Plate No.: 1	Title.:. Area 01 Eastern Face from 1.75 – 4.30m bgl.

Plate No.: 2	Title.: Area 01 Eastern Face from 1.75 – 4.30m bgl.	
sanctus	Contract No.: S3240	Date: 31/01/2024
	Contract Name: Ardrossan, North Shore	

Plate No.: 3	Title.:. Area 01 Excavation Base from 4.30m bgl.

Plate No.: 4	Title.: Area 01 Excavation Base from 4.30m bgl.	
sanctus	Contract No.: S3240	Date: 31/01/2024
	Contract Name: Ardrossan, North Shore	

Plate No.: 5	Title.: Area 01 Excavation Base from 4.30m bgl.

Plate No.: 6	Title.: Area 01 Southern Extent from 1.75 – 4.30m bgl	
sanctus	Contract No.: S3240	Date: 31/01/2024
	Contract Name: Ardrossan, North Shore	

Plate No.: 7	Title.: Area 01 Western Face from 1.75 – 4.30m bgl.

Plate No.: 8	Title.: Area 01 Western Face from 1.75 – 4.30m bgl.	
sanctus	Contract No.: S3240	Date: 31/01/2024
	Contract Name: Ardrossan, North Shore	

Plate No.: 9	Title.:. Area 01 Northern Face from 1.75 – 4.30m bgl.

Plate No.: 10	Title.: Area 01 Excavation Base from 1.75 – 4.30m bgl.	
sanctus	Contract No.: S3240	Date: 31/01/2024
	Contract Name: Ardrossan, North Shore	

Plate No.: 11	Title.:. Area 02 Northern Face from 1.75 – 4.30m bgl.

Plate No.: 12	Title.: Area 02 Northern Face from 1.75 – 4.30m bgl.	
sanctus	Contract No.: S3240	Date: 31/01/2024
	Contract Name: Ardrossan, North Shore	

Plate No.: 13	Title.:. Area 02 Eastern Face from 1.75 – 4.30m bgl.

Plate No.: 14	Title.:Area 02 Western Face from 1.75 – 4.30m bgl.	
sanctus	Contract No.: S3240	Date: 31/01/2024
	Contract Name: Ardrossan, North Shore	

Plate No.: 15	Title.:. Area 02 Validation.

Plate No.: 16	Title.: Area 02 Base from 4.30m bgl.	
sanctus	Contract No.: S3240	Date: 31/01/2024
	Contract Name: Ardrossan, North Shore	

Plate No.: 17	Title.:. Area 03 V001 Excavation Base 2.10m bgl

Plate No.: 18	Title.: Area 03 V002 Eastern Face 0.70 – 2.10m bgl	
sanctus	Contract No.: S3240	Date: 07/11/2023
	Contract Name: Ardrossan, North Shore	

Plate No.: 19	Title.:. Area 03 V003 Northern Extent 0.70 – 2.10m bgl

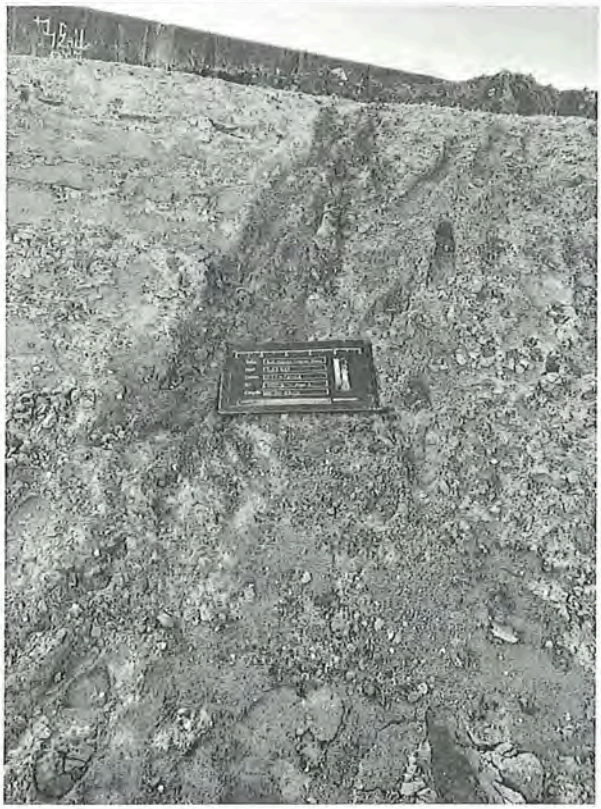

Plate No.: 20	Title.: Area 03 V004 Western Extent 0.70 – 2.10m bgl	
sanctus	Contract No.: S3240	Date: 07/11/2023
	Contract Name: Ardrossan, North Shore	

Plate No.: 21	Title.:. Area 03 V005 Southern Extent 0.70 – 2.10m bgl

Plate No.: 22	Title.: Area 04 V112 Northern Extent from 0.00 – 4.50m bgl	
sanctus	Contract No.: S3240	Date: 10/01/2024
	Contract Name: Ardrossan, North Shore	

Plate No.: 23	Title.:. Area 04 V113 Northern Extent from 0.00 – 4.50m bgl

Plate No.: 24	Title.: Area 04 V114 Eastern Extent 0.00 – 4.50m bgl	
sanctus	Contract No.: S3240	Date: 10/01/2024
	Contract Name: Ardrossan, North Shore	

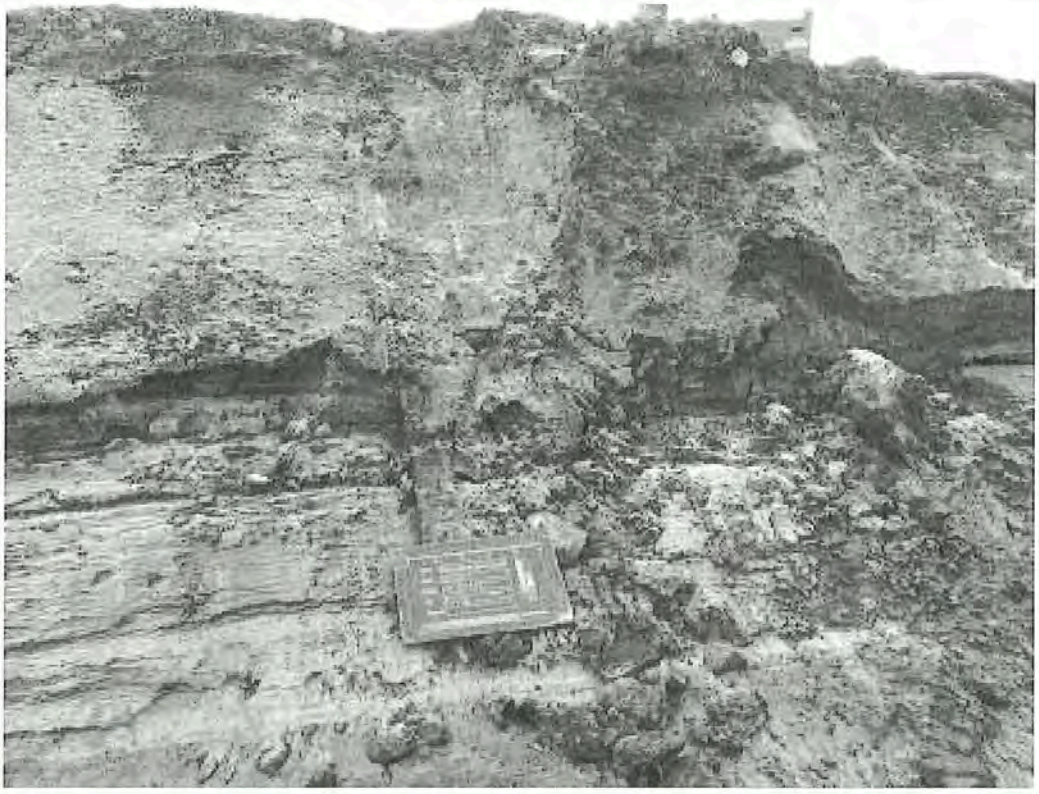

Plate No.: 25	Title.:. Area 04 V115 Eastern Extent from 0.00 – 4.50m bgl.

Plate No.: 26	Title.: Area 04 V116 Eastern Extent from 0.00 – 4.50m bgl	
sanctus	Contract No.: S3240	Date: 10/01/2024
	Contract Name: Ardrossan, North Shore	

Plate No.: 27	Title.:. Area 04 V117 Southern Extent from 0.00 – 4.50m bgl.

Plate No.: 28	Title.: Area 04 V118 Western Extent from 0.0 – 4.50m bgl.	
sanctus	Contract No.: S3240	Date: 10/01/2024
	Contract Name: Ardrossan, North Shore	

Plate No.: 29	Title.:. Area 04 V119 Western Extent 0.00 – 4.50m bgl

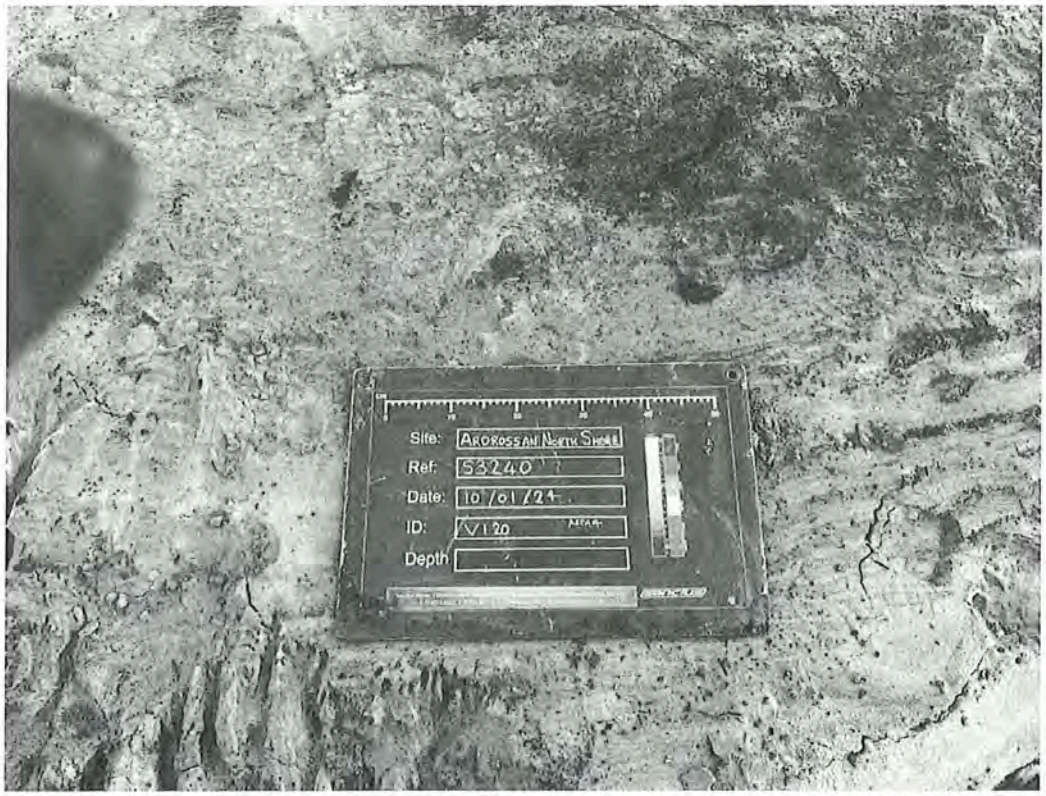

Plate No.: 30	Title.: Area 04 V120 Excavation Base at 4.50m bgl	
sanctus	Contract No.: S3240	Date: 10/01/2024
	Contract Name: Ardrossan, North Shore	

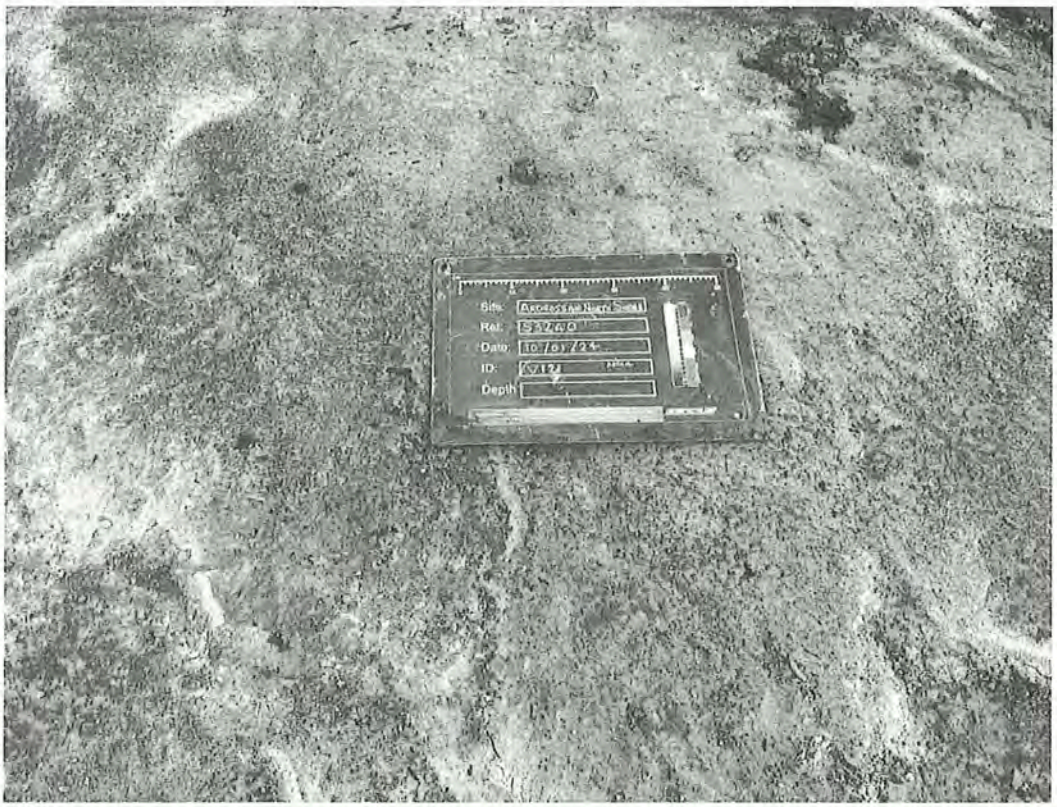

Plate No.: 31	Title.:. Area 04 V121 Excavation Base at 4.50m bgl

Plate No.: 32	Title.: Area 04 Backfilled Excavation.	
sanctus	Contract No.: S3240	Date: 10/01/2024
	Contract Name: Ardrossan, North Shore	

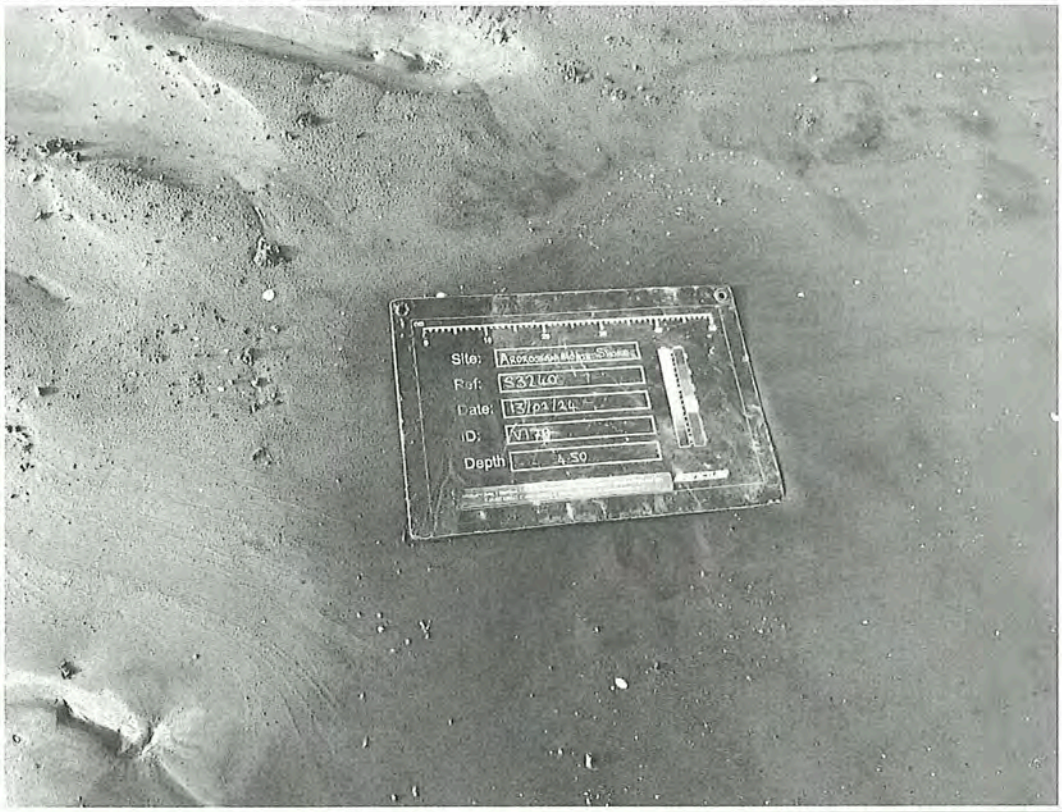

Plate No.: 33	Title.:. Area 05 V179 Excavation Base at 5.10m bgl

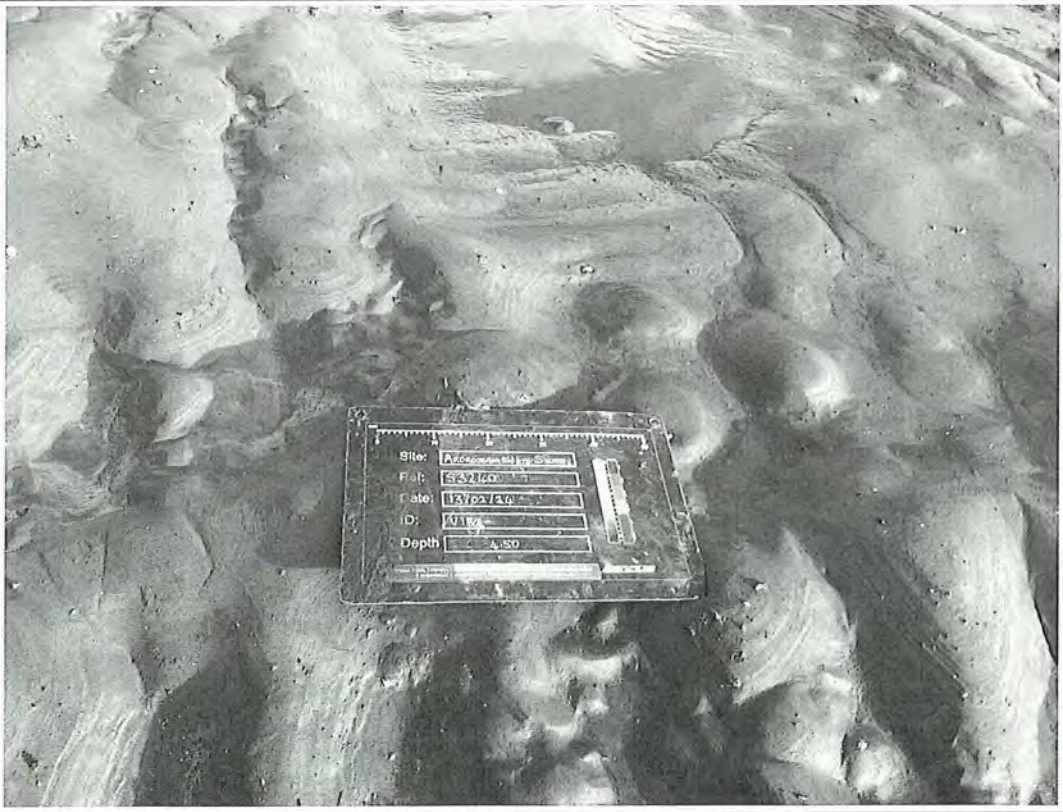

Plate No.: 34	Title.: Area 05 V180 Excavation Base at 5.10m bgl	
sanctus	Contract No.: S3240	Date: 13/02/2024
	Contract Name: Ardrossan, North Shore	

Plate No.: 35	Title.:. Area 05 V181 Excavation Base at 4.50m bgl

Plate No.: 36	Title.: Area 05 V182 Excavation Base at 4.50m bgl	
sanctus	Contract No.: S3240	Date: 13/0/2024
	Contract Name: Ardrossan, North Shore	

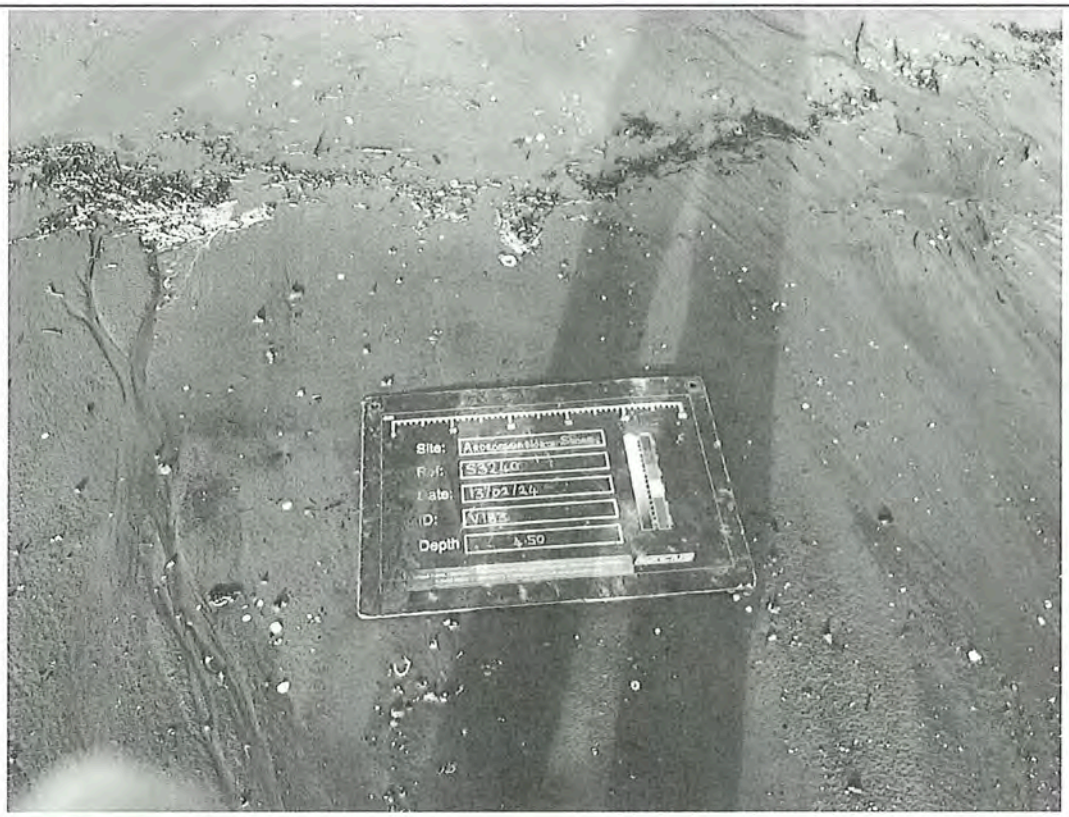

Plate No.: 37 | Title.: Area 05 V183 Excavation Base at 4.50m bgl

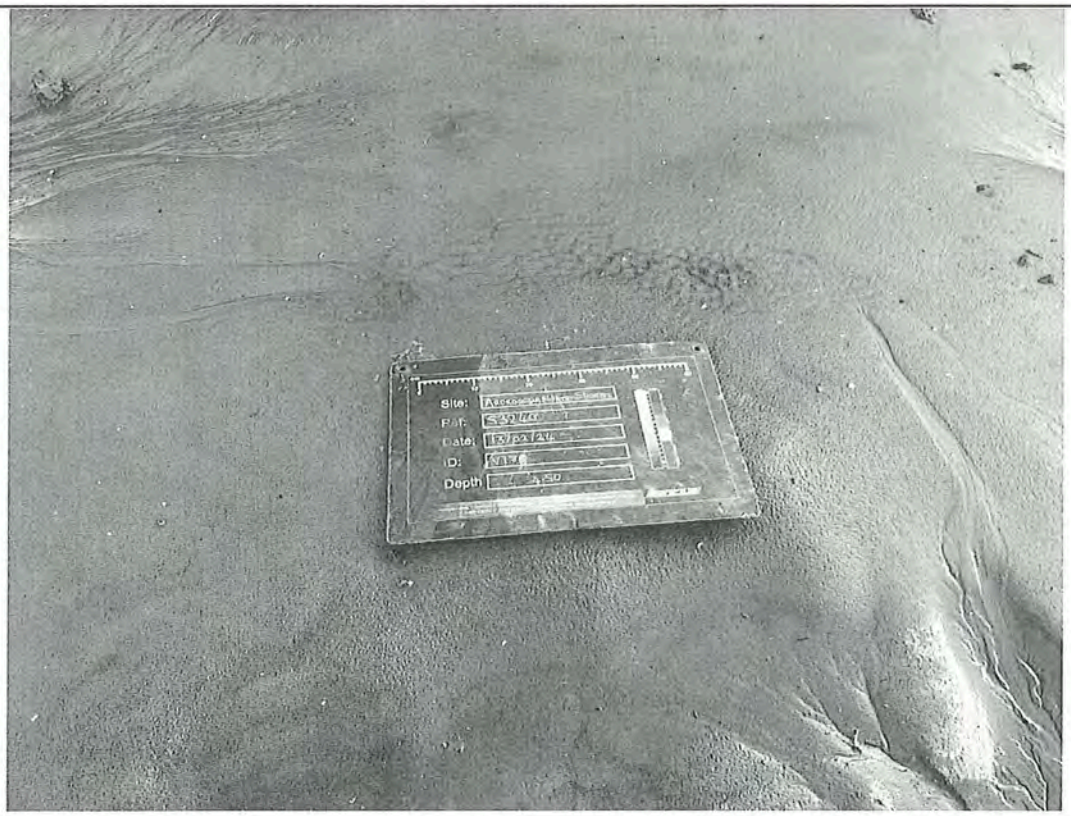

Plate No.: 38 | Title.: Area 05 V184 Excavation Base at 4.50m bgl

sanctus

Contract No.: S3240 | Date: 13/02/2024

Contract Name: Ardrossan, North Shore

Plate No.: 39 | Title.:. Area 05 V185 Excavation Base at 4.50m bgl

Plate No.: 40 | Title.: Area 05 V186 Excavation Base at 4.50m bgl

sanctus

Contract No.: S3240 | Date: 13/02/2024

Contract Name: Ardrossan, North Shore

Plate No.: 41	Title.:. Area 05 V187 Excavation Base at 5.10m bgl

Plate No.: 42	Title.: Area 05 V188 Excavation Base at 5.10m bgl	
sanctus	Contract No.: S3240	Date: 13/02/2024
	Contract Name: Ardrossan, North Shore	

Plate No.: 43	Title.: Area 05 V189 Northern Face from 3.20 – 5.10m bgl

Plate No.: 44	Title.: Area 05 V190 Northern Face from 3.20 – 5.10m bgl	
sanctus	Contract No.: S3240	Date: 13/02/2024
	Contract Name: Ardrossan, North Shore	

Plate No.: 44	Title.:. Area 05 V191 Eastern Face from 3.20 – 5.10m bgl

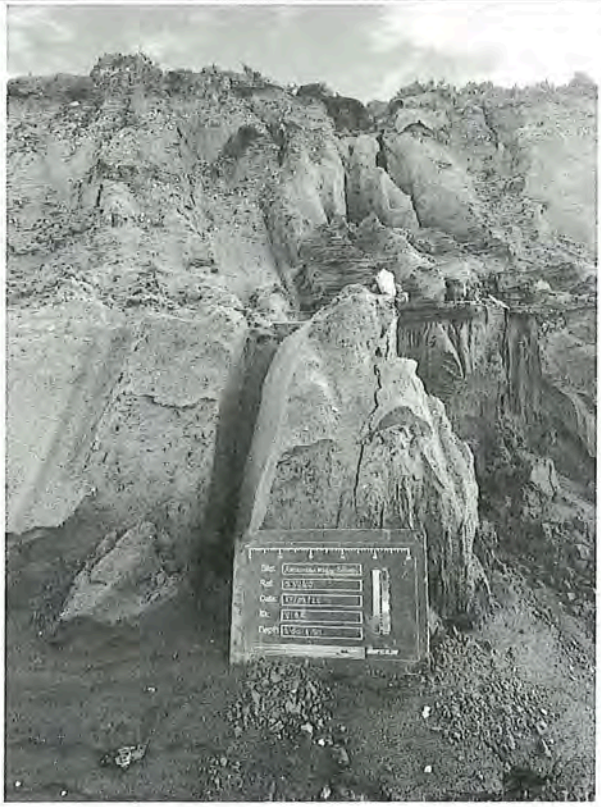

Plate No.: 45	Title.: Area 05 V192 Eastern Face from 3.20 – 5.10m bgl	
sanctus	Contract No.: S3240	Date: 13/02/2024
	Contract Name: Ardrossan, North Shore	

Plate No.: 46	Title.: Area 05 V193 Eastern Face from 3.20 – 5.10m bgl

Plate No.: 47	Title.: Area 05 V194 Eastern Face from 3.20 – 5.10m bgl	
sanctus	Contract No.: S3240	Date: 13/02/2024
	Contract Name: Ardrossan, North Shore	

Plate No.: 49	Title.:. Area 05 V195 Eastern Face from 3.20 – 5.10m bgl.

Plate No.: 50	Title.: Area 05 V196 Southern Face from 3.20 – 5.10m bgl
sanctus	Contract No.: S3240 / Date: 13/02/2024
	Contract Name: Ardrossan, North Shore

Plate No.: 51	Title.:. Area 05 V197 Southern Face from 3.20 – 5.10m bgl

Plate No.: 52	Title.: Area 05 V198 Western Face from 3.20 – 5.10m bgl	
sanctus	Contract No.: S3240	Date: 13/02/2024
	Contract Name: Ardrossan, North Shore	

Plate No.: 1	Title.:. Area 05 V199 Western Face from 3.20 – 5.10m bgl

Plate No.: 2	Title.: Area 05 V120 Western Face from 3.20 – 5.10m bgl	
sanctus	Contract No.: S3240	Date: 13/02/2024
	Contract Name: Ardrossan, North Shore	

Plate No.: 53	Title.:. Area 05 V201 Western Face from 3.20 – 5.10m bgl

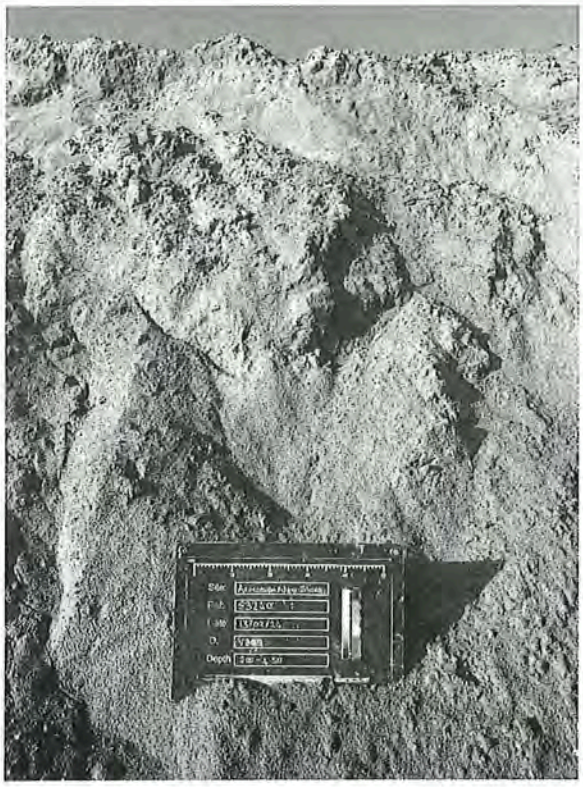

Plate No.: 54	Title.: Area 05 V202 Western Face from 3.20 – 5.10m bgl	
sanctus	Contract No.: S3240	Date: 13/02/2024
	Contract Name: Ardrossan, North Shore	

Plate No.: 55	Title.: Area 06 Excavation Base at 5.00m bgl

Plate No.: 56	Title.: Area 06 Excavation Base at 5.00m bgl	
sanctus	Contract No.: S3240	Date: March 2024
	Contract Name: Ardrossan, North Shore	

Plate No.: 57	Title.:. Area 06 Excavation Base at 5.00m bgl

Plate No.: 58	Title.: Area 06 Excavation Base at 5.00m bgl .	
sanctus	Contract No.: S3240	Date: March 2024
	Contract Name: Ardrossan, North Shore	

Plate No.: 59	Title.: Area 06 Area 06 Excavation Base at 5.00m bgl

Plate No.: 60	Title.: Area 06 Area 06 Excavation Base at 5.00m bgl	
sanctus	Contract No.: S3240	Date:
	Contract Name: Ardrossan, North Shore	

Plate No.: 61	Title.: Area 06 Area 06 Excavation Base at 5.00m bgl .

Plate No.:62	Title.: Area 06 Northern Extent from 2.60 – 5.00m bgl.	
sanctus	Contract No.: S3240	Date: March 2024
	Contract Name: Ardrossan, North Shore	

Plate No.: 63	Title.: Area 06 Eastern Extent.

Plate No.: 64	Title.: Area 06 Eastern extent.	
sanctus	Contract No.: S3240	Date: March 2024
	Contract Name: Ardrossan, North Shore	

Plate No.: 65	Title.:. Area 06 Eastern Extent.

Plate No.: 66	Title.: Area 06 Eastern Extent.	
sanctus	Contract No.: S3240	Date: March 2024
	Contract Name: Ardrossan, North Shore	

Plate No.: 67	Title.: Area 06 Southern Extent.

Plate No.: 68	Title.: Area 06 Southern Extent	
sanctus	Contract No.: S3240	Date: March 2024
	Contract Name: Ardrossan, North Shore	

Plate No.: 1	Title.: Area 06 Western extent

Plate No.: 2	Title.: Area 06 Western Extent	
sanctus	Contract No.: S3240	Date: March 2024
	Contract Name: Ardrossan, North Shore	

Plate No.: 1	Title.: Area 06 Southern Extent.

Plate No.: 2	Title.: Area 06 Western Extent.	
sanctus	Contract No.: S3240	Date: March 2024
	Contract Name: Ardrossan, North Shore	

Appendix F S3240-015 Phase 02 Verification Report: S3240-015

Phase 02 Verification Report

Ardrossan, North Shore

Sanctus Limited Sanctus House 1 Olympus Park Business Centre Quedgeley Gloucestershire GL2 4DH

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Disclaimer

Sanctus Limited has prepared this interim Verification Report relating to the sectional hand over of Phase 02 of the Ardrossan North Shore site on the instruction of North Ayrshire Council (Client). This document is for the sole specific use of the Client and for the particular project as referred to herein. Copies may be passed to third parties only with the express written permission of Sanctus and then no professional liability or warranty will be extended to such parties without the express written confirmation of Sanctus.

Document Reference: S3240-015 Phase 02				**Issue:** Issue D
Date:	**Status:**	**Name:**	**Position:**	**Signature:**
09/12/2024	Prepared By:	[redacted]	[redacted]	[redacted]
09/12/2024	Checked By:	[redacted]	[redacted]	[redacted]
09/12/2024	Authorised By:	[redacted]	[redacted]	[redacted]

Revision Status.			
Revision:	**Date:**	**Sections Revised**	**Description of Revision:**
Issue A	17/09/2024	N/A	First Issue
Issue B	18/10/2024	All	Updated following regulator comments received 08/10/2024
Issue C	15/11/2024	All	Updated following regulator comments received.
Issue D	09/12/2024	All	Updated following regulator comments received.

CONTENTS

List of Tables

1.0 Introduction

Sanctus limited have been appointed by North Ayrshire Council (NAC) (Client) to undertake the phased ground remediation of their site at Ardrossan North Shore (Site). The scheme involves the targeted excavation of known areas of elevated hydrocarbon contamination, de-watering and removal of NAPL (Non-Aqueous Phase Liquid – a free phase product) from ground water and the bioremediation of soils containing elevated Petroleum and Polycyclic Aromatic Hydrocarbon Contaminants to agreed, site suitable levels.

The report relates to the works completed between December 2023 and September 2024 and has been produced in accordance with the verification measures, where appropriate, within Section 25.0 of the Remediation Strategy (1).

This report should be read in conjunction with the Phase 01 Verification Report (2) and the Sanctus Remediation Strategy, Revision E.

This report details the remedial works completed within Areas 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20 and 23 as detailed on Sanctus drawing D3240/006 and 007, included within Appendix A. To assist with phased handover and continuation of works for the clients appointed civils and groundworks contractor, the works were split into different 'Cells', with each cell comprising parts of different remediation areas. On completion of each Cell, the relevant chemical and groundwater validation was submitted to the clients Environmental Consultant, EnviroCentre for review. The cells are detailed on Sanctus Drawing D3240/069, included within Appendix A.

All additional and future remediation works pertained within Sanctus's scope of remediation works will be verified within addendum reports (anticipated references and dates are provided within Table 1-1).

Table 1-1: Addendum Verification Reporting Dates

Anticipated Report Reference	Report Description	Anticipated Production Date
S3240-016	Interim Verification report detailing remedial works completed within 'Phase 03' of the Ardrossan north Shore Site.	September 2024
S3240-017	Verification report detailing all remedial works completed at the Ardrossan north Shore Site	November 2024

The remedial works, monitoring & verification that fall outside of the Sanctus Scope will be competed, verified and documented by the clients appointed follow on contractors and/or Environmental Consultant, EnviroCentre.

The works detailed below have been undertaken in accordance with the Sanctus produced Remediation Strategy, (1).

This document has been produced for review and acceptance by both North Ayrshire Council (NAC) and the Scottish Environment Protection Agency (SEPA), to the partial discharge planning condition 4 of application No N/21/01161/PP.

A photographic log of the works completed are included within Appendix B, while photos relating to the validation of groundwater, where encountered, are included separately within Appendix C.

During the remediation works of Phase 02, the initially appointed independent laboratory for the chemical analysis, i2 Analytical, was changed to Eurofins Chemtest. This change in laboratories was discussed with the clients environmental clerk of works ands was required due to numerous failings by i2 within the Ardrossan North Shore project as well as within the wider Sanctus Business. Due to the nature of the failings these reasons cannot be stated within this report. The replacement laboratory, Eurofins Chemtest hold the same accreditations.

2.0 Phase 02 Ground Remediation

The Phase 2 site is detailed on drawing D3240/006 Rev B. The anticipated ground remediation area extents have been identified based on historic site investigation data where either free phase product has been identified or soil contamination levels for hydrocarbon contaminants indicate the risk to the ground water environment. As part of the Phase 2 works, remediation Area 23, located within Phase 03, shown on Sanctus drawing D3240/007 Rev B, was also completed.

The remedial works completed in these areas include the following and are detailed within Section 3.0:

- Excavation across the targeted remediation areas (Areas 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20 & 23. detailed on Sanctus Drawings D3240/006 and 007, included within Appendix A, with overburden materials segregated for re-use following confirmation of suitability through laboratory analysis;
- Excavation and removal of hydrocarbon impacted soils and transport to the Sanctus Waste Treatment Area for bioremediation;
- Groundwater pumping and removal of encountered Free Phase hydrocarbons and sheens prior to treatment and subsequent discharge to foul sewer through an agreed trade effluent consent;
- Validation of groundwater and excavation extents against the Sanctus Remedial Criteria (Detailed within Appendix D);
- Reinstatement of remediation areas using site suitable materials (confirmed to pass the remedial target criteria through chemical analysis) to existing site levels; and
- Re-use of bioremediated soils within remediation areas, once confirmed as suitable for use (as defined within the remediation strategy) and discussed with regulators during progress meetings.

During the remediation works, the excavation extents varied from the anticipated locations and depths, as detailed within D3240/006 and 007. The actual extents have been surveyed and recorded and are detailed within Sanctus Drawing S3240/081 included in Appendix A.. The interaction of the remediation areas and the proposed development are shown in Sanctus drawing D3240/028, included within Appendix A.

To facilitate the clients appointed civil contractor and allow continuity of works, the Phase 02 works were split into 'Cells' A to D, with each cell comprising multiple remediation areas. Each indicative cell extent is detailed on Sanctus Drawing D3240/069, included within Appendix A.

Chemical analysis relating to the verification of each cell was passed for review and comment by regulators.

3.0 Completed Works

Anticipated excavation extents of hydrocarbon and free phase impacted soils and groundwater were identified and modelled prior to Sanctus' involvement, based on the historic site investigation data where groundwater or soils analysis indicated the presence of free phase hydrocarbon product or a potential risk to the groundwater environment and/or human health.

In general hydrocarbon contamination of the soils and water on the site was identified ranging between 2.0-4.0 meters below ground level (mbgl), with a maximum depth of 5.0m within Area 09.

Shallow ground contamination was identified within the former bus depot (Areas 17 & 18) with a maximum excavation depth of 0.50m bgl.

Although forming part of the Phase 02 works, Areas 13 & 14, 17 and 18 were identified as relatively shallow remedial excavations, following a review of the historic EnviroCentre site investigations, with limited modelled horizontal extents, as such these excavations undertaken while completing works within Phase 01.

Hydrocarbon contaminated materials underlying overburden materials, as detailed within Section 6.0, were bulk excavated to their full lateral and vertical extents within all targeted remedial areas. The impacted materials were transported and placed within the waste treatment areas for bioremediation treatment. All encountered groundwater was managed as detailed within Section 4.0.

On completion of the excavation and removal of impacted materials, the excavation extents were surveyed by Sanctus and representative validation soil samples obtained in accordance with the Sanctus Remedial Strategy Section 17.0, and the validations are summarised within the following sub-sections.

All excavation extents are shown on Sanctus Drawing D3240/081, included within Appendix A.

3.1 Area 08

The area delineated from the historic EnviroCentre investigations was undertaken as an extension of the Area 07 excavation works in Phase 1 and validation soil samples obtained. Additional trail pits, references STP019 and STP020 were undertaken to identify if there was any further hydrocarbon contamination to the west of the former historic sea wall and adjacent to Area 7. Representative analysis of encountered strata, obtained in accordance with BS ISO 18400-104:2018, was scheduled for analysis to confirm the presence/absence of contaminants of concern (Polycyclic Aromatic Hydrocarbons and Petroleum hydrocarbons). The analysis is summarised within Table 3-1, below. The investigation locations are shown on Sanctus Drawing D3240/090 and the stratigraphic Logs are included within Appendix E.

Table 3-1: Sanctus Area 08 Additional Trail Pit Summary.

Sanctus Investigation ID	Sanctus Sample ID	Sample Depth	Contamination exceeding Sanctus Remediation Criteria Present (Yes/ No)
STP019	STP019	1.50-3.00	No
STP020	STP020	2.00-3.50	No

During the investigation, no ground water was identified, and no visual or olfactoral signs of contamination were present, including free phase product. A section former redundant pipework was identified at 1.00m with STP19. No free phase product was identified within the pipework and it was removed from the area.

The remainder of Area 08 was excavated and validated as part of the Area 07 works, and the relevant validation analysis has been detailed within the Phase 01 verification report (2).

3.2 Area 09

During the excavation works to achieve the remedial objectives within Area 09, chemical validations of materials along the southeastern excavation, detailed within Table 3-2, below, exceeded the remedial target criteria and as such the excavation was extended. During this process a relic pipeline was encountered and identified as the source of the additional contamination. The pipeline was removed, and the contamination excavated to full lateral and vertical extents. This additional excavation is referenced as Area 09 'A' and is shown on Sanctus drawing D3240/062.

The chemical validations from Area 09 and 09 'A' are detailed within Table 3-2, below and shown on Sanctus drawing D3240/062, included within Appendix A, and the screening is detailed within Appendix E.

Validations from the northern face of Area 09 (V270, 271, 272, 274, 275 and 286 denoted with an * within Table 3-2) exceeded the remedial criteria regarding TPH (all exceeding 1,000 mg/kg), the failed materials were removed during the Cell B phase of works including the excavation of Areas 15 and 16.

Table 3-2: Sanctus Area 09 and 09 'A' Soils Validation Summary

Soil Validation ID	Depths (m bgl)	Descriptions	Pass/Fail	Secondary Validation ID	Pass/Fail	Third Validation ID	Pass/Fail
V263	4.00	Area 09 Base	Fail	V263A	Fail	V263B	Pass
V264	3.60	Area 09 Base	Pass	-	-	-	-
V265	3.70	Area 09 Base	Pass	-	-	-	-
V266	3.70	Area 09 Base	Fail	V266A	Pass	-	-
V267	3.60	Area 09 Base	Pass	-	-	-	-
V268	3.70	Area 09 Base	Pass	-	-	-	-
V269	3.60	Area 09 Base	Pass	-	-	-	-
V270*	1.00-4.20	Area 09 Northern Face	Fail	N/A		-	-
V271*	1.00-4.00	Area 09 Northern Face	Fail	N/A	-	-	-
V272*	1.00-3.50	Area 09 Northern Face	Fail	-	-	-	-
V273	1.00-3.50	Area 09 Northern Face	Pass	-	-	-	-
V274*	1.00-3.70	Area 09 Northern Face	Fail	N/A	-	-	-
V275	1.00-3.70	Area 09 Eastern Face	Pass	-	-	-	-
V276	1.00-3.70	Area 09 Eastern Face	Pass	-	-	-	-
V277	1.00-3.70	Area 09 Eastern Face	Pass	-	-	-	-
V278	1.00-3.60	Area 09 Southern Face	Pass	-	-	-	-
V279	1.00-3.60	Area 09 Western Face	Pass	-	-	-	-
V280	1.00-4.00	Area 09 Western Face	Pass	-	-	-	-

Soil Validation ID	Depths (m bgl)	Descriptions	Pass/Fail	Secondary Validation ID	Pass/Fail	Third Validation ID	Pass/Fail
V281	1.00-4.00	Area 09 Western Face	Fail	V281A	Pass	-	-
V282	1.00-4.00	Area 09 Western Face	Pass	-	-	-	-
V286	1.00-4.00	Area 09 Northern Face	Fail	V286A	Fail	N/A	N/A
V324	3.40	Area 09 'A' Base	Fail	V324A	Pass	-	-
V325	2.80-3.40	Area 09 'A' North Eastern Face	Fail	V325A	Pass	-	-
V326	2.80-3.40	Area 09 'A' Eastern face	Fail	V326A	Pass	-	-
V327	2.80-3.40	Area 09 'A' Southern Face	Pass	-	-	-	-

3.3 Area 10

The Chemical validation locations are shown on Sanctus drawing D3240/082, also included within Appendix A.

During the works within Area 10, no groundwater was encountered.

Following the excavation of Area 10, surface water from other areas of the Phase 2 works were temporarily pumped into the Area 10 excavation to allow the continuation of works within the remainder of Phase 02. To confirm that the surface waters had not cross contaminated the base of Area 10, 4no additional validation samples were obtained (V368-V371). The validations are summarised within Table 3-3.

Table 3-3: Area 10 Validation Summary

Soil Validation ID	Depths (m bgl)	Description	Pass/ Fail
V239	3.00	Area 10 Excavation Base	Pass
V240	3.00	Area 10 Excavation Base	Pass
V241	3.00	Area 10 Excavation Base	Pass
V242	3.00	Area 10 Excavation Base	Pass
V243	3.00	Area 10 Excavation Base	Pass
V244	3.00	Area 10 Excavation Base	Pass
V245	3.00	Area 10 Excavation Base	Pass
V246	1.00-3.00	Area 10 Excavation Northern Face	Pass
V247	1.00-3.00	Area 10 Excavation Northern Face	Pass
V248	1.00-3.00	Area 10 Excavation Northern Face	Pass
V249	1.00-3.00	Area 10 Excavation Northern Face	Pass
V250	1.00-3.00	Area 10 Excavation Northern Face	Pass
V251	1.00-3.00	Area 10 Excavation Northern Face	Pass

Soil Validation ID	Depths (m bgl)	Description	Pass/ Fail
V252	1.00-3.00	Area 10 Excavation Northern Face	Pass
V253	1.00-3.00	Area 10 Excavation Eastern Face	Pass
V254	1.00-3.00	Area 10 Excavation Southern Face	Pass
V255	1.00-3.00	Area 10 Excavation Southern Face	Pass
V256	1.00-3.00	Area 10 Excavation Southern Face	Pass
V257	1.00-3.00	Area 10 Excavation Southern Face	Pass
V258	1.00-3.00	Area 10 Excavation Southern Face	Pass
V259	1.00-3.00	Area 10 Excavation Southern Face	Pass
V260	1.00-3.00	Area 10 Excavation Southern Face	Pass
V261	1.00-3.00	Area 10 Excavation Southern Face	Pass
V262	1.00-3.00	Area 10 Excavation Western Face	Pass
V368	3.00	Area 10 Excavation Base	Pass
V369	3.00	Area 10 Excavation Base	Pass
V370	3.00	Area 10 Excavation Base	Pass
V371	3.00	Area 10 Excavation Base	Pass

3.4 Area 11

Table 3-4: Area 11 Validation Summary

Soil Validation ID	Depths (m bgl)	Description	Pass/ Fail
V358	3.30	Area 11 Excavation Base	Pass
V359	2.70-3.30	Area 11 Excavation Northern Face	Pass
V360	2.70-3.30	Area 11 Excavation Eastern Face	Pass
V361	2.70-3.30	Area 11 Excavation Southern Face	Pass
V362	2.70-3.30	Area 11 Excavation Western Face	Pass

3.5 Area 12 & 23

Table 3-5: Area 12 & 23 Validation Summary

Soil Validation ID	Depths (m bgl)	Description	Pass/ Fail	Secondary Validation ID	Pass/ Fail
V328	3.2	Area 12 Excavation Base	Pass	N/A	N/A
V329	3.2	Area 12 Excavation Base	Pass	N/A	N/A
V330	3.2	Area 12 Excavation Base	Pass	N/A	N/A
V331	3.2	Area 12 Excavation Base	Pass	N/A	N/A
V332	3.2	Area 12 Excavation Base	Pass	N/A	N/A
V333	3.2	Area 23 Excavation Base	Pass	N/A	N/A
V334	3.2	Area 23 Excavation Base	Pass	N/A	N/A

Soil Validation ID	Depths (m bgl)	Description	Pass/ Fail	Secondary Validation ID	Pass/ Fail
V335	3.2	Area 23 Excavation Base	Pass	N/A	N/A
V336	3.2	Area 23 Excavation Base	Pass	N/A	N/A
V340	1.20-2.90	Area 12 Excavation Western Face	Pass	N/A	N/A
V341	1.40-2.90	Area 12 Excavation Western Face	Pass	N/A	N/A
V342	1.40-2.90	Area 12 Excavation Western Face	Pass	N/A	N/A
V343	1.40-3.20	Area 12 Excavation Western Face	Pass	N/A	N/A
V344	1.40-3.20	Area 23 Excavation Western Face	Pass	N/A	N/A
V345	1.40-3.20	Area 12 Excavation Eastern Face	Fail	V345A	Pass
V346	1.40-3.20	Area 12 Excavation Eastern Face	Pass	N/A	N/A
V347	1.40-3.30	Area 12 Excavation Eastern Face	Pass	N/A	N/A
V348	1.40-3.30	Area 12 Excavation Eastern Face	Pass	N/A	N/A
V349	1.40-3.20	Area 23 Excavation Northern Face	Pass	N/A	N/A
V350	1.40-3.20	Area 23 Excavation Northern Face	Pass	N/A	N/A

Soil Validation ID	Depths (m bgl)	Description	Pass/ Fail	Secondary Validation ID	Pass/ Fail
V351	1.40-3.20	Area 23 Excavation Northern Face	Pass	N/A	N/A
V352	1.40-3.20	Area 23 Excavation Northern Face	Pass	N/A	N/A

3.6 Area 13

Table 3-6: Area 13 Validation Summary

Soil Validation ID	Depths (m bgl)	Description	Pass/ Fail
V070	1.70	Area 13 Excavation Base	Pass
V071	0.00-1.70	Area 13 Excavation Northern Face	Pass
V072	0.00-1.70	Area 13 Excavation Eastern Face	Pass
V073	0.00-1.70	Area 13 Excavation Southern Face	Pass
V074	0.00-1.70	Area 13 Excavation Western Face	Pass

3.7 Area 14

Table 3-7: Area 14 Validation Summary

Soil Validation ID	Depths (m bgl)	Description	Pass/ Fail
V075	1.20	Area 14 Excavation Base	Pass
V076	0.00-1.20	Area 14 Excavation Northern Face	Pass
V077	0.00-1.20	Area 14 Excavation Eastern Face	Pass
V078	0.00-1.20	Area 14 Excavation Southern Face	Pass

Soil Validation ID	Depths (m bgl)	Description	Pass/ Fail
V079	0.00-1.20	Area 14 Excavation Western Face	Pass

3.8 Area 15 and 16

During the remediation works, validation soil samples V295, V297, V298, V300, V302, V304, V305, V306, V307, V308 and V309 were obtained from temporary excavation faces, segregating the works completed within Cell B and the remainder of the required remediation excavations within 'Cell C'. Further excavation and subsequent re-validations V297A, V298A and V300A were obtained following the failure of validations V297, 298 and 300. However, these revalidations were not required as these were from temporary excavation faces and this material was subsequently all removed as excavation works continued into 'Cell C'

All temporary excavation faces were subsequently excavated as part of the Sanctus remediation works within Area 15 and 16 until the excavation extents, shown on D3240/062 Rev B, were achieved. The excavation extents were visually inspected and confirmed that no visual or olfactoral evidence of contamination remained. Where required, soil samples were collected and validated to confirm the removal of the impacted materials.

Note that due to validation samples V302, V304, V305, V306, V307, V308 and V309 failing the remedial criteria due to Total Hydrocarbons exceeding 1,000 mg/kg, these samples were not screened by Sanctus and are not shown on the Sanctus validation location plans included within Appendix A.

Table 3-8: Area 15 Validation Summary

Soil Validation ID	Depths (m bgl)	Description	Pass/ Fail
V287	4.00	Area 15 Excavation Base	Pass
V291	4.00	Area 15 Excavation Base	Pass
V300*	4.00	Area 15 Temporary Northern Face	Fail
V295*	4.00	Area 15 Temporary Northern face	Fail
V299	1.00-4.00	Area 15 Excavation Western Face	Pass
V319	1.00-4.00	Area 15 Excavation Western Face	Pass

Table 3-9: Area 16 Validation Summary

Soil Validation ID	Depths (m bgl)	Description	Pass/ Fail
V288	4.00	Area 16 Excavation Base	Pass
V289	4.00	Area 16 Excavation Base	Pass
V290	4.00	Area 16 Excavation Base	Pass
V292	4.00	Area 16 Excavation Base	Pass
V293	4.00	Area 16 Excavation Base	Pass
V294	4.00	Area 16 Excavation Base	Pass
V310	4.00	Area 16 Excavation Base	Pass
V311	4.00	Area 16 Excavation Base	Pass
V312	4.00	Area 16 Excavation Base	Pass
V313	4.00	Area 16 Excavation Base	Pass
V314	4.00	Area 16 Excavation Base	Pass
V315	4.00	Area 16 Excavation Base	Pass
V316	4.00	Area 16 Excavation Base	Pass
V317	4.00	Area 16 Excavation Base	Pass

Soil Validation ID	Depths (m bgl)	Description	Pass/ Fail
V296	1.00-4.00	Area 16 Excavation Eastern Face	Pass
V297*	1.00-4.00	Area 16 Excavation Temporary Northern Face	Fail
V298*	4.00	Area 16 Excavation Temporary Northern Face	Fail
V318	1.00-4.00	Area 16 Excavation Eastern Face	Pass
V338	1.20-3.20	Area 16 Excavation Eastern Face	Pass
V337	1.20-3.20	Area 16 Excavation Western Face	Pass
V339	1.20-3.20	Area 16 Excavation Western Face	Pass

3.9 Area 12, 15 & 16 (Cell D)

Where excavations where grouped (Area 12, 15 & 16) within the western portion of the site and the phase of works referred to as 'Cell D', as shown in Sanctus drawing D3240/069, included within Appendix A, the excavation was validated as a single phase of work. The validations from this excavation are detailed within Table 3-10, below.

Table 3-10: Area 12, 15 & 16 Validation Summary (Cell D)

Soil Validation ID	Depths (m bgl)	Description	Pass/ Fail
V372	3.50	Excavation Base	Pass
V373	3.50	Excavation Base	Pass
V374	3.50	Excavation Base	Pass
V375	3.50	Excavation Base	Pass
V376	3.50	Excavation Base	Pass
V377	3.50	Excavation Base	Pass
V378	3.50	Excavation Base	Pass

Soil Validation ID	Depths (m bgl)	Description	Pass/ Fail
V379	3.50	Excavation Base	Pass
V380	1.80	Excavation Base	Pass
V381	1.80	Excavation Base	Pass
V382	1.80	Excavation Base	Pass
V383	1.80	Excavation Base	Pass
V384	2.10-3.50	Excavation Western Face	Pass
V385	2.10-3.50	Excavation Western Face	Pass
V386	2.10-3.50	Excavation Western Face	Pass
V387	2.10-3.50	Excavation Western Face	Pass
V388	2.10-3.50	Excavation Western Face	Pass
V389	2.10-3.50	Excavation Western Face	Pass
V390	0.00-1.80	Excavation Western Face	Pass
V391	0.00-1.80	Excavation Southern Face	Pass
V392	0.00-1.80	Excavation Southern Face	Pass
V393	0.00-1.80	Excavation Western Face	Pass
V394	0.00-1.80	Excavation North Western Face	Pass
V395	0.00-1.80	Excavation North Western Face	Pass
V396	0.00-1.80	Excavation North Western Face	Pass
V397	0.00-1.80	Excavation North Western Face	Pass
V398	2.10-3.50	Excavation Northern Face	Pass
V399	2.10-3.50	Excavation Northern Face	Pass
V400	2.10-3.50	Excavation Eastern Face	Pass
V401	2.10-3.00	Excavation Eastern Face	Pass
V402	2.10-3.10	Excavation Eastern Face	Pass

Soil Validation ID	Depths (m bgl)	Description	Pass/ Fail
V403	2.10-3.00	Excavation Eastern Face	Pass

3.10 Area 17

Table 3-11: Area 17 Validation Summary

Soil Validation ID	Depths (m bgl)	Description	Pass/ Fail
V030	0.45	Area 17 Excavation Base	Pass
V031	0.45	Area 17 Excavation Base	Pass
V032	0.00-0.45	Area 17 Excavation Northern Face	Pass
V033	0.00-0.45	Area 17 Excavation Western Face	Pass
V034	0.00-0.45	Area 17 Excavation Western Face	Pass
V035	0.00-0.45	Area 17 Excavation Southern Face	Pass
V036	0.00-0.45	Area 17 Excavation Western Face	Pass
V037	0.00-0.45	Area 17 Excavation Western Face	Pass

3.11 Area 18

Table 3-12: Area 18 Validation Summary

Soil Validation ID	Depths (m bgl)	Description	Pass/ Fail
V038	0.55	Area 18 Excavation Base	Pass
V039	0.30	Area 18 Excavation Base	Pass
V040	0.00-0.30	Area 18 Excavation Northern Face	Pass
V041	0.00-0.30	Area 18 Excavation Western Face	Pass

Soil Validation ID	Depths (m bgl)	Description	Pass/ Fail
V042	0.00-0.55	Area 18 Excavation Western Face	Pass
V043	0.00-0.55	Area 18 Excavation Southern Face	Pass
V044	0.00-0.55	Area 18 Excavation Western Face	Pass
V045	0.00-0.30	Area 17 Excavation Western Face	Pass

3.12 Area 19

Table 3-13: Area 19 Validation Summary

Soil Validation ID	Depths (m bgl)	Description	Pass/ Fail
V353	2.90	Area 19 Excavation Base	Pass
V354	2.20-2.90	Area 19 Excavation Northern Face	Pass
V356	2.20-2.90	Area 19 Excavation Eastern Face	Pass
V357	2.20-2.90	Area 19 Excavation Southern Face	Pass
V358	2.20-2.90	Area 19 Excavation Western Face	Pass

3.13 Area 20

An initial excavation in Area 20 was completed and validation soil analysis was obtained from the sides and base of the void. All validation soil analysis results passed the assessment criteria (V363-V367). Following the initial excavation to remove impacted soils, the site supervisor raised concerns regarding the total excavation depth of Area 20 and the potential for contamination below this depth. To ensure no further contamination existed below the validated subsurface of the Area 20 excavation, a trial pit was excavated through the base of Area 20 to inspect and validate the soils at depth. Sanctus Trial Pit STP21 was undertaken on the 10th September 2024. There were no visual or olfactoral signs of hydrocarbon impact of

the soils in this area. A soil sample of the materials encountered between 3.00 -3.60m bgl, was scheduled for analysis to determine the presence of elevated hydrocarbons.

The analysis confirmed that there was no contamination underlying the Sanctus excavation extents, and as such the remedial objectives had been completed. The chemical analysis (Ref 24-29534), photographs and stratigraphic log are included within Appendix J.

Table 3-14: Area 20 Validation Summary

Soil Validation ID	Depths (m bgl)	Description	Pass/ Fail
V363	1.80	Area 20 Excavation Base	Pass
V364	0.30-1.80	Area 20 Excavation Northern Face	Pass
V365	0.30-1.80	Area 20 Excavation Eastern Face	Pass
V366	0.30-1.80	Area 20 Excavation Southern Face	Pass
V367	0.30-1.80	Area 20 Excavation Western Face	Pass
STP21	3.00-3.60	Area 20 Investigation Location	Pass

All the chemical screening associated with the chemical validations of the Phase 02 remediation areas, as well as the chemical analysis, is included within Appendix F.

4.0 Groundwater

During the excavation and removal of visually and olfactory impacted hydrocarbon soils within the targeted remediation excavation extents, groundwater and floating free product oil that was encountered was pumped and removed to facilitate the excavation and the reinstatement works.

Ground and surface waters were pumped through the Sanctus Water Treatment Equipment, detailed on Sanctus drawing D3240/009, included within Appendix A, prior to discharge to the foul sewer through the agreed trade effluent consent.

Table 4-1, below, summarises the durations target remediation areas were left open and groundwater removed and treated, where required. Where product was originally encountered (prior to removal) the thickness is also summarised.

Table 4-1: Phase 02 Groundwater Summary

Sanctus Excavation ID and Area (m^2)	Duration Left Open	Free Phase Product Description (When initially encountered)	Product Thickness (where quantifiable)	Area Recharge Rate (Qualitative)
Area 09	8 Days	Black to Dark Brown, highly viscous oil.	3 – 10mm	Recharge to standing ground water level within 6 hours of 100mm ϕ pump being switched off
Area 09 'A'	6 Days	Black to Dark Brown, highly viscous oil.	3 – 10mm	Recharge to standing ground water level within 6 hours of 100mm ϕ pump being switched off
Area 10	N/A	N/A	N/A	N/A
Area 11	N/A	N/A	N/A	N/A
Area 12 & 23	7 Days	Dark to light Brown, highly viscous oil.	2 - 5mm	Recharge to standing ground water level within 6 hours of 100mm ϕ pump being switched off
Area 13	N/A	N/A	N/A	N/A
Area 14	N/A	N/A	N/A	N/A

Sanctus Excavation ID and Area (m^2)	Duration Left Open	Free Phase Product Description (When initially encountered)	Product Thickness (where quantifiable)	Area Recharge Rate (Qualitative)
Area 15	6 Days	Black to Dark Brown, highly viscous oil.	3 – 10mm	Recharge to standing ground water level within 6 hours of 100mm ϕ pump being switched off
Area 16	5 Days	Black to light Brown, highly viscous oil.	2 – 10mm	Recharge to standing ground water level within 6 hours of 100mm ϕ pump being switched off
Area 17	N/A	N/A	N/A	N/A
Area 18	N/A	N/A	N/A	N/A
Area 19	6 Days	Black to light Brown, highly viscous oil.	2 – 10mm	Recharge to standing ground water level within 6 hours of 100mm ϕ pump being switched off
Area 20	N/A	N/A	N/A	N/A

At the time of production of this report, ~17,500ltrs of hydrocarbon free product has been recovered and removed from the ground water. 2,500lts of this value are attributed to the Phase 02 remedial works. This reduction from Phase 01 is not attributed to less effective recovery but due to the reduction in free product encountered within groundwater across the Phase 02 site.

The product is stored within suitable containers within the lined and bunded waste treatment areas prior to disposal on completion of all the Sanctus works.

The validation process, as detailed within Appendix J of the Sanctus Remediation Strategy (1) was followed, with the demonstrable validation evidence included within Appendix C. The bailer sample locations, used to demonstrate the absence of NAPL (Free product) within groundwater are shown on Sanctus Drawings S3240/066, 080, 088,and 089 within Appendix A.

The bailer samples further demonstrated the absence of any measurable/demonstrable free product within all groundwater encountered. No sheens or product was left within the excavations at the time of re-instatement.

5.0 Bio-Remediated Soils

Sanctus undertook the bioremediation of hydrocarbon impacted soils in accordance with Section 14.13 and 14.14 of the Sanctus Remediation Strategy (1) and the Waste Management License, ref WML/L/5005884.

The hydrocarbon impacted soils undergoing treatment were stockpiled within a designated quarantine area, prior to screening and processing to remove unsuitable materials i.e. wood, metals and concrete. This process also had the added benefit of disturbing the soil structure and oxygenating the treated soils whilst adding the dosing media.

The dosing was undertaken in accordance with the supplier's design and guidance, with each 50m^3 of impacted soils dosed with 20 ltrs of Bio-8 Surge bio stimulant and 1 packet of Bio-8 Bacteria mixed within 1,000ltrs of water. Representative samples were then collected to obtain starting concentrations of the treatment stockpiles. The stockpiles formed, their respective volumes and number of samples per round of sampling are summarised within Table 5-7.

The bioagent and growth medium were mixed with 1,000ltrs of water, a minimum of 2hours prior to application to allow time for activation and agitation. During the application the flow/dosing rate was continuously monitored by Sanctus. There were no changes to dosing or application rates based upon areas of excavation and historic maximum TPH concentrations, as the chosen product and dosing rate was suitable for all anticipated concentrations following a review of the site investigation data.

During the treatment, additional Coliform testing was obtained from 5no stockpiles (TSPs 07, 08, 10, 11 &13) and compared for dosed and treated vs untreated stockpiles to prove the size of the created bacterial colonies. The analysis reviewed total viable count (TVC) and Coliforms. The analysis showed a difference within the total number of coliforms within the dosed materials and the untreated soils. This sampling was not undertaken in each treatment stockpile but was representative of the treatment process and to demonstrate the selected dosing was effective. The results are summarised within Table 5-1, below.

Coliform analysis was not obtained from all bio treated stockpiles as the analysis was to demonstrate the dosing methodology worked and that enhanced microbial colonies were

present within dosed soils. It was Sanctus's view that the analysis obtained was suitable to demonstrate the effectiveness of the dosing without analysing all stockpiles.

Table 5-1: Bacterial Coliform Analysis Summary.

Sanctus TSP ID	Sample ID	TVC @ 37°C (cfu/g)	TVC @ 37°C (cfu/g)	Coliforms (MPN/g)
Control Pile*	CP-01	>300	>300	200
TSP07	TSP07	>300	>300	>242,000
TSP08	TSP08	>300	>300	>242,000
TSP11	TSP011	>300	>300	>242,000
TSP10	TSP10-17 (1.5m)	>300	>300	>242,000
TSP13	TSP13-05 (1.6m)	>300	>300	>242,000
*Note: * Control Pile (CP) formed of excavated, untreated soils.*				

The data from the above Table 5-1, is graphically represented within Figure 1, below, which further demonstrates bacterial activity within the treated materials and the reductions achieved were through bacterial activity, as per the remedial design. A copy of the analysis is included within Appendix G.

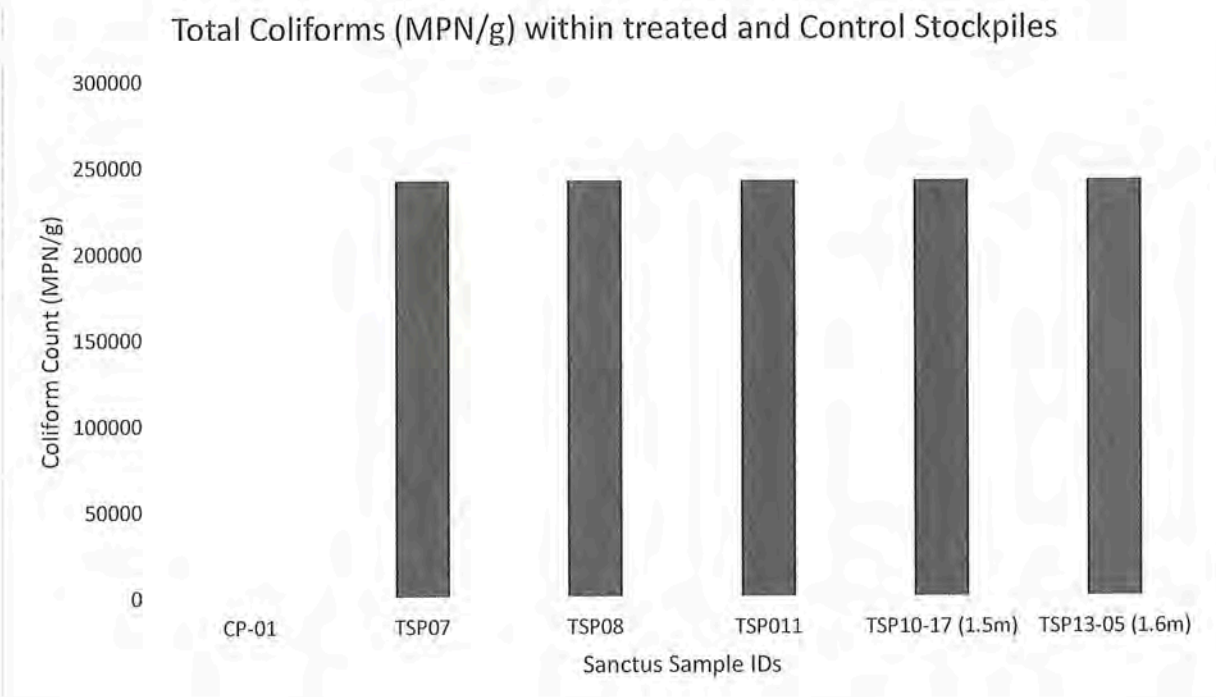

Figure 1: Coliform Testing summary, based upon data within Table 5-7.

If assessed as required, by Sanctus, dosed/treated materials were dosed multiple times, this occurred within TSPs 01-04, which were merged to form TSP05.

Within treatment stockpiles TSP05, 06, 08, 10 & 11 Oxygen and Carbon dioxide concentrations were monitored over a 6-hour period to further demonstrate microbial activity within the dosed materials and further demonstrate that the reductions achieved within the materials were primarily due to the bioremediation. The graphs are represented within Appendix G.

Available gas concentration vs temperature monitoring was not undertaken in every treated stockpile, however the materials monitored where assessed as proportional and suitable to represent all treated materials and to demonstrate the dosing, treatment methodology and bacterial activity was the driving factor in the reductions of TPH values. The volume of TSP05, 06, 08, 10 & 11 represents a volume of 8,400m^3 out of the 14,800m^3 treated.

During the monitoring, external vs internal temperatures of the biotreated stockpiles was also monitored and compared. As materials were dosed and turned, the internal temperature increased, showing microbial activity within the stockpiles. The graphs and table showing the temperature monitoring are shown within Appendix G.

Representative materials, obtained from across the stockpile were placed within sealed 20l containers. The concentrations were then monitored using a GA5000 gas analyser at 2 hour intervals. The first monitoring round represents the materials just after dosing. Table 5-2, Table 5-3, Table 5-4, Table 5-5 and Table 5-6, below show the oxygen and carbon dioxide concentration percentages over time. These are presented graphically within Appendix G The graphs and data shows for monitoring rounds after the initial round (undertaken immediately after the dosing) that as time increased the concentration of representative oxygen (O_2) within the sealed unit decreased while the carbon dioxide (CO_2) concentration increased. This change over time was due to the bacterial activity within the dosed soils, further demonstrating that the reduction within TPH concentrations was due to the bioremediation undertaken by Sanctus.

Example photos of the monitoring undertaken are included within Appendix G.

Table 5-2: TSP05 Oxygen vs Carbon Dioxide Concentrations over time.

Monitoring Round Number and Date	Time							
	0hrs		2hrs		4hrs		6hrs	
	O_2 %	CO_2 %	O_2 %	CO_2 %	O_2 %	CO_2 %	O_2 %	CO_2 %
01 -18th December 2023	20.9	0.1	20.8	0.1	20.8	0.1	20.8	0.1
05 -11th January 2024	20.9	0.1	20.9	0.1	20.8	0.2	20.6	0.2
10 -17th April 2024	20.9	0.1	20.7	0.2	20.6	0.3	20.6	0.3
15 -09th July 2024	20.9	0.1	20.5	0.3	20.4	0.5	20.4	0.6
17 -23rd July 2024	20.9	0.1	20.5	0.4	20.4	0.5	20.3	0.7

Table 5-3: TSP06 Oxygen vs Carbon Dioxide Concentrations over time

Monitoring Round Number and Date	Time							
	0hrs		2hrs		4hrs		6hrs	
	O_2 %	CO_2 %	O_2 %	CO_2 %	O_2 %	CO_2 %	O_2 %	CO_2 %
01 -21st March 2024	20.9	0.1	20.9	0.1	20.9	0.1	20.9	0.1
05 -24th April 2024	20.9	0.1	20.8	0.1	20.7	0.2	20.7	0.3
10 -17th June 2024	20.9	0.1	20.6	0.3	20.5	0.5	20.5	0.5
13 -10th July 2024	20.9		20.7	0.3	20.5	0.5	20.3	0.7

Table 5-4: TSP08 Oxygen vs Carbon Dioxide Concentrations over time

Monitoring Round Number and Date	Time							
	0hrs		2hrs		4hrs		6hrs	
	O_2 %	CO_2 %	O_2 %	CO_2 %	O_2 %	CO_2 %	O_2 %	CO_2 %
01 -21st March 2024	20.9	0.1	20.9	0.1	20.9	0.1	20.9	0.1
05 -24th April 2024	20.9	0.1	20.8	0.2	20.7	0.3	20.6	0.4
10 -17th June 2024	20.9	0.1	20.7	0.3	20.5	0.5	20.4	0.6
12 -09th July 2024	20.9	0.1	20.5	0.5	20.5	0.5	20.3	0.7
14 -30th July 2024	20.8	0.2	20.5	0.5	20.4	0.6	20.1	0.8

Table 5-5: TSP10 Oxygen vs Carbon Dioxide Concentrations over time

Monitoring Round Number and Date	Time							
	0hrs		2hrs		4hrs		6hrs	
	O_2 %	CO_2 %	O_2 %	CO_2 %	O_2 %	CO_2 %	O_2 %	CO_2 %
01 -15th May 2024	20.9	0.1	20.9	0.1	20.9	0.1	20.9	0.1
03 -18th June 2024	20.9	0.1	20.6	0.3	20.5	0.4	20.4	0.6
05 -17th July 2024	20.9	0.1	20.7	0.3	20.4	0.5	20.2	0.8

Table 5-6: TSP11 Oxygen vs Carbon Dioxide Concentrations over time

Monitoring Round Number and Date	Time							
	0hrs		2hrs		4hrs		6hrs	
	O_2 %	CO_2 %	O_2 %	CO_2 %	O_2 %	CO_2 %	O_2 %	CO_2 %
01 -12th June 2024	20.9	0.1	20.9	0.1	20.9	0.1	20.9	0.1
03 -25th June 2024	20.9	0.1	20.6	0.3	20.5	0.4	20.4	0.6
05 -09th July 2024	20.9	0.1	20.7	0.3	20.4	0.5	20.2	0.8

Following the degradation of the hydrocarbons present within the soils (as indicated by falling total petroleum hydrocarbons concentrations to <1,000mg/kg), samples were obtained at a frequency of 1 sample per 100m³, until 3no consecutive rounds of analysis passed the remedial criteria and were assessed as suitable for re-use without posing a risk to the groundwater environment or site end users.

The treatment process, sampling strategy and consecutive sampling rounds are summarised within stockpile specific declaration notices and submitted to regulators to confirm that the treated materials were suitable for re-use and that they passed the remedial criteria.

Within Sanctus TSP10-07, sampling round 5 (TSP10-07E), an erroneous result was identified with a TPH value of 3,600mg/kg. This results was flagged due to the treatment methodology creating a homogeneous material. The result was 27 times higher than the mean average of the other 1,900m³. As such, the result was assessed by Sanctus to not be representative of the materials sampled, and a re-test was scheduled of the sample. The re-test confirmed the Sanctus assessment, with the result returning a concentration of 89mg/kg.

The declaration forms also include example photographs of the sampling methodology used during the treatment.

The materials were sampled, reviewed and deemed suitable in accordance with Sanctus Technical Note SL2274.3240.02 Rev B, included within Appendix H and in line with the

Sanctus Remediation Strategy (1). A copy of each declaration notice is also included within Appendix H.

Table 5-7: Bioremediated Stockpiles Summary

Sanctus Stockpile ID	Approximate Volume (m^3)	Sanctus Declaration Note Reference	Area of Re-use in Phase 02	Depth of Re-use (m AOD)
TSP05	1,200	003	Area 15 & 16, Area 20	Area15 & 16: 2.70-3.60 Area 20: 2.61-4.30
TSP06	1,700	006	Area 19	Area 19: 1.00-4.80
TSP07	700	004	Area 12 & 23	Area 12 & 23: 0.70-1.00
TSP08	2,300	007	Area 10	Area 10: 1.40-2.70
TSP09 (South)	800	001	Area 10	Area 10: 2.70-3.00
TSP09 (North)	1,200	005	Cell 'D'	Cell 'D': 0.30-1.90
TSP10	2,000	008	Area 10	Area 10: 3.00-3.70
TSP11	1,200	002	Area 11	Area 11: 1.10-4.00
TSP13	3,700	009	Cell 'D' & Area 10	Area 10: 3.70-4.14 Cell 'D': 1.90-4.20

During the bioremediation, Round 'H' representing round 8 of sampling was abandoned within TSP07. This was an operational decision due to inclement weather. The assessment was made that the sampling methodology would add additional moisture affecting the materials geotechnical properties and the ability to be re-used and therefore the certainty of its use. The monitoring was then re-commenced at round 'I'. This skip of suffix within the monitoring rounds was a clerical mistake by the onsite Engineer. Round 'I' which passed the remedial criteria, represents the 8th round of monitoring.

6.0 Overburden Soils and Stockpiles

Overburden soils generally above the contaminated layer of soil, were excavated, transported and stockpiled temporarily on site. The materials were excavated within 500mm layers under an Environmental Watching Brief by the Sanctus Environmental Engineer.

The stockpiled overburden materials were then sampled at a frequency of 1 sample per 250m^3, as per Section 17.0 of the Remediation Strategy (1) and assigned a unique Stockpile (SP) reference. The obtained soil analysis was screened against the Sanctus remedial criteria to confirm suitability for re-use. Materials failing the remedial criteria following chemical analysis were assessed as unsuitable for immediate re-use and were quarantined for further inspection prior to treatment. These materials were treated in accordance with the Remediation Strategy. This strategy was followed for Stockpiles SP063, SP064, SP065, SP068 and SP069. Although representative samples from these stockpiles passed the remedial criteria, due to the presence of failures they were assessed as unsuitable for re-use and the stockpiles bioremediated. These materials were conf=signed to treatment stockpile TSP14'B'.

Excavated soils displaying visual and olfactory evidence of contamination, were transported directly to the Sanctus Waste Treatment Areas for bioremediation treatment.

A summary of the formed overburden stockpiles and their area of origin is detailed within Table 6-1, with the screening and associated chemical analysis included within Appendix I.

A detailed summary for the areas of re-use are detailed within Table 6-2, below.

Table 6-1: Sanctus Stockpile Summary.

Sanctus Stockpile ID	Stockpile Volume (m^3)	Sanctus Sample ID	Area of Origin	Pass/Fail
SP059	2,610	SP059-01	Area 10 Overburden	Pass
		SP059-02	Area 10 Overburden	Pass
		SP059-03	Area 10 Overburden	Pass
		SP059-04	Area 10 Overburden	Pass
		SP059-05	Area 10 Overburden	Pass
		SP059-06	Area 10 Overburden	Pass
		SP059-07	Area 10 Overburden	Pass
		SP059-08	Area 10 Overburden	Pass
		SP059-09	Area 10 Overburden	Pass
		SP059-10	Area 10 Overburden	Pass
		SP059-11	Area 10 Overburden	Pass
SP060	650	SP060-01	Area 11 Overburden	Pass
		SP060-02	Area 11 Overburden	Pass
		SP060-03	Area 11 Overburden	Pass
SP061	1,245	SP061-01	Area 09 Overburden	Pass
		SP061-02	Area 09 Overburden	Pass

Sanctus Stockpile ID	Stockpile Volume (m^3)	Sanctus Sample ID	Area of Origin	Pass/Fail
		SP061-03	Area 09 Overburden	Pass
		SP061-04	Area 09 Overburden	Pass
		SP061-05	Area 09 Overburden	Pass
SP062	1,679	SP062-01	Area 11 Overburden	Pass
		SP062-02	Area 11 Overburden	Pass
		SP062-03	Area 11 Overburden	Pass
		SP062-04	Area 11 Overburden	Pass
		SP062-05	Area 11 Overburden	Pass
		SP062-06	Area 11 Overburden	Pass
		SP062-07	Area 11 Overburden	Pass
SP063*	2,746	SP063-01	Area 09 Overburden	Fail
		SP063-02	Area 09 Overburden	Fail
		SP063-03	Area 09 Overburden	Pass
		SP063-04	Area 09 Overburden	Pass
		SP063-05	Area 09 Overburden	Fail
		SP063-06	Area 09 Overburden	Fail
		SP063-07	Area 09 Overburden	Fail

Sanctus Stockpile ID	Stockpile Volume (m^3)	Sanctus Sample ID	Area of Origin	Pass/Fail
		SP063-08	Area 09 Overburden	Fail
		SP063-09	Area 09 Overburden	Fail
		SP063-10	Area 09 Overburden	Pass
		SP063-11	Area 09 Overburden	Fail
SP064*	3,789	SP064-01	Area 15 Overburden	Fail
		SP064-02	Area 15 Overburden	Fail
		SP064-03	Area 15 Overburden	Fail
		SP064-04	Area 15 Overburden	Fail
		SP064-05	Area 15 Overburden	Fail
		SP064-06	Area 15 Overburden	Fail
		SP064-07	Area 15 Overburden	Fail
		SP064-08	Area 15 Overburden	Fail
		SP064-09	Area 15 Overburden	Fail
		SP064-10	Area 15 Overburden	Fail
		SP064-11	Area 15 Overburden	Fail
		SP064-12	Area 15 Overburden	Pass
		SP064-13	Area 15 Overburden	Fail

Sanctus Stockpile ID	Stockpile Volume (m^3)	Sanctus Sample ID	Area of Origin	Pass/Fail
		SP064-14	Area 15 Overburden	Fail
		SP064-15	Area 15 Overburden	Fail
		SP064-16	Area 15 Overburden	Fail
		SP064-17	Area 15 Overburden	Fail
		SP064-18	Area 15 Overburden	Fail
SP065*	748	SP065-01	Area 15 Overburden	Pass
		SP065-02	Area 15 Overburden	Fail
		SP065-03	Area 15 Overburden	Fail
SP066	985	SP066-01	Area 09 'A' Overburden	Pass
		SP066-02	Area 09 'A' Overburden	Pass
		SP066-03	Area 09 'A' Overburden	Pass
		SP066-04	Area 09 'A' Overburden	Pass
SP067	996	SP067-01	Area 16 Overburden	Pass
		SP067-02	Area 16 Overburden	Pass
		SP067-03	Area 16 Overburden	Pass
		SP067-04	Area 16 Overburden	Pass
SP068*	2,487	SP068-01	Area 16 Overburden	Pass

Sanctus Stockpile ID	Stockpile Volume (m^3)	Sanctus Sample ID	Area of Origin	Pass/Fail
		SP068-02	Area 16 Overburden	Fail
		SP068-03	Area 16 Overburden	Pass
		SP068-04	Area 16 Overburden	Fail
		SP068-05	Area 16 Overburden	Pass
		SP068-06	Area 16 Overburden	Fail
		SP068-07	Area 16 Overburden	Pass
		SP068-08	Area 16 Overburden	Pass
		SP068-09	Area 16 Overburden	Pass
		SP068-10	Area 16 Overburden	Pass
SP069*	128	SP069-01	Area 16 Overburden	Fail
SP070	987	SP070-01	Area 12/15/16 (Cell D) Overburden	Pass
		SP070-02	Area 12/15/16 (Cell D) Overburden	Pass
		SP070-03	Area 12/15/16 (Cell D) Overburden	Pass
		SP070-04	Area 12/15/16 (Cell D) Overburden	Pass
SP071	1,476	SP071-01	Area 12 Overburden	Pass
		SP071-02	Area 12 Overburden	Pass
		SP071-03	Area 12 Overburden	Pass

Sanctus Stockpile ID	Stockpile Volume (m^3)	Sanctus Sample ID	Area of Origin	Pass/Fail
		SP071-04	Area 12 Overburden	Pass
		SP071-05	Area 12 Overburden	Pass
		SP071-06	Area 12 Overburden	Pass
SP072	987	SP072-01	Area 23 Overburden	Pass
		SP072-02	Area 23 Overburden	Pass
		SP072-03	Area 23 Overburden	Pass
		SP072-04	Area 23 Overburden	Pass
SP073	938	SP073-01	Area 12 Overburden	Pass
		SP073-02	Area 12 Overburden	Pass
		SP073-03	Area 12 Overburden	Pass
		SP073-04	Area 12 Overburden	Pass
SP074	498	SP074-01	Area 21 Overburden	Pass
		SP074-02	Area 21 Overburden	Pass
SP075	1,976	SP075-01	Area 22 Overburden	Pass
		SP075-02	Area 22 Overburden	Pass
		SP075-03	Area 22 Overburden	Pass
		SP075-04	Area 22 Overburden	Pass

Sanctus Stockpile ID	Stockpile Volume (m^3)	Sanctus Sample ID	Area of Origin	Pass/Fail
		SP075-05	Area 22 Overburden	Pass
		SP075-06	Area 22 Overburden	Pass
		SP075-07	Area 22 Overburden	Pass
		SP075-08	Area 22 Overburden	Pass

Note: (*) Denotes materials which were unsuitable for re-use within the re-instatement of excavations due to all or part of the stockpile failing the remedial criteria. These materials were placed within the quarantine area and treated as detailed within Section 5.0 of this verification report.

Table 6-2: Sanctus Stockpiles Re-use Summary

Sanctus Excavation ID	Maximum Excavation Depth (m bgl)	Stockpiles Used to Re-instate
Area 09	5.00	SP059
Area 09 'A'	3.90	SP061
Area 10	3.00	SP075, TSP08, TSP10, TSP09 South
Area 11	3.30	TSP11
Area 12 & 23	3.20	SP060, SP062, SP070, SP071, TSP07
Area 13	1.70	SP04
Area 14	1.20	SP04
Area 15	4.00	SP060, SP062, SP066, SP067, SP073, TSP05
Area 16	4.00	SP060, SP062, SP066, SP067, SP074, TSP05
Area 17	0.45	SP03
Area 18	0.55	SP03
Cell 'D' (Comprising Area 15, 16 & 12)	3.50	TSP09 North, TSP13
Area 19	2.90	TSP06
Area 20	1.80	TSP05

7.0 Obstructions

During the remedial works concrete obstructions and pipelines forming part of the historic infrastructure were identified. Where possible these were removed and processed onsite.

Concrete was segregated and inspected to be free of contamination and left for the management of the client.

All pipes, where encountered were inspected, drained of all products and/or water and removed prior to offsite disposal. Due to the frequency of pipe work within the remediation areas, the total linear meterage could not be quantified.

The risk remains that obstructions and former pipelines associated with the sites historic use remain outside of the Sanctus remediation excavation extents.

8.0 Outstanding and Ongoing Works

As previously discussed within Section 1.0, this report pertains to the remedial works undertaken within the Phase 02 area only, of the wider Ardrossan North Shore Site.

At the time of production, the following works are still to be completed by Sanctus:

- Bioremediation of hydrocarbon impacted soils to the Remedial Target Criteria, detailed within Appendix D;
- Excavation within Phase 03 as shown within Sanctus Drawings D3240/006 and 007, included within Appendix A, to remove impacted soils and remove free phase oils and sheens within groundwater where encountered, in line with the remedial criteria within Sanctus Remediation Strategy; and
- Reinstatement of excavation areas within Phase 03 using site suitable materials from excavated overburden and bioremediated materials passing the Sanctus Remedial Criteria.

9.0 Summary and Conclusion

Based on the above lines of evidence and those included within the following appendices, the remedial objectives for the Phase 02 site (Area 08 to 20, including Area 23) have been met, with the confirmed removal of materials posing unsuitable risk to the ground water and the water environment.

This has been achieved through the removal of the source previously present within the impacted soils and groundwater, achieved through the excavation of impacted soils containing elevated hydrocarbon contamination and the removal of free phase oily product/ and sheens present within the groundwater.

Materials re-used to infill excavations to site levels were confirmed as suitable for re-use, through the bioremediation and reduction of hydrocarbon contaminants to the agreed remedial criteria and verified in accordance with the remediation strategy or the segregation, stockpiling and verification of overburden soils.

Although the source of the contamination has been removed, as required from the Sanctus Remediation Strategy (1), due to the site's history, the potential remains for previously unidentified contamination to be identified during the next phases of the sites development. As such, the remediation strategy and site investigation data should be made available for all contractors involved with the development scheme and the discovery strategy within Section 21.0 of the Remediation Strategy (1) followed.

10.0 References

1. **Sanctus Limited.** *Ardrossan North Shore Remediation Strategy.* August 2024.

2. —. *Ardrossan North Shore Phase 01 Verification Report, Revision D.* July 2024.