence relating to the dredging works during this time reveals the following:

- On the 13<sup>th</sup> of April 1921, a letter addressed to the Dublin Port and Docks Board secretary mentioned a dredging campaign in November 1920 when 12 days of dredging were carried out. The letter also highlighted that over-dredging had been an issue in the past, leading to settlement and cracks in the structure.
- On the 16<sup>th</sup> of December 1924, a letter addressed to the Dublin Port and Docks Board secretary specifying dredging had occurred in the harbour in January of the same year.
- On the 12<sup>th</sup> of August 1927, a letter from the Commissioners of Public Works addressed to Dublin Port and Docks Board secretary outlining the completion of the 11 days dredging works by the “Fag a Bealach” dredger, which removed 2,875 tons of material.
- On the 5<sup>th</sup> of December 1929, a letter from the Commissioners of Public Works addressed to Dublin Port and Docks Board secretary outlining the completion of the dredging works by the “Fag a Bealach” dredger. These works cleared the entrance between the piers, along the western pier end and a catch pit on the northwest side of the west pier, which resulted in the removal of 5,930 tons of material dumped near Cardys Rock just north of the site.

[2006 Royal Haskoning Structural Inspection Report, Appendix D [8]]

More recently, reference to a discussion on the dredging of the harbour was made in the Dail on the 29<sup>th</sup> of April 1953. This dialogue detailed that maintenance dredging was performed in 1948, 1951 and 1953 while stating that if more dredging were required, it would be performed in late 1953 [9].

### [3.1.3] 1996 Dredging

The most recent dredging records available at Balbriggan Harbour are those of the January 1996 [10]. These dredging/excavation works were carried out across the harbour entrance and the inner harbour, both using long-reach excavators positioned within the harbour basin at low tides and on the quay walls alongside the basin [10].

The dredge spoil within the harbour entrance, noted to be ‘completely clean’, was spread across the beach alongside Balbriggan Harbour to naturally disperse with the incoming tide [10]. Sediment or material testing results were not noted in the report – therefore it is not possible to verify the contaminant characteristics of the dredge spoil.

The dredging of the inner harbour required a bund to be constructed on the beach for temporary storage and drying of the spoil material before transport to local landfill facilities [10]. It was also noted within the dredging report that the bottom of the basin could be classified as gravelly with occasional softer areas [10]. The nature of the disposal methodology for the spoil within the harbour suggests that contaminated material may have been present during pre-dredge investigations.

Figure 3-2 and Figure 3-3 below illustrate the dredging works within Balbriggan Harbour during January 1996.



Figure 3-2: 1996 Dredging Campaign (Viaduct Walls)



Figure 3-3: 1996 Dredging Campaign (Salt Works)

The 1996 dredging campaign is the last known dredging campaign to be recorded within Balbriggan Harbour. Maintenance dredging is, therefore, well overdue within the harbour entrance and basin.

## [4] Dredging Considerations

### [4.1] Target Areas

As discussed within Section [2.6], there are distinct areas of the harbour basin and entrance that routinely experience siltation and sediment build-up. Due to the extended period between maintenance dredging cycles, these areas are in particular need of dredging to reinstate a sufficient navigational depth. It is noted that navigability within the harbour and the berthing options have decreased as a result of the increased sediment build-up.

Zones of high importance are the around the head of the spur pier extension, along the dogleg of the original harbour quay wall, around the saltworks quay walls, and along the northern quay wall of the ballast pier. Of secondary importance would be the area of sediment build up in the corner of the harbour basin between the western quay wall and the viaduct wall. This area will not have a major impact on the navigability of the harbour, and also does not hinder berthing for larger vessels, which are likely to berth in the outer harbour basin. It is also understood that a slipway or platform is located in this corner – any dredging effort should aim return the structure to its original form. From the survey, these key areas are shown to have current bed levels of between 3m and 4m CD. Target areas are identified in Figure 4-1.

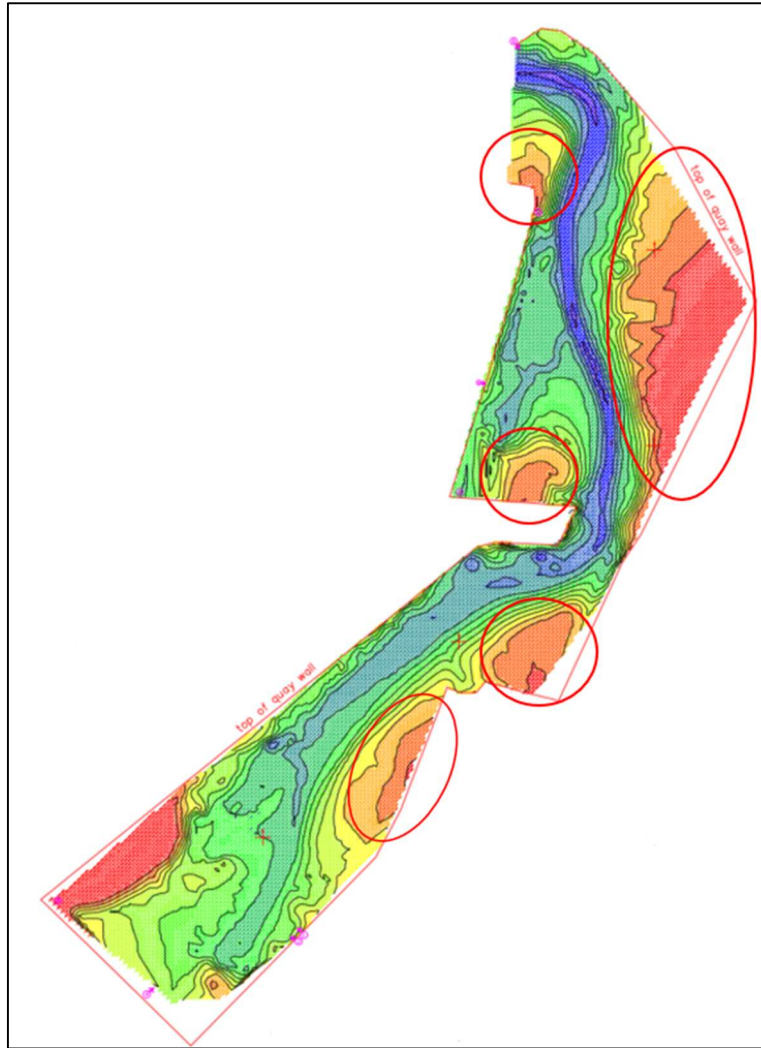


Figure 4-1: Target areas for dredging campaign

#### [4.2] Fleet Characteristics

Balbriggan Harbour’s primary function is that of a fishing harbour, and the typical fleet will consist primarily of fishing vessels with occasional (smaller) leisure vessels. Per Balbriggan Harbour Bye-Laws 2024, the use of the Harbour is restricted to vessels which are less than 18 metres in length.

To undertake the dredging assessment, several ‘standard’ vessels have been selected to ascertain an indicative representation of the required dredge levels for entrance and berthing areas under various tidal conditions. The standardised vessels used in this assessment are presented in Table 4-1.

Table 4-1: Vessel parameters used within Dredging Assessment

Vessel Parameter	Vessel 1	Vessel 2	Vessel 3	Vessel 4
Length (m)	18	15	12	9
Draft (m)	2	1.5	1.2	1

### [4.3] Under-Keel Clearance: Required Water Depth

The recommended Under-Keel Clearance (UKC) for the vessels presented in Table 4-1 has been calculated in line with PIANC WG121 Harbour Approach Channels Design Guidelines [11]. The calculations were undertaken for both the entrance and berthing scenarios for the vessels at the various tidal conditions, discussed within Section [2.2]. The corresponding recommended water depths for the assumed vessels are provided within Table 4-2. Greater water depth is required during vessel approach and navigation, due to wave action present at the harbour mouth, which is reduced when vessels are at berth.

**Table 4-2: Recommended water depth for Vessels 1-4 under berthing and navigation scenarios**

Dredge Scenario	Vessel 1	Vessel 2	Vessel 3	Vessel 4
Berthing Depth (m)	2.8	2.3	2.0	1.8
Navigation Depth (m)	3.0	2.5	2.2	2.0

The calculated water depth requirements (Table 4-2) have been used to assess the suitability of various proposed dredge levels within the harbour basin. Theoretical dredge depths of -0.5m, -1.0m, -1.5m, -2.0m, and -3.0m ODM are proposed for this exercise. These will be referred to as the 'proposed dredge levels' from now on. The study considers the ability of each standard vessel (Vessels 1-4) to a) safely berth and b) safely navigate within the harbour, across a range of water levels, for each of the theoretical dredge scenarios.

The dredging levels required for the vessels to carry out safe berthing and navigation activities, according to the PIANC UKC calculation procedure [11], is presented below in Table 4-3 and Table 4-4 respectively.

**Table 4-3: Required Dredge Level for Safe Berthing**

Tidal Level	Vessel 1	Vessel 2	Vessel 3	Vessel 4
	<b>Dredge Level m ODM</b>			
<b>HAT</b>	<b>-0.21</b>	<b>0.29</b>	<b>0.59</b>	<b>0.79</b>
<b>MHWS</b>	<b>-0.70</b>	<b>-0.20</b>	<b>0.10</b>	<b>0.30</b>
<b>MHWN</b>	<b>-1.60</b>	<b>-1.10</b>	<b>-0.80</b>	<b>-0.60</b>
<b>MSL</b>	<b>-2.79</b>	<b>-2.29</b>	<b>-1.99</b>	<b>-1.79</b>
<b>MLWN</b>	<b>-3.98</b>	<b>-3.48</b>	<b>-3.18</b>	<b>-2.98</b>
<b>MLWS</b>	<b>-4.98</b>	<b>-4.48</b>	<b>-4.18</b>	<b>-3.98</b>
<b>LAT</b>	<b>-5.66</b>	<b>-5.16</b>	<b>-4.86</b>	<b>-4.66</b>

**Table 4-4: Required Dredge Level for Safe Navigation**

<b>Tidal Level</b>	<b>Vessel 1</b>	<b>Vessel 2</b>	<b>Vessel 3</b>	<b>Vessel 4</b>
	<b>Dredge Level m ODM</b>			
<b>HAT</b>	<b>-0.41</b>	<b>0.09</b>	<b>0.39</b>	<b>0.59</b>
<b>MHWS</b>	<b>-0.90</b>	<b>-0.40</b>	<b>-0.10</b>	<b>0.10</b>
<b>MHWN</b>	<b>-1.80</b>	<b>-1.30</b>	<b>-1.00</b>	<b>-0.80</b>
<b>MSL</b>	<b>-2.99</b>	<b>-2.49</b>	<b>-2.19</b>	<b>-1.99</b>
<b>MLWN</b>	<b>-4.18</b>	<b>-3.68</b>	<b>-3.38</b>	<b>-3.18</b>
<b>MLWS</b>	<b>-5.18</b>	<b>-4.68</b>	<b>-4.38</b>	<b>-4.18</b>
<b>LAT</b>	<b>-5.86</b>	<b>-5.36</b>	<b>-5.06</b>	<b>-4.86</b>

Results of the assessment are presented in Table 4-5 to Table 4-14. The values within the tables reflect those presented in Table 4-3 and Table 4-4. Cells are highlighted either green or red, to represent whether the proposed dredge level is sufficient or insufficient to enable safe navigation or berthing.

Associated dredge level layouts are presented alongside these tables in Figure 4-2 to Figure 4-6.

It must be reiterated that the depths stated in Table 4-3 and Table 4-4 indicate the depths at which vessels can safely navigate and berth with adequate under keel clearance – not depths at which vessels will bottom-out.

Lower water levels (MSL & below), have been deduced from tide tables at Skerries.

Table 4-5: Berthing Dredging Depth Verification (-0.5m ODM)

Tidal Level	Vessel 1	Vessel 2	Vessel 3	Vessel 4
<b>Dredge Level m ODM</b>				
HAT	-0.21	0.29	0.59	0.79
MHWS	-0.70	-0.20	0.10	0.30
MHWN	-1.60	-1.10	-0.80	-0.60
MSL	-2.79	-2.29	-1.99	-1.79
MLWN	-3.98	-3.48	-3.18	-2.98
MLWS	-4.98	-4.48	-4.18	-3.98
LAT	-5.66	-5.16	-4.86	-4.66

Table 4-6: Navigation Dredging Depth Verification (-0.5m ODM)

Tidal Level	Vessel 1	Vessel 2	Vessel 3	Vessel 4
<b>Dredge Level m ODM</b>				
HAT	-0.41	0.09	0.39	0.59
MHWS	-0.90	-0.40	-0.10	0.10
MHWN	-1.80	-1.30	-1.00	-0.80
MSL	-2.99	-2.49	-2.19	-1.99
MLWN	-4.18	-3.68	-3.38	-3.18
MLWS	-5.18	-4.68	-4.38	-4.18
LAT	-5.86	-5.36	-5.06	-4.86

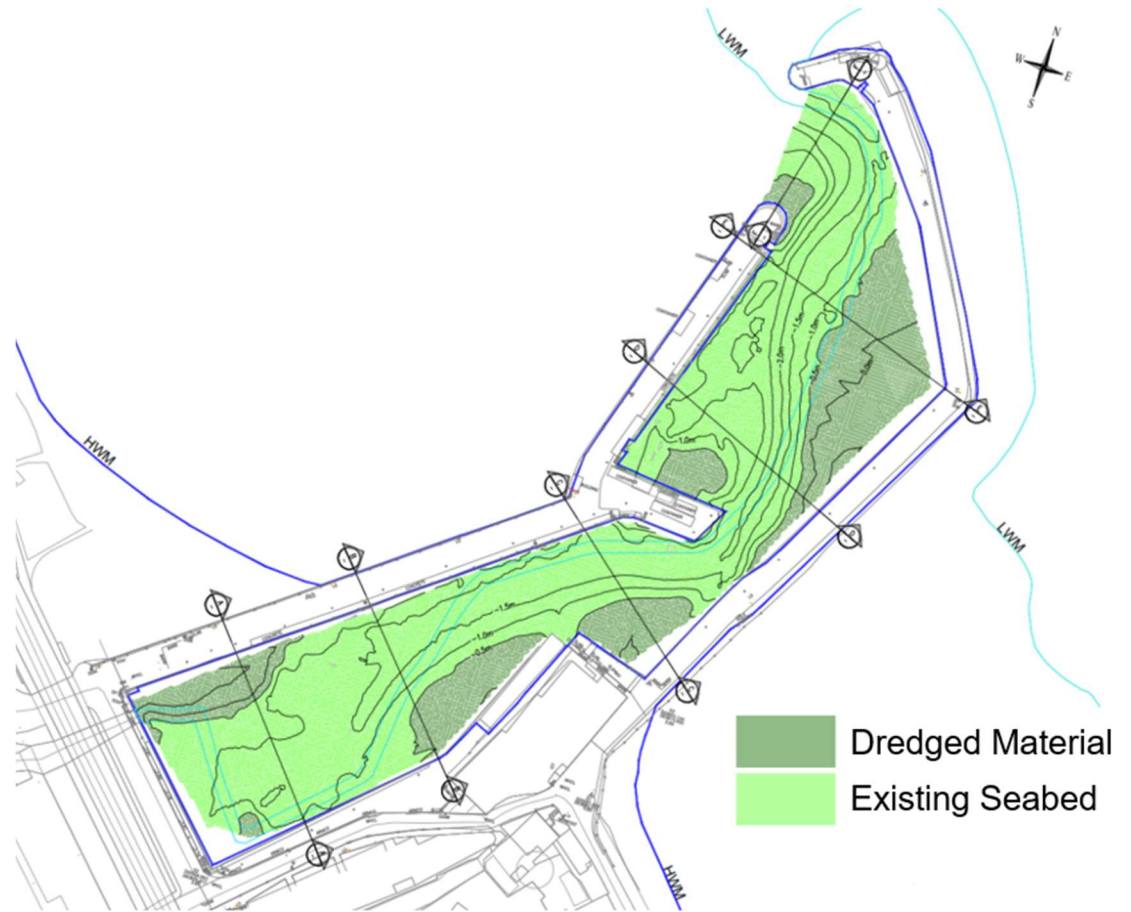


Figure 4-2: -0.5m ODM Dredge Layout

Table 4-7: Berthing Dredging Depth Verification (-1.0m ODM)

Tidal Level	Vessel 1	Vessel 2	Vessel 3	Vessel 4
<b>Dredge Level m ODM</b>				
HAT	-0.21	0.29	0.59	0.79
MHWS	-0.70	-0.20	0.10	0.30
MHWN	-1.60	-1.10	-0.80	-0.60
MSL	-2.79	-2.29	-1.99	-1.79
MLWN	-3.98	-3.48	-3.18	-2.98
MLWS	-4.98	-4.48	-4.18	-3.98
LAT	-5.66	-5.16	-4.86	-4.66

Table 4-8: Navigation Dredging Depth Verification (-1.0m ODM)

Tidal Level	Vessel 1	Vessel 2	Vessel 3	Vessel 4
<b>Dredge Level m ODM</b>				
HAT	-0.41	0.09	0.39	0.59
MHWS	-0.90	-0.40	-0.10	0.10
MHWN	-1.80	-1.30	-1.00	-0.80
MSL	-2.99	-2.49	-2.19	-1.99
MLWN	-4.18	-3.68	-3.38	-3.18
MLWS	-5.18	-4.68	-4.38	-4.18
LAT	-5.86	-5.36	-5.06	-4.86

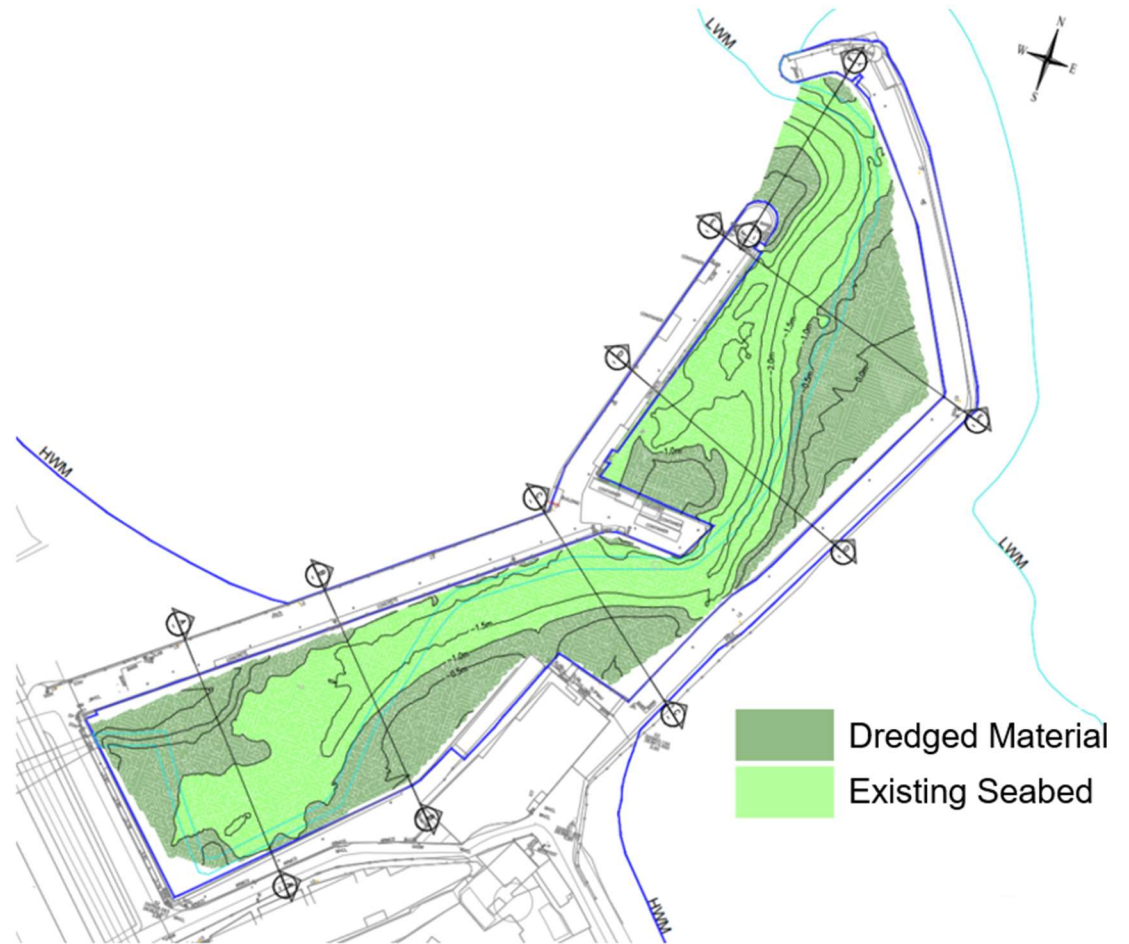


Figure 4-3: -1.0m ODM Dredge Layout

Table 4-9: Berthing Dredging Depth Verification (-1.5m ODM)

Tidal Level	Vessel 1	Vessel 2	Vessel 3	Vessel 4
<b>Dredge Level m ODM</b>				
HAT	-0.21	0.29	0.59	0.79
MHWS	-0.70	-0.20	0.10	0.30
MHWN	-1.60	-1.10	-0.80	-0.60
MSL	-2.79	-2.29	-1.99	-1.79
MLWN	-3.98	-3.48	-3.18	-2.98
MLWS	-4.98	-4.48	-4.18	-3.98
LAT	-5.66	-5.16	-4.86	-4.66

Table 4-10: Navigation Dredging Depth Verification (-1.5m ODM)

Tidal Level	Vessel 1	Vessel 2	Vessel 3	Vessel 4
<b>Dredge Level m ODM</b>				
HAT	-0.41	0.09	0.39	0.59
MHWS	-0.90	-0.40	-0.10	0.10
MHWN	-1.80	-1.30	-1.00	-0.80
MSL	-2.99	-2.49	-2.19	-1.99
MLWN	-4.18	-3.68	-3.38	-3.18
MLWS	-5.18	-4.68	-4.38	-4.18
LAT	-5.86	-5.36	-5.06	-4.86



Figure 4-4: -1.5m ODM Dredge Layout

Table 4-11: Berthing Dredging Depth Verification (-2.0m ODM)

Tidal Level	Vessel 1	Vessel 2	Vessel 3	Vessel 4
	Dredge Level m ODM			
HAT	-0.21	0.29	0.59	0.79
MHWS	-0.70	-0.20	0.10	0.30
MHWN	-1.60	-1.10	-0.80	-0.60
MSL	-2.79	-2.29	-1.99	-1.79
MLWN	-3.98	-3.48	-3.18	-2.98
MLWS	-4.98	-4.48	-4.18	-3.98
LAT	-5.66	-5.16	-4.86	-4.66

Table 4-12: Navigation Dredging Depth Verification (-2.0m ODM)

Tidal Level	Vessel 1	Vessel 2	Vessel 3	Vessel 4
	Dredge Level m ODM			
HAT	-0.41	0.09	0.39	0.59
MHWS	-0.90	-0.40	-0.10	0.10
MHWN	-1.80	-1.30	-1.00	-0.80
MSL	-2.99	-2.49	-2.19	-1.99
MLWN	-4.18	-3.68	-3.38	-3.18
MLWS	-5.18	-4.68	-4.38	-4.18
LAT	-5.86	-5.36	-5.06	-4.86



Figure 4-5: -2.0m ODM Dredge Layout

Table 4-13: Berthing Dredging Depth Verification (-3.0m ODM)

Tidal Level	Vessel 1	Vessel 2	Vessel 3	Vessel 4
<b>Dredge Level m ODM</b>				
HAT	-0.21	0.29	0.59	0.79
MHWS	-0.70	-0.20	0.10	0.30
MHWN	-1.60	-1.10	-0.80	-0.60
MSL	-2.79	-2.29	-1.99	-1.79
MLWN	-3.98	-3.48	-3.18	-2.98
MLWS	-4.98	-4.48	-4.18	-3.98
LAT	-5.66	-5.16	-4.86	-4.66

Table 4-14: Navigation Dredging Depth Verification (-3.0m ODM)

Tidal Level	Vessel 1	Vessel 2	Vessel 3	Vessel 4
<b>Dredge Level m ODM</b>				
HAT	-0.41	0.09	0.39	0.59
MHWS	-0.90	-0.40	-0.10	0.10
MHWN	-1.80	-1.30	-1.00	-0.80
MSL	-2.99	-2.49	-2.19	-1.99
MLWN	-4.18	-3.68	-3.38	-3.18
MLWS	-5.18	-4.68	-4.38	-4.18
LAT	-5.86	-5.36	-5.06	-4.86



Figure 4-6: -3.0m ODM Dredge Layout

The above assessment shows that, regardless of dredge level achieved, adequate water depth to ensure safe access and berthing cannot be provided for all tidal states. Vessels will continue to bottom out within the harbour at lower tide levels. Other than for the -3.0mODM scenario, vessels will be required to access/egress the harbour during high tide scenarios (i.e. MSL or higher) to ensure safe transit.

#### [4.4] Dredge Volumes

The estimated dredge volumes associated with each of the proposed dredge layouts (indicated in Figure 4-2 to Figure 4-6) are presented within Table 4-15.

**Table 4-15: Proposed dredge layouts with associated volumes**

Proposed Dredge Level (m ODM)	Total Dredge Volume (m <sup>3</sup> )
-0.5	1,300
-1.0	3,300
-1.5	6,600
-2.0	11,520
-3.0	22,700

#### [4.5] Maintenance Dredging Requirements

As is discussed in Section [2.6], Balbriggan Harbour basin has experienced frequent issues with sediment build-up, often in the same 'problem areas' indicated within Figure 4-1. In order to prevent future issues both with sediment volume and contamination build-up, it is recommended that regular maintenance dredging be implemented within the harbour.

Environmental licences sought in conjunction with the dredge campaign should consider the need for ongoing maintenance dredging over several years.

## [5] Material Investigation

In January 2024, Hydro Survey Limited (HSL) undertook a sediment sampling campaign, with the results presented in a Survey Report [12]. Fifteen sediment samples were taken across 11 locations within Balbriggan Harbour, with seven surface samples and eight cores (i.e. sub-surface samples). Sample locations are presented in Figure 5-1. It should be noted that Sample 7, due to be recovered at a depth of -2.5m below seabed level, was not able to be retrieved due to the presence of bedrock. Therefore 14 samples were successfully retrieved. Particle size distribution was analysed in addition to chemical characteristics.

This section discusses the results of the survey with regards to the physical parameters of the entrance and basin material, as well as the contamination levels within the harbour.

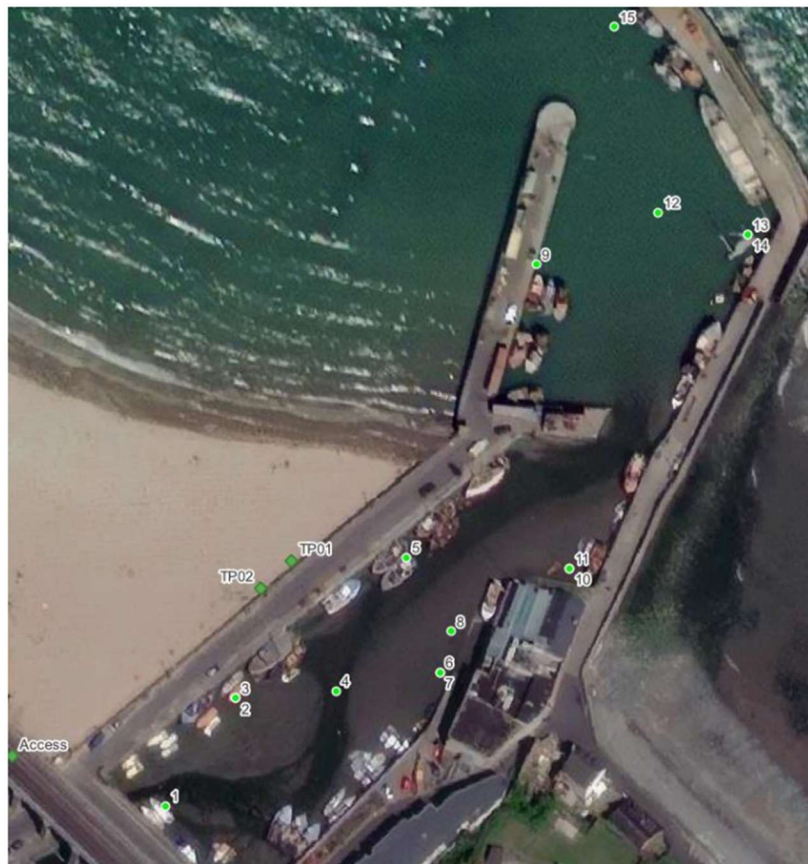


Figure 5-1: HSL Sediment Sample Locations (2024)

### [5.1] Physical Characteristics

The majority of the material in the harbour basin is made up of sand and gravels, with several samples having a significant proportion of silt & clay material as well. Along the original pier, from north of the salt works to the dogleg, the presence of cobble material is also noted. The specific distribution of each sample is presented in Table 5-1.

**Table 5-1: Harbour Basin Sediment Characteristics [12]**

Sample No.	Sample Depth (m)	Cobbles (%)	Gravel (%)	Sand (%)	Silt & Clay (%)
1	0.0	0.0	42.0	49.0	10.0
2	1.2	0.0	10.0	71.0	19.0
3	2.5	0.0	47.0	39.0	15.0
4	0.0	0.0	9.0	62.0	29.0
5	0.0	0.0	41.0	36.0	23.0
6	1.2	0.0	5.0	28.0	67.0
7	-	-	-	-	-
8	0.0	0.0	20.0	29.0	51.0
9	0.0	0.0	0.0	100.0	0.0
10	1.2	14.0	16.0	35.0	35.0
11	2.0	0.0	6.0	25.0	70.0
12	0.0	0.0	1.0	82.0	17.0
13	1.2	13.0	2.0	81.0	4.0
14	2.5	6.0	4.0	89.0	2.0
15	0.0	0.0	2.0	90.0	7.0

## [5.2] Contamination

### [5.2.1] Contaminant Testing Methodology

The Sediment Sampling Campaign included the testing of the sediment material according to several testing suites including the Marine Institute (MI), RILTA, and WAC suites. Sediment was then classified as either non-hazardous or hazardous material and categorised with regards to waste management and disposal routes. The results of these analyses are discussed in the following paragraphs, and in more detail in the HWOL Report [13] and Waste Classification Report [14], both of which can be found in Appendix B.

The test suites profile the sediment samples against differing criteria and specify a resultant categorisation for the material. This process is described for each suite below.

### [5.2.2] Testing for Disposal at Sea

The Marine suite tests for the concentration of harmful or hazardous materials within the sediment and compares these concentrations with the allowable limits set out by the Environmental Protection Agency (EPA) for disposing of the material via Dumping at Sea (DaS). Test locations have been defined by the Marine Institute (MI), and are a prerequisite for any DaS permit applications.

Limits include a “Lower Level” and an “Upper Level” for contaminant concentrations and are set out in the “*Guidelines for the assessment of dredge material for disposal in Irish waters*” [15]. The material results are delineated into three classes as follows:

- Class 1: Contaminant concentrations less than the lower level.

- Class 2: Contaminant concentrations between the lower limit and the upper level.
- Class 3: Contaminant concentrations above the upper level.

Table 5-2 depicts the results of the Marine suite testing results on the samples collected from Balbriggan Harbour basin, with green cells indicating Class 1 concentrations, yellow indicating Class 2, and red indicating Class 3.

**Table 5-2: Marine Institute Testing Suite Results**

Parameter	Units (dry wt)	Low Level	Upper Level	Results													
				1	2	3	4	5	6	8	9	10	11	12	13	14	15
Sample No.																	
Arsenic	mg kg	9 <sup>c</sup>	70*	88.7	107	112	108	129	145	132	45.6	85.1	79.9	43.1	11.3	7.6	6.4
Cadmium	mg kg <sub>1</sub>	0.7	4.2	2.95	4.59	3.89	4.88	2.16	5.49	4.03	0.37	2.51	3.04	0.36	0.18	0.14	0.05
Chromium	mg kg <sub>1</sub>	120	370	630	532	620	634	1250	1530	757	191	636	672	220	34.2	27	23
Copper	mg kg <sub>1</sub>	40	110 <sup>d</sup>	354	411	500	376	1060	1820	16900	263	482	462	109	19.4	14.8	5.6
Lead	mg kg <sub>1</sub>	60	218	6200	2360	2650	460	347	561	769	87.5	517	508	1790	79.9	95.2	14
Mercury	mg kg <sub>1</sub>	0.2	0.7	2.42	3.01	2.53	1.63	0.56	1.84	1.2	0.14	0.93	1.26	0.22	0.16	0.07	0.04
Nickel	mg kg <sub>1</sub>	21	60	237	231	291	269	465	359	302	68	262	261	74.9	15.8	14.2	9.6
Zinc	mg kg <sub>1</sub>	160	410	808	1150	1220	1230	1430	13700	16800	338	1230	1330	319	72.5	62.6	33.7
TBT	µg kg <sub>1</sub>			36	32.8	73.8	26.5	1463	395	3072	<1	349	208	28.1	<1	25.8	<5
DBT	µg kg <sub>1</sub>			15.2	118	145	74.5	344	52.4	718	<1	69.8	91	18.1	<1	24.5	<5
TBT	mg kg <sub>1</sub>			0.026	0.0328	0.0738	0.0265	1.463	0.395	3.072	<0.001	0.349	0.208	0.0281	<0.001	0.0258	<0.005
DBT	mg kg <sub>1</sub>			0.0152	0.118	0.145	0.0745	0.344	0.0524	0.718	<0.001	0.0698	0.091	0.0181	<0.001	0.0245	<0.005
Σ TBT & DBT	mg kg <sub>1</sub>	0.1	0.5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0487	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
γ – HCH (Lindane)	µg kg <sup>-1</sup>	0.3	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	µg kg <sup>-1</sup>	0.3	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PCB 028	µg kg <sub>1</sub>	1	180b	0.09	0.56	2.87	0.27	0.2	0.44	0.37	0.08	0.36	0.45	0.08	0.08	0.08	0.08

Parameter	Units (dry wt)	Low Level	Upper Level	Results													
				1	2	3	4	5	6	8	9	10	11	12	13	14	15
Sample No.																	
PCB 052	µg kg <sup>-1</sup>	1	180b	0.16	0.76	1.9	0.33	0.23	0.49	0.45	0.08	1.39	0.73	0.08	0.08	0.19	0.08
PCB 101	µg kg <sup>-1</sup>	1	180b	0.22	0.68	0.81	0.37	0.62	0.78	0.62	0.08	3.11	1.44	0.08	0.08	0.2	0.08
PCB 138	µg kg <sup>-1</sup>	1	180b	0.16	0.66	0.49	0.29	0.85	0.83	0.5	0.08	3.22	1.61	0.08	0.08	0.15	0.08
PCB 153	µg kg <sup>-1</sup>	1	180b	0.12	0.67	0.56	0.39	0.95	0.73	0.84	0.08	3.18	1.94	0.08	0.08	0.21	0.08
PCB 180	µg kg <sup>-1</sup>	1	180b	0.08	0.22	0.31	0.11	0.27	0.25	0.25	0.08	1.27	0.53	0.08	0.08	0.11	0.08
PCB 118	µg kg <sup>-1</sup>	1	180b	0.22	0.78	1.08	0.54	1.13	1.01	0.93	0.08	3.96	1.9	0.08	0.08	0.15	0.08
PCB (Σ ICES 7)	µg kg <sup>-1</sup>	7	1260	0.97	4.33	8.02	2.3	4.25	4.53	3.96	0	16.49	8.6	0	0	1.04	0
PAH (Σ 16)	µg kg <sup>-1</sup>	4000		7723.7	9300.9	505460	5549.9	1422.9	12539.5	6135.3	39.68	1326.9	1400.93	176.35	3228.47	7161.91	103.65
Total Extractable Hydrocarbons	g kg <sup>-1</sup>	1		0.126	0.428	1.7	0.35	0.07	0.605	0.851	0.011	0.112	0.184	0.359	0.045	0.167	0.012
<b>Waste Classification (Class)</b>				<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>1</b>

### [5.2.3] Testing for Disposal on Land

The Rilta testing suite allows for the assessment of material based on total pollutant content and classifies materials as either hazardous or non-hazardous. This constitutes the first stage of waste assessment. This suite further allows for the assessment of the suitability of the material for disposal at the various categories of landfill or waste facilities specified in the EU Council Decision 2003/33/EC. The criteria assess the presence of various metals, inorganic compounds, organic matter and asbestos. The result of this testing allows the categorisation of the waste as hazardous or non-hazardous, as presented in Table 5-3

Waste Acceptance Criteria (WAC) – WAC testing compares the concentration and volume of pollutants within a material against the limits set out within the EU Council Decision 2003/33/EC, and classifies the waste according to the waste categories set out in the EU Council Decision 2003/33/EC.

In Ireland, the EPA has implemented increased WAC to a selection of licenced landfills, which was also considered in this assessment [14]. This testing does not classify waste as hazardous or non-hazardous, but rather categorises the material to assist in guidance for required disposal procedures. The categorisation of the samples from Balbriggan Harbour basin is presented in Table 5-3.

**Table 5-3: Sediment Contamination Results [11], [12]**

Sample No.	HWOL Classification	Waste Category
1	Non-hazardous	Category B2
2	Non-hazardous	Category C
3	Hazardous	Category D
4	Non-hazardous	Category C
5	Non-hazardous	Category C
6	Non-hazardous	Category C
7	-	-
8	Non-hazardous	Category C
9	Non-hazardous	Category C1
10	Non-hazardous	Category C
11	Non-hazardous	Category C
12	Hazardous	Category D
13	Hazardous	Category D
14	Hazardous	Category D
15	Non-hazardous	Category B2

### [5.2.4] Interpretation

The results of the various testing methodologies discussed above provide guidance and restrictions on the possible options for disposal of the proposed dredged spoil. As can be seen

from the MI suite results in Table 5-2, the majority of the samples are Class 3 Waste, meaning it is not suitable for Dumping at Sea. Only two of the samples provided are Class 1 or 2, thus Dumping at Sea may not be deemed a feasible disposal process given how small a volume would be permitted to be dumped.

The results of the Rilta and WAC testing in Table 5-3 indicate that there are a few areas of the basin containing hazardous material and based on the waste classification of these samples, and will need to be disposed of at Category D waste facilities, limiting the disposal options for this material. Material is likely to need treatment before disposal. Fortunately, these hazardous samples are generally located within proximity of each other thus concentrating problematic sediment in localised areas.

However, most of the material within the basin is classified as non-hazardous and categorised in Waste Category group B or C. Several facilities in Ireland would possibly be able to dispose of this material, and these facilities will be contacted during the course of the proceedings following this report. Further testing during the later stages of the project is recommended to confirm any presence of asbestos in the harbour and delineate its extent if present.

An indicative zoning map depicting the contamination extent is presented in Figure 5-2. The map has been derived using initial sample results and should be updated as additional (tightly-gridded) samples are analysed i.e. by the Contractor before, during and after dredging, to establish a robust zoning map.



**Figure 5-2: Contamination Zoning**

## [6] Dredging and Disposal Methodology

This section intends to discuss, at a high level, the possible dredging and disposal options relevant to Balbriggan Harbour. These options will be discussed in terms of benefits and drawbacks within the project context, and in terms of the extent to which the option is applicable to the proposed dredging works.

### [6.1] Dredging

#### [6.1.1] Land-Based Machinery

Similar to the dredging campaign undertaken in 1996, described in Section [3.1.3], it is expected that the dredge spoil will be removed from the basin via long-reach excavators based on either the quayside and/or the basin seabed if and when possible and beneficial.

Excavators will need to deposit the material into either bunds located along the quay for temporary storage and possible treatment or drying, or into a barge within the harbour basin for dewatering/stabilising or for removal to another site for dewatering/treatment. Following this, the material will need to be moved from the bunds or the barge into suitably licenced trucks for transport to the proposed waste disposal facilities. The disposal pathways will be discussed in Section [6.1.2].

The final methodology for the dredging works will need to be proposed and justified by the appointed Contractor during the tender period. However, based on the constraints of the site, the approaches discussed above are the most likely proposals to be received during the tender period.

#### [6.1.2] Alternative Methodologies

##### [6.1.2.1] Traditional Dredging Vessels

This dredging methodology entails the use of dredging vessels, likely suction-hopper dredgers based on the material composition of the harbour seabed, to dredge the seabed. Due to the existing bathymetric conditions within the Balbriggan Harbour basin, the vessels would not have sufficient water depth to operate for extending periods of time. Furthermore, the high mobilisation costs of this plant may render the option economically unfeasible. Therefore, this dredging option would not be possible within Balbriggan Harbour.

##### [6.1.2.2] Marine-based Machinery

Using a backhoe placed on a barge is another common dredging methodology. With this option, dredged material would likely be placed in an adjacent barge, or in bunds on the quayside. Similar to traditional dredging vessels, the bathymetry within the harbour is not favourable to this method of dredging, it is particularly difficult to implement within the inner harbour, where the seabed is at its shallowest. This method of dredging is unlikely to be pursued due to the constraints surrounding the harbour.

## [6.2] Disposal

The results of the sediment testing campaign, discussed in Section [5.2], dictate the disposal options available for the proposed dredge spoil within the harbour. The contamination within the harbour is not uniformly spread, with certain areas having a higher concentration of contaminants than others. Thus, options for disposal relating to both contaminated and non-contaminated material will be discussed here.

### [6.2.1] Contaminated Materials

As the dredge spoil test results indicate the material is classified as contaminated, the disposal of the material will need to be undertaken in accordance with the Waste Management Act 1996, overseen by the EPA. Two options are seen to be viable for the disposal of any contaminated dredge material – disposal at a suitably licenced local landfill and disposal at a suitably licenced landfill abroad.

#### [6.2.1.1] Local Landfill

There are two primary methodologies to follow in this scenario; namely transport to a licenced landfill directly, or on-site treatment of the spoil. The dredge spoil will almost certainly need to be dried prior to transport, with the need for on-site treatment dictated by the contamination limits and requirements set out by the proposed landfill or waste facility. Treatment of contaminated material involves binding contaminated sediment with a cementitious binder to reduce its contamination potential. The process is subject to licensing by the EPA in Ireland. The licencing and permitting process required for this disposal methodology is further discussed in Section [8].

With the acceptance requirements of the intended disposal facilities still to be confirmed, the exact nature of any required treatment of the material is unknown. The material will, however, be required to be dried and stabilised on-site before transport. This method of disposal can often come with complications arising from spatial restrictions and licencing requirements which will be further illustrated in Section [8]. The most onerous process related to this disposal methodology would be acquiring the necessary Waste Management licences and certificates for the proposed drying, treatment, and transport works to remove and dispose of the dredge spoil in a manner compliant with the EPA's established legislation. During this drying process, stockpiling of the dredge spoil separately based on the different waste classes is recommended to prevent contamination of the surrounding environment.

It is preferable that the dredge spoil be disposed of at licenced facilities within close proximity to Balbriggan Harbour, if possible. There are several waste and landfill facilities within 12km of Balbriggan Harbour. These facilities are namely, Murphy Concrete Manufacturing Limited, Clashford Recovery Facilities, IMS Limited Partnerships, and Milverton Waste Recovery Facility. Of these four facilities, only Clashford Recovery Facilities and IMS Limited Partnerships are licenced for the acceptance of dredge spoil, both operating as inert waste landfill sites.

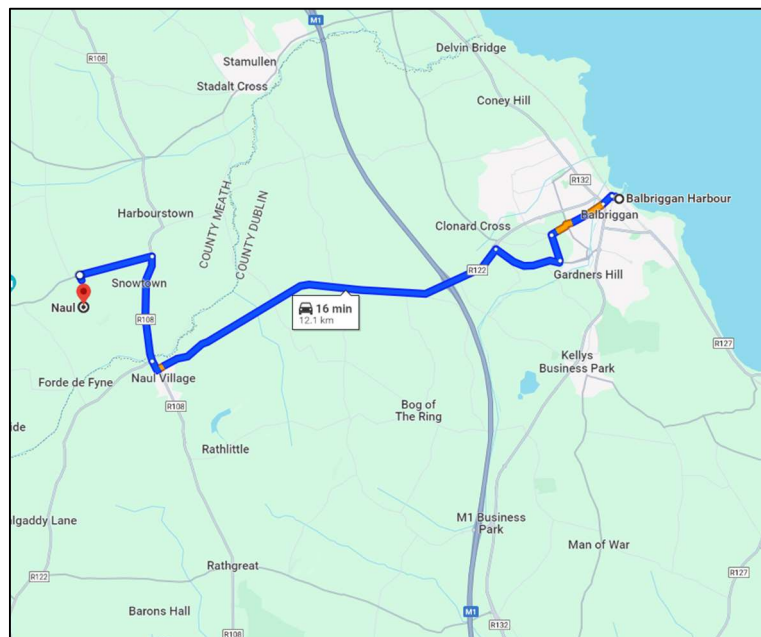
Further out from Balbriggan Harbour is Panda, a non-hazardous landfill facility located near Navan, County Meath. Panda is licenced to dispose of material that is categorised as non-hazardous waste, which pertains to a large portion of the material within the Balbriggan Harbour basin. Alternatively, Enva facilities in both Dublin and Portlaoise could accept

hazardous material, which would make up the remainder of the material unable to be accepted by the other facilities discussed here.

Thus, only Clashford, IMS, Panda, and Enva can be considered for any landside dumping of dredge spoil required as part of the proposed dredging works.

### **Clashford Recovery Facilities:**

Clashford Recovery Facilities is an EPA licenced facility for the disposal and recovery of dredge spoil material, with the Waste Licence Number W0265-01. The facility is approximately 12 km from Balbriggan Harbour and is licenced to accept a maximum of 170,000 tonnes of dredge spoil per annum. The facility's location relative to Balbriggan Harbor is presented in Figure 6-1.

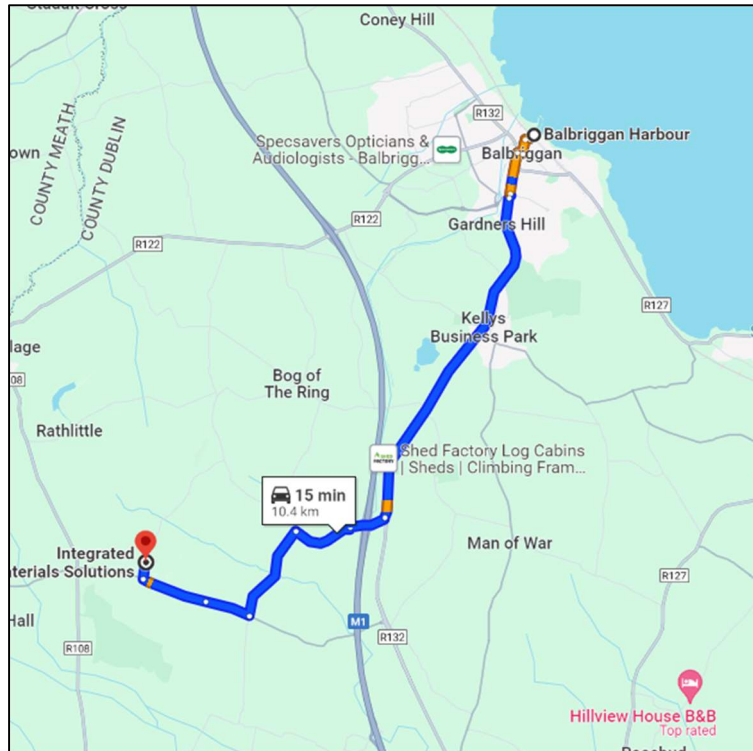


**Figure 6-1: Location of Clashford Recovery Facilities [16]**

The expected dredge spoil for the proposed dredging works may be up to 10,000 tonnes, therefore equating to almost 6% of Clashford's total allowance. It is not expected that this will cause any issues with obtaining the required licensing or permissions needed to approve the dumping of the material at this facility, however, it is worth noting. If Clashford were able to receive this volume of dredge spoil from a single contract, they would be a viable candidate for disposal.

### **IMS Limited Partnerships:**

IMS Limited Partnerships operates an EPA licenced facility approximately 10 km away from Balbriggan, also being licenced to accept dredge spoil under the Waste Licence Number W0129-02. The annual dredge volume allowance at their facility is 400,000.00 tonnes of inert dredging waste. The facility's location relative to Balbriggan Harbour is presented in Figure 6-2.

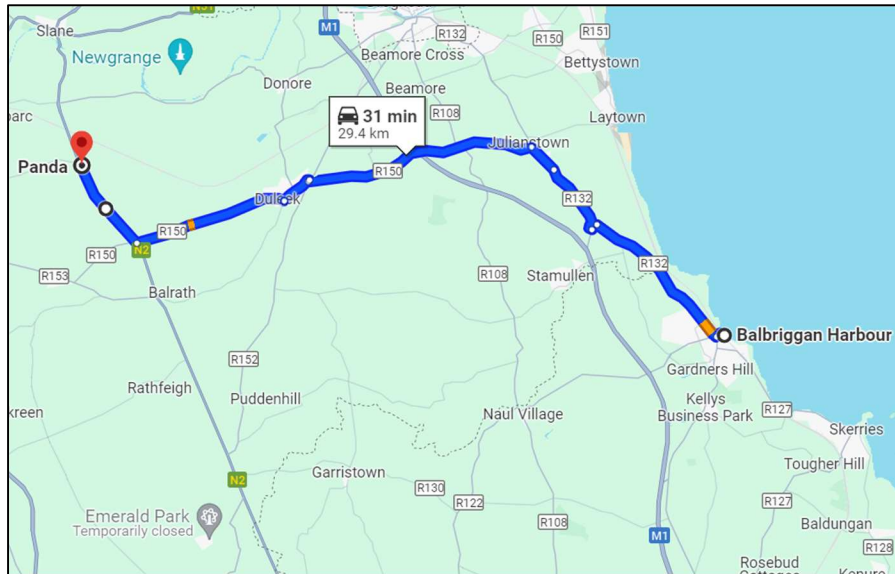


**Figure 6-2: Location of IMS Waste Management Facility [16]**

The IMS facility is well equipped to handle dredge spoil waste, with the expected dredge spoil to be within their capabilities of receiving. Should they accept the material based on its waste categorisation, IMS Limited Partnership's facility is a suitable candidate for any required landside dumping of dredge material.

**Panda:**

Panda (operating under the waste licence given to Greenstar Holdings Limited) is an EPA licenced facility for the disposal and recovery of non-hazardous waste material, with the Waste Licence Number W0146-02. The facility is approximately 30km from Balbriggan Harbour, with the location of the facility presented in Figure 6-3.



**Figure 6-3: Location of Panda Facility [16]**

Panda's waste licence does not explicitly disclose its ability to accept dredge spoil, rather categorising the allowable waste by activity origin (residential, commercial, industrial, etc.). As they are the closest non-hazardous waste facility to Balbriggan Harbour, it will be clarified as to whether they are able to accept dredge spoil as per their licence limitations. Should neither Clashford nor IMS be able to accept the dredge spoil from Balbriggan Harbour, Panda would be the next desirable disposal location.

**Enva:**

Enva is a waste treatment and disposal specialist with multiple facilities for the disposal of waste. Their Portlaoise branch is an EPA-licensed facility for the disposal and recovery of hazardous waste material, with the Waste Licence Number W0184-02. The facility is approximately 120km from Balbriggan Harbour, with the location of the facility presented in Figure 6-4. Enva also has a facility for the disposal of hazardous waste in Rathcoole, Dublin which operates under the EPA Waste Licence Number W0192-03 and is approximately 50km from Balbriggan Harbour, as shown in Figure 6-5.

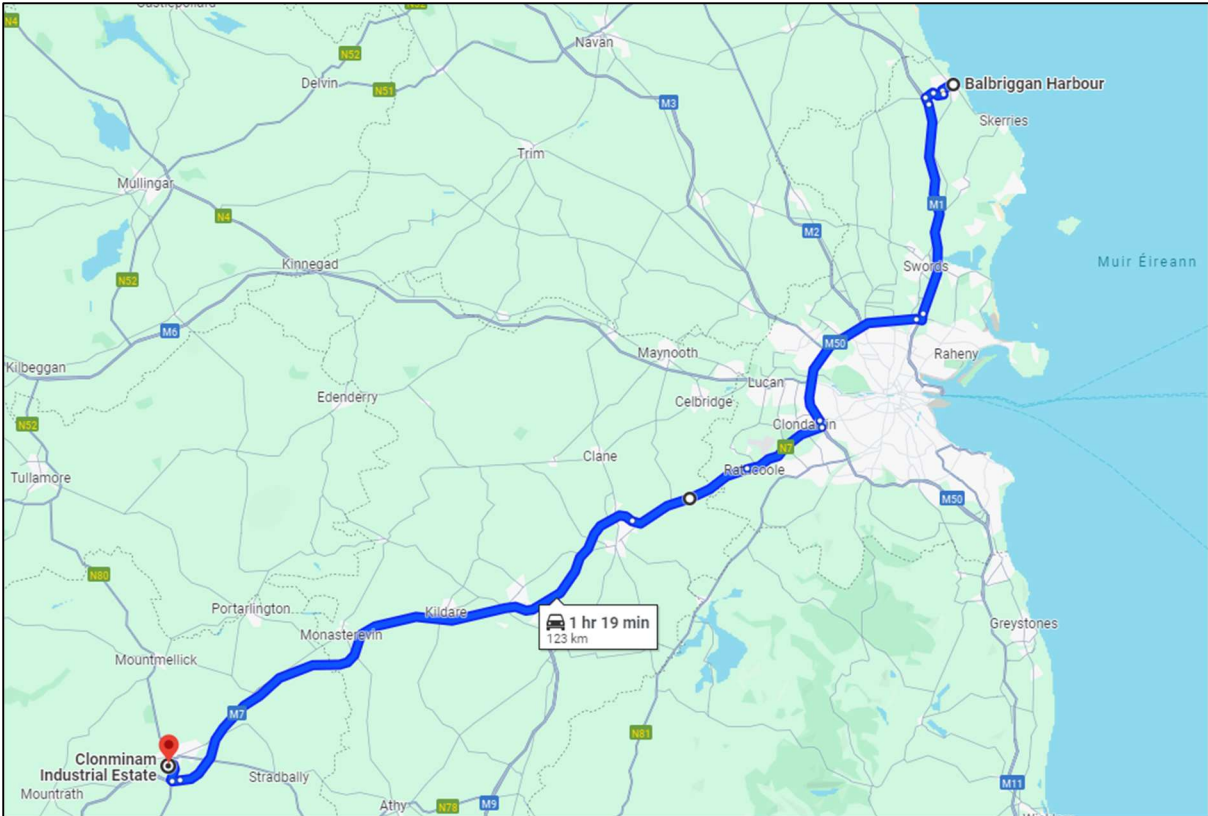
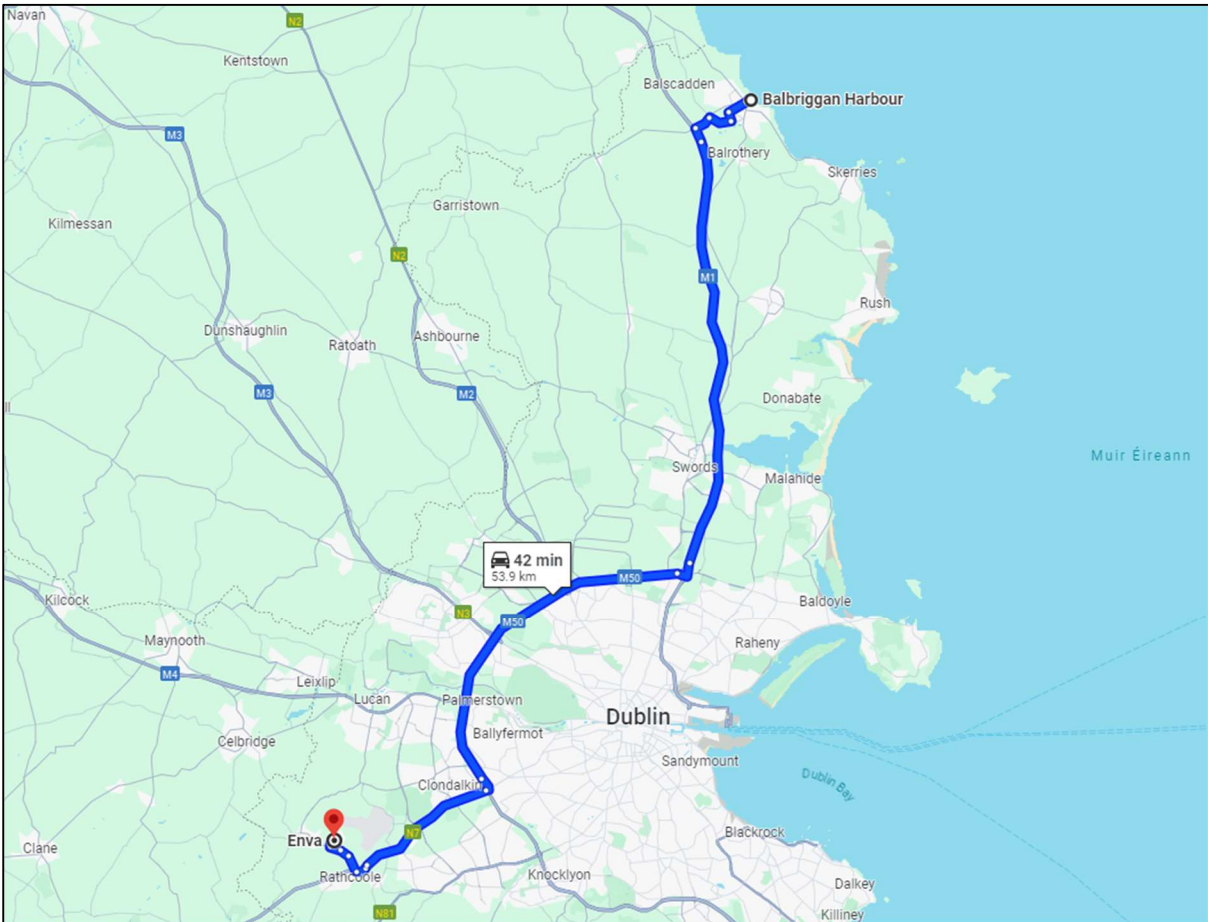


Figure 6-4: Location of Enva Portlaoise Facility [16]



### Figure 6-5: Location of Enva Rathcoole Facility [16]

Enva's waste licence for the disposal or recovery of hazardous waste material makes it one of the few facilities of its kind in the Republic of Ireland. Therefore, any waste that is unable to be accepted by any of the alternative facilities discussed above should be considered for disposal at one of Enva's facilities.

#### [6.2.1.2] Overseas Disposal

From our experience, mainland EU and UK facilities are reluctant to accept contaminated material from Ireland. However, should none of the proposed landfill facilities discussed in Section [6.2.1.1] accept the dredge spoil due to its level of contamination exceeding their allowable limits, facilities within the UK or mainland EU may need to be considered.

Should this methodology of disposal be pursued, the transfer of dredge material from Ireland to an EU or UK landfill or waste facility is subject to the following directives: The Waste Shipment Regulation (2006/12/EC) which regulates and licences all shipments of waste within the EU and to and from non-EU countries, and The Waste Management (Shipments of Waste) Regulations 2012 (SI No 339 of 2012) which implements the Waste Shipment Regulation within Ireland, requiring notifications of any waste shipments to be sent to the EPA.

It should be noted that this disposal option is very costly and is subject to prolonged licensing and permitting processes. Material will require drying in the first instance, as sludge cannot be transported by ship.

#### [6.2.2] Non-Contaminated Materials

Based on the sediment testing results discussed in Section [5.2], none of the material in the harbour basin is expected to be non-contaminated. However, should the contractor appointed for the works identify non-contaminated material in the harbour, the options discussed here could become viable.

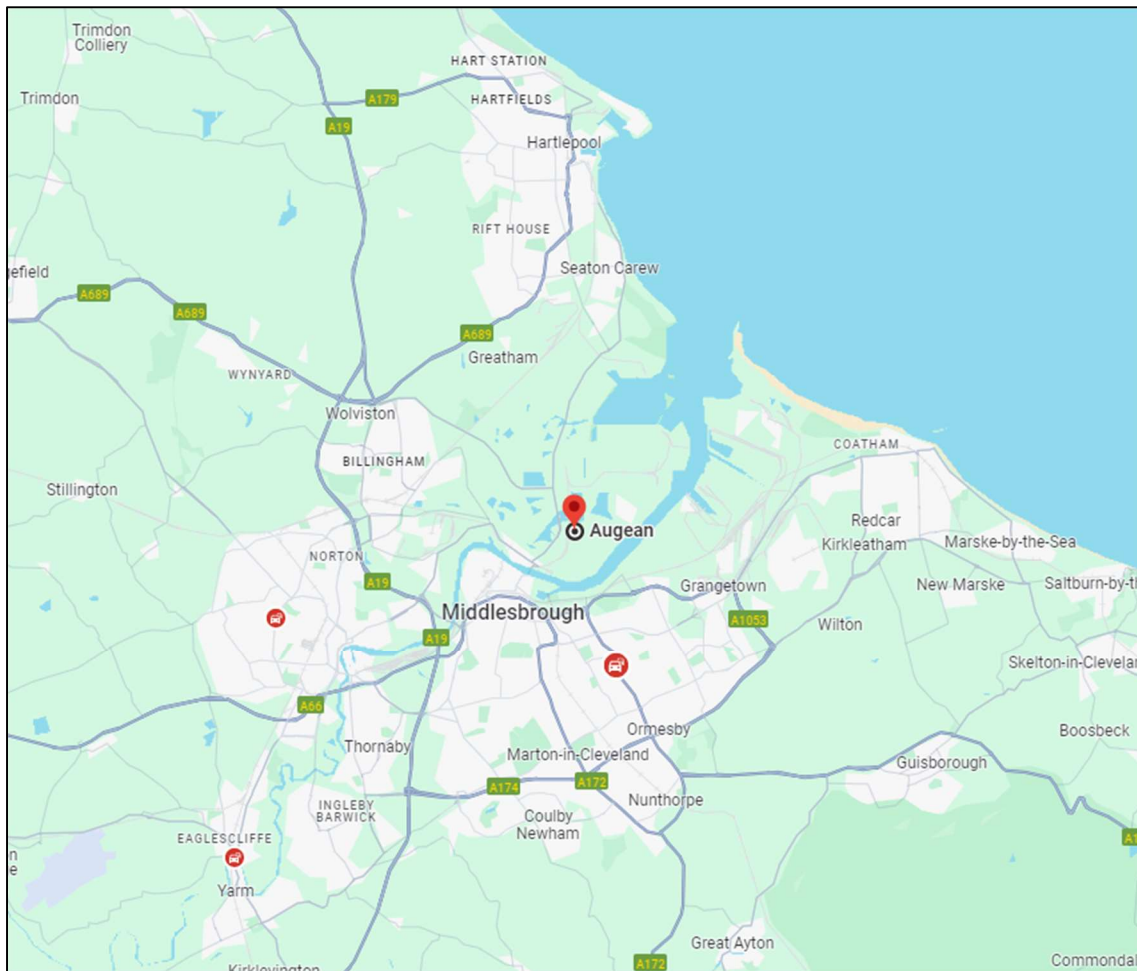
##### [6.2.2.1] Local Landfill

Non-contaminated material could feasibly be dumped in a suitable landfill facility alongside the contaminated material. As the non-contaminated material would fall within the acceptance criteria of any proposed landfill, the same disposal process discussed in Section [6.2.1.1] would apply.

##### [6.2.2.2] Overseas Disposal

Similar to the local landfill disposal option, any non-contaminated material within the harbour might be disposed of abroad, following the same methodology discussed in Section **Error! Reference source not found.**

The disposal of material abroad has been considered, and discussions have taken place with Augean, who would be considered a possible agent for the disposal of any dredge spoil abroad. Augean operates a dredge spoil disposal process out of their Port Clarence facility in Middlesborough, England, as seen in Figure 6-6.



**Figure 6-6: Location of Augean's Port Clarence Disposal Facility in the UK**

Augean operates their facility by processing the dredge spoil as raw material, allowing for them to treat the material themselves and re-use the material for construction under their licensing regulations. This allows the material to be exempt from landfill tax, as it is accepted into the facility as untreated material. As such, the dredge spoil cannot be treated with stabilisers or additives before entering the Augean facility. The material would still need to be dried before transport to the UK, however, the regulations on the material requirements do restrict the dredging methodology.

### [6.2.2.3] Dumping at Sea

Disposal at sea is governed by various legislation and regulation at national and European Union levels, addressing various aspects of waste management, environmental protection, and specific concerns related to marine and harbour environments.

The primary piece of legislature governing this method of disposal would be Ireland's Dumping at Sea Act, 1996. This Act prohibits dumping any substance or material from or in conjunction with a vessel, aircraft or offshore installation in the maritime area without a permit from the EPA. As part of the application process for this permit, a suitable dump site must be identified and proposed, of which there are 4 within proximity of Balbriggan Harbour. This permit may take over 24 months to acquire from the EPA. Should the Dumping at Sea (DaS) Permit be obtained, the dredged material could be placed directly in a barge, transported to the dump site and discharged directly from the barge.

As previously discussed in Section [5.2], the vast majority of the material proposed to be dredged is expected to be contaminated. Any volume of non-contaminated material that could possibly be eligible for Dumping at Sea would be expected to be too small to consider undergoing the DaS licensing process. Therefore, this disposal method is highly unlikely to be pursued.

#### [6.2.2.4] Material Reuse

Any non-contaminated material identified within the harbour could feasibly be suitable for re-use. As there is not expected to be any beneficial use available for the material within Balbriggan Harbour, FCC could potentially sell on the material to interested parties. Re-use of this material could include, but is not limited to, the following:

- Engineering uses,
- Environmental enhancements,
- Land Reclamation,
- Landfill cover,
- Fill for abandoned mines/quarries,
- Concrete manufacturing.

## [7] Capital Cost Estimate

To effectively compare the various dredging levels and disposal options discussed, Ayesa has undertaken a high-level cost analysis of the various options based on previous experience, third-part contractor feedback, landfill facility feedback and the volume calculations presented within Section [4.4]. This process involved meetings with several facilities and contractors across both Ireland and the UK to determine the most suitable rates associated with the project-specific parameters relevant to Balbriggan Harbour.

From this feedback, preliminary cost estimates have been developed for the components of the dredging works that could feasibly make up the work sequence. It is important to note that these cost estimates should be considered high-level and are indicative of the expected cost range for the project when considering the various options. The final costs are subject to variability and change due to contractor costing differences, detailed design considerations, or proposed alterations to the project scope.

The high-level cost estimates for Balbriggan Harbour are presented in Table 7-1 for disposal at Irish landfills (split between Hazardous and non-Hazardous material) and in Table 7-2 for disposal overseas.

**Table 7-1: High-level Cost Estimates for Dredging & Disposal in Ireland**

Proposed Dredge Level (m ODM)	Excavation using Land-based Plant (€)	Onshore Drying / Treatment (€)	Haulage to ROI Landfill (€)	Total (€)
-0.5	432,000	35,000	117,000	584,000
-1.0	520,000	89,000	296,000	905,000
-1.5	665,000	178,000	592,000	1,436,000
-2.0	882,000	311,000	1,034,000	2,227,000
-3.0	1,374,000	613,000	2,037,000	4,024,000

**Table 7-2: High-level Cost Estimates for Dredging & Disposal Overseas**

Proposed Dredge Level (m ODM)	Excavation using Land-based Plant (€)	Onshore Drying / Treatment (€)	Haulage & Shipping (€)	Total (€)
-0.5	432,000	35,000	390,000	858,000
-1.0	520,000	89,000	852,000	1,462,000
-1.5	665,000	178,000	1,705,000	2,549,000
-2.0	882,000	311,000	2,932,000	4,125,000
-3.0	1,374,000	613,000	5,695,000	7,681,000

## [8] Consenting Processes

The planning process undertaken for the dredging works at Balbriggan Harbour is largely dependent on the proposed disposal methodology. The consenting and planning processes for the dredging works are not scheduled for this phase of the project, however a high-level overview of the expected planning process is shown in Figure 8-1.

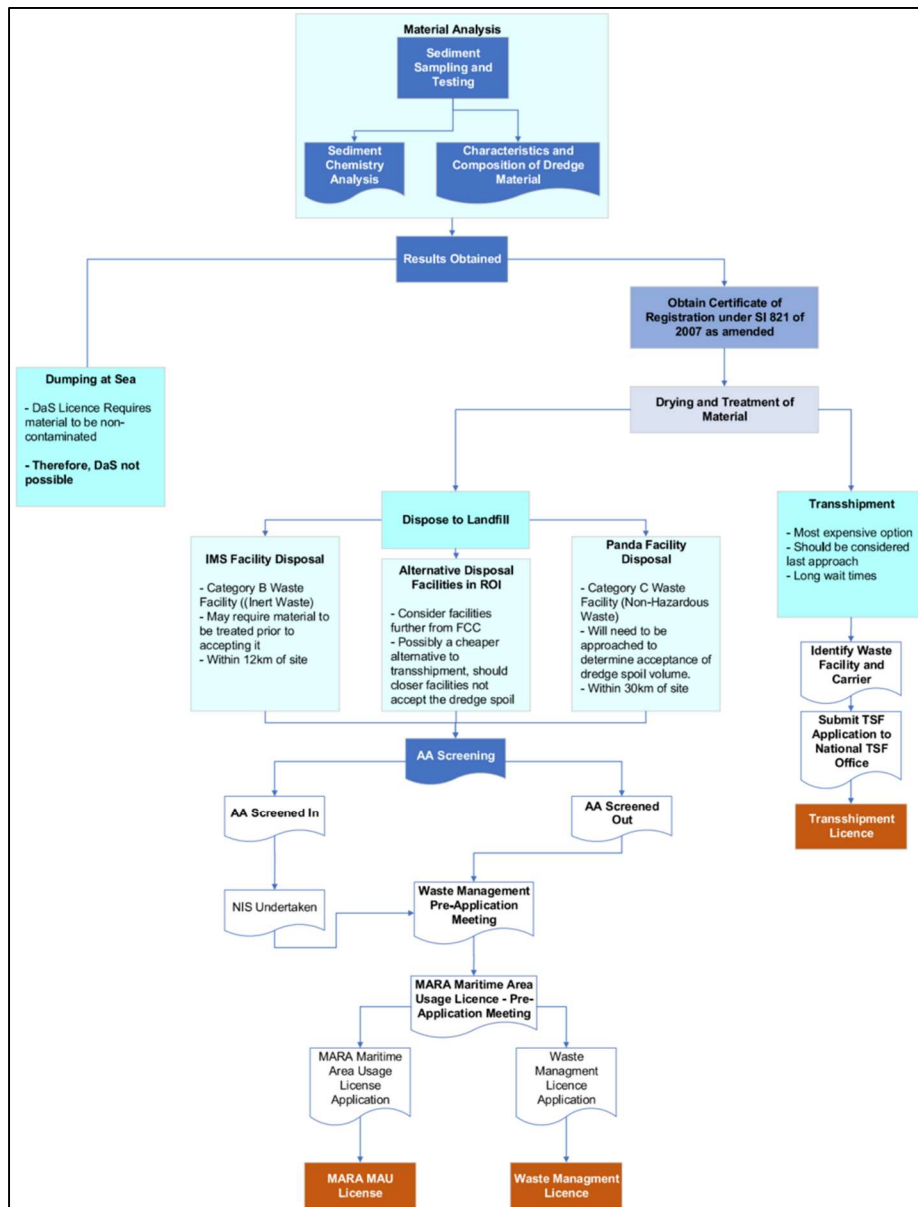


Figure 8-1: High-Level Consenting Process Flowchart

The most likely, and preferable, consenting process would be acquiring a Waste Management Licence from the EPA and Maritime Area Usage Licence from MARA. There are several stages and requirements to obtain these permits and the extent of the requirements and documents for these permits will change based on if there is a requirement for treatment or drying of the dredge spoil prior to disposal. However, these requirements will be discussed in further detail in later reports.

## [9] Discussion and Way Forward

### [9.1] Discussion

#### [9.1.1] Dredge Level Risk Assessment

To propose a dredge depth for the harbour basin, the structural risk associated with each dredge level needs to be fully appreciated. As discussed in the Gap Report [4], the historical information available at the time of writing this report provides no clear evidence regarding the foundation level of the existing harbour quay walls. Due to the uncertainty surrounding the foundation levels of the quay walls and records of previous collapse events of the quay walls within the harbour, the final proposed dredged level will be largely dictated by the requirements imposed by the quay walls to remain stable.

A structural assessment will follow this dredge assessment, discussed in Section [9.2.2], which will provide an analysis of the structures and will advise on the potential impact of dredge levels on quay wall stability.

While there is uncertainty regarding the existing foundation level of the quay walls, following review of historical drawings and interpretation of bed levels over time, it has been estimated that the foundation level is likely to sit between -2.0m and -3.0m ODM (+1.0m and 0m CD). When compared with the latest bathymetric survey [3], it is estimated that there may be a current sediment overburden of approximately 3m along much of the harbour basin quay wall boundary, with high points reaching +3.5m to +4.0m CD locally.

The existing quay walls essentially act as gravity masonry walls; therefore, this overburden is likely to play a role in the structural stability of the quay. As such, the risk of structural issues arising due to dredging activity will increase as dredge depth increases.

#### [9.1.2] Cost-Benefit Dredge Assessment

Table 7-1 in Section [7] illustrates the cost variability due to dredge level and disposal method. This section discusses the comparative benefits of each option.

As can be seen from the minimum dredge level analysis discussed in Section [4.3], deeper dredge depths result in improved operational. However, the two deepest proposed dredge levels of -2.0m ODM and -3.0m ODM are expected to be toward the limit of what is possible to dredge within Balbriggan Harbour whilst still maintaining the structural stability of the quay walls.

Of the scenarios studied, the -3.0m ODM dredge level provides the greatest capacity for safe berthing and navigation within the harbour. At this level, all four hypothetical design vessels (with draft between 0.5m and 2m) would be able to safely berth and navigate within the harbour at mean sea level (MSL) and above.

The -2.0m ODM dredge level also provides more safe access than that of the higher dredge level options, however, the benefit of this access is minimal in comparison to the -1.5m ODM dredge level, as only Vessels 3 and 4 can safely utilise the harbour at MSL.

The difference in the operational benefits between the -1.0m ODM and the -1.5m ODM dredge level options is marginal. The only difference seen between the two dredge level options is

that the -1.5m ODM dredge depth allows Vessels 2, 3, and 4 to berth and navigate within the harbour from tidal levels upwards of MHWN, while the -1.0m ODM dredge level only allows berthing and navigation for Vessels 3 and 4.

The -0.5m ODM dredge level is far more restrictive, with Vessels 2, 3 and 4 only being able to berth and navigate at tidal levels greater than MHWS. Due to the large tidal range present at Balbriggan, the berthing and navigation potential at the lowest tidal ranges is not a primary concern, as vessels will be expected to bottom out even at the largest proposed dredge levels of -2.0m ODM and -3.0m ODM.

Based on the cost-benefit analysis of the various dredging scenarios and disposal options, it is likely that dredge levels within the -1.0m ODM to -1.5m ODM range will be the preferred scenario for progression. However, the final approach will be contingent on findings of the structural study, and on an optioneering workshop/study to be completed alongside FCC.

The recommended approach for dredge disposal is to use a licensed facility in the Republic of Ireland. Subsequent reports will explore optimising disposal methods, possibly distributing the spoil across multiple facilities to cut costs, guided by Waste Categorisation detailed in Section [5.2]. While disposal abroad might be technically viable, the associated costs across all dredge-level options are prohibitively high. Therefore, such an option should only be considered as a last resort.

## [9.2] Summary

### [9.2.1] Summary

An assessment of the proposed dredging of Balbriggan Harbour basin has been undertaken. Using historical data and recent SI data, it is established that the harbour bed material consists primarily of sandy material, especially within the harbour mouth, as well as silty and gravel material, found mostly within the inner harbour.

Following extensive laboratory testing and analysis of samples gathered during the latest SI campaign, it is evident that contaminants are present in the seabed material across much of the site. Results indicate that the material is not suitable for Dumping at Sea, and therefore pathways for disposing of the material at suitably licenced landfill facilities will need to be investigated.

Five potential dredging scenarios were investigated, at dredge levels of -0.5, -1.0, -1.5, -2.0, and -3.0m ODM. The levels were used to calculate material volumes for potential future dredge campaigns. The extent of navigational access enabled by each dredge level was assessed for a selection of typical vessels which call at Balbriggan. A suitable level of underkeel clearance has been considered for both vessel approach and berthing scenarios.

A cost-benefit analysis has been undertaken, contrasting the navigational access afforded by each dredge level, with the capital cost of achieving the applicable dredge levels. Dredge spoil disposal methodology was also discussed concerning the cost of each option. Due to uncertainties surrounding the existing foundation levels of the quay walls, the structural implications of dredging to the proposed depth scenarios have not been included in the analysis at this point. From the cost-benefit review, it is recommended to further investigate the -1.0m ODM to -1.5m ODM dredge level range in conjunction with disposal of the spoil to a licenced waste facility within the Republic of Ireland.

### [9.2.2] Way Forward

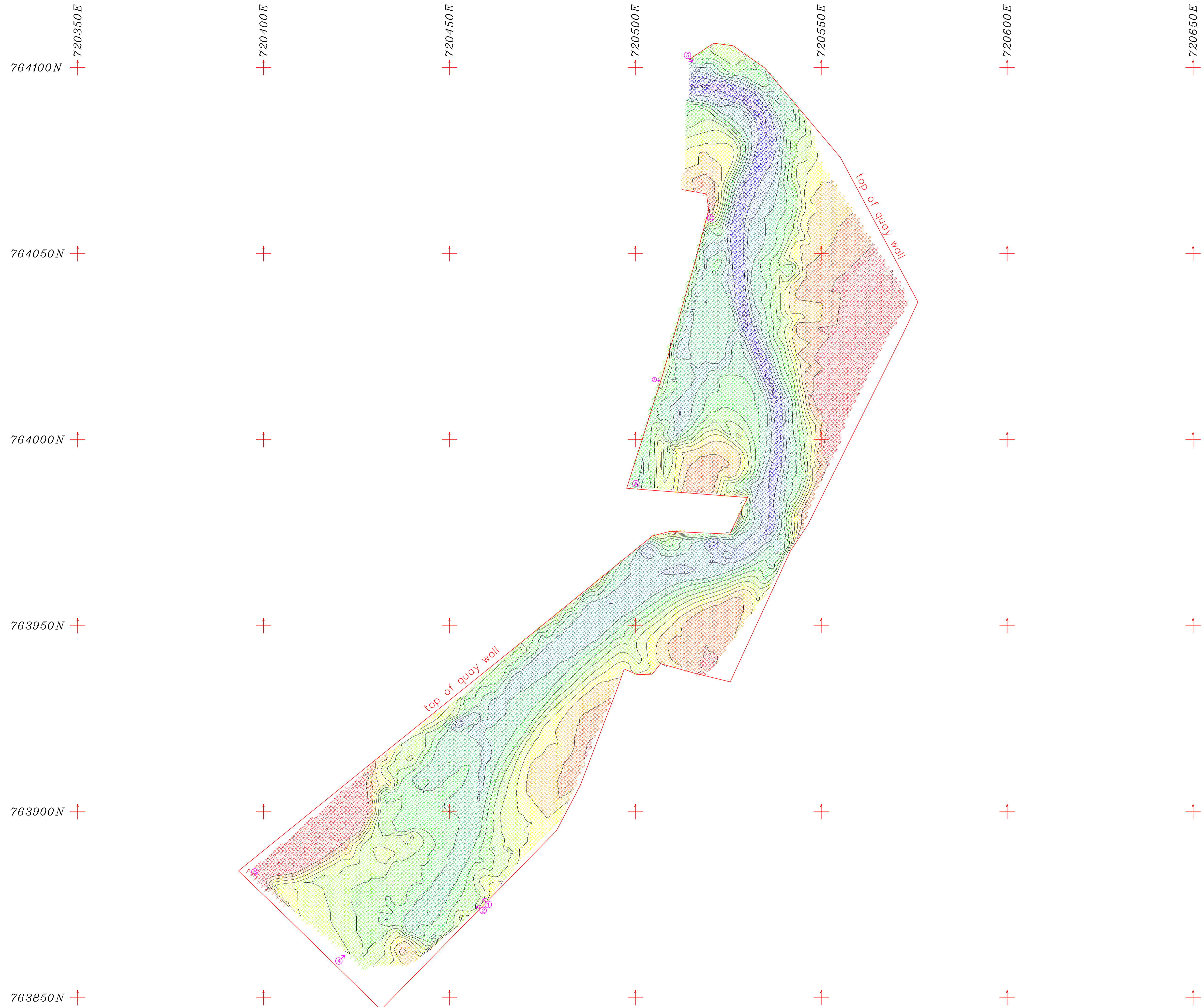
Following this Dredging Assessment report, a Structural Assessment technical note is due to be finalised, assessing the various quay structures within Balbriggan Harbour with the aim of establishing minimum seabed levels in front of the quay wall to maintain structural stability. The Structural Assessment technical note will also analyse the dredge level options in terms of possible structural risks associated with each level.

This Dredging Assessment report will be used in conjunction with the Structural Assessment report to feed into an overall Options Assessment study. The Options Assessment will be developed in conjunction with discussions with Fingal County Council and will encompass a more detailed view of the required licensing and planning processes, the proposed options for dredge levels, pathways for disposal of dredge spoil, and any structural remedial measures that could be undertaken.

## [10] References

- [1] Marinas.com, “marinas.com,” [Online]. Available: [https://marinas.com/view/harbor/mpt87l\\_Balbriggan\\_Harbour\\_Balbriggan\\_County\\_Fingal\\_Ireland#&gid=1&pid=3](https://marinas.com/view/harbor/mpt87l_Balbriggan_Harbour_Balbriggan_County_Fingal_Ireland#&gid=1&pid=3). [Accessed 02 04 2024].
- [2] RPS, “Irish Coastal Protection Strategy Study Phase 3 - North East Coast,” 2010.
- [3] Hydro Survey, *Bathymetric and Topographical Survey of Balbriggan Harbour*, 2023.
- [4] Ayesa, “CM1407-MA-RP-001-Rev01\_GAP Analysis Report,” 2024.
- [5] Royal Haskoning, “Factual Report volume 1 - Site Investigation,” Royal Haskoning, 2005.
- [6] D. P. Company, “Dublin Port Company,” [Online]. Available: <https://www.dublinportarchive.com/collection/balbriggan-harbour/#gallery-7>. [Accessed 06 November 2023].
- [7] Malachy Walsh & Partners, “Balbriggan Harbour, Co. Dublin: An Industrial Heritage Review,” 2022.
- [8] Royal Haskoning , “Balbrigan Harbour Structural Inspection Report (9P7631),” 2006.
- [9] D. Eireann, “Houses of the Oireachtas,” [Online]. Available: <https://www.oireachtas.ie/en/debates/debate/dail/1953-04-29/37>. [Accessed 06 November 2023 ].
- [10] Royal Haskoning, “Balbriggan Harbour Renovation Works January 1996,” 1996.
- [11] PIANC, WG121 Harbour Approach Channels Design Guidelines, 2014.
- [12] Hydro Survey Ltd., “Balbriggan Sampling Sediment Sampling Technical Report,” 2024.
- [13] Ground Investigations Ireland, “HazWasteOnline Waste Classification Report,” 2024.
- [14] Ground Investigations Ireland, “Waste Classification Report,” 2024.
- [15] M. Cronin, E. McGovern, T. McMahon and R. Boelens, “Guidelines for the Assessment of Dredge Material for Disposal in Irish Waters,” Marine Institute, 2006.
- [16] Google, “Google Maps,” [Online]. Available: <https://www.google.com/maps>. [Accessed 26 March 2024].

# Appendix A Bathymetric Survey: HSL 2023



Site:  
BALBRIGGAN HARBOUR,  
CO. DUBLIN

Sheet Title:  
BATHYMETRIC AND  
TOPOGRAPHICAL SURVEY  
OF BALBRIGGAN HARBOUR

Client:  
FINGAL COUNTY COUNCIL

Survey by:  
HYDRO SURVEY  
UNIT 12 OWENACURRA BUSINESS PARK,  
MIDLETON, CO. CORK, P25 C563  
www.hydrosurvey.com

Project Number:  
HS23008

Drawing Number:  
HS23008\_D01

Drawn by:  
Hugh Power

Survey date(s):  
20/01/2023

Scale:  
1:500 @ A1

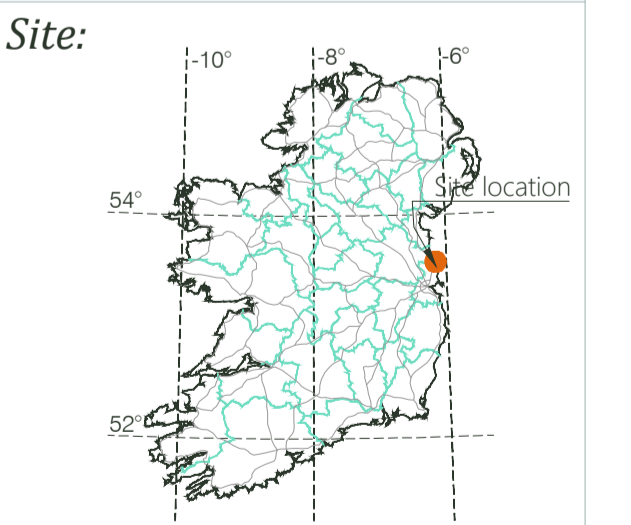
Approved:  
BJB

CRS:  
2157 (ITM)

Datum:  
CD

Revision:  
Rev.01

- Memoir:**
1. Constructed on Irish Transverse Mercator (EPSG 2157).
  2. Horizontal and vertical control by RTK (Real Time Kinematic) GNSS surveying via nRTK corrections from Trimble VRS Now correction stream (15\_TV\_N\_RTCM\_31).
  3. Soundings in metres and decimetres reduced to local Chart Datum taken as 3.00m below OD Malin (OSGM15).



PRODUCED BY:  
HYDRO SURVEY  
UNIT 12 OWENACURRA BUSINESS PARK,  
MIDLETON, CO. CORK, P25 C563  
T: +353 21 483 1184  
E: info@hydrosurvey.com

## Appendix B Waste Classification Report: GII 2024



**GROUND INVESTIGATIONS IRELAND**  
Geotechnical & Environmental

Catherinestown House,  
Hazelhatch Road,  
Newcastle,  
Co. Dublin.  
D22 YD52

Tel: 01 601 5175 / 5176  
Email: [info@gii.ie](mailto:info@gii.ie)  
Web: [www.gii.ie](http://www.gii.ie)

Ground Investigations Ireland

Balbriggan Sediment Waste Classification

AYESA

Waste Classification Report

March 2024





**GROUND INVESTIGATIONS IRELAND**  
Geotechnical & Environmental

Catherinestown House,  
Hazelhatch Road,  
Newcastle,  
Co. Dublin.  
D22 YD52

Tel: 01 601 5175 / 5176  
Email: [info@gii.ie](mailto:info@gii.ie)  
Web: [www.gii.ie](http://www.gii.ie)

## **DOCUMENT CONTROL SHEET**

Project Title	Balbriggan Sediment Waste Classification
Engineer	AYESA
Project No	13590-02-24
Document Title	Waste Classification Report

Rev.	Status	Author(s)	Reviewed By	Approved By	Office of Origin	Issue Date
A	Final	B Sexton	J Cashen	B Sexton	Dublin	06 March 2024
B	Final	B Sexton	J Cashen	B Sexton	Dublin	22 April 2024

*Ground Investigations Ireland Ltd. present the results of the fieldworks and laboratory testing in accordance with the specification and related documents provided by or on behalf of the client. The possibility of variation in the ground and/or groundwater conditions between or below exploratory locations or due to the investigation techniques employed must be taken into account when this report and the appendices inform designs or decisions where such variation may be considered relevant. Ground and/or groundwater conditions may vary due to seasonal, man-made or other activities not apparent during the fieldworks and no responsibility can be taken for such variation. The data presented and the recommendations included in this report and associated appendices are intended for the use of the client and the client's geotechnical representative only and any duty of care to others is excluded unless approved in writing.*



Catherinestown House,  
Hazelhatch Road,  
Newcastle,  
Co. Dublin.  
D22 YD52

Tel: 01 601 5175 / 5176  
Email: [info@gii.ie](mailto:info@gii.ie)  
Web: [www.gii.ie](http://www.gii.ie)

## GROUND INVESTIGATIONS IRELAND

Geotechnical & Environmental

### CONTENTS

1.0	Preamble.....	1
2.0	Purpose & Scope.....	1
3.0	Limitations.....	1
4.0	Site Location and Layout.....	2
5.0	Site History.....	2
6.0	Laboratory Analysis .....	3
6.1.	Sample Collection .....	3
6.2.	Analysis Suite .....	3
6.3.	Asbestos.....	3
7.0	Waste Classification.....	4
8.0	Conclusions & Recommendations .....	7
8.1.	Conclusions .....	7
8.1.1.	Waste Classification.....	7
8.1.2.	Asbestos.....	7
8.1.3.	Waste Categories .....	7
8.2.	Recommendations .....	7
8.2.1.	Waste Transfer.....	7
9.0	References .....	9

### LIST OF TABLES

Table 1	Potential Waste Categories for Disposal/Recovery .....	5
Table 2	Individual Sample Waste Category .....	6

### APPENDICES

Appendix 1	Figures
Appendix 2	Hydro Survey Report
Appendix 3	HazWasteOnLine™ Report
Appendix 4	Waste Category Data Summary



[www.gii.ie](http://www.gii.ie)

## 1.0 Preamble

Ground Investigations Ireland (GII) was appointed by AYESA Consulting Engineers to carry out a Waste Classification Assessment for a proposed dredging project in Balbriggan, County Dublin. The sampling works were completed in January 2024.

## 2.0 Purpose & Scope

It is understood that as part of the proposed development there may be dredging of the exiting harbour in Balbriggan. As such the dredged material may not be suitable for disposal at sea and as such needs to be assessed in terms of waste disposal outlets on land.

The purpose of the waste classification exercise was as follows.

- Assess the site in terms of historical use; and
- Classification, in terms of waste management and final disposal outlets, of material that may require disposal following excavation during the construction phase.

The scope of the work undertaken to facilitate the waste classification exercise included the following:

- Waste classification.

## 3.0 Limitations

**This report is based on the waste classification regulatory requirements at the time of writing this report and the conclusions and recommendations may not be applicable where there have been amendments to these requirements subsequent to writing the report.**

**In all cases the reader of this report shall confirm that the waste categories are acceptable to the various waste facilities to which the material may be sent. The quantification of disposal costs shall not be completed prior to confirmation with the relevant waste facilities of the waste categories. It should be noted that the environmental regulator (in this case the EPA) and the waste acceptor (in this case a landfill operator) shall decide whether a waste is hazardous or non-hazardous and or suitable for disposal at their facility.**

GII has prepared this report for the sole use of AYESA. No other warranty, express or implied, is made as to the professional advice included in this report or other services provided by GII.

The conclusions and recommendations contained in this report are based upon information provided by others and the assumption that all relevant information has been provided by those bodies from whom it has been requested. Information obtained from third parties has not been independently verified by GII, unless otherwise stated in this report.

This report has been prepared in line with best industry standards and within the project's budgetary and time constraints. The methodology adopted and the sources of information used by GII in providing its services are outlined in this report.

GII did not collect the samples which were subjected to laboratory analysis. GII cannot comment on the sampling procedure or the chain of custody employed during transport of the samples to the laboratory.

GII disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to GII's attention after the date of the Report.

The conclusions presented in this report represent GII's best professional judgement based on review of site conditions observed during any site visit and the relevant information available at the time of writing. The opinions and conclusions presented are valid only to the extent that the information provided was accurate and complete.

The waste classification exercise is reflective of and applicable to the ground conditions described within the report presented in Appendix 2 and the chemical analysis provided to GII.

#### **4.0 Site Location and Layout**

The site is located in Balbriggan, County Dublin (Figure 1 Appendix 1). The site is comprised of the area immediately adjacent to the existing pier and harbour in Balbriggan.

#### **5.0 Site History**

GII reviewed the aerial photographs and historical maps maintained by the Ordnance Survey of Ireland (OSI) and the google imagery records. These included the 6-inch maps that were produced between 1829 and 1842, the 25-inch maps that were produced between 1888 and 1913 and the 6-inch Cassini Maps that were produced between the 1830's and 1930's. The site is developed as a harbour with piers, a salt works and lighthouse on all historical maps reviewed.

There is a gas works indicated immediately to the south west and upstream of the site on the 25-Inch and Cassini maps.

Based on a review of the OSI and Google Imagery aerial photograph records the site has been in its current state of development since at least 1995.

The historical use of the site as a working harbour and the use of the adjacent sites as a gasworks indicated that there is potential for an impact on the sediment with contaminants particularly hydrocarbons.

## 6.0 Laboratory Analysis

### 6.1. Sample Collection

Samples were collected at several locations as detailed in Figure 5 in Appendix 1. The sampling strategy and procedure along with a summary of the material sampled is outlined in the report presented in Appendix 2.

### 6.2. Analysis Suite

In order to assess materials, which may be excavated and removed from site, in terms of waste classification, a selection of samples collected were analysed for a suite of parameters which allows for the assessment of the soils in terms of total pollutant content for classification of materials as *hazardous* or *non-hazardous* (RILTA Suite). The suite also allows for the assessment of the soils in terms of suitability for placement at various categories of landfill. The parameter list for the RILTA suite includes analysis of the solid samples for arsenic, barium, cadmium, chromium, copper, cyanide, lead, nickel, mercury, zinc, speciated aliphatic and aromatic petroleum hydrocarbons, pH, sulphate, sulphide, moisture content, soil organic matter and an asbestos screen.

The RILTA suite also includes those parameters specified in the EU Council Decision establishing criteria for the acceptance of waste at Landfills (Council Decision 2003/33/EC), which for the solid samples are pH, total organic carbon (TOC), speciated aliphatic and aromatic petroleum hydrocarbons, BTEX, phenol, polychlorinated biphenyls (PCB) and PAH.

In line with the requirement of Council Decision 2003/33/EC a leachate was generated from the solid samples which was in turn analysed for antimony, arsenic, barium, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, zinc, chloride, fluoride, soluble sulphate, sulphide, phenols, dissolved organic carbon (DOC) and total dissolved solids (TDS).

The samples were also analysed for the parameters set out in the Marine Institute "*Guidelines for the Assessment of Dredge Material for Disposal in Irish Waters*". These results were not assessed as part of this report.

The laboratory testing was completed by Socotec Laboratory in the UK; Socotec is a UKAS accredited laboratory. The full laboratory reports are included in the report in Appendix 2.

### 6.3. Asbestos

Asbestos fibres were detected in sample 9. The laboratory did not identify asbestos containing materials (ACMs) in the sample(s). The level detected was below the hazardous level of 0.1%<sup>1</sup>.

---

<sup>1</sup> Environment Agency (2018). Technical Guidance WM3 - Guidance on the classification and assessment of waste (1<sup>st</sup> Edition V1.1 May 2018) Technical Guidance WM3 – page 19.

## 7.0 Waste Classification

GII understands that any materials which may be excavated and removed from site would meet the definition of waste under the Waste Framework Directive. Due to the fact that the material which may be generated during the proposed works would meet the definition of dredged material, there is one potential set of List of Waste (LoW)<sup>2</sup> codes with “mirror” entries which may be applied to excavated materials to be removed from site.

*17-05-05\* (dredging spoil containing hazardous substances, classified as hazardous) or 17-05-06 (dredging spoil other than those mentioned in 17 05 05, classified as not hazardous).*

Where waste is a mirror entry in the LoW, it can be classified via a process of analysis against standard criteria set out in the Waste Framework Directive. The assessment process is described in detail in guidance published by the Irish (EPA Waste Classification, List of Waste & Determining if Waste is Hazardous or Non-Hazardous, June 2015) and UK regulatory authorities (Guidance on the Classification and Assessment of Waste: Technical Guidance WM3, 2015). The assessment involves comparison of the concentration of various parameters against defined threshold values.

The specific LoW code which should be applied to the material at each sample location is summarised in Table 2 below. These codes are only applicable where the material is being removed from a site as a waste.

GII use HazWasteOnline™, a web-based commercial waste classification software tool which assists in the classification of potentially hazardous materials. This tool was used to determine whether the materials sampled are classified as hazardous or non-hazardous. The use of the online tool is accepted by the EPA (EPA 2014).

The conclusions presented in the report are based on GII’s professional opinion. **It should be noted that the environmental regulator (in this case the EPA) and the waste acceptor (in this case a landfill operator) shall decide whether a waste is hazardous or non-hazardous and suitable for disposal at their facility.**

### 7.1. HazWasteOnLine™ Results

In total, fourteen (14 No.) samples were assessed using the HazWasteOnLine™ Tool. Samples 3, 11, 12 and 13 were classified as hazardous due to elevated levels of TPH and the associated hazardous properties HP7<sup>3</sup> Carcinogenic and HP11<sup>4</sup> Mutagenic. All remaining samples were classified as being non-hazardous. The complete HazWasteOnLine™ report for all samples is included in Appendix 3. The specific LoW code which should be applied to the material at each SI location is summarised in Table 2 below. The assigning of the LoW code is based on observations recorded during sample collection, an estimation of the % of anthropogenic material present and the results of the HazWasteOnLine™ output. The final LoW codes

<sup>2</sup> Formerly European Waste Catalogue Codes (EWC Codes)

<sup>3</sup> HP 7: Carcinogenic "waste which induces cancer or increases its incidence".

<sup>4</sup> HP 11: Mutagenic "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell".

applied at the time of disposal may vary due to variations in % of anthropogenic material observed in the excavation phase. Where there is in excess of 2%<sup>5</sup> anthropogenic material observed the LoW code 17 09 04 may be applied.

## 7.2. Landfill Waste Acceptance Criteria

Waste Acceptance Criteria (WAC) have been agreed by the EU (Council Decision 2003/33/EC) and are only applicable to material if it is to be disposed of as a waste at a landfill facility. Each individual member state and licensed operators of landfills may apply more stringent WAC. WAC limits and the associated laboratory analysis are not suitable for use in the determination of whether a waste is hazardous or non-hazardous. The data have been compared to the WAC limits set out in Council Decision 2003/33/EC as well as the specific increased WAC which the EPA have applied to a selection of EPA licenced landfills. These landfills have higher limits for a range of parameters while still operating under an inert landfill licence. The WAC data considered in combination with the waste classification outlined in Section 7.1 allows the most suitable waste category to be applied to the material tested. The potentially applicable waste categories are summarised in Table 1. A summary of the WAC data is presented in Appendix 4. The waste category assigned to each sample is summarised in Table 2.

**Table 1 Potential Waste Categories for Disposal/Recovery**

Waste Category	Classification Criteria
Category A Unlined Facilities	Soil and Stone only which are free from <sup>6</sup> anthropogenic materials such as concrete, brick, timber. Soil must be free from “contamination” e.g. PAHs, Hydrocarbons <sup>7</sup> .
Category B1 Inert Landfill	Reported concentrations within inert waste limits, which are set out by the adopted EU Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Directive 1999/31/EC (2002). Results also found to be non-hazardous using the HWOL <sup>8</sup> application.
Category B2 Inert Landfill	Reported concentrations greater than Category B1 criteria but less than IMS Hollywood Landfill acceptance criteria, as set out in their Waste Licence W0129-02. Results also found to be non-hazardous using the HWOL application.
Category C Non-Haz Landfill	Reported concentrations greater than Category B2 criteria but within non-haz landfill waste acceptance limits set out by the adopted EU Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Directive 1999/31/EC (2002).

<sup>5</sup> EPA (2020) - Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities.

<sup>6</sup> Free from equates to less than 2%.

<sup>7</sup> Total BTEX 0.05mg/kg, Mineral Oil 50mg/kg, Total PAHs 1mg/kg, Total PCBs 0.05mg/kg and Asbestos No Asbestos Detected – EPA Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities, 2020.

<sup>8</sup> HazWasteOnLine™ Tool.

Waste Category	Classification Criteria
	Results also found to be non-hazardous using the HWOL application.
Category C 1 Non-Haz Landfill	As Category C but containing < 0.001% w/w asbestos fibres.
Category C 2 Non-Haz Landfill	As Category C but containing >0.001% and <0.01% w/w asbestos fibres
Category C 3 Non-Haz Landfill	As Category C but containing >0.01% and <0.1% w/w asbestos fibres.
Category D Hazardous Treatment	Results found to be hazardous using HWOL Application.
Category D 1 Hazardous Disposal	Results found to be hazardous due to the presence of asbestos (>0.1%).

### 7.3. Final Waste Categorisation

All samples were assessed in terms of waste classification using the HazWasteOnLine™ tool and also the WAC set out in Council Decision 2003/33/EC and the EPA's increased WAC to give a final waste categorisation to determine the most appropriate disposal route for any waste generated. The final and most applicable waste category for each sample is summarised in Table 2.

**Table 2 Individual Sample Waste Category**

Sample ID	Material Type	Sample Date	LoW Code	Waste Category
1	Sediment	05/01/2024	17 05 06	Category B2
2	Sediment	05/01/2024	17 05 06	Category C
3	Sediment	05/01/2024	17 05 05	Category D
4	Sediment	05/01/2024	17 05 06	Category C
5	Sediment	05/01/2024	17 05 06	Category C
6	Sediment	05/01/2024	17 05 06	Category C
7	Sediment	05/01/2024	17 05 06	Category C
8	Sediment	05/01/2024	17 05 06	Category C
9	Sediment	05/01/2024	17 05 06	Category C1
10	Sediment	05/01/2024	17 05 06	Category C
11	Sediment	05/01/2024	17 05 05	Category D
12	Sediment	05/01/2024	17 05 05	Category D
13	Sediment	05/01/2024	17 05 05	Category D
14	Sediment	05/01/2024	17 05 06	Category B2

## 8.0 Conclusions & Recommendations

The conclusions and recommendations given and opinions expressed in this report are based on the findings of the site investigation works and laboratory testing undertaken. Where any opinion is expressed on the classification of material between site investigation locations, this is for guidance only and no liability can be accepted for its accuracy. No responsibility can be accepted for conditions which have not been revealed by the findings at the site investigation locations.

### 8.1. Conclusions

#### 8.1.1. Waste Classification

Based on the results of the HazWasteOnLine™ tool the samples 3, 11, 12 and 13 if being considered a waste can be classified as hazardous. The remainder of the samples if being considered a waste can be classified as non-hazardous.

#### 8.1.2. Asbestos

Asbestos fibres were detected in sample 9. The level detected was below the hazardous level of 0.1%.

#### 8.1.3. Waste Categories

The most applicable waste categories for each of the samples if being considered a waste to be disposed of at landfill are presented in Table 2.

### 8.2. Recommendations

#### 8.2.1. Waste Transfer

In the event that material is excavated for removal from site, any firm engaged to transport waste material from site and the operator of any waste facility that will accept subsoils excavated from this site should be furnished with, at a minimum, copies of the **full unabridged** laboratory reports and HazWasteOnLine™ report for all samples presented in this report.

The non-hazardous material across the site if excavated should be removed from site to an appropriate facility under either the LoW codes 17 05 04 or 17 09 04. Where during excavation there is noted to be in excess of 2% anthropogenic material the appropriate LoW code which should be applied is 17 09 04.

The hazardous material across the site if excavated should be removed from site to an appropriate facility under either the LoW codes 17 05 03 or 17 09 03. Where during excavation there is noted to be in excess of 2% anthropogenic material the appropriate LoW code which should be applied is 17 09 03.

## 9.0 References

Environment Agency (2013). *Waste Sampling and Testing for Disposal to Landfill*.

Environment Agency (2015). *Technical Guidance WM3 - Guidance on the classification and assessment of waste (1st edition 2015) Technical Guidance WM3*.

Environmental Protection Agency (EPA) (2014). Letter to Licences *Re: Waste Classification & Haz Waste On-Line™*.

Environmental Protection Agency (EPA) (2015). *Waste Classification List of Waste & Determining if Waste is Hazardous or Non-hazardous*.

Environmental Protection Agency (EPA) (2020). *Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities*.

Association of Geotechnical and Geoenvironmental Specialists (2019). *Waste Classification for Soils – A Practitioners Guide*.

# APPENDIX 1 - Figures



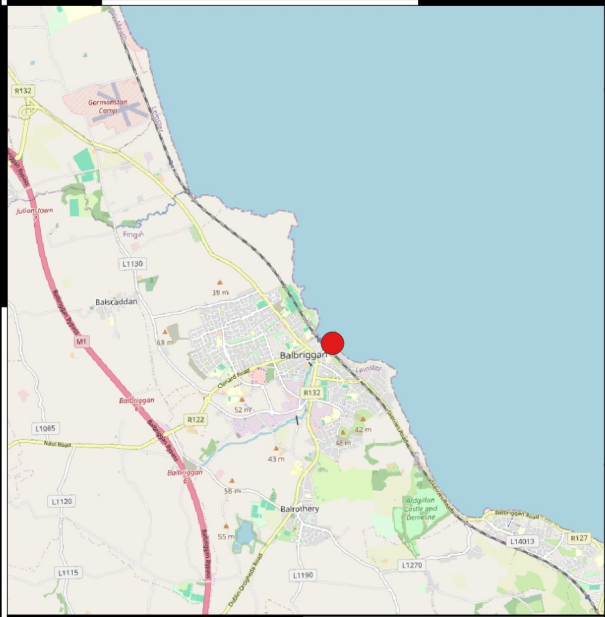
720200E 720300E 720400E 720500E 720600E 720700E

764100N

764000N

763900N

763800N



7638000N

7620000N

720000E



- Site Location
- Indicative Site Boundary

**Client:**  

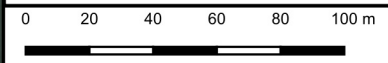

**Project Code:**  
 13590-02-24

**Project Title:**  
 Balbriggan Sediment Waste Classification

**Drawing Title:**  
 Figure 1 Site Location

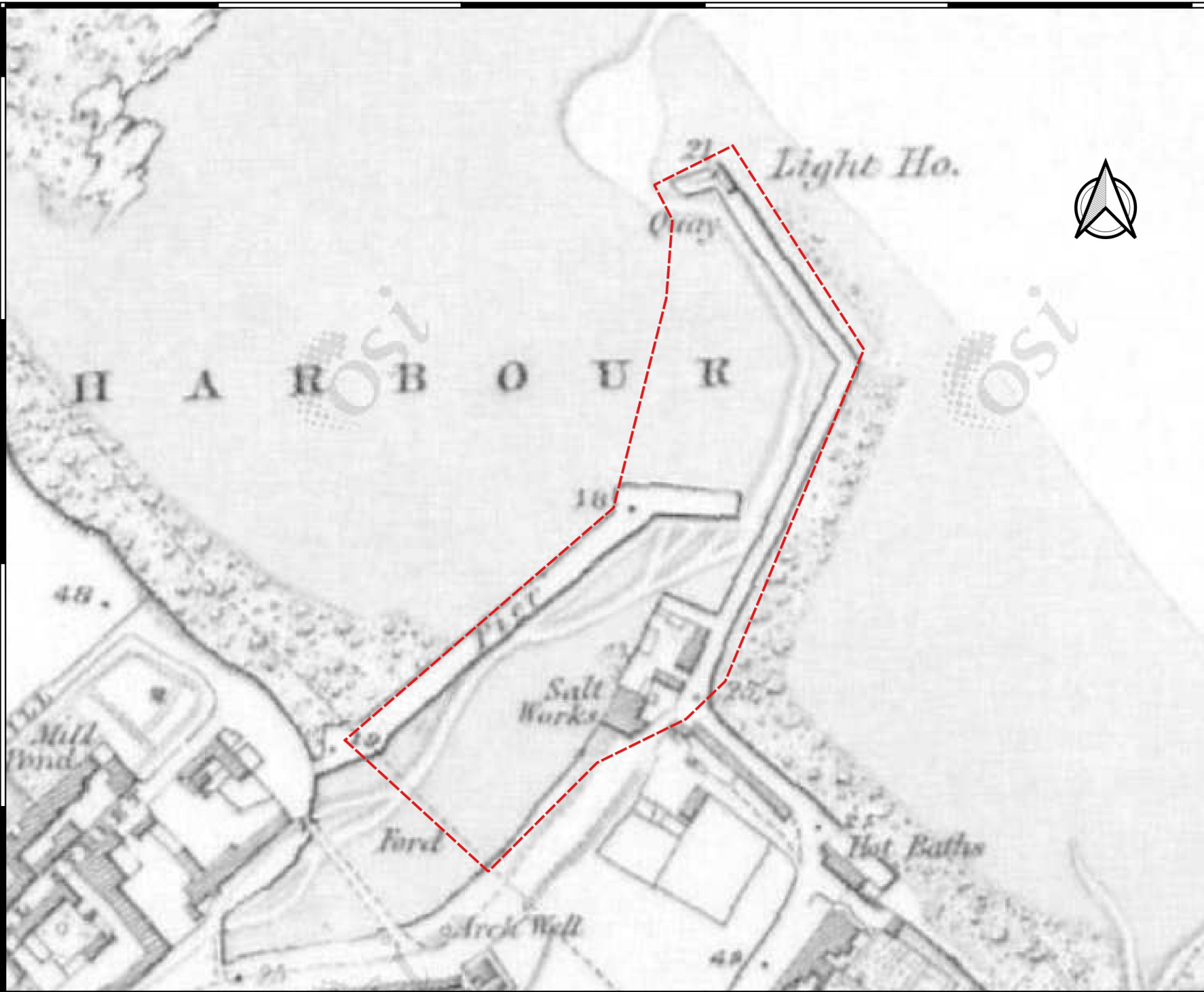



**GROUND INVESTIGATIONS IRELAND**  
 Geotechnical & Environmental  
 Ground Investigations Ireland Ltd.  
 Catherinstown House,  
 Hazelhatch Road,  
 Newcastle, Co. Dublin  
 www.gii.ie 01-6015175/5176



<b>Drawn By:</b> BS	<b>Date:</b> 04-03-2024
------------------------	----------------------------

720200E 720300E 720400E 720500E 720600E 720700E



 Indicative Site Location

Client:

**ayesa**

Project Code:

13590-02-24

Project Title:

Balbriggan Sediment Waste  
Classification

Drawing Title:

Figure 2 OSI 6-Inch Map

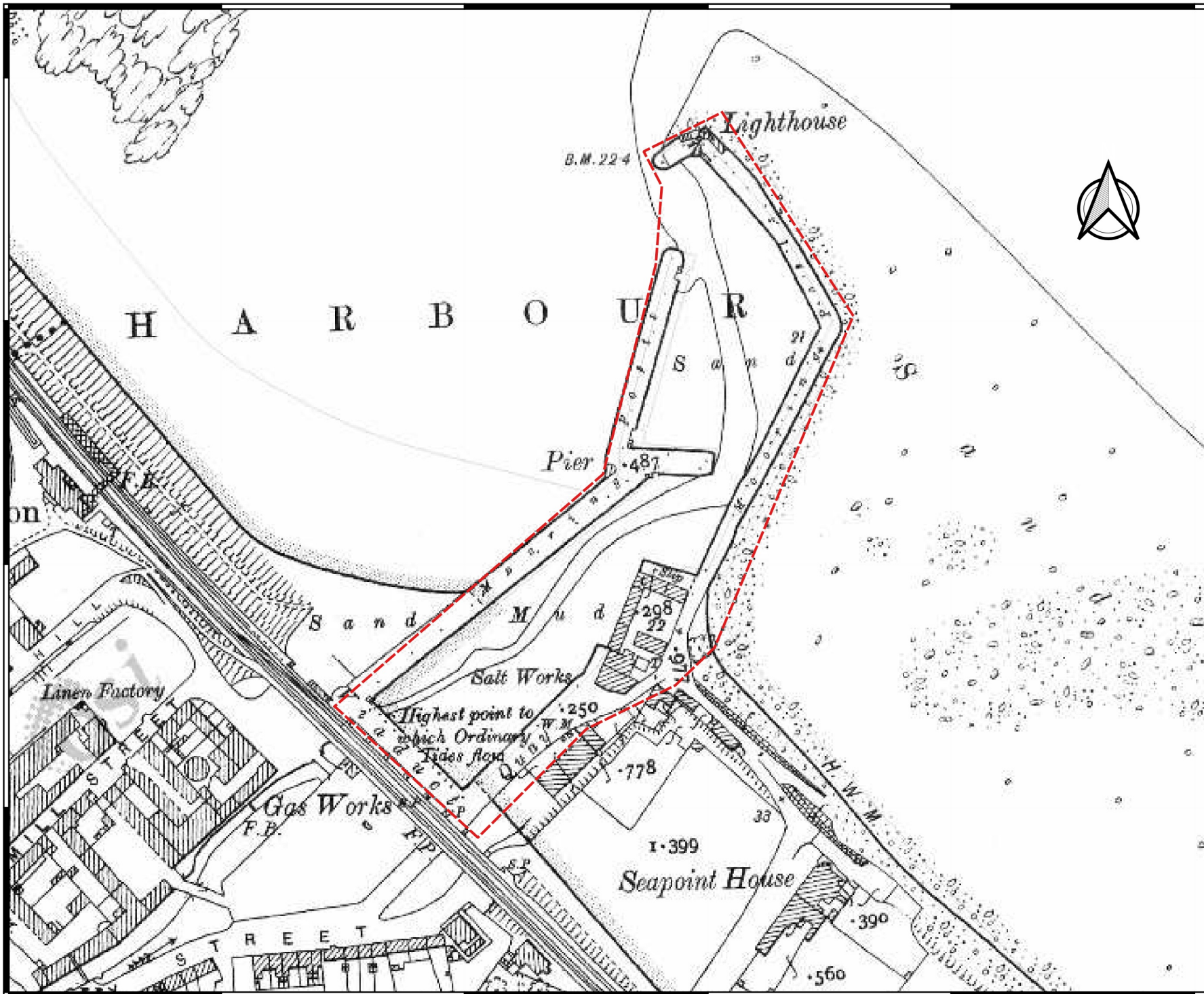



**GROUND INVESTIGATIONS IRELAND**  
Geotechnical & Environmental

Ground Investigations Ireland Ltd.  
Catherinstown House,  
Hazelhatch Road,  
Newcastle, Co. Dublin  
www.gii.ie 01-6015175/5176

Drawn By:  
BS

Date:  
04-03-2024



 Indicative Site Location

Client:

**ayesa**

Project Code:

13590-02-24

Project Title:

Balbriggan Sediment Waste  
Classification

Drawing Title:

Figure 3 OSI 25-Inch Map

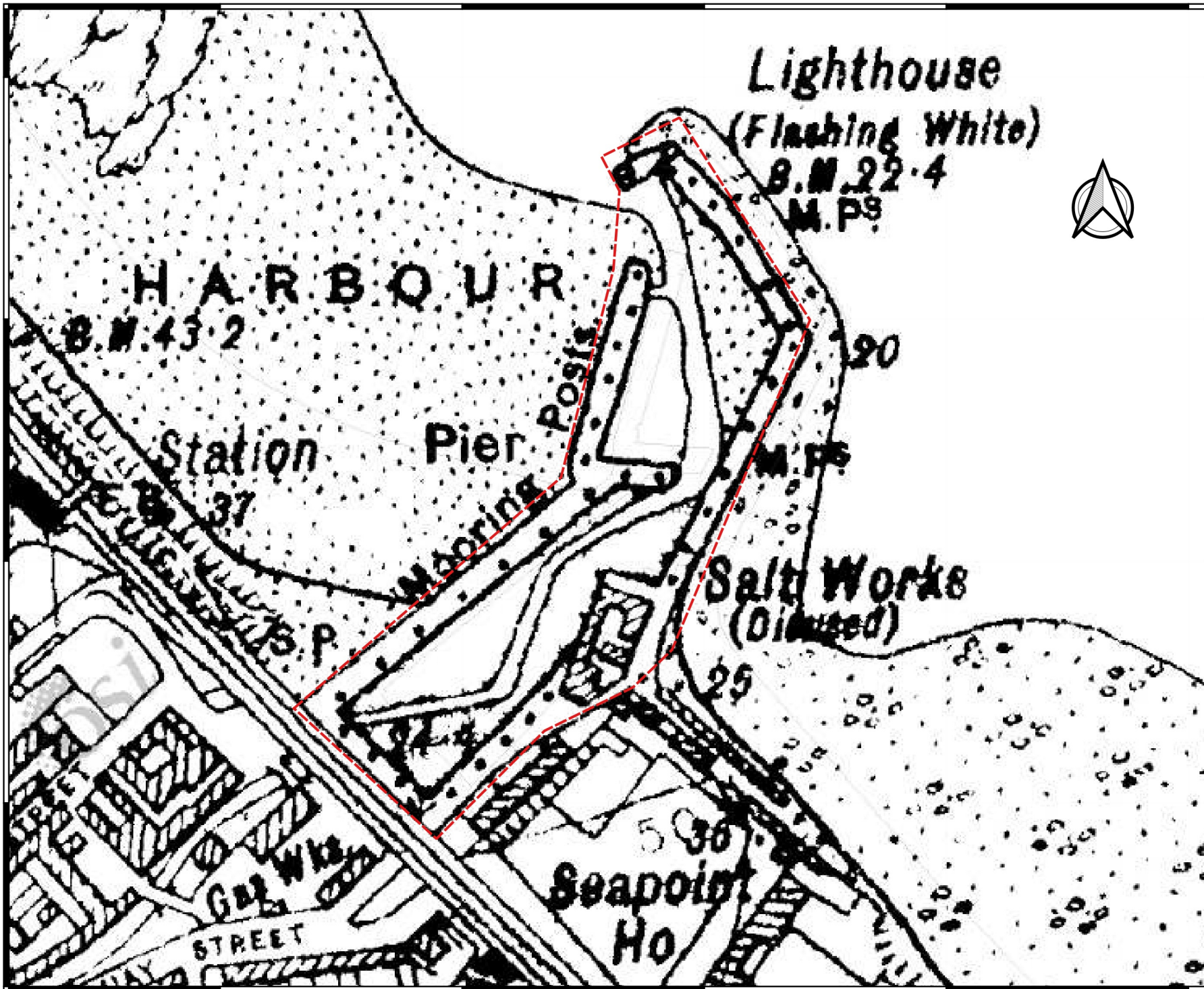



**GROUND INVESTIGATIONS IRELAND**  
Geotechnical & Environmental

Ground Investigations Ireland Ltd.  
Catherinstown House,  
Hazelhatch Road,  
Newcastle, Co. Dublin  
www.gii.ie 01-6015175/5176

Drawn By:  
BS

Date:  
04-03-2024



 Indicative Site Location

Client:

**ayesa**

Project Code:

13590-02-24

Project Title:

Balbriggan Sediment Waste Classification

Drawing Title:

Figure 4 OSI Cassini Map





**GROUND INVESTIGATIONS IRELAND**  
Geotechnical & Environmental

Ground Investigations Ireland Ltd.  
Catherinstown House,  
Hazelhatch Road,  
Newcastle, Co. Dublin  
www.gii.ie 01-6015175/5176

Drawn By:  
BS

Date:  
04-03-2024



-  Indicative Site Boundary
-  Sample Point

**Client:**  


**Project Code:**  
 13590-02-24

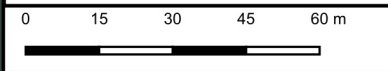
**Project Title:**  
 Balbriggan Sediment Waste Classification

**Drawing Title:**  
 Figure 5 Sample Locations



**GROUND INVESTIGATIONS IRELAND**  
 Geotechnical & Environmental

Ground Investigations Ireland Ltd.  
 Catherinstown House,  
 Hazelhatch Road,  
 Newcastle, Co. Dublin  
 www.gii.ie 01-6015175/5176



<b>Drawn By:</b> BS	<b>Date:</b> 04-03-2024
------------------------	----------------------------

# APPENDIX 2 – Hydro Survey Report





# Balbriggan Sampling Sediment Sampling Technical Report

---

Client: **ayesa**

## REPORT CONTROL SHEET

Client	Ayesa					
Project Name	Balbriggan Sampling Sediment Sampling					
Document Type	Technical Report					
Project Number	HS23033					
This Report Comprises of	TOC	Text	No. of Volume	No. of Appendices	Drawings	Electronic data
	2	8	1	4	1	*.pdf *.xlsx, *.dwg *.hwl

Revision	Status	Author(s)	Approved by	Issue Date
Rev.01	Draft for comment	HP <i>Hugh Rev.</i>	JB <i>JB</i>	31/01/2024
Rev.02	Updated with client comments	HP <i>Hugh Rev.</i>	JB <i>JB</i>	13/02/2024

Units  
Time: UTC  
Distance: metres

## Table of Contents

1. Introduction .....	1
2. Survey Methodology.....	3
2.1 Sample coordinates.....	3
2.2 Mobilisation .....	3
2.2.1 Trial pits.....	3
2.2.2 Sediment Sampling.....	5
2.3 Sample Times .....	6
3. Survey Results.....	8
3.1 Trial Pits .....	8
3.2 Sediment Sampling.....	8
APPENDIX A: FOUNDATION PITS RESULTS.....	9
APPENDIX B: PARTICLE SIZE DISTRIBUTION RESULTS.....	10
APPENDIX C: MARINE INSTITUTE SUITE RESULTS .....	11
APPENDIX D: RILTA / WAC SUITE RESULTS .....	12

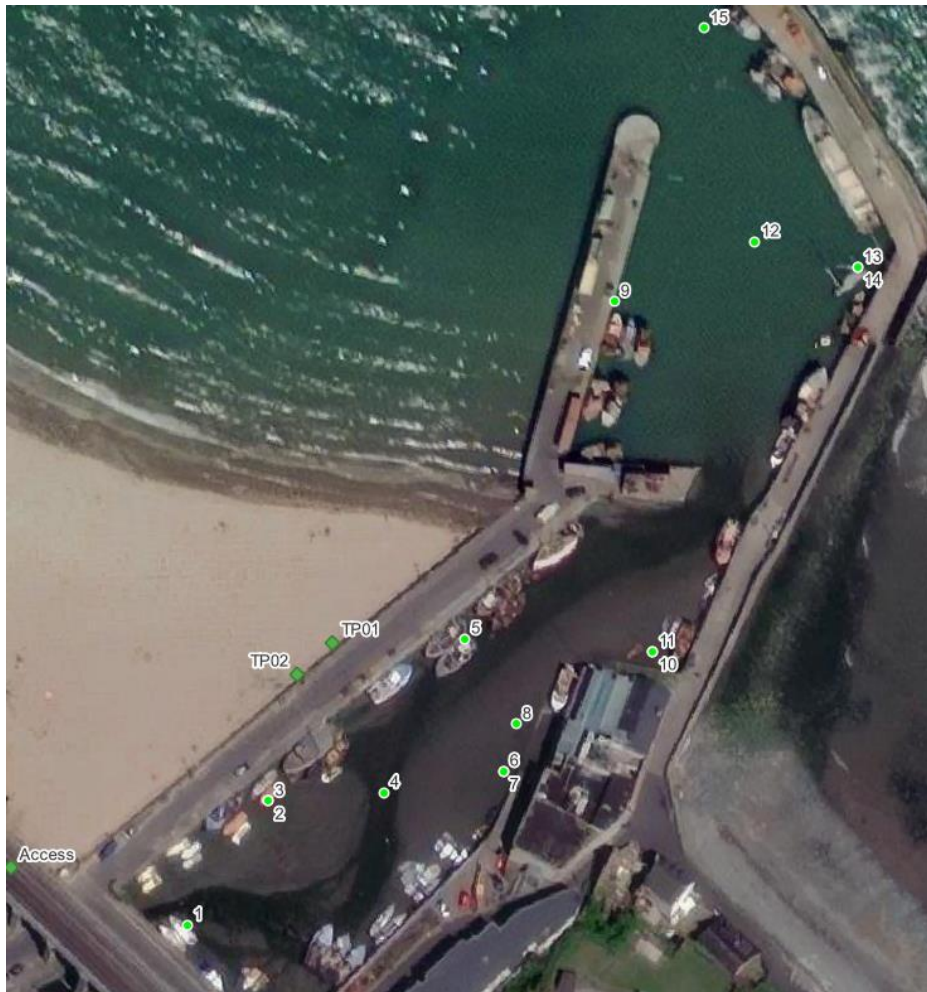
## Table of Figures

Table 2-1: Sediment sampling positions .....	3
Table 2-2: Sampling timings (UTC).....	6
Figure 1-1: Map showing sediment sample locations and trial pitting locations.....	1
Figure 1-2: Sample depth requirement .....	2
Figure 2-1: Image of excavator digging TP01 .....	4
Figure 2-2: Hand vane testing being undertaken at TP01 .....	5
Figure 2-3: Grab sample being taken with excavator.....	6

## 1. Introduction

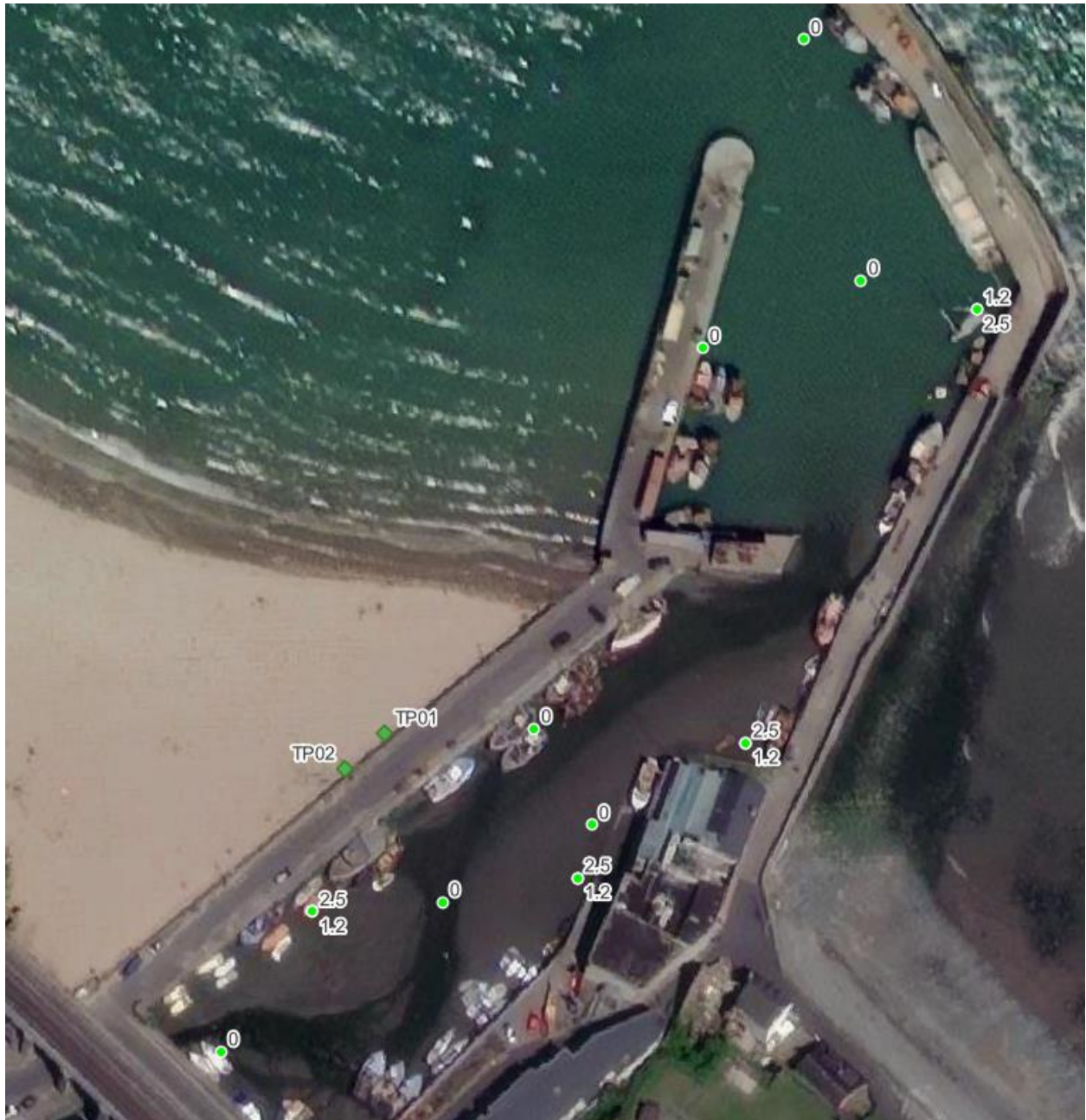
Hydro Survey was contracted by Ayesa Consulting Engineers, on behalf of Fingal County Council to undertake a sediment sampling survey at Balbriggan Harbour, Co. Dublin.

The objective of the survey was to safely obtain and analyse sediment samples at 11 locations (7 surface and 8 cores) within Balbriggan Harbour and have analysed to the required geochemical / geotechnical parameters. As part of the survey, a hand vane test was required to be undertaken at depth at two trial pits (TP01 and TP02) to determine founding material of the western outside quay wall.



**Figure 1-1: Map showing sediment sample locations and trial pitting locations**

The sediment sampling was undertaken at 11 locations which resulted in 15 samples, as 3 locations had 2 samples to be collected in a single location as displayed in Figure 1-2.



**Figure 1-2: Sample depth requirement**

## 2. Survey Methodology

### 2.1 Sample coordinates

The sampling was carried out by the coordinates as given in Table 2-1 and displayed in Figure 1-1.

**Table 2-1: Sediment sampling positions**

Sample ID	Lat	Lon	Depth	IRENET95-East	IRENET95-North
1	53.61088	-6.18029	0	720411	763878
2	53.61114	-6.17999	1.2	720430	763907
3	53.61114	-6.17999	2.5	720430	763907
4	53.61115	-6.17959	0	720457	763909
5	53.61147	-6.17928	0	720476	763945
6	53.61119	-6.17917	1.2	720485	763914
7	53.61119	-6.17917	2.5	720485	763914
8	53.61129	-6.17912	0	720488	763925
9	53.61217	-6.17873	0	720511	764024
10	53.61143	-6.17863	1.2	720520	763942
11	53.61143	-6.17863	2.5	720520	763942
12	53.61229	-6.17822	0	720544	764038
13	53.61223	-6.17787	1.2	720568	764032
14	53.61223	-6.17787	2.5	720568	764032
15	53.61274	-6.17838	0	720532	764088

These sample locations were in line with the Sampling Action Plan as provided by the client to Hydro Survey.

### 2.2 Mobilisation

The sampling was carried out on the 5<sup>th</sup> of January 2024 between the hours of 8:00 to 17:30.

An excavator was used to collect sub surface sediment samples and to undertake the trial pits. The make / model of the excavator was a CASE CX145D SR, weighing approximately 14,600kg.

#### 2.2.1 Trial pits

As part of the survey, trial pits were dug and logged in order to understand the foundations of the western quay walls. A hand vane test was taken at depth in the two trial pits locations (FP01 and FP02).

Trial pit (TP01) was dug to 3.35m bgl (where the foundation of wall begins) using an excavator as shown in Figure 2-1 and Figure 2-2 below.

The position for TP02 was to the southwest of TP01. This was concluded following the differing wall structures as observed and requested by the FCC client. TP02 was excavated to a depth of 1.9m, at this depth the trial pit began collapsing on itself and so the inspection was abandoned, the base of the quay wall was not established.



**Figure 2-1: Image of excavator digging TP01**



**Figure 2-2: Hand vane testing being undertaken at TP01**

### 2.2.2 Sediment Sampling

All samples were assigned ID numbers as per Table 2-1.

All samples were taken from the appropriate depth apart from Sample ID 7 where shallow bedrock prevented the 2.5m bgl sample being taken.

Where samples were to be taken at the surface a stainless steel van Veen sampler was used.

All samples were placed directly into laboratory provided containers and immediately sealed after collection.

The 1.2m and 2.5m for sample no.6, no.10 and 11 and no.13 and 14 were dug up by the excavator as shown in Figure 2-3 and the samples were collected from the bucket.



**Figure 2-3: Grab sample being taken with excavator.**

### 2.3 Sample Times

The below tables detail the time of acquisition of each sample.

**Table 2-2: Sampling timings (UTC)**

Sample ID	Date	Sampling Time
1	05/01/2024	13:00
2	05/01/2024	13:50
3	05/01/2024	14:09
4	05/01/2024	14:15
5	05/01/2024	14:27
6	05/01/2024	12:16

7	05/01/2024	NIL
8	05/01/2024	13:12
9	05/01/2024	13:18
10	05/01/2024	11:15
11	05/01/2024	11:22
12	05/01/2024	12:52
13	05/01/2024	11:45
14	05/01/2024	11:50
15	05/01/2024	12:42

### 3. Survey Results

#### 3.1 Trial Pits

All trial pitting and hand vane results are provided in APPENDIX A of this report. It was only possible to undertake the hand vane testing at FP01, FP02 material was too unconsolidated (sandy GRAVEL) to undertake the testing.

The findings of the trial pits are summarised as follows:

- FP01: The masonry wall sits on top/atop the gravel bed. The masonry wall (from the top) is of horizontally stone, changing to vertically orientated stone atop of the gravel bed.
- FP02: At 1.9m bgl we found the top of what we describe as a foundation footing. From what we could make out @ 2.3m bgl we were at the base of this foundation 'footing'.

The results of the hand vane testing at a depth of 3.35m bgl was 20, 20 and 35 kPa average 25 kPa.

Full logs, a photographic record and a plan view map with cross sections is provided in APPENDIX A.

Coordinates, to ITM EPGS 2157, of the as dug foundation inspection pits were as follows:

FP01: 720445E, 763939N, surface elevation 2.63m OD Malin

FP02: 720489E, 763989N, surface elevation 1.32m OD Malin

#### 3.2 Sediment Sampling

PSD for the 14 samples is provided in APPENDIX B of this report, analysing laboratory Priority Geotechnical Ltd.

The Marine Institute Suite, RILTA and WAC suite analysis were undertaken via Socotec UK laboratories.

The Marine Institute Suite results are provided in APPENDIX C of this report and are also provided in tabular and Marine Institute Dumping at Sea formatted spreadsheet.

The RILTA and WAC suite results are provided along with this report in APPENDIX D of this report and are also provided in tabular and .hwo1 format.

## **APPENDIX A: FOUNDATION PITS RESULTS**


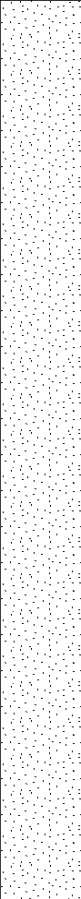
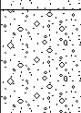


Priority Geotechnical Ltd.  
 Tel: 021 4631600  
 Fax: 021 4638690  
 www.prioritygeotechnical.ie

Trial Pit No  
**FP01**  
 Sheet 1 of 1

<b>Project Name:</b> Ballbriggan - Site Investigation	<b>Project No.:</b> HS23033	<b>Co-ords:</b> 720445E - 763939N <b>Level:</b> 2.63m OD	<b>Date:</b> 05/01/2024
---	-----------------------------	---	-------------------------

<b>Location:</b> Co. Dublin	<b>Dimensions (m):</b> 	<b>Scale:</b> 1:25
<b>Client:</b> Fingal County Council		<b>Depth:</b> 3.35m BGL

Water Strike & Backfill	Samples & In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
	Depth (m)	Type	Results				
							SAND. Sand is fine to coarse.
				3.00	-0.37		Grey brown, slightly gravelly SAND with cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to rounded. Cobbles are angular to rounded, 63-200mm dia.
	3.35 3.35 3.35		HVP=20kPa HVP=20kPa HVP=35kPa	3.35	-0.72		End of Pit at 3.350m

<b>Stability:</b> Poor	<b>Groundwater:</b> 2.90m: Slow rate of flow.
<b>Plant:</b> 13t tracked excavator.	
<b>Backfill:</b> Arisings.	



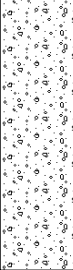
**Remarks:** Foundation pit terminated at 3.35m bgl. Refer to DWG HS23033 FP01 for cross sectional detail. Vane test carried out at 3.35m bgl.



<b>Project Name:</b> Ballbriggan - Site Investigation	<b>Project No.:</b> HS23033	<b>Co-ords:</b> 720489E - 763989N <b>Level:</b> 1.32m OD	<b>Date:</b> 05/01/2024
---	-----------------------------	---	-------------------------

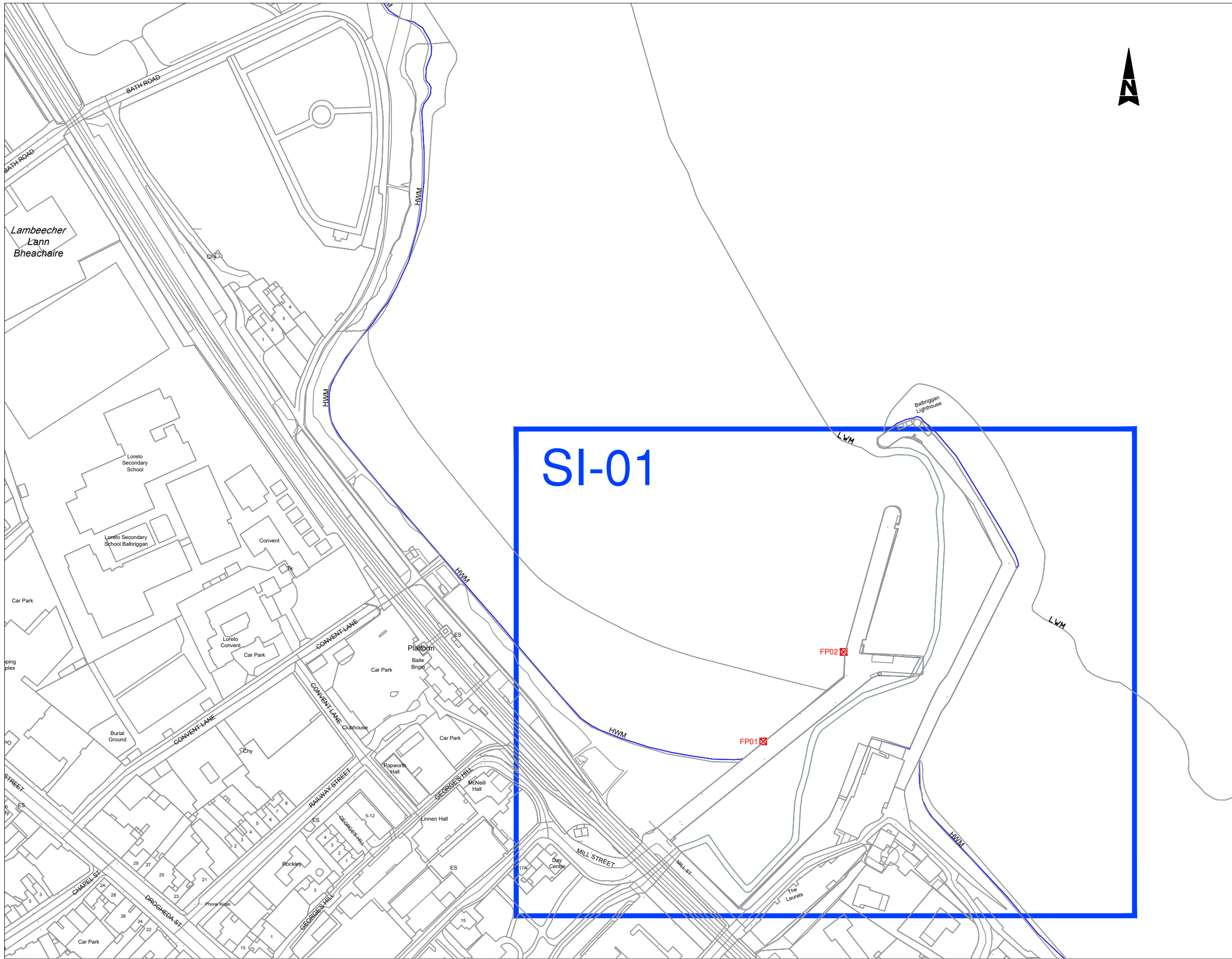
<b>Location:</b> Co. Dublin	<b>Dimensions (m):</b> 	<b>Scale:</b> 1:25
-----------------------------	---	--------------------

<b>Client:</b> Fingal County Council	<b>Depth:</b> 2.30m BGL	<b>Logged:</b> AT
--------------------------------------	-------------------------	-------------------

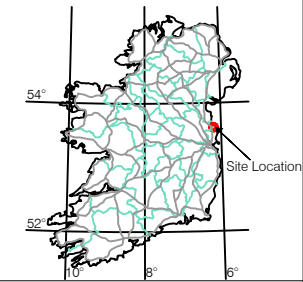
Water Strike & Backfill	Samples & In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
	Depth (m)	Type	Results				
				1.40	-0.08		SAND. Sand is fine to coarse.
				2.30	-0.98		Grey brown, sandy GRAVEL with cobble content. Sand is fine to coarse. Gravel is fine to coarse, angular to rounded. Cobbles are 63-200mm dia.
							End of Pit at 2.300m

<b>Stability:</b> Poor	<b>Groundwater:</b> 1.45m: Slow flow rate.
<b>Plant:</b> 13t tracked excavator	
<b>Backfill:</b> Arisings.	

**Remarks:** Foundation pit terminated at 2.30m bgl. Refer to DWG HS23033 FP02 for cross sectional detail.



Priority Geotechnical Site



JOB NAME:

Balbriggan

Sheet Title:

Exploratory Location Layout

JOB NUMBER:

HS23033

DRAWING NUMBER:

HS23033-SI-A

DRAWN BY:

G.C.

DATE:

09/01/2024

SCALE:

1:500 ON A3

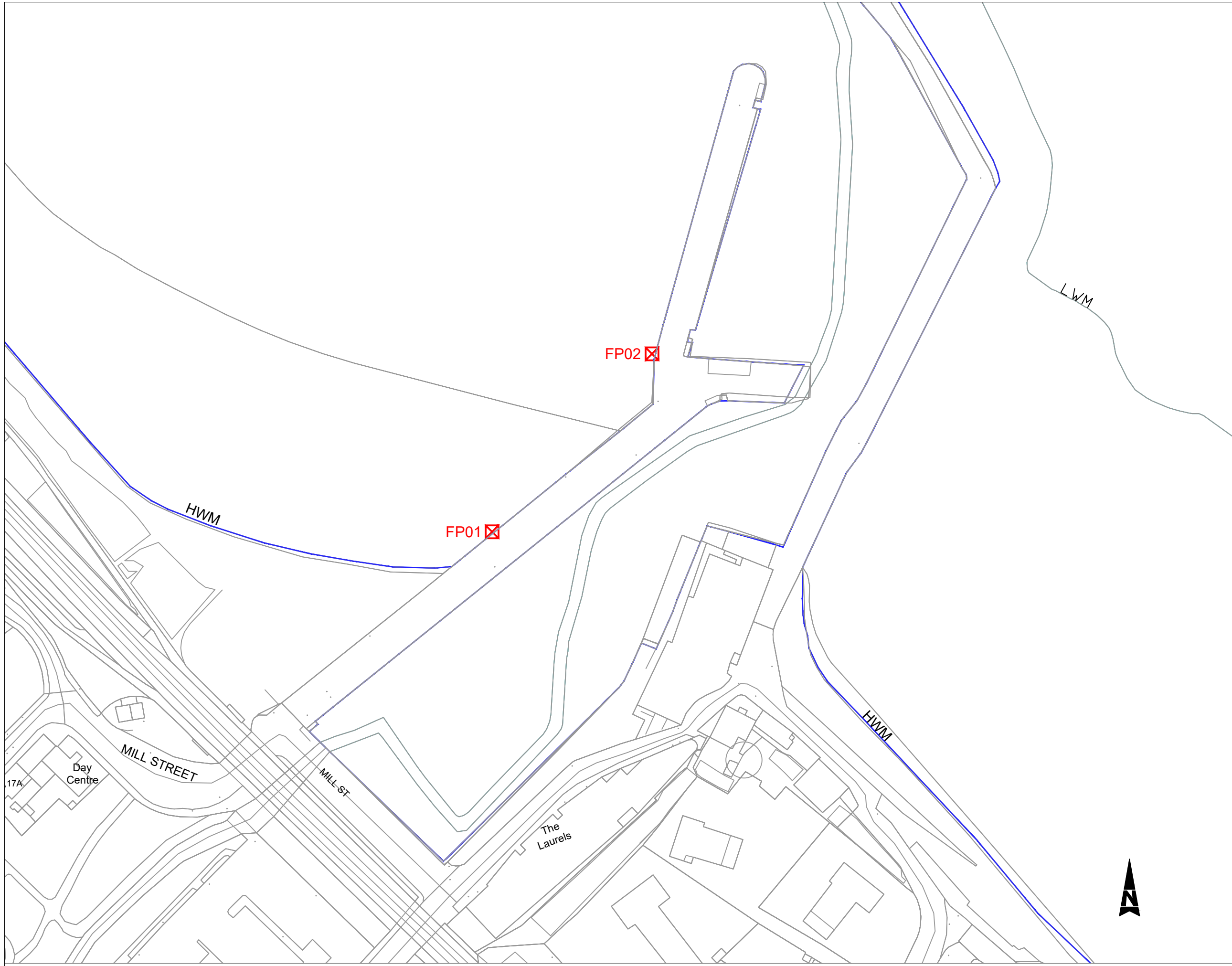
APPROVED:

GH

REVISION:

D01





KEY:

☒ FP00 Denotes Foundation Pit location

JOB NAME:

Balbriggan

Sheet Title:

LOCATION PLAN

JOB NUMBER:

HS23033

DRAWING NUMBER:

HS23033-SI-01

DRAWN BY:

G.C.

DATE:

09/01/2024

SCALE:

1:1000 ON A3

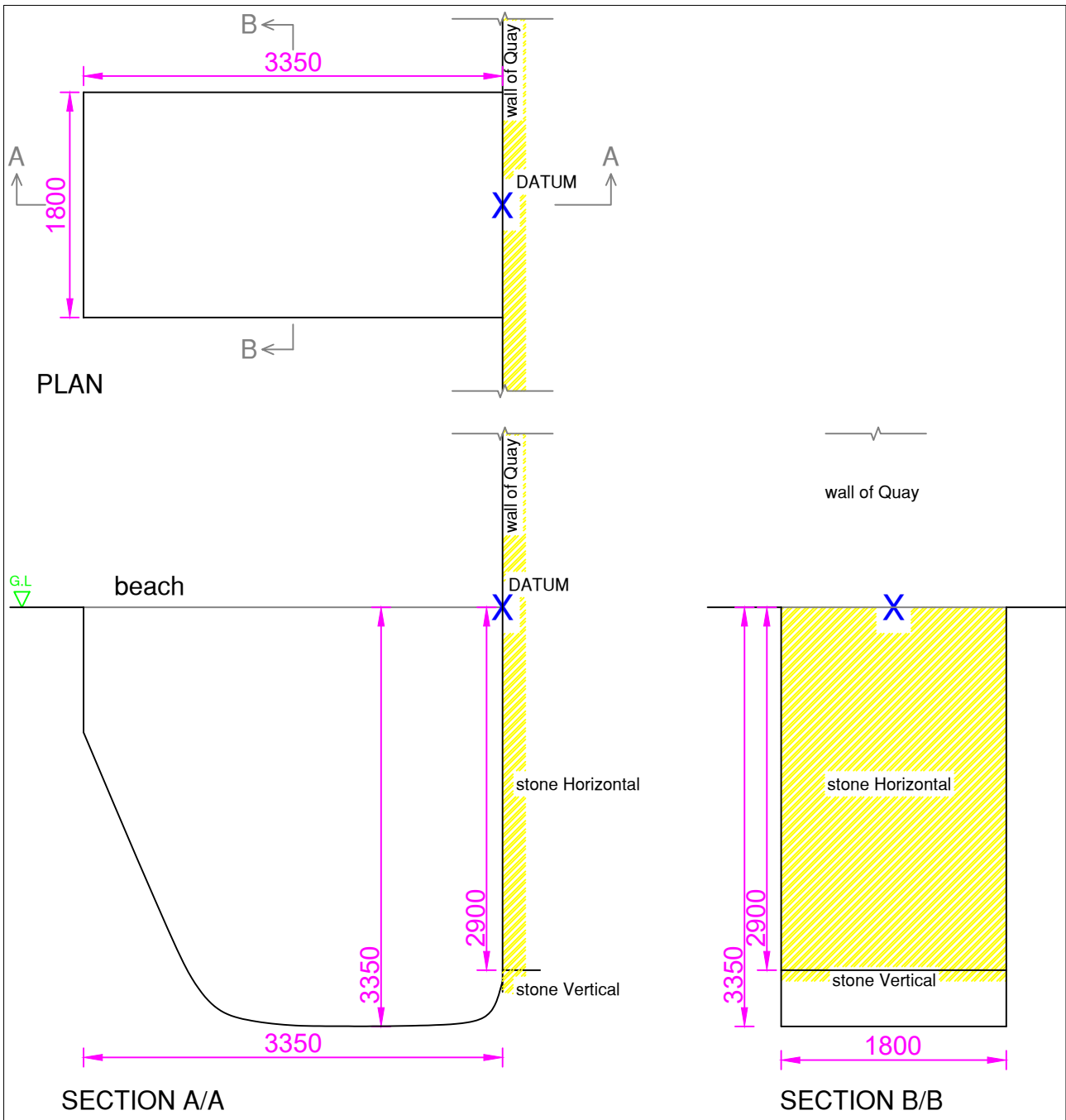
APPROVED:

GH

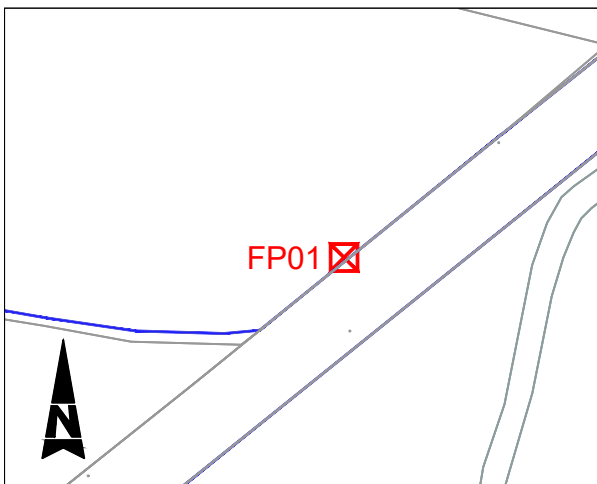
REVISION:

D01



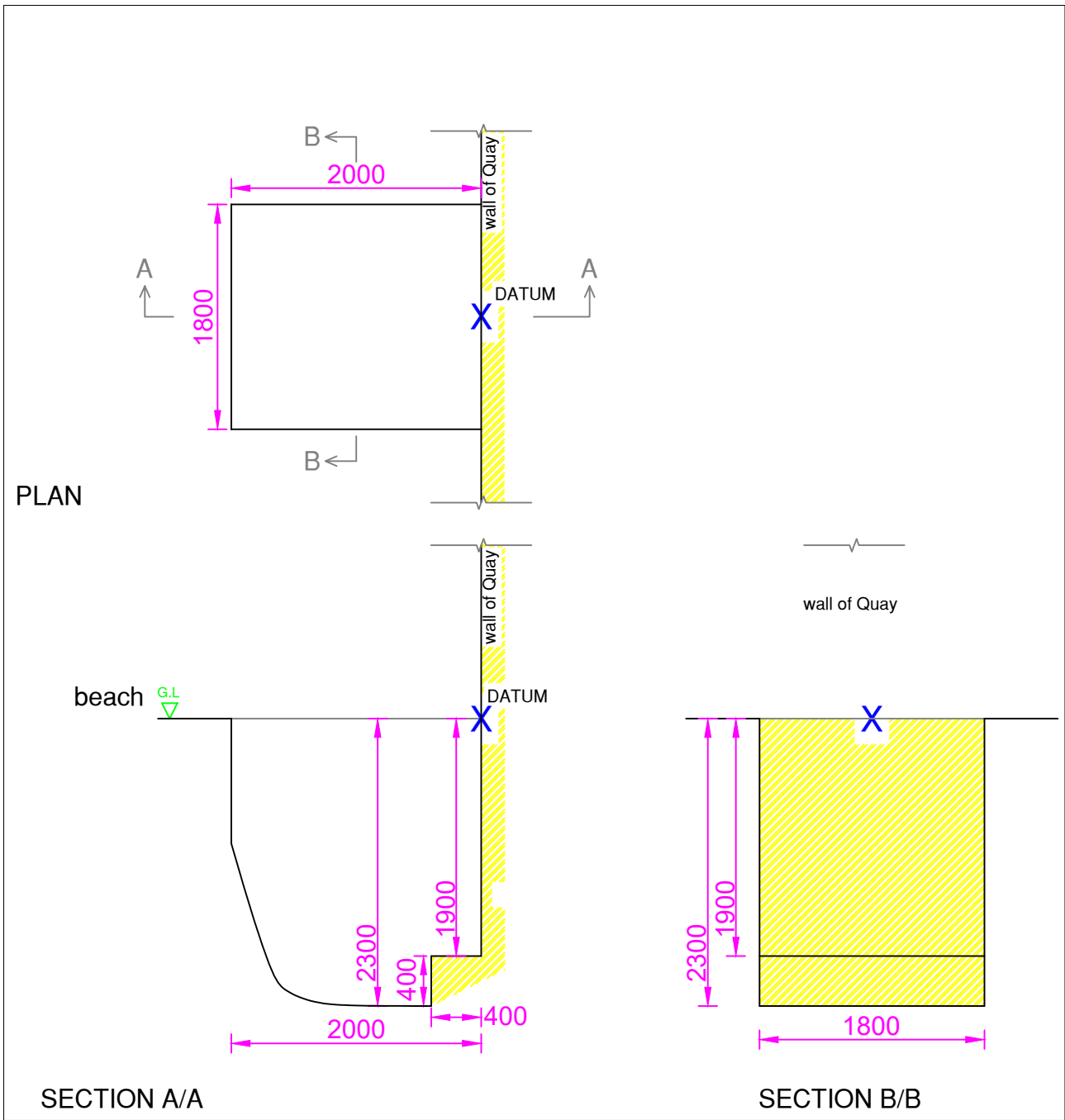


FOUNDATION PIT 1:50 ON A4

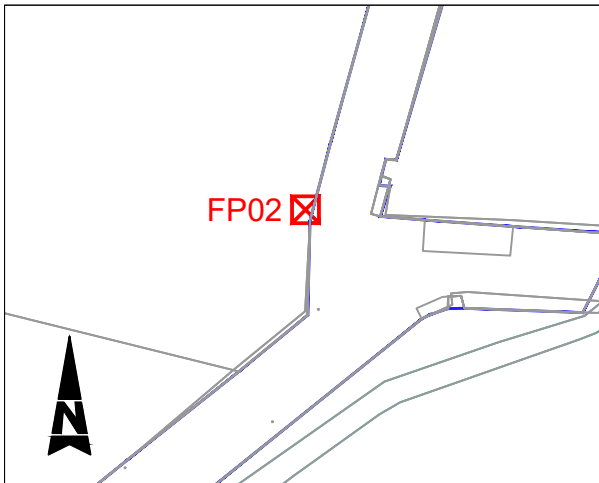


FOUNDATION PIT LOCATION PLAN, 1:1000 ON A4

DATUM COORDINATES: EASTING: 720444.9 NORTHING: 763939.4 LEVEL: 2.628m AOD		FOUNDATION PIT NUMBER: <h1>FP01</h1>
KEY: DATUM: X		JOB NAME: Balbriggan
FOUNDATION PIT DIMENSIONS: LENGTH: 2.50m WIDTH: 1.80m DEPTH: 3.35m		JOB NUMBER: HS23033
STRATA SHOWN ON DETAILED LOG		
DRAWN BY: G.C.	DATE: 09/01/2023	DRAWING NUMBER: HS23033-FP01
LOGGED BY: A.T.	DATE: 05/01/2023	
SCALE: AS STATED	APPROVED: GH	



FOUNDATION PIT 1:100 ON A4



FOUNDATION PIT LOCATION PLAN, 1:1000 ON A4

DATUM COORDINATES: EASTING: 720489.2 NORTHING: 763988.7 LEVEL: 1.315m AOD		FOUNDATION PIT NUMBER: <b>FP02</b>
KEY: DATUM: X		JOB NAME: Balbriggan
FOUNDATION PIT DIMENSIONS: LENGTH: 2.00m WIDTH: 1.80m DEPTH: 2.30m		JOB NUMBER: HS23033
STRATA SHOWN ON DETAILED LOG		
DRAWN BY: G.C.	DATE: 09/01/2024	DRAWING NUMBER: HS23033-FP02
LOGGED BY: A.T.	DATE: 05/01/2024	
SCALE: AS STATED	APPROVED: GH	



**Number:**

**FP01**

**Project  
Project No  
Engineer**

Balbriggan  
HS23033  
ByrneLooby Ayesa



**Number:**

**FP01**

**Project  
Project No  
Engineer**

Balbriggan  
HS23033  
ByrneLooby Ayesa



<b>Number:</b>	<b>FP01</b>	<b>Project</b>	Balbriggan
		<b>Project No</b>	HS23033
		<b>Engineer</b>	ByrneLooby Ayesa



**Number:**

**FP02**

**Project  
Project No  
Engineer**

Balbriggan  
HS23033  
ByrneLooby Ayesa



**Number:**

**FP02**

**Project  
Project No  
Engineer**

Balbriggan  
HS23033  
ByrneLooby Ayesa



**Number:**

**FP02**

**Project  
Project No  
Engineer**

Balbriggan  
HS23033  
ByrneLooby Ayesa

## **APPENDIX B: PARTICLE SIZE DISTRIBUTION RESULTS**



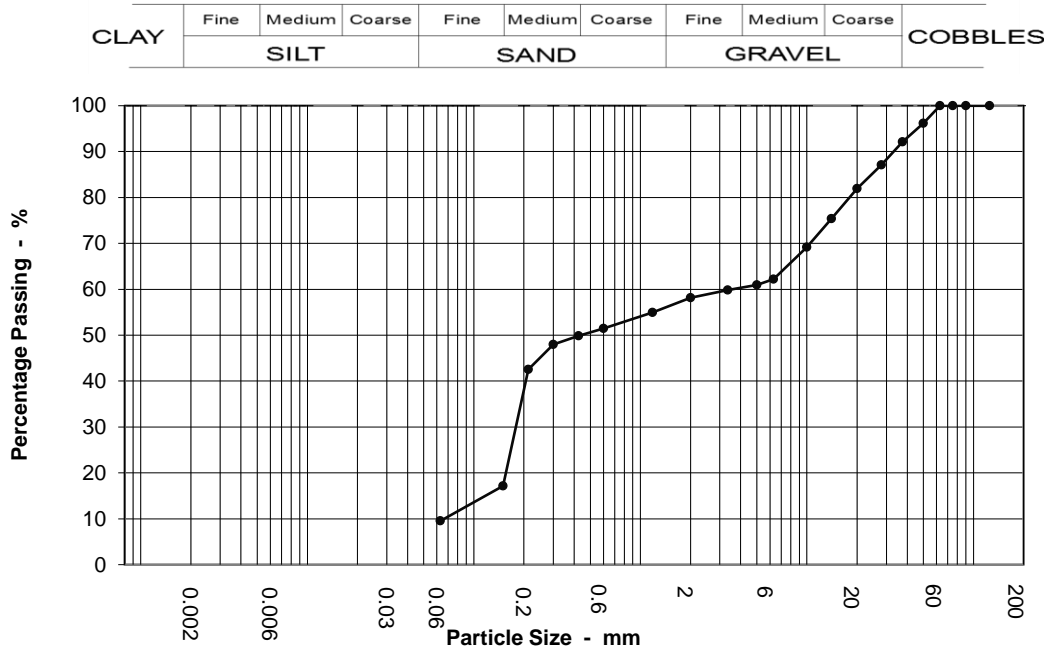
# PARTICLE SIZE DISTRIBUTION

**BS 1377 : Part 2 : 1990 : Clause 9**

<b>Job Ref</b>	<b>HS23033</b>
Borehole / Pit No	Sample 01
Sample No	B
Depth	0.00 m
Sample type	B

Location: **Balbriggan**

Soil Description



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	96		
37.5	92		
28	87		
20	82		
14	75		
10	69		
6.3	62		
5	61		
3.35	60		
2	58		
1.18	55		
0.6	51		
0.425	50		
0.3	48		
0.212	43		
0.15	17		
0.063	10		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.3
Sedimentation	N/A

Sample Proportions	
Cobbles	0.0
Gravel	42.0
Sand	49.0
Silt & Clay	10.0

Grading Analysis	
D100	63.00
D60	3.57
D10	0.07
Uniformity Coefficient	54.00



# PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

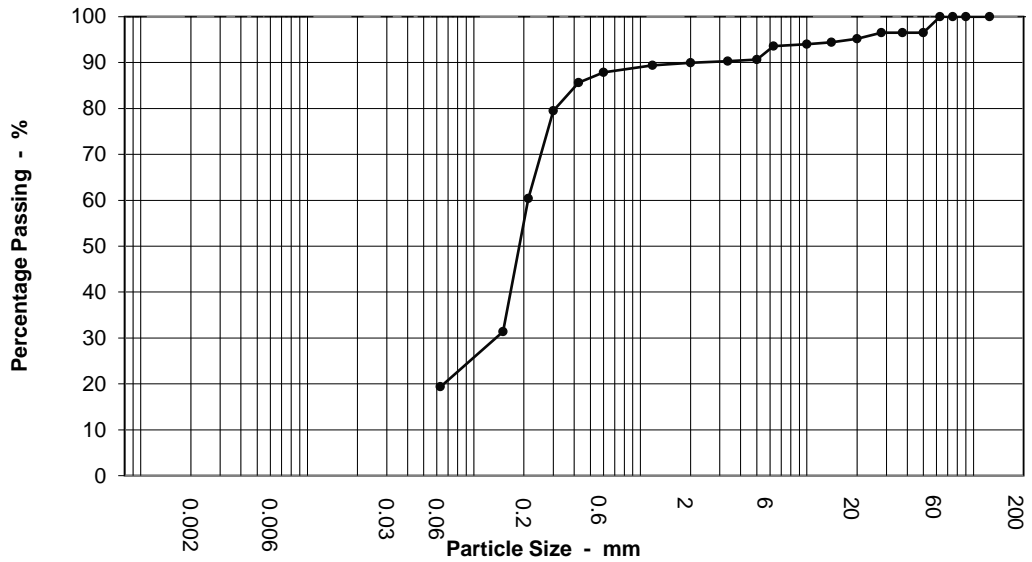
<b>Job Ref</b>	<b>HS23033</b>
Borehole / Pit No	Sample 02
Sample No	B
Depth	1.20 m
Sample type	B

Location

**Balbriggan**

Soil Description

<b>CLAY</b>	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	<b>COBBLES</b>
	<b>SILT</b>			<b>SAND</b>			<b>GRAVEL</b>			



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	97		
37.5	97		
28	97		
20	95		
14	94		
10	94		
6.3	94		
5	91		
3.35	90		
2	90		
1.18	89		
0.6	88		
0.425	86		
0.3	79		
0.212	60		
0.15	31		
0.063	19		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.3
Sedimentation	N/A

Sample Proportions	
Cobbles	0.0
Gravel	10.0
Sand	71.0
Silt & Clay	19.0

Grading Analysis	
D100	63.00
D60	0.21
D10	
Uniformity Coefficient	



# PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

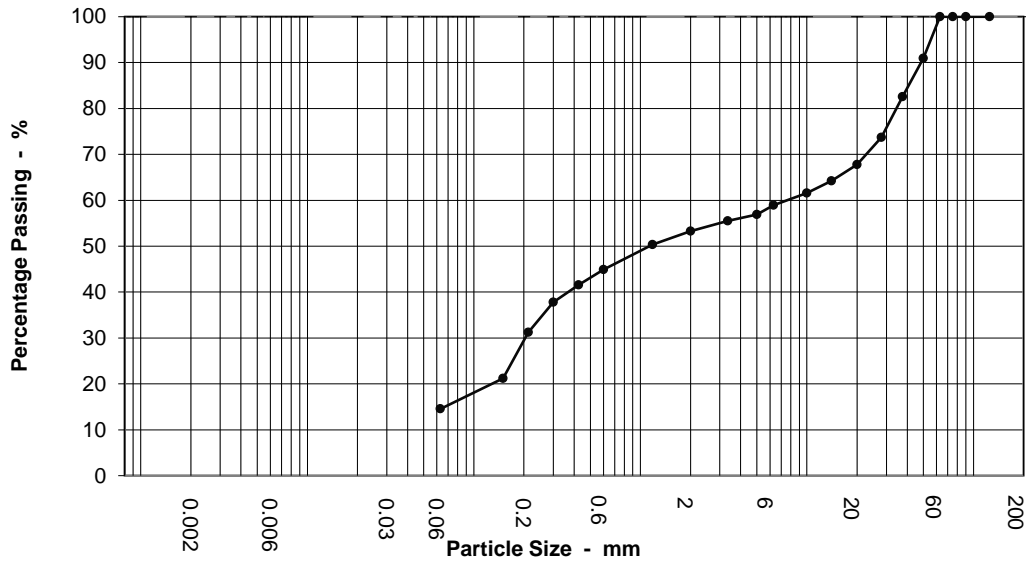
<b>Job Ref</b>	<b>HS23033</b>
Borehole / Pit No	Sample 03
Sample No	B
Depth	2.50 m
Sample type	B

Location

**Balbriggan**

Soil Description

<b>CLAY</b>	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	<b>COBBLES</b>
	<b>SILT</b>			<b>SAND</b>			<b>GRAVEL</b>			



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	91		
37.5	83		
28	74		
20	68		
14	64		
10	62		
6.3	59		
5	57		
3.35	55		
2	53		
1.18	50		
0.6	45		
0.425	42		
0.3	38		
0.212	31		
0.15	21		
0.063	15		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.3
Sedimentation	N/A

Sample Proportions	
Cobbles	0.0
Gravel	47.0
Sand	39.0
Silt & Clay	15.0

Grading Analysis	
D100	63.00
D60	7.60
D10	
Uniformity Coefficient	



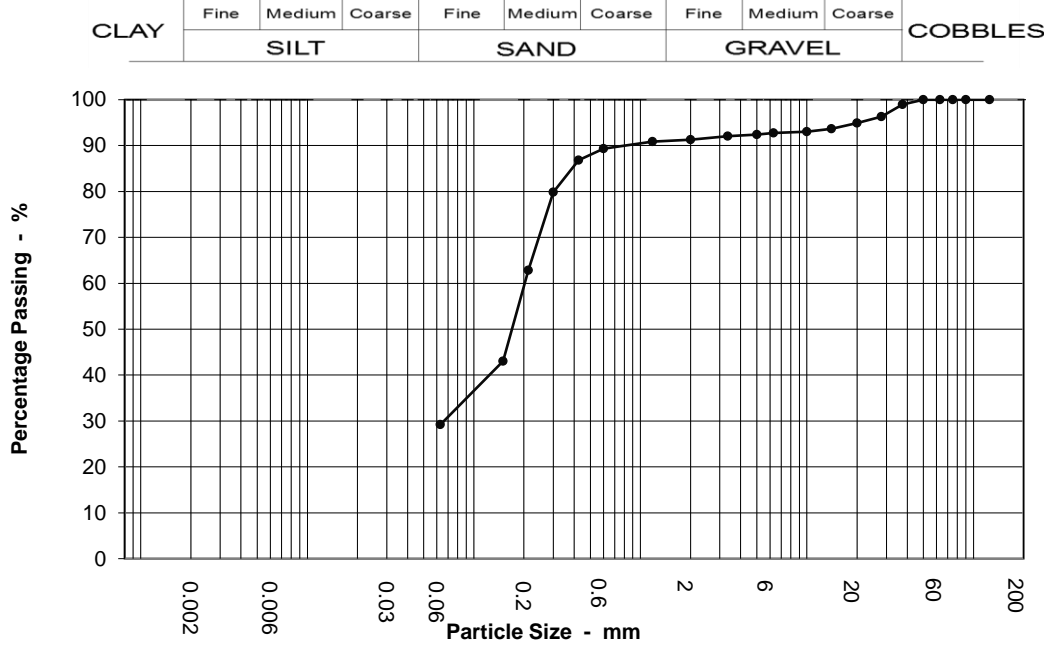
# PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

<b>Job Ref</b>	<b>HS23033</b>
Borehole / Pit No	Sample 04
Sample No	B
Depth	0.00 m
Sample type	B

Location **Balbriggan**

Soil Description



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	99		
28	96		
20	95		
14	94		
10	93		
6.3	93		
5	92		
3.35	92		
2	91		
1.18	91		
0.6	89		
0.425	87		
0.3	80		
0.212	63		
0.15	43		
0.063	29		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.3
Sedimentation	N/A

Sample Proportions	
Cobbles	0.0
Gravel	9.0
Sand	62.0
Silt & Clay	29.0

Grading Analysis	
D100	50.00
D60	0.20
D10	
Uniformity Coefficient	



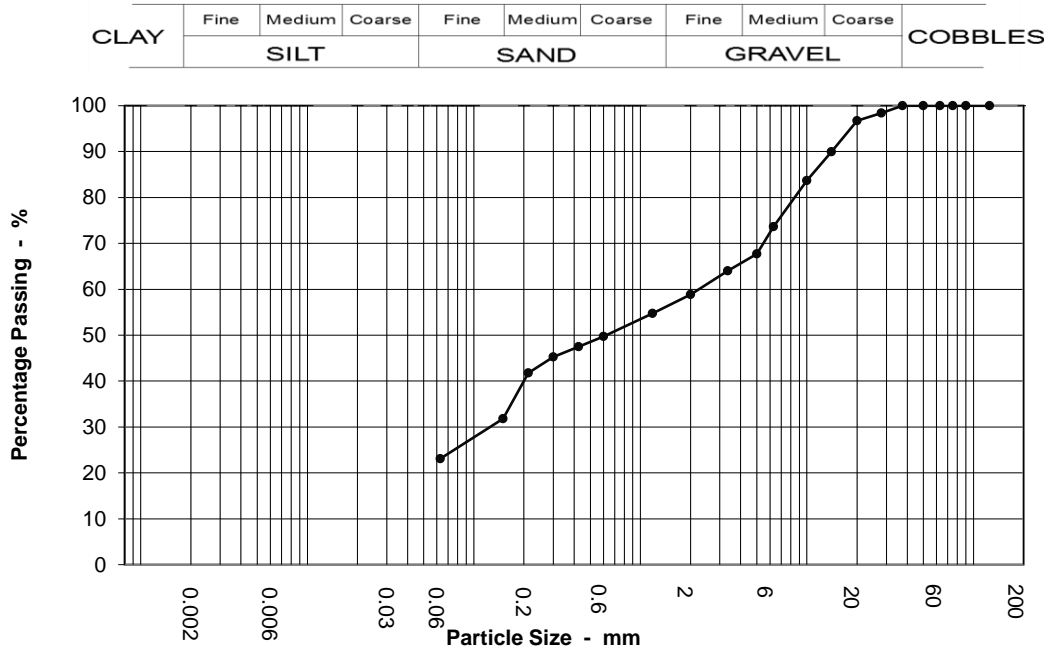
# PARTICLE SIZE DISTRIBUTION

**BS 1377 : Part 2 : 1990 : Clause 9**

<b>Job Ref</b>	<b>HS23033</b>
Borehole / Pit No	Sample 05
Sample No	B
Depth	0.00 m
Sample type	B

Location **Balbriggan**

Soil Description



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	98		
20	97		
14	90		
10	84		
6.3	74		
5	68		
3.35	64		
2	59		
1.18	55		
0.6	50		
0.425	47		
0.3	45		
0.212	42		
0.15	32		
0.063	23		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.3
Sedimentation	N/A

Sample Proportions	
Cobbles	0.0
Gravel	41.0
Sand	36.0
Silt & Clay	23.0

Grading Analysis	
D100	37.50
D60	2.24
D10	
Uniformity Coefficient	



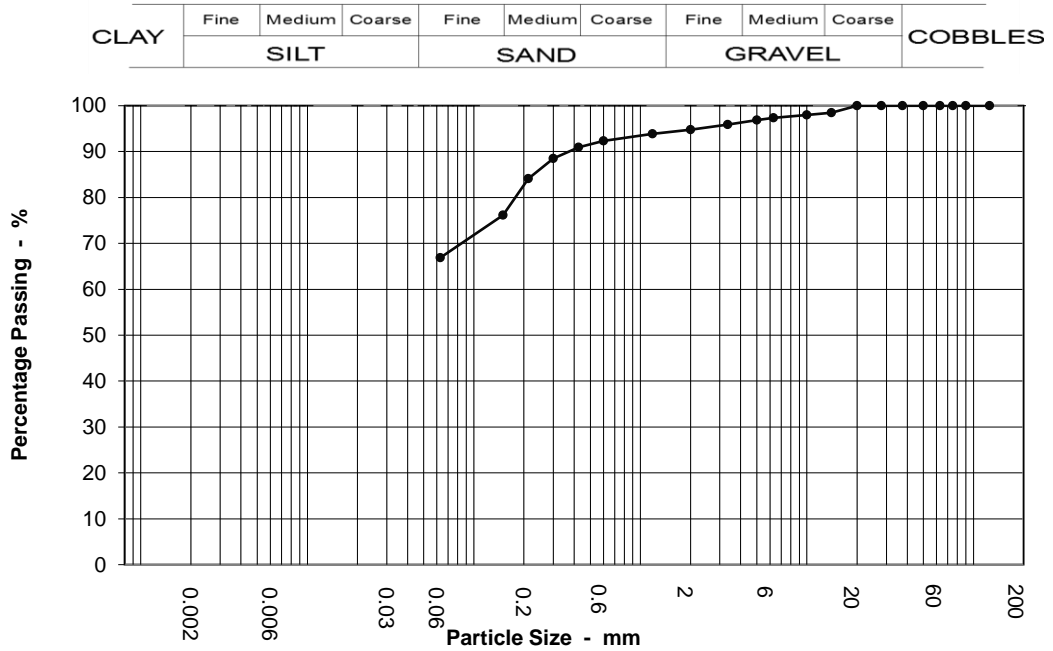
# PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

<b>Job Ref</b>	<b>HS23033</b>
Borehole / Pit No	Sample 06
Sample No	B
Depth	1.20 m
Sample type	B

Location **Balbriggan**

Soil Description



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	98		
10	98		
6.3	97		
5	97		
3.35	96		
2	95		
1.18	94		
0.6	92		
0.425	91		
0.3	89		
0.212	84		
0.15	76		
0.063	67		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.3
Sedimentation	N/A

Sample Proportions	
Cobbles	0.0
Gravel	5.0
Sand	28.0
Silt & Clay	67.0

Grading Analysis	
D100	20.00
D60	
D10	
Uniformity Coefficient	



# PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

Job Ref

HS23033

Borehole / Pit No

Sample 08

Location

Balbriggan

Sample No

B

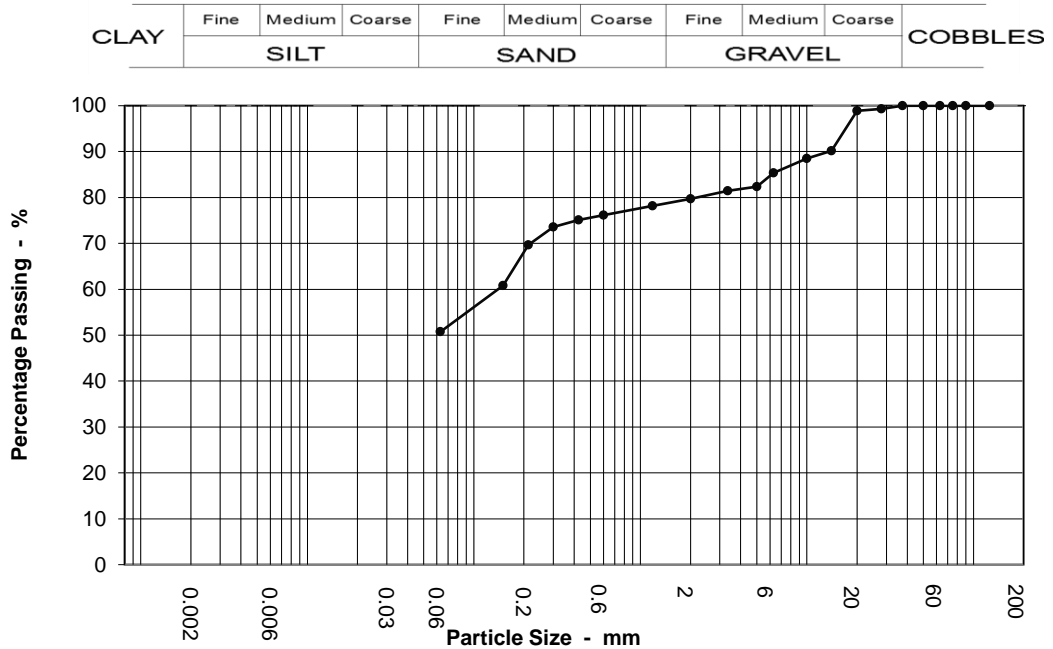
Depth

0.00 m

Soil Description

Sample type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	99		
20	99		
14	90		
10	89		
6.3	85		
5	82		
3.35	81		
2	80		
1.18	78		
0.6	76		
0.425	75		
0.3	74		
0.212	70		
0.15	61		
0.063	51		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.3
Sedimentation	N/A

Sample Proportions	
Cobbles	0.0
Gravel	20.0
Sand	29.0
Silt & Clay	51.0

Grading Analysis	
D100	37.50
D60	0.14
D10	
Uniformity Coefficient	



# PARTICLE SIZE DISTRIBUTION

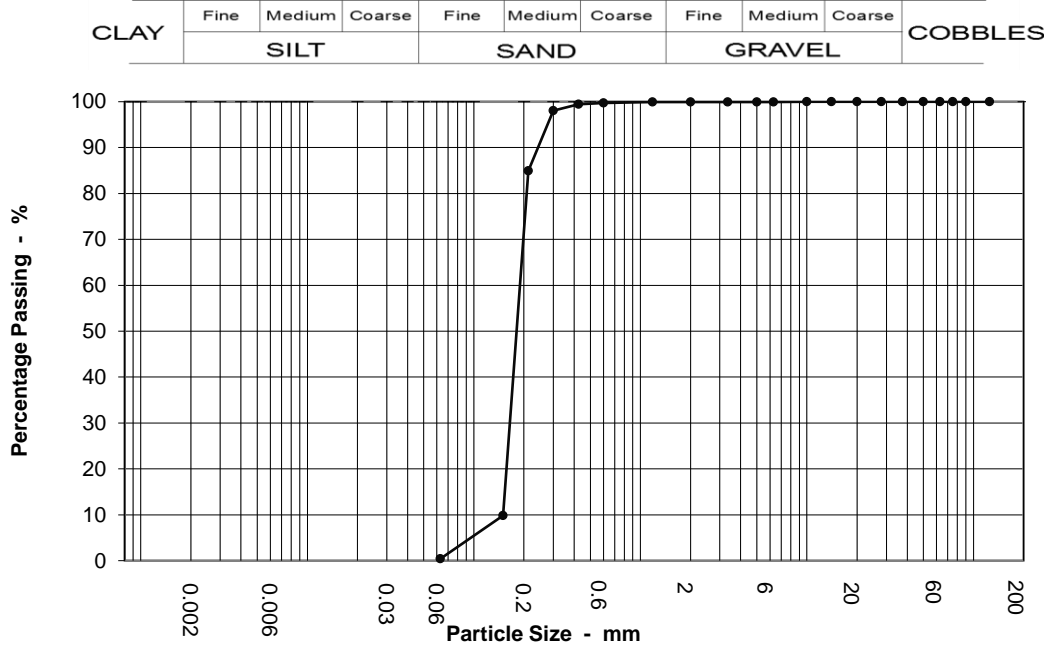
BS 1377 : Part 2 : 1990 : Clause 9

<b>Job Ref</b>	<b>HS23033</b>
Borehole / Pit No	Sample 09
Sample No	B
Depth	0.00 m
Sample type	B

Location

**Balbriggan**

Soil Description



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99		
0.3	98		
0.212	85		
0.15	10		
0.063	0		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.3
Sedimentation	N/A

Sample Proportions	
Cobbles	0.0
Gravel	0.0
Sand	100.0
Silt & Clay	0.0

Grading Analysis	
D100	10.00
D60	0.19
D10	0.15
Uniformity Coefficient	1.30



# PARTICLE SIZE DISTRIBUTION

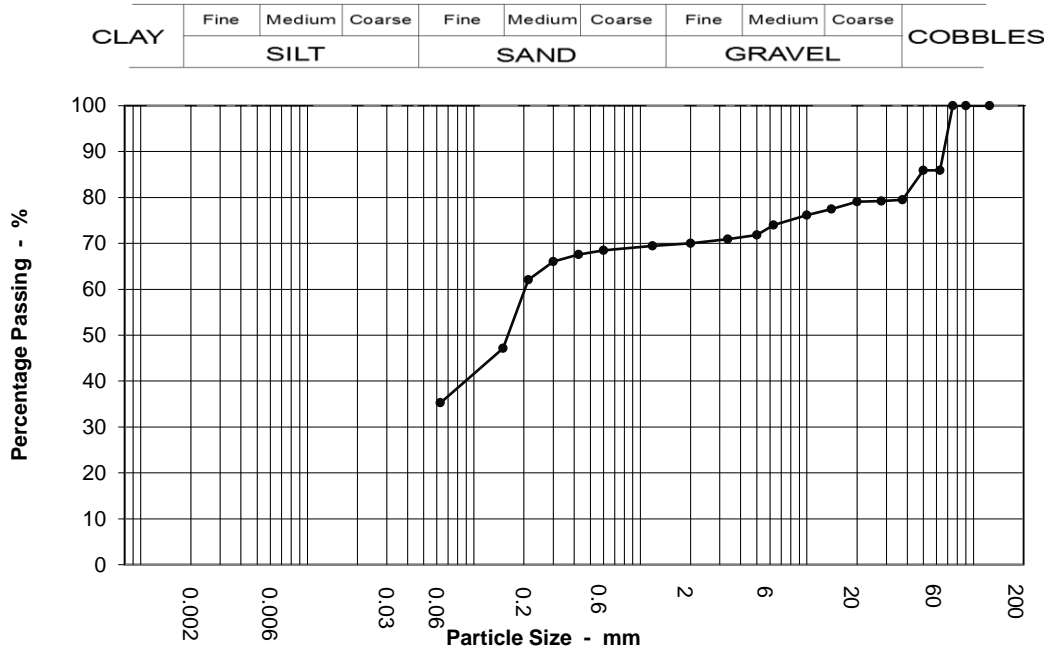
**BS 1377 : Part 2 : 1990 : Clause 9**

<b>Job Ref</b>	<b>HS23033</b>
Borehole / Pit No	Sample 10
Sample No	B
Depth	1.20 m
Sample type	B

Location

**Balbriggan**

Soil Description



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	86		
50	86		
37.5	79		
28	79		
20	79		
14	77		
10	76		
6.3	74		
5	72		
3.35	71		
2	70		
1.18	69		
0.6	69		
0.425	68		
0.3	66		
0.212	62		
0.15	47		
0.063	35		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.3
Sedimentation	N/A

Sample Proportions	
Cobbles	14.0
Gravel	16.0
Sand	35.0
Silt & Clay	35.0

Grading Analysis	
D100	75.00
D60	0.20
D10	
Uniformity Coefficient	



# PARTICLE SIZE DISTRIBUTION

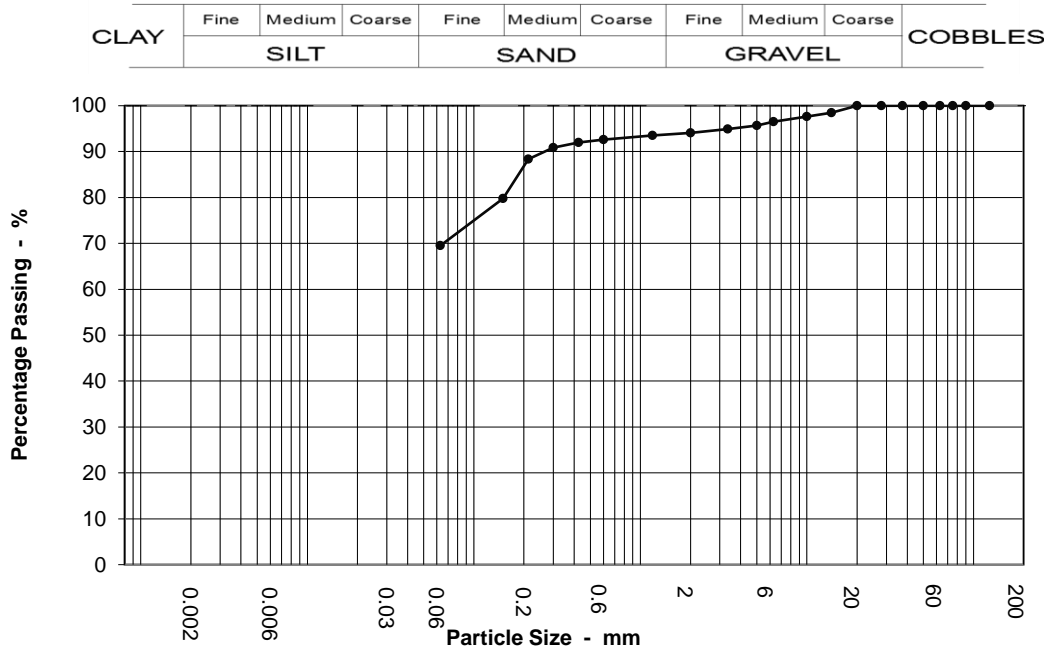
BS 1377 : Part 2 : 1990 : Clause 9

<b>Job Ref</b>	<b>HS23033</b>
Borehole / Pit No	Sample 11
Sample No	B
Depth	2.00 m
Sample type	B

Location

**Balbriggan**

Soil Description



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	98		
10	98		
6.3	97		
5	96		
3.35	95		
2	94		
1.18	93		
0.6	93		
0.425	92		
0.3	91		
0.212	88		
0.15	80		
0.063	70		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.3
Sedimentation	N/A

Sample Proportions	
Cobbles	0.0
Gravel	6.0
Sand	25.0
Silt & Clay	70.0

Grading Analysis	
D100	20.00
D60	
D10	
Uniformity Coefficient	



# PARTICLE SIZE DISTRIBUTION

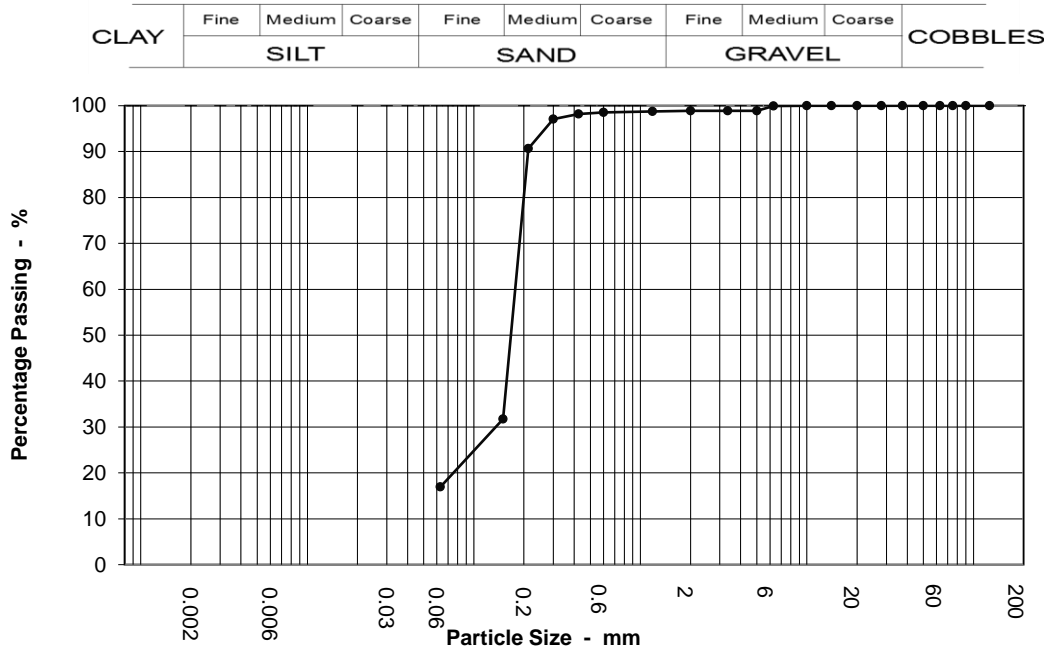
**BS 1377 : Part 2 : 1990 : Clause 9**

<b>Job Ref</b>	<b>HS23033</b>
Borehole / Pit No	Sample 12
Sample No	B
Depth	0.00 m
Sample type	B

Location

**Balbriggan**

Soil Description



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	99		
3.35	99		
2	99		
1.18	99		
0.6	99		
0.425	98		
0.3	97		
0.212	91		
0.15	32		
0.063	17		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.3
Sedimentation	N/A

Sample Proportions	
Cobbles	0.0
Gravel	1.0
Sand	82.0
Silt & Clay	17.0

Grading Analysis	
D100	10.00
D60	0.18
D10	
Uniformity Coefficient	



# PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

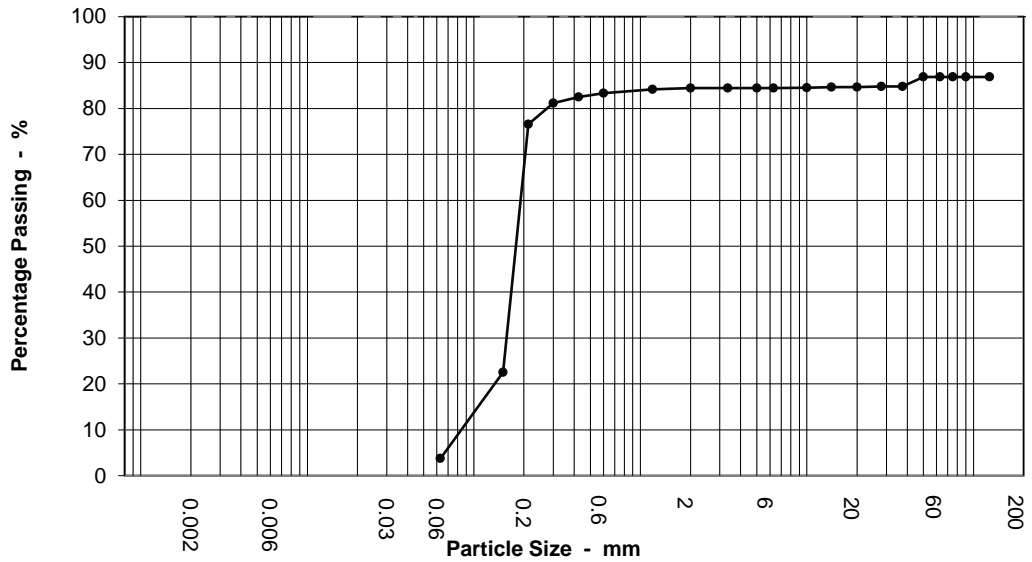
<b>Job Ref</b>	<b>HS23033</b>
Borehole / Pit No	Sample 13
Sample No	B
Depth	1.20 m
Sample type	B

Location

**Balbriggan**

Soil Description

<b>CLAY</b>	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	<b>COBBLES</b>
	<b>SILT</b>			<b>SAND</b>			<b>GRAVEL</b>			



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	87		
90	87		
75	87		
63	87		
50	87		
37.5	85		
28	85		
20	85		
14	85		
10	85		
6.3	84		
5	84		
3.35	84		
2	84		
1.18	84		
0.6	83		
0.425	83		
0.3	81		
0.212	77		
0.15	23		
0.063	4		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.3
Sedimentation	N/A

Sample Proportions	
Cobbles	13.0
Gravel	2.0
Sand	81.0
Silt & Clay	4.0

Grading Analysis	
D100	0.19
D60	0.19
D10	0.08
Uniformity Coefficient	2.30



# PARTICLE SIZE DISTRIBUTION

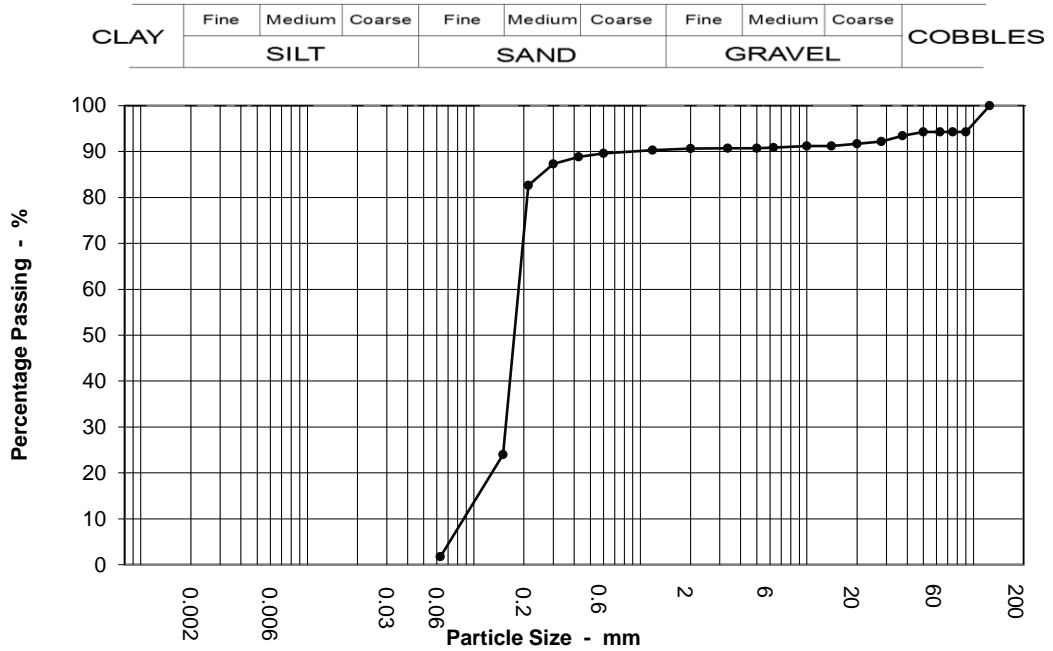
BS 1377 : Part 2 : 1990 : Clause 9

<b>Job Ref</b>	<b>HS23033</b>
Borehole / Pit No	Sample 14
Sample No	B
Depth	2.50 m
Sample type	B

Location

**Balbriggan**

Soil Description



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	94		
75	94		
63	94		
50	94		
37.5	93		
28	92		
20	92		
14	91		
10	91		
6.3	91		
5	91		
3.35	91		
2	91		
1.18	90		
0.6	90		
0.425	89		
0.3	87		
0.212	83		
0.15	24		
0.063	2		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.3
Sedimentation	N/A

Sample Proportions	
Cobbles	6.0
Gravel	4.0
Sand	89.0
Silt & Clay	2.0

Grading Analysis	
D100	125.00
D60	0.19
D10	0.09
Uniformity Coefficient	2.10



# PARTICLE SIZE DISTRIBUTION

BS 1377 : Part 2 : 1990 : Clause 9

Job Ref

HS23033

Borehole / Pit No

Sample 15

Location

Balbriggan

Sample No

B

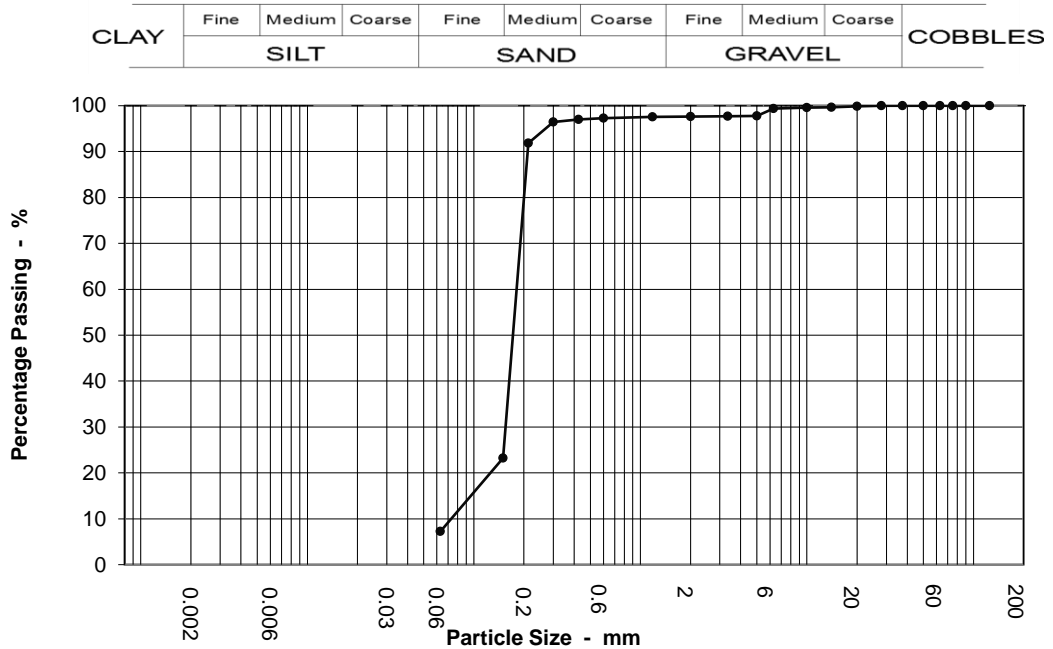
Depth

0.00 m

Soil Description

Sample type

B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	98		
3.35	98		
2	98		
1.18	98		
0.6	97		
0.425	97		
0.3	96		
0.212	92		
0.15	23		
0.063	7		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause 9.3
Sedimentation	N/A

Sample Proportions	
Cobbles	0.0
Gravel	2.0
Sand	90.0
Silt & Clay	7.0

Grading Analysis	
D100	28.00
D60	0.18
D10	0.07
Uniformity Coefficient	2.50

## **APPENDIX C: MARINE INSTITUTE SUITE RESULTS**

# Certificate of Analysis

Issuing Laboratory SOCOTEC, Marine Department, Advanced Chemistry and Research, Etwall House, Bretby Business Park, Ashby Road, Burton-upon-Trent DE15 0YZ



## Test Report ID MAR02166

Issue Version: 1

Customer: Hydrographic Surveys Ltd, Unit 12 Owenacurra Business Park, Midleton, Co. Cork, P25 C563

Customer Reference: HS23033 Balbriggan Sampling

Date Sampled: 05-Jan-24

Date Samples Received: 08-Jan-24

Test Report Date: 30-Jan-24

Condition of samples: Ambient Satisfactory

Opinions and Interpretations expressed herein are outside the scope of our UKAS accreditation  
The results reported relate only to the sample tested  
The results apply to the sample as received

*JM Colbourne*

Authorised by: Jane Colbourne

Position: Customer Service Specialist



1252

# Certificate of Analysis

Issuing Laboratory SOCOTEC, Marine Department, Advanced Chemistry and Research, Etwall House, Bretby Business Park, Ashby Road, Burton-upon-Trent DE15 0YZ



Test Report ID           MAR02166  
Issue Version            1  
Customer Reference       HS23033 Balbriggan Sampling

		Method No	SOCOTEC Environmental Chemistry*
Client Reference:	SOCOTEC Ref:	Matrix	Visual Description
1	MAR02166.001	Sediment	Black/Brown Sediment
2	MAR02166.002	Sediment	Black/Brown Sediment
3	MAR02166.003	Sediment	Black/Brown Sediment
4	MAR02166.004	Sediment	Black/Brown Sediment
5	MAR02166.005	Sediment	Black/Brown Sediment
6	MAR02166.006	Sediment	Black/Brown Sediment
8	MAR02166.007	Sediment	Black/Brown Sediment
9	MAR02166.008	Sediment	Orange Sediment
10	MAR02166.009	Sediment	Black/Brown Sediment
11	MAR02166.010	Sediment	Black/Brown Sediment
12	MAR02166.011	Sediment	Orange Sediment
13	MAR02166.012	Sediment	Black/Brown Sediment
14	MAR02166.013	Sediment	Black/Brown Sediment
15	MAR02166.014	Sediment	Black/Brown Sediment

\* See Report Notes

MAR02166  
This test report shall not be reproduced except in full, without written approval of the laboratory

# Certificate of Analysis



Issuing Laboratory SOCOTEC, Marine Department, Advanced Chemistry and Research, Etwall House, Bretby Business Park, Ashby Road, Burton-upon-Trent DE15 0YZ

Test Report ID           MAR02166  
 Issue Version            1  
 Customer Reference       HS23033 Balbriggan Sampling

Units	%	%	% m/m	%m/m
<b>Method No</b>	ASC/SOP/303	ASC/SOP/303	WSLM59*	ANC*
<b>Limit of Detection</b>	0.2	0.2	0.02	0.12
<b>Accreditation</b>	UKAS	UKAS	UKAS	No

Client Reference:	SOCOTEC Ref:	Matrix	Total Moisture @ 120°C	Total Solids	TOC	Carbonate Equivalent (%CO3)
1	MAR02166.001	Sediment	17.0	83.0	1.01	3.8
2	MAR02166.002	Sediment	28.7	71.3	1.46	1.2
3	MAR02166.003	Sediment	26.5	73.5	1.69	4.32
4	MAR02166.004	Sediment	31.2	68.8	1.85	<0.12
5	MAR02166.005	Sediment	33.7	66.3	6.31	5.76
6	MAR02166.006	Sediment	49.2	50.8	2.34	1.2
8	MAR02166.007	Sediment	40.5	59.5	2.05	8.6
9	MAR02166.008	Sediment	23.0	77.0	0.27	7.2
10	MAR02166.009	Sediment	34.6	65.4	1.78	5.5
11	MAR02166.010	Sediment	43.7	56.3	2.33	7.2
12	MAR02166.011	Sediment	26.3	73.7	0.39	3.12
13	MAR02166.012	Sediment	20.3	79.7	2.16	7.7
14	MAR02166.013	Sediment	29.0	71.0	0.69	4.80
15	MAR02166.014	Sediment	27.8	72.2	0.42	2.88
Reference Material (% Recovery)			NA	NA	96	98
QC Blank			NA	NA	<0.02	<0.12

\* See Report Notes

MAR02166  
 This test report shall not be reproduced except in full, without written approval of the laboratory

# Certificate of Analysis



Issuing Laboratory SOCOTEC, Marine Department, Advanced Chemistry and Research, Etwall House, Bretby Business Park, Ashby Road, Burton-upon-Trent DE15 0YZ

Test Report ID           MAR02166  
 Issue Version            1  
 Customer Reference       HS23033 Balbriggan Sampling

Units	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
<b>Method No</b>	ICPMS-MWSED*	ICPMS-MWSED*	ICPMS-MWSED*	ICPMS-MWSED*	ICPMS-MWSED*	ICPMS-MWSED*	ICPMS-MWSED*
<b>Limit of Detection</b>	0.14	0.03	1	0.7	0.6	0.01	0.4
<b>Accreditation</b>	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS

Client Reference:	SOCOTEC Ref:	Matrix	Arsenic as As	Cadmium as Cd	Chromium as Cr	Copper as Cu	Lead as Pb	Mercury as Hg	Nickel as Ni
1	MAR02166.001	Sediment	88.7	2.95	630	354	6200	2.42	237
2	MAR02166.002	Sediment	107	4.59	532	411	2360	3.01	231
3	MAR02166.003	Sediment	112	3.89	620	500	2650	2.53	291
4	MAR02166.004	Sediment	108	4.88	634	376	460	1.63	269
5	MAR02166.005	Sediment	129	2.16	1250	1060	347	0.56	465
6	MAR02166.006	Sediment	145	5.49	1530	1820	561	1.84	359
8	MAR02166.007	Sediment	132	4.03	757	16900	769	1.20	302
9	MAR02166.008	Sediment	45.6	0.37	191	263	87.5	0.14	68.0
10	MAR02166.009	Sediment	85.1	2.51	636	482	517	0.93	262
11	MAR02166.010	Sediment	79.9	3.04	672	462	508	1.26	261
12	MAR02166.011	Sediment	43.1	0.36	220	109	1790	0.22	74.9
13	MAR02166.012	Sediment	11.3	0.18	34.2	19.4	79.9	0.16	15.8
14	MAR02166.013	Sediment	7.6	0.14	27.0	14.8	95.2	0.07	14.2
15	MAR02166.014	Sediment	6.4	0.05	23.0	5.6	14.0	0.04	9.6
Certified Reference Material 2702 (Measured Value)			39.99	0.737	297.7	108.4	112.9	0.473	74.12
Certified Reference Material 2702 (Certified Value)			45.3	0.817	352	117.7	132.8	0.447	75.4
Certified Reference Material 2702 (% Recovery)			85	72	91	94	87	102	106
QC Blank			<0.14	<0.03	<1	<0.7	<0.6	<0.01	<0.4

\* See Report Notes

MAR02166  
 This test report shall not be reproduced except in full, without written approval of the laboratory

# Certificate of Analysis



Issuing Laboratory SOCOTEC, Marine Department, Advanced Chemistry and Research, Etwall House, Bretby Business Park, Ashby Road, Burton-upon-Trent DE15 0YZ

Test Report ID           MAR02166  
 Issue Version            1  
 Customer Reference       HS23033 Balbriggan Sampling

<b>Units</b>	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)	mg/Kg (Dry Weight)
<b>Method No</b>	ICPMS-MWSED*	ICPOES-MWSED*	ICPOES-MWSED*
<b>Limit of Detection</b>	3.5	1750	2
<b>Accreditation</b>	UKAS	UKAS	N

Client Reference:	SOCOTEC Ref:	Matrix	Zinc as Zn	Aluminium as Al	Lithium as Li
1	MAR02166.001	Sediment	808	268000	244
2	MAR02166.002	Sediment	1150	285000	267
3	MAR02166.003	Sediment	1220	322000	324
4	MAR02166.004	Sediment	1230	366000	332
5	MAR02166.005	Sediment	1430	331000	424
6	MAR02166.006	Sediment	13700	441000	474
8	MAR02166.007	Sediment	16800	441000	481
9	MAR02166.008	Sediment	338	130000	103
10	MAR02166.009	Sediment	1230	419000	441
11	MAR02166.010	Sediment	1330	494000	578
12	MAR02166.011	Sediment	319	153000	142
13	MAR02166.012	Sediment	72.5	24800	28.6
14	MAR02166.013	Sediment	62.6	19700	22.2
15	MAR02166.014	Sediment	34	18200	16.7
Certified Reference Material 2702 (Measured Value)			416.2	88830	77.01
Certified Reference Material 2702 (Certified Value)			485.3	84000	78.2
Certified Reference Material 2702 (% Recovery)			86	98	99
QC Blank			<3.5	<1750	<2

\* See Report Notes

MAR02166  
 This test report shall not be reproduced except in full, without written approval of the laboratory

# Certificate of Analysis



Issuing Laboratory SOCOTEC, Marine Department, Advanced Chemistry and Research, Etwall House, Bretby Business Park, Ashby Road, Burton-upon-Trent DE15 0YZ

Test Report ID           MAR02166  
 Issue Version            1  
 Customer Reference       HS23033 Balbriggan Sampling

<b>Units</b>	µg/Kg (Dry Weight)	
<b>Method No</b>	ASC/SOP/301	
<b>Limit of Detection</b>	1	1
<b>Accreditation</b>	UKAS	UKAS

Client Reference:	SOCOTEC Ref:	Matrix	Dibutyltin (DBT)	Tributyltin (TBT)
1	MAR02166.001	Sediment	15.2	26.0
2	MAR02166.002	Sediment	118	32.8
3	MAR02166.003	Sediment	145	73.8
4	MAR02166.004	Sediment	74.5	26.5
5	MAR02166.005	Sediment	344	1463
6	MAR02166.006	Sediment	52.4	395
8	MAR02166.007	Sediment	718	3072
9	MAR02166.008	Sediment	<1	<1
10	MAR02166.009	Sediment	69.8	349
11	MAR02166.010	Sediment	91.0	208
12	MAR02166.011	Sediment	18.1	28.1
13	MAR02166.012	Sediment	<1	<1
14	MAR02166.013	Sediment	24.5	25.8
15	MAR02166.014	Sediment	<5	<5
Certified Reference Material BCR-646 (Measured Value)			613	246
Certified Reference Material BCR-646 (Certified Value)			770	480
Certified Reference Material BCR-646 (% Recovery)			80	51
QC Blank			<1	<1

MAR02166  
 This test report shall not be reproduced except in full, without written approval of the laboratory

# Certificate of Analysis



Issuing Laboratory SOCOTEC, Marine Department, Advanced Chemistry and Research, Etwall House, Bretby Business Park, Ashby Road, Burton-upon-Trent DE15 0YZ

Test Report ID           MAR02166  
 Issue Version            1  
 Customer Reference       HS23033 Balbriggan Sampling

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304
		Limit of Detection	1	1	1	1	1	1
		Accreditation	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS
Client Reference:	SOCOTEC Ref:	Matrix	ACENAPTH	ACENAPHY	ANTHRACN	BAA	BAP	BBF
1	MAR02166.001	Sediment	29.0	112	203	680	741	532
2	MAR02166.002	Sediment	31.3	141	226	774	986	795
3	MAR02166.003	Sediment	1140	7670	27400	48000	39900	27900
4	MAR02166.004	Sediment	25.0	89.4	125	566	590	457
5	MAR02166.005	Sediment	14.6	26.8	35.2	89.9	124	122
6	MAR02166.006	Sediment	74.5	253	498	1150	1070	794
8	MAR02166.007	Sediment	33.9	83.4	154	540	587	486
9	MAR02166.008	Sediment	<1	<1	1.32	3.01	3.79	3.75
10	MAR02166.009	Sediment	11.4	20.5	38.8	102	142	113
11	MAR02166.010	Sediment	6.23	17.7	34.5	111	144	134
12	MAR02166.011	Sediment	3.72	3.76	3.53	8.20	11.3	11.7
13	MAR02166.012	Sediment	5.57	20.2	109	344	322	245
14	MAR02166.013	Sediment	6.21	58.4	210	760	715	507
15	MAR02166.014	Sediment	<1	1.03	2.34	7.55	9.28	9.72
Certified Reference Material Nist 1941b (Measured Value)			32.3	51.0	117	200	196	378
Certified Reference Material Nist 1941b (Certified Value)			38.4	53.3	184	335	358	453
Certified Reference Material Nist 1941b (% Recovery)			84	96	64	60	55	83
QC Blank			<1	<1	<1	<1	<1	<1

For full analyte name see method summaries  
 - Indicates result is for an In-house Reference Material as no Certified Reference Materials are available.  
 As the method uses surrogate standards to correct for losses, the RM results are reported as percentage trueness, not recovery.  
 \* See Report Notes

# Certificate of Analysis



Issuing Laboratory SOCOTEC, Marine Department, Advanced Chemistry and Research, Etwall House, Bretby Business Park, Ashby Road, Burton-upon-Trent DE15 0YZ

Test Report ID           MAR02166  
 Issue Version            1  
 Customer Reference       HS23033 Balbriggan Sampling

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304
		Limit of Detection	1	1	1	1	1	1
		Accreditation	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS
Client Reference:	SOCOTEC Ref:	Matrix	BENZGHIP	BKF*	CHRYSENE*	DBENZAH	FLUORANT	FLUORENE
1	MAR02166.001	Sediment	353	648	713	90.6	1270	94.1
2	MAR02166.002	Sediment	517	875	821	127	1280	89.7
3	MAR02166.003	Sediment	15200	34200	44100	4780	117000	5460
4	MAR02166.004	Sediment	283	498	525	87.6	750	51.9
5	MAR02166.005	Sediment	96.0	107	103	22.0	153	33.0
6	MAR02166.006	Sediment	495	899	975	147	2250	186
8	MAR02166.007	Sediment	329	498	554	82.2	920	69.9
9	MAR02166.008	Sediment	2.96	3.84	3.30	<1	5.01	<1
10	MAR02166.009	Sediment	80.5	119	103	20.5	129	20.8
11	MAR02166.010	Sediment	95.8	132	116	25.2	171	17.6
12	MAR02166.011	Sediment	8.56	9.48	12.6	1.83	17.4	11.6
13	MAR02166.012	Sediment	159	296	310	46.9	522	13.7
14	MAR02166.013	Sediment	360	624	720	108	1210	35.9
15	MAR02166.014	Sediment	7.71	8.88	8.79	1.94	12.6	1.72
Certified Reference Material Nist 1941b (Measured Value)			210	337	327	55.5	485	54.9
Certified Reference Material Nist 1941b (Certified Value)			307	225	399	53.0	651	85.0
Certified Reference Material Nist 1941b (% Recovery)			68	150	82	105	75	65
QC Blank			<1	<1	<1	<1	<1	<1

For full analyte name see method summaries  
 - Indicates result is for an In-house Reference Material as no Certified Reference Materials are available.  
 As the method uses surrogate standards to correct for losses, the RM results are reported as percentage trueness, not recovery.  
 \* See Report Notes

# Certificate of Analysis



Issuing Laboratory SOCOTEC, Marine Department, Advanced Chemistry and Research, Etwall House, Bretby Business Park, Ashby Road, Burton-upon-Trent DE15 0YZ

Test Report ID           MAR02166  
 Issue Version            1  
 Customer Reference       HS23033 Balbriggan Sampling

<b>Units</b>	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
<b>Method No</b>	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/304	ASC/SOP/303/306
<b>Limit of Detection</b>	1	1	1	1	100
<b>Accreditation</b>	UKAS	UKAS	UKAS	UKAS	N

Client Reference:	SOCOTEC Ref:	Matrix	INDPYR	NAPTH	PHENANT	PYRENE	THC
1	MAR02166.001	Sediment	420	100	708	1030	126000
2	MAR02166.002	Sediment	628	92.9	457	1460	428000
3	MAR02166.003	Sediment	20000	2510	19800	90400	1700000
4	MAR02166.004	Sediment	358	68.0	155	921	350000
5	MAR02166.005	Sediment	111	101	89.4	195	69500
6	MAR02166.006	Sediment	620	195	993	1940	605000
8	MAR02166.007	Sediment	385	76.9	336	1000	851000
9	MAR02166.008	Sediment	3.39	1.74	2.58	4.99	11000
10	MAR02166.009	Sediment	90.9	34.1	56.4	245	112000
11	MAR02166.010	Sediment	113	26.5	53.4	203	184000
12	MAR02166.011	Sediment	8.58	3.09	10.3	50.7	359000
13	MAR02166.012	Sediment	205	12.1	69.0	549	45300
14	MAR02166.013	Sediment	467	32.4	248	1100	167000
15	MAR02166.014	Sediment	9.10	2.43	6.26	14.3	11800
Certified Reference Material Nist 1941b (Measured Value)			225	475	284	386	1220
Certified Reference Material Nist 1941b (Certified Value)			341	848	406	581	1400
Certified Reference Material Nist 1941b (% Recovery)			66	56	70	66	87~
QC Blank			<1	<1	<1	<1	<100

For full analyte name see method summaries  
 ~ Indicates result is for an In-house Reference Material as no Certified Reference Materials are available.  
 As the method uses surrogate standards to correct for losses, the RM results are reported as percentage trueness, not recovery.  
 \* See Report Notes

# Certificate of Analysis



Issuing Laboratory SOCOTEC, Marine Department, Advanced Chemistry and Research, Etwall House, Bretby Business Park, Ashby Road, Burton-upon-Trent DE15 0YZ

Test Report ID           MAR02166  
 Issue Version            1  
 Customer Reference       HS23033 Balbriggan Sampling

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.08	0.08	0.08	0.08	0.08	0.08	0.08
		Accreditation	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS
Client Reference:	SOCOTEC Ref:	Matrix	PCB28	PCB52	PCB101	PCB118	PCB138	PCB153	PCB180
1	MAR02166.001	Sediment	0.09	0.16	0.22	0.22	0.16	0.12	<0.08
2	MAR02166.002	Sediment	0.56	0.76	0.68	0.78	0.66	0.67	0.22
3	MAR02166.003	Sediment	2.87	1.90	0.81	1.08	0.49	0.56	0.31
4	MAR02166.004	Sediment	0.27	0.33	0.37	0.54	0.29	0.39	0.11
5	MAR02166.005	Sediment	0.20	0.23	0.62	1.13	0.85	0.95	0.27
6	MAR02166.006	Sediment	0.44	0.49	0.78	1.01	0.83	0.73	0.25
8	MAR02166.007	Sediment	0.37	0.45	0.62	0.93	0.50	0.84	0.25
9	MAR02166.008	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Certified Reference Material Nist 1941b (Measured Value)			3.44	5.55	5.68	4.88	3.82	5.46	3.25
Certified Reference Material Nist 1941b (Certified Value)			4.52	5.24	5.11	4.23	3.60	5.47	3.24
Certified Reference Material Nist 1941b (% Recovery)			76	106	111	115	106	100	100
QC Blank			<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08

For full analyte name see method summaries  
 - Indicates result is for an In-house Reference Material as no Certified Reference Materials are available.

# Certificate of Analysis



Issuing Laboratory SOCOTEC, Marine Department, Advanced Chemistry and Research, Etwall House, Bretby Business Park, Ashby Road, Burton-upon-Trent DE15 0YZ

Test Report ID           MAR02166  
 Issue Version            1  
 Customer Reference       HS23033 Balbriggan Sampling

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.08	0.08	0.08	0.08	0.08	0.08	0.08
		Accreditation	UKAS	UKAS	UKAS	N*	UKAS	UKAS	UKAS
Client Reference:	SOCOTEC Ref:	Matrix	PCB28	PCB52	PCB101	PCB118	PCB138	PCB153	PCB180
10	MAR02166.009	Sediment	0.36	1.39	3.11	3.96	3.22	3.18	1.27
11	MAR02166.010	Sediment	0.45	0.73	1.44	1.90	1.61	1.94	0.53
12	MAR02166.011	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
13	MAR02166.012	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
14	MAR02166.013	Sediment	<0.08	0.19	0.20	0.18	0.15	0.21	0.11
15	MAR02166.014	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Certified Reference Material Nist 1941b (Measured Value)			3.49	5.55	5.28	4.82	3.79	5.32	2.81
Certified Reference Material Nist 1941b (Certified Value)			4.52	5.24	5.11	4.23	3.60	5.47	3.24
Certified Reference Material Nist 1941b (% Recovery)			77	106	103	114	105	97	87
QC Blank			<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08

For full analyte name see method summaries  
 ~ Indicates result is for an In-house Reference Material as no Certified Reference Materials are available.  
 \* See Report Notes

# Certificate of Analysis



Issuing Laboratory SOCOTEC, Marine Department, Advanced Chemistry and Research, Etwall House, Bretby Business Park, Ashby Road, Burton-upon-Trent DE15 0YZ

Test Report ID           MAR02166  
 Issue Version            1  
 Customer Reference       HS23033 Balbriggan Sampling

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		Accreditation	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS
Client Reference:	SOCOTEC Ref:	Matrix	AHCH	BHCH	GHCH	DIELDRIN	HCB	DDE	DDT	DDD
1	MAR02166.001	Sediment	<0.1	<0.1	<0.1	0.31	<0.1	0.26	0.15	0.37
2	MAR02166.002	Sediment	<0.1	<0.1	<0.1	0.40	<0.1	1.28	2.86	5.07
3	MAR02166.003	Sediment	<0.1	<0.1	<0.1	0.12	<0.1	0.85	0.29	3.90
4	MAR02166.004	Sediment	<0.1	<0.1	<0.1	0.16	<0.1	0.36	<0.1	0.98
5	MAR02166.005	Sediment	<0.1	<0.1	<0.1	0.34	<0.1	0.24	<0.1	0.54
6	MAR02166.006	Sediment	<0.1	<0.1	<0.1	0.83	<0.1	0.57	0.14	2.88
8	MAR02166.007	Sediment	<0.1	<0.1	<0.1	0.52	<0.1	0.32	<0.1	0.92
9	MAR02166.008	Sediment	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Certified Reference Material Nist 1941b (Measured Value)			37.7	35.7	40.2	37.0	5.83	3.05	0.63	4.50
Certified Reference Material Nist 1941b (Certified Value)			40.0	40.0	40.0	40.0	5.83	3.22	1.12	4.66
Certified Reference Material Nist 1941b (% Recovery)			94~	89~	101~	92~	100	95	56	97
QC Blank			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

For full analyte name see method summaries

~ Indicates result is for an In-house Reference Material as no Certified Reference Materials are available.

MAR02166  
 This test report shall not be reproduced except in full, without written approval of the laboratory

# Certificate of Analysis



Issuing Laboratory SOCOTEC, Marine Department, Advanced Chemistry and Research, Etwall House, Bretby Business Park, Ashby Road, Burton-upon-Trent DE15 0YZ

Test Report ID           MAR02166  
 Issue Version            1  
 Customer Reference       HS23033 Balbriggan Sampling

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302	ASC/SOP/302
		Limit of Detection	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
		Accreditation	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS
Client Reference:	SOCOTEC Ref:	Matrix	AHCH	BHCH	GHCH	DIELDRIN	HCB	DDE	DDT	DDD
10	MAR02166.009	Sediment	<0.1	<0.1	<0.1	0.73	<0.1	0.55	<0.1	1.98
11	MAR02166.010	Sediment	<0.1	<0.1	<0.1	0.18	<0.1	0.83	0.28	3.04
12	MAR02166.011	Sediment	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
13	MAR02166.012	Sediment	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
14	MAR02166.013	Sediment	<0.1	<0.1	<0.1	0.14	<0.1	<0.1	<0.1	0.34
15	MAR02166.014	Sediment	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Certified Reference Material Nist 1941b (Measured Value)			39.0	35.5	39.3	39.9	6.36	2.69	0.87	4.50
Certified Reference Material Nist 1941b (Certified Value)			40.0	40.0	40.0	40.0	5.83	3.22	1.12	4.66
Certified Reference Material Nist 1941b (% Recovery)			97	89	98	100	109	84	78	96
QC Blank			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

For full analyte name see method summaries  
 - Indicates result is for an In-house Reference Material as no Certified Reference Materials are available.

# Certificate of Analysis

Issuing Laboratory SOCOTEC, Marine Department, Advanced Chemistry and Research, Etwall House, Bretby Business Park, Ashby Road, Burton-upon-Trent DE15 0YZ



Test Report ID      MAR02166

Issue Version        1

Customer Reference HS23033 Balbriggan Sampling

## REPORT NOTES

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
WSLM59*	MAR02166.001-014	Analysis was conducted by an internal SOCOTEC laboratory. UKAS accredited analysis by this laboratory is under UKAS number 1252.
ANC*	MAR02166.001-014	Analysis was conducted by an internal SOCOTEC laboratory. UKAS accredited analysis by this laboratory is under UKAS number 1252.
ICPMS-MWSED*	MAR02166.001-014	Analysis was conducted by an internal SOCOTEC laboratory. UKAS accredited analysis by this laboratory is under UKAS number 1252.
ICPOES-MWSED*	MAR02166.001-014	Analysis was conducted by an internal SOCOTEC laboratory. UKAS accredited analysis by this laboratory is under UKAS number 1252.
ASC/SOP/301	MAR02166.014	The matrix of this sample has been found to interfere with the result for this test. The sample has therefore been diluted, but in doing so, the detection limit for this test has been elevated.
ASC/SOP/302	MAR02166.009-014	The Primary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. The remaining data gives the Laboratory confidence that the test has performed satisfactorily and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation, where applicable, from the affected analytes (PCB118) . These circumstances should be taken into consideration when utilising the data.
ASC/SOP/303/304	MAR02166.001-014	Benzo[k]fluoranthene is known to coelute with Benzo[j]fluoranthene and these peaks can not be resolved. It is believed Benzo[j]fluoranthene is present in these samples therefore it is suggested that the Benzo[k]fluoranthene results should be taken as a Benzo[k]fluoranthene (inc. Benzo[j]fluoranthene). Benzo[j]fluoranthene is not UKAS accredited. This should be taken into consideration when utilising the data.
ASC/SOP/303/304	MAR02166.001-014	Chrysene is known to coelute with Triphenylene and these peaks can not be resolved. It is believed Triphenylene is present in these samples therefore it is suggested that the Chrysene results should be taken as a Chrysene (inc. Triphenylene). This should be taken into consideration when utilising the data.

## DEVIATING SAMPLE STATEMENT

Deviation Code	Deviation Definition	Sample ID	Deviation Details. The following information should be taken into consideration when using the data contained within this report
D1	Holding Time Exceeded	N/A	N/A
D2	Sample Contaminated through Damaged Packaging	N/A	N/A
D3	Sample Contaminated through Sampling	N/A	N/A
D4	Inappropriate Container/Packaging	N/A	N/A
D5	Damaged in Transit	N/A	N/A
D6	Insufficient Quantity of Sample	N/A	N/A
D7	Inappropriate Headspace	N/A	N/A
D8	Retained at Incorrect Temperature	N/A	N/A
D9	Lack of Date & Time of Sampling	N/A	N/A
D10	Insufficient Sample Details	N/A	N/A
D11	Sample integrity compromised or not suitable for analysis	N/A	N/A

MAR02166

This test report shall not be reproduced except in full, without written approval of the laboratory

# Certificate of Analysis



Issuing Laboratory SOCOTEC, Marine Department, Advanced Chemistry and Research, Etwall House, Bretby Business Park, Ashby Road, Burton-upon-Trent DE15 0YZ

Test Report ID           MAR02166  
 Issue Version            1  
 Customer Reference       HS23033 Balbriggan Sampling

Method	Sample and Fraction Size	Method Summary
Total Solids	Wet Sediment	Calculation (100%-Moisture Content).Moisture content determined by drying a portion of the sample at 120°C to constant weight.
Total Organic Carbon (TOC)	Air dried and seived to <2mm	Carbonate removal and sulphurous acid/combustion at 1600°C/NDIR.
Carbonate	Air dried and seived to <2mm	Quantitative digestion with Hydrochloric Acid back titration with 1M Sodium Hydroxide to pH 7
Metals	Air dried and seived to <2mm	Microwave assisted HF/Boric extraction followed by ICP analysis.
Organotins	Wet Sediment	Solvent extraction and derivatisation followed by GC-MS analysis.
Polyaromatic Hydrocarbons (PAH)	Wet Sediment	Solvent extraction and clean up followed by GC-MS analysis.
Total Hydrocarbon Content (THC)	Wet Sediment	Solvent extraction and clean up followed by GC-FID analysis.
Polychlorinated Biphenyls (PCBs)	Air dried and seived to <2mm	Solvent extraction and clean up followed by GC-MS-MS analysis.
Organochlorine Pesticides (OCPs)	Air dried and seived to <2mm	Solvent extraction and clean up followed by GC-MS-MS analysis.

Analyte Definitions					
Analyte Abbreviation	Full Analyte name	Analyte Abbreviation	Full Analyte name	Analyte Abbreviation	Full Analyte name
ACENAPTH	Acenaphthene	C2N	C2-naphthalenes	THC	Total Hydrocarbon Content
ACENAPHY	Acenaphthylene	C3N	C3-naphthalenes	AHCH	alpha-Hexachlorocyclohexane
ANTHRACN	Anthracene	CHRYSENE	Chrysene	BHCH	beta-Hexachlorocyclohexane
BAA	Benzo[a]anthracene	DBENZA	Dibenzo[ah]anthracene	GHCH	gamma-Hexachlorocyclohexane
BAP	Benzo[a]pyrene	FLUORANT	Fluoranthene	DIELDRIN	Dieldrin
BBF	Benzo[b]fluoranthene	FLUORENE	Fluorene	HC	Hexachlorobenzene
BEP	Benzo[e]pyrene	INDPYR	Indeno[1,2,3-cd]pyrene	DDD	p,p'-Dichlorodiphenyldichloroethane
BENZGHIP	Benzo[ghi]perylene	NAPTH	Naphthalene	DDE	p,p'-Dichlorodiphenyldichloroethylene
BKF	Benzo[k]fluoranthene	PERYLENE	Perylene	DDT	p,p'-Dichlorodiphenyltrichloroethane
C1N	C1-naphthalenes	PHENANT	Phenanthrene		
C1PHEN	C1-phenanthrene	PYRENE	Pyrene		

MAR02166  
 This test report shall not be reproduced except in full, without written approval of the laboratory

## **APPENDIX D: RILTA / WAC SUITE RESULTS**



Environmental  
Chemistry

## Certificate of Analysis

**Client:** Hydrosurvey

**Project:** 24011183

**Quote:** BEC231032156 V1.3

**Project Ref:** HS23033

**Site:** Balgbriggan Harbour

**Contact:** Hugh Power

**Address:** Unit C  
Clonakilty Business and Technology Park  
Clonakilty  
Cork  
P85 FV48

**E-Mail:** hugh.power@hydrosurvey.com

**Phone:** +353 83 148 6402

**No. Samples Received:** 14

**Date Received:** 12/01/2024

**Analysis Date:** 26/01/2024

**Date Issued:** 26/01/2024

**Report Type:** Final Version 01

This report supersedes any versions previously issued by the laboratory

A handwritten signature in black ink, appearing to be 'J. Dickinson'.

Reported by Customer Service Co-Ordinator  
Julie Dickinson  
01283 554496



Client: Hydrosurvey  
Project Name: HS23033-Balgriggan Harbour  
Project No: 24011183  
Date Issued: 26/01/2024

**Samples Analysed**

<b><u>Text ID</u></b>	<b><u>Sample Reference</u></b>	<b><u>Sampling Date</u></b>	<b><u>Sample Type</u></b>	<b><u>Sample Description</u></b>
24011183-001	1	05/01/2024 13:00:00	SOLID	Soil Sample
24011183-002	2	05/01/2024 13:50:00	SOLID	Soil Sample
24011183-003	3	05/01/2024 14:09:00	SOLID	Soil Sample
24011183-004	4	05/01/2024 14:15:00	SOLID	Soil Sample
24011183-005	5	05/01/2024 14:27:00	SOLID	Soil Sample
24011183-006	6	05/01/2024 12:16:00	SOLID	Soil Sample
24011183-007	8	05/01/2024 13:12:00	SOLID	Soil Sample
24011183-008	9	05/01/2024 13:18:00	SOLID	Soil Sample
24011183-009	10	05/01/2024 11:15:00	SOLID	Soil Sample
24011183-010	11	05/01/2024 11:22:00	SOLID	Soil Sample
24011183-011	12	05/01/2024 12:52:00	SOLID	Soil Sample
24011183-012	13	05/01/2024 11:45:00	SOLID	Soil Sample
24011183-013	14	05/01/2024 11:50:00	SOLID	Soil Sample
24011183-014	15	05/01/2024 12:42:00	SOLID	Soil Sample



Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID	001		002		003		004
					Customer ID	1		2		3		4
					Sample Type	LPL	SOLID	LPL	SOLID	LPL	SOLID	LPL
					Sampling Date	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024
>C6-C8 Aliphatic HS_1D_AL	GROHSA/BTEXHSA	0.2	mg/kg <sup>^</sup>	UM		<0.243*		<0.283		<0.252		
>C7-C8 Aromatic HS_1D_AR	GROHSA/BTEXHSA	0.01	mg/kg <sup>^</sup>	UM		<0.012*		<0.014		<0.013		
>C8-C10 Aliphatic HS_1D_AL	GROHSA/BTEXHSA	0.2	mg/kg <sup>^</sup>	UM		<0.243*		<0.283		<0.252		
>C8-C10 Aromatic HS_1D_AR	GROHSA/BTEXHSA	0.04	mg/kg <sup>^</sup>	UM		<0.049*		<0.057		<0.051		
C5-C6 Aliphatic HS_1D_AL	GROHSA/BTEXHSA	0.2	mg/kg <sup>^</sup>	UM		<0.243*		<0.283		<0.252		
C5-C7 Aromatic HS_1D_AR	GROHSA/BTEXHSA	0.01	mg/kg <sup>^</sup>	UM		<0.012*		<0.014		<0.013		
Total GRO C5-C10 HS_1D_Total	GROHSA/BTEXHSA	0.2	mg/kg <sup>^</sup>	UM		<0.243*		<0.283		<0.252		
Chromium (III)	CALC_CR3	1.2	mg/kg <sup>^</sup>	N		30.2		29.7		22.6		
Antimony as Sb	ICPMSW (Dissolved)	0.01	mg/kg <sup>^</sup>	N		0.03		0.13		0.10		
Arsenic as As	ICPMSW (Dissolved)	0.01	mg/kg <sup>^</sup>	N		0.02		0.03		0.02		
Barium as Ba	ICPWATVAR (Dissolved)	0.1	mg/kg <sup>^</sup>	N		<0.1		<0.1		<0.1		
Cadmium as Cd	ICPMSW (Dissolved)	0.0002	mg/kg <sup>^</sup>	N		<0.0002		0.0007		0.0005		
Chloride as Cl	KONENS	10	mg/kg <sup>^</sup>	N		1130		4240		4080		
Total Chromium as Cr	ICPMSW (Dissolved)	0.01	mg/kg <sup>^</sup>	N		<0.01		<0.01		<0.01		
Copper as Cu	ICPMSW (Dissolved)	0.01	mg/kg <sup>^</sup>	N		<0.01		0.02		<0.01		
Lead as Pb	ICPMSW (Dissolved)	0.01	mg/kg <sup>^</sup>	N		<0.01		0.15		0.03		
Mercury as Hg	ICPMSW (Dissolved)	0.0003	mg/kg <sup>^</sup>	N		<0.0003		<0.0003		<0.0003		
Molybdenum as Mo	ICPMSW (Dissolved)	0.01	mg/kg <sup>^</sup>	N		0.24		0.93		0.82		
Nickel as Ni	ICPMSW (Dissolved)	0.01	mg/kg <sup>^</sup>	N		0.03		0.02		0.02		

Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID	004		005		006		007	
					Customer ID	4	5		6		8		
					Sample Type	SOLID	LPL	SOLID	LPL	SOLID	LPL	SOLID	
					Sampling Date	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	
>C6-C8 Aliphatic HS_1D_AL	GROHSA/BTEXHSA	0.2	mg/kg^	UM	<0.315		<0.268		<0.367		<0.334		
>C7-C8 Aromatic HS_1D_AR	GROHSA/BTEXHSA	0.01	mg/kg^	UM	<0.016		0.014		<0.018		<0.017		
>C8-C10 Aliphatic HS_1D_AL	GROHSA/BTEXHSA	0.2	mg/kg^	UM	<0.315		<0.268		<0.367		<0.334		
>C8-C10 Aromatic HS_1D_AR	GROHSA/BTEXHSA	0.04	mg/kg^	UM	<0.064		<0.054		<0.073		<0.067		
C5-C6 Aliphatic HS_1D_AL	GROHSA/BTEXHSA	0.2	mg/kg^	UM	<0.315		<0.268		<0.367		<0.334		
C5-C7 Aromatic HS_1D_AR	GROHSA/BTEXHSA	0.01	mg/kg^	UM	<0.016		<0.013		<0.018		<0.017		
Total GRO C5-C10 HS_1D_Total	GROHSA/BTEXHSA	0.2	mg/kg^	UM	<0.315		<0.268		<0.367		<0.334		
Chromium (III)	CALC_CR3	1.2	mg/kg^	N	26.3		68.9		32.3		1.70		
Antimony as Sb	ICPMSW (Dissolved)	0.01	mg/kg^	N			0.03		0.03		<0.01		
Arsenic as As	ICPMSW (Dissolved)	0.01	mg/kg^	N			0.03		0.04		0.02 c		
Barium as Ba	ICPWATVAR (Dissolved)	0.1	mg/kg^	N			<0.1		<0.1		<0.1		
Cadmium as Cd	ICPMSW (Dissolved)	0.0002	mg/kg^	N			<0.0002		<0.0002		<0.0002		
Chloride as Cl	KONENS	10	mg/kg^	N			4560		12300		11500		
Total Chromium as Cr	ICPMSW (Dissolved)	0.01	mg/kg^	N			<0.01		<0.01		<0.01 c		
Copper as Cu	ICPMSW (Dissolved)	0.01	mg/kg^	N			0.03		<0.01		0.05 c		
Lead as Pb	ICPMSW (Dissolved)	0.01	mg/kg^	N			<0.01		<0.01		<0.01		
Mercury as Hg	ICPMSW (Dissolved)	0.0003	mg/kg^	N			<0.0003		<0.0003		<0.0003		
Molybdenum as Mo	ICPMSW (Dissolved)	0.01	mg/kg^	N			0.64		0.22		0.44		
Nickel as Ni	ICPMSW (Dissolved)	0.01	mg/kg^	N			0.02		<0.01		<0.01 c		

Client: Hydrosurvey  
 Project Name: HS23033-Balgriggin Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID		008		009		010		011		
					Customer ID		9		10		11		12		
					Sample Type		LPL	SOLID	LPL	SOLID	LPL	SOLID	LPL	SOLID	LPL
					Sampling Date		05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024
>C6-C8 Aliphatic HS_1D_AL	GROHSA/BTEXHSA	0.2	mg/kg^	UM		<0.346		<0.324		<0.346					
>C7-C8 Aromatic HS_1D_AR	GROHSA/BTEXHSA	0.01	mg/kg^	UM		<0.017		<0.016		<0.017					
>C8-C10 Aliphatic HS_1D_AL	GROHSA/BTEXHSA	0.2	mg/kg^	UM		<0.346* B		<0.324		<0.346					
>C8-C10 Aromatic HS_1D_AR	GROHSA/BTEXHSA	0.04	mg/kg^	UM		<0.069* B		<0.065		<0.069					
C5-C6 Aliphatic HS_1D_AL	GROHSA/BTEXHSA	0.2	mg/kg^	UM		<0.346		<0.324		<0.346					
C5-C7 Aromatic HS_1D_AR	GROHSA/BTEXHSA	0.01	mg/kg^	UM		<0.017		<0.016		<0.017					
Total GRO C5-C10 HS_1D_Total	GROHSA/BTEXHSA	0.2	mg/kg^	UM		<0.346		<0.324		<0.346					
Chromium (III)	CALC_CR3	1.2	mg/kg^	N		17.4		31.7		47.4					
Antimony as Sb	ICPMSW (Dissolved)	0.01	mg/kg^	N		<0.01		0.03		0.02				0.02	
Arsenic as As	ICPMSW (Dissolved)	0.01	mg/kg^	N		0.03		0.03		0.02				0.03	
Barium as Ba	ICPWATVAR (Dissolved)	0.1	mg/kg^	N		<0.1		<0.1		<0.1				<0.1	
Cadmium as Cd	ICPMSW (Dissolved)	0.0002	mg/kg^	N		<0.0002		<0.0002		<0.0002				<0.0002	
Chloride as Cl	KONENS	10	mg/kg^	N		2960		7940		9350				4110	
Total Chromium as Cr	ICPMSW (Dissolved)	0.01	mg/kg^	N		<0.01		<0.01 c		<0.01 c				<0.01	
Copper as Cu	ICPMSW (Dissolved)	0.01	mg/kg^	N		<0.01		<0.01 c		<0.01 c				0.02	
Lead as Pb	ICPMSW (Dissolved)	0.01	mg/kg^	N		<0.01		<0.01		<0.01				<0.01	
Mercury as Hg	ICPMSW (Dissolved)	0.0003	mg/kg^	N		<0.0003		<0.0003		<0.0003				<0.0003	
Molybdenum as Mo	ICPMSW (Dissolved)	0.01	mg/kg^	N		<0.01		0.46		0.24				0.13	
Nickel as Ni	ICPMSW (Dissolved)	0.01	mg/kg^	N		<0.01		<0.01 c		<0.01 c				<0.01	

Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID	011		012		013		014	
					Customer ID	12	13		14		15		
					Sample Type	SOLID	LPL	SOLID	LPL	SOLID	LPL	SOLID	
					Sampling Date	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	
>C6-C8 Aliphatic HS_1D_AL	GROHSA/BTEXHSA	0.2	mg/kg^	UM	<0.267		<0.255		<0.249		<0.249		
>C7-C8 Aromatic HS_1D_AR	GROHSA/BTEXHSA	0.01	mg/kg^	UM	<0.013		<0.013		<0.013		<0.013		
>C8-C10 Aliphatic HS_1D_AL	GROHSA/BTEXHSA	0.2	mg/kg^	UM	<0.267		<0.255		<0.249		<0.249		
>C8-C10 Aromatic HS_1D_AR	GROHSA/BTEXHSA	0.04	mg/kg^	UM	<0.053		<0.052		<0.051		<0.051		
C5-C6 Aliphatic HS_1D_AL	GROHSA/BTEXHSA	0.2	mg/kg^	UM	<0.267		<0.255		<0.249		<0.249		
C5-C7 Aromatic HS_1D_AR	GROHSA/BTEXHSA	0.01	mg/kg^	UM	<0.013		<0.013		<0.013		<0.013		
Total GRO C5-C10 HS_1D_Total	GROHSA/BTEXHSA	0.2	mg/kg^	UM	<0.267		<0.255		<0.249		<0.249		
Chromium (III)	CALC_CR3	1.2	mg/kg^	N	35.7		91.1		12.3		9.30		
Antimony as Sb	ICPMSW (Dissolved)	0.01	mg/kg^	N			0.06		0.05 c		<0.01 c		
Arsenic as As	ICPMSW (Dissolved)	0.01	mg/kg^	N			0.06		0.05		0.04 c		
Barium as Ba	ICPWATVAR (Dissolved)	0.1	mg/kg^	N			<0.1		<0.1		<0.1		
Cadmium as Cd	ICPMSW (Dissolved)	0.0002	mg/kg^	N			0.0003		0.0003 c		<0.0002 c		
Chloride as Cl	KONENS	10	mg/kg^	N			1810		1600		1950		
Total Chromium as Cr	ICPMSW (Dissolved)	0.01	mg/kg^	N			<0.01		<0.01 c		<0.01 c		
Copper as Cu	ICPMSW (Dissolved)	0.01	mg/kg^	N			0.04		0.03 c		0.03 c		
Lead as Pb	ICPMSW (Dissolved)	0.01	mg/kg^	N			0.03		0.03		<0.01 c		
Mercury as Hg	ICPMSW (Dissolved)	0.0003	mg/kg^	N			<0.0003		<0.0003		<0.0003 c		
Molybdenum as Mo	ICPMSW (Dissolved)	0.01	mg/kg^	N			0.41		0.73 c		<0.01 c		
Nickel as Ni	ICPMSW (Dissolved)	0.01	mg/kg^	N			<0.01		<0.01 c		<0.01 c		



Client: Hydrosurvey  
 Project Name: HS23033-Balbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID		001		002		003		004	
					Customer ID	1	2	3	4					
					Sample Type	LPL	SOLID	LPL	SOLID	LPL	SOLID	LPL		
					Sampling Date	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024		
Phenol Index	SFAPI	0.5	mg/kg <sup>^</sup>	N	<0.5		<0.5		<0.5		<0.5		<0.5	
Selenium as Se	ICPMSW (Dissolved)	0.01	mg/kg <sup>^</sup>	N	<0.01		0.02		<0.01		0.02		<0.01	
Total Sulphur as SO4	ICPWATVAR (Dissolved)	30	mg/kg <sup>^</sup>	N	718		1280		1870		1420		1870	
TDS as mg/kg	PHCONDW	700	mg/kg <sup>^</sup>	N	3870		11600		12000		16600		12000	
Leached Organic Carbon	WSLM13	2	mg/kg <sup>^</sup>	N	45.5		70.5		63.2		81.5		63.2	
Fluoride as F	ISEF	1	mg/kg <sup>^</sup>	N	5		4		4		4		4	
Zinc as Zn	ICPMSW (Dissolved)	0.02	mg/kg <sup>^</sup>	N	<0.02		0.09		0.06		0.08		0.06	
Conductivity at 25°C	PHCONDW	100	µS/cm	N	571		1720		1780		2490		1780	
pH	PHCONDW	1	pH units	N	8.5		8.2		8.1		8.1		8.1	
TDS as mg/l	PHCONDW	70	mg/l	N	388		1170		1210		1690		1210	
ANC	ANC	0.04	mol/kg <sup>^</sup>	N		0.24		1.12		0.64			0.64	
pH (2.5:1 extraction)	PHSOIL	1	pH units	UM		8.1*		7.9		7.8			7.8	
TDS as mg/L	WSLM27	5	mg/l	N	324		962		984		1440		984	
Chloride as Cl	KONENS	1	mg/l	U	113		427		412		629		412	
Chromium (VI) as Cr	KONENS	0.1	mg/kg <sup>^</sup>	N	<0.1		<0.1		<0.1		<0.1		<0.1	
Phenol Index	SFAPI	0.05	mg/l	U	<0.05		<0.05		<0.05		<0.05		<0.05	
Fluoride as F	ISEF	0.1	mg/l	U	0.5		0.4		0.4		0.4		0.4	
Total Organic Carbon	WSLM59	0.02	% m/m <sup>^</sup>	U		0.86*		1.39		1.19			1.19	
LOI @ 450°C	LOI(%MM)	0.2	% m/m <sup>^</sup>	N		2.5		4.3		3.6			3.6	

Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID	004		005		006		007	
					Customer ID	4		5		6		8	
					Sample Type	SOLID	LPL	SOLID	LPL	SOLID	LPL	SOLID	
					Sampling Date	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	
Phenol Index	SFAPI	0.5	mg/kg^	N			<0.5		<0.5			<0.5	
Selenium as Se	ICPMSW (Dissolved)	0.01	mg/kg^	N			<0.01		0.02			0.02	
Total Sulphur as SO4	ICPWATVAR (Dissolved)	30	mg/kg^	N			1260		1350			2030	
TDS as mg/kg	PHCONDW	700	mg/kg^	N			12300		29600			28200	
Leached Organic Carbon	WSLM13	2	mg/kg^	N			96.1		126			95.5	
Fluoride as F	ISEF	1	mg/kg^	N			5		5			5	
Zinc as Zn	ICPMSW (Dissolved)	0.02	mg/kg^	N			0.06		<0.02			0.09 c	
Conductivity at 25°C	PHCONDW	100	µS/cm	N			1840		4520			4340	
pH	PHCONDW	1	pH units	N			8.5		8.5			8.1	
TDS as mg/l	PHCONDW	70	mg/l	N			1250		3070			2950	
ANC	ANC	0.04	mol/kg^	N		2.00		3.12		3.28			4.32
pH (2.5:1 extraction)	PHSOIL	1	pH units	UM		8.0		7.3		7.6			7.7
TDS as mg/L	WSLM27	5	mg/l	N			1010		2650			2630	
Chloride as Cl	KONENS	1	mg/l	U			462		1280			1200	
Chromium (VI) as Cr	KONENS	0.1	mg/kg^	N		<0.1		<0.1		<0.1		<0.1	
Phenol Index	SFAPI	0.05	mg/l	U			<0.05		<0.05			<0.05	
Fluoride as F	ISEF	0.1	mg/l	U			0.5		0.5			0.5	
Total Organic Carbon	WSLM59	0.02	% m/m^	U		1.96		5.45		2.29			2.27
LOI @ 450°C	LOI(%MM)	0.2	% m/m^	N		5.6		6.1		7.6			7.2

Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID		008		009		010		011	
					Customer ID	9	10	11	12					
					Sample Type	LPL	SOLID	LPL	SOLID	LPL	SOLID	LPL		
					Sampling Date	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024		
Phenol Index	SFAPI	0.5	mg/kg^	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Selenium as Se	ICPMSW (Dissolved)	0.01	mg/kg^	N	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	0.02	<0.01	<0.01	<0.01
Total Sulphur as SO4	ICPWATVAR (Dissolved)	30	mg/kg^	N	465	1390	1390	1390	1690	1690	1690	1170	1170	1170
TDS as mg/kg	PHCONDW	700	mg/kg^	N	7940	20700	20700	20700	24100	24100	24100	11300	11300	11300
Leached Organic Carbon	WSLM13	2	mg/kg^	N	7.2	127	127	127	151	151	151	51.3	51.3	51.3
Fluoride as F	ISEF	1	mg/kg^	N	<1	4	4	4	2	2	2	3	3	3
Zinc as Zn	ICPMSW (Dissolved)	0.02	mg/kg^	N	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	0.04	0.04
Conductivity at 25°C	PHCONDW	100	µS/cm	N	1180	3130	3130	3130	3680	3680	3680	1680	1680	1680
pH	PHCONDW	1	pH units	N	8.6	8.6	8.6	8.6	8.6	8.6	8.6	7.9	7.9	7.9
TDS as mg/l	PHCONDW	70	mg/l	N	802	2130	2130	2130	2500	2500	2500	1140	1140	1140
ANC	ANC	0.04	mol/kg^	N		2.72	2.72	2.72	3.60	3.60	3.60	5.20	5.20	5.20
pH (2.5:1 extraction)	PHSOIL	1	pH units	UM		8.1	8.1	8.1	7.8	7.8	7.8	7.9	7.9	7.9
TDS as mg/L	WSLM27	5	mg/l	N	692	1770	1770	1770	2020	2020	2020	965	965	965
Chloride as Cl	KONENS	1	mg/l	U	299	816	816	816	970	970	970	415	415	415
Chromium (VI) as Cr	KONENS	0.1	mg/kg^	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenol Index	SFAPI	0.05	mg/l	U	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoride as F	ISEF	0.1	mg/l	U	0.1	0.4	0.4	0.4	0.2	0.2	0.2	0.3	0.3	0.3
Total Organic Carbon	WSLM59	0.02	% m/m^	U		0.13	0.13	0.13	2.36	2.36	2.36	2.86	2.86	2.86
LOI @ 450°C	LOI(%MM)	0.2	% m/m^	N		0.8	0.8	0.8	6.2	6.2	6.2	7.7	7.7	7.7

Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID	012		013		014		
					Customer ID	13		14		15		
					Sample Type	SOLID	LPL	SOLID	LPL	SOLID	LPL	SOLID
					Sampling Date	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024
Phenol Index	SFAPI	0.5	mg/kg^	N		<0.5		<0.5		<0.5		
Selenium as Se	ICPMSW (Dissolved)	0.01	mg/kg^	N		0.04		<0.01 c		<0.01 c		
Total Sulphur as SO4	ICPWATVAR (Dissolved)	30	mg/kg^	N		855		815		348		
TDS as mg/kg	PHCONDW	700	mg/kg^	N		5280		4870		5630		
Leached Organic Carbon	WSLM13	2	mg/kg^	N		22.3		33.9		10.7		
Fluoride as F	ISEF	1	mg/kg^	N		2		2		<1		
Zinc as Zn	ICPMSW (Dissolved)	0.02	mg/kg^	N		0.06		0.05		<0.02 c		
Conductivity at 25°C	PHCONDW	100	µS/cm	N		781		720		832		
pH	PHCONDW	1	pH units	N		8.1		8.2		8.5		
TDS as mg/l	PHCONDW	70	mg/l	N		531		490		566		
ANC	ANC	0.04	mol/kg^	N	11.1		2.16		4.08		1.76	
pH (2.5:1 extraction)	PHSOIL	1	pH units	UM	8.1		8.4		8.6		8.4	
TDS as mg/L	WSLM27	5	mg/l	N		466		390		480		
Chloride as Cl	KONENS	1	mg/l	U		182		161		196		
Chromium (VI) as Cr	KONENS	0.1	mg/kg^	N	<0.1		<0.1		<0.1		<0.1	
Phenol Index	SFAPI	0.05	mg/l	U		<0.05		<0.05		<0.05		
Fluoride as F	ISEF	0.1	mg/l	U		0.2		0.2		0.1		
Total Organic Carbon	WSLM59	0.02	% m/m^	U	0.62		1.13		0.39		0.18	
LOI @ 450°C	LOI(%MM)	0.2	% m/m^	N	2.6		2.5		1.2		1.0	



Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



Analysis Results

Analysis	Method Code	MDL	Units	Accred.	Sample ID 001		Sample ID 002		Sample ID 003		Sample ID 004	
					Customer ID 1		Customer ID 2		Customer ID 3		Customer ID 4	
					LPL	SOLID	LPL	SOLID	LPL	SOLID	LPL	
					Sampling Date 05/01/2024		Sampling Date 05/01/2024		Sampling Date 05/01/2024		Sampling Date 05/01/2024	
Leached Organic Carbon	TOCW	0.4	mg/l	U	4.56		7.10		6.38		8.29	
Antimony as Sb	ICPMSS	0.1	mg/kg^	U		0.5*		1.6		1.2		
Arsenic as As	ICPMSS	0.3	mg/kg^	UM		8.4*		8.3		8.8		
Cadmium as Cd	ICPMSS	0.2	mg/kg^	UM		0.2*		0.5		0.5		
Copper as Cu	ICPMSS	1.6	mg/kg^	UM		22.4*		675.7		45.1		
Lead as Pb	ICPMSS	0.7	mg/kg^	UM		32.4*		98.8		100.6		
Mercury as Hg	ICPMSS	0.5	mg/kg^	UM		<0.5*		<0.5		<0.5		
Molybdenum as Mo	ICPMSS	0.5	mg/kg^	UM		0.9*		2.3		1.5		
Nickel as Ni	ICPMSS	2	mg/kg^	UM		25.0*		21.3		21.4		
Selenium as Se	ICPMSS	0.5	mg/kg^	UM		<0.5*		<0.5		<0.5		
Total Chromium as Cr	ICPMSS	1.2	mg/kg^	UM		30.2*		29.7		22.6		
Zinc as Zn	ICPMSS	16	mg/kg^	UM		58.6*		218.7		101.9		
Barium as Ba	ICPSOIL	0.5	mg/kg^	UM		53.1*		181		83.1		
Antimony as Sb	ICPMSW (Dissolved)	0.001	mg/l	U	0.003		0.013		0.010		0.005	
Arsenic as As	ICPMSW (Dissolved)	0.001	mg/l	U	0.002		0.003		0.002		0.004	
Cadmium as Cd	ICPMSW (Dissolved)	0.00002	mg/l	U	<0.00002		0.00007		0.00005		0.00007	
Total Chromium as Cr	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001		<0.001		<0.001		<0.001	
Copper as Cu	ICPMSW (Dissolved)	0.001	mg/l	U	0.001		0.002		0.001		0.002	
Lead as Pb	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001		0.015		0.003		0.002	

Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID	004		005		006		007	
					Customer ID	4	5		6		8		
					Sample Type	SOLID	LPL	SOLID	LPL	SOLID	LPL	SOLID	
					Sampling Date	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	
Leached Organic Carbon	TOCW	0.4	mg/l	U			9.74		13.1			9.98	
Antimony as Sb	ICPMSS	0.1	mg/kg^	U	1.1			1.3		1.0			<0.1
Arsenic as As	ICPMSS	0.3	mg/kg^	UM	10.4			18.0		13.2			1.2
Cadmium as Cd	ICPMSS	0.2	mg/kg^	UM	0.6			0.4		0.6			<0.2
Copper as Cu	ICPMSS	1.6	mg/kg^	UM	46.4			160.1		157.1			<1.6
Lead as Pb	ICPMSS	0.7	mg/kg^	UM	48.4			42.2		59.4			1.2
Mercury as Hg	ICPMSS	0.5	mg/kg^	UM	<0.5			<0.5		<0.5			<0.5
Molybdenum as Mo	ICPMSS	0.5	mg/kg^	UM	2.4			4.3		1.8			<0.5
Nickel as Ni	ICPMSS	2	mg/kg^	UM	23.8			60.5		25.5			2.4
Selenium as Se	ICPMSS	0.5	mg/kg^	UM	<0.5			<0.5		<0.5			<0.5
Total Chromium as Cr	ICPMSS	1.2	mg/kg^	UM	26.3			68.9		32.3			1.7
Zinc as Zn	ICPMSS	16	mg/kg^	UM	120.7			154.2		681.5			<16.0
Barium as Ba	ICPSOIL	0.5	mg/kg^	UM	43.6			66.5		53.9			2.74
Antimony as Sb	ICPMSW (Dissolved)	0.001	mg/l	U			0.003		0.003			0.001	
Arsenic as As	ICPMSW (Dissolved)	0.001	mg/l	U			0.003		0.004			0.002 c	
Cadmium as Cd	ICPMSW (Dissolved)	0.00002	mg/l	U			<0.00002		<0.00002			0.00002	
Total Chromium as Cr	ICPMSW (Dissolved)	0.001	mg/l	U			<0.001		<0.001			<0.001 c	
Copper as Cu	ICPMSW (Dissolved)	0.001	mg/l	U			0.003		<0.001			0.005 c	
Lead as Pb	ICPMSW (Dissolved)	0.001	mg/l	U			<0.001		<0.001			<0.001	

Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID		008		009		010		011		
					Customer ID		9		10		11		12		
					Sample Type		LPL	SOLID	LPL	SOLID	LPL	SOLID	LPL	SOLID	LPL
					Sampling Date		05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	
Leached Organic Carbon	TOCW	0.4	mg/l	U	0.73			13.0			15.7			5.18	
Antimony as Sb	ICPMSS	0.1	mg/kg^	U		<0.1		0.7			1.2				
Arsenic as As	ICPMSS	0.3	mg/kg^	UM		6.6		23.9			11.7				
Cadmium as Cd	ICPMSS	0.2	mg/kg^	UM		<0.2		0.5			0.7				
Copper as Cu	ICPMSS	1.6	mg/kg^	UM		11.2		59.7			1146				
Lead as Pb	ICPMSS	0.7	mg/kg^	UM		10.4		51.8			70.0				
Mercury as Hg	ICPMSS	0.5	mg/kg^	UM		<0.5		<0.5			<0.5				
Molybdenum as Mo	ICPMSS	0.5	mg/kg^	UM		<0.5		1.3			2.8				
Nickel as Ni	ICPMSS	2	mg/kg^	UM		21.4		28.2			30.6				
Selenium as Se	ICPMSS	0.5	mg/kg^	UM		<0.5		<0.5			<0.5				
Total Chromium as Cr	ICPMSS	1.2	mg/kg^	UM		17.4		31.7			47.4				
Zinc as Zn	ICPMSS	16	mg/kg^	UM		34.2		152.5			986.4				
Barium as Ba	ICPSOIL	0.5	mg/kg^	UM		19.8		47.2			136				
Antimony as Sb	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001			0.003			0.002			0.002	
Arsenic as As	ICPMSW (Dissolved)	0.001	mg/l	U	0.003			0.003			0.002			0.003	
Cadmium as Cd	ICPMSW (Dissolved)	0.00002	mg/l	U	<0.00002			<0.00002			<0.00002			0.00002	
Total Chromium as Cr	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001			<0.001 c			<0.001 c			<0.001	
Copper as Cu	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001			<0.001 c			<0.001 c			0.002	
Lead as Pb	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001			<0.001			<0.001			<0.001	

Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID	011		012		013		014	
					Customer ID	12		13		14		15	
					Sample Type	SOLID	LPL	SOLID	LPL	SOLID	LPL	SOLID	
					Sampling Date	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	
Leached Organic Carbon	TOCW	0.4	mg/l	U			2.24		3.41			1.08	
Antimony as Sb	ICPMSS	0.1	mg/kg^	U	0.4			3.2		0.3			0.3
Arsenic as As	ICPMSS	0.3	mg/kg^	UM	7.5			8.7		5.1			6.0
Cadmium as Cd	ICPMSS	0.2	mg/kg^	UM	0.4			1.5		<0.2			0.2
Copper as Cu	ICPMSS	1.6	mg/kg^	UM	39.8			377.6		14.1			9.2
Lead as Pb	ICPMSS	0.7	mg/kg^	UM	48.7			182.1		12.5			27.4
Mercury as Hg	ICPMSS	0.5	mg/kg^	UM	<0.5			<0.5		<0.5			<0.5
Molybdenum as Mo	ICPMSS	0.5	mg/kg^	UM	1.1			3.2		0.6			0.5
Nickel as Ni	ICPMSS	2	mg/kg^	UM	28.2			50.3		10.3			8.3
Selenium as Se	ICPMSS	0.5	mg/kg^	UM	<0.5			<0.5		<0.5			<0.5
Total Chromium as Cr	ICPMSS	1.2	mg/kg^	UM	35.7			91.1		12.3			9.3
Zinc as Zn	ICPMSS	16	mg/kg^	UM	122.2			1510		51.8			45.4
Barium as Ba	ICPSOIL	0.5	mg/kg^	UM	52.0			179		16.3			14.0
Antimony as Sb	ICPMSW (Dissolved)	0.001	mg/l	U			0.006		0.005 c			<0.001 c	
Arsenic as As	ICPMSW (Dissolved)	0.001	mg/l	U			0.006		0.005			0.004 c	
Cadmium as Cd	ICPMSW (Dissolved)	0.00002	mg/l	U			0.00003		0.00003 c			<0.00002 c	
Total Chromium as Cr	ICPMSW (Dissolved)	0.001	mg/l	U			<0.001		<0.001 c			<0.001 c	
Copper as Cu	ICPMSW (Dissolved)	0.001	mg/l	U			0.004		0.003 c			0.003 c	
Lead as Pb	ICPMSW (Dissolved)	0.001	mg/l	U			0.003		0.003			<0.001 c	



Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID	001		002		003		004
					Customer ID	1		2		3		4
					Sample Type	LPL	SOLID	LPL	SOLID	LPL	SOLID	LPL
					Sampling Date	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024
Mercury as Hg	ICPMSW (Dissolved)	0.00003	mg/l	U	<0.00003		<0.00003		<0.00003		<0.00003	
Molybdenum as Mo	ICPMSW (Dissolved)	0.001	mg/l	U	0.024		0.094		0.083		0.056	
Nickel as Ni	ICPMSW (Dissolved)	0.001	mg/l	U	0.003		0.002		0.002		0.003	
Selenium as Se	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001		0.002		0.001		0.002	
Zinc as Zn	ICPMSW (Dissolved)	0.002	mg/l	U	<0.002		0.009		0.006		0.008	
Barium as Ba	ICPWATVAR (Dissolved)	0.01	mg/l	U	<0.01		0.01		<0.01		0.01	
Total Sulphur as SO4	ICPWATVAR (Dissolved)	3	mg/l	U	72		129		189		145	
MTBE	BTEXHSA	20	µg/kg^	U		<24* <sub>B</sub>		<28* <sub>B</sub>		<25* <sub>B</sub>		
Benzene HS_1D_AR	BTEXHSA	10	µg/kg^	UM		<12*		<14		<13		
Ethylbenzene HS_1D_AR	BTEXHSA	10	µg/kg^	UM		<12*		<14		<13		
m/p-Xylene HS_1D_AR	BTEXHSA	20	µg/kg^	UM		<24*		<28		<25		
o-Xylene HS_1D_AR	BTEXHSA	10	µg/kg^	UM		<12*		<14		<13		
Toluene HS_1D_AR	BTEXHSA	10	µg/kg^	UM		<12*		<14		<13		
Benzene HS_1D_AR	BTEXHSA	0.01	mg/kg^	UM		<0.012*		<0.014		<0.013		
Ethylbenzene HS_1D_AR	BTEXHSA	0.01	mg/kg^	UM		<0.012*		<0.014		<0.013		
m/p-Xylene HS_1D_AR	BTEXHSA	0.02	mg/kg^	UM		<0.024*		<0.028		<0.025		
o-Xylene HS_1D_AR	BTEXHSA	0.01	mg/kg^	UM		<0.012*		<0.014		<0.013		
Toluene HS_1D_AR	BTEXHSA	0.01	mg/kg^	UM		<0.012*		<0.014		<0.013		
Total BTEX HS_1D_AR	BTEXHSA	0.06	mg/kg^	UM		<0.073*		<0.085		<0.076		

Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID	004		005		006		007	
					Customer ID	4	5		6		8		
					Sample Type	SOLID	LPL	SOLID	LPL	SOLID	LPL	SOLID	
					Sampling Date	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	
Mercury as Hg	ICPMSW (Dissolved)	0.00003	mg/l	U		<0.00003		<0.00003		<0.00003			
Molybdenum as Mo	ICPMSW (Dissolved)	0.001	mg/l	U		0.065		0.023		0.046			
Nickel as Ni	ICPMSW (Dissolved)	0.001	mg/l	U		0.002		<0.001		0.001 c			
Selenium as Se	ICPMSW (Dissolved)	0.001	mg/l	U		0.001		0.002		0.002			
Zinc as Zn	ICPMSW (Dissolved)	0.002	mg/l	U		0.006		<0.002		0.009 c			
Barium as Ba	ICPWATVAR (Dissolved)	0.01	mg/l	U		<0.01		<0.01		<0.01			
Total Sulphur as SO4	ICPWATVAR (Dissolved)	3	mg/l	U		128		140		212			
MTBE	BTEXHSA	20	µg/kg^	U		<32* B		<27* B		<37* B			<33* B
Benzene HS_1D_AR	BTEXHSA	10	µg/kg^	UM		<16		<13		<18			<17
Ethylbenzene HS_1D_AR	BTEXHSA	10	µg/kg^	UM		<16		<13		<18			<17
m/p-Xylene HS_1D_AR	BTEXHSA	20	µg/kg^	UM		<32		<27		<37			<33
o-Xylene HS_1D_AR	BTEXHSA	10	µg/kg^	UM		<16		<13		<18			<17
Toluene HS_1D_AR	BTEXHSA	10	µg/kg^	UM		<16		14		<18			<17
Benzene HS_1D_AR	BTEXHSA	0.01	mg/kg^	UM		<0.016		<0.013		<0.018			<0.017
Ethylbenzene HS_1D_AR	BTEXHSA	0.01	mg/kg^	UM		<0.016		<0.013		<0.018			<0.017
m/p-Xylene HS_1D_AR	BTEXHSA	0.02	mg/kg^	UM		<0.032		<0.027		<0.037			<0.033
o-Xylene HS_1D_AR	BTEXHSA	0.01	mg/kg^	UM		<0.016		<0.013		<0.018			<0.017
Toluene HS_1D_AR	BTEXHSA	0.01	mg/kg^	UM		<0.016		0.014		<0.018			<0.017
Total BTEX HS_1D_AR	BTEXHSA	0.06	mg/kg^	UM		<0.095		0.081		<0.110			<0.100

Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID		008		009		010		011		
					Customer ID		9		10		11		12		
					Sample Type		LPL	SOLID	LPL	SOLID	LPL	SOLID	LPL	SOLID	LPL
					Sampling Date		05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024
Mercury as Hg	ICPMSW (Dissolved)	0.00003	mg/l	U	<0.00003		<0.00003		<0.00003		<0.00003		<0.00003		
Molybdenum as Mo	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001		0.047		0.025		0.013		0.013		
Nickel as Ni	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001		<0.001 c		0.001 c		0.001		0.001		
Selenium as Se	ICPMSW (Dissolved)	0.001	mg/l	U	<0.001		0.001		0.002		0.001		0.001		
Zinc as Zn	ICPMSW (Dissolved)	0.002	mg/l	U	<0.002		<0.002		<0.002		<0.002		0.004		
Barium as Ba	ICPWATVAR (Dissolved)	0.01	mg/l	U	<0.01		<0.01		<0.01		<0.01		<0.01		
Total Sulphur as SO4	ICPWATVAR (Dissolved)	3	mg/l	U	47		143		175		118		118		
MTBE	BTEXHSA	20	µg/kg^	U		<35		<32* B		<35* B		<35* B			
Benzene HS_1D_AR	BTEXHSA	10	µg/kg^	UM		<17		<16		<17		<17			
Ethylbenzene HS_1D_AR	BTEXHSA	10	µg/kg^	UM		<17* B		<16		<17		<17			
m/p-Xylene HS_1D_AR	BTEXHSA	20	µg/kg^	UM		<35		<32		<35		<35			
o-Xylene HS_1D_AR	BTEXHSA	10	µg/kg^	UM		<17		<16		<17		<17			
Toluene HS_1D_AR	BTEXHSA	10	µg/kg^	UM		<17		<16		<17		<17			
Benzene HS_1D_AR	BTEXHSA	0.01	mg/kg^	UM		<0.017		<0.016		<0.017		<0.017			
Ethylbenzene HS_1D_AR	BTEXHSA	0.01	mg/kg^	UM		<0.017* B		<0.016		<0.017		<0.017			
m/p-Xylene HS_1D_AR	BTEXHSA	0.02	mg/kg^	UM		<0.035		<0.032		<0.035		<0.035			
o-Xylene HS_1D_AR	BTEXHSA	0.01	mg/kg^	UM		<0.017		<0.016		<0.017		<0.017			
Toluene HS_1D_AR	BTEXHSA	0.01	mg/kg^	UM		<0.017		<0.016		<0.017		<0.017			
Total BTEX HS_1D_AR	BTEXHSA	0.06	mg/kg^	UM		<0.104		<0.097		<0.104		<0.104			

Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID	012		013		014		
					Customer ID	12	13		14		15	
					Sample Type	SOLID	LPL	SOLID	LPL	SOLID	LPL	SOLID
					Sampling Date	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024
Mercury as Hg	ICPMSW (Dissolved)	0.00003	mg/l	U		<0.00003		<0.00003		<0.00003 c		
Molybdenum as Mo	ICPMSW (Dissolved)	0.001	mg/l	U		0.041		0.073 c		<0.001 c		
Nickel as Ni	ICPMSW (Dissolved)	0.001	mg/l	U		0.001		0.001 c		<0.001 c		
Selenium as Se	ICPMSW (Dissolved)	0.001	mg/l	U		0.004		0.001 c		<0.001 c		
Zinc as Zn	ICPMSW (Dissolved)	0.002	mg/l	U		0.006		0.005		<0.002 c		
Barium as Ba	ICPWATVAR (Dissolved)	0.01	mg/l	U		<0.01		<0.01		<0.01		
Total Sulphur as SO4	ICPWATVAR (Dissolved)	3	mg/l	U		86		82		35		
MTBE	BTEXHSA	20	µg/kg^	U		<27* B		<26* B		<25* B		
Benzene HS_1D_AR	BTEXHSA	10	µg/kg^	UM		<13		<13		<13		
Ethylbenzene HS_1D_AR	BTEXHSA	10	µg/kg^	UM		<13		<13		<13		
m/p-Xylene HS_1D_AR	BTEXHSA	20	µg/kg^	UM		<27		<26		<25		
o-Xylene HS_1D_AR	BTEXHSA	10	µg/kg^	UM		<13		<13		<13		
Toluene HS_1D_AR	BTEXHSA	10	µg/kg^	UM		<13		<13		<13		
Benzene HS_1D_AR	BTEXHSA	0.01	mg/kg^	UM		<0.013		<0.013		<0.013		
Ethylbenzene HS_1D_AR	BTEXHSA	0.01	mg/kg^	UM		<0.013		<0.013		<0.013		
m/p-Xylene HS_1D_AR	BTEXHSA	0.02	mg/kg^	UM		<0.027		<0.026		<0.025		
o-Xylene HS_1D_AR	BTEXHSA	0.01	mg/kg^	UM		<0.013		<0.013		<0.013		
Toluene HS_1D_AR	BTEXHSA	0.01	mg/kg^	UM		<0.013		<0.013		<0.013		
Total BTEX HS_1D_AR	BTEXHSA	0.06	mg/kg^	UM		<0.080		<0.076		<0.075		



Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



Analysis Results

Analysis	Method Code	MDL	Units	Accred.	Sample ID	001		002		003		004
					Customer ID	1		2		3		4
					Sample Type	LPL	SOLID	LPL	SOLID	LPL	SOLID	LPL
					Sampling Date	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024
Acenaphthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		<0.10*		<0.11		0.74		
Acenaphthylene	PAHMSUS	0.08	mg/kg <sup>^</sup>	U		0.42*		<0.11		1.43		
Anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	U		0.93*		0.23		7.40		
Benzo[a]anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		3.77* <sub>B</sub>		0.83* <sub>B</sub>		21.7* <sub>B</sub>		
Benzo[a]pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		2.34*		0.68		13.3		
Benzo[b]fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		2.75*		0.82		15.3		
Benzo[g,h,i]perylene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.75*		0.29		3.54		
Benzo[k]fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		1.29*		0.39		6.11		
Chrysene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		2.40*		0.59		13.1		
Coronene	PAHMSUS	0.08	mg/kg <sup>^</sup>	N		0.20		<0.11		0.92		
Dibenzo[a,h]anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.31*		<0.11		1.48		
Fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		5.44*		1.11		38.5		
Fluorene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.34*		<0.11		2.13		
Indeno[1,2,3-cd]pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		1.01*		0.38		5.46		
Naphthalene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		<0.10*		<0.11		0.79		
Phenanthrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		2.74*		0.43		12.9		
Pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		4.30*		1.16		29.9		
Total PAH 16	PAHMSUS	1.28	mg/kg <sup>^</sup>	U		29.0*		7.47		174		
Acenaphthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		<0.10*		<0.11		0.74		

Client: Hydrosurvey  
 Project Name: HS23033-Balgriggin Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

					Sample ID		004		005		006		007	
					Customer ID		4		5		6		8	
					Sample Type		SOLID		LPL		SOLID		LPL	
					Sampling Date		05/01/2024		05/01/2024		05/01/2024		05/01/2024	
Analysis	Method Code	MDL	Units	Accred.										
Acenaphthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	<0.13		<0.11		<0.15		<0.13			
Acenaphthylene	PAHMSUS	0.08	mg/kg <sup>^</sup>	U	<0.13		<0.11		<0.15		<0.13			
Anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	U	0.32		<0.11		0.28		<0.13			
Benzo[a]anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	1.05* <sub>B</sub>		0.17* <sub>B</sub>		0.81* <sub>B</sub>		0.31* <sub>B</sub>			
Benzo[a]pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	0.72		0.17		0.55		0.25			
Benzo[b]fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	0.89		0.19		0.63		0.31			
Benzo[g,h,i]perylene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	0.26		<0.11		0.21		<0.13			
Benzo[k]fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	0.41		<0.11		0.32		0.16			
Chrysene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	0.66		<0.11		0.47		0.20			
Coronene	PAHMSUS	0.08	mg/kg <sup>^</sup>	N	<0.13		<0.11		<0.15		<0.13			
Dibenzo[a,h]anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	<0.13		<0.11		<0.15		<0.13			
Fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	1.40		0.22		1.09		0.37			
Fluorene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	<0.13		<0.11		<0.15		<0.13			
Indeno[1,2,3-cd]pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	0.37		<0.11		0.27		0.14			
Naphthalene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	<0.13		<0.11		<0.15		<0.13			
Phenanthrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	0.51		<0.11		0.41		0.14			
Pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	1.35		0.21		1.01		0.42			
Total PAH 16	PAHMSUS	1.28	mg/kg <sup>^</sup>	U	8.56		2.14		6.78		3.23			
Acenaphthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	<0.13		<0.11		<0.15		<0.13			

Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID	008		009		010		011
					Customer ID	9		10		11		12
					Sample Type	LPL	SOLID	LPL	SOLID	LPL	SOLID	LPL
					Sampling Date	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024
Acenaphthene	PAHMSUS	0.08	mg/kg^	UM		<0.14		<0.13		<0.14		
Acenaphthylene	PAHMSUS	0.08	mg/kg^	U		<0.14		<0.13		<0.14		
Anthracene	PAHMSUS	0.08	mg/kg^	U		<0.14		0.14		0.18		
Benzo[a]anthracene	PAHMSUS	0.08	mg/kg^	UM		<0.14		0.39		0.69		
Benzo[a]pyrene	PAHMSUS	0.08	mg/kg^	UM		<0.14		0.36		0.59		
Benzo[b]fluoranthene	PAHMSUS	0.08	mg/kg^	UM		<0.14		0.41		0.67		
Benzo[g,h,i]perylene	PAHMSUS	0.08	mg/kg^	UM		<0.14		0.19		0.27		
Benzo[k]fluoranthene	PAHMSUS	0.08	mg/kg^	UM		<0.14		0.17		0.29		
Chrysene	PAHMSUS	0.08	mg/kg^	UM		<0.14		0.29		0.52		
Coronene	PAHMSUS	0.08	mg/kg^	N		<0.14		<0.13		<0.14		
Dibenzo[a,h]anthracene	PAHMSUS	0.08	mg/kg^	UM		<0.14		<0.13		<0.14		
Fluoranthene	PAHMSUS	0.08	mg/kg^	UM		<0.14		0.64		0.97		
Fluorene	PAHMSUS	0.08	mg/kg^	UM		<0.14		<0.13		<0.14		
Indeno[1,2,3-cd]pyrene	PAHMSUS	0.08	mg/kg^	UM		<0.14		0.24		0.34		
Naphthalene	PAHMSUS	0.08	mg/kg^	UM		<0.14		<0.13		<0.14		
Phenanthrene	PAHMSUS	0.08	mg/kg^	UM		<0.14		0.24		0.35		
Pyrene	PAHMSUS	0.08	mg/kg^	UM		<0.14		0.72		1.02		
Total PAH 16	PAHMSUS	1.28	mg/kg^	U		<2.21		4.43		6.57		
Acenaphthene	PAHMSUS	0.08	mg/kg^	UM		<0.14		<0.13		<0.14		

Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID	012		013		014		
					Customer ID	13		14		15		
					Sample Type	SOLID	LPL	SOLID	LPL	SOLID	LPL	SOLID
					Sampling Date	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024
Acenaphthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	<0.11		<0.10		<0.10		<0.10	
Acenaphthylene	PAHMSUS	0.08	mg/kg <sup>^</sup>	U	<0.11		<0.10		<0.10		<0.10	
Anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	U	<0.11		0.25		<0.10		<0.10	
Benzo[a]anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	<0.11		1.30		<0.10		<0.10	
Benzo[a]pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	<0.11		1.32		<0.10		<0.10	
Benzo[b]fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	<0.11		1.43		<0.10		<0.10	
Benzo[g,h,i]perylene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	<0.11		0.59		<0.10		<0.10	
Benzo[k]fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	<0.11		0.62		<0.10		<0.10	
Chrysene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	<0.11		1.07		<0.10		<0.10	
Coronene	PAHMSUS	0.08	mg/kg <sup>^</sup>	N	<0.11		0.19		<0.10		<0.10	
Dibenzo[a,h]anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	<0.11		0.21		<0.10		<0.10	
Fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	<0.11		1.68		<0.10		<0.10	
Fluorene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	<0.11		<0.10		<0.10		<0.10	
Indeno[1,2,3-cd]pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	<0.11		0.72		<0.10		<0.10	
Naphthalene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	<0.11		<0.10		<0.10		<0.10	
Phenanthrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	<0.11		0.37		<0.10		<0.10	
Pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	0.11		1.92		<0.10		<0.10	
Total PAH 16	PAHMSUS	1.28	mg/kg <sup>^</sup>	U	1.71		11.9		<1.60		<1.59	
Acenaphthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	<0.11		<0.10		<0.10		<0.10	



Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



Analysis Results

Analysis	Method Code	MDL	Units	Accred.	Sample ID		001		002		003		004	
					Customer ID		1		2		3		4	
					Sample Type		LPL	SOLID	LPL	SOLID	LPL	SOLID	LPL	SOLID
					Sampling Date		05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024
Acenaphthylene	PAHMSUS	0.08	mg/kg <sup>^</sup>	U		0.42*		<0.11			1.43			
Anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	U		0.93*		0.23			7.40			
Benzo[a]anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		3.77* <sub>B</sub>		0.83* <sub>B</sub>			21.7* <sub>B</sub>			
Benzo[a]pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		2.34*		0.68			13.3			
Benzo[b]fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		2.75*		0.82			15.3			
Benzo[g,h,i]perylene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.75*		0.29			3.54			
Benzo[k]fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		1.29*		0.39			6.11			
Chrysene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		2.40*		0.59			13.1			
Coronene	PAHMSUS	0.08	mg/kg <sup>^</sup>	N		0.20		<0.11			0.92			
Dibenzo[a,h]anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.31*		<0.11			1.48			
Fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		5.44*		1.11			38.5			
Fluorene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.34*		<0.11			2.13			
Indeno[1,2,3-cd]pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		1.01*		0.38			5.46			
Naphthalene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		<0.10*		<0.11			0.79			
Phenanthrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		2.74*		0.43			12.9			
Pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		4.30*		1.16			29.9			
Total PAH 16	PAHMSUS	1.28	mg/kg <sup>^</sup>	U		29.0*		7.47			174			
Total PAH 17	PAHMSUS	1.36	mg/kg <sup>^</sup>	N		29.2		7.58			175			
PCB 101	PCBECD	5	µg/kg <sup>^</sup>	UM		<6.08*		<7.07			<6.30			

Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID	005		006		007		
					Customer ID	5		6		8		
					Sample Type	SOLID	LPL	SOLID	LPL	SOLID	LPL	SOLID
					Sampling Date	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024
Acenaphthylene	PAHMSUS	0.08	mg/kg^	U	<0.13		<0.11		<0.15		<0.13	
Anthracene	PAHMSUS	0.08	mg/kg^	U	0.32		<0.11		0.28		<0.13	
Benzo[a]anthracene	PAHMSUS	0.08	mg/kg^	UM	1.05* <sub>B</sub>		0.17* <sub>B</sub>		0.81* <sub>B</sub>		0.31* <sub>B</sub>	
Benzo[a]pyrene	PAHMSUS	0.08	mg/kg^	UM	0.72		0.17		0.55		0.25	
Benzo[b]fluoranthene	PAHMSUS	0.08	mg/kg^	UM	0.89		0.19		0.63		0.31	
Benzo[g,h,i]perylene	PAHMSUS	0.08	mg/kg^	UM	0.26		<0.11		0.21		<0.13	
Benzo[k]fluoranthene	PAHMSUS	0.08	mg/kg^	UM	0.41		<0.11		0.32		0.16	
Chrysene	PAHMSUS	0.08	mg/kg^	UM	0.66		<0.11		0.47		0.20	
Coronene	PAHMSUS	0.08	mg/kg^	N	<0.13		<0.11		<0.15		<0.13	
Dibenzo[a,h]anthracene	PAHMSUS	0.08	mg/kg^	UM	<0.13		<0.11		<0.15		<0.13	
Fluoranthene	PAHMSUS	0.08	mg/kg^	UM	1.40		0.22		1.09		0.37	
Fluorene	PAHMSUS	0.08	mg/kg^	UM	<0.13		<0.11		<0.15		<0.13	
Indeno[1,2,3-cd]pyrene	PAHMSUS	0.08	mg/kg^	UM	0.37		<0.11		0.27		0.14	
Naphthalene	PAHMSUS	0.08	mg/kg^	UM	<0.13		<0.11		<0.15		<0.13	
Phenanthrene	PAHMSUS	0.08	mg/kg^	UM	0.51		<0.11		0.41		0.14	
Pyrene	PAHMSUS	0.08	mg/kg^	UM	1.35		0.21		1.01		0.42	
Total PAH 16	PAHMSUS	1.28	mg/kg^	U	8.56		2.14		6.78		3.23	
Total PAH 17	PAHMSUS	1.36	mg/kg^	N	8.68		2.25		6.93		3.36	
PCB 101	PCBECD	5	µg/kg^	UM	<7.87		<6.70		<9.17		<8.36	

Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID		008		009		010		011	
					Customer ID	9	10	11	12					
					Sample Type	LPL	SOLID	LPL	SOLID	LPL	SOLID	LPL		
					Sampling Date	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024		
Acenaphthylene	PAHMSUS	0.08	mg/kg^	U		<0.14		<0.13		<0.14				
Anthracene	PAHMSUS	0.08	mg/kg^	U		<0.14		0.14		0.18				
Benzo[a]anthracene	PAHMSUS	0.08	mg/kg^	UM		<0.14		0.39		0.69				
Benzo[a]pyrene	PAHMSUS	0.08	mg/kg^	UM		<0.14		0.36		0.59				
Benzo[b]fluoranthene	PAHMSUS	0.08	mg/kg^	UM		<0.14		0.41		0.67				
Benzo[g,h,i]perylene	PAHMSUS	0.08	mg/kg^	UM		<0.14		0.19		0.27				
Benzo[k]fluoranthene	PAHMSUS	0.08	mg/kg^	UM		<0.14		0.17		0.29				
Chrysene	PAHMSUS	0.08	mg/kg^	UM		<0.14		0.29		0.52				
Coronene	PAHMSUS	0.08	mg/kg^	N		<0.14		<0.13		<0.14				
Dibenzo[a,h]anthracene	PAHMSUS	0.08	mg/kg^	UM		<0.14		<0.13		<0.14				
Fluoranthene	PAHMSUS	0.08	mg/kg^	UM		<0.14		0.64		0.97				
Fluorene	PAHMSUS	0.08	mg/kg^	UM		<0.14		<0.13		<0.14				
Indeno[1,2,3-cd]pyrene	PAHMSUS	0.08	mg/kg^	UM		<0.14		0.24		0.34				
Naphthalene	PAHMSUS	0.08	mg/kg^	UM		<0.14		<0.13		<0.14				
Phenanthrene	PAHMSUS	0.08	mg/kg^	UM		<0.14		0.24		0.35				
Pyrene	PAHMSUS	0.08	mg/kg^	UM		<0.14		0.72		1.02				
Total PAH 16	PAHMSUS	1.28	mg/kg^	U		<2.21		4.43		6.57				
Total PAH 17	PAHMSUS	1.36	mg/kg^	N		<2.35		4.56		6.71				
PCB 101	PCBECD	5	µg/kg^	UM		<8.65		<8.09		<8.65				

Client: Hydrosurvey  
 Project Name: HS23033-Balgriggin Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID	012		013		014		
					Customer ID	13		14		15		
					Sample Type	SOLID	LPL	SOLID	LPL	SOLID	LPL	SOLID
					Sampling Date	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024
Acenaphthylene	PAHMSUS	0.08	mg/kg^	U	<0.11		<0.10		<0.10		<0.10	
Anthracene	PAHMSUS	0.08	mg/kg^	U	<0.11		0.25		<0.10		<0.10	
Benzo[a]anthracene	PAHMSUS	0.08	mg/kg^	UM	<0.11		1.30		<0.10		<0.10	
Benzo[a]pyrene	PAHMSUS	0.08	mg/kg^	UM	<0.11		1.32		<0.10		<0.10	
Benzo[b]fluoranthene	PAHMSUS	0.08	mg/kg^	UM	<0.11		1.43		<0.10		<0.10	
Benzo[g,h,i]perylene	PAHMSUS	0.08	mg/kg^	UM	<0.11		0.59		<0.10		<0.10	
Benzo[k]fluoranthene	PAHMSUS	0.08	mg/kg^	UM	<0.11		0.62		<0.10		<0.10	
Chrysene	PAHMSUS	0.08	mg/kg^	UM	<0.11		1.07		<0.10		<0.10	
Coronene	PAHMSUS	0.08	mg/kg^	N	<0.11		0.19		<0.10		<0.10	
Dibenzo[a,h]anthracene	PAHMSUS	0.08	mg/kg^	UM	<0.11		0.21		<0.10		<0.10	
Fluoranthene	PAHMSUS	0.08	mg/kg^	UM	<0.11		1.68		<0.10		<0.10	
Fluorene	PAHMSUS	0.08	mg/kg^	UM	<0.11		<0.10		<0.10		<0.10	
Indeno[1,2,3-cd]pyrene	PAHMSUS	0.08	mg/kg^	UM	<0.11		0.72		<0.10		<0.10	
Naphthalene	PAHMSUS	0.08	mg/kg^	UM	<0.11		<0.10		<0.10		<0.10	
Phenanthrene	PAHMSUS	0.08	mg/kg^	UM	<0.11		0.37		<0.10		<0.10	
Pyrene	PAHMSUS	0.08	mg/kg^	UM	0.11		1.92		<0.10		<0.10	
Total PAH 16	PAHMSUS	1.28	mg/kg^	U	1.71		11.9		<1.60		<1.59	
Total PAH 17	PAHMSUS	1.36	mg/kg^	N	1.82		12.1		<1.70		<1.69	
PCB 101	PCBECD	5	µg/kg^	UM	<6.68		<6.37		<6.23		<6.23	



Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



Analysis Results

Analysis	Method Code	MDL	Units	Accred.	Sample ID		001		002		003		004	
					Customer ID	1	2	3	4					
					Sample Type	LPL	SOLID	LPL	SOLID	LPL	SOLID	LPL		
					Sampling Date	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024		
PCB 118	PCBECD	5	µg/kg <sup>^</sup>	UM		<6.08*		<7.07		<6.30				
PCB 138	PCBECD	5	µg/kg <sup>^</sup>	UM		<6.08*		<7.07		<6.30				
PCB 153	PCBECD	5	µg/kg <sup>^</sup>	UM		<6.08*		<7.07		<6.30				
PCB 180	PCBECD	5	µg/kg <sup>^</sup>	UM		<6.08*		<7.07		<6.30				
PCB 28	PCBECD	5	µg/kg <sup>^</sup>	UM		<6.08*		<7.07		<6.30				
PCB 52	PCBECD	5	µg/kg <sup>^</sup>	UM		<6.08*		<7.07		<6.30				
PCB 101	PCBECD	0.005	mg/kg <sup>^</sup>	UM		<0.006*		<0.007		<0.006				
PCB 118	PCBECD	0.005	mg/kg <sup>^</sup>	UM		<0.006*		<0.007		<0.006				
PCB 138	PCBECD	0.005	mg/kg <sup>^</sup>	UM		<0.006*		<0.007		<0.006				
PCB 153	PCBECD	0.005	mg/kg <sup>^</sup>	UM		<0.006*		<0.007		<0.006				
PCB 180	PCBECD	0.005	mg/kg <sup>^</sup>	UM		<0.006*		<0.007		<0.006				
PCB 28	PCBECD	0.005	mg/kg <sup>^</sup>	UM		<0.006*		<0.007		<0.006				
PCB 52	PCBECD	0.005	mg/kg <sup>^</sup>	UM		<0.006*		<0.007		<0.006				
Total PCB 7 Congeners	PCBECD	0.035	mg/kg <sup>^</sup>	UM		<0.043*		<0.050		<0.044				
Dimethylphenols	PHEHPLCUV	0.05	mg/l	U	<0.05		<0.05		<0.05		<0.05		<0.05	
Methylphenols	PHEHPLCUV	0.05	mg/l	U	<0.05		<0.05		<0.05		<0.05		<0.05	
Phenol	PHEHPLCUV	0.05	mg/l	U	<0.05		<0.05		<0.05		<0.05		<0.05	
Total Phenols	PHEHPLCUV	0.2	mg/l	U	<0.20		<0.20		<0.20		<0.20		<0.20	
Trimethylphenols	PHEHPLCUV	0.05	mg/l	U	<0.05		<0.05		<0.05		<0.05		<0.05	

Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID	004		005		006		007	
					Customer ID	4	5		6		8		
					Sample Type	SOLID	LPL	SOLID	LPL	SOLID	LPL	SOLID	
					Sampling Date	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	
PCB 118	PCBECD	5	µg/kg^	UM	<7.87		<6.70		<9.17		<8.36		
PCB 138	PCBECD	5	µg/kg^	UM	<7.87		<6.70		<9.17		<8.36		
PCB 153	PCBECD	5	µg/kg^	UM	<7.87		<6.70		<9.17		<8.36		
PCB 180	PCBECD	5	µg/kg^	UM	<7.87		<6.70		<9.17		<8.36		
PCB 28	PCBECD	5	µg/kg^	UM	<7.87		<6.70		<9.17		<8.36		
PCB 52	PCBECD	5	µg/kg^	UM	<7.87		<6.70		<9.17		<8.36		
PCB 101	PCBECD	0.005	mg/kg^	UM	<0.008		<0.007		<0.009		<0.008		
PCB 118	PCBECD	0.005	mg/kg^	UM	<0.008		<0.007		<0.009		<0.008		
PCB 138	PCBECD	0.005	mg/kg^	UM	<0.008		<0.007		<0.009		<0.008		
PCB 153	PCBECD	0.005	mg/kg^	UM	<0.008		<0.007		<0.009		<0.008		
PCB 180	PCBECD	0.005	mg/kg^	UM	<0.008		<0.007		<0.009		<0.008		
PCB 28	PCBECD	0.005	mg/kg^	UM	<0.008		<0.007		<0.009		<0.008		
PCB 52	PCBECD	0.005	mg/kg^	UM	<0.008		<0.007		<0.009		<0.008		
Total PCB 7 Congeners	PCBECD	0.035	mg/kg^	UM	<0.055		<0.047		<0.064		<0.059		
Dimethylphenols	PHEHPLCUV	0.05	mg/l	U		<0.05		<0.05		<0.05			
Methylphenols	PHEHPLCUV	0.05	mg/l	U		<0.05		<0.05		<0.05			
Phenol	PHEHPLCUV	0.05	mg/l	U		<0.05		<0.05		<0.05			
Total Phenols	PHEHPLCUV	0.2	mg/l	U		<0.20		<0.20		<0.20			
Trimethylphenols	PHEHPLCUV	0.05	mg/l	U		<0.05		<0.05		<0.05			

Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID	008		009		010		011
					Customer ID	9		10		11		12
					Sample Type	LPL	SOLID	LPL	SOLID	LPL	SOLID	LPL
					Sampling Date	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024
PCB 118	PCBECD	5	µg/kg^	UM		<8.65		<8.09		<8.65		
PCB 138	PCBECD	5	µg/kg^	UM		<8.65		<8.09		<8.65		
PCB 153	PCBECD	5	µg/kg^	UM		<8.65		<8.09		<8.65		
PCB 180	PCBECD	5	µg/kg^	UM		<8.65		<8.09		<8.65		
PCB 28	PCBECD	5	µg/kg^	UM		<8.65		<8.09		<8.65		
PCB 52	PCBECD	5	µg/kg^	UM		<8.65		<8.09		<8.65		
PCB 101	PCBECD	0.005	mg/kg^	UM		<0.009		<0.008		<0.009		
PCB 118	PCBECD	0.005	mg/kg^	UM		<0.009		<0.008		<0.009		
PCB 138	PCBECD	0.005	mg/kg^	UM		<0.009		<0.008		<0.009		
PCB 153	PCBECD	0.005	mg/kg^	UM		<0.009		<0.008		<0.009		
PCB 180	PCBECD	0.005	mg/kg^	UM		<0.009		<0.008		<0.009		
PCB 28	PCBECD	0.005	mg/kg^	UM		<0.009		<0.008		<0.009		
PCB 52	PCBECD	0.005	mg/kg^	UM		<0.009		<0.008		<0.009		
Total PCB 7 Congeners	PCBECD	0.035	mg/kg^	UM		<0.061		<0.057		<0.061		
Dimethylphenols	PHEHPLCUV	0.05	mg/l	U	<0.05		<0.05		<0.05		<0.05	
Methylphenols	PHEHPLCUV	0.05	mg/l	U	<0.05		<0.05		<0.05		<0.05	
Phenol	PHEHPLCUV	0.05	mg/l	U	<0.05		<0.05		<0.05		<0.05	
Total Phenols	PHEHPLCUV	0.2	mg/l	U	<0.20		<0.20		<0.20		<0.20	
Trimethylphenols	PHEHPLCUV	0.05	mg/l	U	<0.05		<0.05		<0.05		<0.05	

Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID	011		012		013		014	
					Customer ID	12	13	14	15				
					Sample Type	SOLID	LPL	SOLID	LPL	SOLID	LPL	SOLID	
					Sampling Date	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	
PCB 118	PCBECD	5	µg/kg^	UM	<6.68		<6.37		<6.23		<6.23		
PCB 138	PCBECD	5	µg/kg^	UM	<6.68		<6.37		<6.23		<6.23		
PCB 153	PCBECD	5	µg/kg^	UM	<6.68		<6.37		<6.23		<6.23		
PCB 180	PCBECD	5	µg/kg^	UM	<6.68		<6.37		<6.23		<6.23		
PCB 28	PCBECD	5	µg/kg^	UM	<6.68		<6.37		<6.23		<6.23		
PCB 52	PCBECD	5	µg/kg^	UM	<6.68		<6.37		<6.23		<6.23		
PCB 101	PCBECD	0.005	mg/kg^	UM	<0.007		<0.006		<0.006		<0.006		
PCB 118	PCBECD	0.005	mg/kg^	UM	<0.007		<0.006		<0.006		<0.006		
PCB 138	PCBECD	0.005	mg/kg^	UM	<0.007		<0.006		<0.006		<0.006		
PCB 153	PCBECD	0.005	mg/kg^	UM	<0.007		<0.006		<0.006		<0.006		
PCB 180	PCBECD	0.005	mg/kg^	UM	<0.007		<0.006		<0.006		<0.006		
PCB 28	PCBECD	0.005	mg/kg^	UM	<0.007		<0.006		<0.006		<0.006		
PCB 52	PCBECD	0.005	mg/kg^	UM	<0.007		<0.006		<0.006		<0.006		
Total PCB 7 Congeners	PCBECD	0.035	mg/kg^	UM	<0.047		<0.045		<0.044		<0.044		
Dimethylphenols	PHEHPLCUV	0.05	mg/l	U			<0.05		<0.05		<0.05		
Methylphenols	PHEHPLCUV	0.05	mg/l	U			<0.05		<0.05		<0.05		
Phenol	PHEHPLCUV	0.05	mg/l	U			<0.05		<0.05		<0.05		
Total Phenols	PHEHPLCUV	0.2	mg/l	U			<0.20		<0.20		<0.20		
Trimethylphenols	PHEHPLCUV	0.05	mg/l	U			<0.05		<0.05		<0.05		



Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID	001		002		003		004
					Customer ID	1		2		3		4
					Sample Type	LPL	SOLID	LPL	SOLID	LPL	SOLID	LPL
					Sampling Date	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024
>C10-C12 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	4	mg/kg <sup>^</sup>	U		<4.87*		<5.66		<5.04		
>C12-C16 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	4	mg/kg <sup>^</sup>	U		<4.87*		<5.66		19.7		
>C16-C21 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	4	mg/kg <sup>^</sup>	U		11.6*		36.0		63.6		
>C21-C35 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	10	mg/kg <sup>^</sup>	U		64.0*		136		141		
>C35-C44 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	6	mg/kg <sup>^</sup>	N		21.2		32.4		30.3		
Total TPH >C8-C40 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	20	mg/kg <sup>^</sup>	U		90.8*		199		246		
>C10-C12 (Aromatic) EH_CU_1D_AR	TPHFIDUS (Aromatic)	4	mg/kg <sup>^</sup>	U		5.39*		6.70		6.25		
>C12-C16 (Aromatic) EH_CU_1D_AR	TPHFIDUS (Aromatic)	4	mg/kg <sup>^</sup>	U		11.1*		17.1		39.9		
>C16-C21 (Aromatic) EH_CU_1D_AR	TPHFIDUS (Aromatic)	4	mg/kg <sup>^</sup>	U		49.2*		33.4		251		
>C21-C35 (Aromatic) EH_CU_1D_AR	TPHFIDUS (Aromatic)	10	mg/kg <sup>^</sup>	U		193*		159		845		
>C35-C44 (Aromatic) EH_CU_1D_AR	TPHFIDUS (Aromatic)	6	mg/kg <sup>^</sup>	N		31.6		39.8		182		
Total TPH >C8-C40 (Aromatic) EH_CU_1D_AR	TPHFIDUS (Aromatic)	20	mg/kg <sup>^</sup>	U		266*		223		1270		
>C10-C40 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	20	mg/kg <sup>^</sup>	U		90.6*		199		246		
Total TPH >C8-C40 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	20	mg/kg <sup>^</sup>	U		90.8*		199		246		
Total Moisture at 35°C	CLANDPREP	0.1	%	N		17.8		29.3		20.6		
Colour of Material	CLANDPREP		-	N		Brown/Green		Brown/Green		Brown/Green		
Major Constituents	CLANDPREP		-	N		GRAVEL		SAND		SAND		
Minor Constituents	CLANDPREP		-	N		Clay		Gravel		Gravel		
Miscellaneous Constituents	CLANDPREP		-	N		n/a		n/a		n/a		

Client: Hydrosurvey  
 Project Name: HS23033-Balgriggin Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID	005		006		007		
					Customer ID	5		6		8		
					Sample Type	SOLID	LPL	SOLID	LPL	SOLID	LPL	SOLID
					Sampling Date	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024
>C10-C12 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	4	mg/kg^	U	<6.30	<5.36	<7.34	<6.69				
>C12-C16 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	4	mg/kg^	U	<6.30	<5.36	17.1	12.5				
>C16-C21 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	4	mg/kg^	U	17.4	14.2	47.0	49.9				
>C21-C35 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	10	mg/kg^	U	67.3	34.7	125	126				
>C35-C44 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	6	mg/kg^	N	19.6	14.6	34.1	36.3				
Total TPH >C8-C40 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	20	mg/kg^	U	100	59.7	217	218				
>C10-C12 (Aromatic) EH_CU_1D_AR	TPHFIDUS (Aromatic)	4	mg/kg^	U	<6.30	<5.36	10.5	<6.69				
>C12-C16 (Aromatic) EH_CU_1D_AR	TPHFIDUS (Aromatic)	4	mg/kg^	U	12.6	6.56	29.0	14.1				
>C16-C21 (Aromatic) EH_CU_1D_AR	TPHFIDUS (Aromatic)	4	mg/kg^	U	22.2	9.46	52.8	28.8				
>C21-C35 (Aromatic) EH_CU_1D_AR	TPHFIDUS (Aromatic)	10	mg/kg^	U	110	43.9	149	113				
>C35-C44 (Aromatic) EH_CU_1D_AR	TPHFIDUS (Aromatic)	6	mg/kg^	N	31.9	20.9	42.0	65.2				
Total TPH >C8-C40 (Aromatic) EH_CU_1D_AR	TPHFIDUS (Aromatic)	20	mg/kg^	U	156	63.9	251	204				
>C10-C40 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	20	mg/kg^	U	99.8	59.4	214	214				
Total TPH >C8-C40 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	20	mg/kg^	U	100	59.7	217	218				
Total Moisture at 35°C	CLANDPREP	0.1	%	N	36.5	25.4	45.5	40.2				
Colour of Material	CLANDPREP		-	N	Brown/Green	Brown/Green	Brown/Green	Brown/Green				
Major Constituents	CLANDPREP		-	N	CLAY	SAND	CLAY	CLAY				
Minor Constituents	CLANDPREP		-	N	Gravel	Gravel	Gravel	Gravel				
Miscellaneous Constituents	CLANDPREP		-	N	n/a	n/a	n/a	n/a				

Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID	008		009		010		011
					Customer ID	9		10		11		12
					Sample Type	LPL	SOLID	LPL	SOLID	LPL	SOLID	LPL
					Sampling Date	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024
>C10-C12 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	4	mg/kg^	U		<6.92	<6.47	<6.92				
>C12-C16 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	4	mg/kg^	U		<6.92	21.0	23.8				
>C16-C21 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	4	mg/kg^	U		<6.92	75.0	87.8				
>C21-C35 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	10	mg/kg^	U		<17.3	134	136				
>C35-C44 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	6	mg/kg^	N		<10.4	12.2	16.7				
Total TPH >C8-C40 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	20	mg/kg^	U		<34.6	244	263				
>C10-C12 (Aromatic) EH_CU_1D_AR	TPHFIDUS (Aromatic)	4	mg/kg^	U		<6.92	<6.47	<6.92				
>C12-C16 (Aromatic) EH_CU_1D_AR	TPHFIDUS (Aromatic)	4	mg/kg^	U		<6.92	6.74	<6.92				
>C16-C21 (Aromatic) EH_CU_1D_AR	TPHFIDUS (Aromatic)	4	mg/kg^	U		<6.92	56.0	65.1				
>C21-C35 (Aromatic) EH_CU_1D_AR	TPHFIDUS (Aromatic)	10	mg/kg^	U		<17.3	121	136				
>C35-C44 (Aromatic) EH_CU_1D_AR	TPHFIDUS (Aromatic)	6	mg/kg^	N		<10.4	21.0	17.7				
Total TPH >C8-C40 (Aromatic) EH_CU_1D_AR	TPHFIDUS (Aromatic)	20	mg/kg^	U		<34.6	200	220				
>C10-C40 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	20	mg/kg^	U		<34.6	244	262				
Total TPH >C8-C40 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	20	mg/kg^	U		<34.6	244	263				
Total Moisture at 35°C	CLANDPREP	0.1	%	N		42.2	38.2	42.2				
Colour of Material	CLANDPREP		-	N		Brown	Brown/Green	Brown/Green				
Major Constituents	CLANDPREP		-	N		SAND	CLAY	CLAY				
Minor Constituents	CLANDPREP		-	N		None	Gravel	Gravel				
Miscellaneous Constituents	CLANDPREP		-	N		n/a	n/a	n/a				

Client: Hydrosurvey  
 Project Name: HS23033-Balgriggin Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID	011		012		013		014	
					Customer ID	12		13		14		15	
					Sample Type	SOLID	LPL	SOLID	LPL	SOLID	LPL	SOLID	
					Sampling Date	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	
>C10-C12 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	4	mg/kg^	U	<5.34		<5.10		<4.99		<4.98		
>C12-C16 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	4	mg/kg^	U	56.3		117		36.6		<4.98		
>C16-C21 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	4	mg/kg^	U	269		338		226		<4.98		
>C21-C35 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	10	mg/kg^	U	1620		1740		1600		<12.5		
>C35-C44 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	6	mg/kg^	N	246		280		158		<7.47		
Total TPH >C8-C40 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	20	mg/kg^	U	2160		2450		2010		<24.9		
>C10-C12 (Aromatic) EH_CU_1D_AR	TPHFIDUS (Aromatic)	4	mg/kg^	U	5.37		6.98		5.30		<4.98		
>C12-C16 (Aromatic) EH_CU_1D_AR	TPHFIDUS (Aromatic)	4	mg/kg^	U	22.3		51.5		17.8		<4.98		
>C16-C21 (Aromatic) EH_CU_1D_AR	TPHFIDUS (Aromatic)	4	mg/kg^	U	133		164		119		<4.98		
>C21-C35 (Aromatic) EH_CU_1D_AR	TPHFIDUS (Aromatic)	10	mg/kg^	U	761		761		601		<12.5		
>C35-C44 (Aromatic) EH_CU_1D_AR	TPHFIDUS (Aromatic)	6	mg/kg^	N	287		253		102		<7.47		
Total TPH >C8-C40 (Aromatic) EH_CU_1D_AR	TPHFIDUS (Aromatic)	20	mg/kg^	U	1120		1200		820		<24.9		
>C10-C40 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	20	mg/kg^	U	2160		2440		2000		<24.9		
Total TPH >C8-C40 (Aliphatic) EH_CU_1D_AL	TPHFIDUS (Aliphatic)	20	mg/kg^	U	2160		2450		2010		<24.9		
Total Moisture at 35°C	CLANDPREP	0.1	%	N	25.1		21.5		19.8		19.7		
Colour of Material	CLANDPREP		-	N	Brown		Brown		Brown		Brown		
Major Constituents	CLANDPREP		-	N	SAND		SAND		SAND		SAND		
Minor Constituents	CLANDPREP		-	N	None		None		None		None		
Miscellaneous Constituents	CLANDPREP		-	N	n/a		n/a		n/a		n/a		



Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID	001		002		003		004
					Customer ID	1		2		3		4
					Sample Type	LPL	SOLID	LPL	SOLID	LPL	SOLID	LPL
					Sampling Date	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024
Equivalent Weight of Dry Material (kg)	Leachate Prep CEN 10:1		kg	N		0.090		0.090		0.090		
Fraction above 4mm (%)	Leachate Prep CEN 10:1		%	N		42.1		26.9		18.8		
Fraction of non-crushable material (%)	Leachate Prep CEN 10:1		%	N		0		0		0		
Volume of Water for 10:1 Leach (ltr)	Leachate Prep CEN 10:1		l	N		0.882		0.874		0.869		
Weight of Sample Leached (kg)	Leachate Prep CEN 10:1		kg	N		0.108		0.116		0.121		
Equivalent Weight of Dry Material (kg)	Leachate Prep CEN 10:1		kg	N		0.090		0.090		0.090		
Fraction above 4mm (%)	Leachate Prep CEN 10:1		%	N		42.1		26.9		18.8		
Fraction of non-crushable material (%)	Leachate Prep CEN 10:1		%	N		0		0		0		
Volume of Water for 10:1 Leach (ltr)	Leachate Prep CEN 10:1		l	N		0.882		0.874		0.869		
Weight of Sample Leached (kg)	Leachate Prep CEN 10:1		kg	N		0.108		0.116		0.121		
WAC Report	WAC		-	N		See Attached		See Attached		See Attached		
Asbestos Identification	SUB002		-	N		NAIIS		NAIIS		NAIIS		

Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

					Sample ID		004		005		006		007	
					Customer ID		4		5		6		8	
					Sample Type		SOLID		LPL		SOLID		LPL	
					Sampling Date		05/01/2024		05/01/2024		05/01/2024		05/01/2024	
Analysis	Method Code	MDL	Units	Accred.										
Equivalent Weight of Dry Material (kg)	Leachate Prep CEN 10:1		kg	N	0.090		0.090		0.090		0.090		0.090	
Fraction above 4mm (%)	Leachate Prep CEN 10:1		%	N	9.9		23.3		0		0		0	
Fraction of non-crushable material (%)	Leachate Prep CEN 10:1		%	N	0		0		0		0		0	
Volume of Water for 10:1 Leach (ltr)	Leachate Prep CEN 10:1		l	N	0.854		0.861		0.828		0.819		0.819	
Weight of Sample Leached (kg)	Leachate Prep CEN 10:1		kg	N	0.136		0.129		0.162		0.171		0.171	
Equivalent Weight of Dry Material (kg)	Leachate Prep CEN 10:1		kg	N	0.090		0.090		0.090		0.090		0.090	
Fraction above 4mm (%)	Leachate Prep CEN 10:1		%	N	9.9		23.3		0		0		0	
Fraction of non-crushable material (%)	Leachate Prep CEN 10:1		%	N	0		0		0		0		0	
Volume of Water for 10:1 Leach (ltr)	Leachate Prep CEN 10:1		l	N	0.854		0.861		0.828		0.819		0.819	
Weight of Sample Leached (kg)	Leachate Prep CEN 10:1		kg	N	0.136		0.129		0.162		0.171		0.171	
WAC Report	WAC		-	N	See Attached		See Attached		See Attached		See Attached		See Attached	
Asbestos Identification	SUB002		-	N	NAIIS		NAIIS		NAIIS		NAIIS		NAIIS	

Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

					Sample ID		008		009		010		011	
					Customer ID		9		10		11		12	
					Sample Type		LPL		SOLID		LPL		SOLID	
					Sampling Date		05/01/2024		05/01/2024		05/01/2024		05/01/2024	
Analysis	Method Code	MDL	Units	Accred.										
Equivalent Weight of Dry Material (kg)	Leachate Prep CEN 10:1		kg	N			0.090		0.090			0.090		
Fraction above 4mm (%)	Leachate Prep CEN 10:1		%	N			0		0			0		
Fraction of non-crushable material (%)	Leachate Prep CEN 10:1		%	N			0		0			0		
Volume of Water for 10:1 Leach (ltr)	Leachate Prep CEN 10:1		l	N			0.866		0.840			0.828		
Weight of Sample Leached (kg)	Leachate Prep CEN 10:1		kg	N			0.124		0.150			0.162		
Equivalent Weight of Dry Material (kg)	Leachate Prep CEN 10:1		kg	N			0.090		0.090			0.090		
Fraction above 4mm (%)	Leachate Prep CEN 10:1		%	N			0		0			0		
Fraction of non-crushable material (%)	Leachate Prep CEN 10:1		%	N			0		0			0		
Volume of Water for 10:1 Leach (ltr)	Leachate Prep CEN 10:1		l	N			0.866		0.840			0.828		
Weight of Sample Leached (kg)	Leachate Prep CEN 10:1		kg	N			0.124		0.150			0.162		
WAC Report	WAC		-	N			See Attached		See Attached			See Attached		
Asbestos Identification	SUB002		-	N			NAIIS		CH			NAIIS		

Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024



**Analysis Results**

					Sample ID		011		012		013		014	
					Customer ID		12		13		14		15	
					Sample Type		SOLID		LPL		SOLID		LPL	
					Sampling Date		05/01/2024		05/01/2024		05/01/2024		05/01/2024	
Analysis	Method Code	MDL	Units	Accred.										
Equivalent Weight of Dry Material (kg)	Leachate Prep CEN 10:1		kg	N	0.090		0.090		0.090		0.090		0.090	
Fraction above 4mm (%)	Leachate Prep CEN 10:1		%	N	0		0		0		0		0	
Fraction of non-crushable material (%)	Leachate Prep CEN 10:1		%	N	0		0		0		0		0	
Volume of Water for 10:1 Leach (ltr)	Leachate Prep CEN 10:1		l	N	0.869		0.876		0.875		0.878		0.878	
Weight of Sample Leached (kg)	Leachate Prep CEN 10:1		kg	N	0.121		0.114		0.115		0.112		0.112	
Equivalent Weight of Dry Material (kg)	Leachate Prep CEN 10:1		kg	N	0.090		0.090		0.090		0.090		0.090	
Fraction above 4mm (%)	Leachate Prep CEN 10:1		%	N	0		0		0		0		0	
Fraction of non-crushable material (%)	Leachate Prep CEN 10:1		%	N	0		0		0		0		0	
Volume of Water for 10:1 Leach (ltr)	Leachate Prep CEN 10:1		l	N	0.869		0.876		0.875		0.878		0.878	
Weight of Sample Leached (kg)	Leachate Prep CEN 10:1		kg	N	0.121		0.114		0.115		0.112		0.112	
WAC Report	WAC		-	N	See Attached		See Attached		See Attached		See Attached		See Attached	
Asbestos Identification	SUB002		-	N	NAIIS		NAIIS		NAIIS		NAIIS		NAIIS	

**WASTE ACCEPTANCE CRITERIA TESTING**  
**BSEN 12457/2**

Client	Hydrosurvey	
Site	Balgbriggan Harbour	
Project	24011183	
Sample No	Sample Description	Issue Date
24011183-001	1	26/01/2024

Leaching Data	
Weight of Sample (kg)	0.108
Moisture content @ 105°C (% Wet Weight)	16.8
Equivalent weight based on drying @ 105°C (kg)	0.090
Volume of Water required for 10:1 stage (litres)	0.882
Fraction of sample above 4mm %	42.1
Fraction of non-crushable material %	0

**Note: The >4mm fraction is crushed using a disc mill**

Accreditation	Method Code	Solid Waste Analysis (Dry Basis)	Concentration in Solid (Dry Weight Basis)	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
N	WSLM59	Total Organic Carbon (% M/M)	0.86	3	5	6
N	LOI450	Loss on Ignition (%)	2.5			10
N	BTEXHSA	Sum of BTEX (mg/kg)	<0.073	6		
N	PCBUSECD	Sum of 7 Congener PCBs (mg/kg)	<0.043	1		
N	TPHFIDUS	>C10-C40 Aliphatic (mg/kg) EH_1D_AL	90.6	500		
N	PAHMSUS	Sum of 17 PAHs (mg/kg)	29.2	100		
N	PHSOIL	pH (pH Units)	8.1		>6	
N	ANC	Acid Neutralisation Capacity (mol/kg)	0.24		To be evaluated	To be evaluated

Accreditation	Method Code	Leachate Analysis	10:1 Single Stage Leachate	Cumulative Amount Leached at 10:1	Landfill Waste Acceptance Criteria Limit Values		
			mg/l except **	mg/kg (dry wt)	Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
N	WSLM3**	pH (pH Units)	8.5				
N	WSLM2**	Conductivity (µS/cm)	571				
U	ICPMSW	Arsenic	0.002	0.02	0.5	2	25
U	ICPWATVAR	Barium	<0.01	<0.1	20	100	300
U	ICPMSW	Cadmium	<0.00002	<0.0002	0.04	1	5
U	ICPMSW	Chromium	<0.001	<0.01	0.5	10	70
U	ICPMSW	Copper	0.001	<0.01	2	50	100
U	ICPMSW	Mercury	<0.00003	<0.0003	0.01	0.2	2
U	ICPMSW	Molybdenum	0.024	0.24	0.5	10	30
U	ICPMSW	Nickel	0.003	0.03	0.4	10	40
U	ICPMSW	Lead	<0.001	<0.01	0.5	10	50
U	ICPMSW	Antimony	0.003	0.03	0.06	0.7	5
U	ICPMSW	Selenium	<0.001	<0.01	0.1	0.5	7
U	ICPMSW	Zinc	<0.002	<0.02	4	50	200
U	KONENS	Chloride	113	1130	800	15000	25000
U	ISEF	Fluoride	0.5	5	10	150	500
U	ICPWATVAR	Sulphate as SO4	72	718	1000	20000	50000
N	WSLM27	Total Dissolved Solids	388	3870	4000	60000	100000
U	SFAPI	Phenol Index	<0.05	<0.5	1		
U	WSLM13	Dissolved Organic Carbon	4.56	45.5	500	800	1000

Tests where the accreditation is set to U are UKAS accredited, those where the accreditation is set to N are not UKAS accredited.

Calculated data is not UKAS accredited

Landfill Waste Acceptance Criteria limit values correct as of 11th March 2009.

**WASTE ACCEPTANCE CRITERIA TESTING**  
**BSEN 12457/2**

Client	Hydrosurvey	
Site	Balgbriggan Harbour	
Project	24011183	
Sample No	Sample Description	Issue Date
24011183-002	2	26/01/2024

Leaching Data	
Weight of Sample (kg)	0.116
Moisture content @ 105°C (% Wet Weight)	22.5
Equivalent weight based on drying @ 105°C (kg)	0.090
Volume of Water required for 10:1 stage (litres)	0.874
Fraction of sample above 4mm %	26.9
Fraction of non-crushable material %	0

**Note: The >4mm fraction is crushed using a disc mill**

Accreditation	Method Code	Solid Waste Analysis (Dry Basis)	Concentration in Solid (Dry Weight Basis)	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
U	WSLM59	Total Organic Carbon (% M/M)	1.39	3	5	6
N	LOI450	Loss on Ignition (%)	4.3			10
UM	BTEXHSA	Sum of BTEX (mg/kg)	<0.085	6		
UM	PCBUSECD	Sum of 7 Congener PCBs (mg/kg)	<0.050	1		
U	TPHFIDUS	>C10-C40 Aliphatic (mg/kg) EH_1D_AL	199	500		
N	PAHMSUS	Sum of 17 PAHs (mg/kg)	7.58	100		
UM	PHSOIL	pH (pH Units)	7.9		>6	
N	ANC	Acid Neutralisation Capacity (mol/kg)	1.12		To be evaluated	To be evaluated

Accreditation	Method Code	Leachate Analysis	10:1 Single Stage Leachate	Cumulative Amount Leached at 10:1	Landfill Waste Acceptance Criteria Limit Values		
			mg/l except **	mg/kg (dry wt)	Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
N	WSLM3**	pH (pH Units)	8.2				
N	WSLM2**	Conductivity (µS/cm)	1720				
U	ICPMSW	Arsenic	0.003	0.03	0.5	2	25
U	ICPWATVAR	Barium	0.01	<0.1	20	100	300
U	ICPMSW	Cadmium	0.00007	0.0007	0.04	1	5
U	ICPMSW	Chromium	<0.001	<0.01	0.5	10	70
U	ICPMSW	Copper	0.002	0.02	2	50	100
U	ICPMSW	Mercury	<0.00003	<0.0003	0.01	0.2	2
U	ICPMSW	Molybdenum	0.094	0.93	0.5	10	30
U	ICPMSW	Nickel	0.002	0.02	0.4	10	40
U	ICPMSW	Lead	0.015	0.15	0.5	10	50
U	ICPMSW	Antimony	0.013	0.13	0.06	0.7	5
U	ICPMSW	Selenium	0.002	0.02	0.1	0.5	7
U	ICPMSW	Zinc	0.009	0.09	4	50	200
U	KONENS	Chloride	427	4240	800	15000	25000
U	ISEF	Fluoride	0.4	4	10	150	500
U	ICPWATVAR	Sulphate as SO4	129	1280	1000	20000	50000
N	WSLM27	Total Dissolved Solids	962	11600	4000	60000	100000
U	SFAPI	Phenol Index	<0.05	<0.5	1		
U	WSLM13	Dissolved Organic Carbon	7.10	70.5	500	800	1000

Tests where the accreditation is set to U are UKAS accredited, those where the accreditation is set to N are not UKAS accredited.

Calculated data is not UKAS accredited

Landfill Waste Acceptance Criteria limit values correct as of 11th March 2009.

**WASTE ACCEPTANCE CRITERIA TESTING**  
**BSEN 12457/2**

Client	Hydrosurvey	
Site	Balgbriggan Harbour	
Project	24011183	
Sample No	Sample Description	Issue Date
24011183-003	3	26/01/2024

Leaching Data	
Weight of Sample (kg)	0.121
Moisture content @ 105°C (% Wet Weight)	25.7
Equivalent weight based on drying @ 105°C (kg)	0.090
Volume of Water required for 10:1 stage (litres)	0.869
Fraction of sample above 4mm %	18.8
Fraction of non-crushable material %	0

**Note: The >4mm fraction is crushed using a disc mill**

Accreditation	Method Code	Solid Waste Analysis (Dry Basis)	Concentration in Solid (Dry Weight Basis)	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
U	WSLM59	Total Organic Carbon (% M/M)	1.19	3	5	6
N	LOI450	Loss on Ignition (%)	3.6			10
UM	BTEXHSA	Sum of BTEX (mg/kg)	<0.076	6		
UM	PCBUSECD	Sum of 7 Congener PCBs (mg/kg)	<0.044	1		
U	TPHFIDUS	>C10-C40 Aliphatic (mg/kg) EH_1D_AL	246	500		
N	PAHMSUS	Sum of 17 PAHs (mg/kg)	175	100		
UM	PHSOIL	pH (pH Units)	7.8		>6	
N	ANC	Acid Neutralisation Capacity (mol/kg)	0.64		To be evaluated	To be evaluated

Accreditation	Method Code	Leachate Analysis	10:1 Single Stage Leachate	Cumulative Amount Leached at 10:1	Landfill Waste Acceptance Criteria Limit Values		
			mg/l except **	mg/kg (dry wt)	Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
N	WSLM3**	pH (pH Units)	8.1				
N	WSLM2**	Conductivity (µS/cm)	1780				
U	ICPMSW	Arsenic	0.002	0.02	0.5	2	25
U	ICPWATVAR	Barium	<0.01	<0.1	20	100	300
U	ICPMSW	Cadmium	0.00005	0.0005	0.04	1	5
U	ICPMSW	Chromium	<0.001	<0.01	0.5	10	70
U	ICPMSW	Copper	0.001	<0.01	2	50	100
U	ICPMSW	Mercury	<0.00003	<0.0003	0.01	0.2	2
U	ICPMSW	Molybdenum	0.083	0.82	0.5	10	30
U	ICPMSW	Nickel	0.002	0.02	0.4	10	40
U	ICPMSW	Lead	0.003	0.03	0.5	10	50
U	ICPMSW	Antimony	0.010	0.10	0.06	0.7	5
U	ICPMSW	Selenium	0.001	<0.01	0.1	0.5	7
U	ICPMSW	Zinc	0.006	0.06	4	50	200
U	KONENS	Chloride	412	4080	800	15000	25000
U	ISEF	Fluoride	0.4	4	10	150	500
U	ICPWATVAR	Sulphate as SO4	189	1870	1000	20000	50000
N	WSLM27	Total Dissolved Solids	984	12000	4000	60000	100000
U	SFAPI	Phenol Index	<0.05	<0.5	1		
U	WSLM13	Dissolved Organic Carbon	6.38	63.2	500	800	1000

Tests where the accreditation is set to U are UKAS accredited, those where the accreditation is set to N are not UKAS accredited.

Calculated data is not UKAS accredited

Landfill Waste Acceptance Criteria limit values correct as of 11th March 2009.

**WASTE ACCEPTANCE CRITERIA TESTING**  
**BSEN 12457/2**

Client	Hydrosurvey	
Site	Balgbriggan Harbour	
Project	24011183	
Sample No	Sample Description	Issue Date
24011183-004	4	26/01/2024

Leaching Data	
Weight of Sample (kg)	0.136
Moisture content @ 105°C (% Wet Weight)	33.8
Equivalent weight based on drying @ 105°C (kg)	0.090
Volume of Water required for 10:1 stage (litres)	0.854
Fraction of sample above 4mm %	9.9
Fraction of non-crushable material %	0

**Note: The >4mm fraction is crushed using a disc mill**

Accreditation	Method Code	Solid Waste Analysis (Dry Basis)	Concentration in Solid (Dry Weight Basis)	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
U	WSLM59	Total Organic Carbon (% M/M)	1.96	3	5	6
N	LOI450	Loss on Ignition (%)	5.6			10
UM	BTEXHSA	Sum of BTEX (mg/kg)	<0.095	6		
UM	PCBUSECD	Sum of 7 Congener PCBs (mg/kg)	<0.055	1		
U	TPHFIDUS	>C10-C40 Aliphatic (mg/kg) EH_1D_AL	99.8	500		
N	PAHMSUS	Sum of 17 PAHs (mg/kg)	8.68	100		
UM	PHSOIL	pH (pH Units)	8.0		>6	
N	ANC	Acid Neutralisation Capacity (mol/kg)	2.00		To be evaluated	To be evaluated

Accreditation	Method Code	Leachate Analysis	10:1 Single Stage Leachate	Cumulative Amount Leached at 10:1	Landfill Waste Acceptance Criteria Limit Values		
			mg/l except **	mg/kg (dry wt)	Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
N	WSLM3**	pH (pH Units)	8.1				
N	WSLM2**	Conductivity (µS/cm)	2490				
U	ICPMSW	Arsenic	0.004	0.04	0.5	2	25
U	ICPWATVAR	Barium	0.01	<0.1	20	100	300
U	ICPMSW	Cadmium	0.00007	0.0007	0.04	1	5
U	ICPMSW	Chromium	<0.001	<0.01	0.5	10	70
U	ICPMSW	Copper	0.002	0.02	2	50	100
U	ICPMSW	Mercury	<0.00003	<0.0003	0.01	0.2	2
U	ICPMSW	Molybdenum	0.056	0.55	0.5	10	30
U	ICPMSW	Nickel	0.003	0.03	0.4	10	40
U	ICPMSW	Lead	0.002	0.02	0.5	10	50
U	ICPMSW	Antimony	0.005	0.05	0.06	0.7	5
U	ICPMSW	Selenium	0.002	0.02	0.1	0.5	7
U	ICPMSW	Zinc	0.008	0.08	4	50	200
U	KONENS	Chloride	629	6180	800	15000	25000
U	ISEF	Fluoride	0.4	4	10	150	500
U	ICPWATVAR	Sulphate as SO4	145	1420	1000	20000	50000
N	WSLM27	Total Dissolved Solids	1690	16600	4000	60000	100000
U	SFAPI	Phenol Index	<0.05	<0.5	1		
U	WSLM13	Dissolved Organic Carbon	8.29	81.5	500	800	1000

Tests where the accreditation is set to U are UKAS accredited, those where the accreditation is set to N are not UKAS accredited.

Calculated data is not UKAS accredited

Landfill Waste Acceptance Criteria limit values correct as of 11th March 2009.

**WASTE ACCEPTANCE CRITERIA TESTING**  
**BSEN 12457/2**

Client	Hydrosurvey	
Site	Balgbriggan Harbour	
Project	24011183	
Sample No	Sample Description	Issue Date
24011183-005	5	26/01/2024

Leaching Data	
Weight of Sample (kg)	0.129
Moisture content @ 105°C (% Wet Weight)	30.1
Equivalent weight based on drying @ 105°C (kg)	0.090
Volume of Water required for 10:1 stage (litres)	0.861
Fraction of sample above 4mm %	23.3
Fraction of non-crushable material %	0

**Note: The >4mm fraction is crushed using a disc mill**

Accreditation	Method Code	Solid Waste Analysis (Dry Basis)	Concentration in Solid (Dry Weight Basis)	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
U	WSLM59	Total Organic Carbon (% M/M)	5.45	3	5	6
N	LOI450	Loss on Ignition (%)	6.1			10
UM	BTEXHSA	Sum of BTEX (mg/kg)	0.081	6		
UM	PCBUSECD	Sum of 7 Congener PCBs (mg/kg)	<0.047	1		
U	TPHFIDUS	>C10-C40 Aliphatic (mg/kg) EH_1D_AL	59.4	500		
N	PAHMSUS	Sum of 17 PAHs (mg/kg)	2.25	100		
UM	PHSOIL	pH (pH Units)	7.3		>6	
N	ANC	Acid Neutralisation Capacity (mol/kg)	3.12		To be evaluated	To be evaluated

Accreditation	Method Code	Leachate Analysis	10:1 Single Stage Leachate	Cumulative Amount Leached at 10:1	Landfill Waste Acceptance Criteria Limit Values		
			mg/l except **	mg/kg (dry wt)	Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
N	WSLM3**	pH (pH Units)	8.5				
N	WSLM2**	Conductivity (µS/cm)	1840				
U	ICPMSW	Arsenic	0.003	0.03	0.5	2	25
U	ICPWATVAR	Barium	<0.01	<0.1	20	100	300
U	ICPMSW	Cadmium	<0.00002	<0.0002	0.04	1	5
U	ICPMSW	Chromium	<0.001	<0.01	0.5	10	70
U	ICPMSW	Copper	0.003	0.03	2	50	100
U	ICPMSW	Mercury	<0.00003	<0.0003	0.01	0.2	2
U	ICPMSW	Molybdenum	0.065	0.64	0.5	10	30
U	ICPMSW	Nickel	0.002	0.02	0.4	10	40
U	ICPMSW	Lead	<0.001	<0.01	0.5	10	50
U	ICPMSW	Antimony	0.003	0.03	0.06	0.7	5
U	ICPMSW	Selenium	0.001	<0.01	0.1	0.5	7
U	ICPMSW	Zinc	0.006	0.06	4	50	200
U	KONENS	Chloride	462	4560	800	15000	25000
U	ISEF	Fluoride	0.5	5	10	150	500
U	ICPWATVAR	Sulphate as SO4	128	1260	1000	20000	50000
N	WSLM27	Total Dissolved Solids	1250	12300	4000	60000	100000
U	SFAPI	Phenol Index	<0.05	<0.5	1		
U	WSLM13	Dissolved Organic Carbon	9.74	96.1	500	800	1000

Tests where the accreditation is set to U are UKAS accredited, those where the accreditation is set to N are not UKAS accredited.

Calculated data is not UKAS accredited

Landfill Waste Acceptance Criteria limit values correct as of 11th March 2009.

**WASTE ACCEPTANCE CRITERIA TESTING**  
**BSEN 12457/2**

Client	Hydrosurvey	
Site	Balgbriggan Harbour	
Project	24011183	
Sample No	Sample Description	Issue Date
24011183-006	6	26/01/2024

Leaching Data	
Weight of Sample (kg)	0.162
Moisture content @ 105°C (% Wet Weight)	44.5
Equivalent weight based on drying @ 105°C (kg)	0.090
Volume of Water required for 10:1 stage (litres)	0.828
Fraction of sample above 4mm %	0
Fraction of non-crushable material %	0

**Note: The >4mm fraction is crushed using a disc mill**

Accreditation	Method Code	Solid Waste Analysis (Dry Basis)	Concentration in Solid (Dry Weight Basis)	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
U	WSLM59	Total Organic Carbon (% M/M)	2.29	3	5	6
N	LOI450	Loss on Ignition (%)	7.6			10
UM	BTEXHSA	Sum of BTEX (mg/kg)	<0.110	6		
UM	PCBUSECD	Sum of 7 Congener PCBs (mg/kg)	<0.064	1		
U	TPHFIDUS	>C10-C40 Aliphatic (mg/kg) EH_1D_AL	214	500		
N	PAHMSUS	Sum of 17 PAHs (mg/kg)	6.93	100		
UM	PHSOIL	pH (pH Units)	7.6		>6	
N	ANC	Acid Neutralisation Capacity (mol/kg)	3.28		To be evaluated	To be evaluated

Accreditation	Method Code	Leachate Analysis	10:1 Single Stage Leachate	Cumulative Amount Leached at 10:1	Landfill Waste Acceptance Criteria Limit Values		
			mg/l except **	mg/kg (dry wt)	Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
N	WSLM3**	pH (pH Units)	8.5				
N	WSLM2**	Conductivity (µS/cm)	4520				
U	ICPMSW	Arsenic	0.004	0.04	0.5	2	25
U	ICPWATVAR	Barium	<0.01	<0.1	20	100	300
U	ICPMSW	Cadmium	<0.00002	<0.0002	0.04	1	5
U	ICPMSW	Chromium	<0.001	<0.01	0.5	10	70
U	ICPMSW	Copper	<0.001	<0.01	2	50	100
U	ICPMSW	Mercury	<0.00003	<0.0003	0.01	0.2	2
U	ICPMSW	Molybdenum	0.023	0.22	0.5	10	30
U	ICPMSW	Nickel	<0.001	<0.01	0.4	10	40
U	ICPMSW	Lead	<0.001	<0.01	0.5	10	50
U	ICPMSW	Antimony	0.003	0.03	0.06	0.7	5
U	ICPMSW	Selenium	0.002	0.02	0.1	0.5	7
U	ICPMSW	Zinc	<0.002	<0.02	4	50	200
U	KONENS	Chloride	1280	12300	800	15000	25000
U	ISEF	Fluoride	0.5	5	10	150	500
U	ICPWATVAR	Sulphate as SO4	140	1350	1000	20000	50000
N	WSLM27	Total Dissolved Solids	3070	29600	4000	60000	100000
U	SFAPI	Phenol Index	<0.05	<0.5	1		
U	WSLM13	Dissolved Organic Carbon	13.1	126	500	800	1000

Tests where the accreditation is set to U are UKAS accredited, those where the accreditation is set to N are not UKAS accredited.

Calculated data is not UKAS accredited

Landfill Waste Acceptance Criteria limit values correct as of 11th March 2009.

**WASTE ACCEPTANCE CRITERIA TESTING**  
**BSEN 12457/2**

Client	Hydrosurvey	
Site	Balgbriggan Harbour	
Project	24011183	
Sample No	Sample Description	Issue Date
24011183-007	8	26/01/2024

Leaching Data	
Weight of Sample (kg)	0.171
Moisture content @ 105°C (% Wet Weight)	47.4
Equivalent weight based on drying @ 105°C (kg)	0.090
Volume of Water required for 10:1 stage (litres)	0.819
Fraction of sample above 4mm %	0
Fraction of non-crushable material %	0

**Note: The >4mm fraction is crushed using a disc mill**

Accreditation	Method Code	Solid Waste Analysis (Dry Basis)	Concentration in Solid (Dry Weight Basis)	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
U	WSLM59	Total Organic Carbon (% M/M)	2.27	3	5	6
N	LOI450	Loss on Ignition (%)	7.2			10
UM	BTEXHSA	Sum of BTEX (mg/kg)	<0.100	6		
UM	PCBUSECD	Sum of 7 Congener PCBs (mg/kg)	<0.059	1		
U	TPHFIDUS	>C10-C40 Aliphatic (mg/kg) EH_1D_AL	214	500		
N	PAHMSUS	Sum of 17 PAHs (mg/kg)	3.36	100		
UM	PHSOIL	pH (pH Units)	7.7		>6	
N	ANC	Acid Neutralisation Capacity (mol/kg)	4.32		To be evaluated	To be evaluated

Accreditation	Method Code	Leachate Analysis	10:1 Single Stage Leachate	Cumulative Amount Leached at 10:1	Landfill Waste Acceptance Criteria Limit Values		
			mg/l except **	mg/kg (dry wt)	Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
N	WSLM3**	pH (pH Units)	8.1				
N	WSLM2**	Conductivity (µS/cm)	4340				
U	ICPMSW	Arsenic	0.002	0.02	0.5	2	25
U	ICPWATVAR	Barium	<0.01	<0.1	20	100	300
U	ICPMSW	Cadmium	0.00002	<0.0002	0.04	1	5
U	ICPMSW	Chromium	<0.001	<0.01	0.5	10	70
U	ICPMSW	Copper	0.005	0.05	2	50	100
U	ICPMSW	Mercury	<0.00003	<0.0003	0.01	0.2	2
U	ICPMSW	Molybdenum	0.046	0.44	0.5	10	30
U	ICPMSW	Nickel	0.001	<0.01	0.4	10	40
U	ICPMSW	Lead	<0.001	<0.01	0.5	10	50
U	ICPMSW	Antimony	0.001	<0.01	0.06	0.7	5
U	ICPMSW	Selenium	0.002	0.02	0.1	0.5	7
U	ICPMSW	Zinc	0.009	0.09	4	50	200
U	KONENS	Chloride	1200	11500	800	15000	25000
U	ISEF	Fluoride	0.5	5	10	150	500
U	ICPWATVAR	Sulphate as SO4	212	2030	1000	20000	50000
N	WSLM27	Total Dissolved Solids	2950	28200	4000	60000	100000
U	SFAPI	Phenol Index	<0.05	<0.5	1		
U	WSLM13	Dissolved Organic Carbon	9.98	95.5	500	800	1000

Tests where the accreditation is set to U are UKAS accredited, those where the accreditation is set to N are not UKAS accredited.

Calculated data is not UKAS accredited

Landfill Waste Acceptance Criteria limit values correct as of 11th March 2009.

**WASTE ACCEPTANCE CRITERIA TESTING**  
**BSEN 12457/2**

Client	Hydrosurvey	
Site	Balgbriggan Harbour	
Project	24011183	
Sample No	Sample Description	Issue Date
24011183-008	9	26/01/2024

Leaching Data	
Weight of Sample (kg)	0.124
Moisture content @ 105°C (% Wet Weight)	27.7
Equivalent weight based on drying @ 105°C (kg)	0.090
Volume of Water required for 10:1 stage (litres)	0.866
Fraction of sample above 4mm %	0
Fraction of non-crushable material %	0

**Note: The >4mm fraction is crushed using a disc mill**

Accreditation	Method Code	Solid Waste Analysis (Dry Basis)	Concentration in Solid (Dry Weight Basis)	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
U	WSLM59	Total Organic Carbon (% M/M)	0.13	3	5	6
N	LOI450	Loss on Ignition (%)	0.8			10
UM	BTEXHSA	Sum of BTEX (mg/kg)	<0.104	6		
UM	PCBUSECD	Sum of 7 Congener PCBs (mg/kg)	<0.061	1		
U	TPHFIDUS	>C10-C40 Aliphatic (mg/kg) EH_1D_AL	<34.6	500		
N	PAHMSUS	Sum of 17 PAHs (mg/kg)	<2.35	100		
UM	PHSOIL	pH (pH Units)	8.1		>6	
N	ANC	Acid Neutralisation Capacity (mol/kg)	2.72		To be evaluated	To be evaluated

Accreditation	Method Code	Leachate Analysis	10:1 Single Stage Leachate	Cumulative Amount Leached at 10:1	Landfill Waste Acceptance Criteria Limit Values		
			mg/l except **	mg/kg (dry wt)	Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
N	WSLM3**	pH (pH Units)	8.6				
N	WSLM2**	Conductivity (µS/cm)	1180				
U	ICPMSW	Arsenic	0.003	0.03	0.5	2	25
U	ICPWATVAR	Barium	<0.01	<0.1	20	100	300
U	ICPMSW	Cadmium	<0.00002	<0.0002	0.04	1	5
U	ICPMSW	Chromium	<0.001	<0.01	0.5	10	70
U	ICPMSW	Copper	<0.001	<0.01	2	50	100
U	ICPMSW	Mercury	<0.00003	<0.0003	0.01	0.2	2
U	ICPMSW	Molybdenum	<0.001	<0.01	0.5	10	30
U	ICPMSW	Nickel	<0.001	<0.01	0.4	10	40
U	ICPMSW	Lead	<0.001	<0.01	0.5	10	50
U	ICPMSW	Antimony	<0.001	<0.01	0.06	0.7	5
U	ICPMSW	Selenium	<0.001	<0.01	0.1	0.5	7
U	ICPMSW	Zinc	<0.002	<0.02	4	50	200
U	KONENS	Chloride	299	2960	800	15000	25000
U	ISEF	Fluoride	0.1	<1	10	150	500
U	ICPWATVAR	Sulphate as SO4	47	465	1000	20000	50000
N	WSLM27	Total Dissolved Solids	802	7940	4000	60000	100000
U	SFAPI	Phenol Index	<0.05	<0.5	1		
U	WSLM13	Dissolved Organic Carbon	0.73	7.2	500	800	1000

Tests where the accreditation is set to U are UKAS accredited, those where the accreditation is set to N are not UKAS accredited.

Calculated data is not UKAS accredited

Landfill Waste Acceptance Criteria limit values correct as of 11th March 2009.

**WASTE ACCEPTANCE CRITERIA TESTING**  
**BSEN 12457/2**

Client	Hydrosurvey	
Site	Balgbriggan Harbour	
Project	24011183	
Sample No	Sample Description	Issue Date
24011183-009	10	26/01/2024

Leaching Data	
Weight of Sample (kg)	0.150
Moisture content @ 105°C (% Wet Weight)	40.1
Equivalent weight based on drying @ 105°C (kg)	0.090
Volume of Water required for 10:1 stage (litres)	0.840
Fraction of sample above 4mm %	0
Fraction of non-crushable material %	0

**Note: The >4mm fraction is crushed using a disc mill**

Accreditation	Method Code	Solid Waste Analysis (Dry Basis)	Concentration in Solid (Dry Weight Basis)	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
U	WSLM59	Total Organic Carbon (% M/M)	2.36	3	5	6
N	LOI450	Loss on Ignition (%)	6.2			10
UM	BTEXHSA	Sum of BTEX (mg/kg)	<0.097	6		
UM	PCBUSECD	Sum of 7 Congener PCBs (mg/kg)	<0.057	1		
U	TPHFIDUS	>C10-C40 Aliphatic (mg/kg) EH_1D_AL	244	500		
N	PAHMSUS	Sum of 17 PAHs (mg/kg)	4.56	100		
UM	PHSOIL	pH (pH Units)	7.8		>6	
N	ANC	Acid Neutralisation Capacity (mol/kg)	3.60		To be evaluated	To be evaluated

Accreditation	Method Code	Leachate Analysis	10:1 Single Stage Leachate	Cumulative Amount Leached at 10:1	Landfill Waste Acceptance Criteria Limit Values		
			mg/l except **	mg/kg (dry wt)	Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
N	WSLM3**	pH (pH Units)	8.6				
N	WSLM2**	Conductivity (µS/cm)	3130				
U	ICPMSW	Arsenic	0.003	0.03	0.5	2	25
U	ICPWATVAR	Barium	<0.01	<0.1	20	100	300
U	ICPMSW	Cadmium	<0.00002	<0.0002	0.04	1	5
U	ICPMSW	Chromium	<0.001	<0.01	0.5	10	70
U	ICPMSW	Copper	<0.001	<0.01	2	50	100
U	ICPMSW	Mercury	<0.00003	<0.0003	0.01	0.2	2
U	ICPMSW	Molybdenum	0.047	0.46	0.5	10	30
U	ICPMSW	Nickel	<0.001	<0.01	0.4	10	40
U	ICPMSW	Lead	<0.001	<0.01	0.5	10	50
U	ICPMSW	Antimony	0.003	0.03	0.06	0.7	5
U	ICPMSW	Selenium	0.001	<0.01	0.1	0.5	7
U	ICPMSW	Zinc	<0.002	<0.02	4	50	200
U	KONENS	Chloride	816	7940	800	15000	25000
U	ISEF	Fluoride	0.4	4	10	150	500
U	ICPWATVAR	Sulphate as SO4	143	1390	1000	20000	50000
N	WSLM27	Total Dissolved Solids	2130	20700	4000	60000	100000
U	SFAPI	Phenol Index	<0.05	<0.5	1		
U	WSLM13	Dissolved Organic Carbon	13.0	127	500	800	1000

Tests where the accreditation is set to U are UKAS accredited, those where the accreditation is set to N are not UKAS accredited.

Calculated data is not UKAS accredited

Landfill Waste Acceptance Criteria limit values correct as of 11th March 2009.

**WASTE ACCEPTANCE CRITERIA TESTING**  
**BSEN 12457/2**

Client	Hydrosurvey	
Site	Balgbriggan Harbour	
Project	24011183	
Sample No	Sample Description	Issue Date
24011183-010	11	26/01/2024

Leaching Data	
Weight of Sample (kg)	0.162
Moisture content @ 105°C (% Wet Weight)	44.3
Equivalent weight based on drying @ 105°C (kg)	0.090
Volume of Water required for 10:1 stage (litres)	0.828
Fraction of sample above 4mm %	0
Fraction of non-crushable material %	0

**Note: The >4mm fraction is crushed using a disc mill**

Accreditation	Method Code	Solid Waste Analysis (Dry Basis)	Concentration in Solid (Dry Weight Basis)	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
U	WSLM59	Total Organic Carbon (% M/M)	2.86	3	5	6
N	LOI450	Loss on Ignition (%)	7.7			10
UM	BTEXHSA	Sum of BTEX (mg/kg)	<0.104	6		
UM	PCBUSECD	Sum of 7 Congener PCBs (mg/kg)	<0.061	1		
U	TPHFIDUS	>C10-C40 Aliphatic (mg/kg) EH_1D_AL	262	500		
N	PAHMSUS	Sum of 17 PAHs (mg/kg)	6.71	100		
UM	PHSOIL	pH (pH Units)	7.9		>6	
N	ANC	Acid Neutralisation Capacity (mol/kg)	5.20		To be evaluated	To be evaluated

Accreditation	Method Code	Leachate Analysis	10:1 Single Stage Leachate	Cumulative Amount Leached at 10:1	Landfill Waste Acceptance Criteria Limit Values		
			mg/l except **	mg/kg (dry wt)	Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
N	WSLM3**	pH (pH Units)	8.6				
N	WSLM2**	Conductivity (µS/cm)	3680				
U	ICPMSW	Arsenic	0.002	0.02	0.5	2	25
U	ICPWATVAR	Barium	<0.01	<0.1	20	100	300
U	ICPMSW	Cadmium	<0.00002	<0.0002	0.04	1	5
U	ICPMSW	Chromium	<0.001	<0.01	0.5	10	70
U	ICPMSW	Copper	<0.001	<0.01	2	50	100
U	ICPMSW	Mercury	<0.00003	<0.0003	0.01	0.2	2
U	ICPMSW	Molybdenum	0.025	0.24	0.5	10	30
U	ICPMSW	Nickel	0.001	<0.01	0.4	10	40
U	ICPMSW	Lead	<0.001	<0.01	0.5	10	50
U	ICPMSW	Antimony	0.002	0.02	0.06	0.7	5
U	ICPMSW	Selenium	0.002	0.02	0.1	0.5	7
U	ICPMSW	Zinc	<0.002	<0.02	4	50	200
U	KONENS	Chloride	970	9350	800	15000	25000
U	ISEF	Fluoride	0.2	2	10	150	500
U	ICPWATVAR	Sulphate as SO4	175	1690	1000	20000	50000
N	WSLM27	Total Dissolved Solids	2500	24100	4000	60000	100000
U	SFAPI	Phenol Index	<0.05	<0.5	1		
U	WSLM13	Dissolved Organic Carbon	15.7	151	500	800	1000

Tests where the accreditation is set to U are UKAS accredited, those where the accreditation is set to N are not UKAS accredited.

Calculated data is not UKAS accredited

Landfill Waste Acceptance Criteria limit values correct as of 11th March 2009.

**WASTE ACCEPTANCE CRITERIA TESTING**  
**BSEN 12457/2**

Client	Hydrosurvey	
Site	Balgbriggan Harbour	
Project	24011183	
Sample No	Sample Description	Issue Date
24011183-011	12	26/01/2024

Leaching Data	
Weight of Sample (kg)	0.121
Moisture content @ 105°C (% Wet Weight)	25.7
Equivalent weight based on drying @ 105°C (kg)	0.090
Volume of Water required for 10:1 stage (litres)	0.869
Fraction of sample above 4mm %	0
Fraction of non-crushable material %	0

**Note: The >4mm fraction is crushed using a disc mill**

Accreditation	Method Code	Solid Waste Analysis (Dry Basis)	Concentration in Solid (Dry Weight Basis)	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
U	WSLM59	Total Organic Carbon (% M/M)	0.62	3	5	6
N	LOI450	Loss on Ignition (%)	2.6			10
UM	BTEXHSA	Sum of BTEX (mg/kg)	<0.080	6		
UM	PCBUSECD	Sum of 7 Congener PCBs (mg/kg)	<0.047	1		
U	TPHFIDUS	>C10-C40 Aliphatic (mg/kg) EH_1D_AL	2160	500		
N	PAHMSUS	Sum of 17 PAHs (mg/kg)	1.82	100		
UM	PHSOIL	pH (pH Units)	8.1		>6	
N	ANC	Acid Neutralisation Capacity (mol/kg)	11.1		To be evaluated	To be evaluated

Accreditation	Method Code	Leachate Analysis	10:1 Single Stage Leachate	Cumulative Amount Leached at 10:1	Landfill Waste Acceptance Criteria Limit Values		
			mg/l except **	mg/kg (dry wt)	Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
N	WSLM3**	pH (pH Units)	7.9				
N	WSLM2**	Conductivity (µS/cm)	1680				
U	ICPMSW	Arsenic	0.003	0.03	0.5	2	25
U	ICPWATVAR	Barium	<0.01	<0.1	20	100	300
U	ICPMSW	Cadmium	0.00002	<0.0002	0.04	1	5
U	ICPMSW	Chromium	<0.001	<0.01	0.5	10	70
U	ICPMSW	Copper	0.002	0.02	2	50	100
U	ICPMSW	Mercury	<0.00003	<0.0003	0.01	0.2	2
U	ICPMSW	Molybdenum	0.013	0.13	0.5	10	30
U	ICPMSW	Nickel	0.001	<0.01	0.4	10	40
U	ICPMSW	Lead	<0.001	<0.01	0.5	10	50
U	ICPMSW	Antimony	0.002	0.02	0.06	0.7	5
U	ICPMSW	Selenium	0.001	<0.01	0.1	0.5	7
U	ICPMSW	Zinc	0.004	0.04	4	50	200
U	KONENS	Chloride	415	4110	800	15000	25000
U	ISEF	Fluoride	0.3	3	10	150	500
U	ICPWATVAR	Sulphate as SO4	118	1170	1000	20000	50000
N	WSLM27	Total Dissolved Solids	965	11300	4000	60000	100000
U	SFAPI	Phenol Index	<0.05	<0.5	1		
U	WSLM13	Dissolved Organic Carbon	5.18	51.3	500	800	1000

Tests where the accreditation is set to U are UKAS accredited, those where the accreditation is set to N are not UKAS accredited.

Calculated data is not UKAS accredited

Landfill Waste Acceptance Criteria limit values correct as of 11th March 2009.

**WASTE ACCEPTANCE CRITERIA TESTING**  
**BSEN 12457/2**

Client	Hydrosurvey	
Site	Balgbriggan Harbour	
Project	24011183	
Sample No	Sample Description	Issue Date
24011183-012	13	26/01/2024

Leaching Data	
Weight of Sample (kg)	0.114
Moisture content @ 105°C (% Wet Weight)	20.9
Equivalent weight based on drying @ 105°C (kg)	0.090
Volume of Water required for 10:1 stage (litres)	0.876
Fraction of sample above 4mm %	0
Fraction of non-crushable material %	0

**Note: The >4mm fraction is crushed using a disc mill**

Accreditation	Method Code	Solid Waste Analysis (Dry Basis)	Concentration in Solid (Dry Weight Basis)	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
U	WSLM59	Total Organic Carbon (% M/M)	1.13	3	5	6
N	LOI450	Loss on Ignition (%)	2.5			10
UM	BTEXHSA	Sum of BTEX (mg/kg)	<0.076	6		
UM	PCBUSECD	Sum of 7 Congener PCBs (mg/kg)	<0.045	1		
U	TPHFIDUS	>C10-C40 Aliphatic (mg/kg) EH_1D_AL	2440	500		
N	PAHMSUS	Sum of 17 PAHs (mg/kg)	12.1	100		
UM	PHSOIL	pH (pH Units)	8.4		>6	
N	ANC	Acid Neutralisation Capacity (mol/kg)	2.16		To be evaluated	To be evaluated

Accreditation	Method Code	Leachate Analysis	10:1 Single Stage Leachate	Cumulative Amount Leached at 10:1	Landfill Waste Acceptance Criteria Limit Values		
			mg/l except **	mg/kg (dry wt)	Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
N	WSLM3**	pH (pH Units)	8.1				
N	WSLM2**	Conductivity (µS/cm)	781				
U	ICPMSW	Arsenic	0.006	0.06	0.5	2	25
U	ICPWATVAR	Barium	<0.01	<0.1	20	100	300
U	ICPMSW	Cadmium	0.00003	0.0003	0.04	1	5
U	ICPMSW	Chromium	<0.001	<0.01	0.5	10	70
U	ICPMSW	Copper	0.004	0.04	2	50	100
U	ICPMSW	Mercury	<0.00003	<0.0003	0.01	0.2	2
U	ICPMSW	Molybdenum	0.041	0.41	0.5	10	30
U	ICPMSW	Nickel	0.001	<0.01	0.4	10	40
U	ICPMSW	Lead	0.003	0.03	0.5	10	50
U	ICPMSW	Antimony	0.006	0.06	0.06	0.7	5
U	ICPMSW	Selenium	0.004	0.04	0.1	0.5	7
U	ICPMSW	Zinc	0.006	0.06	4	50	200
U	KONENS	Chloride	182	1810	800	15000	25000
U	ISEF	Fluoride	0.2	2	10	150	500
U	ICPWATVAR	Sulphate as SO4	86	855	1000	20000	50000
N	WSLM27	Total Dissolved Solids	531	5280	4000	60000	100000
U	SFAPI	Phenol Index	<0.05	<0.5	1		
U	WSLM13	Dissolved Organic Carbon	2.24	22.3	500	800	1000

Tests where the accreditation is set to U are UKAS accredited, those where the accreditation is set to N are not UKAS accredited.

Calculated data is not UKAS accredited

Landfill Waste Acceptance Criteria limit values correct as of 11th March 2009.

**WASTE ACCEPTANCE CRITERIA TESTING**  
**BSEN 12457/2**

Client	Hydrosurvey	
Site	Balgbriggan Harbour	
Project	24011183	
Sample No	Sample Description	Issue Date
24011183-013	14	26/01/2024

Leaching Data	
Weight of Sample (kg)	0.115
Moisture content @ 105°C (% Wet Weight)	21.5
Equivalent weight based on drying @ 105°C (kg)	0.090
Volume of Water required for 10:1 stage (litres)	0.875
Fraction of sample above 4mm %	0
Fraction of non-crushable material %	0

**Note: The >4mm fraction is crushed using a disc mill**

Accreditation	Method Code	Solid Waste Analysis (Dry Basis)	Concentration in Solid (Dry Weight Basis)	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
U	WSLM59	Total Organic Carbon (% M/M)	0.39	3	5	6
N	LOI450	Loss on Ignition (%)	1.2			10
UM	BTEXHSA	Sum of BTEX (mg/kg)	<0.075	6		
UM	PCBUSECD	Sum of 7 Congener PCBs (mg/kg)	<0.044	1		
U	TPHFIDUS	>C10-C40 Aliphatic (mg/kg) EH_1D_AL	2000	500		
N	PAHMSUS	Sum of 17 PAHs (mg/kg)	<1.70	100		
UM	PHSOIL	pH (pH Units)	8.6		>6	
N	ANC	Acid Neutralisation Capacity (mol/kg)	4.08		To be evaluated	To be evaluated

Accreditation	Method Code	Leachate Analysis	10:1 Single Stage Leachate	Cumulative Amount Leached at 10:1	Landfill Waste Acceptance Criteria Limit Values		
			mg/l except **	mg/kg (dry wt)	Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
N	WSLM3**	pH (pH Units)	8.2				
N	WSLM2**	Conductivity (µS/cm)	720				
U	ICPMSW	Arsenic	0.005	0.05	0.5	2	25
U	ICPWATVAR	Barium	<0.01	<0.1	20	100	300
U	ICPMSW	Cadmium	0.00003	0.0003	0.04	1	5
U	ICPMSW	Chromium	<0.001	<0.01	0.5	10	70
U	ICPMSW	Copper	0.003	0.03	2	50	100
U	ICPMSW	Mercury	<0.00003	<0.0003	0.01	0.2	2
U	ICPMSW	Molybdenum	0.073	0.73	0.5	10	30
U	ICPMSW	Nickel	0.001	<0.01	0.4	10	40
U	ICPMSW	Lead	0.003	0.03	0.5	10	50
U	ICPMSW	Antimony	0.005	0.05	0.06	0.7	5
U	ICPMSW	Selenium	0.001	<0.01	0.1	0.5	7
U	ICPMSW	Zinc	0.005	0.05	4	50	200
U	KONENS	Chloride	161	1600	800	15000	25000
U	ISEF	Fluoride	0.2	2	10	150	500
U	ICPWATVAR	Sulphate as SO4	82	815	1000	20000	50000
N	WSLM27	Total Dissolved Solids	490	4870	4000	60000	100000
U	SFAPI	Phenol Index	<0.05	<0.5	1		
U	WSLM13	Dissolved Organic Carbon	3.41	33.9	500	800	1000

Tests where the accreditation is set to U are UKAS accredited, those where the accreditation is set to N are not UKAS accredited.

Calculated data is not UKAS accredited

Landfill Waste Acceptance Criteria limit values correct as of 11th March 2009.

**WASTE ACCEPTANCE CRITERIA TESTING**  
**BSEN 12457/2**

Client	Hydrosurvey	
Site	Balgbriggan Harbour	
Project	24011183	
Sample No	Sample Description	Issue Date
24011183-014	15	26/01/2024

Leaching Data	
Weight of Sample (kg)	0.112
Moisture content @ 105°C (% Wet Weight)	19.6
Equivalent weight based on drying @ 105°C (kg)	0.090
Volume of Water required for 10:1 stage (litres)	0.878
Fraction of sample above 4mm %	0
Fraction of non-crushable material %	0

**Note: The >4mm fraction is crushed using a disc mill**

Accreditation	Method Code	Solid Waste Analysis (Dry Basis)	Concentration in Solid (Dry Weight Basis)	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
U	WSLM59	Total Organic Carbon (% M/M)	0.18	3	5	6
N	LOI450	Loss on Ignition (%)	1.0			10
UM	BTEXHSA	Sum of BTEX (mg/kg)	<0.075	6		
UM	PCBUSECD	Sum of 7 Congener PCBs (mg/kg)	<0.044	1		
U	TPHFIDUS	>C10-C40 Aliphatic (mg/kg) EH_1D_AL	<24.9	500		
N	PAHMSUS	Sum of 17 PAHs (mg/kg)	<1.69	100		
UM	PHSOIL	pH (pH Units)	8.4		>6	
N	ANC	Acid Neutralisation Capacity (mol/kg)	1.76		To be evaluated	To be evaluated

Accreditation	Method Code	Leachate Analysis	10:1 Single Stage Leachate	Cumulative Amount Leached at 10:1	Landfill Waste Acceptance Criteria Limit Values		
			mg/l except **	mg/kg (dry wt)	Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
N	WSLM3**	pH (pH Units)	8.5				
N	WSLM2**	Conductivity (µS/cm)	832				
U	ICPMSW	Arsenic	0.004	0.04	0.5	2	25
U	ICPWATVAR	Barium	<0.01	<0.1	20	100	300
U	ICPMSW	Cadmium	<0.00002	<0.0002	0.04	1	5
U	ICPMSW	Chromium	<0.001	<0.01	0.5	10	70
U	ICPMSW	Copper	0.003	0.03	2	50	100
U	ICPMSW	Mercury	<0.00003	<0.0003	0.01	0.2	2
U	ICPMSW	Molybdenum	<0.001	<0.01	0.5	10	30
U	ICPMSW	Nickel	<0.001	<0.01	0.4	10	40
U	ICPMSW	Lead	<0.001	<0.01	0.5	10	50
U	ICPMSW	Antimony	<0.001	<0.01	0.06	0.7	5
U	ICPMSW	Selenium	<0.001	<0.01	0.1	0.5	7
U	ICPMSW	Zinc	<0.002	<0.02	4	50	200
U	KONENS	Chloride	196	1950	800	15000	25000
U	ISEF	Fluoride	0.1	<1	10	150	500
U	ICPWATVAR	Sulphate as SO4	35	348	1000	20000	50000
N	WSLM27	Total Dissolved Solids	566	5630	4000	60000	100000
U	SFAPI	Phenol Index	<0.05	<0.5	1		
U	WSLM13	Dissolved Organic Carbon	1.08	10.7	500	800	1000

Tests where the accreditation is set to U are UKAS accredited, those where the accreditation is set to N are not UKAS accredited.

Calculated data is not UKAS accredited

Landfill Waste Acceptance Criteria limit values correct as of 11th March 2009.





Client: Hydrosurvey  
Project Name: HS23033-Balgbriggan Harbour  
Project No: 24011183  
Date Issued: 26/01/2024

**Deviating Sample Report**

All samples received in an appropriate condition with no deviancies noted with the samples.



Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024

Analysis Method

<u>Method Code</u>	<u>Method Description</u>	<u>Analysis Method</u>
ANC	ANC: Acid Neutralisation Capacity (mol/kg)	Air Dried & Ground
BTEXHSA	BTEX by GCFID	As Received
BTEXHSA	BTEX for WAC by GCFID	As Received
BTEXHSA	MTBE by GCFID	As Received
CALC_CR3	Chromium III (Trivalent) (Calc)	Air Dried & Ground
CLANDPREP	DW35 - CLand Prep and Dry Weight Correction to 35°C	As Received
CLANDPREP	Solid Material Description	As Received
GROHSA/BTEXHSA	GRO CWG UK (C5-C10) Ali/Aro Split	As Received
ICPMSS	Antimony in Solids by ICPMS	Air Dried & Ground
ICPMSS	Arsenic in Solids by ICPMS	Air Dried & Ground
ICPMSS	Cadmium in Solids by ICPMS	Air Dried & Ground
ICPMSS	Chromium in Solids by ICPMS	Air Dried & Ground
ICPMSS	Copper in Solids by ICPMS	Air Dried & Ground
ICPMSS	Lead in Solids by ICPMS	Air Dried & Ground
ICPMSS	Mercury in Solids by ICPMS	Air Dried & Ground
ICPMSS	Molybdenum in Solids by ICPMS	Air Dried & Ground
ICPMSS	Nickel in Solids by ICPMS	Air Dried & Ground
ICPMSS	Selenium in Solids by ICPMS	Air Dried & Ground
ICPMSS	Zinc in Solids by ICPMS	Air Dried & Ground
ICPMSW (Dissolved)	Antimony (Diss.) in Lab Leachate by ICPMS	Filtered
ICPMSW (Dissolved)	Antimony in Solids (BSEN 12457-2)	Filtered
ICPMSW (Dissolved)	Arsenic (Diss.) in Lab Leachate by ICPMS	Filtered
ICPMSW (Dissolved)	Arsenic in Solids (BSEN 12457-2)	Filtered
ICPMSW (Dissolved)	Cadmium (Diss.) in Lab Leachate by ICPMS	Filtered
ICPMSW (Dissolved)	Cadmium in Solids (BSEN 12457-2)	Filtered
ICPMSW (Dissolved)	Chromium (Diss.) in Lab Leachate by ICPMS	Filtered
ICPMSW (Dissolved)	Chromium in Solids (BSEN 12457-2)	Filtered
ICPMSW (Dissolved)	Copper (Diss.) in Lab Leachate by ICPMS	Filtered
ICPMSW (Dissolved)	Copper in Solids (BSEN 12457-2)	Filtered
ICPMSW (Dissolved)	Lead (Diss.) in Lab Leachate by ICPMS	Filtered
ICPMSW (Dissolved)	Lead in Solids (BSEN 12457-2)	Filtered
ICPMSW (Dissolved)	Mercury (Diss.) in Lab Leachate by ICPMS	Filtered
ICPMSW (Dissolved)	Mercury in Solids (BSEN 12457-2)	Filtered
ICPMSW (Dissolved)	Molybdenum (Diss.) in Lab Leachate by ICPMS	Filtered
ICPMSW (Dissolved)	Molybdenum in Solids (BSEN 12457-2)	Filtered
ICPMSW (Dissolved)	Nickel (Diss.) in Lab Leachate by ICPMS	Filtered
ICPMSW (Dissolved)	Nickel in Solids (BSEN 12457-2)	Filtered
ICPMSW (Dissolved)	Selenium (Diss.) in Lab Leachate by ICPMS	Filtered
ICPMSW (Dissolved)	Selenium in Solids (BSEN 12457-2)	Filtered
ICPMSW (Dissolved)	Zinc (Diss.) in Lab Leachate by ICPMS	Filtered
ICPMSW (Dissolved)	Zinc in Solids (BSEN 12457-2)	Filtered
ICPSOIL	Barium in Solids by ICPOES	Air Dried & Ground
ICPWATVAR (Dissolved)	Barium (Diss.) in Lab Leachate by ICPOES	Filtered
ICPWATVAR (Dissolved)	Barium in Solids (BSEN 12457-2)	Filtered
ICPWATVAR (Dissolved)	Total Sulphur as SO4 (Diss.) in Lab Leachate	Filtered
ICPWATVAR (Dissolved)	Total Sulphur as SO4 in Solids (BSEN 12457-2)	Filtered
ISEF	Fluoride by ISE	Filtered
ISEF	Fluoride in Solids (BSEN 12457-2)	Filtered
KONENS	Chloride by Colorimetry	Filtered
KONENS	Chloride in Solids (BSEN 12457-2)	Filtered



Client: Hydrosurvey  
 Project Name: HS23033-Balgbriggan Harbour  
 Project No: 24011183  
 Date Issued: 26/01/2024

KONENS	Chromium VI (Hexavalent) by Colorimetry	Air Dried & Ground
Leachate Prep CEN 10:1	Leachate Prep, 1-Stage 10:1 (BSEN 12457-2)	As Received
Leachate Prep CEN 10:1	WAC Leachate Prep, 1-Stage 10:1 (BSEN 12457-2)	As Received
LOI(%MM)	LOI: Loss on Ignition @ 450°C	Air Dried & Ground
PAHMSUS	17 PAHs (inc. Coronene) by GCMS	As Received
PAHMSUS	17 PAHs (inc. Coronene) for WAC by GCMS	As Received
PCBECD	PCBs, ICES 7 Congeners	As Received
PCBECD	PCBs, ICES 7 Congeners inc. Total Calculation	As Received
PHCONDW	Electrical Conductivity @ 25°C	Filtered
PHCONDW	pH	Filtered
PHCONDW	TDS: Total Dissolved Solids (Calc)	Filtered
PHCONDW	Total Dissolved Solids in Solids (BSEN 12457-2)	Filtered
PHEHPLCUV	Phenols Suite by HPLC UV	Filtered
PHSOIL	pH (2.5:1)	As Received
SFAPI	Phenol Index (Total) by SFA	Filtered
SFAPI	Phenol Index in Solids (BSEN 12457-2)	Filtered
SUB002	Asbestos Stage 1 (with Stage 2 Trigger)	
SUB020	Asbestos Stage 1 (with Stage 2 Trigger)	
TOCW	LOC: Leached Organic Carbon	Filtered
TPHFIDUS (Aliphatic)	TPH (>C8-C40) Aliphatic and Carbon Band (>C10-C40)	As Received
TPHFIDUS (Aliphatic)	TPH (CWG UK) Aliphatic Split with Carbon Banding	As Received
TPHFIDUS (Aromatic)	TPH (CWG UK) Aromatic Split with Carbon Banding	As Received
WAC	WAC Report	
WSLM13	Leached Organic Carbon in Solids (BSEN 12457-2)	Filtered
WSLM27	TDS: Total Dissolved Solids	Filtered
WSLM59	TOC: Total Organic Carbon	Air Dried & Ground

### Result Report Notes

Letters alongside results signify that the result has associated report notes.  
 The report notes are as follows:

<u>Letter</u>	<u>Note</u>
A	Due to the matrix of the sample the laboratory has had to deviate from our standard protocols to be able to process the sample and provide a result. Where applicable the accreditation has been removed and this should be taken into consideration when utilising the data.
B	The QC associated with this result has not wholly met the QMS requirements, the accreditation has therefore been removed. However, the Laboratory has confidence in the performance of the method as a whole and that the integrity of the data has not been significantly compromised.
C	Due to matrix interference, the internal standard and/or surrogate has not met the QMS requirements. This should be taken into consideration when utilising the data.
D	A non-standard volume or mass has been used for this test which has resulted in a raised detection limit.
E	Due to the parameter value being beyond our calibration range (and following the maximum size of dilution allowed, where applicable), the result cannot be quantified and as such the result will appear as a greater than symbol (>) with the accreditation removed. This data should be used for indicative purposes only.



Client: Hydrosurvey  
Project Name: HS23033-Balgbriggan Harbour  
Project No: 24011183  
Date Issued: 26/01/2024

- F Based on the sample history, appearance and smell a dilution was applied prior to testing. Unfortunately, the result is either above (>) or below (<) our calibration range. Results above our calibration range have accreditation removed. The data should be used for indicative purposes only.
- G The day 5 oxygen reading was below the capability of the instrument to detect, and therefore the calculated BOD has been reported unaccredited for guidance purposes only.

[HWOL Acronym Key](#)

<a href="#"><u>Acronym</u></a>	<a href="#"><u>Description</u></a>
HS	Headspace Analysis
EH	Extractable Hydrocarbons - i.e everything extracted by the solvent(s)
CU	Clean up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
+	Operator to indicate cumulative e.g. EH_CU+HS_1D_Total



Client: Hydrosurvey  
Project Name: HS23033-Balgbriggan Harbour  
Project No: 24011183  
Date Issued: 26/01/2024

### Additional Information

This report refers to samples as received. SOCOTEC UK Ltd takes no responsibility for accuracy or competence of sampling by others.

Results within this report relate only to the samples tested.

The accreditation codes are as follows:

- U = UKAS accredited analysis
- M = MCERT accredited analysis
- N = Unaccredited analysis

Any units marked with ^ signify results are reported on a dry weight basis of 35° c.

All Air Dried and Ground Samples (ADG) are oven dried at less than 35° c.

This report shall not be reproduced except in full, without written approval of the laboratory.

Opinions and interpretations given are outside the scope of our UKAS accreditation.

Any samples marked with \* are not covered by our scope of UKAS accreditation. If applicable, further report notes have been added.

Any solid samples where the Major Constituents are not one of the following (Sand, Silt, Clay, Made Ground) are not one of our accredited matrix types.

Any samples marked with ‡ have had MCERTS accreditation removed for this result

Any samples marked with a tick in the deviant table is deviant for the specific reason.

Any samples reported as IS, NA, ND mean the following:

- IS = Insufficient Sample to complete analysis
- NA = Sample is not amenable for the required analysis
- ND = Results cannot be determined

Items listed with a 'SUB' method code prefix have been carried out by an external subcontracted laboratory.

Our deviating sample report does not include deviancy information for Subcontracted analysis. Please see the report from the subcontracted lab for information regarding any deviancies for this analysis.

Summaries of analysis methods are available upon request.

## **End of Certificate of Analysis**

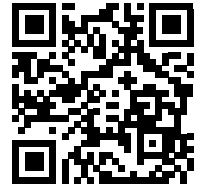
# APPENDIX 3 – HazWasteOnLine™ Report



# Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

- understand the origin of the waste
- select the correct List of Waste code(s)
- confirm that the list of determinands, results and sampling plan are fit for purpose
- select and justify the chosen metal species (Appendix B)
- correctly apply moisture correction and other available corrections
- add the meta data for their user-defined substances (Appendix A)
- check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)



TKKKZ-GUK91-KYDYZ

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in pale yellow.

## Job name

Balbriggan Sediment Samples

## Description/Comments

## Project

13590-02-24

## Site

Balbriggan Sediment Samples

## Classified by

Name: **Barry Sexton**  
Date: **22 Apr 2024 14:06 GMT**  
Telephone: **353 (0)1 601 5175 / 5176**

Company: **Ground Investigations Ireland Ltd**  
**Catherinstown House, Hazelhatch Road,**  
**Newcastle, Co. Dublin.**

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

**HazWasteOnline™ Certification:**

**CERTIFIED**

### Course

Hazardous Waste Classification  
Most recent 3 year Refresher

### Date

10 Apr 2019  
19 Apr 2022

Next 3 year Refresher due by Apr 2025

## Purpose of classification

4 - Classification of Waste Products

## Address of the waste

Post Code

## Description of industry/producer giving rise to the waste

## Description of the specific process, sub-process and/or activity that created the waste

## Description of the waste



### Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	1-05/01/2024		Non Hazardous		3
2	2-05/01/2024		Non Hazardous		6
3	3-05/01/2024		Hazardous	HP 7, HP 11	9
4	4-05/01/2024		Non Hazardous		12
5	5-05/01/2024		Non Hazardous		15
6	6-05/01/2024		Non Hazardous		18
7	8-05/01/2024		Non Hazardous		21
8	9-05/01/2024		Non Hazardous		24
9	10-05/01/2024		Non Hazardous		26
10	11-05/01/2024		Non Hazardous		29
11	12-05/01/2024		Hazardous	HP 7, HP 11	32
12	13-05/01/2024		Hazardous	HP 7, HP 11	35
13	14-05/01/2024		Hazardous	HP 7, HP 11	38
14	15-05/01/2024		Non Hazardous		41

### Related documents

#	Name	Description
1	Balbriggan Sediment Samples.hwol	SOCOTEC .hwol file used to populate the Job
2	Example waste stream template for contaminated soils	waste stream template used to create this Job


### Report

Created by: Barry Sexton

Created date: 22 Apr 2024 14:06 GMT

Appendices	Page
Appendix A: Classifier defined and non EU CLP determinands	43
Appendix B: Rationale for selection of metal species	44
Appendix C: Version	45

Classification of sample: 1-05/01/2024

 **Non Hazardous Waste**  
**Classified as 17 05 06**  
**in the List of Waste**

**Sample details**

Sample name:	LoW Code:	
<b>1-05/01/2024</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 06 (Dredging spoil other than those mentioned in 17 05 05)
<b>17.8%</b> (wet weight correction)		

**Hazard properties**

None identified

**Determinands**

Moisture content: 17.8% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	antimony { antimony trioxide } 051-005-00-X   215-175-0   1309-64-4				0.5	mg/kg	1.197	0.492	mg/kg	0.0000492 %	✓	
2	arsenic { arsenic trioxide } 033-003-00-0   215-481-4   1327-53-3				8.4	mg/kg	1.32	9.117	mg/kg	0.000912 %	✓	
3	cadmium { cadmium oxide } 048-002-00-0   215-146-2   1306-19-0				0.2	mg/kg	1.142	0.188	mg/kg	0.0000188 %	✓	
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) } 215-160-9   1308-38-9				30.2	mg/kg	1.462	36.282	mg/kg	0.00363 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex } 024-017-00-8				<0.1	mg/kg	2.27	<0.227	mg/kg	<0.0000227 %		<LOD
6	copper { dicopper oxide; copper (I) oxide } 029-002-00-X   215-270-7   1317-39-1				22.4	mg/kg	1.126	20.731	mg/kg	0.00207 %	✓	
7	lead { lead chromate } 082-004-00-2   231-846-0   7758-97-6			1	32.4	mg/kg	1.56	41.542	mg/kg	0.00266 %	✓	
8	mercury { mercury dichloride } 080-010-00-X   231-299-8   7487-94-7				<0.5	mg/kg	1.353	<0.677	mg/kg	<0.0000677 %		<LOD
9	molybdenum { molybdenum(VI) oxide } 042-001-00-9   215-204-7   1313-27-5				0.9	mg/kg	1.5	1.11	mg/kg	0.000111 %	✓	
10	nickel { nickel chromate } 028-035-00-7   238-766-5   14721-18-7				25	mg/kg	2.976	61.162	mg/kg	0.00612 %	✓	
11	selenium { nickel selenate } 028-031-00-5   239-125-2   15060-62-5				<0.5	mg/kg	2.554	<1.277	mg/kg	<0.000128 %		<LOD
12	zinc { zinc oxide } 030-013-00-7   215-222-5   1314-13-2				58.6	mg/kg	1.245	59.957	mg/kg	0.006 %	✓	
13	TPH (C6 to C40) petroleum group TPH				447.6	mg/kg		367.927	mg/kg	0.0368 %	✓	
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X   216-653-1   1634-04-4				<0.024	mg/kg		<0.024	mg/kg	<0.0000024 %		<LOD
15	benzene 601-020-00-8   200-753-7   71-43-2				<0.012	mg/kg		<0.012	mg/kg	<0.0000012 %		<LOD
16	toluene 601-021-00-3   203-625-9   108-88-3				<0.012	mg/kg		<0.012	mg/kg	<0.0000012 %		<LOD



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
17	ethylbenzene				<0.012 mg/kg		<0.012 mg/kg	<0.0000012 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.072 mg/kg		<0.072 mg/kg	<0.0000072 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.1 pH		8.1 pH	8.1 pH		
			PH							
20	naphthalene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				0.42 mg/kg		0.345 mg/kg	0.0000345 %	✓	
		205-917-1	208-96-8							
22	acenaphthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		201-469-6	83-32-9							
23	fluorene				0.34 mg/kg		0.279 mg/kg	0.0000279 %	✓	
		201-695-5	86-73-7							
24	phenanthrene				2.74 mg/kg		2.252 mg/kg	0.000225 %	✓	
		201-581-5	85-01-8							
25	anthracene				0.93 mg/kg		0.764 mg/kg	0.0000764 %	✓	
		204-371-1	120-12-7							
26	fluoranthene				5.44 mg/kg		4.472 mg/kg	0.000447 %	✓	
		205-912-4	206-44-0							
27	pyrene				4.3 mg/kg		3.535 mg/kg	0.000353 %	✓	
		204-927-3	129-00-0							
28	benzo[a]anthracene				3.77 mg/kg		3.099 mg/kg	0.00031 %	✓	
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				2.4 mg/kg		1.973 mg/kg	0.000197 %	✓	
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				2.75 mg/kg		2.261 mg/kg	0.000226 %	✓	
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				1.29 mg/kg		1.06 mg/kg	0.000106 %	✓	
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				2.34 mg/kg		1.923 mg/kg	0.000192 %	✓	
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				1.01 mg/kg		0.83 mg/kg	0.000083 %	✓	
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				0.31 mg/kg		0.255 mg/kg	0.0000255 %	✓	
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.75 mg/kg		0.617 mg/kg	0.0000617 %	✓	
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.043 mg/kg		<0.043 mg/kg	<0.0000043 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
37	barium { barium oxide }				53.1 mg/kg	1.117	48.733 mg/kg	0.00487 %	✓	
		215-127-9	1304-28-5							
38	coronene				0.2 mg/kg		0.164 mg/kg	0.0000164 %	✓	
		205-881-7	191-07-1							
Total:								0.0659 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

---

### Supplementary Hazardous Property Information

---

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Solid waste without liquid phase


Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0368%)

Classification of sample: 2-05/01/2024

 **Non Hazardous Waste**  
Classified as **17 05 06**  
in the List of Waste

**Sample details**

Sample name: <b>2-05/01/2024</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content: <b>29.3%</b> (wet weight correction)	Entry:	17 05 06 (Dredging spoil other than those mentioned in 17 05 05)

**Hazard properties**

None identified

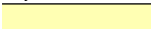



**Determinands**

Moisture content: 29.3% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				1.6 mg/kg	1.197	1.354 mg/kg	0.000135 %	✓	
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				8.3 mg/kg	1.32	7.748 mg/kg	0.000775 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.5 mg/kg	1.142	0.404 mg/kg	0.0000404 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				29.7 mg/kg	1.462	30.69 mg/kg	0.00307 %	✓	
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.1 mg/kg	2.27	<0.227 mg/kg	<0.0000227 %		<LOD
	024-017-00-8									
6	copper { dicopper oxide; copper (I) oxide }				675.7 mg/kg	1.126	537.859 mg/kg	0.0538 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	98.8 mg/kg	1.56	108.956 mg/kg	0.00699 %	✓	
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.5 mg/kg	1.353	<0.677 mg/kg	<0.0000677 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				2.3 mg/kg	1.5	2.439 mg/kg	0.000244 %	✓	
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				21.3 mg/kg	2.976	44.82 mg/kg	0.00448 %	✓	
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { nickel selenate }				<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<LOD
	028-031-00-5	239-125-2	15060-62-5							
12	zinc { zinc oxide }				218.7 mg/kg	1.245	192.459 mg/kg	0.0192 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				621 mg/kg		439.047 mg/kg	0.0439 %	✓	
			TPH							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.028 mg/kg		<0.028 mg/kg	<0.0000028 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
	601-021-00-3	203-625-9	108-88-3							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
17	• ethylbenzene				<0.014 mg/kg		<0.014 mg/kg	<0.0000014 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.084 mg/kg		<0.084 mg/kg	<0.0000084 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	• pH				7.9 pH		7.9 pH	7.9 pH		
			PH							
20	naphthalene				<0.11 mg/kg		<0.11 mg/kg	<0.000011 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	• acenaphthylene				<0.11 mg/kg		<0.11 mg/kg	<0.000011 %		<LOD
		205-917-1	208-96-8							
22	• acenaphthene				<0.11 mg/kg		<0.11 mg/kg	<0.000011 %		<LOD
		201-469-6	83-32-9							
23	• fluorene				<0.11 mg/kg		<0.11 mg/kg	<0.000011 %		<LOD
		201-695-5	86-73-7							
24	• phenanthrene				0.43 mg/kg		0.304 mg/kg	0.0000304 %	✓	
		201-581-5	85-01-8							
25	• anthracene				0.23 mg/kg		0.163 mg/kg	0.0000163 %	✓	
		204-371-1	120-12-7							
26	• fluoranthene				1.11 mg/kg		0.785 mg/kg	0.0000785 %	✓	
		205-912-4	206-44-0							
27	• pyrene				1.16 mg/kg		0.82 mg/kg	0.000082 %	✓	
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.83 mg/kg		0.587 mg/kg	0.0000587 %	✓	
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.59 mg/kg		0.417 mg/kg	0.0000417 %	✓	
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.82 mg/kg		0.58 mg/kg	0.000058 %	✓	
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.39 mg/kg		0.276 mg/kg	0.0000276 %	✓	
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.68 mg/kg		0.481 mg/kg	0.0000481 %	✓	
	601-032-00-3	200-028-5	50-32-8							
33	• indeno[123-cd]pyrene				0.38 mg/kg		0.269 mg/kg	0.0000269 %	✓	
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.11 mg/kg		<0.11 mg/kg	<0.000011 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	• benzo[ghi]perylene				0.29 mg/kg		0.205 mg/kg	0.0000205 %	✓	
		205-883-8	191-24-2							
36	• polychlorobiphenyls; PCB				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
37	• barium { barium oxide }				181 mg/kg	1.117	142.876 mg/kg	0.0143 %	✓	
		215-127-9	1304-28-5							
38	• coronene				<0.11 mg/kg		<0.11 mg/kg	<0.000011 %		<LOD
		205-881-7	191-07-1							
Total:								0.148 %		

**Key**

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

---

### Supplementary Hazardous Property Information

---

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Solid waste without liquid phase

Hazard Statements hit:

---


**Fam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

---

TPH (C6 to C40) petroleum group: (conc.: 0.0439%)

Classification of sample: 3-05/01/2024

 **Hazardous Waste**  
Classified as **17 05 05 \***  
in the List of Waste

**Sample details**

Sample name:	LoW Code:	
<b>3-05/01/2024</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 05 * (Dredging spoil containing hazardous substances)
<b>20.6%</b> (wet weight correction)		

**Hazard properties**

**HP 7: Carcinogenic** "waste which induces cancer or increases its incidence"

Hazard Statements hit:

**Carc. 1B; H350** "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.14%)

**HP 11: Mutagenic** "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:









**Muta. 1B; H340** "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.14%)

**Determinands**

Moisture content: 20.6% Wet Weight Moisture Correction applied (MC)



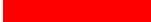



#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	 antimony { antimony trioxide }				1.2	mg/kg	1.197	1.141	mg/kg	0.000114 %	✓	
	051-005-00-X	215-175-0	1309-64-4									
2	 arsenic { arsenic trioxide }				8.8	mg/kg	1.32	9.225	mg/kg	0.000923 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
3	 cadmium { cadmium oxide }				0.5	mg/kg	1.142	0.454	mg/kg	0.0000454 %	✓	
	048-002-00-0	215-146-2	1306-19-0									
4	 chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				22.6	mg/kg	1.462	26.227	mg/kg	0.00262 %	✓	
		215-160-9	1308-38-9									
5	 chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.1	mg/kg	2.27	<0.227	mg/kg	<0.0000227 %		<LOD
	024-017-00-8											
6	 copper { dicopper oxide; copper (I) oxide }				45.1	mg/kg	1.126	40.317	mg/kg	0.00403 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
7	 lead { lead chromate }			1	100.6	mg/kg	1.56	124.592	mg/kg	0.00799 %	✓	
	082-004-00-2	231-846-0	7758-97-6									
8	 mercury { mercury dichloride }				<0.5	mg/kg	1.353	<0.677	mg/kg	<0.0000677 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									



#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
9	molybdenum { molybdenum(VI) oxide }				1.5	mg/kg	1.5	1.787	mg/kg	0.000179 %	✓	
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				21.4	mg/kg	2.976	50.572	mg/kg	0.00506 %	✓	
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { nickel selenate }				<0.5	mg/kg	2.554	<1.277	mg/kg	<0.000128 %		<LOD
	028-031-00-5	239-125-2	15060-62-5									
12	zinc { zinc oxide }				101.9	mg/kg	1.245	100.708	mg/kg	0.0101 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
13	TPH (C6 to C40) petroleum group				1762	mg/kg		1399.028	mg/kg	0.14 %	✓	
			TPH									
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.025	mg/kg		<0.025	mg/kg	<0.0000025 %		<LOD
	603-181-00-X	216-653-1	1634-04-4									
15	benzene				<0.013	mg/kg		<0.013	mg/kg	<0.0000013 %		<LOD
	601-020-00-8	200-753-7	71-43-2									
16	toluene				<0.013	mg/kg		<0.013	mg/kg	<0.0000013 %		<LOD
	601-021-00-3	203-625-9	108-88-3									
17	ethylbenzene				<0.013	mg/kg		<0.013	mg/kg	<0.0000013 %		<LOD
	601-023-00-4	202-849-4	100-41-4									
18	xylene				<0.076	mg/kg		<0.076	mg/kg	<0.0000076 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
19	pH				7.8	pH		7.8	pH	7.8 pH		
			PH									
20	naphthalene				0.79	mg/kg		0.627	mg/kg	0.0000627 %	✓	
	601-052-00-2	202-049-5	91-20-3									
21	acenaphthylene				1.43	mg/kg		1.135	mg/kg	0.000114 %	✓	
		205-917-1	208-96-8									
22	acenaphthene				0.74	mg/kg		0.588	mg/kg	0.0000588 %	✓	
		201-469-6	83-32-9									
23	fluorene				2.13	mg/kg		1.691	mg/kg	0.000169 %	✓	
		201-695-5	86-73-7									
24	phenanthrene				12.9	mg/kg		10.243	mg/kg	0.00102 %	✓	
		201-581-5	85-01-8									
25	anthracene				7.4	mg/kg		5.876	mg/kg	0.000588 %	✓	
		204-371-1	120-12-7									
26	fluoranthene				38.5	mg/kg		30.569	mg/kg	0.00306 %	✓	
		205-912-4	206-44-0									
27	pyrene				29.9	mg/kg		23.741	mg/kg	0.00237 %	✓	
		204-927-3	129-00-0									
28	benzo[a]anthracene				21.7	mg/kg		17.23	mg/kg	0.00172 %	✓	
	601-033-00-9	200-280-6	56-55-3									
29	chrysene				13.1	mg/kg		10.401	mg/kg	0.00104 %	✓	
	601-048-00-0	205-923-4	218-01-9									
30	benzo[b]fluoranthene				15.3	mg/kg		12.148	mg/kg	0.00121 %	✓	
	601-034-00-4	205-911-9	205-99-2									
31	benzo[k]fluoranthene				6.11	mg/kg		4.851	mg/kg	0.000485 %	✓	
	601-036-00-5	205-916-6	207-08-9									
32	benzo[a]pyrene; benzo[def]chrysene				13.3	mg/kg		10.56	mg/kg	0.00106 %	✓	
	601-032-00-3	200-028-5	50-32-8									
33	indeno[123-cd]pyrene				5.46	mg/kg		4.335	mg/kg	0.000434 %	✓	
		205-893-2	193-39-5									
34	dibenz[a,h]anthracene				1.48	mg/kg		1.175	mg/kg	0.000118 %	✓	
	601-041-00-2	200-181-8	53-70-3									
35	benzo[ghi]perylene				3.54	mg/kg		2.811	mg/kg	0.000281 %	✓	
		205-883-8	191-24-2									
36	polychlorobiphenyls; PCB				<0.044	mg/kg		<0.044	mg/kg	<0.0000044 %		<LOD
	602-039-00-4	215-648-1	1336-36-3									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
37	barium { barium oxide }				83.1 mg/kg	1.117	73.669 mg/kg	0.00737 %	✓	
		215-127-9	1304-28-5							
38	coronene				0.92 mg/kg		0.73 mg/kg	0.000073 %	✓	
		205-881-7	191-07-1							
Total:								0.192 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

### Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Solid waste without liquid phase


Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.14%)

Classification of sample: 4-05/01/2024

 **Non Hazardous Waste**  
Classified as **17 05 06**  
in the List of Waste

**Sample details**

Sample name:	LoW Code:
<b>4-05/01/2024</b>	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 06 (Dredging spoil other than those mentioned in 17 05 05)
<b>36.5%</b> (wet weight correction)	

**Hazard properties**

None identified

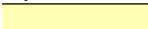



**Determinands**

Moisture content: 36.5% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				1.1 mg/kg	1.197	0.836 mg/kg	0.0000836 %	✓	
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				10.4 mg/kg	1.32	8.719 mg/kg	0.000872 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.6 mg/kg	1.142	0.435 mg/kg	0.0000435 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				26.3 mg/kg	1.462	24.409 mg/kg	0.00244 %	✓	
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.1 mg/kg	2.27	<0.227 mg/kg	<0.0000227 %		<LOD
	024-017-00-8									
6	copper { dicopper oxide; copper (I) oxide }				46.4 mg/kg	1.126	33.173 mg/kg	0.00332 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	48.4 mg/kg	1.56	47.939 mg/kg	0.00307 %	✓	
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.5 mg/kg	1.353	<0.677 mg/kg	<0.0000677 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				2.4 mg/kg	1.5	2.286 mg/kg	0.000229 %	✓	
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				23.8 mg/kg	2.976	44.98 mg/kg	0.0045 %	✓	
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { nickel selenate }				<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<LOD
	028-031-00-5	239-125-2	15060-62-5							
12	zinc { zinc oxide }				120.7 mg/kg	1.245	95.4 mg/kg	0.00954 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				356 mg/kg		226.06 mg/kg	0.0226 %	✓	
			TPH							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.031 mg/kg		<0.031 mg/kg	<0.0000031 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
	601-021-00-3	203-625-9	108-88-3							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
17	ethylbenzene				<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.094 mg/kg		<0.094 mg/kg	<0.0000094 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8 pH		8 pH	8pH		
			PH							
20	naphthalene				<0.13 mg/kg		<0.13 mg/kg	<0.000013 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				<0.13 mg/kg		<0.13 mg/kg	<0.000013 %		<LOD
		205-917-1	208-96-8							
22	acenaphthene				<0.13 mg/kg		<0.13 mg/kg	<0.000013 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.13 mg/kg		<0.13 mg/kg	<0.000013 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				0.51 mg/kg		0.324 mg/kg	0.0000324 %	✓	
		201-581-5	85-01-8							
25	anthracene				0.32 mg/kg		0.203 mg/kg	0.0000203 %	✓	
		204-371-1	120-12-7							
26	fluoranthene				1.4 mg/kg		0.889 mg/kg	0.0000889 %	✓	
		205-912-4	206-44-0							
27	pyrene				1.35 mg/kg		0.857 mg/kg	0.0000857 %	✓	
		204-927-3	129-00-0							
28	benzo[a]anthracene				1.05 mg/kg		0.667 mg/kg	0.0000667 %	✓	
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.66 mg/kg		0.419 mg/kg	0.0000419 %	✓	
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.89 mg/kg		0.565 mg/kg	0.0000565 %	✓	
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.41 mg/kg		0.26 mg/kg	0.000026 %	✓	
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.72 mg/kg		0.457 mg/kg	0.0000457 %	✓	
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.37 mg/kg		0.235 mg/kg	0.0000235 %	✓	
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.13 mg/kg		<0.13 mg/kg	<0.000013 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.26 mg/kg		0.165 mg/kg	0.0000165 %	✓	
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.055 mg/kg		<0.055 mg/kg	<0.0000055 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
37	barium { barium oxide }				43.6 mg/kg	1.117	30.912 mg/kg	0.00309 %	✓	
		215-127-9	1304-28-5							
38	coronene				<0.13 mg/kg		<0.13 mg/kg	<0.000013 %		<LOD
		205-881-7	191-07-1							
Total:								0.0506 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

---

### Supplementary Hazardous Property Information

---

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Solid waste without liquid phase

Hazard Statements hit:

---

**Fam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

---

TPH (C6 to C40) petroleum group: (conc.: 0.0226%)

Classification of sample: 5-05/01/2024

✔ **Non Hazardous Waste**  
Classified as **17 05 06**  
in the List of Waste

**Sample details**

Sample name:	LoW Code:	
<b>5-05/01/2024</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 06 (Dredging spoil other than those mentioned in 17 05 05)
<b>25.4%</b> (wet weight correction)		

**Hazard properties**

None identified

**Determinands**

Moisture content: 25.4% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				1.3 mg/kg	1.197	1.161 mg/kg	0.000116 %	✓	
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				18 mg/kg	1.32	17.729 mg/kg	0.00177 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.4 mg/kg	1.142	0.341 mg/kg	0.0000341 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				68.9 mg/kg	1.462	75.123 mg/kg	0.00751 %	✓	
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.1 mg/kg	2.27	<0.227 mg/kg	<0.0000227 %		<LOD
		024-017-00-8								
6	copper { dicopper oxide; copper (I) oxide }				160.1 mg/kg	1.126	134.47 mg/kg	0.0134 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	42.2 mg/kg	1.56	49.105 mg/kg	0.00315 %	✓	
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.5 mg/kg	1.353	<0.677 mg/kg	<0.0000677 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				4.3 mg/kg	1.5	4.812 mg/kg	0.000481 %	✓	
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				60.5 mg/kg	2.976	134.328 mg/kg	0.0134 %	✓	
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { nickel selenate }				<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<LOD
	028-031-00-5	239-125-2	15060-62-5							
12	zinc { zinc oxide }				154.2 mg/kg	1.245	143.183 mg/kg	0.0143 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				183.3 mg/kg		136.742 mg/kg	0.0137 %	✓	
			TPH							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.027 mg/kg		<0.027 mg/kg	<0.0000027 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.013 mg/kg		<0.013 mg/kg	<0.0000013 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				0.014 mg/kg		0.0104 mg/kg	0.00000104 %	✓	
	601-021-00-3	203-625-9	108-88-3							



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
17	ethylbenzene				<0.013 mg/kg		<0.013 mg/kg	<0.0000013 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.08 mg/kg		<0.08 mg/kg	<0.000008 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				7.3 pH		7.3 pH	7.3 pH		
			PH							
20	naphthalene				<0.11 mg/kg		<0.11 mg/kg	<0.000011 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				<0.11 mg/kg		<0.11 mg/kg	<0.000011 %		<LOD
		205-917-1	208-96-8							
22	acenaphthene				<0.11 mg/kg		<0.11 mg/kg	<0.000011 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.11 mg/kg		<0.11 mg/kg	<0.000011 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				<0.11 mg/kg		<0.11 mg/kg	<0.000011 %		<LOD
		201-581-5	85-01-8							
25	anthracene				<0.11 mg/kg		<0.11 mg/kg	<0.000011 %		<LOD
		204-371-1	120-12-7							
26	fluoranthene				0.22 mg/kg		0.164 mg/kg	0.0000164 %	✓	
		205-912-4	206-44-0							
27	pyrene				0.21 mg/kg		0.157 mg/kg	0.0000157 %	✓	
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.17 mg/kg		0.127 mg/kg	0.0000127 %	✓	
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				<0.11 mg/kg		<0.11 mg/kg	<0.000011 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.19 mg/kg		0.142 mg/kg	0.0000142 %	✓	
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				<0.11 mg/kg		<0.11 mg/kg	<0.000011 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.17 mg/kg		0.127 mg/kg	0.0000127 %	✓	
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				<0.11 mg/kg		<0.11 mg/kg	<0.000011 %		<LOD
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.11 mg/kg		<0.11 mg/kg	<0.000011 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				<0.11 mg/kg		<0.11 mg/kg	<0.000011 %		<LOD
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.047 mg/kg		<0.047 mg/kg	<0.0000047 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
37	barium { barium oxide }				66.5 mg/kg	1.117	55.389 mg/kg	0.00554 %	✓	
		215-127-9	1304-28-5							
38	coronene				<0.11 mg/kg		<0.11 mg/kg	<0.000011 %		<LOD
		205-881-7	191-07-1							
Total:								0.0739 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

---

### Supplementary Hazardous Property Information

---

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Solid waste without liquid phase

Hazard Statements hit:

**Flam. Liq. 2; H225** "Highly flammable liquid and vapour."

Because of determinand:

toluene: (conc.: 1.04e-06%)

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0137%)

Classification of sample: 6-05/01/2024

✔ **Non Hazardous Waste**  
Classified as **17 05 06**  
in the List of Waste

**Sample details**

Sample name:	LoW Code:
<b>6-05/01/2024</b>	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 06 (Dredging spoil other than those mentioned in 17 05 05)
<b>45.5%</b> (wet weight correction)	

**Hazard properties**

None identified

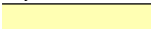



**Determinands**

Moisture content: 45.5% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				1 mg/kg	1.197	0.652 mg/kg	0.0000652 %	✓	
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				13.2 mg/kg	1.32	9.498 mg/kg	0.00095 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.6 mg/kg	1.142	0.374 mg/kg	0.0000374 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				32.3 mg/kg	1.462	25.728 mg/kg	0.00257 %	✓	
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.1 mg/kg	2.27	<0.227 mg/kg	<0.0000227 %		<LOD
	024-017-00-8									
6	copper { dicopper oxide; copper (I) oxide }				157.1 mg/kg	1.126	96.398 mg/kg	0.00964 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	59.4 mg/kg	1.56	50.496 mg/kg	0.00324 %	✓	
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.5 mg/kg	1.353	<0.677 mg/kg	<0.0000677 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				1.8 mg/kg	1.5	1.472 mg/kg	0.000147 %	✓	
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				25.5 mg/kg	2.976	41.363 mg/kg	0.00414 %	✓	
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { nickel selenate }				<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<LOD
	028-031-00-5	239-125-2	15060-62-5							
12	zinc { zinc oxide }				681.5 mg/kg	1.245	462.309 mg/kg	0.0462 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				685 mg/kg		373.325 mg/kg	0.0373 %	✓	
			TPH							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.037 mg/kg		<0.037 mg/kg	<0.0000037 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
	601-021-00-3	203-625-9	108-88-3							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
17	• ethylbenzene				<0.018 mg/kg		<0.018 mg/kg	<0.0000018 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.11 mg/kg		<0.11 mg/kg	<0.000011 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	• pH				7.6 pH		7.6 pH	7.6 pH		
			PH							
20	naphthalene				<0.15 mg/kg		<0.15 mg/kg	<0.000015 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	• acenaphthylene				<0.15 mg/kg		<0.15 mg/kg	<0.000015 %		<LOD
		205-917-1	208-96-8							
22	• acenaphthene				<0.15 mg/kg		<0.15 mg/kg	<0.000015 %		<LOD
		201-469-6	83-32-9							
23	• fluorene				<0.15 mg/kg		<0.15 mg/kg	<0.000015 %		<LOD
		201-695-5	86-73-7							
24	• phenanthrene				0.41 mg/kg		0.223 mg/kg	0.0000223 %	✓	
		201-581-5	85-01-8							
25	• anthracene				0.28 mg/kg		0.153 mg/kg	0.0000153 %	✓	
		204-371-1	120-12-7							
26	• fluoranthene				1.09 mg/kg		0.594 mg/kg	0.0000594 %	✓	
		205-912-4	206-44-0							
27	• pyrene				1.01 mg/kg		0.55 mg/kg	0.000055 %	✓	
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.81 mg/kg		0.441 mg/kg	0.0000441 %	✓	
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.47 mg/kg		0.256 mg/kg	0.0000256 %	✓	
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.63 mg/kg		0.343 mg/kg	0.0000343 %	✓	
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.32 mg/kg		0.174 mg/kg	0.0000174 %	✓	
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.55 mg/kg		0.3 mg/kg	0.00003 %	✓	
	601-032-00-3	200-028-5	50-32-8							
33	• indeno[123-cd]pyrene				0.27 mg/kg		0.147 mg/kg	0.0000147 %	✓	
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.15 mg/kg		<0.15 mg/kg	<0.000015 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	• benzo[ghi]perylene				0.21 mg/kg		0.114 mg/kg	0.0000114 %	✓	
		205-883-8	191-24-2							
36	• polychlorobiphenyls; PCB				<0.064 mg/kg		<0.064 mg/kg	<0.0000064 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
37	• barium { barium oxide }				53.9 mg/kg	1.117	32.798 mg/kg	0.00328 %	✓	
		215-127-9	1304-28-5							
38	• coronene				<0.15 mg/kg		<0.15 mg/kg	<0.000015 %		<LOD
		205-881-7	191-07-1							
Total:								0.108 %		

**Key**

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

---

### Supplementary Hazardous Property Information

---

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Solid waste without liquid phase

Hazard Statements hit:

---

**Fam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

---

TPH (C6 to C40) petroleum group: (conc.: 0.0373%)

Classification of sample: 8-05/01/2024

✔ **Non Hazardous Waste**  
Classified as **17 05 06**  
in the List of Waste

**Sample details**

Sample name:	LoW Code:	
<b>8-05/01/2024</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 06 (Dredging spoil other than those mentioned in 17 05 05)
<b>40.2%</b> (wet weight correction)		

**Hazard properties**

None identified

**Determinands**

Moisture content: 40.2% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	antimony { antimony trioxide }				<0.1	mg/kg	1.197	<0.12	mg/kg	<0.000012 %		<LOD
	051-005-00-X	215-175-0	1309-64-4									
2	arsenic { arsenic trioxide }				1.2	mg/kg	1.32	0.947	mg/kg	0.0000947 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
3	cadmium { cadmium oxide }				<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
	048-002-00-0	215-146-2	1306-19-0									
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				1.7	mg/kg	1.462	1.486	mg/kg	0.000149 %	✓	
		215-160-9	1308-38-9									
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.1	mg/kg	2.27	<0.227	mg/kg	<0.0000227 %		<LOD
		024-017-00-8										
6	copper { dicopper oxide; copper (I) oxide }				<1.6	mg/kg	1.126	<1.801	mg/kg	<0.00018 %		<LOD
	029-002-00-X	215-270-7	1317-39-1									
7	lead { lead chromate }			1	1.2	mg/kg	1.56	1.119	mg/kg	0.0000718 %	✓	
	082-004-00-2	231-846-0	7758-97-6									
8	mercury { mercury dichloride }				<0.5	mg/kg	1.353	<0.677	mg/kg	<0.0000677 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
9	molybdenum { molybdenum(VI) oxide }				<0.5	mg/kg	1.5	<0.75	mg/kg	<0.000075 %		<LOD
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				2.4	mg/kg	2.976	4.272	mg/kg	0.000427 %	✓	
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { nickel selenate }				<0.5	mg/kg	2.554	<1.277	mg/kg	<0.000128 %		<LOD
	028-031-00-5	239-125-2	15060-62-5									
12	zinc { zinc oxide }				<16	mg/kg	1.245	<19.915	mg/kg	<0.00199 %		<LOD
	030-013-00-7	215-222-5	1314-13-2									
13	TPH (C6 to C40) petroleum group				640	mg/kg		382.72	mg/kg	0.0383 %	✓	
			TPH									
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.033	mg/kg		<0.033	mg/kg	<0.0000033 %		<LOD
	603-181-00-X	216-653-1	1634-04-4									
15	benzene				<0.017	mg/kg		<0.017	mg/kg	<0.0000017 %		<LOD
	601-020-00-8	200-753-7	71-43-2									
16	toluene				<0.017	mg/kg		<0.017	mg/kg	<0.0000017 %		<LOD
	601-021-00-3	203-625-9	108-88-3									



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
17	ethylbenzene				<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				7.7 pH		7.7 pH	7.7 pH		
			PH							
20	naphthalene				<0.13 mg/kg		<0.13 mg/kg	<0.000013 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				<0.13 mg/kg		<0.13 mg/kg	<0.000013 %		<LOD
		205-917-1	208-96-8							
22	acenaphthene				<0.13 mg/kg		<0.13 mg/kg	<0.000013 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.13 mg/kg		<0.13 mg/kg	<0.000013 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				0.14 mg/kg		0.0837 mg/kg	0.00000837 %	✓	
		201-581-5	85-01-8							
25	anthracene				<0.13 mg/kg		<0.13 mg/kg	<0.000013 %		<LOD
		204-371-1	120-12-7							
26	fluoranthene				0.37 mg/kg		0.221 mg/kg	0.0000221 %	✓	
		205-912-4	206-44-0							
27	pyrene				0.42 mg/kg		0.251 mg/kg	0.0000251 %	✓	
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.31 mg/kg		0.185 mg/kg	0.0000185 %	✓	
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.2 mg/kg		0.12 mg/kg	0.000012 %	✓	
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.31 mg/kg		0.185 mg/kg	0.0000185 %	✓	
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.16 mg/kg		0.0957 mg/kg	0.00000957 %	✓	
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.25 mg/kg		0.15 mg/kg	0.000015 %	✓	
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.14 mg/kg		0.0837 mg/kg	0.00000837 %	✓	
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.13 mg/kg		<0.13 mg/kg	<0.000013 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				<0.13 mg/kg		<0.13 mg/kg	<0.000013 %		<LOD
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.059 mg/kg		<0.059 mg/kg	<0.0000059 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
37	barium { barium oxide }				2.74 mg/kg	1.117	1.829 mg/kg	0.000183 %	✓	
		215-127-9	1304-28-5							
38	coronene				<0.13 mg/kg		<0.13 mg/kg	<0.000013 %		<LOD
		205-881-7	191-07-1							
Total:								0.042 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

---

### Supplementary Hazardous Property Information

---

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Solid waste without liquid phase

Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0383%)

Classification of sample: 9-05/01/2024

✔ **Non Hazardous Waste**  
Classified as **17 05 06**  
in the List of Waste

**Sample details**

Sample name:	LoW Code:
<b>9-05/01/2024</b>	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 06 (Dredging spoil other than those mentioned in 17 05 05)
<b>42.2%</b> (wet weight correction)	

**Hazard properties**

None identified

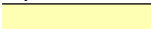



**Determinands**

Moisture content: 42.2% Wet Weight Moisture Correction applied (MC)


#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				<0.1 mg/kg	1.197	<0.12 mg/kg	<0.000012 %		<LOD
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				6.6 mg/kg	1.32	5.037 mg/kg	0.000504 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				17.4 mg/kg	1.462	14.699 mg/kg	0.00147 %	✓	
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.1 mg/kg	2.27	<0.227 mg/kg	<0.0000227 %		<LOD
	024-017-00-8									
6	copper { dicopper oxide; copper (I) oxide }				11.2 mg/kg	1.126	7.289 mg/kg	0.000729 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	10.4 mg/kg	1.56	9.376 mg/kg	0.000601 %	✓	
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.5 mg/kg	1.353	<0.677 mg/kg	<0.0000677 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				<0.5 mg/kg	1.5	<0.75 mg/kg	<0.000075 %		<LOD
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				21.4 mg/kg	2.976	36.814 mg/kg	0.00368 %	✓	
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { nickel selenate }				<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<LOD
	028-031-00-5	239-125-2	15060-62-5							
12	zinc { zinc oxide }				34.2 mg/kg	1.245	24.605 mg/kg	0.00246 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				<104.146 mg/kg		<104.146 mg/kg	<0.0104 %		<LOD
			TPH							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %		<LOD
	601-021-00-3	203-625-9	108-88-3							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
17	ethylbenzene				<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.104 mg/kg		<0.104 mg/kg	<0.0000104 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.1 pH		8.1 pH	8.1 pH		
			PH							
20	naphthalene				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
		205-917-1	208-96-8							
22	acenaphthene				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
		201-581-5	85-01-8							
25	anthracene				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
		204-371-1	120-12-7							
26	fluoranthene				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
		205-912-4	206-44-0							
27	pyrene				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
		204-927-3	129-00-0							
28	benzo[a]anthracene				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.061 mg/kg		<0.061 mg/kg	<0.0000061 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
37	barium { barium oxide }				19.8 mg/kg	1.117	12.778 mg/kg	0.00128 %	✓	
		215-127-9	1304-28-5							
38	coronene				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
		205-881-7	191-07-1							
Total:								0.0217 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: 10-05/01/2024

 **Non Hazardous Waste**  
Classified as **17 05 06**  
in the List of Waste

**Sample details**

Sample name:	LoW Code:
<b>10-05/01/2024</b>	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 06 (Dredging spoil other than those mentioned in 17 05 05)
<b>38.2%</b> (wet weight correction)	

**Hazard properties**

None identified

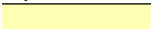



**Determinands**

Moisture content: 38.2% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				0.7 mg/kg	1.197	0.518 mg/kg	0.0000518 %	✓	
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				23.9 mg/kg	1.32	19.501 mg/kg	0.00195 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.5 mg/kg	1.142	0.353 mg/kg	0.0000353 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				31.7 mg/kg	1.462	28.633 mg/kg	0.00286 %	✓	
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.1 mg/kg	2.27	<0.227 mg/kg	<0.0000227 %		<LOD
	024-017-00-8									
6	copper { dicopper oxide; copper (I) oxide }				59.7 mg/kg	1.126	41.539 mg/kg	0.00415 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	51.8 mg/kg	1.56	49.933 mg/kg	0.0032 %	✓	
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.5 mg/kg	1.353	<0.677 mg/kg	<0.0000677 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							
9	molybdenum { molybdenum(VI) oxide }				1.3 mg/kg	1.5	1.205 mg/kg	0.000121 %	✓	
	042-001-00-9	215-204-7	1313-27-5							
10	nickel { nickel chromate }				28.2 mg/kg	2.976	51.869 mg/kg	0.00519 %	✓	
	028-035-00-7	238-766-5	14721-18-7							
11	selenium { nickel selenate }				<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<LOD
	028-031-00-5	239-125-2	15060-62-5							
12	zinc { zinc oxide }				152.5 mg/kg	1.245	117.308 mg/kg	0.0117 %	✓	
	030-013-00-7	215-222-5	1314-13-2							
13	TPH (C6 to C40) petroleum group				688 mg/kg		425.184 mg/kg	0.0425 %	✓	
			TPH							
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.032 mg/kg		<0.032 mg/kg	<0.0000032 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
15	benzene				<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
16	toluene				<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
	601-021-00-3	203-625-9	108-88-3							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
17	• ethylbenzene				<0.016 mg/kg		<0.016 mg/kg	<0.0000016 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.096 mg/kg		<0.096 mg/kg	<0.0000096 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	• pH				7.8 pH		7.8 pH	7.8 pH		
			PH							
20	naphthalene				<0.13 mg/kg		<0.13 mg/kg	<0.000013 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	• acenaphthylene				<0.13 mg/kg		<0.13 mg/kg	<0.000013 %		<LOD
		205-917-1	208-96-8							
22	• acenaphthene				<0.13 mg/kg		<0.13 mg/kg	<0.000013 %		<LOD
		201-469-6	83-32-9							
23	• fluorene				<0.13 mg/kg		<0.13 mg/kg	<0.000013 %		<LOD
		201-695-5	86-73-7							
24	• phenanthrene				0.24 mg/kg		0.148 mg/kg	0.0000148 %	✓	
		201-581-5	85-01-8							
25	• anthracene				0.14 mg/kg		0.0865 mg/kg	0.00000865 %	✓	
		204-371-1	120-12-7							
26	• fluoranthene				0.64 mg/kg		0.396 mg/kg	0.0000396 %	✓	
		205-912-4	206-44-0							
27	• pyrene				0.72 mg/kg		0.445 mg/kg	0.0000445 %	✓	
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.39 mg/kg		0.241 mg/kg	0.0000241 %	✓	
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.29 mg/kg		0.179 mg/kg	0.0000179 %	✓	
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.41 mg/kg		0.253 mg/kg	0.0000253 %	✓	
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.17 mg/kg		0.105 mg/kg	0.0000105 %	✓	
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.36 mg/kg		0.222 mg/kg	0.0000222 %	✓	
	601-032-00-3	200-028-5	50-32-8							
33	• indeno[123-cd]pyrene				0.24 mg/kg		0.148 mg/kg	0.0000148 %	✓	
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.13 mg/kg		<0.13 mg/kg	<0.000013 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	• benzo[ghi]perylene				0.19 mg/kg		0.117 mg/kg	0.0000117 %	✓	
		205-883-8	191-24-2							
36	• polychlorobiphenyls; PCB				<0.057 mg/kg		<0.057 mg/kg	<0.0000057 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
37	• barium { • barium oxide }				47.2 mg/kg	1.117	32.568 mg/kg	0.00326 %	✓	
		215-127-9	1304-28-5							
38	• coronene				<0.13 mg/kg		<0.13 mg/kg	<0.000013 %		<LOD
		205-881-7	191-07-1							
Total:								0.0756 %		

**Key**

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

---

### Supplementary Hazardous Property Information

---

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Solid waste without liquid phase

Hazard Statements hit:

---

**Fam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

---

TPH (C6 to C40) petroleum group: (conc.: 0.0425%)

Classification of sample: 11-05/01/2024

✔ **Non Hazardous Waste**  
Classified as **17 05 06**  
in the List of Waste

**Sample details**

Sample name:	LoW Code:	
<b>11-05/01/2024</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 06 (Dredging spoil other than those mentioned in 17 05 05)
<b>42.2%</b> (wet weight correction)		

**Hazard properties**

None identified

**Determinands**

Moisture content: 42.2% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	antimony { antimony trioxide }				1.2	mg/kg	1.197	0.83	mg/kg	0.000083 %	✓	
	051-005-00-X	215-175-0	1309-64-4									
2	arsenic { arsenic trioxide }				11.7	mg/kg	1.32	8.929	mg/kg	0.000893 %	✓	
	033-003-00-0	215-481-4	1327-53-3									
3	cadmium { cadmium oxide }				0.7	mg/kg	1.142	0.462	mg/kg	0.0000462 %	✓	
	048-002-00-0	215-146-2	1306-19-0									
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				47.4	mg/kg	1.462	40.043	mg/kg	0.004 %	✓	
		215-160-9	1308-38-9									
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.1	mg/kg	2.27	<0.227	mg/kg	<0.0000227 %		<LOD
		024-017-00-8										
6	copper { dicopper oxide; copper (I) oxide }				1146	mg/kg	1.126	745.775	mg/kg	0.0746 %	✓	
	029-002-00-X	215-270-7	1317-39-1									
7	lead { lead chromate }			1	70	mg/kg	1.56	63.11	mg/kg	0.00405 %	✓	
	082-004-00-2	231-846-0	7758-97-6									
8	mercury { mercury dichloride }				<0.5	mg/kg	1.353	<0.677	mg/kg	<0.0000677 %		<LOD
	080-010-00-X	231-299-8	7487-94-7									
9	molybdenum { molybdenum(VI) oxide }				2.8	mg/kg	1.5	2.428	mg/kg	0.000243 %	✓	
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				30.6	mg/kg	2.976	52.641	mg/kg	0.00526 %	✓	
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { nickel selenate }				<0.5	mg/kg	2.554	<1.277	mg/kg	<0.000128 %		<LOD
	028-031-00-5	239-125-2	15060-62-5									
12	zinc { zinc oxide }				986.4	mg/kg	1.245	709.66	mg/kg	0.071 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
13	TPH (C6 to C40) petroleum group				746	mg/kg		431.188	mg/kg	0.0431 %	✓	
			TPH									
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.035	mg/kg		<0.035	mg/kg	<0.0000035 %		<LOD
	603-181-00-X	216-653-1	1634-04-4									
15	benzene				<0.017	mg/kg		<0.017	mg/kg	<0.0000017 %		<LOD
	601-020-00-8	200-753-7	71-43-2									
16	toluene				<0.017	mg/kg		<0.017	mg/kg	<0.0000017 %		<LOD
	601-021-00-3	203-625-9	108-88-3									



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
17	ethylbenzene				<0.017 mg/kg		<0.017 mg/kg	<0.0000017 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.104 mg/kg		<0.104 mg/kg	<0.0000104 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				7.9 pH		7.9 pH	7.9 pH		
			PH							
20	naphthalene				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
		205-917-1	208-96-8							
22	acenaphthene				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				0.35 mg/kg		0.202 mg/kg	0.0000202 %	✓	
		201-581-5	85-01-8							
25	anthracene				0.18 mg/kg		0.104 mg/kg	0.0000104 %	✓	
		204-371-1	120-12-7							
26	fluoranthene				0.97 mg/kg		0.561 mg/kg	0.0000561 %	✓	
		205-912-4	206-44-0							
27	pyrene				1.02 mg/kg		0.59 mg/kg	0.000059 %	✓	
		204-927-3	129-00-0							
28	benzo[a]anthracene				0.69 mg/kg		0.399 mg/kg	0.0000399 %	✓	
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				0.52 mg/kg		0.301 mg/kg	0.0000301 %	✓	
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				0.67 mg/kg		0.387 mg/kg	0.0000387 %	✓	
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				0.29 mg/kg		0.168 mg/kg	0.0000168 %	✓	
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				0.59 mg/kg		0.341 mg/kg	0.0000341 %	✓	
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				0.34 mg/kg		0.197 mg/kg	0.0000197 %	✓	
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				0.27 mg/kg		0.156 mg/kg	0.0000156 %	✓	
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.061 mg/kg		<0.061 mg/kg	<0.0000061 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
37	barium { barium oxide }				136 mg/kg	1.117	87.766 mg/kg	0.00878 %	✓	
		215-127-9	1304-28-5							
38	coronene				<0.14 mg/kg		<0.14 mg/kg	<0.000014 %		<LOD
		205-881-7	191-07-1							
Total:								0.213 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

---

### Supplementary Hazardous Property Information

---

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Solid waste without liquid phase


Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0431%)

**Classification of sample: 12-05/01/2024**

 **Hazardous Waste**  
Classified as **17 05 05 \***  
in the List of Waste

**Sample details**

Sample name: <b>12-05/01/2024</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content: <b>25.1%</b> (wet weight correction)	Entry:	17 05 05 * (Dredging spoil containing hazardous substances)

**Hazard properties**

**HP 7: Carcinogenic** "waste which induces cancer or increases its incidence"

Hazard Statements hit:

**Carc. 1B; H350** "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.407%)

**HP 11: Mutagenic** "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

**Muta. 1B; H340** "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.407%)

**Determinands**

Moisture content: 25.1% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				0.4 mg/kg	1.197	0.359 mg/kg	0.0000359 %	✓	
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				7.5 mg/kg	1.32	7.417 mg/kg	0.000742 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				0.4 mg/kg	1.142	0.342 mg/kg	0.0000342 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				35.7 mg/kg	1.462	39.081 mg/kg	0.00391 %	✓	
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.1 mg/kg	2.27	<0.227 mg/kg	<0.0000227 %		<LOD
	024-017-00-8									
6	copper { dicopper oxide; copper (I) oxide }				39.8 mg/kg	1.126	33.563 mg/kg	0.00336 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	48.7 mg/kg	1.56	56.896 mg/kg	0.00365 %	✓	
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.5 mg/kg	1.353	<0.677 mg/kg	<0.0000677 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
9	molybdenum { molybdenum(VI) oxide }				1.1	mg/kg	1.5	1.236	mg/kg	0.000124 %	✓	
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				28.2	mg/kg	2.976	62.864	mg/kg	0.00629 %	✓	
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { nickel selenate }				<0.5	mg/kg	2.554	<1.277	mg/kg	<0.000128 %		<LOD
	028-031-00-5	239-125-2	15060-62-5									
12	zinc { zinc oxide }				122.2	mg/kg	1.245	113.926	mg/kg	0.0114 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
13	TPH (C6 to C40) petroleum group				5440	mg/kg		4074.56	mg/kg	0.407 %	✓	
			TPH									
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.027	mg/kg		<0.027	mg/kg	<0.0000027 %		<LOD
	603-181-00-X	216-653-1	1634-04-4									
15	benzene				<0.013	mg/kg		<0.013	mg/kg	<0.0000013 %		<LOD
	601-020-00-8	200-753-7	71-43-2									
16	toluene				<0.013	mg/kg		<0.013	mg/kg	<0.0000013 %		<LOD
	601-021-00-3	203-625-9	108-88-3									
17	ethylbenzene				<0.013	mg/kg		<0.013	mg/kg	<0.0000013 %		<LOD
	601-023-00-4	202-849-4	100-41-4									
18	xylene				<0.08	mg/kg		<0.08	mg/kg	<0.000008 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
19	pH				8.1	pH		8.1	pH	8.1 pH		
			PH									
20	naphthalene				<0.11	mg/kg		<0.11	mg/kg	<0.000011 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
21	acenaphthylene				<0.11	mg/kg		<0.11	mg/kg	<0.000011 %		<LOD
		205-917-1	208-96-8									
22	acenaphthene				<0.11	mg/kg		<0.11	mg/kg	<0.000011 %		<LOD
		201-469-6	83-32-9									
23	fluorene				<0.11	mg/kg		<0.11	mg/kg	<0.000011 %		<LOD
		201-695-5	86-73-7									
24	phenanthrene				<0.11	mg/kg		<0.11	mg/kg	<0.000011 %		<LOD
		201-581-5	85-01-8									
25	anthracene				<0.11	mg/kg		<0.11	mg/kg	<0.000011 %		<LOD
		204-371-1	120-12-7									
26	fluoranthene				<0.11	mg/kg		<0.11	mg/kg	<0.000011 %		<LOD
		205-912-4	206-44-0									
27	pyrene				0.11	mg/kg		0.0824	mg/kg	0.00000824 %	✓	
		204-927-3	129-00-0									
28	benzo[a]anthracene				<0.11	mg/kg		<0.11	mg/kg	<0.000011 %		<LOD
	601-033-00-9	200-280-6	56-55-3									
29	chrysene				<0.11	mg/kg		<0.11	mg/kg	<0.000011 %		<LOD
	601-048-00-0	205-923-4	218-01-9									
30	benzo[b]fluoranthene				<0.11	mg/kg		<0.11	mg/kg	<0.000011 %		<LOD
	601-034-00-4	205-911-9	205-99-2									
31	benzo[k]fluoranthene				<0.11	mg/kg		<0.11	mg/kg	<0.000011 %		<LOD
	601-036-00-5	205-916-6	207-08-9									
32	benzo[a]pyrene; benzo[def]chrysene				<0.11	mg/kg		<0.11	mg/kg	<0.000011 %		<LOD
	601-032-00-3	200-028-5	50-32-8									
33	indeno[123-cd]pyrene				<0.11	mg/kg		<0.11	mg/kg	<0.000011 %		<LOD
		205-893-2	193-39-5									
34	dibenz[a,h]anthracene				<0.11	mg/kg		<0.11	mg/kg	<0.000011 %		<LOD
	601-041-00-2	200-181-8	53-70-3									
35	benzo[ghi]perylene				<0.11	mg/kg		<0.11	mg/kg	<0.000011 %		<LOD
		205-883-8	191-24-2									
36	polychlorobiphenyls; PCB				<0.047	mg/kg		<0.047	mg/kg	<0.0000047 %		<LOD
	602-039-00-4	215-648-1	1336-36-3									



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
37	barium { barium oxide }	215-127-9	1304-28-5		52 mg/kg	1.117	43.486 mg/kg	0.00435 %	✓	
38	coronene	205-881-7	191-07-1		<0.11 mg/kg		<0.11 mg/kg	<0.000011 %		<LOD
Total:								0.442 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Solid waste without liquid phase


Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.407%)

Classification of sample: 13-05/01/2024

 **Hazardous Waste**  
Classified as **17 05 05 \***  
in the List of Waste

**Sample details**

Sample name:	LoW Code:	
<b>13-05/01/2024</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 05 * (Dredging spoil containing hazardous substances)
<b>21.5%</b> (wet weight correction)		

**Hazard properties**

**HP 7: Carcinogenic** "waste which induces cancer or increases its incidence"

Hazard Statements hit:

**Carc. 1B; H350** "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.479%)

**HP 11: Mutagenic** "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

**Muta. 1B; H340** "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.479%)

**Determinands**

Moisture content: 21.5% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				3.2 mg/kg	1.197	3.007 mg/kg	0.000301 %	✓	
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				8.7 mg/kg	1.32	9.017 mg/kg	0.000902 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				1.5 mg/kg	1.142	1.345 mg/kg	0.000135 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				91.1 mg/kg	1.462	104.521 mg/kg	0.0105 %	✓	
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.1 mg/kg	2.27	<0.227 mg/kg	<0.0000227 %		<LOD
	024-017-00-8									
6	copper { dicopper oxide; copper (I) oxide }				377.6 mg/kg	1.126	333.731 mg/kg	0.0334 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	182.1 mg/kg	1.56	222.973 mg/kg	0.0143 %	✓	
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.5 mg/kg	1.353	<0.677 mg/kg	<0.0000677 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							



#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
9	molybdenum { molybdenum(VI) oxide }				3.2	mg/kg	1.5	3.768	mg/kg	0.000377 %	✓	
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				50.3	mg/kg	2.976	117.519	mg/kg	0.0118 %	✓	
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { nickel selenate }				<0.5	mg/kg	2.554	<1.277	mg/kg	<0.000128 %		<LOD
	028-031-00-5	239-125-2	15060-62-5									
12	zinc { zinc oxide }				1510	mg/kg	1.245	1475.422	mg/kg	0.148 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
13	TPH (C6 to C40) petroleum group				6100	mg/kg		4788.5	mg/kg	0.479 %	✓	
			TPH									
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.025	mg/kg		<0.025	mg/kg	<0.0000025 %		<LOD
	603-181-00-X	216-653-1	1634-04-4									
15	benzene				<0.013	mg/kg		<0.013	mg/kg	<0.0000013 %		<LOD
	601-020-00-8	200-753-7	71-43-2									
16	toluene				<0.013	mg/kg		<0.013	mg/kg	<0.0000013 %		<LOD
	601-021-00-3	203-625-9	108-88-3									
17	ethylbenzene				<0.013	mg/kg		<0.013	mg/kg	<0.0000013 %		<LOD
	601-023-00-4	202-849-4	100-41-4									
18	xylene				<0.076	mg/kg		<0.076	mg/kg	<0.0000076 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
19	pH				8.4	pH		8.4	pH	8.4 pH		
			PH									
20	naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
21	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8									
22	acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-469-6	83-32-9									
23	fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-695-5	86-73-7									
24	phenanthrene				0.37	mg/kg		0.29	mg/kg	0.000029 %	✓	
		201-581-5	85-01-8									
25	anthracene				0.25	mg/kg		0.196	mg/kg	0.0000196 %	✓	
		204-371-1	120-12-7									
26	fluoranthene				1.68	mg/kg		1.319	mg/kg	0.000132 %	✓	
		205-912-4	206-44-0									
27	pyrene				1.92	mg/kg		1.507	mg/kg	0.000151 %	✓	
		204-927-3	129-00-0									
28	benzo[a]anthracene				1.3	mg/kg		1.021	mg/kg	0.000102 %	✓	
	601-033-00-9	200-280-6	56-55-3									
29	chrysene				1.07	mg/kg		0.84	mg/kg	0.000084 %	✓	
	601-048-00-0	205-923-4	218-01-9									
30	benzo[b]fluoranthene				1.43	mg/kg		1.123	mg/kg	0.000112 %	✓	
	601-034-00-4	205-911-9	205-99-2									
31	benzo[k]fluoranthene				0.62	mg/kg		0.487	mg/kg	0.0000487 %	✓	
	601-036-00-5	205-916-6	207-08-9									
32	benzo[a]pyrene; benzo[def]chrysene				1.32	mg/kg		1.036	mg/kg	0.000104 %	✓	
	601-032-00-3	200-028-5	50-32-8									
33	indeno[123-cd]pyrene				0.72	mg/kg		0.565	mg/kg	0.0000565 %	✓	
		205-893-2	193-39-5									
34	dibenz[a,h]anthracene				0.21	mg/kg		0.165	mg/kg	0.0000165 %	✓	
	601-041-00-2	200-181-8	53-70-3									
35	benzo[ghi]perylene				0.59	mg/kg		0.463	mg/kg	0.0000463 %	✓	
		205-883-8	191-24-2									
36	polychlorobiphenyls; PCB				<0.045	mg/kg		<0.045	mg/kg	<0.0000045 %		<LOD
	602-039-00-4	215-648-1	1336-36-3									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
37	barium { barium oxide }				179 mg/kg	1.117	156.886 mg/kg	0.0157 %	✓	
		215-127-9	1304-28-5							
38	coronene				0.19 mg/kg		0.149 mg/kg	0.0000149 %	✓	
		205-881-7	191-07-1							
Total:								0.715 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Hazardous result
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
●	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

### Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Solid waste without liquid phase


Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.479%)

Classification of sample: 14-05/01/2024

 **Hazardous Waste**  
Classified as **17 05 05 \***  
in the List of Waste

**Sample details**

Sample name: <b>14-05/01/2024</b>	LoW Code: Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content: <b>19.8%</b> (wet weight correction)	Entry:	17 05 05 * (Dredging spoil containing hazardous substances)

**Hazard properties**

**HP 7: Carcinogenic** "waste which induces cancer or increases its incidence"

Hazard Statements hit:

**Carc. 1B; H350** "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.388%)

**HP 11: Mutagenic** "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

**Muta. 1B; H340** "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.388%)

**Determinands**

Moisture content: 19.8% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	antimony { antimony trioxide }				0.3 mg/kg	1.197	0.288 mg/kg	0.0000288 %	✓	
	051-005-00-X	215-175-0	1309-64-4							
2	arsenic { arsenic trioxide }				5.1 mg/kg	1.32	5.4 mg/kg	0.00054 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
3	cadmium { cadmium oxide }				<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<LOD
	048-002-00-0	215-146-2	1306-19-0							
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				12.3 mg/kg	1.462	14.418 mg/kg	0.00144 %	✓	
		215-160-9	1308-38-9							
5	chromium in chromium(VI) compounds { chromium(VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<0.1 mg/kg	2.27	<0.227 mg/kg	<0.0000227 %		<LOD
	024-017-00-8									
6	copper { dicopper oxide; copper (I) oxide }				14.1 mg/kg	1.126	12.732 mg/kg	0.00127 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
7	lead { lead chromate }			1	12.5 mg/kg	1.56	15.637 mg/kg	0.001 %	✓	
	082-004-00-2	231-846-0	7758-97-6							
8	mercury { mercury dichloride }				<0.5 mg/kg	1.353	<0.677 mg/kg	<0.0000677 %		<LOD
	080-010-00-X	231-299-8	7487-94-7							

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
9	molybdenum { molybdenum(VI) oxide }				0.6	mg/kg	1.5	0.722	mg/kg	0.0000722 %	✓	
	042-001-00-9	215-204-7	1313-27-5									
10	nickel { nickel chromate }				10.3	mg/kg	2.976	24.586	mg/kg	0.00246 %	✓	
	028-035-00-7	238-766-5	14721-18-7									
11	selenium { nickel selenate }				<0.5	mg/kg	2.554	<1.277	mg/kg	<0.000128 %		<LOD
	028-031-00-5	239-125-2	15060-62-5									
12	zinc { zinc oxide }				51.8	mg/kg	1.245	51.71	mg/kg	0.00517 %	✓	
	030-013-00-7	215-222-5	1314-13-2									
13	TPH (C6 to C40) petroleum group				4840	mg/kg		3881.68	mg/kg	0.388 %	✓	
			TPH									
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.025	mg/kg		<0.025	mg/kg	<0.0000025 %		<LOD
	603-181-00-X	216-653-1	1634-04-4									
15	benzene				<0.012	mg/kg		<0.012	mg/kg	<0.0000012 %		<LOD
	601-020-00-8	200-753-7	71-43-2									
16	toluene				<0.012	mg/kg		<0.012	mg/kg	<0.0000012 %		<LOD
	601-021-00-3	203-625-9	108-88-3									
17	ethylbenzene				<0.012	mg/kg		<0.012	mg/kg	<0.0000012 %		<LOD
	601-023-00-4	202-849-4	100-41-4									
18	xylene				<0.074	mg/kg		<0.074	mg/kg	<0.0000074 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
19	pH				8.6	pH		8.6	pH	8.6 pH		
			PH									
20	naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
21	acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8									
22	acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-469-6	83-32-9									
23	fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-695-5	86-73-7									
24	phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		201-581-5	85-01-8									
25	anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		204-371-1	120-12-7									
26	fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-912-4	206-44-0									
27	pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		204-927-3	129-00-0									
28	benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-033-00-9	200-280-6	56-55-3									
29	chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-048-00-0	205-923-4	218-01-9									
30	benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-034-00-4	205-911-9	205-99-2									
31	benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-036-00-5	205-916-6	207-08-9									
32	benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-032-00-3	200-028-5	50-32-8									
33	indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-893-2	193-39-5									
34	dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	601-041-00-2	200-181-8	53-70-3									
35	benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		205-883-8	191-24-2									
36	polychlorobiphenyls; PCB				<0.044	mg/kg		<0.044	mg/kg	<0.0000044 %		<LOD
	602-039-00-4	215-648-1	1336-36-3									



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used	
	EU CLP index number	EC Number	CAS Number								
37	barium { barium oxide }				16.3 mg/kg	1.117	14.596 mg/kg	0.00146 %	✓		
		215-127-9	1304-28-5								
38	coronene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD	
		205-881-7	191-07-1								
Total:								0.402 %			

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

**HP 3(i): Flammable** "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Solid waste without liquid phase


Hazard Statements hit:

**Flam. Liq. 3; H226** "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.388%)

Classification of sample: 15-05/01/2024

 **Non Hazardous Waste**  
**Classified as 17 05 06**  
**in the List of Waste**

**Sample details**

Sample name:	LoW Code:	
<b>15-05/01/2024</b>	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry:	17 05 06 (Dredging spoil other than those mentioned in 17 05 05)
<b>19.7%</b> (wet weight correction)		

**Hazard properties**

None identified

**Determinands**

Moisture content: 19.7% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	antimony { antimony trioxide } 051-005-00-X   215-175-0   1309-64-4				0.3	mg/kg	1.197	0.288	mg/kg	0.0000288 %	✓	
2	arsenic { arsenic trioxide } 033-003-00-0   215-481-4   1327-53-3				6	mg/kg	1.32	6.361	mg/kg	0.000636 %	✓	
3	cadmium { cadmium oxide } 048-002-00-0   215-146-2   1306-19-0				0.2	mg/kg	1.142	0.183	mg/kg	0.0000183 %	✓	
4	chromium in chromium(III) compounds { chromium(III) oxide (worst case) } 215-160-9   1308-38-9				9.3	mg/kg	1.462	10.915	mg/kg	0.00109 %	✓	
5	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex } 024-017-00-8				<0.1	mg/kg	2.27	<0.227	mg/kg	<0.0000227 %		<LOD
6	copper { dicopper oxide; copper (I) oxide } 029-002-00-X   215-270-7   1317-39-1				9.2	mg/kg	1.126	8.318	mg/kg	0.000832 %	✓	
7	lead { lead chromate } 082-004-00-2   231-846-0   7758-97-6			1	27.4	mg/kg	1.56	34.319	mg/kg	0.0022 %	✓	
8	mercury { mercury dichloride } 080-010-00-X   231-299-8   7487-94-7				<0.5	mg/kg	1.353	<0.677	mg/kg	<0.0000677 %		<LOD
9	molybdenum { molybdenum(VI) oxide } 042-001-00-9   215-204-7   1313-27-5				0.5	mg/kg	1.5	0.602	mg/kg	0.0000602 %	✓	
10	nickel { nickel chromate } 028-035-00-7   238-766-5   14721-18-7				8.3	mg/kg	2.976	19.837	mg/kg	0.00198 %	✓	
11	selenium { nickel selenate } 028-031-00-5   239-125-2   15060-62-5				<0.5	mg/kg	2.554	<1.277	mg/kg	<0.000128 %		<LOD
12	zinc { zinc oxide } 030-013-00-7   215-222-5   1314-13-2				45.4	mg/kg	1.245	45.378	mg/kg	0.00454 %	✓	
13	TPH (C6 to C40) petroleum group TPH				<74.979	mg/kg		<74.979	mg/kg	<0.0075 %		<LOD
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane 603-181-00-X   216-653-1   1634-04-4				<0.025	mg/kg		<0.025	mg/kg	<0.0000025 %		<LOD
15	benzene 601-020-00-8   200-753-7   71-43-2				<0.012	mg/kg		<0.012	mg/kg	<0.0000012 %		<LOD
16	toluene 601-021-00-3   203-625-9   108-88-3				<0.012	mg/kg		<0.012	mg/kg	<0.0000012 %		<LOD



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
17	ethylbenzene				<0.012 mg/kg		<0.012 mg/kg	<0.000012 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
18	xylene				<0.074 mg/kg		<0.074 mg/kg	<0.0000074 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
19	pH				8.4 pH		8.4 pH	8.4 pH		
			PH							
20	naphthalene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
21	acenaphthylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		205-917-1	208-96-8							
22	acenaphthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		201-469-6	83-32-9							
23	fluorene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		201-695-5	86-73-7							
24	phenanthrene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		201-581-5	85-01-8							
25	anthracene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		204-371-1	120-12-7							
26	fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		205-912-4	206-44-0							
27	pyrene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		204-927-3	129-00-0							
28	benzo[a]anthracene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
29	chrysene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
30	benzo[b]fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
31	benzo[k]fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
32	benzo[a]pyrene; benzo[def]chrysene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
33	indeno[123-cd]pyrene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		205-893-2	193-39-5							
34	dibenz[a,h]anthracene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
35	benzo[ghi]perylene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		205-883-8	191-24-2							
36	polychlorobiphenyls; PCB				<0.044 mg/kg		<0.044 mg/kg	<0.0000044 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
37	barium { barium oxide }				14 mg/kg	1.117	12.552 mg/kg	0.00126 %	✓	
		215-127-9	1304-28-5							
38	coronene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		205-881-7	191-07-1							
Total:								0.0205 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
- Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- CLP: Note 1 Only the metal concentration has been used for classification

## Appendix A: Classifier defined and non EU CLP determinands

### chromium(III) oxide (worst case) (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from C&L Inventory Database

Data source: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806>

Data source date: 17 Jul 2015

Hazard Statements: Acute Tox. 4; H332 , Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Resp. Sens. 1; H334 , Skin Sens. 1; H317 , Repr. 1B; H360FD , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

### TPH (C6 to C40) petroleum group (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , STOT RE 2; H373 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 2; H361d , Aquatic Chronic 2; H411

### ethylbenzene (EC Number: 202-849-4, CAS Number: 100-41-4)

EU CLP index number: 601-023-00-4

Description/Comments:

Additional Hazard Statement(s): Carc. 2; H351

Reason for additional Hazards Statement(s):

03 Jun 2015 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

### pH (CAS Number: PH)

Description/Comments: Appendix C4

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: None.

### acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H330 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

### acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Aquatic Chronic 2; H411

### fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

### phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

### anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

### fluoranthene (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 21 Aug 2015

Hazard Statements: Acute Tox. 4; H302 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

▫ **pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014  
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>  
Data source date: 21 Aug 2015  
Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

▫ **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database  
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>  
Data source date: 06 Aug 2015  
Hazard Statements: Carc. 2; H351

▫ **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015  
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>  
Data source date: 23 Jul 2015  
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

▫ **polychlorobiphenyls; PCB** (EC Number: 215-648-1, CAS Number: 1336-36-3)

EU CLP index number: 602-039-00-4  
Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans;  
  
POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.  
Additional Hazard Statement(s): Carc. 1A; H350  
Reason for additional Hazards Statement(s):  
29 Sep 2015 - Carc. 1A; H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

▫ **barium oxide** (EC Number: 215-127-9, CAS Number: 1304-28-5)

Description/Comments: Data from ECHA's C&L Inventory Database, Sigma Aldrich SDS dated 6/2/20  
Data source: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/88825>  
Data source date: 02 Apr 2020  
Hazard Statements: Acute Tox. 3; H301 , Skin Corr. 1B; H314 , Eye Dam. 1; H318 , Acute Tox. 1; H332

▫ **coronene** (EC Number: 205-881-7, CAS Number: 191-07-1)

Description/Comments: Data from C&L Inventory Database; no entries in Registered Substances or Pesticides Properties databases; SDS: Sigma Aldrich, 1907/2006 compliant, dated 2012 - no entries; IARC – Group 3, not carcinogenic.  
Data source: <http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=17010&HarmOnly=no?fc=true&lang=en>  
Data source date: 16 Jun 2014  
Hazard Statements: STOT SE 2; H371

## Appendix B: Rationale for selection of metal species

### antimony {antimony trioxide}

Worst case CLP species based on hazard statements/molecular weight and low solubility. Industrial sources include: flame retardants in electrical apparatus, textiles and coatings (edit as required)

### arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds (edit as required)

### cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. (edit as required) Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history (edit as required)

### chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass (edit as required)

### chromium in chromium(VI) compounds {chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex}

Worst case species based on hazard statements/molecular weight (edit as required)

### copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. (edit as required) Worse case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected. (edit as required)

**lead {lead chromate}**

Worst case CLP species based on hazard statements/molecular weight (edit as required)

**mercury {mercury dichloride}**

Worst case CLP species based on hazard statements/molecular weight (edit as required)

**molybdenum {molybdenum(VI) oxide}**

Worst case CLP species based on hazard statements/molecular weight (edit as required)

**nickel {nickel chromate}**

Worst case CLP species based on hazard statements/molecular weight (edit as required)

**selenium {nickel selenate}**

Worst case CLP species based on hazard statements/molecular weight (edit as required)

**zinc {zinc oxide}**

No CrVI

**barium {barium oxide}**

No Cr(VI)

**Appendix C: Version**

HazWasteOnline Classification Engine: EU WM3 1st Edition v1.1.NI using the EU LoW

HazWasteOnline Classification Engine Version: 2024.110.6022.11160 (19 Apr 2024)

HazWasteOnline Database: 2024.110.6022.11160 (19 Apr 2024)

This classification utilises the following guidance and legislation:

**WM3 v1.1.NI - Waste Classification** - 1st Edition v1.1.NI - Jan 2021

**CLP Regulation** - Regulation 1272/2008/EC of 16 December 2008

**1st ATP** - Regulation 790/2009/EC of 10 August 2009

**2nd ATP** - Regulation 286/2011/EC of 10 March 2011

**3rd ATP** - Regulation 618/2012/EU of 10 July 2012

**4th ATP** - Regulation 487/2013/EU of 8 May 2013

**Correction to 1st ATP** - Regulation 758/2013/EU of 7 August 2013

**5th ATP** - Regulation 944/2013/EU of 2 October 2013

**6th ATP** - Regulation 605/2014/EU of 5 June 2014

**WFD Annex III replacement** - Regulation 1357/2014/EU of 18 December 2014

**Revised List of Waste 2014** - Decision 2014/955/EU of 18 December 2014

**7th ATP** - Regulation 2015/1221/EU of 24 July 2015

**8th ATP** - Regulation (EU) 2016/918 of 19 May 2016

**9th ATP** - Regulation (EU) 2016/1179 of 19 July 2016

**10th ATP** - Regulation (EU) 2017/776 of 4 May 2017

**HP14 amendment** - Regulation (EU) 2017/997 of 8 June 2017

**13th ATP** - Regulation (EU) 2018/1480 of 4 October 2018

**14th ATP** - Regulation (EU) 2020/217 of 4 October 2019

**15th ATP** - Regulation (EU) 2020/1182 of 19 May 2020

**The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit)**

**Regulations 2020** - UK: 2020 No. 1567 of 16th December 2020

**The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020** - UK:

2020 No. 1540 of 16th December 2020

**17th ATP** - Regulation (EU) 2021/849 of 11 March 2021

**18th ATP** - Regulation (EU) 2022/692 of 16 February 2022

**POPs Amendment 2022** - Regulation (EU) 2022/2400 of 23 November 2022

**19th ATP** - Regulation (EU) 2023/1434 of 25 April 2023

**20th ATP** - Regulation (EU) 2023/1435 of 2 May 2023

**21st ATP** - Regulation (EU) 2024/197 of 19 October 2023

# APPENDIX 4 – Waste Category Summary Data



Waste Categorisation Summary Table

Balbriggan Sediment



Sample ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14				
Sample Depth (m)																		
Material Description	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment				
Sample Date	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024	05/01/2024				
LOW Code	17 05 06	17 05 06	17 05 06	17 05 06	17 05 06	17 05 06	17 05 06	17 05 06	17 05 06	17 05 06	17 05 06	17 05 06	17 05 06	17 05 06				
Waste Category	Category B2	Category C	Category D	Category C	Category C	Category C	Category C	Category C	Category C1	Category C	Category D	Category D	Category D	Category B2	Category B1 Criteria	Category B2 Criteria	Hazardous Criteria	Units
<b>Metals</b>																		
Antimony	0.5	1.6	1.2	1.1	1.3	1	<0.1	<0.1	0.7	1.2	0.4	3.2	0.3	0.3	-	-	HazWaste	mg/kg
Arsenic	8.4	8.3	8.8	10.4	18	13.2	1.2	6.6	23.9	11.7	7.5	8.7	5.1	6	-	-	HazWaste	mg/kg
Barium	53.1	181	83.1	43.6	66.5	53.9	2.74	19.8	47.2	136	52	179	16.3	14	-	-	HazWaste	mg/kg
Cadmium	0.2	0.5	0.5	0.6	0.4	0.6	<0.2	<0.2	0.5	0.7	0.4	1.5	<0.2	0.2	-	-	HazWaste	mg/kg
Chromium	30.2	29.7	22.6	26.3	68.9	32.3	1.7	17.4	31.7	47.4	35.7	91.1	12.3	9.3	-	-	HazWaste	mg/kg
Copper	22.4	675.7	45.1	46.4	160.1	157.1	<1.6	11.2	59.7	1146	39.8	377.6	14.1	9.2	-	-	HazWaste	mg/kg
Lead	32.4	98.8	100.6	48.4	42.2	59.4	1.2	10.4	51.8	70	48.7	182.1	12.5	27.4	-	-	HazWaste	mg/kg
Mercury	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	HazWaste	mg/kg
Molybdenum	0.9	2.3	1.5	2.4	4.3	1.8	<0.5	<0.5	1.3	2.8	1.1	3.2	0.6	0.5	-	-	HazWaste	mg/kg
Nickel	25	21.3	21.4	23.8	60.5	25.5	2.4	21.4	28.2	30.6	28.2	50.3	10.3	8.3	-	-	HazWaste	mg/kg
Selenium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	HazWaste	mg/kg
Zinc	58.6	218.7	101.9	120.7	154.2	681.5	<16.0	34.2	152.5	986.4	122.2	1510	51.8	45.4	-	-	HazWaste	mg/kg
Hexavalent Chromium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	HazWaste	mg/kg
pH (solid sample)	8.5	8.2	8.1	8.1	8.5	8.5	8.1	8.6	8.6	8.6	7.9	8.1	8.2	8.5	-	-	HazWaste	pH units
alkali reserve	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	gNaOH/100g
<b>Asbestos</b>																		
Asbestos (Dry Weight)	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	<0.001	NAD	NAD	NAD	NAD	-	-	0.1	%
ACM Detected	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Presence
<b>PAHs</b>																		
Acenaphthene	<0.10	<0.11	0.74	<0.13	<0.11	<0.15	<0.13	<0.14	<0.13	<0.14	<0.11	<0.10	<0.10	<0.10	-	-	HazWaste	mg/kg
Acenaphthylene	0.42	<0.11	1.43	<0.13	<0.11	<0.15	<0.13	<0.14	<0.13	<0.14	<0.11	<0.10	<0.10	<0.10	-	-	HazWaste	mg/kg
Anthracene	0.93	0.23	7.4	0.32	<0.11	0.28	<0.13	<0.14	0.14	0.18	<0.11	0.25	<0.10	<0.10	-	-	HazWaste	mg/kg
Benzo[a]anthracene	3.77	0.83	21.7	1.05	0.17	0.81	0.31	<0.14	0.39	0.69	<0.11	1.3	<0.10	<0.10	-	-	HazWaste	mg/kg
Benzo[a]pyrene	2.34	0.68	13.3	0.72	0.17	0.55	0.25	<0.14	0.36	0.59	<0.11	1.32	<0.10	<0.10	-	-	HazWaste	mg/kg
Benzo[b]fluoranthene	2.75	0.82	15.3	0.89	0.19	0.63	0.31	<0.14	0.41	0.67	<0.11	1.43	<0.10	<0.10	-	-	HazWaste	mg/kg
Benzo[k]fluoranthene	0.75	0.29	3.54	0.26	<0.11	0.21	<0.13	<0.14	0.19	0.27	<0.11	0.59	<0.10	<0.10	-	-	HazWaste	mg/kg
Benzo[e]fluoranthene	1.29	0.39	6.11	0.41	<0.11	0.32	0.16	<0.14	0.17	0.29	<0.11	0.62	<0.10	<0.10	-	-	HazWaste	mg/kg
Chrysene	2.4	0.59	13.1	0.66	<0.11	0.47	0.2	<0.14	0.29	0.52	<0.11	1.07	<0.10	<0.10	-	-	HazWaste	mg/kg
Coronene	0.2	<0.11	0.92	<0.13	<0.11	<0.15	<0.13	<0.14	<0.13	<0.14	<0.11	0.19	<0.10	<0.10	-	-	HazWaste	mg/kg
Dibenz[a,h]anthracene	0.31	<0.11	1.48	<0.13	<0.11	<0.15	<0.13	<0.14	<0.13	<0.14	<0.11	0.21	<0.10	<0.10	-	-	HazWaste	mg/kg
Fluoranthene	5.44	1.11	38.5	1.4	0.22	1.09	0.37	<0.14	0.64	0.97	<0.11	1.68	<0.10	<0.10	-	-	HazWaste	mg/kg
Fluorene	0.34	<0.11	2.13	<0.13	<0.11	<0.15	<0.13	<0.14	0.64	<0.14	<0.11	<0.10	<0.10	<0.10	-	-	HazWaste	mg/kg
Indeno[1,2,3-cd]pyrene	1.01	0.38	5.46	0.37	<0.11	0.27	0.14	<0.14	0.24	0.34	<0.11	0.72	<0.10	<0.10	-	-	HazWaste	mg/kg
Naphthalene	<0.10	<0.11	0.79	<0.13	<0.11	<0.15	<0.13	<0.14	<0.13	<0.14	<0.11	<0.10	<0.10	<0.10	-	-	HazWaste	mg/kg
Phenanthrene	2.74	0.43	12.9	0.51	<0.11	0.41	0.14	<0.14	0.24	0.35	<0.11	0.37	<0.10	<0.10	-	-	HazWaste	mg/kg
Pyrene	4.3	1.16	29.9	1.35	0.21	1.01	0.42	<0.14	0.72	1.02	0.11	1.92	<0.10	<0.10	-	-	HazWaste	mg/kg
Total PAH 16	29	747	174	6.56	2.14	6.78	3.23	<2.21	4.43	6.57	1.71	11.9	<1.60	<1.59	100	100	HazWaste	mg/kg
Total PAH 17	29.2	7.58	175	8.68	2.25	6.93	3.36	<2.35	4.56	6.71	1.82	12.1	<1.70	<1.69	-	-	HazWaste	mg/kg
<b>Hydrocarbons</b>																		
TPH (C5-40)	447.6	621	1762	356	183.3	685	640	<104	688	746	5440	5100	4840	<74	-	-	HazWaste	mg/kg
MTBE	<24	<28	<25	<32	<27	<37	<33	<35	<32	<35	<27	<26	<25	<25	-	-	HazWaste	ug/kg
Benzene	<12	<14	<13	<16	<13	<18	<17	<16	<17	<17	<13	<13	<13	<13	-	-	HazWaste	ug/kg
Toluene	<12	<14	<13	<16	14	<18	<17	<17	<16	<17	<13	<13	<13	<13	-	-	HazWaste	ug/kg
Ethylbenzene	<12	<14	<13	<16	<13	<18	<17	<17	<16	<17	<13	<13	<13	<13	-	-	HazWaste	ug/kg
m,p-Xylene	<24	<28	<25	<32	<27	<37	<33	<35	<32	<35	<27	<26	<25	<25	-	-	HazWaste	ug/kg
o-Xylene	<12	<14	<13	<16	<13	<18	<17	<16	<17	<17	<13	<13	<13	<13	-	-	HazWaste	ug/kg
Total 7 PCBs	<0.043	<0.050	<0.044	<0.055	<0.047	<0.064	<0.059	<0.061	<0.057	<0.061	<0.047	<0.045	<0.044	<0.044	1,000	1,000	HazWaste	ug/kg
<b>WAC** Solid Sample Summary</b>																		
Total Organic Carbon *	0.86	1.39	1.19	1.96	5.45	2.29	2.27	0.13	2.36	2.86	0.62	1.13	0.39	0.18	3	6	-	%
Sum of BTEX	<0.073	<0.085	<0.076	<0.095	0.081	<0.110	<0.100	<0.104	<0.097	<0.104	<0.080	<0.076	<0.075	<0.075	6	6	-	mg/kg
Sum of 7 PCBs	<0.043	<0.050	<0.044	<0.055	<0.047	<0.064	<0.059	<0.061	<0.057	<0.061	<0.047	<0.045	<0.044	<0.044	1	1	-	mg/kg
Mineral Oil (C10-C40 Aliphatic)	90.6	199	246	99.8	59.4	214	214	<34.6	244	262	2160	2440	2000	<24.9	500	500	-	mg/kg
PAH Sum of 17	29.2	7.58	175	8.68	2.25	6.93	3.36	<2.35	4.56	6.71	1.82	12.1	<1.70	<1.69	100	100	-	mg/kg
<b>WAC** Leachate Data</b>																		
Arsenic	0.02	0.03	0.02	0.04	0.03	0.04	0.02	0.03	0.03	0.02	0.03	0.06	0.05	0.04	0.5	1.5	-	mg/kg
Barium	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	20	20	-	mg/kg
Cadmium	<0.0002	0.0007	0.0005	0.0007	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	0.0003	<0.0002	0.04	0.04	-	mg/kg
Chromium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.5	0.5	-	mg/kg
Copper	<0.01	<0.01	<0.01	0.02	0.03	<0.01	0.05	<0.01	<0.01	<0.01	<0.01	0.02	0.04	0.03	2	2	-	mg/kg
Mercury	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	0.01	0.01	-	mg/kg
Molybdenum	0.24	0.98	0.66	0.56	0.64	0.22	0.44	<0.01	0.46	0.24	0.13	0.41	0.75	<0.01	0.5	1.5	-	mg/kg
Nickel	0.03	0.02	0.02	0.03	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.4	0.4	-	mg/kg
Lead	<0.01	0.15	0.03	0.02	&													