Glensanda Dredge

Best Practicable Environmental Option Report

Report No. 144_REP_01_1

Date: 11/12/2025

Document Control

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1A	[R	Initial draft for internal review.	18/09/2025
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Contents

1 Introduction

1.1 Overview

This report presents the Best Practicable Environmental Option (BPEO) assessment for the proposed dredging works at the Port of Glensanda on Loch Linnhe. The purpose of the proposed dredge is to increase navigable depth to allow ongoing operations at the port. This BPEO report has been produced to support the marine licence application for Dredge and Sea Disposal under the Marine (Scotland) Act 2010, as amended, for the proposed maintenance dredge works at the Port of Glensanda.

The purpose of this report is to identify and assess the available options for the use/disposal of materials arising from the maintenance dredge works. The objectives are:

- To provide an overview of the required dredging works;
- To describe the dredge material to be removed including volumes and physical and chemical characteristics;
- To describe the BPEO methodology employed to complete the assessment; and
- To identify and assess options for disposal or re-use of material to determine the BPEO.

1.2 Background

Glensanda granite quarry is an immense coastal super-quarry. The facility includes a processing plant, a small aircraft landing strip, a coastal deep-water berth on Loch Linnhe, which can serve ships up to 120,000 tonnes, and a small harbour that receives a private ferry which crosses the loch from Port Appin bringing workers to the quarry. Due to the volume of material exported from the site, it is heralded as one of the largest ports in the UK (Holcim, 2025).

2 Project Description

2.1 Location

The Port of Glensanda is a coastal quarry loading facility located on the west shore of lower Loch Linnhe on the Morvern peninsula (see Figure 2.1.1). It is operated by Holcim UK (formerly Aggregate Industries) and only accessible by sea.

Figure 2.1.1: Location of the Port of Glensanda

2.2 Proposed Dredging Works

Proposed maintenance dredge activities will take place at four areas within the Port of Glensanda, as depicted in Drawing 2434-WS-XX-XX-D-C-0051 P04. The total expected dredge volume over a 3-year period is detailed in Table 2.2.1. It is anticipated that dredging will begin between Spring and Autumn 2026.

It is understood that the proposed dredge pockets overly existing rock armour in places. Therefore, the method of dredging will need to facilitate careful removal of material immediately adjacent to port infrastructure (quays, harbour walls, etc). Hence, the preferred method is to utilise a backhoe excavator to initially move material away from the quay wall, along the seabed into deeper water.

Table 2.2.1: Expected Dredge Quantities in Cubic Metres per Year

Berth	Operational Depth (m Chart Datum)	Volume to Dredge Year 1 (m^3)	Volume to Dredge Year 2 (m^3)	Volume to Dredge Year 3 (m^3)	Total Dredge Volume per Berth (m^3)
Main Berth	-12.3	4000	4000	4000	12000
Armour Berth	-5	100	100	100	300
Small Boat Harbour	-2	1500	1500	1500	4500
Service Jetty	-1	500	500	500	1500
Total Dredge Volumes per Year (m^3)		6100	6100	6100	18300

2.3 Dredge Material Characteristics

2.3.1 Sampling

A pre-dredge sampling plan was approved on 25th April 2025, by the Marine Directorate Licencing Operations Team (MD-LOT). This plan was created in accordance with the Pre-Disposal Dredge Sampling Guidance (Marine Directorate (formerly Marine Scotland), 2017) and covered all four areas of the proposed dredge. The drawings for these areas are listed below:

- Main berth (see Drawing 2434-WS-XX-XX-D-C-0052 P04);
- Armour berth (see Drawing 2434-WS-XX-XX-D-C-0053 P05);
- Small boat harbour (see Drawing 2434-WS-XX-XX-D-C-0054 P05); and
- Service jetty ramps (see Drawing 2434-WS-XX-XX-D-C-0055 P04).

Sampling was conducted in June 2025. A total of four samples were collected: three vibrocores and one grab sample. Vibrocores were taken in dredge areas where dredge depths are proposed to be greater than one metre, and grab samples were taken for locations where the proposed dredge depth was less than one metre. The coordinates for all sampling locations can be found in Table 2.3.1.

The sampling contractor reported it was not possible to retrieve samples from two of the planned locations, vibrocore (VC01) and grab sample (GS01), despite multiple attempts. This was due to the rocky substrate in these locations. Despite the reduced number of successfully retrieved samples, it is considered the sampling adequately represents the proposed dredge material and characterises all four proposed dredge pockets.

Table 2.3.1: Pre-dredge Sampling Records

Sample Station	Dredge Area	Sampled Easting	Sampled Northing	Target Recovery Depth (metres (m))	Core Recovered (m)	Date Sampled	Water Depth (m) (Chart Datum)
VC01	Main Berth	183060.709	747360.974	3	Failed	Failed	10
VC02	Main Berth	183092.76	747390.702	3	0.55	10/06/2025	10
VC03	Small Boat Harbour	182704.034	747078.295	2.5	1.1	10/06/2025	-0.6
VC04	Small Boat Harbour	182731.007	747096.168	1.5	0.5	10/06/2025	0.3
GS01	Armour Berth	182869.424	747182.245	n/a	n/a	Failed	4
GS02	Service Jetty	182614.049	746961.652	n/a	n/a	10/06/2025	0.1

2.3.2 Sample Analysis

All samples were analysed by SOCOTEC (Environmental Services), a laboratory that is accredited under ISO17025 for marine sediment analysis. SOCOTEC regularly participates in inter-laboratory comparison exercises, such as QUASIMEME, to ensure the accuracy and reliability of its results. The laboratory's methods also meet the limit of detection (LOD) and sensitivity requirements outlined in the Clean Seas Environmental Monitoring Programme Green Book (Marine Assessment and Review Group, 2020).

2.3.3 Sample Results

The sample results are summarised in this section, and the entire set of laboratory sample results are available in the pre-dredge sample results (SOCOTEC, 2025). Sample results have been assessed using the Marine Directorate Revised Action Levels (AL) outlined in the Pre-Disposal Dredge Sampling Guidance (Marine Directorate, 2017). Contaminant levels of dredged material below AL1 are generally assumed to be of negligible concern, contaminant levels between AL1 and AL2 will typically trigger further investigation, and if samples exhibit contaminant levels above AL2, then they are usually considered unsuitable for disposal at sea.

2.3.3.1 Physical Properties

On average, the sampled solids were made up of 31% gravel, 63% sand and 6% silt, with an average total solids component across the samples of 85.4%. High levels of gravel and sand may make a large volume of the material suitable for reuse as construction material.

2.3.3.2 Trace Metals

Based on a review of sediment sample results against Marine Directorate's ALs for trace metals, the dredged material does not exceed any AL1 or AL2 thresholds. Because the samples from

the proposed dredge area were found to be below these thresholds, dredging and disposing of the material is not expected to cause any negative environmental impacts from elevated trace metal concentrations.

2.3.3.3 Polycyclic Aromatic Hydrocarbons

A review of the pre-dredge sample results (SOCOTEC, 2025) for Polycyclic Aromatic Hydrocarbon (PAH) concentrations demonstrates that all values are below AL1. Note, Marine Directorate's data sheet incorrectly flags "less than (<)" results as AL1 exceedances (colouring these blue), when in fact they are below the AL1 threshold as noted in the Aspect Sampling Report (Aspect, 2025). PAHs are subsequently not considered to be a contaminant of concern.

2.3.3.4 Conclusion

The lack of chemical contamination present in all samples retrieved, is not surprising, given the lack of potential pollution sources in the area. Hence, there is a high degree of confidence that there are no contamination concerns in any of the berth areas where dredging is required, based on the site history and results from the adjacent areas where samples were collected.

3 BPEO Methodology

In identifying the BPEO for the proposed dredging works, the following methodology has been employed:

- Identification of options available for material disposal;
- Screening to eliminate unfeasible options;
- Scoring of remaining options; and
- Comparison of options and identification of the BPEO.

3.1 Option Identification

Options for disposal and management of dredge material from the proposed dredge areas were identified through the use of professional judgment and prior experience of similar projects.

3.2 Screening

All options were screened against a set of minimum criteria. Each option had to meet all the minimum criteria in order to be taken forward for detailed consideration. Any option which failed to meet one or more of the criteria was not taken forward for detailed assessment. The criteria are as outlined below:

- The proposed option must be suitable for the physical and chemical characteristics of the material;
- It must be technically viable;
- It must be legally compliant; and
- It must not prevent operational activities of the Port of Glensanda.

3.3 Scoring

Attributes utilised in the options assessment were identified and scored out of 5, with 1 being the worst performing and 5 being the best. Each score has been designated a colour to aid visual comparison. Attributes are outlined in Appendix 1.

Options which met minimum criteria and progressed to detailed assessment were scored against each attribute, see Appendix 2. Reasoning for the corresponding scores is provided in Appendix 3.

3.4 Comparison of Options and Identification of the BPEO

Following the scoring of the options, a detailed comparison was undertaken to identify the BPEO.

4 Assessment of Options

4.1 Identification of Options Available

Several options were identified for the management of material arising from the proposed dredge works, including both terrestrial and marine based disposal options. Options identified are outlined below:

- Do nothing: no material is removed or redistributed from the Port of Glensanda;
- Plough dredging: uses a plough or excavator to move material from high spots at the berths to deeper areas immediately adjacent. No material is removed from the marine environment or from within the dredge boundary;
- Disposal to landfill: bringing the material ashore and transporting it to a licensed landfill facility. Typically reserved for contaminated sediments that are unsuitable for any form of reuse or sea disposal;
- Beneficial re-use within the Port of Glensanda: Reuse options within quarry reinstatement landscaping or processed into an aggregate to be sold as a quarry product;
- Beneficial re-use elsewhere: Reuse at another location for example as land reclamation fill material (i.e., within another project); and
- Dredge with disposal to sea: depositing the dredged material at a specific, licensed location on the seabed. This involves transporting the material by vessel. For a dredge at this location, the nearest licensed dredge disposal site is the Armadale (HE070) Spoil Deposit Site, located off the Isle of Skye, approximately 65 nautical miles from the Port of Glensanda.

4.2 Unfeasible Options

Options were screened against the minimum criteria outlined in Section 3.2. This process eliminated two options as they do not meet one or more of the screening criteria. The reasoning behind discounting these options is discussed below.

4.2.1 Do Nothing

To not undertake dredge works within the identified area would impose a significant impact on operations at the Port of Glensanda due to the berths not meeting operational depth requirements. This option would not meet the minimum criteria as it would prevent the operations at the Port of Glensanda by failing to meet the required depth for vessels. As such, this option will not be taken forward to assessment.

4.2.2 Disposal to Landfill

This option involves the disposal of dredge arisings to landfill. Material would need to be brought ashore and dewatered before being transferred to trucks and transported by road to a landfill site. As above, there is no available space on the quay to enable the transfer of material from dredge vessel to land, or for storage and dewatering. Additionally, there is a lack of connectivity to the road networks at the Port of Glensanda. Hence, material would need to be transported by sea and brought to land elsewhere.

The closest operational landfill site to the Port of Glensanda is at Duisky on the southern shore of Loch Eil, approximately 27 nautical miles north-east. There is no practical way to transport dredged material to this landfill site as there is no berthing facility nearby that could facilitate the landing, storage and dewatering of dredged material.

Furthermore, existing landfill sites must cope with large volumes of domestic and industrial waste, and disposal of dredge spoil would place an intolerable burden on such sites. Dredged material is relatively inert by landfill standards, so disposal at a landfill site is not usually necessary or recommended unless it is contaminated, which it is not in this case (see Section 2.3: Dredge Material Characteristics). As there is no practical means of transporting dredge material to landfill, this option is considered not technically viable and will not be taken forward for assessment.

4.3 Assessment of Feasible Options

Following the screening process, the options to take forward for detailed assessment are:

- Plough dredging
- Beneficial re-use elsewhere
- Beneficial re-use by or within the Port of Glensanda; and
- Dredge with disposal to sea.

Each of these options have been assessed against the attributes detailed in Appendix 1. The options scoring is provided in Appendix 2 with the reasoning for attribute scoring provided in Appendix 3.

4.3.1 Plough Dredging

A plough attachment on a vessel is not suitable for the removal of high spots immediately adjacent to the quay. Hence, in this instance an excavator would be utilised to plough material from high spots into deeper water. Plough dredging avoids the need for offsite disposal. Pre-dredge sediment analysis shows that the substrate consists of coarse sediments, predominantly gravel and sand. The coarse nature of this material and technique deployed minimises material in the water column, with sediments settling out of suspension quickly. As such, any sedimentation will remain localised to the dredge areas. The ploughing of material from one area to the other, will smother the receiving benthic habitats however, the area of this will be limited. No Priority Marine Features (PMF) have been identified in the dredge areas, burrowed mud has been identified in Loch Linnhe, however given the coarse nature of sediments in the vicinity of the berth it is highly unlikely that this habitat type is present (Marine Scotland, 2025). Hence it is unlikely that any PMF will be affected.

This method is suitable for the movement of small volumes of unconsolidated material over short distances. It is a relatively low-cost option in that it eliminates the need for material

transport. This additionally reduces likelihood of causing interruption to Port or quarry operations, as it can be scheduled around ongoing operations at each berth and has minimal vessel movement requirements.

Overall, plough dredging scored **37 out of 45** (see Appendix 2).

4.3.2 Beneficial Re-use Elsewhere

This option involves the beneficial reuse of dredged material by transporting it via sea to another location. At the receiving location, it can be used for purposes such as land reclamation, construction fill or aggregates production. This approach is considered high on the waste hierarchy because it reclaims a valuable resource and avoids the need for disposal.

Feasibility of re-use depends on several key factors, for example:

- Availability of an end-user: A third party with a suitable receiving site is required to offload and process the material. The success of this option hinges on the ability to secure a partner who can effectively utilise the dredged material at the time it is dredged; and
- Logistical and financial viability: The financial viability of this option is determined by the balance between the market value of the dredged aggregate and the logistical costs associated with transport. While potential revenue from the sale of the aggregate can be generated, these earnings may be offset by the significant costs of vessel charter, fuel and other logistical overheads.

The proposed Glensanda dredge campaign will produce relatively low volumes in terms of land reclamation or construction fill. Annual volumes are unlikely to be of notable value to another project, making any agreement difficult, especially considering the need for transportation costs and programme alignment. Additionally, these volumes would only be available across the planned three-year dredge period further reducing logistical viability for re-use at another project. Finally, this option poses potential site operations impacts due to time required to remove material and associated vessel movements.

Overall, beneficial re-use elsewhere scored **28 out of 45** (see Appendix 2).

4.3.3 Beneficial Re-use at the Port of Glensanda

This option would involve the on-site reuse of dredged material at the Port of Glensanda. The material would need to be transferred from the dredge barge to a designated onshore area for dewatering and processing.

The relatively low annual dredge volumes that would be retrieved from the four different sites and need to be transported and transferred within the Port for dewatering and processing before use make this option economically and logistically less favourable. This option would cause additional site operational impacts as berth space and time needed to bring materials ashore. Additionally, materials are not deemed to be suitable for processing into an aggregate material utilising the existing equipment which is designed to crush large rock. In addition, it would potentially introduce saltwater machinery, posing a corrosion issue to equipment.

Movement of retrieved and processed materials would be against the workflow of operational traffic in the Port and Quarry, posing increased health and safety risk to personnel and operations.

Overall, beneficial use at the Port of Glensanda scored **26 out of 45** (see Appendix 2).

4.3.4 Dredge with Disposal to Sea

Transporting dredged material by barge to a designated sea disposal site is a well-established, and technically simple, method. However, it ranks low on the waste hierarchy and comes with costs for vessel charter and fuel. The nearest licensed dredge disposal site is the Armadale (HE070) Spoil Deposit Site which is located within the Inner Hebrides and the Minches Special Area of Conservation (SAC) which has been primarily designated for Harbour porpoise (*Phocoena phocoena)*, and is an area known to be used by basking sharks (*Cetorhinus maximus;* Marine Scotland, 2025). Environmental impacts are minor but will need to be mitigated, due to the potential for physical harm to marine mammals and basking shark during dredge disposal.

Dredge with sea disposal scored **27 out of 45** (see Appendix 2).

4.4 Comparison of Options

Plough dredging conducted using a backhoe to move materials within dredge areas was the highest scoring option and determined to be the BPEO with a score of 37 out of 45. Beneficial re-use elsewhere scored 28 out of 45 due to the additional transport requirements and potential site operations impact, while beneficial re-use within the Port of Glensanda scored lower (26 out of 45) due to potential site operations impacts, as well as health and safety risks, and dredge with sea disposal was also a less favourable option (27 out of 45) due to the additional transport requirements and increased environmental risk and mitigation required for disposal.

5 Conclusion

The options which passed screening are plough dredging, beneficial re-use elsewhere and dredge with disposal to sea. Plough dredging conducted using a backhoe scored favourably and was determined to be the BPEO for the required works at the Port of Glensanda. This option is determined to result in minimal negative environmental impacts and will avoid additional cost, time and logistical constraints associated with the other options considered.

6 References

Affric Limited, 2025. Glensanda Dredge Environmental Supporting Document. Document reference: 144_REP_02).

Aspect, 2025. Vibrocore and Surace Grab Sampling/ Laboratory Analysis Report.

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Marine Scotland, 2025. NMPi. Retrieved from: https://marinescotland.atkinsgeospatial.com/nmpi/default.aspx Accessed on 27/11/2025.

SOCOTEC, 2025, Pre-disposal sediment sampling analysis results form. Document reference: 144__FOR_01_1.

7 Glossary

Acronym	Definition
<	Less Than
AL	Action Level
BPEO	Best Practicable Environmental Option
LOD	Limit of Detection
m	metre
MD-LOT	Marine Directorate - Licensing Operations Team
PAH	Polycyclic Aromatic Hydrocarbons
PMF	Priority Marine Feature
SAC	Special Area of Conservation
UK	United Kingdom

Appendix 1: Attributes

Attribute	Description	1	2	3	4	5
Alignment with Policy	How complex are the regulator requirements and what risks are posed.	In direct conflict with policy.	Does not fully align with policy.	No policy implications.	In the spirit of policy.	Positively implements policy.
Health & Safety	Potential health and safety risk	Very Significant	Significant	Minimal	Trivial	None
Cost	Financial Cost of the Option	>£ 500,000	£300,000 to £500,000	£150,000 to £300,000	£50,000 to £150,000	<£50,000
Timescale	Impact of works on project programme.	Methodology would extend the project programme.	High risk works couldn't be completed within required timescale.	Slight risk works couldn't be completed within required timescale.	Allows works to be completed within required timescale.	Allows works to be completed comfortably within required timescale.
Material Suitability	Is the chemical makeup of the dredge material suitable for the option selected?	Not all of the material is acceptable.	Requires significant mitigation to be made suitable.	Acceptable with mitigation.	Acceptable material for option.	Ideal material for option.
Site Operation Impacts	Level of interference with normal operations.	Very Significant	Significant	Minimal	Trivial	None
Technical Feasibility	Is the option technically feasible?	Technology not proven.	Complex requirements, but proven technology.	Simple proven technology available.	Practicable with basic management.	Standard practice
Environmental Effects	Potential environmental effects associated with implementing the option.	Very Significant	Significant	Minimal	Trivial	None
Legislative Complexity	How complex are the regulator requirements and what risks are posed.	Significant risk additional permits, licences or consents will not be granted.	Requires significant additional permits, licences or consents.	Requires additional permits, licences or consents.	Minor management required to comply with legislation	Complies with all relevant legislation.

Appendix 2: Options Scoring

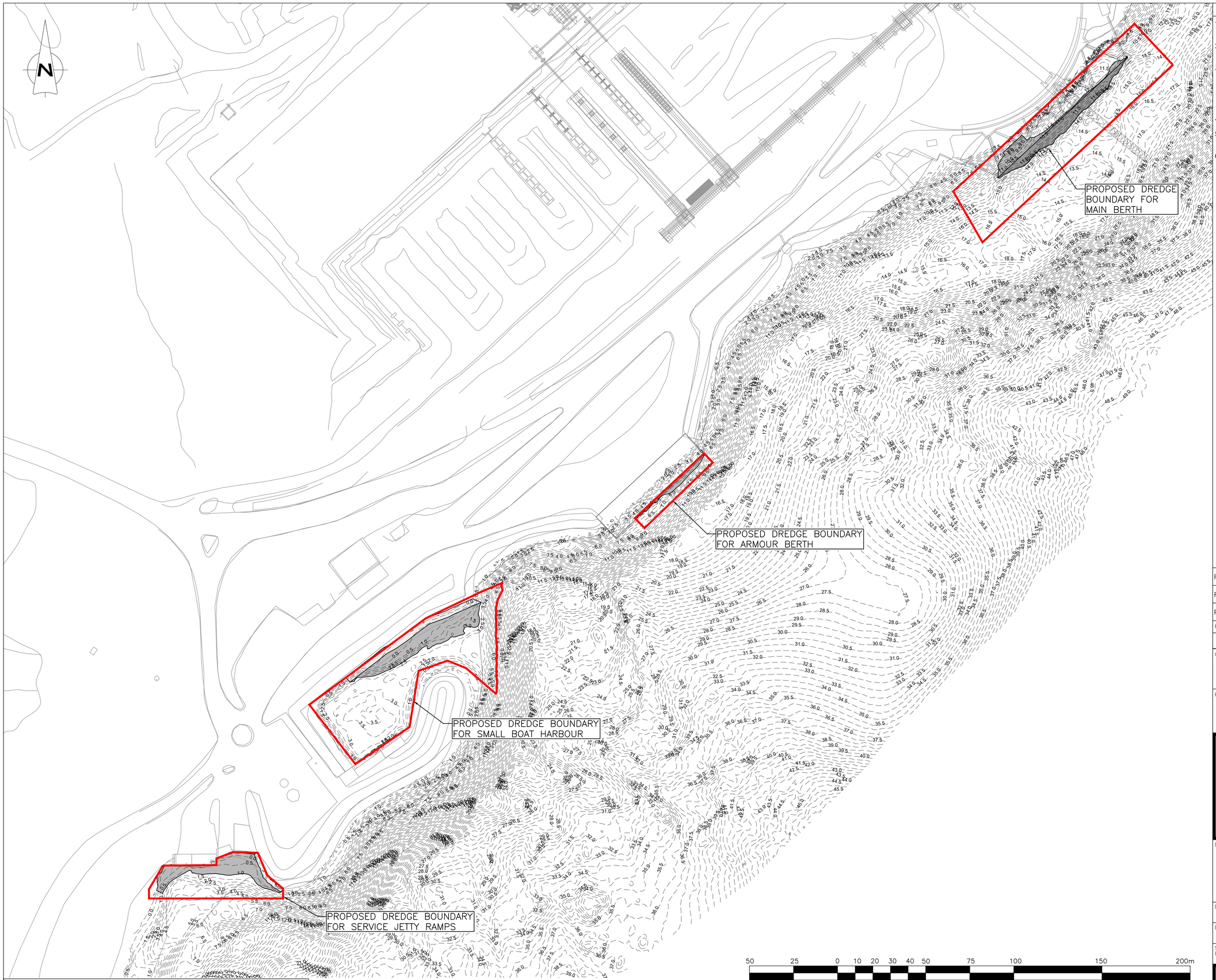
Attribute	Plough Dredging	Beneficial Re-Use Elsewhere	Beneficial re-use within the Port of Glensanda	Dredging with Disposal to Sea at HE070 Deposit Site
Alignment with Policy	3	4	4	2
Health & Safety	4	3	2	3
Cost	5	3	3	2
Timescale	5	3	3	3
Material Suitability	4	4	3	4
Site Operation Impact	4	3	2	3
Technically Feasibility	4	2	2	3
Environmental Effects	4	4	4	3
Legislative Complexity	4	2	3	4
Total (out of 45)	**37**	**28**	**26**	**27**

Appendix 3: Reasoning for Attribute Scoring

Attribute	Plough Dredging	Beneficial Re-Use Elsewhere	Beneficial re-use within the Port of Glensanda	Dredging with Disposal to Sea at HE070 Deposit Site
Alignment with Policy	No policy implications for re-distribution of material within the port area.	This option reduces waste if materials are removed from seabed. Processing and materials for re-use may still give rise to waste product.	This option reduces waste if materials are removed from seabed. Processing and materials for re-use may still give rise to waste product.	Disposal at sea is low on the waste hierarchy and as such does not align to policy.
Health & Safety	No significant risks to health & safety.	Retrieval, and movement of materials, including loading, unloading, re-deployment increases health and safety risks to personnel and operations.	Retrieval, and movement of materials against flow of traffic within Port and quarry increases health and safety risks to personnel and operations.	Retrieval, movement, and disposal operations for materials increases health and safety risks to personnel and operations.
Cost	No additional disposal cost beyond initial dredging.	Additional cost associated with transport to destination potentially covered by purchaser.	Additional costs for material retrieval, dewatering and processing of dredged materials before re-use.	There are associated costs with marine plant required to conduct a dredge and transport the spoil to the disposal site.
Timescale	Can be completed in line with the required timeline.	Can be completed in line with the required timeline. Some management of programme may be needed to facilitate removal of material as it is produced.	Can be completed in line with the required timeline. More time management needed for movement and unloading dredged materials from berths onto port and storage facilities.	The dredge and disposal at sea could be completed within the required timeline, however additional time will be required to transport material to the disposal site.
Material Suitability	The chemical and physical properties of the dredge spoil are suitable for plough dredging.	The chemical and physical properties of the dredge spoil are suitable for beneficial re-use elsewhere.	Salt content and material size mean material may not be suitable for reuse and processing utilising existing equipment.	The dredge spoil will be suitable for disposal at sea as sampling has shown no contamination within dredge areas.
Site Operation Impact	Operations to re-distribute seabed material within berths has low potential to disrupt site operations.	Time and vessel movement needed for retrieval and collection of materials across dredge areas has potential to cause disruption to ongoing and confirmed use of operations at berths.	Space and time needed for unloading retrieved materials would cause disruption to ongoing and confirmed use of space and operations at berths.	Time and movement needed for retrieval and collection of materials across has potential to cause disruption to ongoing and confirmed use of operations at berths.
Technically Feasibility	Established practice with simple equipment.	Beneficial re-use elsewhere will require careful planning and complex technical practices to offload material from dredge	Low volumes of dredged material annually as well as staged retrieval across dredge areas will increase logistic and technical complexity	Disposal at sea is an established industry practice.

Attribute	Plough Dredging	Beneficial Re-Use Elsewhere	Beneficial re-use within the Port of Glensanda	Dredging with Disposal to Sea at HE070 Deposit Site
		hopper barge to receiving location for re-use.	associated with retrieval, processing, and re-use.	
Environmental Effects	Avoids any removal of sediments from the seabed, any sedimentation is very likely to remain localised to the dredge areas.	Trivial potential impacts upon benthic habitats and water quality (increases in sediment in the water column will be reversed quickly due to the coarse nature of the sediment being dredged). Emissions associated with transport to re-use site.	Trivial potential impacts upon benthic habitats and water quality (increases in sediment in the water column will be reversed quickly due to the coarse nature of the sediment being dredged).	Minimal potential impacts upon benthic habitats and water quality (increases in sediment in the water column will be reversed quickly due to the coarse nature of the sediment being dredged). Emissions associated with transport to disposal site. Disposal site located within an SAC; additional mitigation measures required.
Legislative Complexity	Existing legislative process for enabling plough dredging requiring simple/moderate consenting effort.	Reuse of material would require a waste licence exemption, and marine licence is required for the project reusing the material.	Reuse of material would require a waste licence exemption.	Disposal at sea would be permitted under the dredge and disposal marine licence.

Drawings



GENERAL NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS NOTED OTHERWISE.
2. ALL LEVELS ARE IN METRES AND RELATE TO CHART DATUM, UNLESS NOTED OTHERWISE.
3. TIDE LEVELS ARE AS FOLLOWS

HAT	+4.7mCD
MHWS	+4.2mCD
MLWS	+0.8mCD
LAT	+0.1mCD

4. CHART DATUM IS 1.95m BELOW ORDNANCE DATUM.
5. CONTOURS BASED ON ASPECT SURVEYS MULTIBEAM BATHYMETRIC SURVEY CARRIED OUT ON 21st APRIL 2021
6. TO BE READ IN CONJUNCTION WITH DRAWINGS 2434–WS–XX–XX–D–C–0052 TO 0055.

REV	DATE	DETAILS	DRAWN	CHK'D	APP'D
P04	21.08.25	BOUNDARY REVISED	TC	JA	GB
P03	24.04.25	SMALL BOAT HARBOUR DREDGE OUTLINE REVISED.	JR	GB	GB
P02	08.04.25	DREDGE BOUNDARY AREA TITLE REVISED.	AB	GB	GB

AMENDMENTS

CLIENT

AGGREGATE INDUSTRIES

PROJECT

GLENSANDA HARBOUR MAINTENANCE DREDGING

Wallace Stone
Consulting Civil Engineers

GLASGOW
0141 554 8233
glasgow@wallacestone.co.uk

DINGWALL
01349 866775
dingwall@wallacestone.co.uk

DRAWING TITLE

PROPOSED DREDGE AREAS LOCATION PLAN

DRAWN	CHECKED	APPROVED
AB	GB	GB
DATE: MAR 25	DATE: MAR 25	DATE: MAR 25
SCALE (A1): 1:1000	STAGE: CONSENTS	REV: P04

DRAWING No.

2434–WS–XX–XX–D–C–0051

10 8 6 4 2 0 5 10 20 30m
SCALE BAR

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HAT	+4.7mCD
MHWS	+4.2mCD
MLWS	+0.8mCD
LAT	+0.1mCD

4. CHART DATUM IS 1.95m BELOW ORDNANCE DATUM.
5. CONTOURS BASED ON ASPECT SURVEYS MULTIBEAM BATHYMETRIC SURVEY CARRIED OUT ON 21st APRIL 2021.

MAXIMUM DEPTH OF DREDGE = 4m

= MAINTENANCE DREDGE BOUNDARY

DB1 = MAINTENANCE DREDGE BOUNDARY SETTING OUT POINTS

VC1 = VIBROCORE LOCATION

DREDGE BOUNDARY SETTING OUT

LOCATION	EASTING	NORTHING
DB001	183021.845	747343.264
DB002	183124.694	747438.258
DB003	183146.439	747414.973
DB004	183038.378	747314.373

VIBROCORE SETTING OUT

LOCATION	EASTING	NORTHING
VC1	183060.709	747360.974
VC2	183092.760	747390.702

REV	DATE	DETAILS	DRAWN	CHK'D	APP'D
P04	21.08.25	DREDGE AND BOUNDARY REVISED.	TC	JA	GB
P03	24.04.25	GENERAL REVISION.	JR	GB	GB
P02	08.04.25	DREDGE AREA INFORMATION ADDED.	AB	GB	GB

AMENDMENTS

CLIENT
AGGREGATE INDUSTRIES

PROJECT
GLENSANDA DREDGING

Wallace Stone
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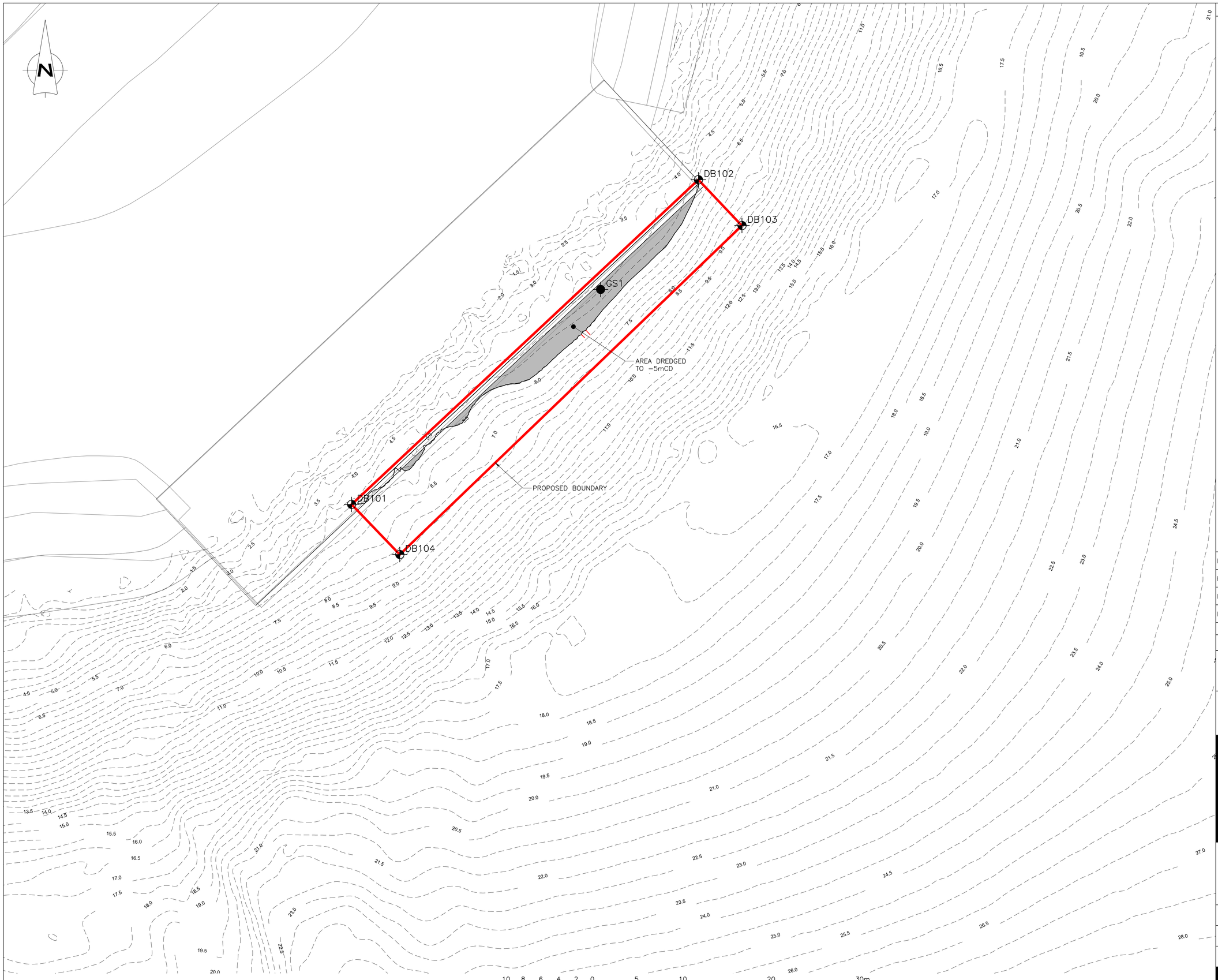
DINGWALL 01349 866775 dingwall@wallacestone.co.uk

DRAWING TITLE
MAIN BERTH
PROPOSED DREDGE
SETTING OUT

DRAWN	CHECKED	APPROVED
JA	GB	GB
DATE: MAR 25	DATE: MAR 25	DATE: MAR 25
SCALE (A1): 1:250	STAGE: CONSENTS	REV: P04

DRAWING No.
2434-WS-XX-XX-D-C-0052



GENERAL NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS NOTED OTHERWISE.
2. ALL LEVELS ARE IN METRES AND RELATE TO CHART DATUM, UNLESS NOTED OTHERWISE.
3. TIDE LEVELS ARE AS FOLLOWS

HAT	+4.7mCD
MHWS	+4.2mCD
MLWS	+0.8mCD
LAT	+0.1mCD

4. CHART DATUM IS 1.95m BELOW ORDNANCE DATUM.
5. CONTOURS BASED ON ASPECT SURVEYS MULTIBEAM BATHYMETRIC SURVEY CARRIED OUT ON 21st APRIL 2021.

MAXIMUM DEPTH OF DREDGE = 1m

= MAINTENANCE DREDGE BOUNDARY

DB1 = MAINTENANCE DREDGE BOUNDARY SETTING OUT POINTS

GS1 = GRAB SAMPLE LOCATION

DREDGE BOUNDARY SETTING OUT

LOCATION	EASTING	NORTHING
DB101	182841.247	747157.934
DB102	182880.494	747194.658
DB103	182885.426	747189.480
DB104	182846.696	747152.263

GRAB SAMPLE SETTING OUT

LOCATION	EASTING	NORTHING
GS1	182869.424	747182.245

REV	DATE	DETAILS	DRAWN	CHK'D	APP'D
P05	27.11.25	SETTING OUT REVISED	TC	JA	GB
P04	21.08.25	BOUNDARY REVISED	TC	JA	GB
P03	24.04.25	GENERAL REVISION	JR	GB	GB
P02	08.04.25	DREDGE AREA INFORMATION ADDED.	AB	GB	GB

AMENDMENTS

CLIENT
AGGREGATE INDUSTRIES

PROJECT
GLENSANDA HARBOUR MAINTENANCE DREDGING

Wallace Stone
Consulting Civil Engineers
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DRAWING TITLE
ARMOUR BERTH PROPOSED DREDGE SETTING OUT

DRAWN	CHECKED	APPROVED
AB	GB	GB
DATE	DATE	DATE
MAR 25	MAR 25	MAR 25

SCALE (A1)	STAGE	REV
1:200	CONSENTS	P05

DRAWING No.
2434−WS−XX−XX−D−C−0053

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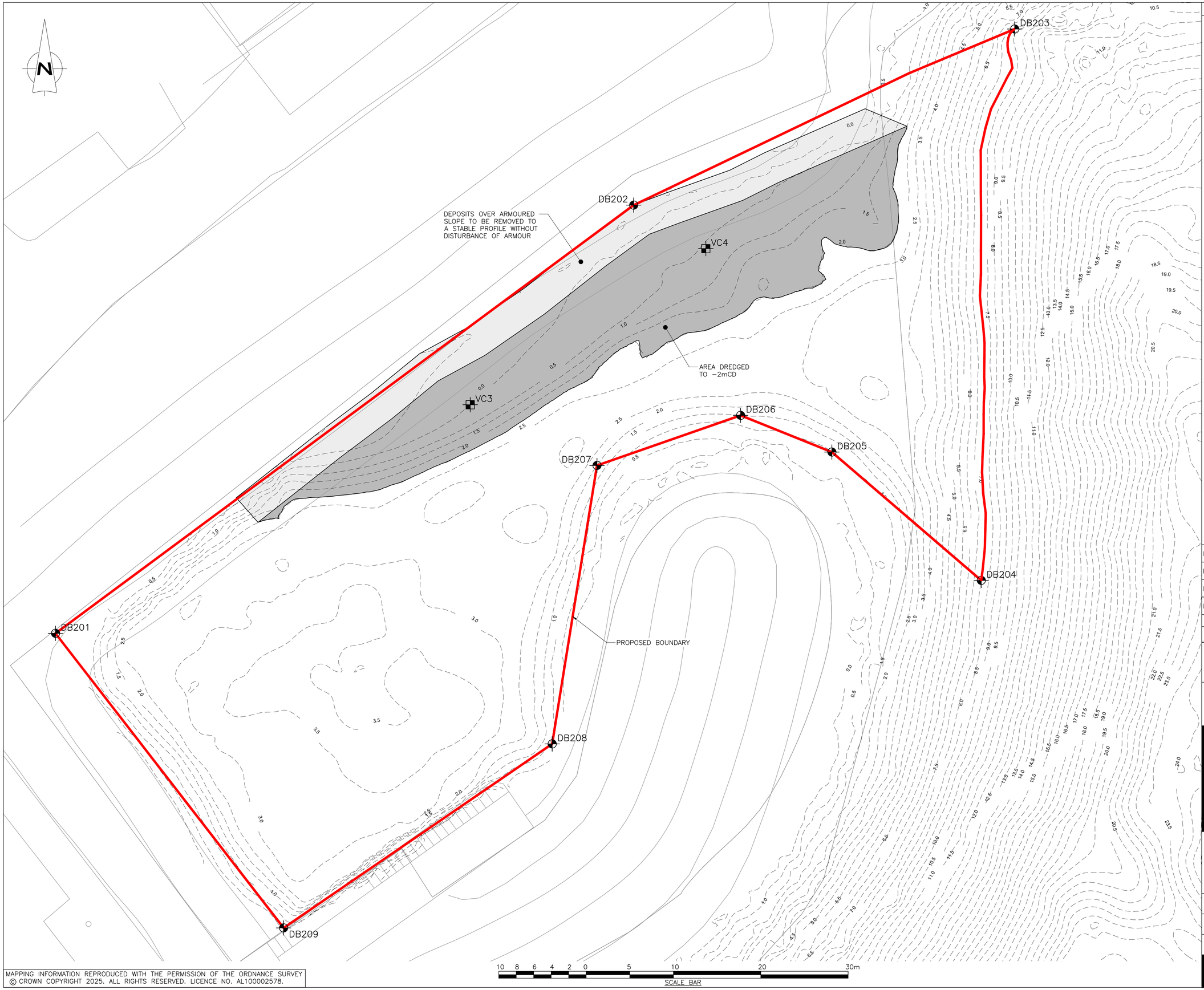
SCALE BAR



GENERAL NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS NOTED OTHERWISE.
2. ALL LEVELS ARE IN METRES AND RELATE TO CHART DATUM, UNLESS NOTED OTHERWISE.
3. TIDE LEVELS ARE AS FOLLOWS

HAT	+4.7mCD
MHWS	+4.2mCD
MLWS	+0.8mCD
LAT	+0.1mCD

4. CHART DATUM IS 1.95m BELOW ORDNANCE DATUM.
5. CONTOURS BASED ON ASPECT SURVEYS MULTIBEAM BATHYMETRIC SURVEY CARRIED OUT ON 21st APRIL 2021.

MAXIMUM DEPTH OF DREDGE = 2m

= MAINTENANCE DREDGE BOUNDARY

DB1 = MAINTENANCE DREDGE BOUNDARY SETTING OUT POINTS

VC1 = VIBROCORE LOCATION

DREDGE BOUNDARY SETTING OUT

LOCATION	EASTING	NORTHING
DB201	182656.553	747052.122
DB202	182722.750	747101.150
DB203	182766.370	747121.308
DB204	182762.540	747058.184
DB205	182745.440	747072.877
DB206	182734.992	747077.080
DB207	182718.547	747071.345
DB208	182713.417	747039.463
DB209	182682.671	747018.400

VIBROCORE SETTING OUT

LOCATION	EASTING	NORTHING
VC3	182704.034	747078.295
VC4	182731.007	747096.168

REV	DATE	DETAILS	DRAWN	CHK'D	APP'D
P05	27.11.25	SETTING OUT REVISED	TC	JA	GB
P04	21.08.25	GENERAL REVISIONS.	TC	JA	GB
P03	24.04.25	DREDGE AREA AMENDED.	JR	GB	GB
P02	08.04.25	DREDGE AREA INFORMATION ADDED.	AB	GB	GB

AMENDMENTS

CLIENT
AGGREGATE INDUSTRIES

PROJECT
GLENSANDA HARBOUR MAINTENANCE DREDGING

Wallace Stone
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DINGWALL 01349 866775 dingwall@wallacestone.co.uk

DRAWING TITLE
SMALL BOAT HARBOUR PROPOSED DREDGE SETTING OUT

DRAWN	CHECKED	APPROVED
AB	GB	GB
DATE: MAR 25	DATE: MAR 25	DATE: MAR 25

SCALE (A1)	STAGE	REV
1:200	CONSENTS	P05

DRAWING No.
2434-WS-XX-XX-D-C-0054

GENERAL NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS NOTED OTHERWISE.
2. ALL LEVELS ARE IN METRES AND RELATE TO CHART DATUM, UNLESS NOTED OTHERWISE.
3. TIDE LEVELS ARE AS FOLLOWS

HAT	+4.7mCD
MHWS	+4.2mCD
MLWS	+0.8mCD
LAT	+0.1mCD

4. CHART DATUM IS 1.95m BELOW ORDNANCE DATUM.
5. CONTOURS BASED ON ASPECT SURVEYS MULTIBEAM BATHYMETRIC SURVEY CARRIED OUT ON 21st APRIL 2021.

MAXIMUM DEPTH OF DREDGE = 1m

= MAINTENANCE DREDGE BOUNDARY

DB1 = MAINTENANCE DREDGE BOUNDARY SETTING OUT POINTS

GS2 = GRAB SAMPLE LOCATION

DREDGE BOUNDARY SETTING OUT

LOCATION	EASTING	NORTHING
DB301	182565.598	746947.441
DB302	182573.513	746960.868
DB303	182603.848	746961.126
DB304	182603.881	746964.917
DB305	182613.301	746968.563
DB306	182627.340	746968.102
DB307	182632.662	746955.356
DB308	182641.647	746947.819
DB309	182641.647	746942.205
DB310	182565.598	746942.205

GRAB SAMPLE SETTING OUT

LOCATION	EASTING	NORTHING
GS2	182614.049	746961.652

REV	DATE	DETAILS	DRAWN	CHK'D	APP'D
P04	21.08.25	BOUNDARY REVISED	TC	JA	GB
P03	24.04.25	GENERAL REVISION.	JR	GB	GB
P02	08.04.25	DREDGE AREA INFORMATION ADDED DRAWING TITLE REVISED..	AB	GB	GB

AMENDMENTS

CLIENT
AGGREGATE INDUSTRIES

PROJECT
GLENSANDA HARBOUR MAINTENANCE DREDGING

Wallace Stone
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DRAWING TITLE
SERVICE JETTY RAMPS PROPOSED DREDGE SETTING OUT

DRAWN	CHECKED	APPROVED
AB	GB	GB
DATE: MAR 25	DATE: MAR 25	DATE: MAR 25

SCALE (A1)	STAGE	REV
1:200	CONSENTS	P04

DRAWING No.
2434-WS-XX-XX-D-C-0055