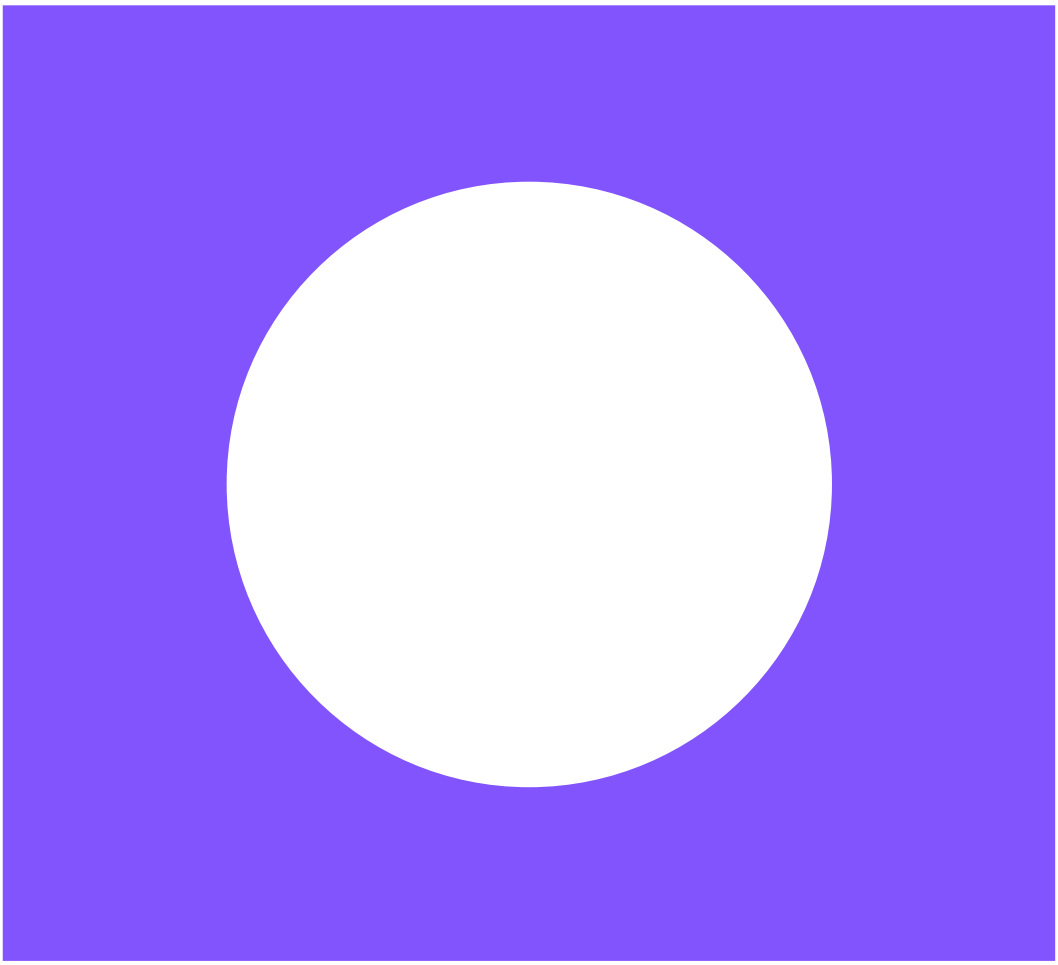
MOTT MACDONALD



BPEO Assessment Report

Port Ellen Terminal Development

January 2026

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BPEO Assessment Report

Port Ellen Terminal Development

January 2026

Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
A	28/10/24	Senior Engineering Geologist	Project Principal – Geotechnical Engineering	Project Manager	First issue
B	30/01/26	Project Engineer	Project Principal	Project Manager	2nd Issue. Updated Dredge Disposal Site to MA030

Document reference: 115031-MMD-PE-XX-RP-G-0003 | B

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Executive summary

Mott MacDonald Ltd prepared this BPEO Assessment Report for Caledonian Maritime Assets Limited (CMAL) to support Marine and Dredge Disposal Licence applications for disposing of dredge material from the Port Ellen Terminal Development project. All disposal options were assessed, and sea disposal was identified as the Best Practicable Environmental Option.

Sea disposal at site MA030 is the Best Practicable Environmental Option for the Port Ellen Terminal Development dredge material disposal. Site MA035 remains an acceptable alternative.

Sampling	35 samples were collected from 23 locations during three phases of investigations between 2022 and 2024. The samples were analysed for chemical contaminants in accordance with Marine Directorate guidance.
Material type	The dredge material is described as mainly silty sand with gravel and occasional cobbles. Some areas contain sandy clay. The bedrock is metamorphic mudstone (phyllite), ranging from extremely weak to medium strong. Bedrock was not tested for contaminants.
Contamination	All samples fell below Action Level 2. However, eight samples exceeded Action Level 1 for metals and polycyclic aromatic hydrocarbons (PAH).
Disposal options	A range of all viable disposal options were reviewed and assessed. Sea disposal at a licenced site was determined as the only feasible choice.
Risk assessment	The eight samples exceeding Action Level 1 were further assessed in line with guidance and standard practice. The average contaminant levels of the dredge material are calculated well below Action Level 1 thresholds. Comparison with Canadian standards shows low risk to marine life.
Environmental modelling	Sediment dispersal was modelled at both disposal sites (MA030, 900m from Port Ellen; MA035, 20km away). Both sites show minimal environmental impact beyond their boundaries. Given the relative proximity of the dredge site (MA030) and disposal site the risk of cumulative effects was also considered and confirmed to be negligible.
Conclusion	The dredge material is suitable for sea disposal. Site MA030 is the preferred option because it is closer to the dredge area, which improves safety and reduces costs. Site MA035 remains an acceptable alternative.

1 Introduction

1.1 Purpose

Mott MacDonald prepared this BPEO Assessment Report for Caledonian Maritime Assets Limited (CMAL) to support Marine and Dredge Disposal Licence applications for disposing of dredge material from the Port Ellen Terminal Development project.

The Marine (Scotland) Act 2010 requires a Marine Licence for dredging and disposing of material in Scottish waters. Marine Directorate must consider alternatives to sea disposal before approving any application. This Best Practicable Environmental Option[1] (BPEO) assessment demonstrates that all options have been explored and confirms that sea disposal poses no unacceptable risk to the marine environment. This is the basis for the Environmental Statement (ES) and the Environmental Impact Assessment (EIA).

1.2 Background

CMAL have commissioned two new ferries for the Kennacraig to Port Askaig/Port Ellen route. These new vessels are scheduled to enter service by autumn 2026. The new ferries are longer, wider and draw more water than the current vessels on the route (MV Finlaggan and MV Hebridean Isles). Port Ellen must therefore upgrade its infrastructure to safely accommodate them. CMAL owns Port Ellen Harbour and has appointed Mott MacDonald to design the necessary upgraded infrastructure works, including dredging, and support the Marine Licence application.

1.3 This Report

This report evaluates all disposal options and identifies those that are practical. Each option is assessed against the Waste Hierarchy (Waste (Scotland) Regulations 2012), environmental impacts and costs.

Report structure:

- Chapter 2: Sediment sampling
- Chapter 3: Test results
- Chapter 4: Disposal options
- Chapter 5: Environmental assessment
- Chapter 6: Conclusion

[1] The disposal method that provides the most benefit or least damage to the environmental at acceptable cost.

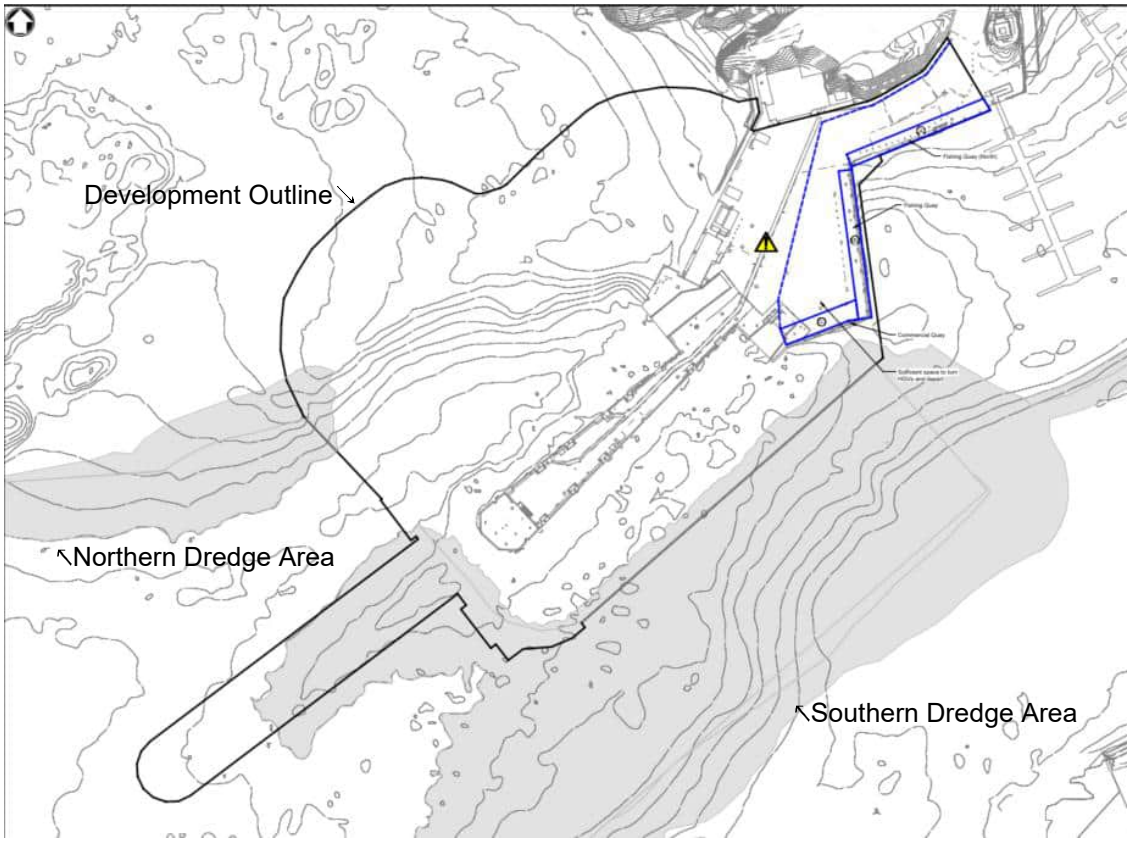
1.4 Proposed Development

1.4.1 Overview

The project will completely rebuild and enlarge the ferry terminal, building the new infrastructure over the footprint of the existing. The main works include:

- Reclaiming 11,500m² of land north and southwest of the existing terminal, bounded by 220m of new quay wall and 260m of rock armour
- Building a new terminal and marshalling area on the reclaimed land
- Constructing a 115m finger pier extending southwest
- Installing a new fixed ramp and linkspan
- Dredging the seabed to provide sufficient depth for the new vessels

Figure 1.1: Proposed development



Source: MMD (2026) 115031-MMD-PE-XX-DR-C-0105

1.4.2 Dredging works

The design of the new infrastructure requires two areas of the seabed to be dredged (see Figure 1-1 and Drawing 115031-MMD-PE-XX-DR-C-0316 in Appendix A):

- **Southern area:** 21,300m² dredged to -5.5m CD[2] (reducing to -2.0m CD in the inner harbour)
- **Northern area:** 2,800m² dredged to -5.5m CD
- **Total dredge volume:** ~27,800m³ (26,100m³ southern area, 1,700m³ northern area).

[2] Chart Datum – the reference level for water depths on nautical charts (approximately lowest astronomical tide).

CMAL's delivery partner, McLaughlin & Harvey Ltd (MCLH), have confirmed that a backhoe dredger with open bucket will be used to excavate the material. Bedrock, if encountered, will be broken using a hydraulic breaker. MCLH have assessed their dredging equipment, and the use of explosive are not anticipated, however, Cardox[3] has been considered in the EIA as a contingency.

1.5 Changes to Construction Programme

Since the first version of this report was prepared, and the licences were determined, the construction programme has changed. Ferry services will now stop during construction, closing the terminal while dredging and disposal works are undertaken.

Originally, ferries would have continued operating during dredging. This created a risk: disposal site MA030 lies 900m south of Port Ellen at the harbour entrance, directly on the ferry route. Disposal vessels could have delayed ferries or created safety concerns (See Figure 1-2). Site MA035 (20km west) was therefore chosen to avoid this conflict.

Figure 1.2: Dredge disposal site locations

Source: https://marinescotland.atkinsgeospatial.com/nmpi/default.aspx?layers=712

With ferries diverted, this risk no longer exists. Site MA030 now offers several advantages:

- Shorter distance (900m versus 20km) reduces operating time and fuel costs
- Shorter open-water transits improve safety
- Less exposure to inclement weather and rough seas
- More operational flexibility for the contractor
- Lower carbon emissions

Modelling shows both sites are environmentally suitable. Site MA030 is now the preferred option, with MA035 remaining an acceptable alternative.

[3] Cardox is a non-explosive method that uses rapidly expanding liquid CO2 to create a controlled blasting force.

1.6 Limitations

Intrusive ground investigations can only characterise a limited proportion of subsurface conditions and cannot provide complete spatial coverage of a site. Ground conditions and contamination are often variable and influenced by local geology and historical use. Consequently, there remains the potential for localised pockets of contamination to exist outside the sampled locations. Sampling locations were selected using a proportionate, risk-based approach, informed by the conceptual site model, the extent of dredging, and an understanding of potential contaminant sources, pathways, and receptors, consistent with SEPA's land contamination assessment principles. The results should therefore be interpreted in the context of these inherent uncertainties.

2 Sediment Sampling

2.1 Sampling Programme

The dredge material was sampled in three phases to support the Marine Licence application:

- **October 2022:** Initial sampling during ground investigation for Port Ellen New Islay Vessel Enabling works project;
- **September-October 2023:** Main sampling during detailed design ground investigation for the Port Ellen Terminal Development project; and
- **May 2024:** Additional sampling in the inner harbour recognising additional extent.

Marine Directorate approved the sampling plans before each phase. In total, 23 samples were collected, significantly exceeding the minimum requirement of 4 samples for a 27,800m³ dredge disposal[4]. Refer to Table 2-1 for a summary of the samples and their location.

Table 2.1: Sample location summary

Location ID	Sample Date	Location		Seabed Level (top of core) (m CD)	Termination Depth (bottom of core) (m bsb / m CD)
		Latitude	Longitude		
GS401	Sept/Oct 2023	55° 37' 37" N	6° 11' 30" W	-5.5	n/a - surface sample
GS402	Sept/Oct 2023	55° 37' 36" N	6° 11' 33" W	-5.3	n/a - surface sample
GS403	Sept/Oct 2023	55° 37' 33" N	6° 11' 30" W	-4.7	n/a - surface sample
GS404	Sept/Oct 2023	55° 37' 35" N	6° 11' 26" W	-4.8	n/a - surface sample
GS405	Sept/Oct 2023	55° 37' 36" N	6° 11' 21" W	-1.5	n/a - surface sample
GS406	Sept/Oct 2023	55° 37' 31" N	6° 11' 29" W	-3.7	n/a - surface sample
GS408	Sept/Oct 2023	55° 37' 35" N	6° 11' 24" W	-4.5	n/a - surface sample
GS409	May 2024	55° 37' 40" N	6° 11' 14" W	-1.3	n/a - surface sample
GS410	May 2024	55° 37' 39" N	6° 11' 16" W	-1.6	n/a - surface sample
GS411	May 2024	55° 37' 38" N	6° 11' 20" W	-3.9	n/a - surface sample
GS412	May 2024	55° 37' 38" N	6° 11' 18" W	-2.7	n/a - surface sample
GS413	May 2024	55° 37' 37" N	6° 11' 18" W	-1.1	n/a - surface sample
BH210A	Sept/Oct 2023	55° 37' 35" N	6° 11' 29" W	-5.25	1.5 / -6.75
BH214A	Sept/Oct 2023	55° 37' 37" N	6° 11' 23" W	-4.84	1.5 / -6.34
BH216A	Sept/Oct 2023	55° 37' 37" N	6° 11' 20" W	-1.55	4.5 / -6.05
BH217A	Sept/Oct 2023	55° 37' 34" N	6° 11' 22" W	-1.61	2.0 / -3.61
BH218	Sept/Oct 2023	55° 37' 34" N	6° 11' 24" W	-2.28	0.35 / -2.63
BH219A	Sept/Oct 2023	55° 37' 32" N	6° 11' 25" W	-2.22	1.4 / -3.62
BH220	Sept/Oct 2023	55° 37' 37" N	6° 11' 32" W	-4.51	2.0 / -6.51
BH221A	Sept/Oct 2023	55° 37' 37" N	6° 11' 31" W	-3.38	3.05 / -6.43
PESS102	October 2022	55° 37' 35" N	6° 11' 24" W	-4.47	0.30 / -4.77
PESS104	October 2022	55° 37' 36" N	6° 11' 27" W	-3.90	0.65 / -4.55
PESS105	October 2022	55° 37' 37" N	6° 11' 30" W	-4.51	0.30 / -4.81

[4] Disposal ≤ 25,000m³ requires 3 samples; ≤ 32,500m³ requires 4 samples; ≤ 50,000m³ requires 5 samples…

2.2 Sampling Methods

Different sampling methods were used across the three phases of the investigation. Each phase was undertaken by a different contractor using methods suited to their experience and scope of work, all of which were appropriate for obtaining good-quality samples:

- 12 grab samples from the seabed surface
- Eight sonic drill cores[5] (0.35-4.50m below seabed)
- Three vibrocores[6] (0.30-0.65m below seabed, collected in 2022)

The drawing in **Appendix A** shows the sample locations and **Appendix B** contains the sampling logs and photographs from the sampling work.

2.3 Laboratory Analysis

35 samples were obtained for chemical analysis following the suite of testing prescribed in the Marine Directorate guidance. Material from the upper, middle and bottom part of each core was tested, along with all material from grab samples. SOCOTEC analysed the 2023 and 2024 samples; RPS analysed the 2022 samples. Both laboratories are UKAS accredited. See Table 2-2 for laboratory details; **Appendix C** presents the laboratory certificates.

Table 2.2: Laboratory details

Laboratory Name	Address	UKAS Accreditation Number
SOCOTEC	SOCOTEC, Marine Department, Advanced Chemistry and Research, Etwall House, Bretby Business Park, Ashby Road, Burton-upon-Trent DE15 0YZ	1252
RPS Environmental Management Limited (Bedford)	13 St Martins Way, Bedford, Bedfordhire MK42 0LF	1663
RPS Environmental Management Limited (Manchester)	Unit 12, Waters Edge Business Park, Modwen Road, Cadishead, M5 3EZ	0605

2.4 Sampling Limitations

As with all exploratory ground investigations, not all sampling was successful. Unforeseen ground conditions were encountered in some locations, which limited the quality of certain samples. The following limitations were encountered:

- **GS405 and GS406:** Sediment layer was thinner than expected due to shallow bedrock
- **GS411:** Recovered only stones and gravel, no useable sediment for analysis
- **BH217A, BH218, BH219A:** Encountered bedrock before reaching target depth
- **PESS102, 104, 105:** Vibrocore equipment stopped early due to gravel and cobbles

[5] Cores obtained using high-frequency vibrations; retrieving high-quality, nearly undisturbed deep soil samples.

[6] Sediment samples obtained by vibrating hollow tubes into the soil; retrieving relatively undisturbed samples.

3 Test Results

3.1 Material Description

The dredge material consists of marine sediment and bedrock.

The marine sediment is mainly silty sand with gravel and occasional cobbles. Some areas contain sandy clay. Average composition: 13% gravel, 58% sand, 29% silt and clay.

The bedrock is metamorphic mudstone (phyllite), ranging from extremely weak to medium strong. Bedrock was not tested for contaminants.

3.2 Contaminant Levels

Results were compared against Marine Directorate Action Levels (Action Level 1 and Action Level 2 - see **Appendix D**). The complete results are presented in **Appendix E**, summarised below.

No samples exceeded Action Level 2. 8 samples exceeded Action Level 1 for metals or PAH (Tables 3-1 and 3-2). All samples passed PCB, polybrominated diphenyl ether and pesticide tests.

Note: The spreadsheet in **Appendix E** incorrectly flags Dibutyltin (DBT) as exceeding Action Level 2. That is not the case, all DBT results were below detection limits.

Table 3.1: Action Level 1 Exceedances

Determinant	AL1 (mg/kg)	PESS102 0 m bsb	BH214A 0 m bsb	BH221A 1.5m bsb	PES104 0.65m bsb	Average of all Samples
Chromium	50	117	-	-	-	17.3
Nickel	30	56.6	30.7	31.4	-	16.6
Zinc	130	-	-	-	176	44.7

Table 3.2: Action Level 1 PAH Exceedances

Determinant	AL1 (ug/kg)	BH216A 0.1m bsb	GS405 0m bsb	BH217A 1m bsb	BH220 0m bsb	Average of all Samples
Benz(a)anthracene	100	193	-	-	-	23.7
Benzo(a)pyrene	100	172	-	-	-	24.7
Benzo(b)fluoranthene	100	111	-	-	-	15.3
Benzo(K)fluoranthene	100	145	-	-	-	16.6
Chrysene	100	186	-	-	-	19.4
Diben(ah)anthracene	10	20.6	-	-	-	4.9
Fluoranthene	100	354	159	-	-	32.9
Naphthalene	100	-	-	-	100	9.9
Phenanthrene	100	142	139	-	-	26.1
Pyrene	100	355	158	113	-	40.2

4 Disposal Options

All viable disposal options were assessed. Given the island setting of the project and the limited capacity of alternative disposal locations, only sea disposal was found to be feasible and represents the best environmental option. Table 4-1 summarises the assessment.

Table 4.1: Review of Disposal Options

Option	Method	Assessment	Feasible
1	Do nothing	Without dredging, the new ferries cannot safely or reliably use the terminal. The project would require complete redesign or cancellation.	No
2	Re-use on site	The land reclamation needs 64,000m³ of fill. The dredge provides only 27,800m³. Geotechnical assessment shows the sediment (25,100m³) is unsuitable due to high silt content. The rock (2,800m³) could work but the small volume makes processing impractical. The material must dry on land before use, but no suitable land exists near Port Ellen.	No
3	Re-use off site	The wet, salty material needs treatment before use in construction. This requires washing, grading, drying and storage. No suitable land exists for drying lagoons near Port Ellen. No projects on Islay have been identified that need this material.	No
4	Landfill	The material needs dewatering before transport by lorry. No suitable land exists for drying lagoons. The nearest landfill (Gartbreck, Bowmore, 15km away) has annual capacity of 9,815 tonnes. The wet dredge material weighs approximately 61,450 tonnes - far exceeding available capacity. Road transport would create significant traffic, noise, air pollution and carbon emissions.	No
5	Beach restoration	The material contains 15-93% fine particles (silt and clay). This is unsuitable for beach restoration, which needs coarser material. No beaches near Port Ellen need replenishment.	No
6	Agricultural use	Islay has good farmland that does not need imported material. The dredge material needs dewatering and desalination before agricultural use. No suitable land exists for drying lagoons. No farms can accommodate 27,800m³ of material. Road transport would create significant traffic, noise, air pollution and carbon emissions.	No
7	Sea disposal	Initial testing (Section 3) shows the material is suitable for sea disposal. Section 5 provides further assessment. Marine Directorate has designated two disposal sites near Port Ellen: ● MA030: 900m south (55.62075, -6.20103) ● MA035: 20km west (55.63621, -6.51789) Both sites can accommodate the dredge volume. MA030 is the preferred choice. Its proximity offers shorter transit times, better safety, less weather exposure, more operational flexibility and lower carbon emissions. With ferries diverted during construction, the risk of navigation conflict no longer exists. MA035 remains an acceptable alternative. This site was originally preferred when ferries would operate during dredging, to avoid navigation conflicts at the harbour entrance.	Yes

5 Environmental Assessment

5.1 Assessing contamination risk

Eight samples exceeded Action Level 1. Further environmental assessment was conducted to confirm the material is suitable for sea disposal. Sediment dispersion from material deposited at the disposal sites was also modelled to confirm that the material does not spread.

To assess the suitability for sea disposal, two approaches were used:

- Comparing results against Canadian environmental guidelines for protecting marine life.
- Calculating average (mean) contamination across all samples, rather than peaks, and comparing these averages to Action Level 1.

5.2 Contaminants exceeding Action Level 1

5.2.1 Summary of Exceedances

Eight samples showed exceedances against the following contaminants:

- **Chromium:** one sample recorded chromium above AL1.
- **Nickel:** three samples recorded nickel above AL1.
- **Zinc:** one sample recorded zinc above AL1.
- **Benz(a)anthracene:** one sample recorded benz(a)anthracene above AL1.
- **Benzo(a)pyrene:** one sample recorded benzo(a)pyrene above AL1.
- **Benzo(b)fluoranthene:** one sample recorded benzo(b)fluoranthene above AL1.
- **Benzo(K)fluoranthene:** one sample recorded benzo(K)fluoranthene above AL1.
- **Chrysene:** one sample recorded chrysene above AL1.
- **Diben(ah)anthracene:** one sample recorded diben(ah)anthracene above AL1.
- **Fluoranthene:** two samples recorded fluoranthene above AL1.
- **Naphthalene:** one sample recorded naphthalene above AL1.
- **Phenanthrene:** two samples recorded phenanthrene above AL1.
- **Pyrene:** three samples recorded pyrene above AL1.

Tables 3-1 and 3-2 show the specific values.

5.2.2 Comparison with Canadian standards

The elevated concentrations were compared against Canadian Council of Ministers of the Environment (CCME) Probable Effect Levels - the threshold above which harmful effects on marine life are likely. Results (Tables 5-1 and 5-2):

- **Metals:** All measured values fell well below CCME thresholds
- **PAH:** All measured values fell well below CCME thresholds

Note: CCME does not provide thresholds for nickel, benzo(b)fluoranthene or benzo(k)fluoranthene.

Table 5.1: Comparison of Metal AL1 Exceedances with CCME PEL

Determinant	AL1 (mg/kg)	CCME PEL (mg/kg)	No. of samples exceeding PEL
Chromium	50	160	0
Nickel	30	-	-
Zinc	130	271	0

Table 5.2: Comparison of PAH AL1 Exceedances with CCME PEL

Determinant	AL1 (µg/kg)	CCME PEL (µg/kg)	No. of samples exceeding PEL
Benz(a)anthracene	100	693	0
Benzo(a)pyrene	100	763	0
Benzo(b)fluoranthene	100	-	-
Benzo(K)fluoranthene	100	-	-
Chrysene	100	846	0
Diben(ah)anthracene	10	135	0
Fluoranthene	100	1494	0
Naphthalene	100	391	0
Phenanthrene	100	544	0
Pyrene	100	1398	0

5.2.3 Average (mean) contamination levels

Individual samples vary in their contamination concentration. When disposing dredge material at sea, regulators consider the average (mean) concentration across all material - treating it as one mixed batch. This is a proportionate approach recognising the inherent limitations of ground investigation and avoids peak results skewing how the material is handled.

Average (mean) concentrations were calculated for all contaminants (Tables 5-3 and 5-4). Every average (mean) fell well below Action Level 1. This confirms the dredge material (as a whole) poses a low risk to marine life.

Table 5.3: Average (Mean) Metal Concentrations

Determinant	AL1 (mg/kg)	Average of all Samples (mg/kg)	Exceed AL1?
Chromium	50	15.8	No
Nickel	30	15.4	No
Zinc	130	41.9	No

Table 5.4: Average (Mean) PAH Concentrations

Determinant	AL1 (µg/kg)	Average of all Samples (ug/kg)	Exceed AL1?
Benz(a)anthracene	100	22.4	No
Benzo(a)pyrene	100	23.4	No
Benzo(b)fluoranthene	100	15.3	No
Benzo(K)fluoranthene	100	16.5	No
Chrysene	100	19.2	No
Diben(ah)anthracene	10	4.6	No
Fluoranthene	100	32.4	No
Naphthalene	100	9.6	No
Phenanthrene	100	25.5	No
Pyrene	100	38.8	No

5.3 Dredging and Sediment Dispersion Modelling

Sediment dispersion during placing and after disposal at both sites was modelled.

Site MA035 (20km west of Port Ellen)

The modelling (Report 115031-MMD-PE-ZZ-RE-W-0001) shows tidal currents and wind spread sediment up to 10km northwest and 5km east of the disposal site. However, strong tidal currents quickly disperse the sediment:

- Within the disposal site: maximum 10mg/l suspended sediment
- Within 2km: 3-10mg/l
- Beyond 2km: less than 1mg/l

The sediment plume will not affect protected sites. Any impact on maerl beds, kelp beds, seagrass beds or sensitive species will be minor.

Site MA030 (900m south of Port Ellen)

The additional modelling work for MA030 (Report 115031-MMD-PE-ZZ-RE-W-0002) predicts similar dispersion patterns as Site MA035:

- Within the disposal site: maximum 10mg/l suspended sediment
- Within 2km: 3-10mg/l
- Beyond 2km: less than 1mg/l

The sediment plume will not affect protected sites. Any impact on maerl beds, kelp beds, seagrass beds or sensitive species will be minor. Given the relative proximity of the dredge site and disposal site the risk of cumulative effects was also considered and confirmed to be negligible. The locations are sufficiently distant, and the materials quickly disperse such that no cumulative effects were observed.

Both sites perform equivalently from an environmental perspective.

5.4 Summary

The assessment confirms the dredge material is suitable for sea disposal:

- Eight of 35 samples exceeded Action Level 1. No samples exceeded Action Level 2
- All elevated values fell well below CCME thresholds for protecting marine life
- Average contamination across all samples fell well below Action Level 1 (Table 5-5)
- Sediment dispersal modelling shows minimal environmental impact at both disposal sites

Both sites MA030 and MA035 are assessed as environmentally suitable. Site MA030 is preferred due to shorter distance, improved safety and lower costs. Site MA035 remains an acceptable alternative.

Table 5.5: Contaminant Assessment Summary

Contaminant	Number of CCME exceedances	Average Value Exceed AL1 (Y/N)
Chromium		N
Nickel	-	N
Zinc	0	N
Benz(a)anthracene	0	N
Benzo(a)pyrene	0	N
Benzo(b)fluoranthene	-	N
Benzo(K)fluoranthene	-	N
Chrysene	0	N
Diben(ah)anthracene	0	N
Fluoranthene	0	N
Naphthalene	0	N
Phenanthrene	0	N
Pyrene	-	N

6 Conclusion

All options for disposing of ~27,800m³ of dredge material from Port Ellen Terminal Development were evaluated. Sea disposal is determined as the only feasible method and is therefore the Best Practicable Environmental Option for this project.

35 samples from 23 locations were tested during three phases of investigation. Eight samples exceeded Action Level 1 for metals or PAH. No samples exceeded Action Level 2.

Further environmental assessment confirms the material is suitable for sea disposal:

- Average (mean) contamination across all samples falls well below Action Level 1
- All measured values fall well below Canadian (CCME) standards for protecting marine life
- Sediment dispersion modelling shows minimal environmental impact

Two Marine Directorate licenced disposal sites are suitable: MA030 (900m south of Port Ellen) and MA035 (20km west). With ferry services diverted during construction, the risk of navigation conflict at MA030 no longer exists. Site MA030 is now the preferred choice because it:

- Reduces vessel transit time and fuel costs
- Improves navigational safety through shorter open-water crossings
- Reduces exposure to adverse weather
- Gives the contractor greater operational control
- Lowers carbon emissions

Sea disposal at site MA030 is the Best Practicable Environmental Option for the Port Ellen Terminal Development dredge material disposal. Site MA035 remains an acceptable alternative.

7 References

[1] Marine Scotland (2015) Guidance for Marine Licence Applicants Version 2

[2] The Waste (Scotland) Regulations 2012. Available at: www.legislation.gov.uk/ssi/2012/148

[3] Marine Scotland (2017) Pre-disposal Sampling Guidance Version 2

[4] Mott MacDonald (2024) Port Ellen Terminal Development Ground Investigation Report. Document 115031-MMD-PE-ZZ-RP-G-0001

[5] Canadian Council of Ministers for the Environment (2024) CCME Guidelines. Available at: www.ccme.ca/en/resources/canadian_environmental_quality_guidelines

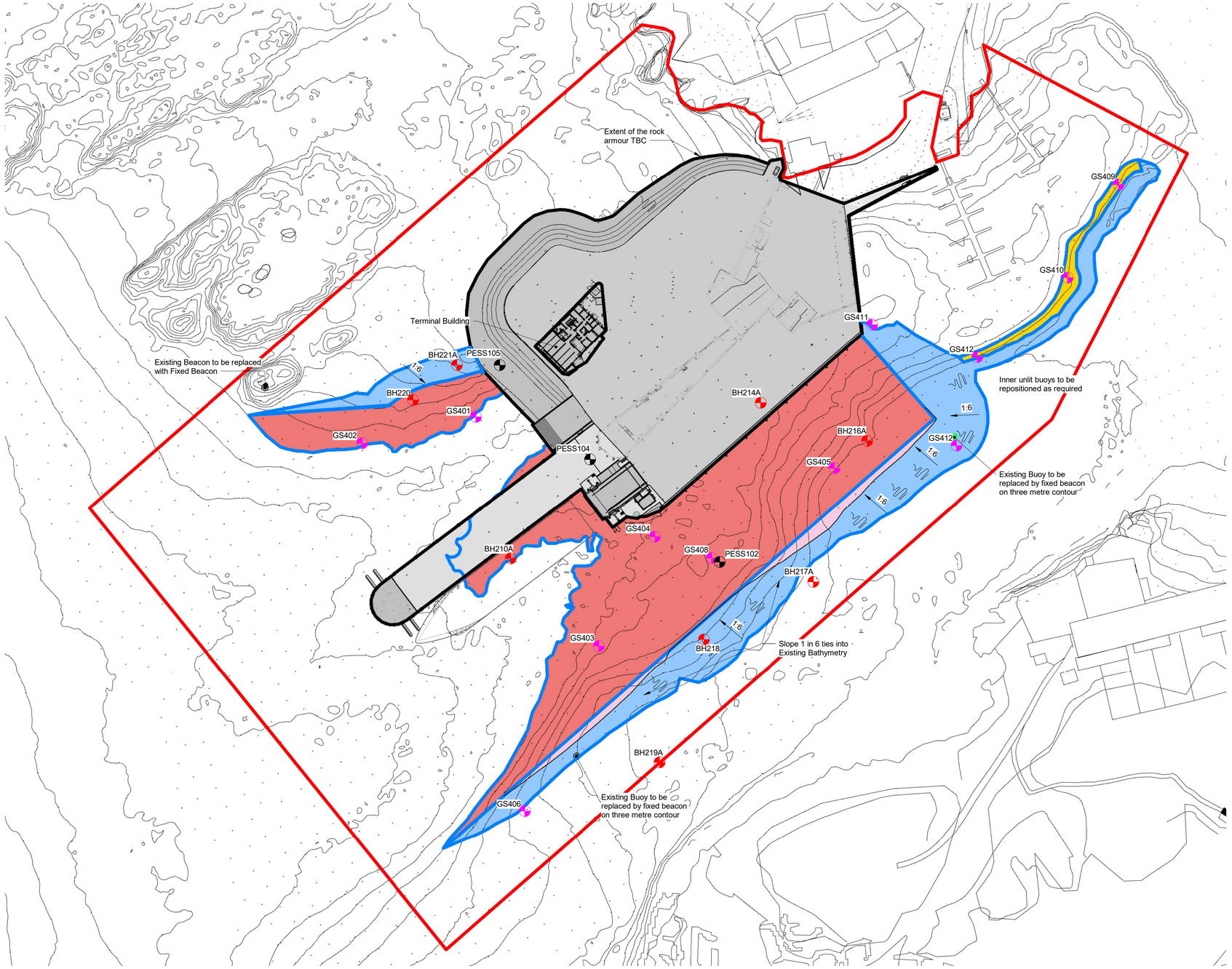
[6] Mott MacDonald (2024) Port Ellen Terminal Development Environmental Impact Assessment Report. Report 115031-MMD-PE-XX-RP-O-0003

[7] Mott MacDonald (2024) Port Ellen Terminal Development Dredging and Sediment Dispersal Modelling. Report 115031-MMD-PE-ZZ-RE-W-0001

[8] Mott MacDonald (2026) Port Ellen Terminal Development Dredging and Sediment Dispersal Modelling. Report 115031-MMD-PE-ZZ-RE-W-0002

A. Reference Drawings

- 115031-MMD-PE-XX-DR-C-0316



As Built Dredge Sampling Plan

1 : 1000

0 50m 100m
1:1000

Notes

1. All dimensions in millimetres unless noted otherwise.
2. All levels in metres relative to Chart Datum (mCD) unless noted otherwise.
3. DO NOT SCALE. Follow written dimensions only.
4. This drawing has been prepared to coordinate the outline design and is suitable for Client review and comment. Not for construction.
5. All structural details are preliminary and subject to detailed design.

Key to symbols

- Proposed Pier Footprint
- Proposed Dredge Area Slopes from 1to6 to 1to27
- Proposed Structure
- Proposed Dredge Depth = -5.5mCD
- Proposed Dredge - Rockhead slope 1to2
- Proposed Dredge Depth = -2.0mCD
- Fixed Beacon
- 2023 Core Sample Locations
- 2023/2024 Grab Sample Locations
- 2022 Vibrocore Sample Locations

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd
P1	19.07.2024	DR	WORK IN PROGRESS	CK	SG

Status Stamp

WORK IN PROGRESS

MOTT MACDONALD

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Client

Caledonian Maritime Assets Limited
Municipal Buildings
Fore Street
Port Glasgow
PA14 5EQ

CMAL
Caledonian Maritime Assets Ltd
Storas Mara Caileannach Eta

Title

Port Ellen Terminal Redevelopment

As Built Dredge Sampling Plan

Designed	Designer	CH01	Eng. Check	Checker	CH02
Drawn	Author	AU01	Coordination	Coordinator	CH05
Dwg. Check	Checker	CH01	Approved	Approver	AP01

MMD Project Number	Scale at A1	Security
115031	1:1000	STD

Suitability Description	Suit. Code
Work In Progress	S0

Drawing Number	Rev
115031-MMD-PE-XX-DR-C-0316	P1

B. Sampling Logs

HOLEQUEST • LIMITED •
Winston Road, Galashiels TD1 2DA
01896 752 295
Admin@holequest.co.uk

Project Name: Islay Routes

Project No. : 22-057

Location: Kennacraig, Port Ellen, Port Askcaig, and Colonsay

Client: Caledonian Maritime Assests Limited

PESS102

Coordinates
E136339.37 N644936.48

Level (mCD)
-4.47

Date: 31/10/2022

Logged By: Gareth Welsh

Crew Name: Philip Wootton

Plant: OSIL Vibrocorer

Drilling Equipment:

Hole Type	Scale	Page Number
VC	1:50	Sheet 1 of 1

Well	Water	Depth (m)	Type /FI	Coring TCR	Coring SCR	Coring RQD	Testing	Level (m)	Depth (m)	Legend	Stratum Description
		0.00	ES					-4.77	0.30		Dark grey slightly gravelly slightly clayey fine to coarse organic SAND with fragments of shells and seaweed. Gravel is medium angular.
											End of Borehole at 0.300m
			Type/FI	TCR	SCR	RQD	D/R/(SPT)				

Hole Diameter		Casing Diameter		Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
0.30	100			0.00	0.30	90	0						

Remarks

100% Sample recovery, Drilling commence at 12:10pm,

Vibrocore terminated on practical refusal, nature of obstruction unknown.

HOLEQUEST • LIMITED •

HOLEQUEST • LIMITED •
Winston Road, Galashiels TD1 2DA
01896 752 295
Admin@holequest.co.uk

Project Name: Islay Routes

Project No. : 22-057

Location: Kennacraig, Port Ellen, Port Askcaig, and Colonsay

Client: Caledonian Maritime Assests Limited

PESS104

Coordinates
E136281.33 N644982.41

Level (mCD)
-3.90

Date: 31/10/2022

Logged By: Gareth Welsh

Crew Name: Philip Wootton

Plant: OSIL Vibrocorer

Drilling Equipment:

Hole Type	Scale	Page Number
VC	1:50	Sheet 1 of 1

Well	Water	Depth (m)	Type /FI	Coring TCR	Coring SCR	Coring RQD	Testing	Level (m)	Depth (m)	Legend	Stratum Description
		0.00	ES					-4.00	0.10		Dark grey sandy organic SILT with seaweed and fragments of shells. Sand is fine to coarse.
											Dark grey sandy organic CLAY with fragments of shells and occasional medium gravel sized pockets of brown fine to medium SAND.
		0.65	ES					-4.55	0.65		End of Borehole at 0.650m
			Type/FI	TCR	SCR	RQD	D/R/(SPT)				

Hole Diameter		Casing Diameter		Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
0.65	100			0.00	0.00	90	0						

Remarks

100% Sample recovery, Drilling commenced at 12:25pm,

Vibrocore terminated on practical refusal, nature of obstruction unknown.

HOLEQUEST • LIMITED •

HOLEQUEST • LIMITED •
Winston Road, Galashiels TD1 2DA
01896 752 295
Admin@holequest.co.uk

Project Name: Islay Routes

Project No. : 22-057

Location: Kennacraig, Port Ellen, Port Askcaig, and Colonsay

Client: Caledonian Maritime Assests Limited

PESS105

Coordinates
E136240.30 N645025.74

Level (mCD)
-4.51

Date: 31/10/2022

Logged By: Gareth Welsh

Crew Name: Philip Wootton

Plant: OSIL Vibrocorer

Drilling Equipment:

Hole Type	Scale	Page Number
VC	1:50	Sheet 1 of 1

Well	Water	Depth (m)	Type /FI	Coring TCR	Coring SCR	Coring RQD	Testing	Level (m)	Depth (m)	Legend	Stratum Description
		0.00	ES					-4.81	0.30		Dark grey slightly gravelly slightly silty fine to coarse SAND. Gravel is fine to coarse subangular to angular.
											End of Borehole at 0.300m
			Type/FI	TCR	SCR	RQD	D/R/(SPT)				

Hole Diameter		Casing Diameter		Inclination and Orientation				Drilling Flush					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Depth Base	Type	Colour	Min (%)	Max (%)
0.30	100			0.00	0.30	90	0						

Remarks

100% Sample recovery, Drilling commenced at 12:50pm,

Vibrocore terminated on practical refusal, nature of obstruction unknown.

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HOLE QUEST LTD.
Est. 1974
Winston Road, Galashiels TD1 2DA
01896 752 295
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Project Name: Port Ellen Terminal Development

Project No. : 23-021

Location: Port Ellen, Islay

Client: Caledonian Maritime Assets Ltd

GS401

Coordinates
E136230.00 N645001.00
Level

Date: 23/09/2023

Logged By: R Barnes
Crew Name:

Plant: Pioneer

Excavation Equipment: Seabed-0.1m Van Veen Grab

Hole Type	Scale	Page Number
IP	1:25	Sheet 1 of 1

Water	Depth (m)	Type	Testing	Level (m)	Depth (m)	Legend	Stratum Description
	0.00	ES			0.10		Light brownish grey variably mottled dark grey speckled white, gravelly, mainly fine SAND, with shell debris, gravel sub angular to sub rounded 0.0m (Marine Scotland sample) End of Trialpit at 0.100m
		Type/FI	D/R/(SPT)				

1
2
3
4
5

Dimensions

Pit Length	Pit Width	Pit Stability

Remarks
Marine Scotland sampling

Terminated on engineer's instruction

HOLE QUEST LTD.
Est. 1974
Winston Road, Galashiels TD1 2DA
01896 752 295
Admin@holequest.co.uk

GS402

Project Name: Port Ellen Terminal Development

Project No. : 23-021

Location: Port Ellen, Islay

Client: Caledonian Maritime Assets Ltd

Coordinates
E136179.00 N644990.00
Level

Date: 23/09/2023

Logged By: R Barnes
Crew Name:

Plant: Pioneer

Excavation Equipment: Seabed-0.1m Van Veen Grab

Hole Type	Scale	Page Number
IP	1:25	Sheet 1 of 1

Water	Depth (m)	Type	Testing	Level (m)	Depth (m)	Legend	Stratum Description
	0.00	ES			0.10		Light brownish grey variably mottled dark grey speckled white, slightly gravelly, mainly fine SAND, with shell debris, gravel sub angular to sub rounded 0.0m (Marine Scotland sample) End of Trialpit at 0.100m
		Type/FI	D/R/(SPT)				

1
2
3
4
5

Dimensions

Pit Length	Pit Width	Pit Stability

Remarks
Marine Scotland sampling

Terminated on engineer's instruction

HOLE QUEST LTD.
Est. 1974
Winston Road, Galashiels TD1 2DA
01896 752 295
Admin@holequest.co.uk

GS403

Project Name: Port Ellen Terminal Development

Project No. : 23-021

Location: Port Ellen, Islay

Client: Caledonian Maritime Assets Ltd

Coordinates
E136285.00 N644899.00
Level

Date: 23/09/2023

Logged By: R Barnes
Crew Name:

Plant: Pioneer

Excavation Equipment: Seabed-0.1m Van Veen Grab

Hole Type	Scale	Page Number
IP	1:25	Sheet 1 of 1

Water	Depth (m)	Type	Testing	Level (m)	Depth (m)	Legend	Stratum Description
	0.00	ES			0.10		Light brownish grey variably mottled dark grey speckled white, gravelly, mainly fine SAND, with shell debris, gravel sub angular to sub rounded 0.0m (Marine Scotland sample) End of Trialpit at 0.100m
		Type/FI	D/R/(SPT)				

1
2
3
4
5

Dimensions

Pit Length	Pit Width	Pit Stability

Remarks
Marine Scotland sampling

Terminated on engineer's instruction

HOLE QUEST LTD.
Est. 1974
Winston Road, Galashiels TD1 2DA
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GS404

Project Name: Port Ellen Terminal Development

Project No. : 23-021

Location: Port Ellen, Islay

Client: Caledonian Maritime Assets Ltd

Coordinates
E136310.00 N644948.00
Level

Date: 23/09/2023

Logged By: R Barnes
Crew Name:

Plant: Pioneer

Excavation Equipment: Seabed-0.1m Van Veen Grab

Hole Type	Scale	Page Number
IP	1:25	Sheet 1 of 1

Water	Depth (m)	Type	Testing	Level (m)	Depth (m)	Legend	Stratum Description
	0.00	ES			0.10		Light brownish grey variably mottled dark grey speckled white, slightly gravelly, mainly fine SAND, with shell debris, gravel sub angular to sub rounded 0.0m (Marine Scotland sample) End of Trialpit at 0.100m
		Type/FI	D/R/(SPT)				

1
2
3
4
5

Dimensions

Pit Length	Pit Width	Pit Stability

Remarks
Marine Scotland sampling

Terminated on engineer's instruction

HOLE QUEST LTD.
Est. 1974
Winston Road, Galashiels TD1 2DA
01896 752 295
Admin@holequest.co.uk

GS405

Logged By: R Barnes

Crew Name:

Project Name: Port Ellen Terminal Development

Project No. : 23-021

Location: Port Ellen, Islay

Client: Caledonian Maritime Assets Ltd

Coordinates
E136391.00 N644978.00
Level

Plant: Pioneer

Excavation Equipment: Seabed-0.1m Van Veen Grab

Date: 23/09/2023

Hole Type	Scale	Page Number
IP	1:25	Sheet 1 of 1

Water	Depth (m)	Type	Testing	Level (m)	Depth (m)	Legend	Stratum Description
	0.00	ES			0.10		Light brownish grey variably mottled dark grey speckled white, mainly fine SAND with shell debris 0.0m (Marine Scotland sample) End of Trialpit at 0.100m
		Type/FI	D/R/(SPT)				

1
2
3
4
5

Dimensions

Pit Length	Pit Width	Pit Stability

Remarks

Marine Scotland sampling

Terminated on engineer's instruction

HOLE QUEST LTD.
Est. 1974
Winston Road, Galashiels TD1 2DA
01896 752 295
Admin@holequest.co.uk

GS406

Logged By: R Barnes

Crew Name:

Project Name: Port Ellen Terminal Development

Project No. : 23-021

Location: Port Ellen, Islay

Client: Caledonian Maritime Assets Ltd

Coordinates
E136252.00 N644825.00
Level

Plant: Pioneer

Excavation Equipment: Seabed-0.1m Van Veen Grab

Date: 23/09/2023

Hole Type	Scale	Page Number
IP	1:25	Sheet 1 of 1

Water	Depth (m)	Type	Testing	Level (m)	Depth (m)	Legend	Stratum Description
	0.00	ES			0.10		Light brownish grey variably mottled dark grey speckled white, mainly fine SAND with shell debris 0.0m (Marine Scotland sample) End of Trialpit at 0.100m
		Type/FI	D/R/(SPT)				

Dimensions

Pit Length	Pit Width	Pit Stability

Remarks

Marine Scotland sampling

Terminated on engineer's instruction

HOLE QUEST LTD.
Est. 1974
Winston Road, Galashiels TD1 2DA
01896 752 295
Admin@holequest.co.uk

GS407

Project Name: Port Ellen Terminal Development

Project No. : 23-021

Location: Port Ellen, Islay

Client: Caledonian Maritime Assets Ltd

Coordinates
E136319.06 N645072.61
Level

Logged By: R Barnes
Crew Name:

Plant: Pioneer

Excavation Equipment: Seabed-0.1m Van Veen Grab

Date: 01/10/2023

Hole Type	Scale	Page Number
IP	1:25	Sheet 1 of 1

Water	Depth (m)	Type	Testing	Level (m)	Depth (m)	Legend	Stratum Description
	0.00	ES			0.10		Light brownish grey variably mottled dark grey speckled white slightly gravelly mainly fine SAND with shell debris 0.0m (Marine Scotland sample) End of Trialpit at 0.100m
		Type/FI	D/R/(SPT)				

1
2
3
4
5

Dimensions

Pit Length	Pit Width	Pit Stability

Remarks
Marine Scotland sampling

Terminated on engineer's instruction

HOLE QUEST LTD.
Est. 1974
Winston Road, Galashiels TD1 2DA
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Admin@holequest.co.uk

GS408

Project Name: Port Ellen Terminal Development

Project No. : 23-021

Location: Port Ellen, Islay

Client: Caledonian Maritime Assets Ltd

Coordinates
E136336.14 N644938.70
Level

Date: 17/10/2023

Logged By: C Gillies
Crew Name: C Gillies

Plant: Pioneer

Excavation Equipment: Seabed-0.1m Van Veen Grab

Hole Type	Scale	Page Number
IP	1:25	Sheet 1 of 1

Water	Depth (m)	Type	Testing	Level (m)	Depth (m)	Legend	Stratum Description
					0.10		Greyish brown slightly silty slightly gravelly fine to coarse SAND with rare shell fragments. Gravel is subrounded to rounded fine to coarse of phyllite, quartzite and quartz. 0.0m (Marine Scotland sample) End of Trialpit at 0.100m
		Type/FI	D/R/(SPT)				

1
2
3
4
5

Dimensions

Pit Length	Pit Width	Pit Stability

Remarks
Marine Scotland sampling

Terminated on engineer's instruction

HOLE QUEST LTD.
Est. 1974
Winston Road, Galashiels, TD1 2DA
01896 752 295
Admin@holequest.co.uk

BH210A

Logged By: R Barnes

Crew Name: Robert Yuill

Project Name : Port Ellen Terminal Development

Project Number : 23-021

Location : Port Ellen, Islay

Client : Caledonian Maritime Assets Ltd

Coordinates
E136245.70 N644938.29
Level
-5.25m CD

Plant: Rotosonic Mini

Drilling Equipment: Seabed-1.5m 178mm Diameter Sonic

Date: 12/10/2023

Hole Type	Scale	Page Number
VC	1:50	Sheet 1 of 1

Well	Water	Depth (m)	Type	Testing	Coring TCR	Coring SCR	Coring RQD	Coring FI	Level (m CD)	Depth (m)	Legend	Stratum Description
		0.00	ES									Brownish grey, slightly speckled white, slightly gravelly silty SAND with minor shell debris; gravel angular to rounded of phyllite and other fine-grained metamorphic lithologies
		0.50	ES						-5.65	0.40		0.0m (Marine Scotland sample)
												Dark grey mottled/laminated brownish grey, slightly gravelly silty SAND; gravel angular to rounded of fine-grained metamorphic lithologies
									-6.05	0.80		0.5m (Marine Scotland sample)
		1.00	ES									Brownish grey in places mottled/laminated dark grey, slightly gravelly silty SAND with low cobble content; gravel and cobbles angular to rounded of fine-grained metamorphic lithologies
		1.30	ES									.0m (Marine Scotland sample)
												.3m (Marine Scotland sample)
									-6.75	1.50		End of Borehole at 1.500m
			Type	D/R/(SPT)	TCR	SCR	RQD	FI				

Hole Diameter		Casing Diameter		Inclination and Orientation				Drilling Flush		
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Colour	Depth Base
1.50	178	1.50	178	0.00	1.50	90	0		None noted by driller	

Remarks

Deck to Seabed = 10.0m

Terminated on engineer's instruction

HOLE QUEST LTD.
Est. 1974
Winston Road, Galashiels, TD1 2DA
01896 752 295
Admin@holequest.co.uk

BH214A

Project Name : Port Ellen Terminal Development

Project Number : 23-021

Location : Port Ellen, Islay

Client : Caledonian Maritime Assets Ltd

Coordinates
E136357.84 N645008.28
Level
-4.84m CD

Date: 23/09/2023

Logged By: R Barnes

Crew Name: Brian O'Donnell

Plant: Rotosonic Mini

Drilling Equipment: Seabed-1.5m 178mm Diameter Sonic

Hole Type	Scale	Page Number
VC	1:50	Sheet 1 of 1

Well	Water	Depth (m)	Type	Testing	Coring TCR	Coring SCR	Coring RQD	Coring FI	Level (m CD)	Depth (m)	Legend	Stratum Description
		0.00	ES									Black bec. Dark grey mottled black, slightly gravelly very silty fine SAND; gravel angular to sub-rounded
												0.0m (Marine Scotland sample)
		0.50	ES									0.5m (Marine Scotland sample)
		1.00	ES						-5.79	0.95		Dark brownish grey, slightly gravelly silty fine to medium SAND; gravel mainly fine, angular to sub rounded
												1.0m (Marine Scotland sample)
									-6.14	1.30		Brownish grey gravelly SAND, gravel angular to rounded
		1.50	ES						-6.34	1.50		1.3m (Marine Scotland sample)
												End of Borehole at 1.500m
			Type	D/R/(SPT)	TCR	SCR	RQD	FI				

Hole Diameter		Casing Diameter		Inclination and Orientation				Drilling Flush		
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Colour	Depth Base
1.50	178	1.50	178	0.00	1.50	90	0		None noted by driller	

Remarks

Deck to Seabed = 9.0m

Terminated on engineer's instruction

HOLE QUEST LTD.
Est. 1974
Winston Road, Galashiels, TD1 2DA
01896 752 295
Admin@holequest.co.uk

BH216A

Logged By: R Barnes

Crew Name: Robert Yuill

Project Name : Port Ellen Terminal Development

Project Number : 23-021

Location : Port Ellen, Islay

Client : Caledonian Maritime Assets Ltd

Coordinates
E136405.73 N644991.21
Level
-1.55m CD

Plant: Rotosonic Mini

Drilling Equipment: Seabed-4.5m 178mm Diameter Sonic

Date: 06/09/2023 - 08/09/2023

Hole Type	Scale	Page Number
VC	1:50	Sheet 1 of 1

Well	Water	Depth (m)	Type	Testing	Coring TCR	Coring SCR	Coring RQD	Coring FI	Level (m CD)	Depth (m)	Legend	Stratum Description
		0.00	ES									
		0.10	ES									Greenish brown, slightly gravelly, fine to medium SAND with sparse shell fragments. 0.1m (Marine Scotland sample)
		0.50	ES									0.5m (Marine Scotland sample)
		1.00	ES									1.0m (Marine Scotland sample)
									-2.85	1.30		
		1.50	ES									Pinkish brown fine to medium slight gravelly SAND. Gravel sub-angular to rounded. 1.5m (Marine Scotland sample)
		2.00	ES									2.0m (Marine Scotland sample)
		2.20 - 3.70							-3.85	2.30		
		2.50	ES									Brown bec. reddish brown slightly gravelly clayey SAND. Gravel angular to sub-rounded. 2.5m (Marine Scotland sample)
									-4.35	2.80		
		3.00	ES		100							Stiff, foliated dark brown mottled reddish brown bec. mainly reddish brown with depth slightly gravelly to gravelly, slightly sandy to sandy CLAY. Gravel angular to sub-rounded. 3.0m (Marine Scotland sample)
		3.50	ES									3.5m (Marine Scotland sample)
		3.70 - 4.10			100							
		4.00	ES						-5.55	4.00		Light orangish brown gravelly clayey SAND with low cobble content. Gravel manly angular to sub-angular. 4.0m (Marine Scotland sample)
		4.10 - 4.50			100							
									-6.05	4.50		End of Borehole at 4.500m
			Type	D/R/(SPT)	TCR	SCR	RQD	FI				

Hole Diameter		Casing Diameter		Inclination and Orientation				Drilling Flush		
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Colour	Depth Base
4.50	140	4.50 4.50	140 178	0.00	4.50	90	0		None noted by driller	

Remarks

Deck to Seabed = 4.0m

Terminated on engineer's instruction

HOLE QUEST LTD.
Est. 1974
Winston Road, Galashiels, TD1 2DA
01896 752 295
Admin@holequest.co.uk

BH217A

Project Name : Port Ellen Terminal Development

Project Number : 23-021

Location : Port Ellen, Islay

Client : Caledonian Maritime Assets Ltd

Coordinates
E136381.55 N644927.91
Level
-1.61m CD

Date: 17/10/2023

Logged By: C Gillies

Crew Name: Brian O'Donnell

Plant: Rotosonic Mini

Drilling Equipment: Seabed-1.8m 178mm Diameter sonic

Hole Type	Scale	Page Number
VC	1:50	Sheet 1 of 1

Well	Water	Depth (m)	Type	Testing	Coring TCR	Coring SCR	Coring RQD	Coring FI	Level (m CD)	Depth (m)	Legend	Stratum Description
		0.00	ES									Brownish grey slightly silty fine to coarse SAND with common shell fragments and rare fine to medium subrounded gravel of phyllite noted.
												0.0m (Marine Scotland sample)
		0.50	ES									0.5m (Marine Scotland sample)
		1.00	ES									1.0m (Marine Scotland sample)
		1.50	ES									1.5m (Marine Scotland sample)
		1.70 - 1.80	ES									1.7-1.8m (Marine Scotland sample)
									-3.41	1.80		No recovery
									-3.61	2.00		End of Borehole at 2.000m
			Type	D/R/(SPT)	TCR	SCR	RQD	FI				

Hole Diameter		Casing Diameter		Inclination and Orientation				Drilling Flush		
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Colour	Depth Base
1.80	178	1.80	178	0.00	1.80	90	0		None noted by driller	

Remarks

Deck to Seabed = 3.0m

Terminated on engineer's instruction

HOLE QUEST LTD.
Est. 1974
Winston Road, Galashiels, TD1 2DA
01896 752 295
Admin@holequest.co.uk

BH218

Logged By: R Barnes

Crew Name: Robert Yuill

Project Name : Port Ellen Terminal Development

Project Number : 23-021

Location : Port Ellen, Islay

Client : Caledonian Maritime Assets Ltd

Coordinates
E136332.47 N644901.76
Level
-2.28m CD

Plant: Rotosonic Mini

Drilling Equipment: 0.35-5.35m 140mm Diameter Geobore S

Date: 30/09/2023 - 01/10/2023

Hole Type	Scale	Page Number
VC	1:50	Sheet 1 of 1

Well	Water	Depth (m)	Type	Testing	Coring TCR	Coring SCR	Coring RQD	Coring FI	Level (m CD)	Depth (m)	Legend	Stratum Description
		0.00 - 0.25	ES									
		0.25 - 0.35	D						-2.53	0.25		Dark grey mottled brownish grey speckled white, slightly gravelly bec gravelly at base, silty SAND with shell debris; gravel mainly angular weak of phyllite with subordinate quartz
		0.35	SPT	50 (25 for 75mm/50 for 25mm)				>50	-2.63	0.35		0m (Marine Scotland sample)
		0.35 - 1.35			100	65	10	20	-2.88	0.60		Brownish grey mottled brown gravelly clayey SAND; gravel angular weak of phyllite to rounded of other lithologies Grey mottled brown slightly sandy clayey GRAVEL mainly angular weak of phyllite
		1.35 - 2.70			100	96	26	16				Moderately weak bec. medium strong to strong, laminated to thin bedded (dip 40-50° in places folded), foliated near parallel to or steeper than bedding, silvery greenish and pinkish grey banded, crenulated, fine-grained METASANDSTONE and METAMUDSTONE (micaceous phyllite). Occasional light grey mottled brown quartz + haematite veins to 15 mm parallel to bedding. Strength and colour suggest moderately to slightly weathered. Discontinuities: Set 1: 20-60° (mainly parallel to bedding/foliation) extremely close- to close-spaced, terminations at intersection or in rock, mainly planar/stepped smooth (micaceous/polished), tight to open occasionally moderately wide with clay infill. Set 2: 60-70° (strike 90-180° to bedding) wide-spaced, persistence seen to 270 mm, terminations at intersection where seen, planar to undulating, rough, open. Both sets with patchy reddish brown stain/coating
		2.70 - 4.25			100	97	17	33 18				Soft pinkish brown silty (micaceous) CLAY as fill to bedding parallel fracture Moderately weak bec. medium strong to strong, laminated to thin bedded (dip 40-50° in places folded), foliated near parallel to or steeper than bedding, silvery greenish and pinkish grey banded, crenulated, fine-grained METASANDSTONE and METAMUDSTONE (micaceous phyllite). Occasional light grey mottled brown quartz + hematite veins to 15 mm parallel to bedding. Strength and colour suggest moderately to slightly weathered. Discontinuities: Set 1: 20-60° (mainly parallel to bedding/foliation) extremely close- to close-spaced, terminations at intersection or in rock, mainly planar/stepped smooth (micaceous/polished), tight to open occasionally moderately wide with clay infill. Set 2: 60-70° (strike 90-180° to bedding) wide-spaced, persistence seen to 270 mm, terminations at intersection where seen, planar to undulating, rough, open. Both sets with patchy reddish brown stain/coating
		4.25 - 5.50			100	100	40		-7.63	5.35		Soft pinkish brown silty (micaceous) CLAY as fill to bedding parallel fracture
									-7.63	5.35		End of Borehole at 5.350m
			Type	D/R/(SPT)	TCR	SCR	RQD	FI				

Hole Diameter		Casing Diameter		Inclination and Orientation				Drilling Flush		
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Colour	Depth Base
5.35	140	0.35 5.35	178 140	0.00	5.35	90	0		None noted by driller	

Remarks

Deck to Seabed = 7.1m

Terminated on engineer's instruction

HOLE QUEST LTD.
Est. 1974
Winston Road, Galashiels, TD1 2DA
01896 752 295
Admin@holequest.co.uk

BH219A

Project Name : Port Ellen Terminal Development

Project Number : 23-021

Location : Port Ellen, Islay

Client : Caledonian Maritime Assets Ltd

Coordinates
E136312.86 N644846.92
Level
-2.22m CD

Date: 05/09/2023

Logged By: R Barnes

Crew Name: Brian O'Donnell

Plant: Rotosonic Mini

Drilling Equipment: Seabed-1.4m 140mm Diameter Geobore S

Hole Type	Scale	Page Number
VC	1:50	Sheet 1 of 1

Well	Water	Depth (m)	Type	Testing	Coring TCR	Coring SCR	Coring RQD	Coring FI	Level (m CD)	Depth (m)	Legend	Stratum Description
		0.00	ES									Dark grey speckled white slightly gravelly slightly silty SAND micaceous, with shell debris. Gravel fine angular.
												0.0m (Marine Scotland sample)
		0.50	ES									0.5m (Marine Scotland sample)
									-2.87	0.65		Dark greenish grey banded pinkish brown and light grey METAMUDSTONE (micaceous phyllite) and subordinate fine-grained metasandstone. Strength and colour suggest slightly to moderately weathered.
		1.20	ES									1.2m (Marine Scotland sample)
									-3.62	1.40		End of Borehole at 1.400m
			Type	D/R/(SPT)	TCR	SCR	RQD	FI				

Hole Diameter		Casing Diameter		Inclination and Orientation				Drilling Flush		
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Colour	Depth Base
4.50	140	4.50 4.50	140 178	0.00	4.50	90	0		None noted by driller	

Remarks

Deck to Seabed = 3.5m

Terminated on engineer's instruction

HOLE QUEST LTD.
Est. 1974
Winston Road, Galashiels, TD1 2DA
01896 752 295
Admin@holequest.co.uk

BH220

Logged By: R Barnes

Crew Name: Brian O'Donnell

Project Name : Port Ellen Terminal Development

Project Number : 23-021

Location : Port Ellen, Islay

Client : Caledonian Maritime Assets Ltd

Coordinates
E136201.59 N645008.05
Level
-4.51m CD

Plant: Rotosonic Mini

Drilling Equipment: Seabed-2.0m 178mm Diameter Sonic& Seabed-1.70m 178mm Diameter Sonic

Date: 16/09/2023

Hole Type	Scale	Page Number
VC	1:50	Sheet 1 of 1

Well	Water	Depth (m)	Type	Testing	Coring TCR	Coring SCR	Coring RQD	Coring FI	Level (m CD)	Depth (m)	Legend	Stratum Description
		0.00	ES									Greenish grey speckled white slightly fine gravelly SAND with shell debris (<0.7 mm)
												0.0m (Marine Scotland sample)
		0.50	ES									0.5m (Marine Scotland sample)
									-5.21	0.70		Reddish brown gravelly slightly clayey SAND, gravel sub angular to rounded
		1.00	ES									1.0m (Marine Scotland sample)
		1.50	ES									1.5m (Marine Scotland sample)
									-6.21	1.70		Reddish brown gravelly slightly clayey SAND, gravel sub angular to rounded
												2.0m (Marine Scotland sample)
									-6.51	2.00		2.5m (Marine Scotland sample)
												End of Borehole at 2.000m
			Type	D/R/(SPT)	TCR	SCR	RQD	FI				

Hole Diameter		Casing Diameter		Inclination and Orientation				Drilling Flush		
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Colour	Depth Base
1.70	178	1.70	140	0.00	1.70	90	0		None noted by driller	
2.00	140	2.00	140	0.00	2.00	90	0			
2.00	178									

Remarks

Deck to Seabed = 5.5m

Terminated on engineer's instruction

HOLE QUEST LTD.
Est. 1974
Winston Road, Galashiels, TD1 2DA
01896 752 295
Admin@holequest.co.uk

BH221A

Project Name : Port Ellen Terminal Development

Project Number : 23-021

Location : Port Ellen, Islay

Client : Caledonian Maritime Assets Ltd

Coordinates
E136221.72 N645025.08
Level
-3.38m CD

Date: 16/09/2023

Logged By: R Barnes

Crew Name: Brian O'Donnell

Plant: Rotosonic Mini

Drilling Equipment: Seabed-3.05m 178mm Diameter Sonic

Hole Type	Scale	Page Number
VC	1:50	Sheet 1 of 1

Well	Water	Depth (m)	Type	Testing	Coring TCR	Coring SCR	Coring RQD	Coring FI	Level (m CD)	Depth (m)	Legend	Stratum Description
		0.00	ES									Greenish grey speckled white slightly fine gravelly SAND with shell debris (<0.7 mm)
												0.0m (Marine Scotland sample)
		0.50	ES									0.5m (Marine Scotland sample)
		1.00	ES									1.0m (Marine Scotland sample)
		1.50	ES									1.5m (Marine Scotland sample)
									-4.98	1.60		Reddish brown slightly gravelly bec.gravelly below 2.00, slightly clayey SAND, gravel sub angular to rounded
		2.00	ES									2.0m (Marine Scotland sample)
		2.50	ES						-5.88	2.50		Brownish grey clayey SAND & GRAVEL, gravel mainly fine angular to rounded of metamorphic lithologies
												2.5m (Marine Scotland sample)
									-6.43	3.05		End of Borehole at 3.050m
			Type	D/R/(SPT)	TCR	SCR	RQD	FI				

Hole Diameter		Casing Diameter		Inclination and Orientation				Drilling Flush		
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Inclination	Orientation	Depth Top	Colour	Depth Base
3.05	140	3.05	140	0.00	3.05	90	0		None noted by driller	
3.05	178									

Remarks

Deck to Seabed = 5.3m

Terminated on engineer's instruction

7. FIELD NOTES / OBSERVATIONS

SAMPLE REFERENCE	SAMPLE NUMBER	FOLK & WARD DESCRIPTION	TEXTURAL GROUP CLASSIFICATION
GS409	-	Very Fine Sand	Slightly Gravelly Muddy Sand

SAMPLE REFERENCE	SAMPLE NUMBER	FOLK & WARD DESCRIPTION	TEXTURAL GROUP CLASSIFICATION
GS410	-	Very Coarse Silt	Muddy Sand

SAMPLE REFERENCE	SAMPLE NUMBER	FOLK & WARD DESCRIPTION	TEXTURAL GROUP CLASSIFICATION
GS411	-	-	-

SAMPLE REFERENCE	SAMPLE NUMBER	FOLK & WARD DESCRIPTION	TEXTURAL GROUP CLASSIFICATION
GS412	-	Very Fine Sand	Slightly Gravelly Muddy Sand

SAMPLE REFERENCE	SAMPLE NUMBER	FOLK & WARD DESCRIPTION	TEXTURAL GROUP CLASSIFICATION
GS413	-	Fine Sand	Slightly Gravelly Sand

C. Laboratory Certificates

C.1 2022 Investigation Laboratory Certificates

Certificate of Analysis

Report No.: **22-01631-2**

Issue No.: **2**
Date of Issue **08/03/2023**

Customer Details:	Holequest Ltd, Winston Road, Galashiels, Scotland, TD1 2DA
Customer Contact:	Craig Rodger
Customer Order No.:	21814
Customer Reference:	Islay Routes
Quotation Reference:	Q22-00446 (Issue: 3)
Description:	4 sediment samples
Date Received:	29/11/2022
Date Started:	09/12/2022
Date Completed:	06/02/2023
Test Methods:	Details available on request (refer to SOP code against relevant result/s)
Notes:	None [Redacted]

Approved By: **David Long, LIMS Manager**

UKAS TESTING
1663

RPS Environmental Management Limited trading as RPS Mountainheath, Registered in England No. 01756175.
13 St Martins Way, Bedford, Bedfordhire MK42 0LF, T +44 1462 480 400

Results Summary - Dry Weights, Moisture, Total Organic Carbon, TPH, Organotins, Density & Asbestos

Report No.: 22-01631-2

Customer Reference: Islay Routes

Customer Order No: 21814

					Customer Sample No	Certified Reference Material			AQC spike			PESS102 @ 0.0	PESS104 @ 0.0	PESS104 @ 0.65
					RPS Sample No							7402	7403	7404
					Sample Type	SEDIMENT			SEDIMENT			Sediment	Sediment	Sediment
					Sample Matrix	CRM PACS 3CRM NIST 1944			Spike on clean sediment			SED_MAR	SED_MAR	SED_MAR
					Sampling Date							30/10/2022	30/10/2022	30/10/2022
Determinand	**CAS No**	**Codes**	**SOP**	**Units**	**RL**	**Assigned Value**	**Measured Value**	**Recovery %**	**Assigned Value**	**Measured Value**	**Recovery %**			
dry solids (at 105°C)		N	397	% w/w		n/a	n/a	n/a	n/a	n/a	n/a	80.2	86.2	85.8
moisture (at 105°C)		N	In house	% w/w		n/a	n/a	n/a	n/a	n/a	n/a	19.8	13.8	14.2
specific gravity		N	In house			n/a	n/a	n/a	n/a	n/a	n/a	1.6	1.4	1.6
total organic carbon		UO	404	% w/w AD	0.3	4.4	5.04	114.5%	1.5	1.2	80.0%	< 0.30	0.52	< 0.30
total petroleum hydrocarbons by GCFID (C10 - C40)		N	In house	mg/kg DW	1	n/a	n/a	n/a	n/a	n/a	n/a	6.4	31.9	3.8
dibutyltin (DBT)	1002-53-5	UO	395	µg/kg DW	5	1236.76	1174.96	95.0%	40	40.66	101.7%	< 5.0	< 5.0	< 5.0
tributyltin (TBT)	56573-85-4	UO	395	µg/kg DW	2	1049.2	814.1	77.6%	40	41.18	103.0%	2.8	< 2.0	< 2.0
asbestos (on as received solid)		US	In house			n/a	n/a	n/a	n/a	n/a	n/a	Not detected	Not detected	Not detected

PESS105 @ 0.0
7405
Sediment
SED_MAR
30/10/2022
83.7
16.3
1.4
< 0.30
4.8
< 5.0
< 2.0
Not detected

Results Summary - Metals

Report No.: 22-01631-2

Customer Reference: Islay Routes

Customer Order No: 21814

Customer Sample No	Standard Reference Material	PESS102 @ 0.0	PESS104 @ 0.0	PESS104 @ 0.65	PESS105 @ 0.0
RPS Sample No		7402	7403	7404	7405
Sample Type	SEDIMENT	Sediment	Sediment	Sediment	Sediment
Sample Matrix	SRM NIST 2702	SED_MAR	SED_MAR	SED_MAR	SED_MAR
Sampling Date		30/10/2022	30/10/2022	30/10/2022	30/10/2022

Determinand	CAS No	Codes	SOP	Units	RL	Assigned Value	Measured Value	Recovery %				
arsenic (HF digest)	7440-38-2	USI	M-129	mg/kg DW	0.5	45.3	43	94.9%	16.7	7.8	6.8	3.3
barium (HF digest)	7440-39-3	USI	M-129	mg/kg DW	1	397.4	393	98.9%	686	232	496	201
cadmium (HF digest)	7440-43-9	USI	M-129	mg/kg DW	0.1	0.817	0.784	96.0%	< 0.10	< 0.10	0.1	< 0.10
chromium (HF digest)	7440-47-3	USI	M-129	mg/kg DW	0.5	352	300	85.2%	117	25.8	46.5	21.6
copper (HF digest)	7440-50-8	USI	M-129	mg/kg DW	0.5	117.7	100	85.0%	26.1	7.9	13.3	9
iron (HF digest)	7439-89-6	USI	M-129	mg/kg DW	10	74000	68870	93.1%	48400	12700	26700	10800
lead (HF digest)	7439-92-1	USI	M-129	mg/kg DW	0.5	132.8	118	88.9%	20.9	8	23.1	8
mercury (HF digest)	7439-97-6	USI	M-129	mg/kg DW	0.01	0.4474	0.4	89.4%	0.05	0.05	0.04	0.05
nickel (HF digest)	7440-02-0	USI	M-129	mg/kg DW	0.5	75.4	67	88.9%	56.6	11.4	21.7	9
vanadium (HF digest)	7440-62-2	USI	M-129	mg/kg DW	1	357.6	325	90.9%	137	33.1	58.5	28.3
zinc (HF digest)	7440-66-6	USI	M-129	mg/kg DW	2	485.3	434	89.4%	99.9	30	176	30.1

Results Summary - Polycyclic Aromatic Hydrocarbons

Report No.: 22-01631-2

Customer Reference: Islay Routes

Customer Order No: 21814

					Customer Sample No	Certified Reference Material			AQC spike			PESS102 @ 0.0	PESS104 @ 0.0	PESS104 @ 0.65
					RPS Sample No							7402	7403	7404
					Sample Type	SEDIMENT			SEDIMENT			Sediment	Sediment	Sediment
					Sample Matrix	CRM IAEA_459			Spike on clean sediment			SED_MAR	SED_MAR	SED_MAR
					Sampling Date							30/10/2022	30/10/2022	30/10/2022
Determinand	**CAS No**	**Codes**	**SOP**	**Units**	**RL**	**Assigned Value**	**Measured Value**	**Recovery %**	**Assigned Value**	**Measured Value**	**Recovery %**			
naphthalene	91-20-3	U	396	µg/kg DW	3	n/a	n/a	n/a	25	23.65	94.6%	4.86	9.73	3.33
acenaphthylene	208-96-8	U	396	µg/kg DW	2	3.2	2.47	77.2%	25	20.5	82.0%	< 1.41	< 1.41	< 1.41
acenaphthene	83-32-9	U	396	µg/kg DW	1.7	1.78	1.73	97.2%	25	23.49	94.0%	2.24	3.09	2
fluorene	86-73-7	U	396	µg/kg DW	1.7	4.7	3.09	65.7%	25	24.53	98.1%	3.31	4.85	2.27
phenanthrene	85-01-8	U	396	µg/kg DW	4	33.9	27.02	79.7%	25	23.08	92.3%	46.3	39.4	16.9
anthracene	120-12-7	U	396	µg/kg DW	2.5	6	5.32	88.7%	25	23.63	94.5%	8.48	7.46	3.76
fluoranthene	206-44-0	U	396	µg/kg DW	2.5	37.3	36.24	97.2%	25	23.71	94.8%	42.7	16.8	26.4
pyrene	129-00-0	U	396	µg/kg DW	2.8	46.3	41.93	90.6%	25	24.48	97.9%	49	20.4	26.2
benzo(a)anthracene	56-55-3	U	396	µg/kg DW	1.6	19.3	15.58	80.7%	25	20.95	83.8%	19.9	12.9	12.8
chrysene	218-01-9	U	396	µg/kg DW	1.7	18.56	18.03	97.1%	25	26.24	105.0%	14.5	12.9	11.8
benzo(b)fluoranthene	205-99-2	U	396	µg/kg DW	1.6	44.1	51.22	116.1%	25	19.88	79.5%	20	13.4	18
benzo(k)fluoranthene	207-08-9	U	396	µg/kg DW	2	19	17.69	93.1%	25	25.8	103.2%	8.79	3.48	4.84
benzo(a)pyrene	50-32-8	U	396	µg/kg DW	0.9	22.7	24.72	108.9%	25	24.38	97.5%	21.1	12.8	15.1
indeno(1,2,3-c,d)pyrene	193-39-5	U	396	µg/kg DW	2.2	36	28.31	78.6%	25	22.73	90.9%	8.67	7.23	7.42
dibenzo(a,h)anthracene	53-70-3	U	396	µg/kg DW	1.6	n/a	n/a	n/a	25	22.01	88.0%	3.2	2.74	2.79
benzo(g,h,i)perylene	191-24-2	U	396	µg/kg DW	1.4	36	39.02	108.4%	25	22.92	91.7%	12.2	8.78	11.1

PESS105 @ 0.0
7405
Sediment
SED_MAR
30/10/2022

2.95
< 1.41
< 0.90
1.37
14.2
4.14
33.4
27.1
18.7
14.6
22.1
10.3
22.1
11.7
4.29
13.2

Results Summary - Organochlorine Pesticides & Polychlorinated Biphenyls

Report No.: 22-01631-2

Customer Reference: Islay Routes

Customer Order No: 21814

						Customer Sample No	Certified Reference Material			AQC spike			PESS102 @ 0.0	PESS104 @ 0.0	PESS104 @ 0.65
						RPS Sample No							7402	7403	7404
						Sample Type	SEDIMENT			SEDIMENT			Sediment	Sediment	Sediment
						Sample Matrix	CRM BCR-536			Spike on clean sediment			SED_MAR	SED_MAR	SED_MAR
						Sampling Date							30/10/2022	30/10/2022	30/10/2022
Determinand	**CAS No**	**Codes**	**SOP**	**Units**	**RL**	**Assigned Value**	**Measured Value**	**Recovery %**	**Assigned Value**	**Measured Value**	**Recovery %**			
alpha-hexachlorocyclohexane (alpha-HCH)	319-84-6	N	In house	µg/kg AD	0.45	n/a	n/a	n/a	n/a	n/a	n/a	< 0.45	< 0.45	< 0.45
beta-hexachlorocyclohexane (beta-HCH, beta-BHC)	319-85-7	N	In house	mg/kg AD	0.02	n/a	n/a	n/a	n/a	n/a	n/a	< 0.02	< 0.02	< 0.02
gamma-hexachlorocyclohexane (lindane)	58-89-9	N	In house	µg/kg AD	0.38	n/a	n/a	n/a	n/a	n/a	n/a	< 0.38	< 0.38	< 0.38
hexachlorobenzene (HCB)	118-74-1	N	In house	µg/kg AD	0.84	n/a	n/a	n/a	n/a	n/a	n/a	< 0.84	< 0.84	< 0.84
dieldrin	60-57-1	N	In house	µg/kg AD	0.21	n/a	n/a	n/a	n/a	n/a	n/a	< 0.21	< 0.21	< 0.21
p,p'-DDD	3424-82-6	N	In house	µg/kg AD	0.58	n/a	n/a	n/a	n/a	n/a	n/a	< 0.58	< 0.58	< 0.58
p,p'-DDT	72-54-8	N	In house	µg/kg AD	0.31	n/a	n/a	n/a	n/a	n/a	n/a	< 0.31	< 0.31	< 0.31
p,p'-DDE	50-29-3	N	In house	µg/kg AD	0.75	n/a	n/a	n/a	n/a	n/a	n/a	< 0.75	< 0.75	< 0.75
PCB congener 18	37680-65-2	UO	403	µg/kg AD	0.08	n/a	n/a	n/a	4	3.04	76.0%	< 0.08	< 0.08	< 0.08
PCB congener 28	7012-37-5	UO	403	µg/kg AD	0.08	44	44.79	101.8%	4	3.37	84.3%	< 0.08	< 0.08	< 0.08
PCB congener 31	16606-02-3	UO	403	µg/kg AD	0.08	n/a	n/a	n/a	4	3.87	96.8%	< 0.08	< 0.08	< 0.08
PCB congener 44	41464-39-5	UO	403	µg/kg AD	0.08	n/a	n/a	n/a	4	3.13	78.3%	< 0.08	< 0.08	< 0.08
PCB congener 47	2437-79-8	UO	403	µg/kg AD	0.08	n/a	n/a	n/a	4	3.11	77.8%	< 0.08	< 0.08	< 0.08
PCB congener 49	41464-40-8	UO	403	µg/kg AD	0.08	n/a	n/a	n/a	4	3.11	77.8%	< 0.08	< 0.08	< 0.08
PCB congener 52	35693-99-3	UO	403	µg/kg AD	0.08	38	40.53	106.7%	4	3.19	79.8%	< 0.08	< 0.08	< 0.08
PCB congener 66	32598-10-0	UO	403	µg/kg AD	0.08	n/a	n/a	n/a	4	3.63	90.8%	< 0.08	< 0.08	< 0.08
PCB congener 101	37680-73-2	UO	403	µg/kg AD	0.08	44	53.8	122.3%	4	3.36	84.0%	< 0.08	< 0.08	< 0.08
PCB congener 105	32598-14-4	UO	403	µg/kg AD	0.08	3.5	3.53	100.9%	4	3.81	95.3%	< 0.08	< 0.08	< 0.08
PCB congener 110	38380-03-9	UO	403	µg/kg AD	0.08	n/a	n/a	n/a	4	3.51	87.8%	< 0.08	< 0.08	< 0.08
PCB congener 118	31508-00-6	UO	403	µg/kg AD	0.08	27.5	29.93	108.8%	4	3.83	95.8%	< 0.08	< 0.08	< 0.08
PCB congener 128	38380-07-3	UO	403	µg/kg AD	0.08	5.4	5.89	109.1%	4	3.84	96.0%	< 0.08	< 0.08	< 0.08
PCB congener 138	35065-28-2	UO	403	µg/kg AD	0.08	44.2	50.42	114.1%	4	3.87	96.8%	< 0.08	< 0.08	< 0.08
PCB congener 141	52712-04-6	UO	403	µg/kg AD	0.08	n/a	n/a	n/a	4	3.65	91.3%	< 0.08	< 0.08	< 0.08
PCB congener 149	38380-04-0	UO	403	µg/kg AD	0.08	49	45.44	92.7%	4	3.35	83.8%	< 0.08	< 0.08	< 0.08
PCB congener 151	52663-63-5	UO	403	µg/kg AD	0.08	n/a	n/a	n/a	4	3.31	82.8%	< 0.08	< 0.08	< 0.08
PCB congener 153	35065-27-1	UO	403	µg/kg AD	0.08	50	55.09	110.2%	4	3.68	92.0%	< 0.08	< 0.08	< 0.08
PCB congener 156	38380-08-4	UO	403	µg/kg AD	0.08	3	4.18	139.3%	4	4.28	107.0%	< 0.08	< 0.08	< 0.08
PCB congener 158	74472-42-7	UO	403	µg/kg AD	0.08	n/a	n/a	n/a	4	3.77	94.3%	< 0.08	< 0.08	< 0.08
PCB congener 170	35065-30-6	UO	403	µg/kg AD	0.08	13.4	14.75	110.1%	4	4.35	108.8%	< 0.08	< 0.08	< 0.08
PCB congener 180	35065-29-3	UO	403	µg/kg AD	0.08	22.4	27.97	124.9%	4	4.12	103.0%	< 0.08	< 0.08	< 0.08
PCB congener 183	52663-69-1	UO	403	µg/kg AD	0.08	n/a	n/a	n/a	4	3.7	92.5%	< 0.08	< 0.08	< 0.08
PCB congener 187	52663-68-0	UO	403	µg/kg AD	0.08	n/a	n/a	n/a	4	3.66	91.5%	< 0.08	< 0.08	< 0.08
PCB congener 194	35694-08-7	UO	403	µg/kg AD	0.08	n/a	n/a	n/a	4	4.35	108.8%	< 0.08	< 0.08	< 0.08

PESS105 @ 0.0
7405
Sediment
SED_MAR
30/10/2022
< 0.45
< 0.02
< 0.38
< 0.84
< 0.21
< 0.58
< 0.31
< 0.75
< 0.08
< 0.08
< 0.08
< 0.08
< 0.08
< 0.08
< 0.08
< 0.08
< 0.08
< 0.08
< 0.08
< 0.08
< 0.08
< 0.08
< 0.08
< 0.08
< 0.08
< 0.08
< 0.08
< 0.08
< 0.08
< 0.08
< 0.08
< 0.08
< 0.08

Results Summary - Polybrominated diphenyl ethers (PBDEs)

Report No.: 22-01631-2

Customer Reference: Islay Routes

Customer Order No: 21814

						Customer Sample No	AQC spike		PESS102 @ 0.0	PESS104 @ 0.0	PESS104 @ 0.65
						RPS Sample No			7402	7403	7404
						Sample Type	SEDIMENT		Sediment	Sediment	Sediment
						Sample Matrix	Spike on clean sediment		SED_MAR	SED_MAR	SED_MAR
						Sampling Date			30/10/2022	30/10/2022	30/10/2022
Determinand	**CAS No**	**Codes**	**SOP**	**Units**	**RL**	**Assigned Value**	**Measured Value**	**Recovery %**			
2,4-dibromodiphenyl ether (BDE-7)	147217-71-8	N	In house	mg/kg AD	0.01	0.8	0.55164	69.0%	< 0.01	< 0.01	< 0.01
4,4'-dibromodiphenyl ether (BDE-15)	2050-47-7	N	In house	mg/kg AD	0.01	0.8	0.91016	113.8%	< 0.10	< 0.10	< 0.10
2,2',4-tribromodiphenyl ether (BDE-17)	147217-75-2	N	In house	mg/kg AD	0.01	1.6	1.67897	104.9%	< 0.01	< 0.01	< 0.01
2,4,4'-tribromodiphenyl ether (BDE-28)	41318-75-6	N	In house	mg/kg AD	0.01	0.8	0.82283	102.9%	< 0.01	< 0.01	< 0.10
2,2',4,4'-tetrabromodiphenyl ether (BDE-47)	5436-43-1	N	In house	mg/kg AD	0.01	0.8	0.83801	104.8%	< 0.01	< 0.01	< 0.01
2,2',4,5'-tetrabromodiphenyl ether (BDE-49)	243982-82-3	N	In house	mg/kg AD	0.01	0.8	0.8561	107.0%	< 0.01	< 0.01	< 0.01
2,3',4,4'-tetrabromodiphenyl ether (BDE-66)	189084-61-5	N	In house	mg/kg AD	0.01	0.8	0.83023	103.8%	< 0.01	< 0.01	< 0.01
2,3',4',6-tetrabromodiphenyl ether (BDE-71)	189084-62-6	N	In house	mg/kg AD	0.01	0.8	0.81167	101.5%	< 0.01	< 0.01	< 0.01
3,3',4,4'-tetrabromodiphenyl ether (BDE-77)	93703-48-1	N	In house	mg/kg AD	0.01	0.8	0.88113	110.1%	< 0.01	< 0.01	< 0.01
2,2',3,4,4'-pentabromodiphenyl ether (BDE-85)	182346-21-0	N	In house	mg/kg AD	0.01	0.8	0.7617	95.2%	< 0.01	< 0.01	< 0.01
2,2',4,4',5-pentabromodiphenyl ether (BDE-99)	60348-60-9	N	In house	mg/kg AD	0.01	0.8	0.78581	98.2%	< 0.01	< 0.01	< 0.01
2,2',4,4',6-pentabromodiphenyl ether (BDE-100)	189084-64-8	N	In house	mg/kg AD	0.01	0.8	0.86571	108.2%	< 0.01	< 0.01	< 0.01
2,3',4,4',6-pentabromodiphenyl ether (BDE-119)	189084-66-0	N	In house	mg/kg AD	0.01	0.8	0.8204	102.6%	< 0.01	< 0.01	< 0.01
3,3',4,4',5-pentabromodiphenyl ether (BDE-126)	366791-32-4	N	In house	mg/kg AD	0.01	0.8	0.74875	93.6%	< 0.01	< 0.01	< 0.01
2,2',3,4,4',5'-hexabromodiphenyl ether (BDE-138)	182677-30-1	N	In house	mg/kg AD	0.01	1.6	1.52865	95.5%	< 0.01	< 0.01	< 0.01
2,2',4,4',5,5'-hexabromodiphenyl ether (BDE-153)	68631-49-2	N	In house	mg/kg AD	0.01	1.6	1.25113	78.2%	< 0.01	< 0.01	< 0.01
2,2',4,4',5,6'-hexabromodiphenyl ether (BDE-154)	207122-15-4	N	In house	mg/kg AD	0.01	1.6	1.58977	99.4%	< 0.01	< 0.01	< 0.01
2,3,3',4,4',5-hexabromodiphenyl ether (BDE-156)	405237-85-6	N	In house	mg/kg AD	0.01	1.6	1.54479	96.5%	< 0.01	< 0.01	< 0.01
2,2',3,4,4',5',6-heptabromodiphenyl ether (BDE-183)	207122-16-5	N	In house	mg/kg AD	0.01	1.6	1.65545	103.5%	< 0.01	< 0.01	< 0.01
2,2',3,4,4',6,6'-heptabromodiphenyl ether (BDE-184)	117948-63-7	N	In house	mg/kg AD	0.01	1.6	1.62043	101.3%	< 0.01	< 0.01	< 0.01
2,3,3',4,4',5',6-heptabromodiphenyl ether (BDE-191)	446255-30-7	N	In house	mg/kg AD	0.01	1.6	1.62854	101.8%	< 0.01	< 0.01	< 0.01
2,2',3,3',4,4',5,6'-octabromodiphenyl ether (BDE-196)	446255-39-6	N	In house	mg/kg AD	0.01	1.6	1.2001	75.0%	< 0.01	< 0.01	< 0.01
2,2',3,3',4,4',6,6'-octabromodiphenyl ether (BDE-197)	117964-21-3	N	In house	mg/kg AD	0.01	4	1.45887	36.5%	< 0.01	< 0.01	< 0.01
2,2',3,3',4,4',5,5',6-nonabromodiphenyl ether (BDE-206)	63387-28-0	N	In house	mg/kg AD	0.01	4	2.87345	71.8%	0.01	< 0.01	0.01
2,2',3,3',4,4',5,6,6'-nonabromodiphenyl ether (BDE-207)	437701-79-6	N	In house	mg/kg AD	0.01	4	2.88934	72.2%	< 0.01	< 0.01	< 0.01
decabromodiphenyl ether (BDE-209)	1163-19-5	N	In house	mg/kg AD	0.01	4	3.28529	82.1%	0.05	0.05	0.17

PESS105 @ 0.0
7405
Sediment
SED_MAR
30/10/2022
< 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
< 0.01
< 0.01
< 0.01
< 0.01
< 0.01
< 0.01
< 0.01
< 0.01
< 0.01
< 0.01
< 0.01
0.09
< 0.01
0.16

Results Summary - PSA Results

Report No.: 22-01631-2

Customer Reference: Islay Routes

Customer Order No: 21814

	Customer Sample No	PESS102 @ 0.0	PESS104 @ 0.0	PESS104 @ 0.65
	RPS Sample No	7402	7403	7404
	Sample Type	Sediment	Sediment	Sediment
	Sample Matrix	SED_MAR	SED_MAR	SED_MAR
	Sampling Date	30/10/2022	30/10/2022	30/10/2022

Determinand	CAS No	Codes	SOP	Units			
sample type		S	In-house		Polymodal, Extremely Poorly Sorted	Polymodal, Extremely Poorly Sorted	Polymodal, Extremely Poorly Sorted
textural group (GRADISTAT)		S	In-house		Gravelly Mud	Muddy Gravel	Muddy Gravel
sediment name		S	In-house		Medium Gravelly Fine Silt	Fine Silty Medium Gravel	Fine Silty Medium Gravel
arithmetic mean (method of moments)		S	In-house	µm	2610	2750	2820
arithmetic sorting (method of moments)		S	In-house	µm	5140	4430	4310
arithmetic skewness (method of moments)		S	In-house	µm	2.19	2	1.69
arithmetic kurtosis (method of moments)		S	In-house	µm	6.72	6.44	4.92
geometic mean (method of moments)		S	In-house	µm	88.1	180	242
geometic sorting (method of moments)		S	In-house	µm	28	28.3	22.9
geometic skewness (method of moments)		S	In-house	µm	0.17	-0.3	-0.43
geometic kurtosis (method of moments)		S	In-house	µm	1.66	1.62	1.91
logarithmic mean (method of moments)		S	In-house	phi	3.51	2.48	2.05
logarithmic sorting (method of moments)		S	In-house	phi	4.8	4.82	4.51
logarithmic skewness (method of moments)		S	In-house	phi	-0.17	0.3	0.43
logarithmic kurtosis (method of moments)		S	In-house	phi	1.66	1.62	1.91
mean (Folk and Ward method - µm)		S	In-house	µm	74.7	232	255
sorting (Folk and Ward method - µm)		S	In-house	µm	0.45	-0.3	-0.23
skewness (Folk and Ward method - µm)		S	In-house	µm	0.45	-0.3	-0.23
kurtosis (Folk and Ward method - µm)		S	In-house	µm	0.69	0.63	0.63
mean (Folk and Ward method - phi)		S	In-house	phi	3.74	2.11	1.97
sorting (Folk and Ward method - phi)		S	In-house	phi	4.82	4.71	4.56
skewness (Folk and Ward method - phi)		S	In-house	phi	-0.45	0.3	0.23
kurtosis (Folk and Ward method - phi)		S	In-house	phi	0.69	0.63	0.63
mean description (Folk and Ward method)		S	In-house		0	0	0
sorting description (Folk and Ward method)		S	In-house		Extremely Poorly Sorted	Extremely Poorly Sorted	Extremely Poorly Sorted
skewness description (Folk and Ward method)		S	In-house		0	0	0
kurtosis description (Folk and Ward method)		S	In-house		0	0	0

MODE 1 - µm		S	In-house	µm	9.43	427	427
MODE 2 - µm		S	In-house	µm	427	6667	13600
MODE 3 - µm		S	In-house	µm	19200	9700	6900
MODE 1 - phi		S	In-house	phi	6.75	1.25	1.25
MODE 2 - phi		S	In-house	phi	1.25	7.25	-3.74
MODE 3 - phi		S	In-house	phi	-4.24	-0.74	-2.74
D10 - µm		S	In-house	µm	2.16	2.48	3.27
D50 - µm		S	In-house	µm	19.4	480	420
D90 - µm		S	In-house	µm	10600	9560	9970
(D90/D10) - µm		S	In-house	µm	4880	3850	3050
(D90 - D10) - µm		S	In-house	µm	10600	9560	9970
(D75/D25) - µm		S	In-house	µm	352	485	394
(D75 - D25) - µm		S	In-house	µm	2050	3330	4030
D10 - phi		S	In-house	phi	-3.4	-3.26	-3.32
D50 - phi		S	In-house	phi	5.69	1.06	1.25
D90 - phi		S	In-house	phi	8.85	8.65	8.26
(D90/D10) - phi		S	In-house	phi	-2.6	-2.66	-2.49
(D90 - D10) - phi		S	In-house	phi	12.3	11.9	11.6
(D75/D25) - phi		S	In-house	phi	-7.12	-4.13	-3.28
(D75 - D25) - phi		S	In-house	phi	8.46	8.92	8.62
% gravel		S	In-house	% w/w	25.3	32.8	34.7
% sand		S	In-house	% w/w	22.2	26.4	31.7
% mud		S	In-house	% w/w	52.5	40.8	33.7
% very coarse gravel (>32<64mm or <-5>-6phi)		S	In-house	% w/w	0	0	0
% coarse gravel (>16<32mm or <-4>-5phi)		S	In-house	% w/w	5.22	2.17	0.75
% medium gravel (>8<16mm or <-3>-4phi)		S	In-house	% w/w	7.88	10.8	12.7
% fine gravel (>4<8mm or <-2>-3phi)		S	In-house	% w/w	6.43	9.67	11.7
% very fine gravel (>2<4mm or <-1>-2phi)		S	In-house	% w/w	5.71	10.2	9.49
% very coarse sand (>1<2mm or <0>-1phi)		S	In-house	% w/w	4.4	12.3	6.17
% coarse sand (>0.5<1mm or <1>0phi)		S	In-house	% w/w	4.59	4.01	4.04
% medium sand (>0.25<0.5mm or <2>1phi)		S	In-house	% w/w	13	9.98	17.2
% fine sand (>0.125<0.25mm or <3>2phi)		S	In-house	% w/w	0.21	0.07	3.04
% very fine sand (>0.0625<0.125mm or <4>3phi)		S	In-house	% w/w	0	0	1.24
% very coarse silt (>0.03125<0.0625mm or <5>4phi		S	In-house	% w/w	0.04	0.01	0.23
% coarse silt (>0.015625<0.03125mm or <6>5phi)		S	In-house	% w/w	5.15	2.88	3.71
% medium silt (>0.007813<0.015625mm or <7>6phi)		S	In-house	% w/w	15.1	10.5	9.03
% fine silt (>0.003906<0.007813mm or <8>7phi)		S	In-house	% w/w	15.5	12.5	9.16
% very fine silt (>0.001953<0.003906mm or <9>8phi		S	In-house	% w/w	7.68	6.88	5.03
% clay (<0.001953mm or >9phi)		S	In-house	% w/w	9.11	8.1	6.49

PESS105 @ 0.0
7405
Sediment
SED_MAR
30/10/2022
Polymodal, Extremely Poorly Sorted
Gravelly Mud
Coarse Gravelly Medium Silt
2590
5930
2.29
6.53
55
25.6
0.48
2.01
4.18
4.68
-0.48
2.01
53.1
0.52
0.52
0.9
4.24
4.74
-0.52
0.9
0
Extremely Poorly Sorted
0
0

19200
9.43
427
-4.24
6.75
1.25
1.97
13
16300
8280
16300
105
545
-4.02
6.27
8.99
-2.23
13
8.79
6.71
1840
2150
6010
0
1050
183
299
308
266
533
1340
10.6
0.01
4.36
641
1760
1760
850
994

Results Summary - PSA Size Class & Statistics

Report No.: 22-01631-2

Customer Reference: Islay Routes

Customer Order No: 21814

			Customer Sample No	PESS102 @ 0.0	PESS104 @ 0.0	PESS104 @ 0.65	PESS105 @ 0.0
			RPS Sample No	7402	7403	7404	7405
			Sample Type	**Sediment**	**Sediment**	**Sediment**	**Sediment**
			Sample Matrix	SED_MAR	SED_MAR	SED_MAR	SED_MAR
			Sampling Date	30/10/2022	30/10/2022	30/10/2022	30/10/2022
Sediment	**mm**	**phi f**	**Units**				
Very coarse gravel	>32<64	<-5>-6	% w/w	0.00	0.00	0.00	0.00
Coarse gravel	>16<32	<-4>-5	% w/w	5.22	2.17	0.75	1050.00
Medium gravel	>8<16	<-3>-4	% w/w	7.88	10.80	12.70	183.00
Fine gravel	>4<8	<-2>-3	% w/w	6.43	9.67	11.70	299.00
Very fine gravel	>2<4	<-1>-2	% w/w	5.71	10.20	9.49	308.00
Very coarse sand	>1<2	<0>-1	% w/w	4.40	12.30	6.17	266.00
Coarse sand	>0.5<1	<1>0	% w/w	4.59	4.01	4.04	533.00
Medium sand	>0.25<0.5	<2>1	% w/w	13.00	9.98	17.20	1340.00
Fine sand	>0.125<0.25	<3>2	% w/w	0.21	0.07	3.04	10.60
Very fine sand	>0.0625<0.125	<4>3	% w/w	0.00	0.00	1.24	0.01
Very coarse silt	>0.03125<0.0625	<5>4	% w/w	0.04	0.01	0.23	4.36
Coarse silt	>0.015625<0.03125	<6>5	% w/w	5.15	2.88	3.71	641.00
Medium silt	>0.007813<0.015625	<7>6	% w/w	15.10	10.50	9.03	1760.00
Fine silt	>0.003906<0.007813	<8>7	% w/w	15.50	12.50	9.16	1760.00
Very fine silt	>0.001953<0.003906	<9>8	% w/w	7.68	6.88	5.03	850.00
Clay	<0.001953	>9	% w/w	9.11	8.10	6.49	994.00
Statistics*	Mean (phi)			3.74	2.11	1.97	4.24
	Sorting			0.45	-0.3	-0.23	0.52
	Skewness			0.45	-0.3	-0.23	0.52
	Kurtosis			0.69	0.63	0.63	0.9
	% Silt/Clay		% w/w	52.58	40.87	33.65	6009.36
	Textural Group**			Gravelly Mud	Muddy Gravel	Muddy Gravel	Gravelly Mud

* Folk & Ward

** GRADISTAT classification system (Blott, S. J. & Pye, K., 2001)

Results Summary - PSA Wentworth Scale

Report No.: 22-01631-2

Customer Reference: Islay Routes

Customer Order No: 21814

Customer Sample No		PESS102 @ 0.0	PESS104 @ 0.0	PESS104 @ 0.65	PESS105 @ 0.0
Customer Sample ID					
RPS Sample No		7402	7403	7404	7405
Sample Type		**Sediment**	**Sediment**	**Sediment**	**Sediment**
Sample Location		SED_MAR	SED_MAR	SED_MAR	SED_MAR
Sample Depth (m)					
Sampling Date		30/10/2022	30/10/2022	30/10/2022	30/10/2022
Sampling Time					
Parameter	**Units**				
Pebble	% w/w	19.53	22.64	25.15	1532.00
Granule	% w/w	5.71	10.20	9.49	308.00
Very coarse sand	% w/w	4.40	12.30	6.17	266.00
Coarse sand	% w/w	4.59	4.01	4.04	533.00
Medium sand	% w/w	13.00	9.98	17.20	1340.00
Fine sand	% w/w	0.21	0.07	3.04	10.60
Very fine sand	% w/w	0.00	0.00	1.24	0.01
Silt Clay	% w/w	52.58	40.87	33.65	6009.36
Total	% w/w	100.0	100.1	100.0	9999.0

Comments

Report No.: 22-01631-2

Customer Reference: Islay Routes

Customer Order No: 21814

RPS Sample Number	Customer Number	Sample Comments
7402	PESS102 @ 0.0	None
7403	PESS104 @ 0.0	None
7404	PESS104 @ 0.65	None
7405	PESS105 @ 0.0	None

Deviating Samples

Report No.: 22-01631-2

Customer Reference: Islay Routes

Customer Order No: 21814

Our policy on Deviating Samples has been implemented in accordance with UKAS Policy on Deviating Samples (TPS63).
RPS is not responsible for the integrity of samples as received, unless RPS personnel performed the sampling. Samples submitted may be declared to be deviating.
Where applicable the analysis method remains UKAS accredited, however results reported for a deviating sample may be compromised.
Where no sampling date was supplied, samples have been declared to be deviating. If the date can be supplied, results may be reissued if assessed not deviating.
Where the sample container used was unsuitable or broken, the sample is flagged as deviating and re-sampling/re-submisson may be required.

RPS No.	Customer No.	Customer ID	Date Sampled	Containers Received	Deviating	Reason for Deviation
7402	PESS102 @ 0.0		30/10/2022	500 mL aluminium pot, 2 x 500mL plastic jars	Yes	No sampling time provided.
7403	PESS104 @ 0.0		30/10/2022	500 mL aluminium pot, 2 x 500mL plastic jars	Yes	No sampling time provided.
7404	PESS104 @ 0.65		30/10/2022	500 mL aluminium pot, 2 x 500mL plastic jars	Yes	No sampling time provided.
7405	PESS105 @ 0.0		30/10/2022	500 mL aluminium pot, 2 x 500mL plastic jars	Yes	No sampling time provided.

Report No.: 22-01631-2

Key Codes	Description
N	Not Accredited Test
U	UKAS Accredited Test - UKAS accreditation is only implied if the report carries the UKAS logo
UF	UKAS Flexible Scope Test
M	MCERTS Accredited Test - MCERTS accreditation is only implied if the report carries the MCERTS logo
O	Marine Management Organisation (MMO) Validated
SN	Subcontracted to approved laboratory not accredited for the test
SU	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
SIN	Subcontracted to internal RPS Group laboratory not accredited for the test
SIU	Subcontracted to internal RPS Group laboratory UKAS Accredited for the test
SIM	Subcontracted to internal RPS Group laboratory MCERTS/UKAS Accredited for the test
I/S (in results)	Insufficient Sample
U/S (in results)	Unsuitable Sample
S/C (in results)	See Comments
ND (in results)	Not Detected
L (in results)	Result is outside normal limits
DW (in units)	Results are expressed on a dry weight basis

Sample Type	Sample Retention and Disposal Period
Foodstuff	1 month (if frozen) from the issue date of this report
Waters	2 weeks from the issue date of this report
Other Liquids	1 month from the issue date of this report
Solids / Soils	1 month from the issue date of this report
Sediments	1 month from the issue date of this report

Note: Sample retention may be subject to agreement with the customer for particular projects

Where the dry solids value of a sample is low (<50%), reporting limits are automatically raised for all determinants analysed on an as-received basis.

Soil Typing	Description
Type 1	Clay - Brown
Type 2	Clay - Grey/Black
Type 3	Sand
Type 4	Top Soil (Standard)
Type 5	Top Soil (High Peat)
Type 6	Made Ground (>50% Clay)
Type 7	Made Ground (>50% Sand)
Type 8	Made Ground (>50% Top Soil)
Type X	Other

Analytical Methods	
PAH's and PCB's	GCMS analysis following extraction of the wet sediment with DCM:acetone by ASE 350 extraction. Extract cleaned-up with silica and activated copper.
Metals	ICP-MS analysis following microwave assisted digestion in hydrofluoric acid of the dried (<30°C) and ground sediment.
TOC	Combustion and infrared analysis following carbonate removal with hydrochloric acid.
PSA	Wet and dry sieving followed by laser diffraction analysis.
Density	Determination of density from the dry sediment by gravimetric analysis of a known volume of sediment.
Dry solids at 105°C	A portion of the wet sediment is dried at 105°C to constant weight.
TBT and DBT	GCMS analysis following the extraction of the wet sediment and subsequent derivatisation.

Note: All testing carried out using the <2mm fraction

Laboratories	
RPS Bedford	UKAS Accreditation Laboratory No. 1663
RPS Manchester (Metals only)	UKAS Accreditation Laboratory No. 0605

Note: Where the following information is included in this certificate, it has usually been supplied by the customer: Customer Sample ID, Sample Location, Sample Depth, Sampling Date and Sampling Time. The laboratory shall not be responsible for any information that is supplied by the customer that may affect the validity of results.

RPS Bedford and Manchester Laboratories participate in the QUASIMEME Proficiency Testing Scheme

C.2 2023 Investigation Laboratory Certificates

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 MAR02102

Issue Version: 1

Customer: Holequest Ltd, Winston Road, Galashiels, TD1 2DA

Customer Reference: 23-021 Port Ellen Terminal Development

Date Sampled: 09-Sep-23

Date Samples Received: 06-Nov-23

Test Report Date: 27-Nov-23

Condition of samples: Ambient Satisfactory

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

[Redacted]

Authorised by: Jane Colbourne

Position: Customer Service Specialist

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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	MAR02102
Issue Version	1
Customer Reference	23-021 Port Ellen Terminal Development

		Units	%	%	%	%	%	Mg/m3
		Method No	ASC/SOP/303	ASC/SOP/303	SUB_01*	SUB_01*	SUB_01*	SUB_03*
		Limit of Detection	0.2	0.2	N/A	N/A	N/A	N/A
		Accreditation	UKAS	UKAS	N	N	N	N
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**Total Moisture @ 120°C**	**Total Solids**	**Gravel (>2mm)**	**Sand (63-2000 µm)**	**Silt (<63 µm)**	**Particle Density**
GS401	MAR02102.001	Sediment	31.1	68.9	1.34	91.71	6.95	2.65
GS402	MAR02102.002	Sediment	29.3	70.7	0.00	85.71	14.29	2.68
GS403	MAR02102.003	Sediment	31.0	69.0	0.00	83.95	16.05	2.67
GS404	MAR02102.004	Sediment	21.9	78.1	5.30	77.35	17.35	2.68
GS405	MAR02102.005	Sediment	20.8	79.2	5.96	85.85	8.19	2.65
GS406	MAR02102.006	Sediment	28.7	71.3	1.45	72.99	25.56	2.67
GS407	MAR02102.007	Sediment	26.8	73.2	7.09	89.31	3.60	2.67
GS408	MAR02102.008	Sediment	20.8	79.2	4.86	82.36	12.78	2.66
BH204A 2	MAR02102.009	Sediment	19.3	80.7	47.57	36.13	16.30	2.69
BH204A 3	MAR02102.010	Sediment	14.7	85.3	37.22	12.53	50.25	2.75
BH204B 0	MAR02102.011	Sediment	15.9	84.1	44.00	44.87	11.13	2.68
BH210A 0	MAR02102.012	Sediment	12.7	87.3	21.18	36.16	42.65	2.69
BH210A 0.5	MAR02102.013	Sediment	12.0	88.0	12.78	37.77	49.45	2.68
BH214A 0	MAR02102.014	Sediment	17.7	82.3	6.90	20.97	72.13	2.71
BH214A 1	MAR02102.015	Sediment	16.4	83.6	5.09	28.51	66.40	2.71
BH216A 0.1	MAR02102.016	Sediment	20.6	79.4	0.30	88.16	11.54	2.65
BH216A 2	MAR02102.017	Sediment	19.5	80.5	0.84	93.58	5.58	2.67
BH216A 3.5	MAR02102.018	Sediment	13.1	86.9	4.89	33.19	61.93	2.67
BH217A 0	MAR02102.019	Sediment	21.4	78.6	1.46	86.49	12.05	2.62
BH217A 1	MAR02102.020	Sediment	26.4	73.6	0.00	76.83	23.17	2.63
BH218A 0	MAR02102.021	Sediment	27.2	72.8	27.41	49.18	23.41	2.66
BH219A 0	MAR02102.022	Sediment	28.6	71.4	0.00	90.12	9.88	2.64
BH220 0	MAR02102.023	Sediment	16.9	83.1	14.98	74.30	10.72	2.64
BH220 1	MAR02102.024	Sediment	15.8	84.2	31.58	52.08	16.34	2.67
BH221A 0	MAR02102.025	Sediment	18.2	81.8	17.08	67.26	15.66	2.66
BH221A 1.5	MAR02102.026	Sediment	19.0	81.0	18.27	61.14	20.58	2.66
BH221A 2.5	MAR02102.027	Sediment	10.4	89.6	43.30	32.46	24.24	2.70
		Reference Material (% Recovery)	N/A	N/A	N/A	N/A	N/A	N/A
		QC Blank	N/A	N/A	N/A	N/A	N/A	N/A

* See Report Notes

NAIIS - No Asbestos Identified In Sample

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	MAR02102
Issue Version	1
Customer Reference	23-021 Port Ellen Terminal Development

		Units	N/A	% M/M
		Method No	SUB_02*	WSLM59*
		Limit of Detection	N/A	0.02
		Accreditation	UKAS	UKAS
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**Asbestos**	**TOC**
GS401	MAR02102.001	Sediment	NAIIS	0.24
GS402	MAR02102.002	Sediment	NAIIS	0.27
GS403	MAR02102.003	Sediment	NAIIS	0.33
GS404	MAR02102.004	Sediment	NAIIS	0.40
GS405	MAR02102.005	Sediment	NAIIS	0.31
GS406	MAR02102.006	Sediment	NAIIS	0.58
GS407	MAR02102.007	Sediment	NAIIS	0.20
GS408	MAR02102.008	Sediment	NAIIS	0.32
BH204A 2	MAR02102.009	Sediment	NAIIS	0.21
BH204A 3	MAR02102.010	Sediment	NAIIS	0.18
BH204B 0	MAR02102.011	Sediment	NAIIS	0.29
BH210A 0	MAR02102.012	Sediment	NAIIS	0.25
BH210A 0.5	MAR02102.013	Sediment	NAIIS	0.23
BH214A 0	MAR02102.014	Sediment	NAIIS	0.41
BH214A 1	MAR02102.015	Sediment	NAIIS	0.36
BH216A 0.1	MAR02102.016	Sediment	NAIIS	0.15
BH216A 2	MAR02102.017	Sediment	NAIIS	0.65
BH216A 3.5	MAR02102.018	Sediment	NAIIS	0.32
BH217A 0	MAR02102.019	Sediment	NAIIS	0.39
BH217A 1	MAR02102.020	Sediment	NAIIS	0.19
BH218A 0	MAR02102.021	Sediment	NAIIS	0.37
BH219A 0	MAR02102.022	Sediment	NAIIS	0.25
BH220 0	MAR02102.023	Sediment	NAIIS	0.54
BH220 1	MAR02102.024	Sediment	NAIIS	0.23
BH221A 0	MAR02102.025	Sediment	NAIIS	0.26
BH221A 1.5	MAR02102.026	Sediment	NAIIS	0.26
BH221A 2.5	MAR02102.027	Sediment	NAIIS	0.19
		Reference Material (% Recovery)	N/A	99
		QC Blank	N/A	<0.02

* See Report Notes

NAIIS - No Asbestos Identified In Sample

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 MAR02102
Issue Version 1
Customer Reference 23-021 Port Ellen Terminal Development

		Units	mg/Kg (Dry Weight)							
		Method No	ICPMSS*							
		Limit of Detection	0.5	0.04	0.5	0.5	0.01	0.5	0.5	2
		Accreditation	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**Arsenic**	**Cadmium**	**Chromium**	**Copper**	**Mercury**	**Nickel**	**Lead**	**Zinc**
GS401	MAR02102.001	Sediment	2.1	0.08	5.9	6.6	0.05	7.0	6.8	20.3
GS402	MAR02102.002	Sediment	2.4	0.10	7.0	6.3	0.02	9.6	4.6	32.5
GS403	MAR02102.003	Sediment	1.8	0.08	5.2	4.6	0.03	5.7	3.6	19.2
GS404	MAR02102.004	Sediment	5.4	0.21	19.4	23.0	0.04	29.3	8.9	91.4
GS405	MAR02102.005	Sediment	4.4	0.13	15.5	15.1	0.11	20.5	10.7	57.4
GS406	MAR02102.006	Sediment	2.2	0.11	7.9	5.2	0.02	8.3	4.4	21.9
GS407	MAR02102.007	Sediment	2.3	0.08	7.3	6.2	0.03	8.3	4.2	23.9
GS408	MAR02102.008	Sediment	2.8	0.08	6.9	7.1	0.01	8.5	5.5	25.3
BH204A 2	MAR02102.009	Sediment	2.2	0.15	9.5	10.8	0.01	15.7	3.5	45.0
BH204A 3	MAR02102.010	Sediment	4.0	0.19	25.0	19.7	0.01	32.3	6.2	82.9
BH204B 0	MAR02102.011	Sediment	3.3	0.39	18.0	16.5	0.02	28.0	5.3	78.5
BH210A 0	MAR02102.012	Sediment	5.0	0.20	22.1	14.5	0.03	25.7	7.2	59.4
BH210A 0.5	MAR02102.013	Sediment	5.6	0.14	14.8	10.3	0.02	17.6	5.2	39.8
BH214A 0	MAR02102.014	Sediment	6.9	0.19	27.7	18.5	0.02	30.7	8.8	71.6
BH214A 1	MAR02102.015	Sediment	7.3	0.18	25.4	14.8	0.02	28.1	7.5	64.3
BH216A 0.1	MAR02102.016	Sediment	2.5	0.08	5.6	4.2	<0.01	7.1	6.2	22.6
BH216A 2	MAR02102.017	Sediment	2.1	0.07	5.6	6.6	0.02	9.4	2.1	25.7
BH216A 3.5	MAR02102.018	Sediment	4.9	0.19	15.8	13.1	0.02	18.4	4.8	41.8
BH217A 0	MAR02102.019	Sediment	1.2	0.07	5.4	4.8	0.03	6.3	6.6	20.8
BH217A 1	MAR02102.020	Sediment	0.9	0.07	5.3	4.1	0.01	6.8	1.7	17.4
BH218A 0	MAR02102.021	Sediment	2.4	0.13	8.9	5.0	0.03	11.9	4.2	32.2
BH219A 0	MAR02102.022	Sediment	1.7	0.06	5.9	4.9	0.01	7.1	6.4	20.4
BH220 0	MAR02102.023	Sediment	1.8	0.11	7.2	7.8	0.03	11.0	4.1	30.6
BH220 1	MAR02102.024	Sediment	4.4	0.17	19.7	15.0	0.05	24.5	6.2	62.4
BH221A 0	MAR02102.025	Sediment	2.8	0.11	14.1	14.0	0.03	20.0	5.6	53.8
BH221A 1.5	MAR02102.026	Sediment	4.4	0.17	22.2	26.6	0.06	31.4	5.3	53.9
BH221A 2.5	MAR02102.027	Sediment	4.3	0.15	13.4	12.7	0.03	20.5	4.3	50.5
Certified Reference Material SETOC 768 (% Recovery)			97	101	105	101	108	102	105	104
QC Blank			<0.5	<0.04	<0.5	<0.5	<0.01	<0.5	<0.5	<2

* 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	MAR02102
Issue Version	1
Customer Reference	23-021 Port Ellen Terminal Development

		Units	µg/Kg (Dry Weight)	
		Method No	ASC/SOP/301	
		Limit of Detection	1	1
		Accreditation	UKAS	UKAS
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**Dibutyltin (DBT)**	**Tributyltin (TBT)**
GS401	MAR02102.001	Sediment	<5	<5
GS402	MAR02102.002	Sediment	<5	<5
GS403	MAR02102.003	Sediment	<5	<5
GS404	MAR02102.004	Sediment	<5	<5
GS405	MAR02102.005	Sediment	<1	<1
GS406	MAR02102.006	Sediment	<5	<5
GS407	MAR02102.007	Sediment	<5	<5
GS408	MAR02102.008	Sediment	<1	<1
BH204A 2	MAR02102.009	Sediment	<1	<1
BH204A 3	MAR02102.010	Sediment	<1	<1
BH204B 0	MAR02102.011	Sediment	<1	<1
BH210A 0	MAR02102.012	Sediment	<1	<1
BH210A 0.5	MAR02102.013	Sediment	<1	<1
BH214A 0	MAR02102.014	Sediment	<5	<5
BH214A 1	MAR02102.015	Sediment	<5	<5
Certified Reference Material BCR-646 (% Recovery)			111	107
QC Blank			<1	<1

* 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	MAR02102
Issue Version	1
Customer Reference	23-021 Port Ellen Terminal Development

		Units	µg/Kg (Dry Weight)	
		Method No	ASC/SOP/301	
		Limit of Detection	1	1
		Accreditation	UKAS	UKAS
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**Dibutyltin (DBT)**	**Tributyltin (TBT)**
BH216A 0.1	MAR02102.016	Sediment	<1	<1
BH216A 2	MAR02102.017	Sediment	<1	<1
BH216A 3.5	MAR02102.018	Sediment	<1	<1
BH217A 0	MAR02102.019	Sediment	<1	<1
BH217A 1	MAR02102.020	Sediment	<5	<5
BH218A 0	MAR02102.021	Sediment	<5	<5
BH219A 0	MAR02102.022	Sediment	<5	<5
BH220 0	MAR02102.023	Sediment	<1	8.27
BH220 1	MAR02102.024	Sediment	<1	<1
BH221A 0	MAR02102.025	Sediment	<1	<1
BH221A 1.5	MAR02102.026	Sediment	<5	<5
BH221A 2.5	MAR02102.027	Sediment	<1	<1
Certified Reference Material BCR-646 (% Recovery)			106	100
QC Blank			<1	<1

* See Report Notes

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

Test Report ID MAR02102
Issue Version 1
Customer Reference 23-021 Port Ellen Terminal Development

		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**
GS401	MAR02102.001	Sediment	<1	<1	<1	1.76	1.67	2.18
GS402	MAR02102.002	Sediment	<1	<1	2.74	7.21	7.17	6.00
GS403	MAR02102.003	Sediment	<1	<1	<1	2.74	2.82	5.24
GS404	MAR02102.004	Sediment	2.57	2.04	13.2	26.4	26.7	24.4
GS405	MAR02102.005	Sediment	13.4	13.0	30.4	64.8	68.4	61.1
GS406	MAR02102.006	Sediment	<1	<1	<1	1.64	<1	2.36
GS407	MAR02102.007	Sediment	<1	<1	2.81	6.89	6.38	5.06
GS408	MAR02102.008	Sediment	1.49	<1	3.13	15.2	17.9	16.6
BH204A 2	MAR02102.009	Sediment	<1	<1	<1	<1	<1	<1
BH204A 3	MAR02102.010	Sediment	<1	<1	<1	<1	<1	<1
BH204B 0	MAR02102.011	Sediment	28.8	2.77	37.1	53.2	51.7	54.6
BH210A 0	MAR02102.012	Sediment	<1	<1	<1	<1	<1	1.72
BH210A 0.5	MAR02102.013	Sediment	<1	<1	<1	<1	<1	1.67
BH214A 0	MAR02102.014	Sediment	2.34	1.51	1.89	3.39	3.79	8.73
BH214A 1	MAR02102.015	Sediment	<1	<1	<1	<1	1.29	2.34
Certified Reference Material NIST 1941b (% Recovery)			94	120	68	60	54	81
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 avaliable.
As the method uses surrogate standards to correct for losses, the RM results are reported as percentage trueness, not recovery.
*See report notes

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

Test Report ID MAR02102
Issue Version 1
Customer Reference 23-021 Port Ellen Terminal Development

		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**
GS401	MAR02102.001	Sediment	2.27	1.95	2.12	<1	3.19	<1
GS402	MAR02102.002	Sediment	5.32	6.96	8.36	<1	11.2	1.89
GS403	MAR02102.003	Sediment	2.42	2.64	3.95	<1	4.82	<1
GS404	MAR02102.004	Sediment	18.9	27.5	34.7	4.28	45.0	5.84
GS405	MAR02102.005	Sediment	54.8	59.7	79.0	9.73	159	14.9
GS406	MAR02102.006	Sediment	2.21	1.78	2.31	<1	2.91	<1
GS407	MAR02102.007	Sediment	4.90	5.23	7.77	<1	16.3	1.46
GS408	MAR02102.008	Sediment	12.7	16.0	18.3	2.79	28.9	1.84
BH204A 2	MAR02102.009	Sediment	<1	<1	<1	<1	<1	<1
BH204A 3	MAR02102.010	Sediment	<1	<1	<1	<1	<1	<1
BH204B 0	MAR02102.011	Sediment	211	30.1	47.2	9.98	53.0	17.3
BH210A 0	MAR02102.012	Sediment	2.06	<1	2.12	<1	1.32	<1
BH210A 0.5	MAR02102.013	Sediment	1.86	<1	2.13	<1	1.27	<1
BH214A 0	MAR02102.014	Sediment	7.26	6.29	5.69	1.63	5.58	3.73
BH214A 1	MAR02102.015	Sediment	2.27	1.23	3.46	<1	2.15	1.54
Certified Reference Material NIST 1941b (% Recovery)			68	84	82	110	81	56
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 avaliable.
As the method uses surrogate standards to correct for losses, the RM results are reported as percentage trueness, not recovery.
*See report notes

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

Test Report ID MAR02102
Issue Version 1
Customer Reference 23-021 Port Ellen Terminal Development

		Units	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/303/306
		Limit of Detection	1	1	1	1	100
		Accreditation	UKAS	UKAS	UKAS	UKAS	N
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**INDPYR**	**NAPTH**	**PHENANT**	**PYRENE**	**THC**
GS401	MAR02102.001	Sediment	2.53	2.38	3.76	3.24	4470
GS402	MAR02102.002	Sediment	4.75	4.03	9.23	11.7	6200
GS403	MAR02102.003	Sediment	2.36	2.13	3.85	5.97	7030
GS404	MAR02102.004	Sediment	18.0	35.5	32.0	41.8	36200
GS405	MAR02102.005	Sediment	46.4	22.2	139	158	51100
GS406	MAR02102.006	Sediment	1.60	2.38	4.21	3.27	6330
GS407	MAR02102.007	Sediment	3.64	1.62	11.1	17.4	5590
GS408	MAR02102.008	Sediment	13.1	3.22	15.8	26.2	9050
BH204A 2	MAR02102.009	Sediment	<1	<1	<1	<1	1340
BH204A 3	MAR02102.010	Sediment	<1	<1	<1	<1	298
BH204B 0	MAR02102.011	Sediment	52.9	9.4	220	60.4	50900
BH210A 0	MAR02102.012	Sediment	<1	<1	3.95	1.89	6610
BH210A 0.5	MAR02102.013	Sediment	<1	1.50	4.01	1.79	4520
BH214A 0	MAR02102.014	Sediment	9.85	4.41	9.04	5.71	7060
BH214A 1	MAR02102.015	Sediment	<1	2.87	6.54	2.75	7260
Certified Reference Material NIST 1941b (% Recovery)			64	61	78	68	102~
QC Blank			<1	<1	<1	<1	<100

For full analyte name see method summaries
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*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 MAR02102
Issue Version 1
Customer Reference 23-021 Port Ellen Terminal Development

		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**
BH216A 0.1	MAR02102.016	Sediment	3.13	19.5	45.1	193	172	111
BH216A 2	MAR02102.017	Sediment	<1	<1	<1	<1	<1	<1
BH216A 3.5	MAR02102.018	Sediment	<1	<1	<1	<1	<1	2.37
BH217A 0	MAR02102.019	Sediment	1.68	<1	6.63	12.1	12.6	10.3
BH217A 1	MAR02102.020	Sediment	14.0	1.58	34.50	48.1	47.5	27.0
BH218A 0	MAR02102.021	Sediment	2.59	1.65	4.48	11.5	12.9	13.2
BH219A 0	MAR02102.022	Sediment	1.47	<1	<1	4.01	4.53	4.63
BH220 0	MAR02102.023	Sediment	3.41	4.56	8.81	47.3	51.7	33.9
BH220 1	MAR02102.024	Sediment	1.84	2.70	6.22	12.5	11.2	9.60
BH221A 0	MAR02102.025	Sediment	<1	<1	<1	2.60	3.40	2.98
BH221A 1.5	MAR02102.026	Sediment	<1	<1	<1	<1	<1	<1
BH221A 2.5	MAR02102.027	Sediment	<1	<1	<1	<1	<1	<1
Certified Reference Material NIST 1941b (% Recovery)			87	105	65	62	59	87
QC Blank			<1	<1	<1	<1	<1	<1

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Test Report ID MAR02102
Issue Version 1
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		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**
BH216A 0.1	MAR02102.016	Sediment	73.3	145	186	20.6	354	13.9
BH216A 2	MAR02102.017	Sediment	<1	<1	<1	<1	<1	<1
BH216A 3.5	MAR02102.018	Sediment	2.70	<1	3.09	<1	2.03	1.23
BH217A 0	MAR02102.019	Sediment	9.39	11.4	13.3	1.52	22.6	3.24
BH217A 1	MAR02102.020	Sediment	25.1	33.9	49.0	5.19	90.1	14.9
BH218A 0	MAR02102.021	Sediment	18.0	13.0	12.7	2.19	25.1	3.28
BH219A 0	MAR02102.022	Sediment	3.55	5.42	5.83	<1	12.4	1.46
BH220 0	MAR02102.023	Sediment	30.8	37.9	48.3	6.26	31.9	8.56
BH220 1	MAR02102.024	Sediment	7.05	9.03	13.1	1.27	26.8	4.27
BH221A 0	MAR02102.025	Sediment	2.42	3.29	3.26	<1	4.72	<1
BH221A 1.5	MAR02102.026	Sediment	<1	2.01	1.48	<1	1.85	<1
BH221A 2.5	MAR02102.027	Sediment	<1	1.26	<1	<1	<1	<1
Certified Reference Material NIST 1941b (% Recovery)			65	80	82	100	77	52
QC Blank			<1	<1	<1	<1	<1	<1

For full analyte name see method summaries
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*See report notes

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Test Report ID MAR02102
Issue Version 1
Customer Reference 23-021 Port Ellen Terminal Development

		Units	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/303/306
		Limit of Detection	1	1	1	1	100
		Accreditation	UKAS	UKAS	UKAS	UKAS	N
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**INDPYR**	**NAPTH**	**PHENANT**	**PYRENE**	**THC**
BH216A 0.1	MAR02102.016	Sediment	80.1	7.48	142	355	22100
BH216A 2	MAR02102.017	Sediment	<1	<1	<1	<1	899
BH216A 3.5	MAR02102.018	Sediment	<1	1.46	5.62	2.79	5750
BH217A 0	MAR02102.019	Sediment	8.29	3.06	21.1	27	8020
BH217A 1	MAR02102.020	Sediment	22.0	6.89	96.4	113	15100
BH218A 0	MAR02102.021	Sediment	14.5	7.18	16.4	24.2	20700
BH219A 0	MAR02102.022	Sediment	3.37	1.86	10.8	10.2	7840
BH220 0	MAR02102.023	Sediment	25.6	100	68.6	53.5	14400
BH220 1	MAR02102.024	Sediment	5.58	2.04	20.9	26.9	4410
BH221A 0	MAR02102.025	Sediment	2.25	<1	2.51	4.86	4160
BH221A 1.5	MAR02102.026	Sediment	<1	<1	3.15	1.92	1150
BH221A 2.5	MAR02102.027	Sediment	<1	1.44	2.03	<1	1330
Certified Reference Material NIST 1941b (% Recovery)			68	57	72	66	106~
QC Blank			<1	<1	<1	<1	<100

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Test Report ID MAR02102
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		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/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
		Accreditation	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB28**	**PCB52**	**PCB101**	**PCB118**	**PCB138**	**PCB153**
GS401	MAR02102.001	Sediment	<0.08	<0.08	<0.08	<0.08	0.08	<0.08
GS402	MAR02102.002	Sediment	<0.08	0.13	0.17	0.09	<0.08	<0.08
GS403	MAR02102.003	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
GS404	MAR02102.004	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
GS405	MAR02102.005	Sediment	<0.08	<0.08	0.10	0.13	0.13	0.14
GS406	MAR02102.006	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
GS407	MAR02102.007	Sediment	<0.08	<0.08	0.11	<0.08	<0.08	0.10
GS408	MAR02102.008	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH204A 2	MAR02102.009	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH204A 3	MAR02102.010	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH204B 0	MAR02102.011	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH210A 0	MAR02102.012	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH210A 0.5	MAR02102.013	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH214A 0	MAR02102.014	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	0.08
BH214A 1	MAR02102.015	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	0.08
BH216A 0.1	MAR02102.016	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH216A 2	MAR02102.017	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH216A 3.5	MAR02102.018	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH217A 0	MAR02102.019	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Certified Reference Material NIST 1941b (% Recovery)			70	90	98	88	92	93
QC Blank			<0.08	<0.08	<0.08	<0.08	<0.08	<0.08

For full analyte name see method summaries
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		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/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
		Accreditation	UKAS	UKAS	N*	UKAS	UKAS	UKAS
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB18**	**PCB105**	**PCB110**	**PCB128**	**PCB141**	**PCB149**
GS401	MAR02102.001	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
GS402	MAR02102.002	Sediment	<0.08	<0.08	0.14	<0.08	<0.08	<0.08
GS403	MAR02102.003	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
GS404	MAR02102.004	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
GS405	MAR02102.005	Sediment	<0.08	<0.08	0.10	<0.08	<0.08	0.10
GS406	MAR02102.006	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
GS407	MAR02102.007	Sediment	<0.08	<0.08	0.13	<0.08	<0.08	<0.08
GS408	MAR02102.008	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH204A 2	MAR02102.009	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH204A 3	MAR02102.010	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH204B 0	MAR02102.011	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH210A 0	MAR02102.012	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH210A 0.5	MAR02102.013	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH214A 0	MAR02102.014	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH214A 1	MAR02102.015	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	0.08
BH216A 0.1	MAR02102.016	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH216A 2	MAR02102.017	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH216A 3.5	MAR02102.018	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH217A 0	MAR02102.019	Sediment	<0.08	<0.08	<0.08	0.09	<0.08	<0.08
Certified Reference Material NIST 1941b (% Recovery)			75	72	82	67	110~	79
QC Blank			<0.08	<0.08	<0.08	<0.08	<0.08	<0.08

For full analyte name see method summaries
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		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/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
		Accreditation	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB151**	**PCB156**	**PCB158**	**PCB170**	**PCB180**	**PCB183**
GS401	MAR02102.001	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
GS402	MAR02102.002	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
GS403	MAR02102.003	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
GS404	MAR02102.004	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
GS405	MAR02102.005	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
GS406	MAR02102.006	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
GS407	MAR02102.007	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
GS408	MAR02102.008	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH204A 2	MAR02102.009	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH204A 3	MAR02102.010	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH204B 0	MAR02102.011	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH210A 0	MAR02102.012	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH210A 0.5	MAR02102.013	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH214A 0	MAR02102.014	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH214A 1	MAR02102.015	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH216A 0.1	MAR02102.016	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH216A 2	MAR02102.017	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH216A 3.5	MAR02102.018	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH217A 0	MAR02102.019	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Certified Reference Material NIST 1941b (% Recovery)			108~	67	74	107	93	59
QC Blank			<0.08	<0.08	<0.08	<0.08	<0.08	<0.08

For full analyte name see method summaries
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Issue Version 1
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		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**	**PCB187**	**PCB194**	**PCB31**	**PCB44**	**PCB47**	**PCB49**	**PCB66**
GS401	MAR02102.001	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
GS402	MAR02102.002	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	0.11	<0.08
GS403	MAR02102.003	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
GS404	MAR02102.004	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
GS405	MAR02102.005	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
GS406	MAR02102.006	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
GS407	MAR02102.007	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
GS408	MAR02102.008	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH204A 2	MAR02102.009	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH204A 3	MAR02102.010	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH204B 0	MAR02102.011	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH210A 0	MAR02102.012	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH210A 0.5	MAR02102.013	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH214A 0	MAR02102.014	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH214A 1	MAR02102.015	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH216A 0.1	MAR02102.016	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH216A 2	MAR02102.017	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH216A 3.5	MAR02102.018	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH217A 0	MAR02102.019	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Certified Reference Material NIST 1941b (% Recovery)			81	92	93	79	101~	97	91
QC Blank			<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08

For full analyte name see method summaries
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		Units	µg/Kg (Dry Weight)
		Method No	ASC/SOP/302
		Limit of Detection	0.56
		Accreditation	UKAS
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**ICES7**
GS401	MAR02102.001	Sediment	<0.56
GS402	MAR02102.002	Sediment	0.61
GS403	MAR02102.003	Sediment	<0.56
GS404	MAR02102.004	Sediment	<0.56
GS405	MAR02102.005	Sediment	0.59
GS406	MAR02102.006	Sediment	<0.56
GS407	MAR02102.007	Sediment	<0.56
GS408	MAR02102.008	Sediment	<0.56
BH204A 2	MAR02102.009	Sediment	<0.56
BH204A 3	MAR02102.010	Sediment	<0.56
BH204B 0	MAR02102.011	Sediment	<0.56
BH210A 0	MAR02102.012	Sediment	<0.56
BH210A 0.5	MAR02102.013	Sediment	<0.56
BH214A 0	MAR02102.014	Sediment	<0.56
BH214A 1	MAR02102.015	Sediment	<0.56
BH216A 0.1	MAR02102.016	Sediment	<0.56
BH216A 2	MAR02102.017	Sediment	<0.56
BH216A 3.5	MAR02102.018	Sediment	<0.56
BH217A 0	MAR02102.019	Sediment	<0.56
Certified Reference Material NIST 1941b (% Recovery)			89
QC Blank			<0.56

For full analyte name see method summaries
~ Indicates result is for an In-house Reference Material as no Certified Reference Materials are avaliable.
*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	MAR02102
Issue Version	1
Customer Reference	23-021 Port Ellen Terminal Development

		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/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
		Accreditation	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB28**	**PCB52**	**PCB101**	**PCB118**	**PCB138**	**PCB153**
BH217A 1	MAR02102.020	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH218A 0	MAR02102.021	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH219A 0	MAR02102.022	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH220 0	MAR02102.023	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH220 1	MAR02102.024	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH221A 0	MAR02102.025	Sediment	<0.08	<0.08	<0.08	<0.08	0.10	0.08
BH221A 1.5	MAR02102.026	Sediment	<0.08	<0.08	0.19	<0.08	0.27	0.34
BH221A 2.5	MAR02102.027	Sediment	<0.08	<0.08	0.09	<0.08	0.10	0.24
Certified Reference Material NIST 1941b (% Recovery)			71	90	92	100	96	101
QC Blank			<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 avaliable.

*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	MAR02102
Issue Version	1
Customer Reference	23-021 Port Ellen Terminal Development

		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/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
		Accreditation	UKAS	UKAS	N*	UKAS	UKAS	UKAS
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB18**	**PCB105**	**PCB110**	**PCB128**	**PCB141**	**PCB149**
BH217A 1	MAR02102.020	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH218A 0	MAR02102.021	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH219A 0	MAR02102.022	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH220 0	MAR02102.023	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH220 1	MAR02102.024	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH221A 0	MAR02102.025	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH221A 1.5	MAR02102.026	Sediment	<0.08	<0.08	0.10	<0.08	0.16	0.23
BH221A 2.5	MAR02102.027	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	0.11
Certified Reference Material NIST 1941b (% Recovery)			70	86	80	94	101~	72
QC Blank			<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 avaliable.

*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	MAR02102
Issue Version	1
Customer Reference	23-021 Port Ellen Terminal Development

		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/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
		Accreditation	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PCB151**	**PCB156**	**PCB158**	**PCB170**	**PCB180**	**PCB183**
BH217A 1	MAR02102.020	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH218A 0	MAR02102.021	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH219A 0	MAR02102.022	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH220 0	MAR02102.023	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH220 1	MAR02102.024	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH221A 0	MAR02102.025	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH221A 1.5	MAR02102.026	Sediment	<0.08	<0.08	<0.08	0.21	0.41	<0.08
BH221A 2.5	MAR02102.027	Sediment	<0.08	<0.08	<0.08	0.09	0.16	<0.08
Certified Reference Material NIST 1941b (% Recovery)			98~	79	89	99	90	68
QC Blank			<0.08	<0.08	<0.08	<0.08	<0.08	<0.08

For full analyte name see method summaries

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*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	MAR02102
Issue Version	1
Customer Reference	23-021 Port Ellen Terminal Development

		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**	**PCB187**	**PCB194**	**PCB31**	**PCB44**	**PCB47**	**PCB49**	**PCB66**
BH217A 1	MAR02102.020	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH218A 0	MAR02102.021	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH219A 0	MAR02102.022	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH220 0	MAR02102.023	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH220 1	MAR02102.024	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH221A 0	MAR02102.025	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BH221A 1.5	MAR02102.026	Sediment	0.17	0.09	<0.08	<0.08	<0.08	<0.08	<0.08
BH221A 2.5	MAR02102.027	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Certified Reference Material NIST 1941b (% Recovery)			87	65	87	76	103~	98	93
QC Blank			<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08

For full analyte name see method summaries

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*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	MAR02102
Issue Version	1
Customer Reference	23-021 Port Ellen Terminal Development

		Units	µg/Kg (Dry Weight)
		Method No	ASC/SOP/302
		Limit of Detection	0.56
		Accreditation	UKAS
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**ICES7**
BH217A 1	MAR02102.020	Sediment	<0.56
BH218A 0	MAR02102.021	Sediment	<0.56
BH219A 0	MAR02102.022	Sediment	<0.56
BH220 0	MAR02102.023	Sediment	<0.56
BH220 1	MAR02102.024	Sediment	<0.56
BH221A 0	MAR02102.025	Sediment	<0.56
BH221A 1.5	MAR02102.026	Sediment	1.34
BH221A 2.5	MAR02102.027	Sediment	0.74
Certified Reference Material NIST 1941b (% Recovery)			91
QC Blank			<0.56

For full analyte name see method summaries

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

*See report notes

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

Test Report ID MAR02102
Issue Version 1
Customer Reference 23-021 Port Ellen Terminal Development

		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**
GS401	MAR02102.001	Sediment	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
GS402	MAR02102.002	Sediment	<0.1	<0.1	<0.1	<0.1	0.37	<0.1	<0.1	<0.1
GS403	MAR02102.003	Sediment	<0.1	<0.1	<0.1	<0.1	0.15	<0.1	<0.1	<0.1
GS404	MAR02102.004	Sediment	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
GS405	MAR02102.005	Sediment	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
GS406	MAR02102.006	Sediment	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
GS407	MAR02102.007	Sediment	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
GS408	MAR02102.008	Sediment	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH204A 2	MAR02102.009	Sediment	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH204A 3	MAR02102.010	Sediment	<0.1	<0.1	<0.1	0.11	1.09	<0.1	<0.1	<0.1
BH204B 0	MAR02102.011	Sediment	<0.1	<0.1	<0.1	<0.1	0.29	<0.1	<0.1	<0.1
BH210A 0	MAR02102.012	Sediment	<0.1	<0.1	<0.1	0.19	1.39	<0.1	<0.1	<0.1
BH210A 0.5	MAR02102.013	Sediment	<0.1	<0.1	<0.1	<0.1	2.68	<0.1	<0.1	<0.1
BH214A 0	MAR02102.014	Sediment	1.01	0.29	0.14	0.28	56.2	<0.1	<0.1	<0.1
BH214A 1	MAR02102.015	Sediment	1.28	0.33	0.27	<0.1	61.7	<0.1	<0.1	<0.1
BH216A 0.1	MAR02102.016	Sediment	<0.1	<0.1	<0.1	0.13	0.43	<0.1	<0.1	<0.1
BH216A 2	MAR02102.017	Sediment	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH216A 3.5	MAR02102.018	Sediment	<0.1	<0.1	<0.1	<0.1	0.85	<0.1	<0.1	<0.1
BH217A 0	MAR02102.019	Sediment	<0.1	<0.1	0.12	<0.1	<0.1	<0.1	<0.1	<0.1
Certified Reference Material NIST 1941b (% Recovery)			95~	118~	108~	97~	122	87	56	58
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 avaliable.

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

Test Report ID MAR02102
Issue Version 1
Customer Reference 23-021 Port Ellen Terminal Development

		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	N*
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**AHCH**	**BHCH**	**GHCH**	**DIELDRIN**	**HCB**	**DDE**	**DDT**	**DDD**
BH217A 1	MAR02102.020	Sediment	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH218A 0	MAR02102.021	Sediment	0.85	0.13	<0.1	<0.1	0.15	<0.1	<0.1	<0.1
BH219A 0	MAR02102.022	Sediment	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH220 0	MAR02102.023	Sediment	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH220 1	MAR02102.024	Sediment	<0.1	<0.1	<0.1	<0.1	0.18	<0.1	<0.1	<0.1
BH221A 0	MAR02102.025	Sediment	0.34	<0.1	0.14	<0.1	9.59	<0.1	<0.1	<0.1
BH221A 1.5	MAR02102.026	Sediment	1.75	0.43	0.59	<0.1	65.33	<0.1	<0.1	<0.1
BH221A 2.5	MAR02102.027	Sediment	1.71	0.46	0.34	0.15	89.30	<0.1	<0.1	<0.1
Certified Reference Material NIST 1941b (% Recovery)			99~	110~	120~	104~	120	79	72	65
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 avaliable.

*See report notes

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

Test Report ID MAR02102
Issue Version 1
Customer Reference 23-021 Port Ellen Terminal Development

		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/308	ASC/SOP/308	ASC/SOP/308	ASC/SOP/308	ASC/SOP/308	ASC/SOP/308	ASC/SOP/308
		Limit of Detection	0.05	0.05	0.05	0.05	0.05	0.05	0.05
		Accreditation	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PBDE 17**	**PBDE 28**	**PBDE 47**	**PBDE 66**	**PBDE 100**	**PBDE 99**	**PBDE 85**
GS401	MAR02102.001	Sediment	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
GS402	MAR02102.002	Sediment	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
GS403	MAR02102.003	Sediment	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
GS404	MAR02102.004	Sediment	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05
GS405	MAR02102.005	Sediment	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
GS406	MAR02102.006	Sediment	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
GS407	MAR02102.007	Sediment	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
GS408	MAR02102.008	Sediment	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH204A 2	MAR02102.009	Sediment	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH204A 3	MAR02102.010	Sediment	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH204B 0	MAR02102.011	Sediment	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH210A 0	MAR02102.012	Sediment	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH210A 0.5	MAR02102.013	Sediment	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH214A 0	MAR02102.014	Sediment	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH214A 1	MAR02102.015	Sediment	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH216A 0.1	MAR02102.016	Sediment	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH216A 2	MAR02102.017	Sediment	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH216A 3.5	MAR02102.018	Sediment	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH217A 0	MAR02102.019	Sediment	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Certified Reference Material Quasimeme SED56 (% Recovery)			98~	112	121	97~	117	95	97~
QC Blank			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

* See Report Notes

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

Test Report ID MAR02102
Issue Version 1
Customer Reference 23-021 Port Ellen Terminal Development

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/308	ASC/SOP/308	ASC/SOP/308	ASC/SOP/308	ASC/SOP/308
		Limit of Detection	0.05	0.05	0.05	0.05	0.1
		Accreditation	UKAS	UKAS	UKAS	UKAS	UKAS
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PBDE 154**	**PBDE 153**	**PBDE 138**	**PBDE 183**	**PBDE 209**
GS401	MAR02102.001	Sediment	<0.05	<0.05	<0.05	<0.05	1.47
GS402	MAR02102.002	Sediment	<0.05	<0.05	<0.05	<0.05	<0.7
GS403	MAR02102.003	Sediment	<0.05	<0.05	<0.05	<0.05	<0.7
GS404	MAR02102.004	Sediment	<0.05	<0.05	<0.05	<0.05	2.47
GS405	MAR02102.005	Sediment	<0.05	<0.05	<0.05	<0.05	<0.7
GS406	MAR02102.006	Sediment	<0.05	<0.05	<0.05	<0.05	<0.7
GS407	MAR02102.007	Sediment	<0.05	<0.05	<0.05	<0.05	<0.7
GS408	MAR02102.008	Sediment	<0.05	<0.05	<0.05	<0.05	<0.7
BH204A 2	MAR02102.009	Sediment	<0.05	<0.05	<0.05	<0.05	<0.7
BH204A 3	MAR02102.010	Sediment	<0.05	<0.05	<0.05	<0.05	0.74
BH204B 0	MAR02102.011	Sediment	<0.05	<0.05	<0.05	<0.05	<0.7
BH210A 0	MAR02102.012	Sediment	<0.05	<0.05	<0.05	<0.05	<0.7
BH210A 0.5	MAR02102.013	Sediment	<0.05	<0.05	<0.05	<0.05	0.82
BH214A 0	MAR02102.014	Sediment	<0.05	<0.05	<0.05	<0.05	<0.7
BH214A 1	MAR02102.015	Sediment	<0.05	<0.05	<0.05	<0.05	5.77
BH216A 0.1	MAR02102.016	Sediment	<0.05	<0.05	<0.05	<0.05	<0.7
BH216A 2	MAR02102.017	Sediment	<0.05	<0.05	<0.05	<0.05	2.35
BH216A 3.5	MAR02102.018	Sediment	<0.05	<0.05	<0.05	<0.05	<0.7
BH217A 0	MAR02102.019	Sediment	<0.05	<0.05	<0.05	<0.05	<0.7
Certified Reference Material Quasimeme SED56 (% Recovery)			108	108	101~	99	107
QC Blank			<0.05	<0.05	<0.05	<0.05	<0.7*

* See Report Notes

Certificate of Analysis

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

Test Report ID	MAR02102
Issue Version	1
Customer Reference	23-021 Port Ellen Terminal Development

		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/308	ASC/SOP/308	ASC/SOP/308	ASC/SOP/308	ASC/SOP/308	ASC/SOP/308	ASC/SOP/308
		Limit of Detection	0.05	0.05	0.05	0.05	0.05	0.05	0.05
		Accreditation	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PBDE 17**	**PBDE 28**	**PBDE 47**	**PBDE 66**	**PBDE 100**	**PBDE 99**	**PBDE 85**
BH217A 1	MAR02102.020	Sediment	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH218A 0	MAR02102.021	Sediment	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH219A 0	MAR02102.022	Sediment	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH220 0	MAR02102.023	Sediment	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH220 1	MAR02102.024	Sediment	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH221A 0	MAR02102.025	Sediment	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH221A 1.5	MAR02102.026	Sediment	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
BH221A 2.5	MAR02102.027	Sediment	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Certified Reference Material Quasimeme SED56 (% Recovery)			99~	107	123	101~	126	100	103~
QC Blank			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

* See Report Notes

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

Test Report ID MAR02102
Issue Version 1
Customer Reference 23-021 Port Ellen Terminal Development

		Units	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)	µg/Kg (Dry Weight)
		Method No	ASC/SOP/308	ASC/SOP/308	ASC/SOP/308	ASC/SOP/308	ASC/SOP/308
		Limit of Detection	0.05	0.05	0.05	0.05	0.1
		Accreditation	UKAS	UKAS	UKAS	UKAS	UKAS
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**PBDE 154**	**PBDE 153**	**PBDE 138**	**PBDE 183**	**PBDE 209**
BH217A 1	MAR02102.020	Sediment	<0.05	<0.05	<0.05	<0.05	2.10
BH218A 0	MAR02102.021	Sediment	<0.05	<0.05	<0.05	<0.05	0.63
BH219A 0	MAR02102.022	Sediment	<0.05	<0.05	<0.05	<0.05	<0.6
BH220 0	MAR02102.023	Sediment	<0.05	<0.05	<0.05	<0.05	<0.6
BH220 1	MAR02102.024	Sediment	<0.05	<0.05	<0.05	<0.05	<0.6
BH221A 0	MAR02102.025	Sediment	<0.05	<0.05	<0.05	<0.05	<0.6
BH221A 1.5	MAR02102.026	Sediment	<0.05	<0.05	<0.05	<0.05	<0.6
BH221A 2.5	MAR02102.027	Sediment	<0.05	<0.05	<0.05	<0.05	<0.6
Certified Reference Material Quasimeme SED56 (% Recovery)			164	90	102~	98	101
QC Blank			<0.05	<0.05	<0.05	<0.05	<0.6*

* See Report Notes

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

Test Report ID MAR02102
Issue Version 1
Customer Reference 23-021 Port Ellen Terminal Development

REPORT NOTES

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
WSLM59*	MAR02102.001-027	Analysis was conducted by an internal SOCOTEC laboratory. UKAS accredited analysis by this laboratory is under UKAS number 1252.
ICPMSS*	MAR02102.001-027	Analysis was conducted by an internal SOCOTEC laboratory. UKAS accredited analysis by this laboratory is under UKAS number 1252.
SUB_01*	MAR02102.001-027	Analysis was conducted by an approved subcontracted laboratory.
SUB_02*	MAR02102.001-027	Analysis was conducted by an approved subcontracted laboratory.
SUB_03*	MAR02102.001-027	Analysis was conducted by an approved subcontracted laboratory.
ASC/SOP/301	MAR02102.001-004, 006-007, 014-015, 020-022, 026	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	MAR02102.001-027	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 (PCB110) . These circumstances should be taken into consideration when utilising the data.
ASC/SOP/302	MAR02102.020-027	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 (DDD) . These circumstances should be taken into consideration when utilising the data.
ASC/SOP/303/304	MAR02102.001-027	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	MAR02102.001-027	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.
ASC/SOP/308	MAR02102.001-027	The Primary process control blank data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with BDE209 falling above acceptable reporting 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 the report limit for this compound has been raised and samples have been blank subtracted.

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

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	MAR02102
Issue Version	1
Customer Reference	23-021 Port Ellen Terminal Development

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.
Particle Size Analysis	Wet Sediment	Wet and dry sieving followed by laser diffraction analysis.
Total Organic Carbon (TOC)	Air dried and ground	Carbonate removal and sulphurous acid/combustion at 1600°C/NDIR.
Metals	Air dried and seived to <63µm	Aqua-regia 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.
Brominated Flame Retardants (PBDEs)	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-Hexachlorcyclohexane
ANTHRACN	Anthracene	CHRYSENE	Chrysene	BHCH	beta-Hexachlorcyclohexane
BAA	Benzo[a]anthracene	DBENZAH	Dibenzo[ah]anthracene	GHCH	gamma-Hexachlorcyclohexane
BAP	Benzo[a]pyrene	FLUORANT	Fluoranthene	DIELDRIN	Dieldrin
BBF	Benzo[b]fluoranthene	FLUORENE	Fluorene	HCB	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		

C.3 2024 Investigation Laboratory Certificates

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 MAR02335

Issue Version: 1

Customer: Aspect Land & Hydrographic Surveys, 30 Ballot Road, Irvine, KA12 0HW

Customer Reference: Port Ellen - Marine Scotland Analysis

Date Sampled: 24-May-24

Date Samples Received: 31-May-24

Test Report Date: 04-Jul-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

[Redacted]

Authorised by: Jane Colbourne

Position: Customer Service Specialist

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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	MAR02335
Issue Version	1
Customer Reference	Port Ellen - Marine Scotland Analysis

		Units	%	%	%	%	%	Mg/m3
		Method No	ASC/SOP/303	ASC/SOP/303	SUB_01*	SUB_01*	SUB_01*	SUB_03*
		Limit of Detection	0.2	0.2	N/A	N/A	N/A	N/A
		Accreditation	UKAS	UKAS	N	N	N	N
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**Total Moisture @ 120°C**	**Total Solids**	**Gravel (>2mm)**	**Sand (63-2000 µm)**	**Silt (<63 µm)**	**Particle Density**
A9175 - (Port Ellen) GS409	MAR02335.001	Sediment	29.8	70.2	3.22	58.25	38.53	2.67
A9175 - (Port Ellen) GS410	MAR02335.002	Sediment	27.7	72.3	0.00	62.68	37.32	2.67
A9175 - (Port Ellen) GS412	MAR02335.003	Sediment	23.5	76.5	0.47	70.98	28.54	2.69
A9175 - (Port Ellen) GS413	MAR02335.004	Sediment	19.8	80.2	1.46	91.90	6.64	2.68
		Reference Material (% Recovery)	N/A	N/A	N/A	N/A	N/A	N/A
		QC Blank	N/A	N/A	N/A	N/A	N/A	N/A

* See Report Notes

NAIIS - No Asbestos Identified In Sample

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	MAR02335
Issue Version	1
Customer Reference	Port Ellen - Marine Scotland Analysis

		Units	N/A	% M/M
		Method No	SUB_02*	WSLM59*
		Limit of Detection	N/A	0.02
		Accreditation	UKAS	UKAS
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**Asbestos**	**TOC**
A9175 - (Port Ellen) GS409	MAR02335.001	Sediment	NAIIS	0.84
A9175 - (Port Ellen) GS410	MAR02335.002	Sediment	NAIIS	0.71
A9175 - (Port Ellen) GS412	MAR02335.003	Sediment	NAIIS	0.14
A9175 - (Port Ellen) GS413	MAR02335.004	Sediment	NAIIS	0.15
		Reference Material (% Recovery)	N/A	98
		QC Blank	N/A	<0.02

* See Report Notes

NAIIS - No Asbestos Identified In Sample

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	MAR02335
Issue Version	1
Customer Reference	Port Ellen - Marine Scotland Analysis

		Units	mg/Kg (Dry Weight)							
		Method No	ICPMSS*							
		Limit of Detection	0.5	0.04	0.5	0.5	0.01	0.5	0.5	2
		Accreditation	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS	UKAS
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**Arsenic**	**Cadmium**	**Chromium**	**Copper**	**Mercury**	**Nickel**	**Lead**	**Zinc**
A9175 - (Port Ellen) GS409	MAR02335.001	Sediment	3.0	<0.04	4.3	4.9	0.13	5.9	3.1	19.8
A9175 - (Port Ellen) GS410	MAR02335.002	Sediment	2.8	<0.04	4.9	6.0	0.07	6.8	3.2	22.3
A9175 - (Port Ellen) GS412	MAR02335.003	Sediment	2.0	0.05	4.0	4.1	0.04	5.6	3.4	21.3
A9175 - (Port Ellen) GS413	MAR02335.004	Sediment	2.1	0.06	3.9	4.1	0.04	5.1	3.2	18.0
Certified Reference Material SETOC 768 (% Recovery)			104	105	105	105	105	105	104	104
QC Blank			<0.5	<0.04	<0.5	<0.5	<0.01	<0.5	<0.5	<2

* 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	MAR02335
Issue Version	1
Customer Reference	Port Ellen - Marine Scotland Analysis

		Units	µg/Kg (Dry Weight)	
		Method No	ASC/SOP/301	
		Limit of Detection	1	1
		Accreditation	UKAS	UKAS
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**Dibutyltin (DBT)**	**Tributyltin (TBT)**
A9175 - (Port Ellen) GS409	MAR02335.001	Sediment	<5	<5
A9175 - (Port Ellen) GS410	MAR02335.002	Sediment	<5	<5
A9175 - (Port Ellen) GS412	MAR02335.003	Sediment	<5	<5
A9175 - (Port Ellen) GS413	MAR02335.004	Sediment	<1	<1
Certified Reference Material BCR-646 (% Recovery)			73	80
QC Blank			<1	<1

* 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	MAR02335
Issue Version	1
Customer Reference	Port Ellen - Marine Scotland Analysis

		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**
A9175 - (Port Ellen) GS409	MAR02335.001	Sediment	2.87	2.10	7.38	16.5	17.4	17.1
A9175 - (Port Ellen) GS410	MAR02335.002	Sediment	2.61	5.65	10.8	28.9	31.9	28.6
A9175 - (Port Ellen) GS412	MAR02335.003	Sediment	2.22	3.28	5.31	13.9	15.8	14.9
A9175 - (Port Ellen) GS413	MAR02335.004	Sediment	<1	<1	1.37	1.20	1.07	1.07
Certified Reference Material NIST 1941b (% Recovery)			66	116	70	67	62	85
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 avaliable.

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	MAR02335
Issue Version	1
Customer Reference	Port Ellen - Marine Scotland Analysis

		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**
A9175 - (Port Ellen) GS409	MAR02335.001	Sediment	14.4	17.0	19.7	2.35	36.7	5.46
A9175 - (Port Ellen) GS410	MAR02335.002	Sediment	25.1	29.8	33.5	4.62	53.3	6.05
A9175 - (Port Ellen) GS412	MAR02335.003	Sediment	11.6	13.4	16.3	2.30	22.6	3.69
A9175 - (Port Ellen) GS413	MAR02335.004	Sediment	<1	1.22	1.61	<1	2.82	<1
Certified Reference Material NIST 1941b (% Recovery)			66	85	90	115	86	54
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 avaliable.

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 MAR02335
Issue Version 1
Customer Reference Port Ellen - Marine Scotland Analysis

		Units	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/303/306
		Limit of Detection	1	1	1	1	100
		Accreditation	UKAS	UKAS	UKAS	UKAS	N
Client Reference:	**SOCOTEC Ref:**	**Matrix**	**INDPYR**	**NAPTH**	**PHENANT**	**PYRENE**	**THC**
A9175 - (Port Ellen) GS409	MAR02335.001	Sediment	11.4	10.2	28.6	36.9	57100
A9175 - (Port Ellen) GS410	MAR02335.002	Sediment	21.6	12.1	34.2	58.7	62100
A9175 - (Port Ellen) GS412	MAR02335.003	Sediment	9.40	8.47	18.1	24.7	41900
A9175 - (Port Ellen) GS413	MAR02335.004	Sediment	<1	2.53	4.46	3.29	12700
Certified Reference Material NIST 1941b (% Recovery)			75	61	80	75	97~
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 avaliable.
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	MAR02335
Issue Version	1
Customer Reference	Port Ellen - Marine Scotland Analysis

		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**
A9175 - (Port Ellen) GS409	MAR02335.001	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
A9175 - (Port Ellen) GS410	MAR02335.002	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
A9175 - (Port Ellen) GS412	MAR02335.003	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
A9175 - (Port Ellen) GS413	MAR02335.004	Sediment	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
Certified Reference Material NIST 1941b (% Recovery)			73	96	100	93	99	97	92
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 avaliable.

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	MAR02335
Issue Version	1
Customer Reference	Port Ellen - Marine Scotland Analysis

		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**
A9175 - (Port Ellen) GS409	MAR02335.001	Sediment	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
A9175 - (Port Ellen) GS410	MAR02335.002	Sediment	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
A9175 - (Port Ellen) GS412	MAR02335.003	Sediment	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
A9175 - (Port Ellen) GS413	MAR02335.004	Sediment	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Certified Reference Material NIST 1941b (% Recovery)			115~	112~	114~	114~	136	100	93	66
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 avaliable.

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

Test Report ID MAR02335
Issue Version 1
Customer Reference Port Ellen - Marine Scotland Analysis

REPORT NOTES

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
WSLM59*	MAR02335.001-004	Analysis was conducted by an internal SOCOTEC laboratory. UKAS accredited analysis by this laboratory is under UKAS number 1252.
ICPMSS*	MAR02335.001-004	Analysis was conducted by an internal SOCOTEC laboratory. UKAS accredited analysis by this laboratory is under UKAS number 1252.
SUB_01*	MAR02335.001-004	Analysis was conducted by an approved subcontracted laboratory.
SUB_02*	MAR02335.001-004	Analysis was conducted by an approved subcontracted laboratory.
SUB_03*	MAR02335.001-004	Analysis was conducted by an approved subcontracted laboratory.
ASC/SOP/301	MAR02335.001-003	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/303/304	MAR02335.001-004	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	MAR02335.001-004	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

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	MAR02335
Issue Version	1
Customer Reference	Port Ellen - Marine Scotland Analysis

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.
Particle Size Analysis	Wet Sediment	Wet and dry sieving followed by laser diffraction analysis.
Total Organic Carbon (TOC)	Air dried and ground	Carbonate removal and sulphurous acid/combustion at 1600°C/NDIR.
Metals	Air dried and seived to <63µm	Aqua-regia 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-Hexachlorcyclohexane
ANTHRACN	Anthracene	CHRYSENE	Chrysene	BHCH	beta-Hexachlorcyclohexane
BAA	Benzo[a]anthracene	DBENZAH	Dibenzo[ah]anthracene	GHCH	gamma-Hexachlorcyclohexane
BAP	Benzo[a]pyrene	FLUORANT	Fluoranthene	DIELDRIN	Dieldrin
BBF	Benzo[b]fluoranthene	FLUORENE	Fluorene	HCB	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		

SOCOTEC
Environmental Chemistry

Certificate of Analysis

Client: Aspect Land & Hydrographic Surveys Ltd

Project: 24061008

Quote: BEC240535540 V1.1

Project Ref: A9175

Site: Port Ellen

Contact: Graeme Thomson

Address: Thornhouse Business Centre
Ballot Road
Irvine
Ayrshire
KA12 0HW

E-Mail: [Redacted]

Phone: 01294 313399

No. Samples Received: 4

Date Received: 10/06/2024

Analysis Completed: 03/07/2024

Date Issued: 03/07/2024

Report Type: Version 01

This report supersedes any versions previously issued by the laboratory

[Redacted]

Reported by Account Manager
Elise Ford
01283 554 447
[Redacted]

Project Number: 24061008

Client: Aspect Land & Hydrographic Surveys Ltd
Date Issued: 03/07/2024
Project Name: A9175 - Port Ellen

Samples Analysed

Text ID	Sample Reference	Sampling Date	Sample Type	Sample Description
24061008-001	A9175 - (Port Ellen) GS409	24/05/2024 16:00:00	SOLID	Silt Sample
24061008-002	A9175 - (Port Ellen) GS410	24/05/2024 16:00:00	SOLID	Silt Sample
24061008-003	A9175 - (Port Ellen) GS412	24/05/2024 16:00:00	SOLID	Silt Sample
24061008-004	A9175 - (Port Ellen) GS413	24/05/2024 16:00:00	SOLID	Sand Sample

SOCOTEC

Project Number: 24061008

Client: Aspect Land & Hydrographic Surveys Ltd
Date Issued: 03/07/2024
Project Name: A9175 - Port Ellen

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME
UKAS TESTING 1252

Analysis Results

Method Code	Analysis	MDL	Accred.	SOCOTEC Sample ID:	24061008-001	24061008-002	24061008-003	24061008-004
				Sampling Date:	24/05/2024 16:00	24/05/2024 16:00	24/05/2024 16:00	24/05/2024 16:00
				Customer ID:	A9175 - (Port Ellen) GS409	A9175 - (Port Ellen) GS410	A9175 - (Port Ellen) GS412	A9175 - (Port Ellen) GS413
CLANDPREP	Total Moisture at 35°C	0.1 %	N		24.4	26.3	24.9	20.4
	Major Constituents	-	N		SILT	SILT	SILT	SAND
	Minor Constituents	-	N		Gravel	Gravel	None	Silt
	Miscellaneous Constituents	-	N		Organic Matter	Organic Matter	Organic Matter	n/a
	Colour of Material	-	N		Black/Grey	Black/Grey	Black/Grey	Grey/Brown
Leachate Prep CEN 10:1	Equivalent Weight of Dry Material (kg)	kg	N		0.090	0.090	0.090	0.090
	Fraction above 4mm (%)	%	N		0	0	0	0
	Fraction of non-crushable material (%)	%	N		0	0	0	0
	Volume of Water for 10:1 Leach (ltr)	l	N		0.854	0.848	0.863	0.869
	Weight of Sample Leached (kg)	kg	N		0.136	0.142	0.127	0.121
PHSOIL	pH (2.5:1 extraction)	1 pH units	M^		7.7	7.7	7.9	8.2
ANC	ANC	0.04 mol/kg	N^		1.69	0.97	0.65	0.81
LOI(%MM)	LOI @ 450°C	0.2 % m/m	N^		3.1	2.8	2.3	0.8
WSLM59	Total Organic Carbon	0.02 % m/m	U^		0.73	0.52	0.49	0.19
BTEXHSA	Benzene (HS_1D_AR)	0.01 mg/kg	M^		<0.013	<0.014	<0.013	<0.013
	Toluene (HS_1D_AR)	0.01 mg/kg	M^		<0.013	<0.014	<0.013	<0.013
	Ethylbenzene (HS_1D_AR)	0.01 mg/kg	M^		<0.013	<0.014	<0.013	<0.013
	m/p-Xylene (HS_1D_AR)	0.02 mg/kg	M^		<0.027	<0.027	<0.027	<0.025
	o-Xylene (HS_1D_AR)	0.01 mg/kg	M^		<0.013	<0.014	<0.013	<0.013
	Total BTEX (HS_1D_AR)	0.06 mg/kg	M^		<0.079	<0.081	<0.080	<0.075
TPHFIDUS (Aliphatic)	Total TPH >C8-C40 (Aliphatic) (EH_CU_1D_AL)	20 mg/kg	U^		<26.5 c	<27.1 c	<26.6 c	<25.1 c
	>C10-C40 (Aliphatic) (EH_CU_1D_AL)	20 mg/kg	U^		<26.5 c	<27.1 c	<26.6 c	<25.1 c
PAHMSUS	Acenaphthene	0.08 mg/kg	M^		<0.11	<0.11	<0.11	<0.10
	Acenaphthylene	0.08 mg/kg	U^		<0.11	<0.11	<0.11	<0.10
	Anthracene	0.08 mg/kg	U^		<0.11	<0.11	<0.11	<0.10
	Benzo[a]anthracene	0.08 mg/kg	M^		<0.11	<0.11	<0.11	<0.10
	Benzo[a]pyrene	0.08 mg/kg	M^		<0.11	<0.11	<0.11	<0.10
	Benzo[b]fluoranthene	0.08 mg/kg	M^		<0.11	<0.11	<0.11	<0.10
	Benzo[g,h,i]perylene	0.08 mg/kg	M^		<0.11	<0.11	<0.11	<0.10
	Benzo[k]fluoranthene	0.08 mg/kg	M^		<0.11	<0.11	<0.11	<0.10
	Chrysene	0.08 mg/kg	M^		<0.11	<0.11	<0.11	<0.10
	Coronene	0.08 mg/kg	N^		<0.11	<0.11	<0.11	<0.10
	Dibenzo[a,h]anthracene	0.08 mg/kg	M^		<0.11	<0.11	<0.11	<0.10
	Fluoranthene	0.08 mg/kg	M^		<0.11	<0.11	<0.11	<0.10
	Fluorene	0.08 mg/kg	M^		<0.11	<0.11	<0.11	<0.10
	Indeno[1,2,3-cd]pyrene	0.08 mg/kg	M^		<0.11	<0.11	<0.11	<0.10
	Naphthalene	0.08 mg/kg	M^		<0.11	<0.11	<0.11	<0.10
	Phenanthrene	0.08 mg/kg	M^		<0.11	<0.11	<0.11	<0.10
	Pyrene	0.08 mg/kg	M^		<0.11	<0.11	<0.11	<0.10
	Total PAH 16	1.28 mg/kg	U^		<1.69	<1.74	<1.70	<1.61
	Total PAH 17	1.36 mg/kg	N^		<1.80	<1.85	<1.81	<1.71
PCBECD	PCB 28	0.005 mg/kg	M^		<0.007	<0.007	<0.007	<0.006
	PCB 52	0.005 mg/kg	M^		<0.007	<0.007	<0.007	<0.006
	PCB 101	0.005 mg/kg	M^		<0.007	<0.007	<0.007	<0.006
	PCB 118	0.005 mg/kg	M^		<0.007	<0.007	<0.007	<0.006
	PCB 138	0.005 mg/kg	M^		<0.007	<0.007	<0.007	<0.006
	PCB 153	0.005 mg/kg	M^		<0.007	<0.007	<0.007	<0.006
	PCB 180	0.005 mg/kg	M^		<0.007	<0.007	<0.007	<0.006
	Total PCB 7 Congeners	0.035 mg/kg	M^		<0.046	<0.048	<0.047	<0.044
PHCONDW	pH	1 pH units	N		8.6	8.3	8.3	8.2
PHCONDW	Conductivity at 25°C	100 µS/cm	N		3160	3740	2830	2170
PHCONDW	TDS as mg/kg	700 mg/kg	N		21100	24900	19000	14700
	TDS as mg/l	70 mg/l	N		2150	2540	1920	1480
TOCW	Leached Organic Carbon	0.4 mg/l	U		13.2	13.3	16.6	5.77
		2 mg/kg	N		130	130	164	57.2
KONENS	Chloride as Cl	1 mg/l	U		822	994	700	554
		10 mg/kg	N		8080	9730	6920	5490
ISEF	Fluoride as F	0.1 mg/l	U		0.3	0.4	0.2	0.1
		1 mg/kg	N		3	4	2	<1
SFAPI	Phenol Index	0.05 mg/l	U		<0.05	<0.05	<0.05	<0.05
		0.5 mg/kg	N		<0.5	<0.5	<0.5	<0.5
ICPMSW (Dissolved)	Antimony as Sb	0.001 mg/l	U		0.002	0.002	0.001	<0.001
		0.01 mg/kg	N		0.02	0.02	<0.01	<0.01
ICPMSW (Dissolved)	Arsenic as As	0.001 mg/l	U		0.006	0.005	0.008	0.005
		0.01 mg/kg	N		0.06	0.05	0.08	0.05
ICPWATVAR (Dissolved)	Barium as Ba	0.01 mg/l	U		<0.01	<0.01	0.01	<0.01
		0.1 mg/kg	N		<0.1	<0.1	<0.1	<0.1
ICPMSW (Dissolved)	Cadmium as Cd	0.00002 mg/l	U		<0.00002	<0.00002	<0.00002	<0.00002
		0.0002 mg/kg	N		<0.0002	<0.0002	<0.0002	<0.0002
ICPMSW (Dissolved)	Total Chromium as Cr	0.001 mg/l	U		<0.001	<0.001	<0.001	<0.001
		0.01 mg/kg	N		<0.01	<0.01	<0.01	<0.01
ICPMSW (Dissolved)	Copper as Cu	0.001 mg/l	U		0.001	<0.001	0.002	0.002
		0.01 mg/kg	N		<0.01	<0.01	0.02	0.02
ICPMSW (Dissolved)	Lead as Pb	0.001 mg/l	U		0.001	<0.001	0.001	0.001
		0.01 mg/kg	N		<0.01	<0.01	<0.01	<0.01
ICPMSW (Dissolved)	Mercury as Hg	0.00003 mg/l	U		<0.00003	<0.00003	<0.00003	<0.00003
		0.0003 mg/kg	N		<0.0003	<0.0003	<0.0003	<0.0003
ICPMSW (Dissolved)	Molybdenum as Mo	0.001 mg/l	U		0.032	0.065	0.024	0.002
		0.01 mg/kg	N		0.31	0.64	0.24	0.02
ICPMSW (Dissolved)	Nickel as Ni	0.001 mg/l	U		<0.001	<0.001	<0.001	<0.001
		0.01 mg/kg	N		<0.01	<0.01	<0.01	<0.01
ICPMSW (Dissolved)	Selenium as Se	0.001 mg/l	U		<0.001	<0.001	<0.001	<0.001

Project Number: 24061008

Client: Aspect Land & Hydrographic Surveys Ltd
Date Issued: 03/07/2024
Project Name: A9175 - Port Ellen

1252

Analysis Results

Method Code	Analysis	MDL	Accred.	SOCOTEC Sample ID:	24061008-001	24061008-002	24061008-003	24061008-004
				Sampling Date:	24/05/2024 16:00	24/05/2024 16:00	24/05/2024 16:00	24/05/2024 16:00
				Customer ID:	A9175 - (Port Ellen) GS409	A9175 - (Port Ellen) GS410	A9175 - (Port Ellen) GS412	A9175 - (Port Ellen) GS413
ICPMSW (Dissolved)	Selenium as Se	0.01 mg/kg	N		<0.01	<0.01	<0.01	<0.01
ICPWATVAR (Dissolved)	Total Sulphur as SO4	3 mg/l	U		106	110	25	85
		30 mg/kg	N		1040	1080	247	842
ICPMSW (Dissolved)	Zinc as Zn	0.002 mg/l	U		0.005	0.002	0.007	0.004
		0.02 mg/kg	N		0.05	<0.02	0.07	0.04

10:1 Cumulative Amount Leached: 1st Stage Leachate Results:

WASTE ACCEPTANCE CRITERIA TESTING (BSEN 12457/2)

Client Name: Aspect Land & Hydrographic Surveys Ltd
Lab Sample ID: 24061008-001
Sample ID: A9175 - (Port Ellen) GS409
Site Name: A9175 - Port Ellen

1252

Leachate Preparation Data			
Weight of Sample (kg)	0.136	Moisture content @ 105°C (%)	33.9
Equivalent weight dried @ 105°C (kg)	0.090	Volume of Water required for 10:1 stage (l)	0.854
Fraction of sample above 4mm (%)	0	Fraction of non-crushable material (%)	0

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

Solid Sample Results

Method Code	Analysis	Result	Accred.	Landfill Waste Acceptance Criteria Limit Values: Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
WSLM59	Total Organic Carbon (% m/m)	0.73	U	3	5	6
LOI(%MM)	Loss on Ignition (% m/m)	3.1	N			10
BTEXHSA	Sum of BTEX (mg/kg) (HS_1D_AR)	<0.079	M	6		
PCBECD	Sum of 7 Congener PCBs (mg/kg)	<0.046	M	1		
TPHFIDUS (Aliphatic)	>C10-C40 Aliphatic (mg/kg) (EH_CU_1D_AL)	<26.5	U	500		
PAHMSUS	Sum of 17 PAHs (mg/kg)	<1.80	N	100		
PHSOIL	pH (pH units)	7.7	M		>6	
ANC	Acid Neutralisation Capacity (mol/kg)	1.69	N		To be evaluated	To be evaluated

10:1 Cumulative Leachate Results

Method Code	Analysis	Result	Accred.	Landfill Waste Acceptance Criteria Limit Values: Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
PHCONDW	pH (pH units)	8.6	N			
PHCONDW	Conductivity (µS/cm)	3160	N			
ICPMSW (Dissolved)	Antimony (mg/kg)	0.02	N	0.06	0.7	5
ICPMSW (Dissolved)	Arsenic (mg/kg)	0.06	N	0.5	2	25
ICPWATVAR (Dissolv	Barium (mg/kg)	<0.1	N	20	100	300
ICPMSW (Dissolved)	Cadmium (mg/kg)	<0.0002	N	0.04	1	5
ICPMSW (Dissolved)	Chromium (mg/kg)	<0.01	N	0.5	10	70
ICPMSW (Dissolved)	Copper (mg/kg)	<0.01	N	2	50	100
ICPMSW (Dissolved)	Lead (mg/kg)	<0.01	N	0.5	10	50
ICPMSW (Dissolved)	Mercury (mg/kg)	<0.0003	N	0.01	0.2	2
ICPMSW (Dissolved)	Molybdenum (mg/kg)	0.31	N	0.5	10	30
ICPMSW (Dissolved)	Nickel (mg/kg)	<0.01	N	0.4	10	40
ICPMSW (Dissolved)	Selenium (mg/kg)	<0.01	N	0.1	0.5	7
ICPMSW (Dissolved)	Zinc (mg/kg)	0.05	N	4	50	200
KONENS	Chloride (mg/kg)	8080	N	800	15000	25000
ISEF	Fluoride (mg/kg)	3	N	10	150	500
ICPWATVAR (Dissolv	Sulphate as SO4 (mg/kg)	1040	N	1000	20000	50000
PHCONDW	Total Dissolved Solids (mg/kg)	21100	N	4000	60000	100000
SFAPI	Phenol Index (mg/kg)	<0.5	N	1		
TOCW	Dissolved Organic Carbon (mg/kg)	130	N	500	800	1000

Accreditation status of M denotes MCERT, U denotes UKAS, N denotes no accreditation for the specific result
Landfill Waste Acceptance Criteria limit values are taken from 2003/33/EC: Council Decision and are correct as of 8th January 2024
Conductivity and pH results are reported from the leached sample, not calculated into the cumulative solid sample

WASTE ACCEPTANCE CRITERIA TESTING (BSEN 12457/2)

Client Name: Aspect Land & Hydrographic Surveys Ltd
Lab Sample ID: 24061008-002
Sample ID: A9175 - (Port Ellen) GS410
Site Name: A9175 - Port Ellen

1252

Leachate Preparation Data			
Weight of Sample (kg)	0.142	Moisture content @ 105°C (%)	36.5
Equivalent weight dried @ 105°C (kg)	0.090	Volume of Water required for 10:1 stage (l)	0.848
Fraction of sample above 4mm (%)	0	Fraction of non-crushable material (%)	0

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

Solid Sample Results

Method Code	Analysis	Result	Accred.	Landfill Waste Acceptance Criteria Limit Values: Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
WSLM59	Total Organic Carbon (% m/m)	0.52	U	3	5	6
LOI(%MM)	Loss on Ignition (% m/m)	2.8	N			10
BTEXHSA	Sum of BTEX (mg/kg) (HS_1D_AR)	<0.081	M	6		
PCBECD	Sum of 7 Congener PCBs (mg/kg)	<0.048	M	1		
TPHFIDUS (Aliphatic)	>C10-C40 Aliphatic (mg/kg) (EH_CU_1D_AL)	<27.1	U	500		
PAHMSUS	Sum of 17 PAHs (mg/kg)	<1.85	N	100		
PHSOIL	pH (pH units)	7.7	M		>6	
ANC	Acid Neutralisation Capacity (mol/kg)	0.97	N		To be evaluated	To be evaluated

10:1 Cumulative Leachate Results

Method Code	Analysis	Result	Accred.	Landfill Waste Acceptance Criteria Limit Values: Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
PHCONDW	pH (pH units)	8.3	N			
PHCONDW	Conductivity (µS/cm)	3740	N			
ICPMSW (Dissolved)	Antimony (mg/kg)	0.02	N	0.06	0.7	5
ICPMSW (Dissolved)	Arsenic (mg/kg)	0.05	N	0.5	2	25
ICPWATVAR (Dissolv	Barium (mg/kg)	<0.1	N	20	100	300
ICPMSW (Dissolved)	Cadmium (mg/kg)	<0.0002	N	0.04	1	5
ICPMSW (Dissolved)	Chromium (mg/kg)	<0.01	N	0.5	10	70
ICPMSW (Dissolved)	Copper (mg/kg)	<0.01	N	2	50	100
ICPMSW (Dissolved)	Lead (mg/kg)	<0.01	N	0.5	10	50
ICPMSW (Dissolved)	Mercury (mg/kg)	<0.0003	N	0.01	0.2	2
ICPMSW (Dissolved)	Molybdenum (mg/kg)	0.64	N	0.5	10	30
ICPMSW (Dissolved)	Nickel (mg/kg)	<0.01	N	0.4	10	40
ICPMSW (Dissolved)	Selenium (mg/kg)	<0.01	N	0.1	0.5	7
ICPMSW (Dissolved)	Zinc (mg/kg)	<0.02	N	4	50	200
KONENS	Chloride (mg/kg)	9730	N	800	15000	25000
ISEF	Fluoride (mg/kg)	4	N	10	150	500
ICPWATVAR (Dissolv	Sulphate as SO4 (mg/kg)	1080	N	1000	20000	50000
PHCONDW	Total Dissolved Solids (mg/kg)	24900	N	4000	60000	100000
SFAPI	Phenol Index (mg/kg)	<0.5	N	1		
TOCW	Dissolved Organic Carbon (mg/kg)	130	N	500	800	1000

Accreditation status of M denotes MCERT, U denotes UKAS, N denotes no accreditation for the specific result
Landfill Waste Acceptance Criteria limit values are taken from 2003/33/EC: Council Decision and are correct as of 8th January 2024
Conductivity and pH results are reported from the leached sample, not calculated into the cumulative solid sample

WASTE ACCEPTANCE CRITERIA TESTING (BSEN 12457/2)

Client Name: Aspect Land & Hydrographic Surveys Ltd
Lab Sample ID: 24061008-003
Sample ID: A9175 - (Port Ellen) GS412
Site Name: A9175 - Port Ellen

1252

Leachate Preparation Data			
Weight of Sample (kg)	0.127	Moisture content @ 105°C (%)	29.0
Equivalent weight dried @ 105°C (kg)	0.090	Volume of Water required for 10:1 stage (l)	0.863
Fraction of sample above 4mm (%)	0	Fraction of non-crushable material (%)	0

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

Solid Sample Results

Method Code	Analysis	Result	Accred.	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
WSLM59	Total Organic Carbon (% m/m)	0.49	U	3	5	6
LOI(%MM)	Loss on Ignition (% m/m)	2.3	N			10
BTEXHSA	Sum of BTEX (mg/kg) (HS_1D_AR)	<0.080	M	6		
PCBECD	Sum of 7 Congener PCBs (mg/kg)	<0.047	M	1		
TPHFIDUS (Aliphatic)	>C10-C40 Aliphatic (mg/kg) (EH_CU_1D_AL)	<26.6	U	500		
PAHMSUS	Sum of 17 PAHs (mg/kg)	<1.81	N	100		
PHSOIL	pH (pH units)	7.9	M		>6	
ANC	Acid Neutralisation Capacity (mol/kg)	0.65	N		To be evaluated	To be evaluated

10:1 Cumulative Leachate Results

Method Code	Analysis	Result	Accred.	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
PHCONDW	pH (pH units)	8.3	N			
PHCONDW	Conductivity (µS/cm)	2830	N			
ICPMSW (Dissolved)	Antimony (mg/kg)	<0.01	N	0.06	0.7	5
ICPMSW (Dissolved)	Arsenic (mg/kg)	0.08	N	0.5	2	25
ICPWATVAR (Dissolv	Barium (mg/kg)	<0.1	N	20	100	300
ICPMSW (Dissolved)	Cadmium (mg/kg)	<0.0002	N	0.04	1	5
ICPMSW (Dissolved)	Chromium (mg/kg)	<0.01	N	0.5	10	70
ICPMSW (Dissolved)	Copper (mg/kg)	0.02	N	2	50	100
ICPMSW (Dissolved)	Lead (mg/kg)	<0.01	N	0.5	10	50
ICPMSW (Dissolved)	Mercury (mg/kg)	<0.0003	N	0.01	0.2	2
ICPMSW (Dissolved)	Molybdenum (mg/kg)	0.24	N	0.5	10	30
ICPMSW (Dissolved)	Nickel (mg/kg)	<0.01	N	0.4	10	40
ICPMSW (Dissolved)	Selenium (mg/kg)	<0.01	N	0.1	0.5	7
ICPMSW (Dissolved)	Zinc (mg/kg)	0.07	N	4	50	200
KONENS	Chloride (mg/kg)	6920	N	800	15000	25000
ISEF	Fluoride (mg/kg)	2	N	10	150	500
ICPWATVAR (Dissolv	Sulphate as SO4 (mg/kg)	247	N	1000	20000	50000
PHCONDW	Total Dissolved Solids (mg/kg)	19000	N	4000	60000	100000
SFAPI	Phenol Index (mg/kg)	<0.5	N	1		
TOCW	Dissolved Organic Carbon (mg/kg)	164	N	500	800	1000

Accreditation status of M denotes MCERT, U denotes UKAS, N denotes no accreditation for the specific result
Landfill Waste Acceptance Criteria limit values are taken from 2003/33/EC: Council Decision and are correct as of 8th January 2024
Conductivity and pH results are reported from the leached sample, not calculated into the cumulative solid sample

WASTE ACCEPTANCE CRITERIA TESTING (BSEN 12457/2)

Client Name: Aspect Land & Hydrographic Surveys Ltd
Lab Sample ID: 24061008-004
Sample ID: A9175 - (Port Ellen) GS413
Site Name: A9175 - Port Ellen

1252

Leachate Preparation Data			
Weight of Sample (kg)	0.121	Moisture content @ 105°C (%)	25.6
Equivalent weight dried @ 105°C (kg)	0.090	Volume of Water required for 10:1 stage (l)	0.869
Fraction of sample above 4mm (%)	0	Fraction of non-crushable material (%)	0

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

Solid Sample Results

Method Code	Analysis	Result	Accred.	Landfill Waste Acceptance Criteria Limit Values: Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
WSLM59	Total Organic Carbon (% m/m)	0.19	U	3	5	6
LOI(%MM)	Loss on Ignition (% m/m)	0.8	N			10
BTEXHSA	Sum of BTEX (mg/kg) (HS_1D_AR)	<0.075	M	6		
PCBECD	Sum of 7 Congener PCBs (mg/kg)	<0.044	M	1		
TPHFIDUS (Aliphatic)	>C10-C40 Aliphatic (mg/kg) (EH_CU_1D_AL)	<25.1	U	500		
PAHMSUS	Sum of 17 PAHs (mg/kg)	<1.71	N	100		
PHSOIL	pH (pH units)	8.2	M		>6	
ANC	Acid Neutralisation Capacity (mol/kg)	0.81	N		To be evaluated	To be evaluated

10:1 Cumulative Leachate Results

Method Code	Analysis	Result	Accred.	Landfill Waste Acceptance Criteria Limit Values: Inert Waste Landfill	Stable Non-Reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
PHCONDW	pH (pH units)	8.2	N			
PHCONDW	Conductivity (µS/cm)	2170	N			
ICPMSW (Dissolved)	Antimony (mg/kg)	<0.01	N	0.06	0.7	5
ICPMSW (Dissolved)	Arsenic (mg/kg)	0.05	N	0.5	2	25
ICPWATVAR (Dissolv	Barium (mg/kg)	<0.1	N	20	100	300
ICPMSW (Dissolved)	Cadmium (mg/kg)	<0.0002	N	0.04	1	5
ICPMSW (Dissolved)	Chromium (mg/kg)	<0.01	N	0.5	10	70
ICPMSW (Dissolved)	Copper (mg/kg)	0.02	N	2	50	100
ICPMSW (Dissolved)	Lead (mg/kg)	<0.01	N	0.5	10	50
ICPMSW (Dissolved)	Mercury (mg/kg)	<0.0003	N	0.01	0.2	2
ICPMSW (Dissolved)	Molybdenum (mg/kg)	0.02	N	0.5	10	30
ICPMSW (Dissolved)	Nickel (mg/kg)	<0.01	N	0.4	10	40
ICPMSW (Dissolved)	Selenium (mg/kg)	<0.01	N	0.1	0.5	7
ICPMSW (Dissolved)	Zinc (mg/kg)	0.04	N	4	50	200
KONENS	Chloride (mg/kg)	5490	N	800	15000	25000
ISEF	Fluoride (mg/kg)	<1	N	10	150	500
ICPWATVAR (Dissolv	Sulphate as SO4 (mg/kg)	842	N	1000	20000	50000
PHCONDW	Total Dissolved Solids (mg/kg)	14700	N	4000	60000	100000
SFAPI	Phenol Index (mg/kg)	<0.5	N	1		
TOCW	Dissolved Organic Carbon (mg/kg)	57.2	N	500	800	1000

Accreditation status of M denotes MCERT, U denotes UKAS, N denotes no accreditation for the specific result
Landfill Waste Acceptance Criteria limit values are taken from 2003/33/EC: Council Decision and are correct as of 8th January 2024
Conductivity and pH results are reported from the leached sample, not calculated into the cumulative solid sample

Project Number: 24061008

Client: Aspect Land & Hydrographic Surveys Ltd
Date Issued: 03/07/2024
Project Name: A9175 - Port Ellen

Deviating Sample Report

Sample Reference	Text ID	Method Code	Incorrect Container	Incorrect Label	Headspace	Incorrect/No Preservative	No Sampling Date	Holding Time
A9175 - (Port Ellen) GS409	24061008-001	**BTEXHSA**						✓
A9175 - (Port Ellen) GS409	24061008-001	**PHSOIL**						✓
A9175 - (Port Ellen) GS410	24061008-002	**BTEXHSA**						✓
A9175 - (Port Ellen) GS410	24061008-002	**PHSOIL**						✓
A9175 - (Port Ellen) GS412	24061008-003	**BTEXHSA**						✓
A9175 - (Port Ellen) GS412	24061008-003	**PHSOIL**						✓
A9175 - (Port Ellen) GS413	24061008-004	**BTEXHSA**						✓
A9175 - (Port Ellen) GS413	24061008-004	**PHSOIL**						✓

Analysis Method

Method Code	Method Description	Analysis Method
ANC	ANC: Acid Neutralisation Capacity (mol/kg)	Air Dried & Ground
BTEXHSA	BTEX for WAC by GCFID	As Received
CLANDPREP	CLand Prep and Dry Weight Correction to 35°C	As Received
CLANDPREP	Solid Material Description	As Received
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
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

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) for WAC by GCMS	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
PHSOIL	pH (2.5:1)	As Received
SFAPI	Phenol Index (Total) by SFA	Filtered
SFAPI	Phenol Index in Solids (BSEN 12457-2)	Filtered
TOCW	Leached Organic Carbon in Solids (BSEN 12457-2)	Filtered
TOCW	LOC: Leached Organic Carbon	Filtered
TPHFIDUS (Aliphatic)	TPH (>C8-C40) Aliphatic and Carbon Band (>C 10-C40)	As Received
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:

Letter	Note
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.
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.

Project Number: 24061008

Client: Aspect Land & Hydrographic Surveys Ltd
Date Issued: 03/07/2024
Project Name: A9175 - Port Ellen

HWOL Acronym Key

Acronym	Description
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

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 accreditation 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 results 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 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 another SOCOTEC department or 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

D. Marine Directorate Action Levels

D.1 Marine Directorate Action Levels

Table D.1 identifies the Marine Directorate action levels for sediment disposal. These are the applicable guidance values used when assessing suitability for disposal to sea to ensure the water and ecological environment is protected against any potential contaminants within the dredge material.

Table D.1: Marine Directorate Action Levels

Contaminant	Revised AL1 mg/kg dry weight (ppm)	Revised AL2 mg/kg dry weight (ppm)
Arsenic (As)	20	70
Cadmium (Cd)	0.4	4
Chromium (Cr)	50	370
Copper (Cu)	30	300
Mercury (Hg)	0.25	1.5
Nickel (Ni)	30	150
Lead (Pb)	50	400
Zinc (Zn)	130	600
Tributyltin	0.1	0.5
Polychlorinated Biphenyls	0.02	0.18
Polyaromatic Hydrocarbons		
Acenaphthene	0.1	
Acenaphthylene	0.1	
Anthracene	0.1	
Fluorene	0.1	
Naphthalene	0.1	
Phenanthrene	0.1	
Benzo[a]anthracene	0.1	
Benzo[b]fluoranthene	0.1	
Benzo[k]fluoranthene	0.1	
Benzo[a]pyrene	0.1	
Benzo[g,hi]perylene	0.1	
Dibenzo[a,h]anthracene	0.01	
Chrysene	0.1	
Fluoranthene	0.1	
Pyrene	0.1	
Indeno(1,2,3cd0pyrene	0.1	
Total hydrocarbons	100	

E. Marine Directorate Pre-disposal Sampling Results Form