Outer Dowsing Offshore Wind

Procedural Deadline 19 September

Offshore Restricted Build Area and Revision to the Offshore Export Cable Corridor Appendix B Blockage Modelling Results

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1 Introduction

1.1 Project Background

1. GT R4 Limited (trading as Outer Dowsing Offshore Wind) hereafter referred to as the 'Applicant', is proposing to develop the Project. The Applicant submitted an application for a DCO ('the Application') for the Project to the Planning Inspectorate in March 2024, which was accepted for Examination in April 2024.
2. The Project array will be located approximately 54km from the Lincolnshire coastline in the southern North Sea. The Project will include both offshore and onshore infrastructure including an offshore generating station (windfarm), export cables to landfall, Offshore Reactive Compensation Platforms (ORCPs), onshore cables, connection to the electricity transmission network, ancillary and associated development and areas for the delivery of up to two Artificial Nesting Structures (ANS) and the creation of a biogenic reef (if these compensation measures are deemed to be required by the Secretary of State) (see Volume 1, Chapter 3: Project Description [APP-058] for full details).

1.2 Overview

3. This document is part of a suite of documents which introduces two changes which have been made by the Applicant to the proposed Outer Dowsing Offshore Wind project (the Project):
   - the introduction of an Offshore Restricted Build Area (ORBA) over the northern section of the array area; and
   - the removal of the northern section of the offshore Export Cable Corridor (ECC).
4. As a result of continuing engagement with stakeholders, and enabled by progress on engineering design, the area within which the Wind Turbine Generators (WTGs) and Offshore Platforms (OPs) will be positioned has been refined. The proposed ORBA has been introduced to reduce the impact from the presence of the WTGs on auk species (specifically common guillemot), informed by a consideration of geophysical and geotechnical data.
5. The proposed ORBA covers the northern section of the array area and would restrict the installation of WTGs and OPs. For the avoidance of doubt, this area may still be used for cable installation and ancillary operations during construction (and decommissioning) and operations and maintenance. Additionally, Project parameters including number of structures, foundation types, and cable parameters will remain unchanged. As such, no change is being proposed to the extent of the array area, as defined within the draft Development Consent Order (DCO).

6. Further engineering design and procurement work, informed by additional geophysical, geotechnical and environmental survey work, undertaken post-consent (if granted), will confirm the final layout of infrastructure. Final details will be set out in a design plan to be submitted to and approved by the MMO, following consultation with Trinity House, the MCA and UKHO prior to commencement of the licensed works, in line deemed Marine Licence condition 13 (see condition 13(1)(a), Part 2, Schedule 10 of the dDCO [document 3.1].
7. The offshore ECC presented within the Environmental Statement (ES) that supported the DCO Application included two routeing options within the inshore area of the cable route, a northern and a southern route. The northern route was included as it is situated north of the Inner Dowsing sandbank and thus avoided impacts to this designated feature[1]. The southern route was also included as the northern route passes through aggregates Area 1805 which has an Exploration and Option area agreement with The Crown Estate, although this was due to expire on 31st August 2024. In the event that the option agreement was not taken up by the holder, this seabed area would have become available to the Project, thus allowing the Project to avoid crossing the Inner Dowsing sandbank.
8. It has now been confirmed that the option on this area has been extended by TCE until 2025 (pers. comms. Hansons via email 1st May 2024), with a Marine Licence Application (MLA/2024/00227) having been made by the agreement holder on 25th April 2024 to permit aggregates extraction within the site for a period of 15 years. As such, it is clear that the agreement holder intends to take up the option over this area of the seabed for aggregate extraction, and therefore it is no longer a viable option for the Project to pursue. Consequently, the Project has excluded the northern route from the offshore ECC and is amending the Order Limits to exclude this section of the offshore ECC from the draft DCO.

[1] The Inner Dowsing sandbank is a designated feature of the Inner Dowsing, Race Bank and North Ridge Special Area of Conservation (SAC), with the feature "sandbanks covered with water at all times" a marine habitat of particular conservation importance and listed under Annex I of the Conservation of Offshore Marine Habitats Regulations (2017)

2 Updated Marine Physical Processes Modelling Parameters

9. The assessment of likely significant effects on marine physical processes (Chapter 7: Marine Physical Processes [APP-062]) has been informed by project-specific numerical modelling, the details of which are provided in Appendix 7.2: Marine Physical Processes Modelling report [APP-151]. The assumptions and parameters considered as part of the numerical modelling have been reviewed in light of the changes outlined above.
10. The expected interactions between marine physical processes and the development of the Project that were represented in the numerical modelling can be grouped into two main 'sources' of near-field effects: seabed disturbance and blockage effects. The only change to the assessment scenarios provided at ES for marine physical processes is related to blockage effects. Project parameters including number of structures, foundation types, and cable parameters will remain unchanged, and cable installation (and associated seabed preparation works) may still take place within the ORBA, therefore the sediment disturbance scenarios represented in the numerical modelling ([APP-062, APP-151]) remain applicable.
11. The Maximum Design Scenario (MDS) used for the ES for blockage effects assumed that foundations could be positioned throughout the entirety of the array area, however, the ORBA represents a 16.4% reduction of the area within which foundations would be installed resulting in a more condensed layout. In addition, as the original modelling assumed the location of the ORCPs to be within the northern route of the ECC, due to the revised boundary they are now both modelled within the southern ECC route. The layout represented in the updated hydrodynamic modelling is provided in Figure 1.
12. Full details of the original modelling assumptions are provided in APP-151. In line with the modelling undertaken for the ES, the revised modelling, based on a worst-case scenario (greatest potential for wave and tidal blockage), assumes 55 Gravity Base Foundations (GBS) at the western extent of the array area, with the remaining foundations comprising suction caissons. It was assumed that 50 GBS were WTG type, with the remaining 5 GBS being OP type. Evidence to support this scenario as the MDS is provided below.
13. Individual foundations will locally interfere with passing waves and currents with a group of foundation structures having the potential to develop an array-scale blockage effect. For individual foundations, the interference will depend on its relative size, shape, and solidity ratio, with the number, arrangement, and spacing also considered for a group of structures.
14. The normalised blockage factors for each WTG foundation type and size are provided in Table 2.1, relative to the GBS flat base for the 50 WTG option (identified as the realistic worst-case). The number of GBS foundation (either conical GBS or flat-base GBS) are limited to up to 50% of sites, therefore the next highest blockage case for an individual WTG foundation is identified as jacket with suction buckets.

Table 2.1 Normalised blockage factor for individual WTG foundation types.

WTG foundation option	100 WTG	93 WTG	75 WTG	60 WTG	50 WTG
Monopiles	0.30	0.30	0.30	0.31	0.31
Jacket - Pin Piles	0.34	0.34	0.34	0.34	0.34
Jacket - Suction Buckets	0.47	0.47	0.47	0.49	0.49
GBS – conical	0.68	0.68	0.76	0.76	0.76
GBS – flat	0.90	0.90	0.90	1.00	**1.00**

15. The variation in normalised blockage effect for each array option (based on 50% of GBS (flat) sites and 50% of jacket with suction bucket WTG foundations) is considered in Table 2.2 and indicates that the realistic worst-case array-scale blockage is the 100 WTG case.

Table 2.2 Normalised blockage factor for array.

WTG foundation option	100 WTG	93 WTG	75 WTG	60 WTG	50 WTG
GBS + Jacket Suction Buckets	1.00	0.93	0.75	0.65	0.54

16. A key assumption in this screening assessment for foundation options is that the scale of the array area remains constant across all foundation options. In addition, jacket structures are assumed to have a highly conservative solidity ratio of 0.3 and orientated at 45° to incident waves and flows which increases their frontal effective area. The key difference between jacket-type foundation options is that the 18m diameter suction bucket option includes a bucket which protrudes by 3m above the seabed with a solidity value of 1.0.
17. Additional blockage in the array area is also contributed by a spread of five Offshore Platform (OP) foundations. There are also two Offshore Reactive Compensation Platforms (ORCP) structures closer to the coast within the ECC and two artificial nesting sites (ANS) which may be placed in sites north and south of the array area. In all cases, their respective GBS foundation options represent the MDS and for the two ORCP foundations when these foundations are at the minimum separation of 90 m apart.

325000 350000 375000 400000

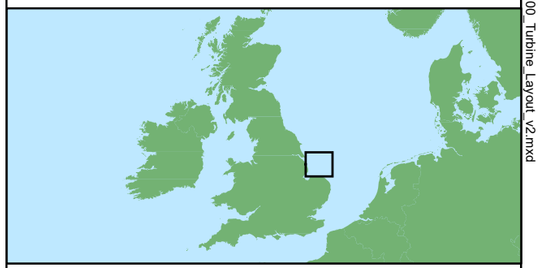
5950000 5925000 5900000 5875000

N

Mablethorpe
Skegness
Wainfleet All Saints
Boston Deeps
Brancaster Roads
Brancaster Bay
Lynn Deeps

Legend

- Array Area
- Offshore Restricted Build Area
- Offshore Export Cable Corridor
- ORCP Area
- Artificial Nesting Structure Area
- Turbine Layout (100 turbines)
- Offshore Platforms
- ORCP Location
- Artifical Nesting Structure Location



Coordinate System: WGS 1984 UTM Zone 31N

0 10 20 km

Scale: 1:350,000

A3 Page Size

Examination

Modelled 100 WTG Indicative Layout Option

Figure 1

OUTER DOWSING OFFSHORE WIND

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Document Path: Z:\GIS\GIS_Projects\0152 Outer Dowsing EIA\GIS\Figures\Examination\OFZ and ECC Environmental Report\WTG Layout\ODOW_0152_Fig1_100_Turbine_Layout_v2.mxd

3 Updated Sediment Mobility Analysis

18. Modelled current time-series data from the Project numerical outputs (the details of which are provided in APP-151) have been used to estimate the potential sediment mobility of sediments across the study area before and after the installation of the Project infrastructure, with results shown in Table 6.1. Potential sediment mobility across a spring and neap tidal cycle are presented at 27 points, the locations of which are shown in Figure 3.1.4 of document 15.9. Highlighted cells identify differences in the sediment mobility with Project infrastructure within the model.

Table 6.1 Estimated potential sediment mobility across the study area from modelled tidal currents

Point	Size Class	Grain Size (upper boundary) (mm)	Approximate Water Depth (m)	Threshold of Bed Shear Stress (N/m^2)	Corresponding Critical Depth-averaged Current Speeds (m/s)	Baseline Sediment Mobility[6] (Spring)	Baseline Sediment Mobility (Neap)	Scheme Sediment Mobility (Spring)	Scheme Sediment Mobility (Neap)
1	Granule Gravel	4	25	3.007	1.32	6%	0%	6%	0%
	Very Coarse Sand	2	25	1.166	0.908	32%	2%	32%	2%
	Coarse Sand	1	25	0.481	0.643	56%	13%	56%	13%
	Medium Sand	0.5	25	0.262	0.524	65%	30%	64%	30%
	Fine Sand	0.25	25	0.189	0.492	66%	35%	66%	35%
	Very Fine Sand	0.125	25	0.153	0.489	66%	36%	66%	36%
	Coarse Silt	0.0625	25	0.120	0.477	67%	38%	67%	38%
2	Granule Gravel	4	5	3.007	1.049	9%	0%	9%	0%
	Very Coarse Sand	2	5	1.166	0.721	42%	6%	42%	6%

	Coarse Sand	1	5	0.481	0.511	66%	33%	66%	33%
	Medium Sand	0.5	5	0.262	0.416	74%	50%	74%	50%
	Fine Sand	0.25	5	0.189	0.391	76%	54%	76%	54%
	Very Fine Sand	0.125	5	0.153	0.388	76%	54%	76%	55%
	Coarse Silt	0.0625	5	0.120	0.379	77%	56%	77%	56%
3	Granule Gravel	4	15	3.007	1.227	12%	0%	12%	0%
	Very Coarse Sand	2	15	1.166	0.844	51%	7%	51%	7%
	Coarse Sand	1	15	0.481	0.598	69%	33%	69%	33%
	Medium Sand	0.5	15	0.262	0.487	76%	49%	76%	49%
	Fine Sand	0.25	15	0.189	0.458	78%	53%	78%	53%
	Very Fine Sand	0.125	15	0.153	0.454	78%	54%	78%	54%
	Coarse Silt	0.0625	15	0.120	0.444	79%	55%	79%	55%
4	Granule Gravel	4	5	3.007	1.049	4%	0%	4%	0%
	Very Coarse Sand	2	5	1.166	0.721	36%	3%	36%	3%
	Coarse Sand	1	5	0.481	0.511	64%	18%	64%	18%
	Medium Sand	0.5	5	0.262	0.416	74%	38%	74%	38%
	Fine Sand	0.25	5	0.189	0.391	78%	44%	78%	44%
	Very Fine Sand	0.125	5	0.153	0.388	78%	44%	78%	45%
	Coarse Silt	0.0625	5	0.120	0.379	78%	47%	78%	47%
5	Granule Gravel	4	15	3.007	1.227	0%	0%	0%	0%
	Very Coarse Sand	2	15	1.166	0.844	32%	1%	32%	1%
	Coarse Sand	1	15	0.481	0.598	82%	25%	82%	25%
	Medium Sand	0.5	15	0.262	0.487	95%	50%	95%	50%
	Fine Sand	0.25	15	0.189	0.458	97%	57%	97%	57%
	Very Fine Sand	0.125	15	0.153	0.454	97%	58%	97%	58%
	Coarse Silt	0.0625	15	0.120	0.444	98%	60%	98%	60%

6	Granule Gravel	4	15	3.007	1.227	0%	0%	0%	0%
	Very Coarse Sand	2	15	1.166	0.844	37%	4%	37%	4%
	Coarse Sand	1	15	0.481	0.598	68%	36%	68%	36%
	Medium Sand	0.5	15	0.262	0.487	82%	52%	82%	52%
	Fine Sand	0.25	15	0.189	0.458	85%	57%	85%	57%
	Very Fine Sand	0.125	15	0.153	0.454	85%	57%	85%	57%
	Coarse Silt	0.0625	15	0.120	0.444	86%	58%	86%	58%
7	Granule Gravel	4	15	3.007	1.227	0%	0%	0%	0%
	Very Coarse Sand	2	15	1.166	0.844	39%	1%	39%	1%
	Coarse Sand	1	15	0.481	0.598	84%	23%	84%	23%
	Medium Sand	0.5	15	0.262	0.487	97%	45%	97%	45%
	Fine Sand	0.25	15	0.189	0.458	98%	53%	99%	53%
	Very Fine Sand	0.125	15	0.153	0.454	99%	54%	99%	54%
	Coarse Silt	0.0625	15	0.120	0.444	99%	57%	99%	58%
8	Granule Gravel	4	5	3.007	1.049	0%	0%	0%	0%
	Very Coarse Sand	2	5	1.166	0.721	55%	7%	55%	7%
	Coarse Sand	1	5	0.481	0.511	86%	40%	86%	40%
	Medium Sand	0.5	5	0.262	0.416	96%	59%	96%	59%
	Fine Sand	0.25	5	0.189	0.391	97%	63%	97%	63%
	Very Fine Sand	0.125	5	0.153	0.388	98%	64%	98%	64%
	Coarse Silt	0.0625	5	0.120	0.379	98%	66%	98%	66%
9	Granule Gravel	4	15	3.007	1.227	0%	0%	0%	0%
	Very Coarse Sand	2	15	1.166	0.844	23%	0%	23%	0%
	Coarse Sand	1	15	0.481	0.598	81%	19%	81%	19%
	Medium Sand	0.5	15	0.262	0.487	96%	44%	96%	44%
	Fine Sand	0.25	15	0.189	0.458	98%	51%	98%	51%

	Very Fine Sand	0.125	15	0.153	0.454	98%	52%	98%	52%
	Coarse Silt	0.0625	15	0.120	0.444	99%	54%	99%	54%
10	Granule Gravel	4	25	3.007	1.32	0%	0%	0%	0%
	Very Coarse Sand	2	25	1.166	0.908	7%	0%	7%	0%
	Coarse Sand	1	25	0.481	0.643	56%	12%	56%	12%
	Medium Sand	0.5	25	0.262	0.524	69%	29%	69%	29%
	Fine Sand	0.25	25	0.189	0.492	73%	36%	73%	36%
	Very Fine Sand	0.125	25	0.153	0.489	74%	37%	74%	37%
	Coarse Silt	0.0625	25	0.120	0.477	76%	39%	76%	39%
11	Granule Gravel	4	5	3.007	1.049	0%	0%	0%	0%
	Very Coarse Sand	2	5	1.166	0.721	29%	1%	29%	1%
	Coarse Sand	1	5	0.481	0.511	74%	30%	74%	30%
	Medium Sand	0.5	5	0.262	0.416	85%	50%	85%	50%
	Fine Sand	0.25	5	0.189	0.391	87%	54%	88%	54%
	Very Fine Sand	0.125	5	0.153	0.388	88%	55%	88%	55%
	Coarse Silt	0.0625	5	0.120	0.379	89%	57%	89%	57%
12	Granule Gravel	4	15	3.007	1.227	0%	0%	0%	0%
	Very Coarse Sand	2	15	1.166	0.844	46%	10%	46%	10%
	Coarse Sand	1	15	0.481	0.598	68%	42%	68%	42%
	Medium Sand	0.5	15	0.262	0.487	75%	56%	75%	56%
	Fine Sand	0.25	15	0.189	0.458	77%	60%	77%	60%
	Very Fine Sand	0.125	15	0.153	0.454	78%	60%	78%	60%
	Coarse Silt	0.0625	15	0.120	0.444	79%	62%	79%	62%
13	Granule Gravel	4	15	3.007	1.227	0%	0%	0%	0%
	Very Coarse Sand	2	15	1.166	0.844	24%	0%	24%	0%
	Coarse Sand	1	15	0.481	0.598	58%	21%	58%	21%

	Medium Sand	0.5	15	0.262	0.487	69%	40%	69%	40%
	Fine Sand	0.25	15	0.189	0.458	71%	45%	71%	45%
	Very Fine Sand	0.125	15	0.153	0.454	71%	46%	71%	46%
	Coarse Silt	0.0625	15	0.120	0.444	72%	48%	72%	48%
14	Granule Gravel	4	5	3.007	1.049	8%	0%	8%	0%
	Very Coarse Sand	2	5	1.166	0.721	53%	15%	53%	15%
	Coarse Sand	1	5	0.481	0.511	71%	49%	71%	49%
	Medium Sand	0.5	5	0.262	0.416	77%	62%	77%	62%
	Fine Sand	0.25	5	0.189	0.391	79%	65%	79%	65%
	Very Fine Sand	0.125	5	0.153	0.388	79%	66%	79%	66%
	Coarse Silt	0.0625	5	0.120	0.379	80%	66%	80%	66%
15	Granule Gravel	4	35	3.007	1.385	0%	0%	0%	0%
	Very Coarse Sand	2	35	1.166	0.952	8%	0%	8%	0%
	Coarse Sand	1	35	0.481	0.675	45%	9%	45%	9%
	Medium Sand	0.5	35	0.262	0.55	58%	23%	58%	23%
	Fine Sand	0.25	35	0.189	0.517	62%	28%	62%	28%
	Very Fine Sand	0.125	35	0.153	0.513	62%	30%	62%	30%
	Coarse Silt	0.0625	35	0.120	0.501	63%	32%	63%	32%
16	Granule Gravel	4	25	3.007	1.32	0%	0%	0%	0%
	Very Coarse Sand	2	25	1.166	0.908	2%	0%	2%	0%
	Coarse Sand	1	25	0.481	0.643	30%	1%	30%	1%
	Medium Sand	0.5	25	0.262	0.524	49%	9%	49%	9%
	Fine Sand	0.25	25	0.189	0.492	53%	12%	53%	12%
	Very Fine Sand	0.125	25	0.153	0.489	53%	12%	53%	12%
	Coarse Silt	0.0625	25	0.120	0.477	56%	14%	56%	14%
17	Granule Gravel	4	25	3.007	1.32	0%	0%	0%	0%

	Very Coarse Sand	2	25	1.166	0.908	17%	0%	17%	0%
	Coarse Sand	1	25	0.481	0.643	50%	6%	50%	6%
	Medium Sand	0.5	25	0.262	0.524	64%	18%	64%	18%
	Fine Sand	0.25	25	0.189	0.492	67%	23%	67%	23%
	Very Fine Sand	0.125	25	0.153	0.489	67%	23%	67%	24%
	Coarse Silt	0.0625	25	0.120	0.477	68%	26%	68%	26%
18	Granule Gravel	4	25	3.007	1.32	0%	0%	0%	0%
	Very Coarse Sand	2	25	1.166	0.908	22%	0%	22%	0%
	Coarse Sand	1	25	0.481	0.643	56%	10%	56%	10%
	Medium Sand	0.5	25	0.262	0.524	68%	27%	68%	27%
	Fine Sand	0.25	25	0.189	0.492	71%	31%	70%	31%
	Very Fine Sand	0.125	25	0.153	0.489	71%	32%	71%	32%
	Coarse Silt	0.0625	25	0.120	0.477	72%	34%	72%	34%
19	Granule Gravel	4	15	3.007	1.227	0%	0%	0%	0%
	Very Coarse Sand	2	15	1.166	0.844	32%	1%	32%	1%
	Coarse Sand	1	15	0.481	0.598	62%	23%	62%	23%
	Medium Sand	0.5	15	0.262	0.487	71%	41%	71%	41%
	Fine Sand	0.25	15	0.189	0.458	73%	47%	73%	47%
	Very Fine Sand	0.125	15	0.153	0.454	73%	48%	73%	48%
	Coarse Silt	0.0625	15	0.120	0.444	74%	49%	74%	49%
20	Granule Gravel	4	25	3.007	1.32	0%	0%	0%	0%
	Very Coarse Sand	2	25	1.166	0.908	5%	0%	5%	0%
	Coarse Sand	1	25	0.481	0.643	40%	2%	40%	2%
	Medium Sand	0.5	25	0.262	0.524	56%	15%	56%	15%
	Fine Sand	0.25	25	0.189	0.492	60%	20%	60%	20%
	Very Fine Sand	0.125	25	0.153	0.489	60%	20%	60%	20%

	Coarse Silt	0.0625	25	0.120	0.477	61%	23%	61%	23%
21	Granule Gravel	4	15	3.007	1.227	1%	0%	1%	0%
	Very Coarse Sand	2	15	1.166	0.844	39%	3%	39%	3%
	Coarse Sand	1	15	0.481	0.598	67%	29%	67%	29%
	Medium Sand	0.5	15	0.262	0.487	76%	48%	76%	48%
	Fine Sand	0.25	15	0.189	0.458	78%	52%	78%	52%
	Very Fine Sand	0.125	15	0.153	0.454	78%	53%	78%	54%
	Coarse Silt	0.0625	15	0.120	0.444	79%	55%	79%	55%
22	Granule Gravel	4	5	3.007	1.049	0%	0%	0%	0%
	Very Coarse Sand	2	5	1.166	0.721	34%	1%	35%	1%
	Coarse Sand	1	5	0.481	0.511	67%	19%	67%	20%
	Medium Sand	0.5	5	0.262	0.416	79%	39%	79%	39%
	Fine Sand	0.25	5	0.189	0.391	82%	46%	82%	46%
	Very Fine Sand	0.125	5	0.153	0.388	82%	46%	83%	46%
	Coarse Silt	0.0625	5	0.120	0.379	83%	49%	83%	49%
23	Granule Gravel	4	15	3.007	1.227	0%	0%	0%	0%
	Very Coarse Sand	2	15	1.166	0.844	6%	0%	6%	0%
	Coarse Sand	1	15	0.481	0.598	41%	4%	41%	4%
	Medium Sand	0.5	15	0.262	0.487	56%	14%	56%	14%
	Fine Sand	0.25	15	0.189	0.458	60%	17%	60%	17%
	Very Fine Sand	0.125	15	0.153	0.454	60%	18%	61%	18%
	Coarse Silt	0.0625	15	0.120	0.444	62%	20%	62%	20%
24	Granule Gravel	4	25	3.007	1.32	0%	0%	0%	0%
	Very Coarse Sand	2	25	1.166	0.908	2%	0%	2%	0%
	Coarse Sand	1	25	0.481	0.643	27%	1%	27%	1%
	Medium Sand	0.5	25	0.262	0.524	46%	6%	46%	6%

	Fine Sand	0.25	25	0.189	0.492	51%	10%	51%	10%
	Very Fine Sand	0.125	25	0.153	0.489	52%	10%	52%	10%
	Coarse Silt	0.0625	25	0.120	0.477	54%	12%	54%	12%
25	Granule Gravel	4	25	3.007	1.32	0%	0%	0%	0%
	Very Coarse Sand	2	25	1.166	0.908	7%	0%	7%	0%
	Coarse Sand	1	25	0.481	0.643	41%	4%	41%	5%
	Medium Sand	0.5	25	0.262	0.524	57%	14%	57%	15%
	Fine Sand	0.25	25	0.189	0.492	60%	18%	60%	18%
	Very Fine Sand	0.125	25	0.153	0.489	61%	19%	61%	19%
	Coarse Silt	0.0625	25	0.120	0.477	61%	20%	62%	20%
26	Granule Gravel	4	15	3.007	1.227	0%	0%	0%	0%
	Very Coarse Sand	2	15	1.166	0.844	7%	0%	7%	0%
	Coarse Sand	1	15	0.481	0.598	42%	4%	42%	4%
	Medium Sand	0.5	15	0.262	0.487	57%	15%	57%	15%
	Fine Sand	0.25	15	0.189	0.458	60%	19%	60%	19%
	Very Fine Sand	0.125	15	0.153	0.454	60%	20%	61%	19%
	Coarse Silt	0.0625	15	0.120	0.444	62%	21%	62%	21%
27	Granule Gravel	4	25	3.007	1.32	2%	0%	2%	0%
	Very Coarse Sand	2	25	1.166	0.908	42%	2%	42%	2%
	Coarse Sand	1	25	0.481	0.643	65%	19%	65%	19%
	Medium Sand	0.5	25	0.262	0.524	74%	39%	74%	39%
	Fine Sand	0.25	25	0.189	0.492	77%	44%	77%	44%
	Very Fine Sand	0.125	25	0.153	0.489	77%	45%	77%	45%
	Coarse Silt	0.0625	25	0.120	0.477	77%	46%	77%	46%