

Technical Note

Project:	Aberaeron Coastal Defence Scheme		
Ref:	5182114-ATK-MAR-GEN-CO-EN-3011		
Subject:	Beach Nourishment – Comparison of source and target shingle		
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Date:	09/03/2021	Project No.:	5182114
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Introduction

This note provides a comparison between the beach shingle at the South Beach in the area targeted for shingle nourishment and the proposed source material for the shingle to be excavated under the breakwater.

1.1. Existing shingle – South Beach

Two rounds of Ground Investigation have been undertaken i.e. WYG 2019 and Quantum 2021. Lab testing for Particle Size Distribution (PSDs) was completed in both cases by GSTL. The existing beach material for the South Beach in the area relevant for nourishment was sampled at BTP1-BTP6A as shown in Figure 1 below. Photographs of some of the trial pits is also included as Plates 1 to 4 below.

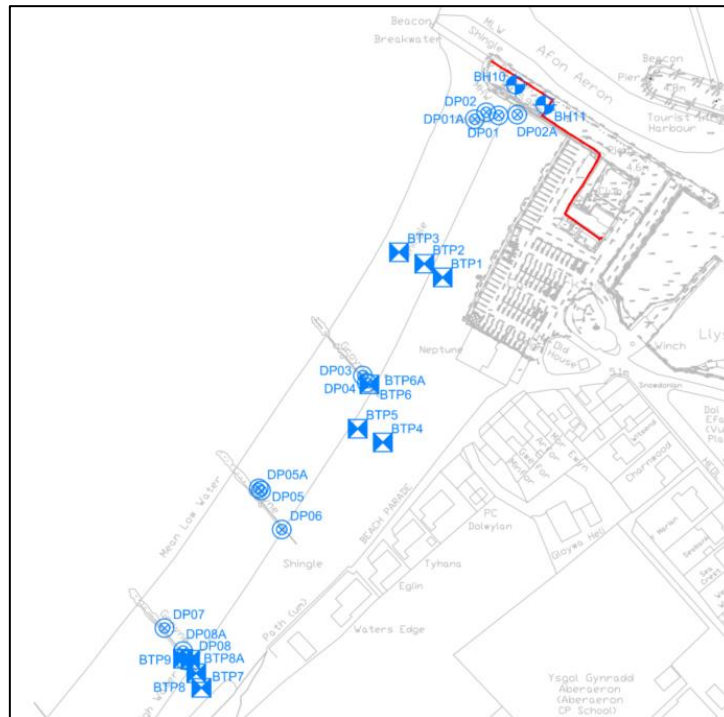


Figure 1 – Sampling locations, WYG 2019



Plate 1 BTP1 - GL to 1.50m bgl



Plate 2 BTP1 - GL to 1.50m bgl



Plate 3 BTP1 - GL to 1.50m bgl



1.2. Excavated source material at Breakwater

Excavation is required for the breakwater toe, where it is estimated around 12,500m³ of shingle material may be removed. The locations nearest to the excavation areas were sampled at TP106, TP107 and TP 108 as shown in Figure 2 below. Photographs of some of the TP107 trial pit is shown below.

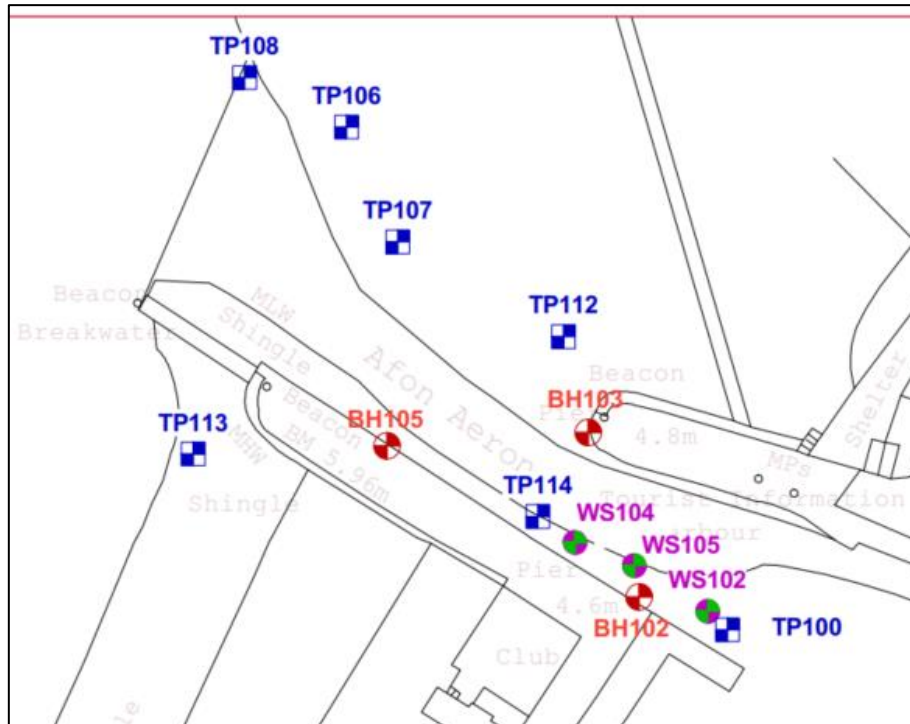


Figure 2 – Sampling Locations, Quantum 2021

Contract : Aberaeron Coastal Defence Scheme		Trial Pit No. TP107
Client : Ceredigion County Council		
Dates : 1/12/20 - 1/12/20	Job Number : Q0377	Ground Level : -4.55 m A.O.D. Level to Ordnance Datum
Location : Near Shore	Engineer : ATKINS	Coordinates: 245440.24 E 263060.46 N Co-ordinates to National Grid




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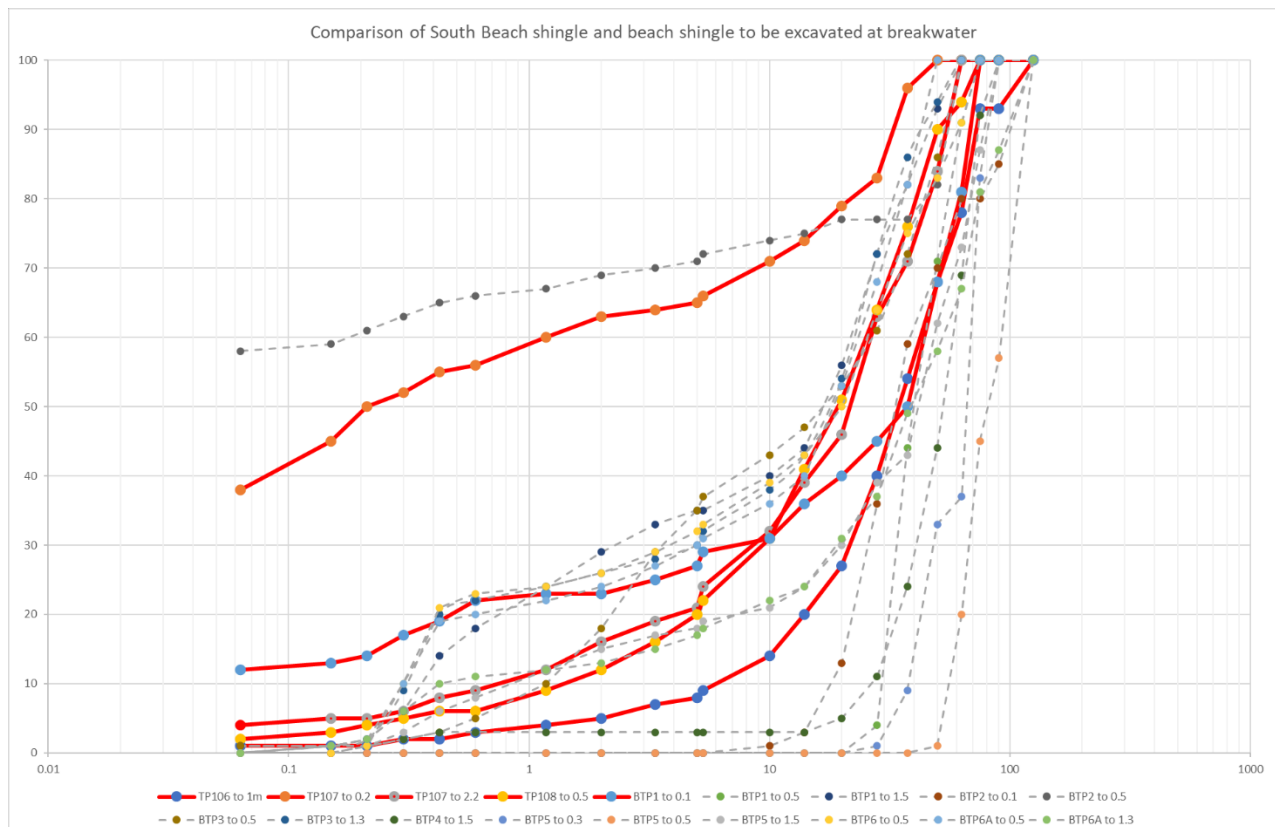

	File Name: Date: Tel: 01584744880 email: enquiries@quantumgeotech.co.uk	Operator: QGL	Logged By: L. Simlett	Sheet No. 3 OF 3	m Per Page	All measurements in metres unless otherwise stated	
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1.3. PSD Analysis

PSD samples were taken at various depths for each trial pit. All the sampled results are shown in the graph below. The graph below shows that the majority of the material is within the Sand/Gravel/Cobble range. All material was below 100mm size with largest material in the 40-100mm range.

The graph below contrasts the source material (red) with the target South Beach material (grey-dotted). This shows the sourced material to be within the same range of grading as the target material.



SILT			SAND			GRAVEL			COBBLES	BOULDERS
Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse		

1.4. Appearance and strata description

The description of the material from both WYG and QGB reports describes brown grey gravelly fine to coarse sand and fine to coarse gravel angular and sub-rounded siltstone sandstone limestone (marine beach deposits). The material at the South Beach is more rounded at the surface. This can be observed from the photographs above.

2. Conclusion

The source material is a good match for that on the South Beach in terms of grading and type of rock. There is a slight difference in the rounding of materials that is to be expected with rock at the South Beach on the surface more rounded due to its movement with tides. Our experience at the Borth Coastal Defence scheme, found that siltstone sandstone limestone rocks placed in the surface zone are rounded relatively quickly i.e. over a period of 3-6 months.

It is also noted that the South Beach currently has a licence to deposit dredged harbour materials in this area. The deposited materials appear to blend visually within a short space of time (1 month) once placed.

3. References:

1. WYG. A11150-2 Aberaeron Coastal Defence Scheme – Ground Investigation Factual Report, August 2018
2. Quantum Geotechnic, Aberaeron Coastal Defence Ground Investigation, Report No. Q0377/FR.01, February 2021.