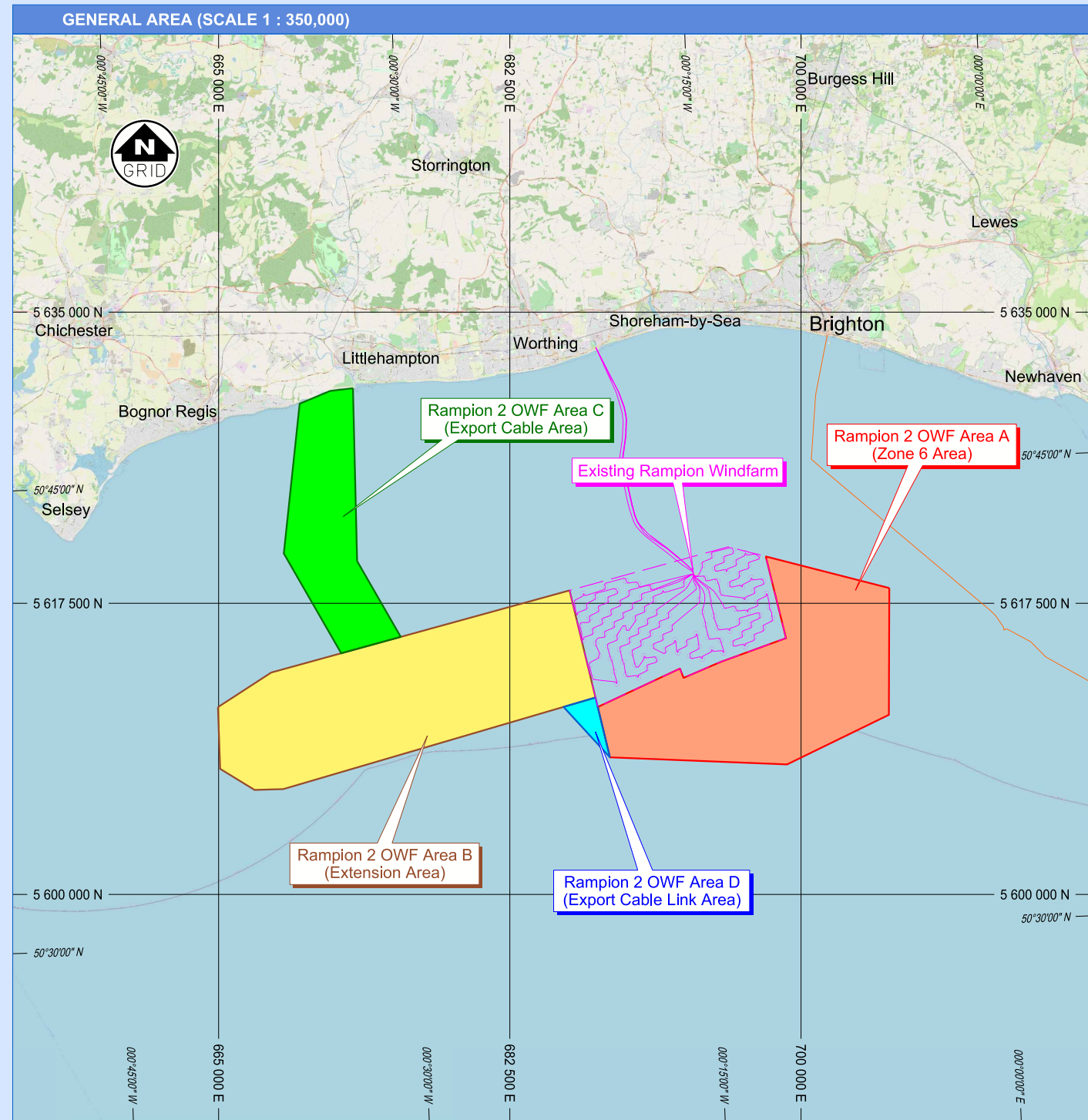


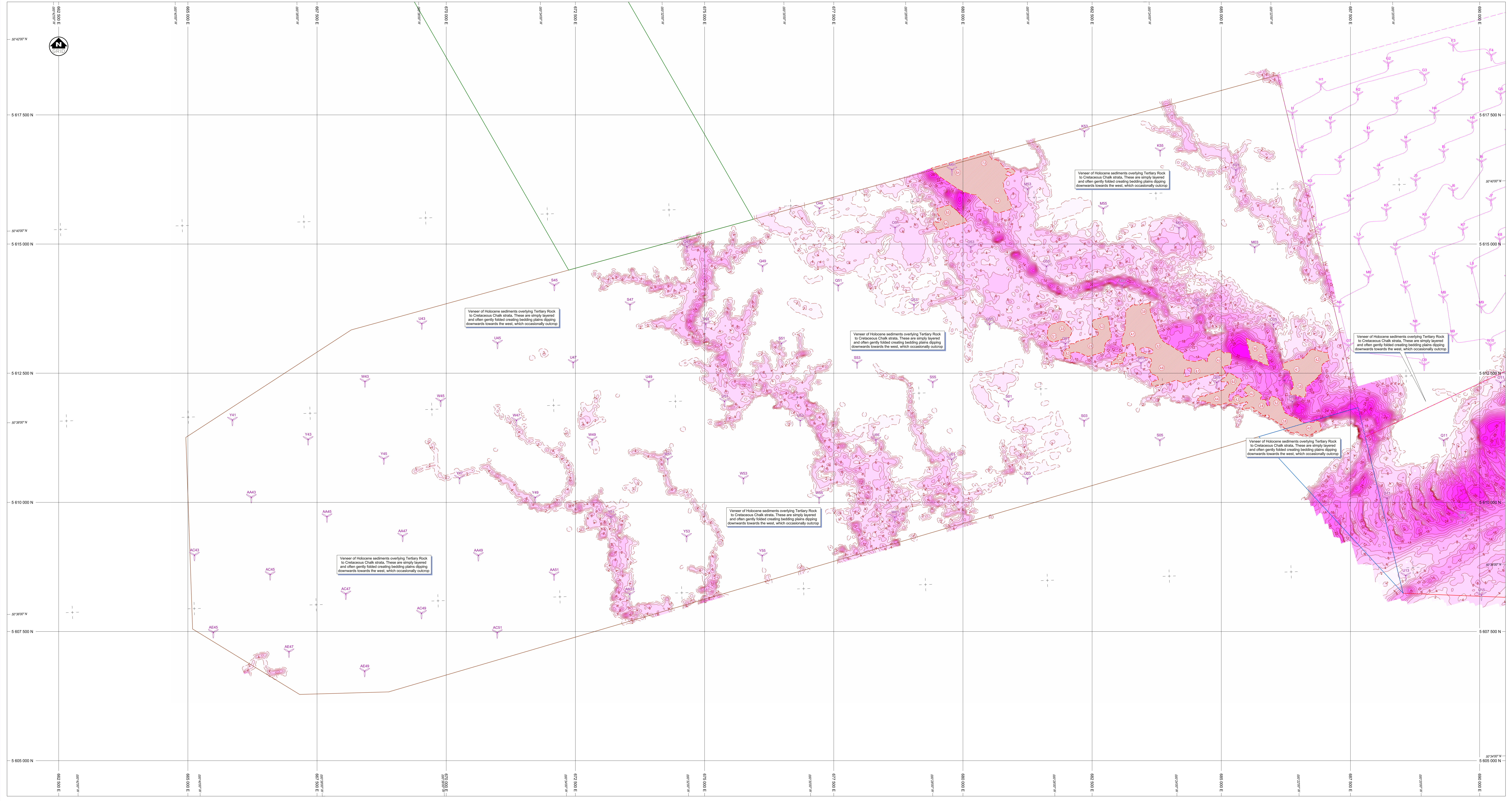
NOTES

1. ASSUMED SEISMIC VELOCITY = 1700m/s
2. H05 = YOUNGER HOLOCENE DEPOSITS COMPRISING UNCONSOLIDATED SEDIMENTS, LARGELY SAND AND GRAVEL, POTENTIALLY MOBILE IN PLACES
3. H07 = QUATERNARY DEPOSITS COMPRISING CONSOLIDATED SEDIMENTS, LARGELY SAND AND GRAVEL



GEODETIC REFERENCE SYSTEM	
GEODETIC DATUM: EUROPEAN PROJECTION: UTM ZONE 30 N (CENTRAL MERIDIAN 3° W)	WGS84 WGS84
SURVEY INFORMATION	
SURVEY VESSEL: SURVEY DATE: POSITIONING SYSTEM: NAVIGATION SYSTEM: ECHO SOUNDER (MULTIBEAM SYSTEM): ECHO SOUNDER (SINGLE-BEAM SYSTEM): SIDE SCAN SONAR: MAGNETOMETER: SUB-BOTTOM PROFILER: ULTRA-HIGH RESOLUTION SEISMIC (UHS):	M.V. VIGILANT 30-JUN-2020 TO 01-AUG-2020 OCEANERRING CANAL DGNSS SONARWYNE RANGER USBL VOYAGER 5 SIMRAD EK6000 SIMRAD EK600 EDGETECH 4000PS GEOMETRICS G882 GEACOUSTICS PRIMER SURFACE TOW BOOMER
M.V. TITAN DISCOVERY 01-JUL-2020 TO 12-AUG-2020 APPLANK POS MV WAVEMASTER SONARWYNE RANGER USBL VOYAGER 5 SIMRAD EK6000 SIMRAD EK600 EDGETECH 4000PS GEOMETRICS G882 GEACOUSTICS PRIMER SURFACE TOW BOOMER	M.V. OCEAN OBSERVER 16-SEP-2020 TO 13-OCT-2020 FUGRO STARFAX DGNSS SONARWYNE RANGER USBL VOYAGER 5 SIMRAD EK6000 SIMRAD EK600 EDGETECH 4000PS GEOMETRICS G882 GEACOUSTICS PRIMER SURFACE TOW BOOMER
SCALE (AS ORIGINAL)	
1 : 25 000 (Horizontal)	

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LEGEND

PROPOSED RAMPION 2 CWF AREA A (ZONE A AREA)

PROPOSED RAMPION 2 CWF AREA B (EXTENSION AREA)

PROPOSED RAMPION 2 CWF AREA C (EXPORT CABLE AREA)

PROPOSED RAMPION 2 CWF AREA D (EXPORT CABLE LINK AREA)

PROPOSED RAMPION 2 WIND TURBINE GENERATOR LAYOUT (SOURCE: CLIENT PROVIDED)

EXISTING RAMPION WIND FARM CABLE (SOURCE: CLIENT PROVIDED)

EXISTING RAMPION SURVEY AREA (SOURCE: CLIENT PROVIDED)

DEPTH IN METRES BELOW SEA BED TO BASE OF H10 - PALAEOCHANNEL, CONTOURED AT 2 METRE INTERVALS

LIMIT OF BASE OF H10

AREA OF BLANKING WITH SPOT DEPTHS IN METRES BELOW SEA BED

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Survey Report for
RWE Renewables UK Ltd

Project:
**Rampion 2 Offshore Windfarm
Development**

Description:
Area C Geophysical Survey

Survey Date:
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Project Number:
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For attention of
Naren Mistry

SURVEY OVERVIEW

Gardline Limited was contracted by RWE Renewables UK Ltd to acquire shallow geophysical and UHRS data across areas being considered for development at the Rampion 2 Offshore Windfarm and associated export cable route corridor.

The offshore portion of the survey was undertaken predominantly by M.V. Vigilant, mobilising in Hull on 30-Jun-2020 and demobilising in Hull on 19-Aug-2020 after completion of the shallow geophysical data acquisition. The M.V. Ocean Observer carried out the UHRS portion of the survey including acquiring SBP and magnetometer data infilling the planned gaps in the geophysical survey including all crosslines. It mobilised in Lowestoft on 21-Sept-2020 and demobilised in Great Yarmouth on 13-Oct-2020. The M.V. Titan Discovery and Titan owned Unmanned Aerial Vehicle carried out the nearshore acquisition, mobilising on 01-Jul-2020 and demobilising 12-Aug-2020.

Report volumes are as follows:

Report	Report No.
Operations Report	11521.1
Rampion 2 OWF Area A Survey Report	11521.2
Rampion 2 OWF Area B Survey Report	11521.3
Rampion 2 OWF Area C Survey Report	11521.4

This report is the Rampion 2 OWF Area C survey report.

USE OF THIS REPORT

This report has been prepared with due care and diligence and with the skill reasonably expected of a reputable contractor experienced in the types of work carried out under the contract and as such the findings in this report are based on an interpretation of data which is a matter of opinion on which professionals may differ and unless clearly stated is not a recommendation of any course of action.

Gardline Limited has prepared this report for the client(s) identified on the front cover in fulfilment of its contractual obligations under the contract and the only liabilities Gardline Limited accept are those contained therein.

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GLOSSARY OF ABBREVIATIONS

AVO	Amplitude Versus Offset	PC	Piston Core
BASE	Bathymetry Associated with Statistical Error	PDOP	Positional Dilution of Precision
BGS	British Geological Survey	ppm	Parts Per Million
BS	British Standards	QC	Quality Control
BSB	Below Seabed	QPRO	Quality Procedure
cm	Centimetre(s)	r	Rotation
CMP	Common Mid Point	RMS	Root Mean Square
CoG	Centre of Gravity	RPL	Route Positioning List
CPT(U)	Cone Penetrometer Testing (Unit)	Rx	Receive
cu. in.	Cubic Inch(es)	S	Second(s)
d	Delta	SBES	Single Beam Echo Sounder
dB	Decibel(s)	sd	Standard Deviation
deg	Degree(s)	SEG Y	Society of Exploration Geophysicists storage format
(D)GNSS	(Differential) Global Navigation Satellite System	SNR	Signal to Noise Ratio
EBS	Environmental Baseline Survey	SP	Shot Point
EC	European Commission	SRME	Surface Related Multiple Elimination
EGNOS	European Geostationary Navigation Overlay Service	SV	Sound Velocity
EPSG	European Petroleum Survey Group	SWNA	Surface Wave Noise Attenuation
f	Focal Length	TWT	Two Way Time
ft	Foot/Feet	Tx	Transmit
h	Hours (times expressed hh:mmh e.g. 12:45h)	UHRS	Ultra High Resolution Seismic
H	Height	UKCS	United Kingdom Continental Shelf
HDOP	Horizontal Dilution of Precision	USBL	Ultra Short Base Line
ISO	International Organisation for Standardisation	(U)TM	(Universal) Transverse Mercator
J	Joule(s)	VC	Vibrocore
(k)Hz	(Kilo)Hertz	(V)GPS	(Voyager) Global Positioning System
kg	Kilogram(s)	VORF	Vertical Offshore Reference Frames
km	Kilometre(s)	WGS84	World Geodetic System 1984
kN	Kilonewton(s)		
kPa	Kilopascal(s)		
kW	Kilowatt(s)		
L	Length		
LAT	Lowest Astronomical Tide		
m	Metre(s)		
M	Megapixels		
MBES	Multi-Beam Echo Sounder		
MDAC	Methane Derived Authigenic Carbonates		
MHWI	Mean High Water Interval		
ml	Millilitre(s)		
mm	Millimetre(s)		
MPa	Megapascals		
MRU	Motion Reference Unit		
ms	Millisecond(s)		
m/s	Metres per Second		
MSL	Mean Sea Level		
MSR	Mean Spring Range		
M.V.	Motor Vessel		
N,E,S,W	North, East, South, West		
nT	NanoTesla		
oct	Octave		
OGP	International Association of Oil and Gas Producers		
OSPAR	Oslo and Paris Commissions		

1. PROJECT SUMMARY

1.1 Scope of Work

Gardline Limited carried out a shallow geophysical and UHRS survey for RWE Renewables UK Ltd off the coast of Brighton, Sussex. The objective was to investigate three areas being considered for development using multi-beam echo sounder, side scan sonar, magnetometer, sub-bottom profiler and UHRS equipment.

The three extension areas were designated:

- Area A: “Zone 6 Area” to the south-east of the existing Rampion offshore wind farm. Part of this area was previously surveyed during the original development and there was no requirement for re-surveying at this stage of the development.
- Area B: “Extension Area” to the west of the existing Rampion offshore windfarm.
- Area C: “Export Cable Area” to the north of Area B, with landfall between Littlehampton and Bognor Regis. No UHRS acquisition was required for Area C.

The purpose of the survey was to:

- To provide accurate bathymetry of the site regions and cable routes region
- To identify natural seabed features and any obstructions, man-made objects, debris, or wrecks
- To produce isopach charts to show sediment thickness of the upper, loose, and any mobile material, and of any other significant reflector levels which might impact on the engineering design to 50m below seabed for Areas A and B, and to 10m below seabed for Area C
- To locate any structural complexities or geohazards within the shallow geological succession such as faulting, accumulations of shallow gas, buried channels etc to 50m below seabed for Areas A and B, and to 10m below seabed for Area C
- Locate and identify sites of near surface soft material pertinent to jack-up operations
- To provide detailed geological interpretation to show strata variations and structural feature changes via appropriate maps and sections
- To provide interpretation to assist design of the offshore foundations / structures and cable routing and burial
- To identify items through correlation of magnetic anomalies and sonar contacts that may require further physical survey, for example UXO and wrecks

The offshore work scope was carried out by the Gardline vessel M.V. Vigilant, with additional work undertaken by M.V. Ocean Observer. The M.V. Vigilant acquired full coverage with MBES and SSS of Areas A, B and the offshore part of Area C. In addition, it acquired SBP and magnetometer data on all of the offshore part of Area C with a line spacing of 60m, and 4 out of every 5 main lines in Areas A and B, with a line spacing of 77m.

The M.V. Ocean Observer acquired UHRS, SBP and magnetometer data on Areas A and B at a line spacing of 385m, and on each of the cross lines in Areas A and B at a line spacing of 1336m. Both the main and cross lines are orientated and positioned so as to acquire UHRS data through the proposed locations of the turbines in Areas A and B.

The nearshore work scope was covered by the M.V. Titan Discovery and a Titan owned Unmanned Aerial Vehicle (UAV). Details of operational activities is included in the Operations Report, 11521.1.

All coordinates quoted in the report are with respect to **World Geodetic System 1984 (WGS84)**, **UTM Grid Zone 30N (3° West)**. All water depths are reduced to **Lowest Astronomical Tide (LAT)**. Full details of the geodetics used during the project are contained in [Appendix A](#).

The grid of survey lines as acquired for Rampion Area C is illustrated on [Charts 1](#), [Chart 2](#) and [Chart 3](#).

This report is the Rampion Area C Survey Report.

1.2 Equipment Summary

Table 1.1 Survey Equipment – M.V. Vigilant

System	Make/Model
Positioning system	Oceaneering C-Nav DGNSS
	Sonardyne Ranger USBL
Navigation System	Voyager5
Echo Sounder (MBES system)	Simrad EM2040D
Echo Sounder (SBES system)	Simrad EA400
Side Scan Sonar	EdgeTech 4200FS
Magnetometer	Geometrics G882
Sub-Bottom Profiler	GeoAcoustics Pinger

Table 1.2 Survey Equipment – Titan Discovery

System	Make/Model
Positioning Systems	Applanix POS MV WaveMaster
	Trimble SPS855 GNSS Receiver
	Sonardyne Mini Ranger 2
Navigation System	QPS QINSy 9
Echo Sounder (SBES system)	Odom Echotrac MK III
Echo Sounder (MBES system)	Reson T20-P Dual Head
Side Scan Sonar	Edgetech 4200FS
Magnetometer	Geometrics G882
Sub-Bottom Profiler	Applied Acoustics CSP300 Bang Box Applied Acoustics 20 Element Hydrophone
UAV	Sensefly eBee

2. ACCURACY AND TERMS FOR SEISMIC INTERPRETATION

2.1 Resolution and Limitations for Site Survey Data

2.1.1 Bathymetry

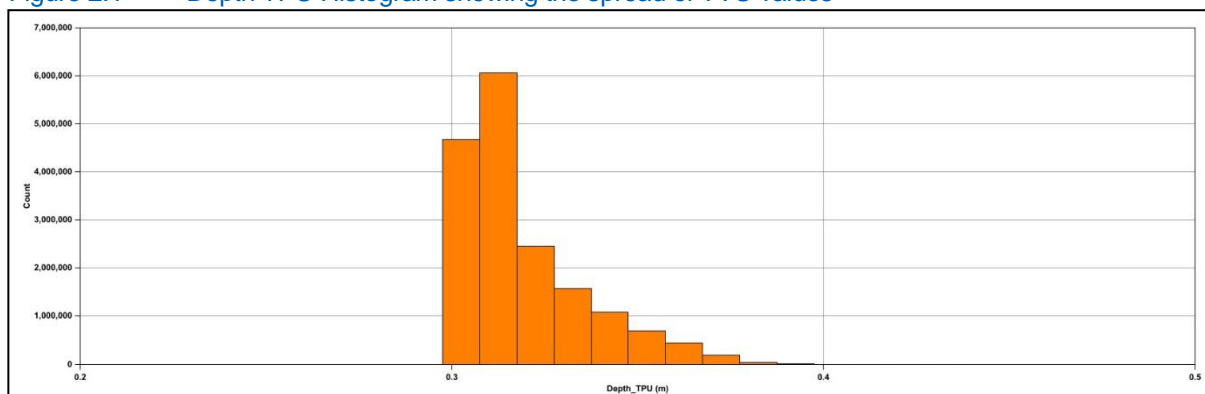
Several factors influence the accuracy of the bathymetric data:

- Variations in sound velocity
- Instrument accuracy (typically 0.2-0.5% of depth depending on beam angle)
- Weather effects/vessel movement
- Morphology of seabed

The uncertainty requirement of the survey to achieve International Hydrographic Organisation's (IHO) Order 1. In the guidelines produced by the IHO, a formula is outlined to derive an accuracy level depending on the depth of water the survey is being carried out in. This Total Vertical Uncertainty (TVU) value is used to ensure the data collected meets the standard required to meet Order 1a. Using water depths of 15m and 60m as the rough range within which Gardline acquired data, the MBES TVU must be better than $\pm 0.537\text{m}$ and $\pm 0.926\text{m}$, respectively.

The data were analysed using the Total Propagated Uncertainty (TPU) engine in CARIS. A depth TPU surface created within CARIS to identify the TVU range. The figure below shows that the TVU values meet the minimum level required to meet the IHO Order1.

Figure 2.1 Depth TPU Histogram showing the spread of TVU values



In addition to standard processing flow of the data, post processing was carried out on the raw GNSS records to produce a more accurate tidal profile to be applied to the data.

Multi-beam echo sounder data have been processed with a 1m bin size. As such, localised gradients of features with a smaller lateral extent will be underestimated.

2.1.2 Seabed Features

Side scan sonar data were collected for the purpose of mapping and imaging features and hazards on the seabed. Collected data from the Vigilant have frequencies of 122kHz and 410kHz and a range of 100m per channel. Collected data from the Titan Discovery have frequencies of 122kHz and 550kHz and a range of 75m per channel.

From corrections made to the sonar mosaic, and comparing the sonar data with the swathe data, USBL positioning accuracy is expected to be in the order of $\pm 2\text{m}$, and horizontal resolution between adjacent objects is expected to be approximately 0.5m. Vertical protrusions above the seabed of 0.1m

should be detectable (and flat-lying objects above 0.1m diameter) depending on range, and measurable to the nearest 0.1m.

2.1.3 Magnetic Survey

Magnetometer data were inspected for potential anomalies with the results being presented on the enclosed Seabed Features chart.

Records were of average quality with background noise apparent due to the relative close proximity of the survey vessel to the magnetometer due to the shallow water depths on site, as well as induced noise from the underlying geology.

Positioning of ferrous bodies from magnetic anomalies is problematical. Errors are introduced from uncertainties on raw navigation data and on offset errors, as well as from the inherent ambiguity of determining body shape from magnetic anomalies. Where possible magnetic anomalies are cross referenced against other datasets (e.g. bathymetry, side scan sonar, sub-bottom profiler, database records etc), in order to assign a likely centre of the magnetic deviation. Where this is not possible the positioning accuracy will be largely dependent on the acquired line spacing.

2.1.4 Sub-Seabed Data

Boomer and Pinger data were of good quality and exhibit an average penetration of 10m and 15m respectively and depending on the local geological conditions. An assumed seismic velocity of 1650m/s was used for time/depth conversion in the shallow sediments. Maximum vertical resolution may be determined theoretically by one quarter of the wavelength, which would give a maximum vertical resolution of the Boomer and Pinger data is approximately 0.1m and 0.3m respectively, assuming a dominant frequency of approximately 1300Hz and 3500Hz. Theoretical minimum detectable layer, estimated at 1/30th the dominant wavelength, is calculated to be approximately 0.016m and 0.043m respectively at seabed.

2.2 Criteria for Horizon Picking

Interpretation of the sub-seabed data has been aided using BGS records and previous reports which are detailed in [Section 4](#).

Horizons were picked where they separated distinct seismo-stratigraphic units. Generally, they were picked on the peak, but where the horizons represented a velocity inversion, they were picked on the trough.

3. GEOPHYSICAL SURVEY RESULTS

3.1 Bathymetry

Rampion Area C bathymetry is illustrated on [Chart 4](#) as a colour shaded relief image with contours at 1m intervals. An overview of the bathymetry is presented as [Figure 3.1](#).

A shaded relief image of the bathymetry is illustrated on [Chart 5](#). An overview of the shaded relief is presented as [Figure 3.2](#).

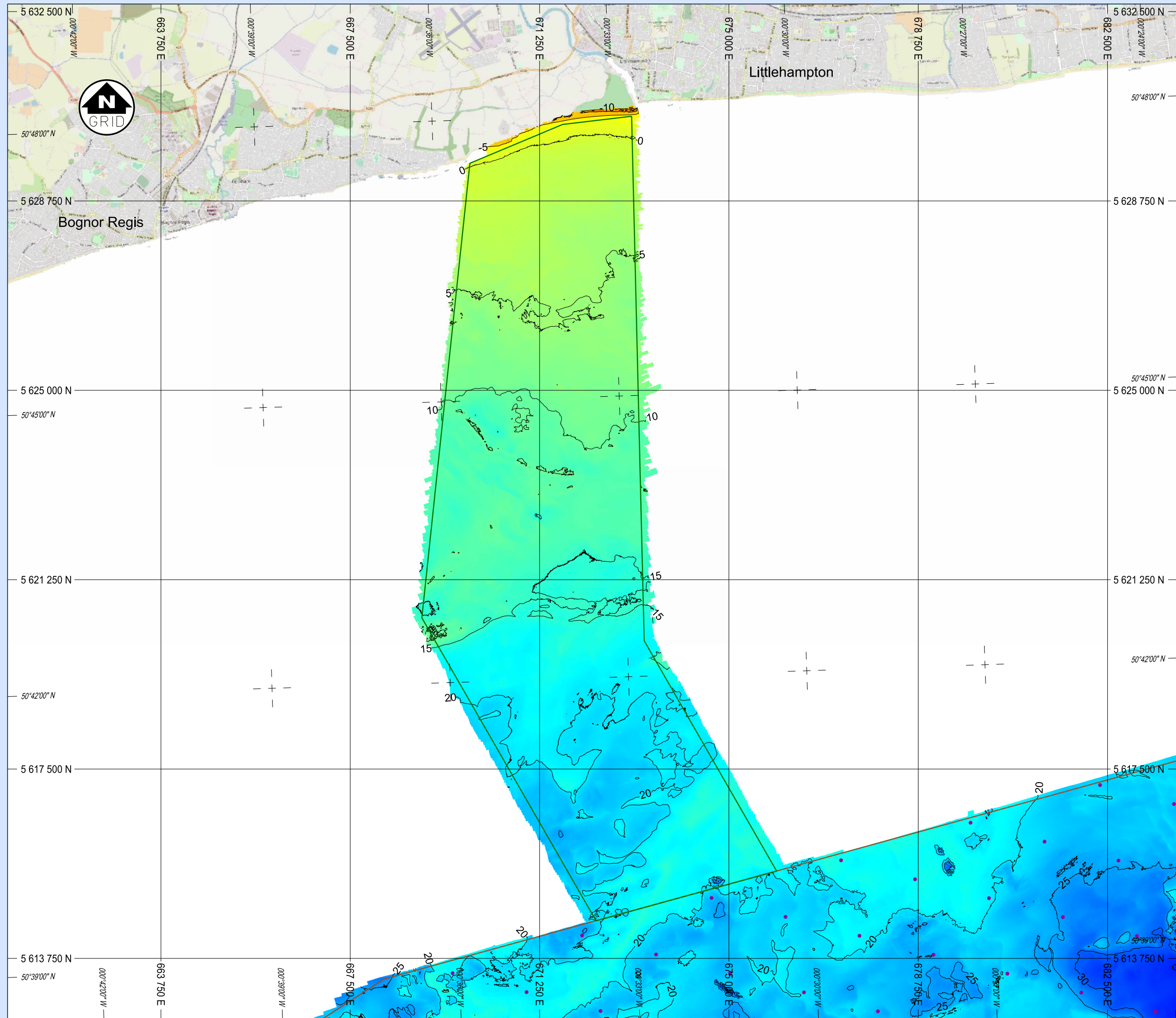
Seabed Gradient is illustrated on [Chart 6](#). An overview presented as [Figure 3.3](#).

Within the survey area, the shallowest depth is -18.9m LAT (observed above sea level) to the north of the site where the Titan UAV (Sensefly Ebee) surveyed the dryline. Water depths reach 28.2m LAT within a possible dredging extraction area to the south of the site. Seabed gradients across the survey area are generally $<1^{\circ}$, dipping towards the south. Localised gradients reach up to 10° within the depression caused by possible dredging extraction.

Megaripples are present towards the southern end of the site with heights of 0.2m and wavelengths reaching 7m. The seabed undulates across much of the site, influenced by the underlying geology. The dipping strata in the bedrock frequently approach seabed and are orientated from northwest to southeast. Occasional rocky outcrops are observed across the centre and north of Area C, with seabed gradients reaching 10° .

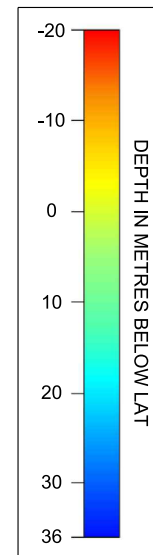
A significant seabed depression is present in the far south of Area C. This measures approximately 285m across and 11m deep, with gradients reaching 20° on its flanks. This has been interpreted as a possible dredging extraction area.

The difference between LAT and MSL within the survey area is approximately 3.3m.



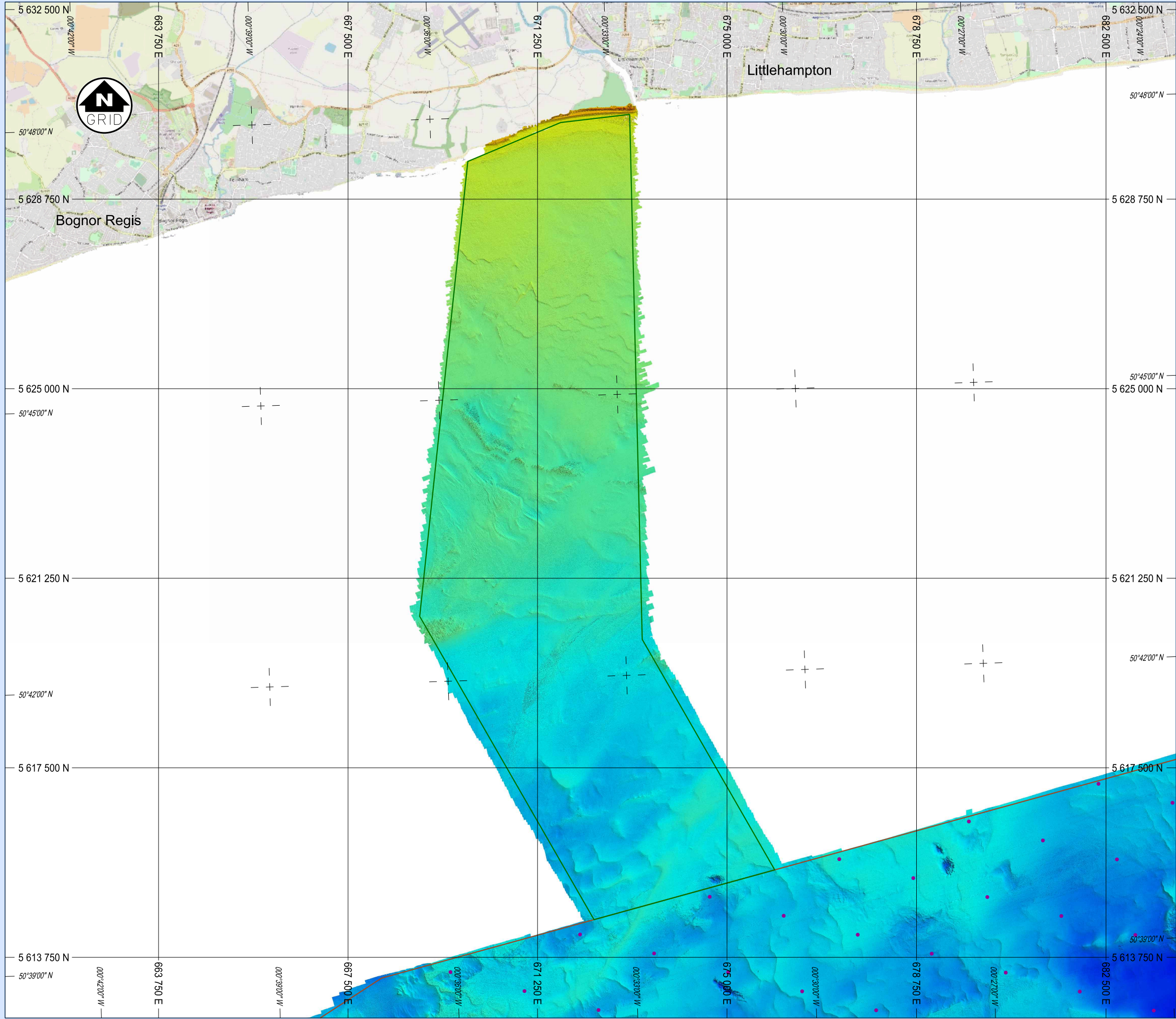
BATHYMETRY OVERVIEW FOR RAMPION 2 OWF AREA C

- PROPOSED RAMPION 2 OWF AREA C
(EXPORT CABLE AREA)
- PROPOSED RAMPION 2 OWF AREA B
(EXTENSION AREA)
- PROPOSED RAMPION 2
WIND TURBINE GENERATOR LAYOUT
(SOURCE: CLIENT PROVIDED)
- BATHYMETRIC CONTOURS SHOWN
AT 5 METRE INTERVALS LAT



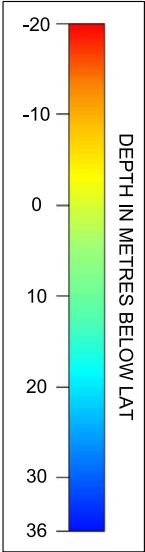
Scale 1 : 75 000
WGS84/UTM Zone 30N (3°W)

Figure 3.1



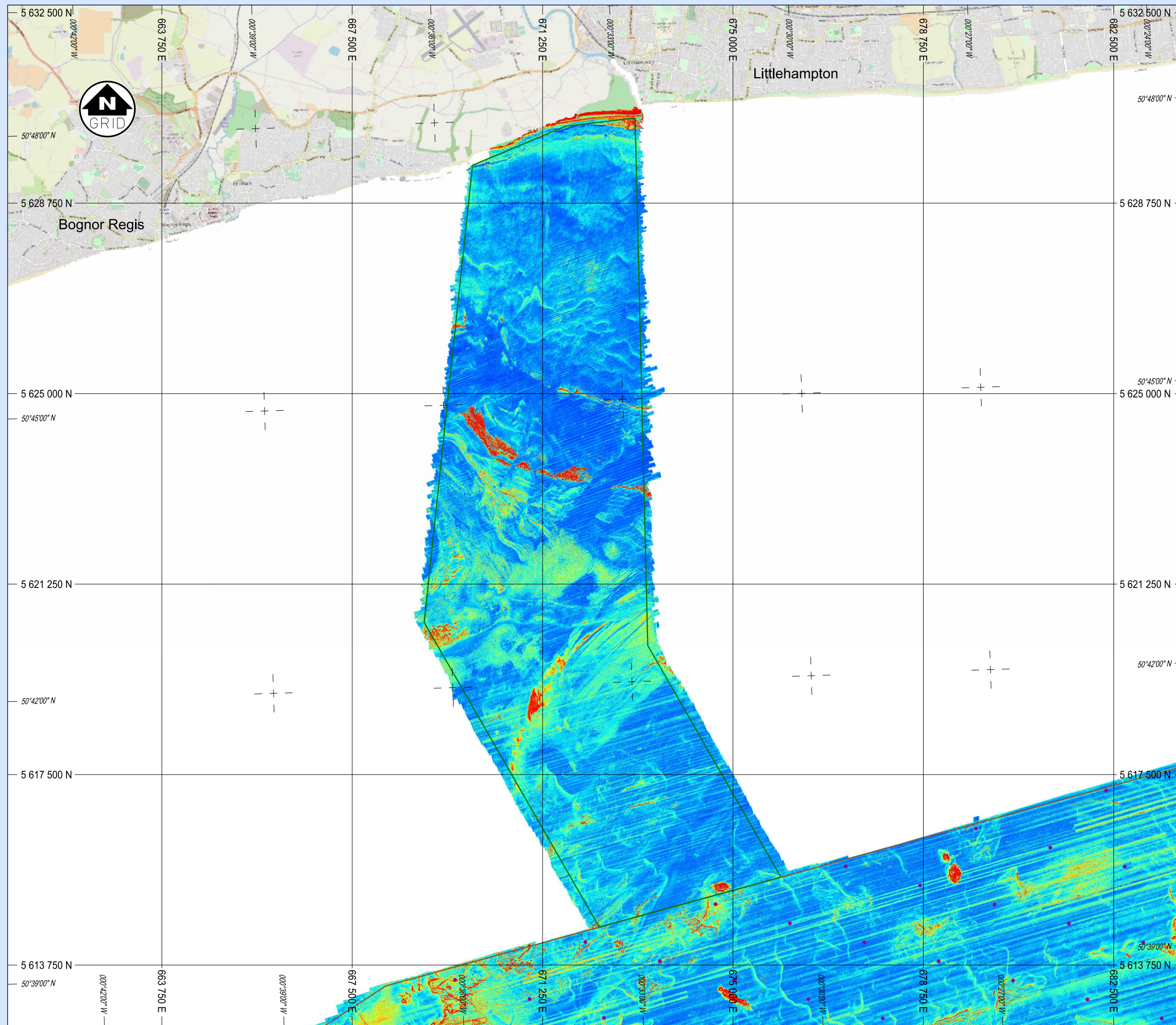
SEABED SHADED RELIEF OVERVIEW
FOR RAMPION 2 OWF AREA C

- PROPOSED RAMPION 2 OWF AREA C
(EXPORT CABLE AREA)
- PROPOSED RAMPION 2 OWF AREA B
(EXTENSION AREA)
- PROPOSED RAMPION 2
WIND TURBINE GENERATOR LAYOUT
(SOURCE: CLIENT PROVIDED)



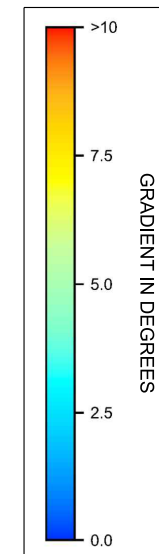
Scale 1 : 75 000
WGS84/UTM Zone 30N (3°W)

Figure 3.2



SEABED GRADIENT OVERVIEW
FOR RAMPION 2 OWF AREA C

- PROPOSED RAMPION 2 OWF AREA C
(EXPORT CABLE AREA)
- PROPOSED RAMPION 2 OWF AREA B
(EXTENSION AREA)
- PROPOSED RAMPION 2
WIND TURBINE GENERATOR LAYOUT
(SOURCE: CLIENT PROVIDED)



Scale 1 : 75 000
WGS84/UTM Zone 30N (3°W)

Figure 3.3

3.2 Seabed Features

Seabed features are illustrated on [Chart 7](#), with an overview provided as [Figure 3.4](#). A side scan sonar mosaic is presented on [Chart 8](#), with an overview provided as [Figure 3.5](#).

Seabed sediments are expected to comprise predominately gravel and sand, with sandy gravel primarily to the north and gravelly sand primarily to the south, with occasional outcrops of rock located in the centre of the site, trending northwest to southeast.

Megaripples are prevalent over much of the south of the site, and are trending northwest to southeast. The crests extend up to 0.2m in height relative to the surrounding seabed. Localised gradients up to 5° are present on the flanks of the megaripples. A side scan sonar data example of the megaripples is illustrated on [Figure 3.6](#).

5434 contacts exceeding 0.5m in any dimension are interpreted across Area C, the majority of which are interpreted as boulders. The largest measures 1.7m in height, and is located in the south of the survey area. 21 contacts are interpreted as debris with largest measuring 2.6m in height, located to the south of the site. 23 contacts are interpreted as fishing pots and are associated with fishing gear across the site.

Areas of numerous boulders cover much of the site with the majority being associated with rock outcrops, and have been categorised as boulder fields. These can be observed in [Figure 3.7](#), [Figure 3.8](#) and [Figure 3.9](#). Boulders found within boulder fields have not been individually picked.

Linear debris is observed sporadically across the site. 14 items of linear debris measuring >1m are interpreted within the site limits. The largest item of linear debris is 378m in length, located in the south of the survey area, illustrated in [Figure 3.10](#). Five linear contacts are interpreted as fishing gear; an example of these can be seen in [Figure 3.11](#), [Figure 3.12](#) and [Figure 3.13](#). The largest item of potential fishing gear is 382m in length, located in the northwest of the survey area.

One possible pipeline/cable has been observed in the centre of the site, with an associated magnetometer anomaly, seen in [Figure 3.14](#). This feature is observed on both side scan sonar and bathymetry data, however no background information is available to positively identify this.

Three wrecks occur within Area C, predominantly located in the southern section of the survey area, and all of which are identified on the geophysical data. These are all located on admiralty charts. All of the observed wrecks are located to the south of the site. All have been observed on side scan sonar, magnetometer and bathymetric records. The largest wreck, illustrated on [Figure 3.15](#), has a length of 120m, width of 32m and a height of 2.3m. The two remaining wrecks are illustrated on [Figure 3.16](#) and [Figure 3.17](#).

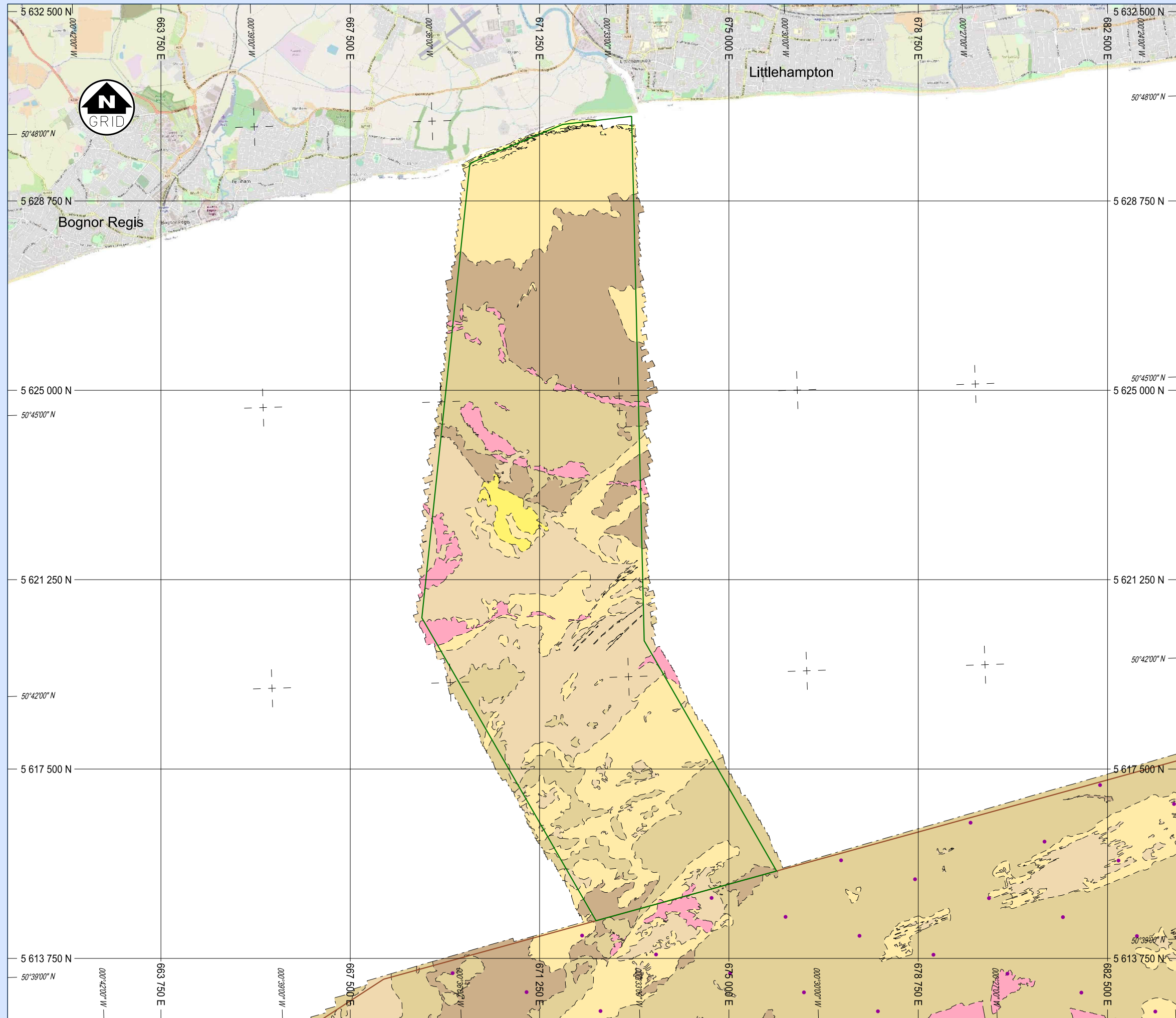
54 magnetometer contacts are observed across the site. Magnetometer contacts generally do not correlate with any object identified at seabed. Due to the relative distance to underlying geology, most of the smaller anomalies may be associated with geological features. Seven magnetometer contacts are associated with the observed wrecks.

Several areas of the seabed appear as patchy areas of raised sonar reflectivity with shallow depressions measuring approximately 0.5m in diameter, to the north of the site. Such a texture on side scan sonar data is often indicative of *Biogenic Structures*, illustrated on [Figure 3.18](#). The extents of these areas have been delineated on [Chart 6](#) as *possible black bream nest aggregations*. Ground truthing is required to confirm the presence of these nesting areas.

Table 3.1 Table of Wrecks

Name	Easting	Northing	Length (m)	Width (m)	Height (m)
Wreck 1	672 748	5 619 009	13.6	3.5	3.1
Wreck 2 A	670 696	5 617 303	4.2	2.3	4.0
Wreck 2 B	670 703	5 617 298	3.4	2.1	3.7
Wreck 3	672 045	5 616 545	119.7	31.9	2.3

MBES and side scan sonar montages of Wreck 2 and Wreck 3 are illustrated on [Figure 3.19](#) and [Figure 3.20](#), respectively.

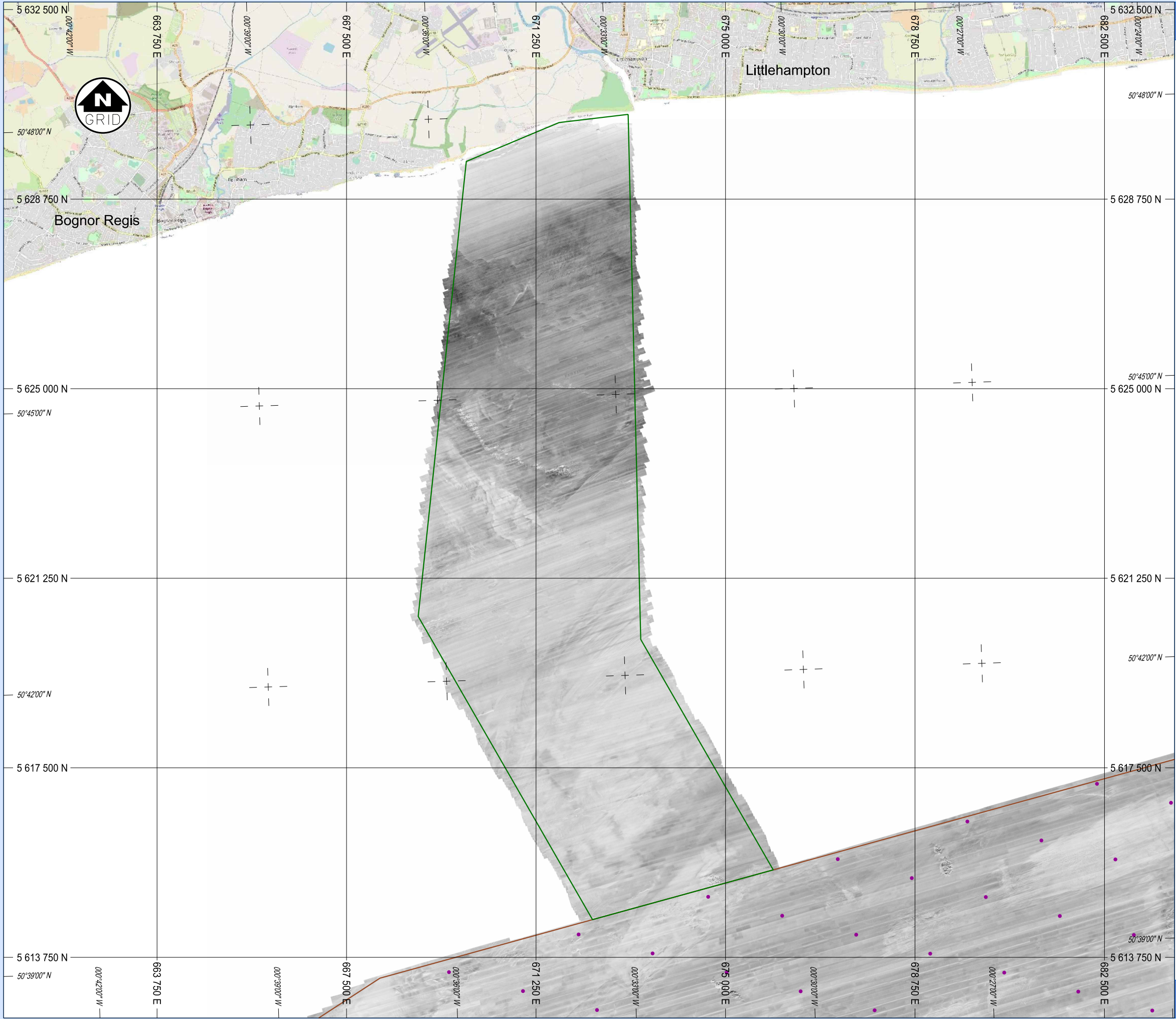


SEABED SEDIMENTS OVERVIEW
FOR RAMPION 2 OWF AREA C

- PROPOSED RAMPION 2 OWF AREA C
(EXPORT CABLE AREA)
- PROPOSED RAMPION 2 OWF AREA B
(EXTENSION AREA)
- PROPOSED RAMPION 2
WIND TURBINE GENERATOR LAYOUT
(SOURCE: CLIENT PROVIDED)
- SAND (NO BEDFORMS)
- SAND (MEGARIPPLED)
- SLIGHTLY GRAVELLY SAND (NO BEDFORMS)
- SLIGHTLY GRAVELLY SAND (MEGARIPPLED)
- SANDY GRAVEL (NO BEDFORMS)
- SANDY GRAVEL (MEGARIPPLED)
- SANDY GRAVEL (OUTCROP)
- ROCK (OUTCROP)
- LIMIT OF SIDE SCAN SONAR COVERAGE

Scale 1 : 75 000
WGS84/UTM Zone 30N (3°W)

Figure 3.4



SIDE SCAN SONAR MOSAIC OVERVIEW
FOR RAMPION 2 OWF AREA C

- PROPOSED RAMPION 2 OWF AREA C
(EXPORT CABLE AREA)
- PROPOSED RAMPION 2 OWF AREA B
(EXTENSION AREA)
- PROPOSED RAMPION 2
WIND TURBINE GENERATOR LAYOUT
(SOURCE: CLIENT PROVIDED)

Scale 1 : 75 000
WGS84/UTM Zone 30N (3°W)

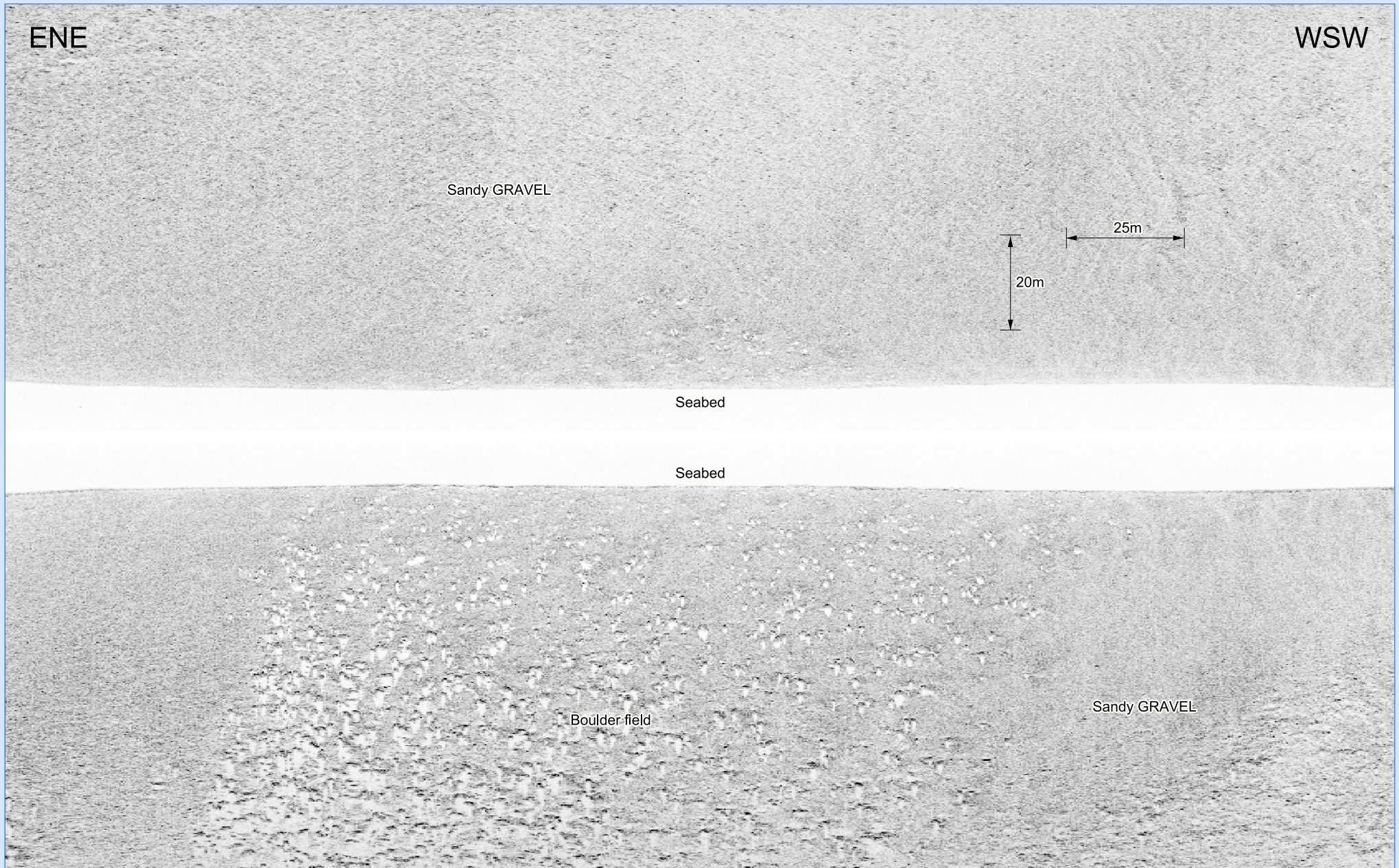
Figure 3.5



Line M39

SIDE SCAN SONAR
Illustrating megaripples

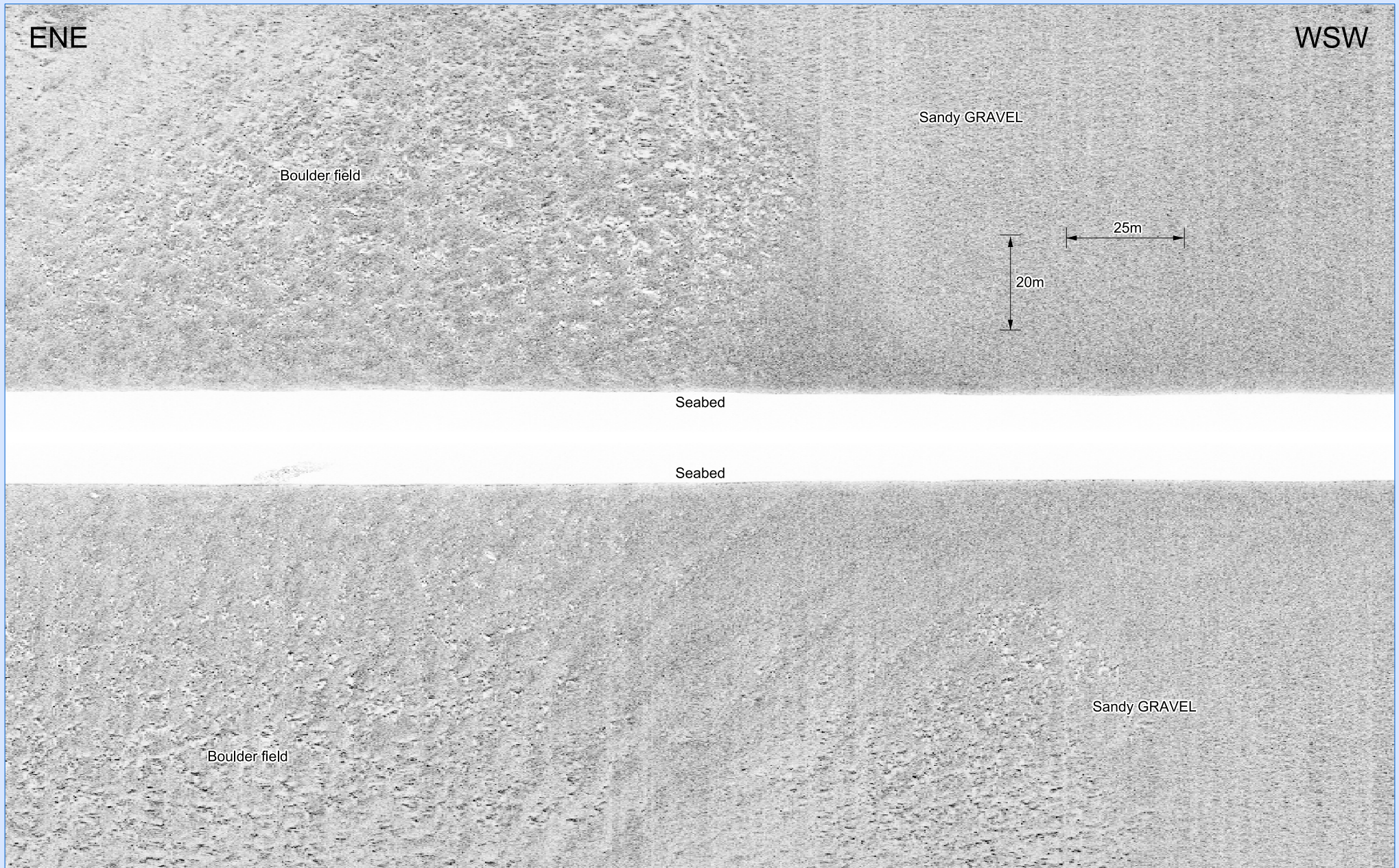
Figure 3.6



Line C_M-60

SIDE SCAN SONAR
Illustrating boulder field area

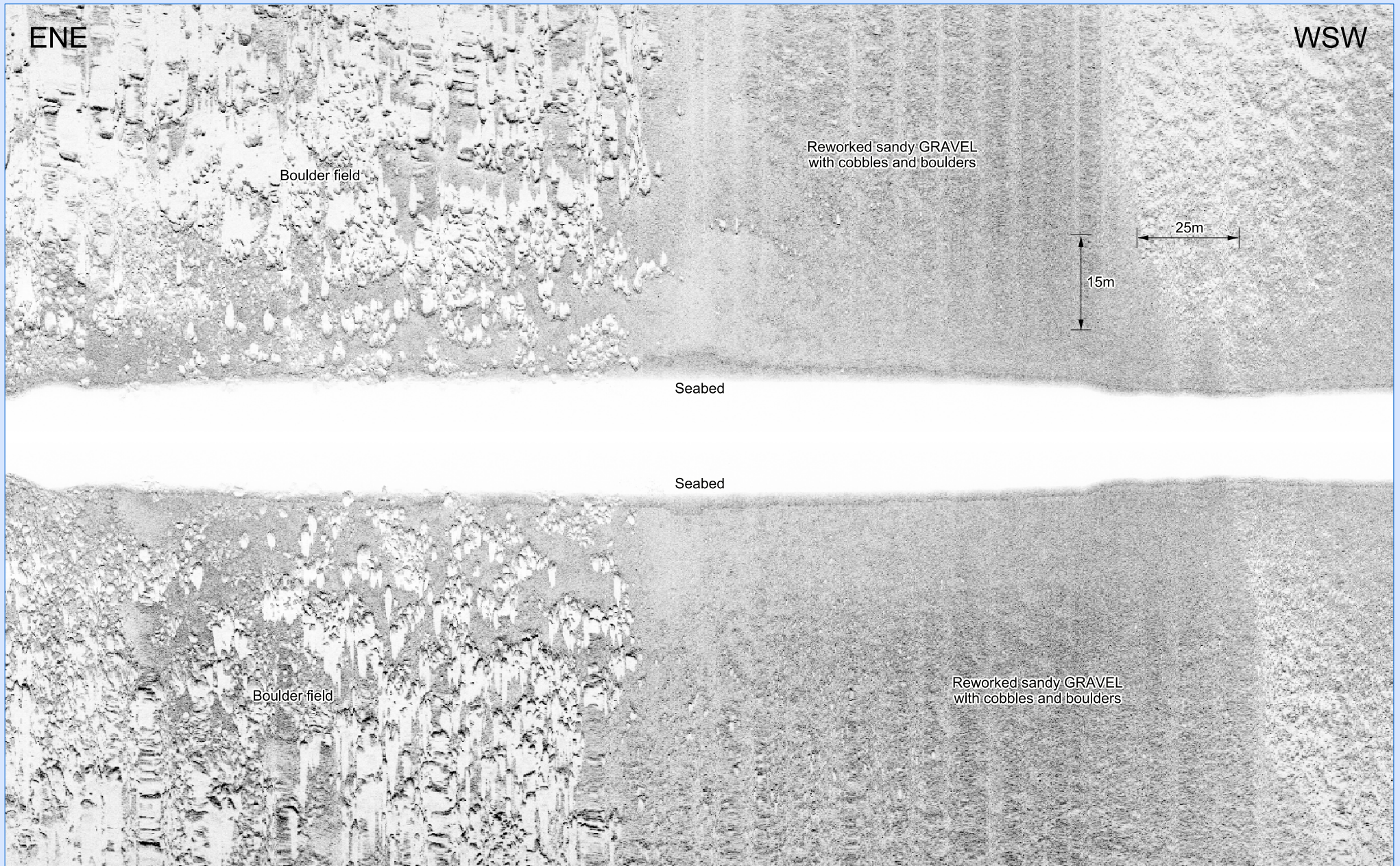
Figure 3.7



Line C_M-37

SIDE SCAN SONAR
Illustrating boulder field area

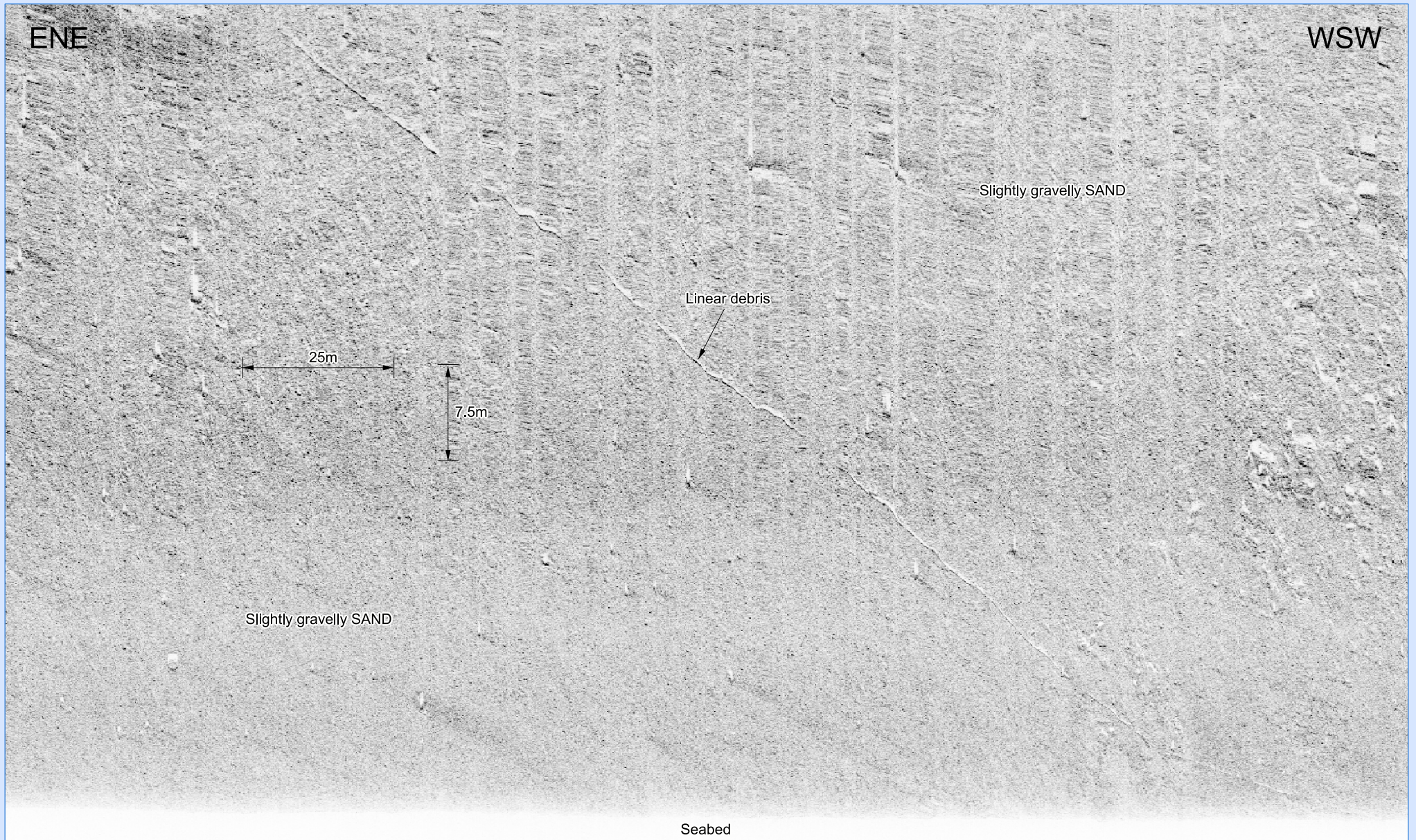
Figure 3.8



Line M91

SIDE SCAN SONAR
Illustrating boulder field area

Figure 3.9



Line M24

SIDE SCAN SONAR
Illustrating linear debris

Figure 3.10

ENE

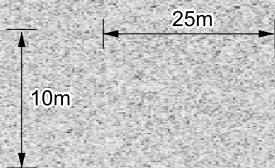
Seabed

WSW

Sandy GRAVEL

Fishing gear debris

Sandy GRAVEL



Line C_M-77

SIDE SCAN SONAR
Illustrating fishing gear debris

Figure 3.11

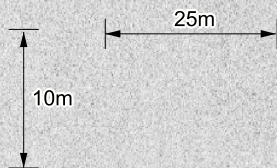
ENE

WSW

Slightly gravelly SAND

Fishing gear debris

Slightly gravelly SAND



Seabed

Line C_M-42

SIDE SCAN SONAR
Illustrating fishing gear debris

Figure 3.12

ENE

Seabed

WSW

Slightly gravelly SAND

Fishing gear debris

7.5m

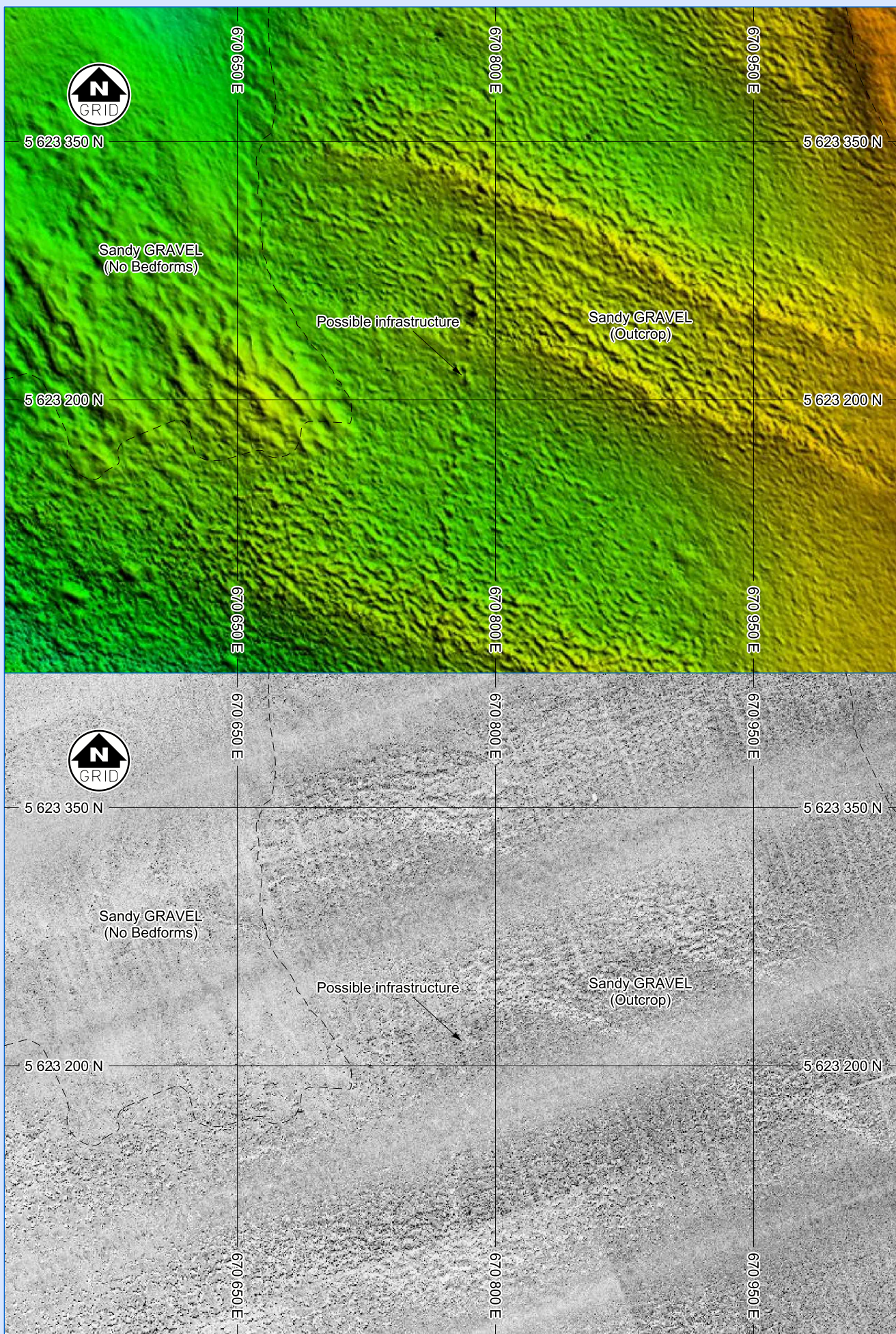
25m

Slightly gravelly SAND

Line M69

SIDE SCAN SONAR
Illustrating fishing gear debris

Figure 3.13



Scale 1 : 3 000
WGS84/UTM Zone 30N (3°W)

MBES/SIDE SCAN SONAR
Illustrating possible infrastructure

Figure 3.14

ENE

WSW

Seabed

Sandy GRAVEL

Sandy GRAVEL

Wreck 3
119.7 x 31.9 x 2.3m (LxWxH)

20m
10m

Boulder-field

Line C_M-55

SIDE SCAN SONAR
Illustrating Wreck 3

Figure 3.15

ENE

WSW

Seabed

Megaripples

Slightly gravelly SAND

Wreck 1
13.6 x 3.5 x 3.1m (LxWxH)

Slightly gravelly SAND

10m
25m

Line C_M-21

SIDE SCAN SONAR
Illustrating Wreck 1

Figure 3.16

ENE

WSW

Seabed

Slightly gravelly SAND

15m
10m

Wreck 2A
3.4 x 2.3 x 4.0m (LxWxH)

Wreck 2B
4.2 x 2.1 x 3.7m (LxWxH)

Megaripples

Slightly gravelly SAND

Line C_M-37

SIDE SCAN SONAR
Illustrating Wreck 2

Figure 3.17



Line M102

SIDE SCAN SONAR
Illustrating biogenic structures - possible black bream nest aggregations

Figure 3.18