Survey Report for
**ONE-Dyas B.V.**

Project:
**F06A Pipeline Route and Platform Area Survey**

Description:
**Environmental Survey Field Report**

Survey Date:
**Survey: June 2023**

Project Number:
**53794**

Client Reference:
**F06A-7-10-0-70000-01**

Report Status:
**Final**

# REPORT AUTHORISATION AND DISTRIBUTION

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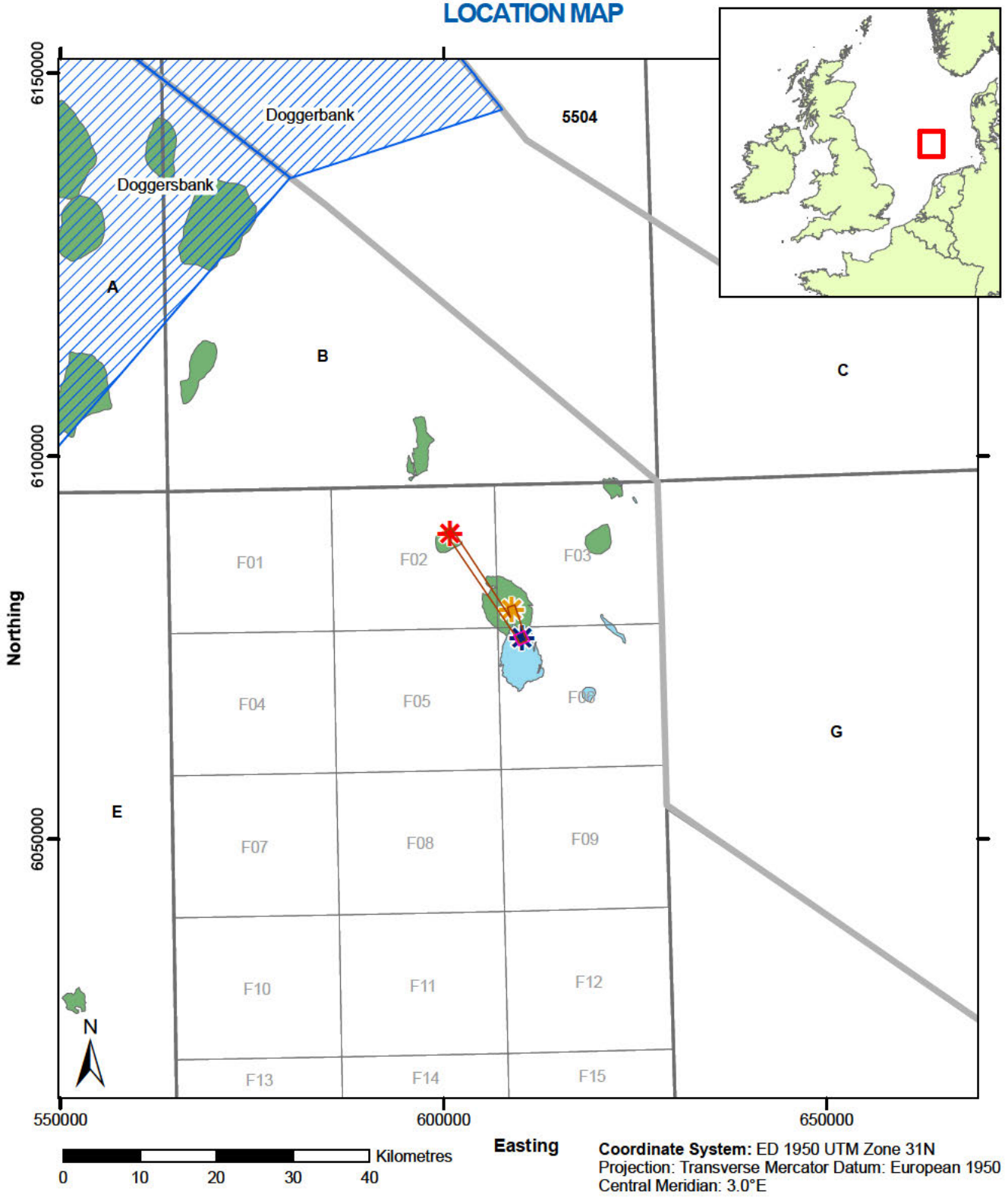
## LOCATION MAP



# PRELIMINARY SUMMARY

| **General** | | | |
|---|---|---|---|
| Client | ONE-Dyas B.V. | Project Title | F06A Pipeline Route and Platform Area Survey |
| Survey Start Date | 01-Jun-2023 | Survey End Date | 13-Jun-2023 |
| Location | Dutch Blocks: F02, 03, 06 | Vessel | MV *Ocean Geograph* |

| **Effort** | |
|---|---|
| Sediment Sampling | 38 grab sampling stations positioned at approximately 500m interval along the proposed pipeline route resulting in:<br>38 primary PSA samples, 38 spare<br>38 primary chemical samples, 38 spare<br>76 primary macrofaunal samples, 38 spare |
| Camera Work | 38 stations, 1446 images and 9hour and 1 minutes of footage acquired |
| Mitigation | 131 hours and 16 minutes |

| **Habitats** | Occurrence from Preliminary Observations | | | Comments |
|---|---|---|---|---|
| | Definite | Possible | None | |
| Biogenic Reef – Worm reef (*i.e. Sabellaria spinulosa*) | | | X | |
| Biogenic Reef – Hard coral reef (*i.e. Desmophyllum pertusum*) | | | X | |
| Biogenic Reef – Mussel Beds (*i.e. Mytilus edulis*) | | | X | |
| Stony/Rocky Reef | | | X | |
| Soft Bottom Sponge Aggregations/Beds | | | X | |
| Hard Bottom Sponge Aggregations/Beds | | | X | |
| Ocean quahog bed (*Arctica islandica*) | | | X | Single pair of siphons at Station ENV30 |
| Seapen and Burrowing Megafauna Community | | | X | |
| Cold Seeps and Carbonate Mounds (*i.e.* Methane Derived Authigenic Carbonate) | | | X | |
| Other Habitats: | None observed | | | |
| Species of concern | None observed | | | |
| Other Species: | Annelida (*Aphrodita aculeata*, Polychaeta), Arthropoda (Brachyura, Paguroidea), Chordata (Actinopterygii, *Melanogrammus aeglefinus*, Pleuronectiformes), Cnidaria (Hydrozoa), Echinodermata (Asteroidea, *Asterias rubens*, *Astropecten irregularis*, Echinoidea, Ophiuroidea), Mollusca (*A. islandica*, Bivalvia, Gastropoda, Scaphopoda) | | | |

| **Compliancy** | | | |
|---|---|---|---|
| BEIS Consent Ref/Licence Number | Mitigation completed as part of best practice, following JNCC Guidelines (2017) | | |
| Pre-shoot watches | 9 | Line-Turns | 141 |
| Soft Starts | 9 | Delays/Shutdowns | 0 |
| Sightings | 0 | Deviations | 2 |
| Consent Reference | N/A | | |
| **Scope Deviations and Concessions** | Two deviations from best practise with line turn over 40 minutes. | | |

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# 1 PROJECT INTRODUCTION

## 1.1 Overview

During June 2023, Gardline conducted an environmental baseline survey on behalf of ONE-Dyas B.V. across Dutch Blocks F02, F03 and F06 in the North Sea. The survey was conducted onboard the motor vessel *Ocean Geograph* between 01-Jun-2023 and 13-Jun-2023, with environmental operations being conducted between 09-Jun-2023 and 11-Jun-2023.

Positional information of the platforms is detailed in Table 1.1. All positional information in this report is referenced to WGS84 Ellipsoid, WGS84 Datum. All grid coordinates are projected using Universal Transverse Mercator (UTM) Projection, Grid Zone 31N, and Central Meridian (CM) 3°E.

Table 1.1 Coordinates of Platform Locations Coordinates

| Platform Locations and Proposed Route Co-ordinates | UTM Zone 31 | |
|---|---|---|
| | Easting | Northing |
| Proposed F06A Platform | 610 250 | 6 075 699 |
| F2A-Hanze Platform | 600 822 | 6 089 970 |
| F3-FB – 1P Platform | 608 898 | 6 079 974 |

Source: Scope of work (SOW; ONE-Dyas, 2023)

## 1.2 Survey Aims and Objectives

As detailed in the SOW (ONE-Dyas, 2023), the overall survey aim was collection of geophysical, geotechnical and environmental data to support the design of the proposed pipeline route from the proposed F06A platform to the F2A-Hanze platform. Additionally, the offshore geophysical data along with data acquired during the environmental surveys will be used to satisfy the requirements of the Environmental Impact Assessment and consenting. To support the placement and design of proposed offshore subsea pipeline within the survey area, a multi-discipline survey was required. The objectives of the integrated survey included:

- a geophysical survey along the proposed route and platform area involving magnetometer, side scan sonar (SSS), multibeam echosounder (MBES) and sub-bottom profiler (SBP) data acquisition to determine bathymetry, seabed features and shallow soils and highlight any debris or hazards that may impact subsequent survey operations.
- sparker multi-channel seismic (UHR) survey of the platform area in addition to the above-mentioned equipment.
- vibrocore to correlate the data gathered during the geophysical surveys.
- an environmental survey along the pipeline route and at the proposed F06A platform using an underwater camera system and grab sampler to provide benthic characterisation of habitats and species assemblages.
- identification of any environmentally significant habitats (*e.g.* potential Habitats Directive Annex I and priority marine features).

## 1.3 Expected Broadscale Habitats and Species of Concern Across the Region

From the wider region, the intended survey area may potentially contain the following habitats or species of concern:

- the ocean quahog; *A. islandica*, which is on the OSPAR (2008) list of threatened and/or declining species and habitats.

## 1.4 Environmental Survey Crew

In order to achieve survey aims and objectives the following roles and quantities were required per 12-hour shift:

- 1 x Marine Environmental Scientist

Details of the crew and their experience are presented in Table 1.2.

Table 1.2 Crew Summary – Environmental

| Name | Role(s) | Start Date | End Date | Shift | Number of Assignments as Role | Years of Service in Role |
|---|---|---|---|---|---|---|
| 5.1.2.e | MMO/PAMS/ENV | 01-Jun-2023 | 12-Jun-2023 | 12:00 – 00:00 | 16 | 9 |
| | MMO/ENV | 01-Jun-2023 | 12-Jun-2023 | 00:00 – 12:00 | 5 | 1 |
| | MMO/PAMS | 01-Jun-2023 | 12-Jun-2023 | 00:00 – 12:00 | 22 | 5 |
| | MMO/ENVTrainee | 01-Jun-2023 | 12-Jun-2023 | 12:00 – 00:00 | 1 | <1 |

## 1.5 Equipment

A summary of the environmental equipment available on board for this survey is presented in Table 1.3 with specification where pertinent presented in Appendix A. Other equipment available on board during this survey are summarised in Table 1.4 along with their associated category.

Table 1.3 Main Environmental Equipment

| Acquisition Category | Type | Version | Quantity | Associated Analyses |
|---|---|---|---|---|
| Benthic Imagery | Still Camera | Kongsberg 14-208 | 2 | Photographs/Video |
| Benthic Imagery | Still Camera | C-Tecnics CT3022 | 1 | Photographs |
| Benthic Imagery | HD Camera | 1Cam Alpha | 2 | HD Video |
| Benthic Imagery | Lamps | Bowtech SeaLED Lamps | 4 | - |
| Benthic Imagery | Line Lasers | Bowtech OceanLASER-L | 4 | Scaling |
| Benthic Imagery | Digital Video Recorder | Digital Edge DVR | 2 | Topside Video / Black box |
| Mitigation | Binoculars | Celestron binoculars (10 x 42)<br>Nikon Sporter binoculars (8 x 36) | 2 | Sightings |
| Mitigation | Passive Acoustic Monitoring System | Gardline Mk III | 2 | Acoustic Detections |
| Mitigation | PAMS Computer | Captec rackmount computer | 2 | |
| Sediment Sampling | Grab Sampler | Day Grab | 2 | PSA, Nutrients, Hydrocarbons, Metals |
| Sediment Sampling | Grab Sampler | Mini-hamon Grab | 1 | |
| Sediment Sampling | Siever | Gardline Auto Siever | 1 | Faunal Samples |

Grey cells indicate equipment available but not used

Table 1.4 Other Survey Equipment

| Survey Equipment | Category |
|---|---|
| Vibro corer | Geotechnical |
| SSS, magnetometer, 2D ultra high resolution seismic (sparker), single and multi-beam echo sounder (SBES and MBES), ultrashort baseline system (USBL), hull mounted pinger | Geophysical |

# 2 SURVEY STRATERGY

## 2.1 Geophysical/Background Information

The survey area comprised two main components: the proposed F06A platform area (1500m x 1500m) and a 1000m corridor pipeline route a running from the proposed F06A platform to the F2A-Hanze platform. In order to ensure that environmental sampling locations were free of subsea obstructions; SSS, magnetometer and MBES data were acquired within the platform area and along the pipeline route.

The initial data from SSS revealed that the seabed was interpreted as lower reflectivity as displayed in Figure 2.1 and was generally flat, as identified by the bathymetry and displayed in Figure 2.2. The water depth ranged from 40m in the southwest to 44m in the eastern regions.

The sediment composition was expected to consist mainly of sand, with some shell material, and some small portions of fines. There were no hard substrate habitats interpreted throughout the survey area.

## 2.2 Sampling Rationale

A total of 38 sampling stations were selected across the survey area in order to meet the objectives of the scope. Details of the targets including their reason for selection, relative location and anticipated findings are presented in Table 2.1.

Figure 2.1 Preliminary Sonar Data with Environmental Target Stations.

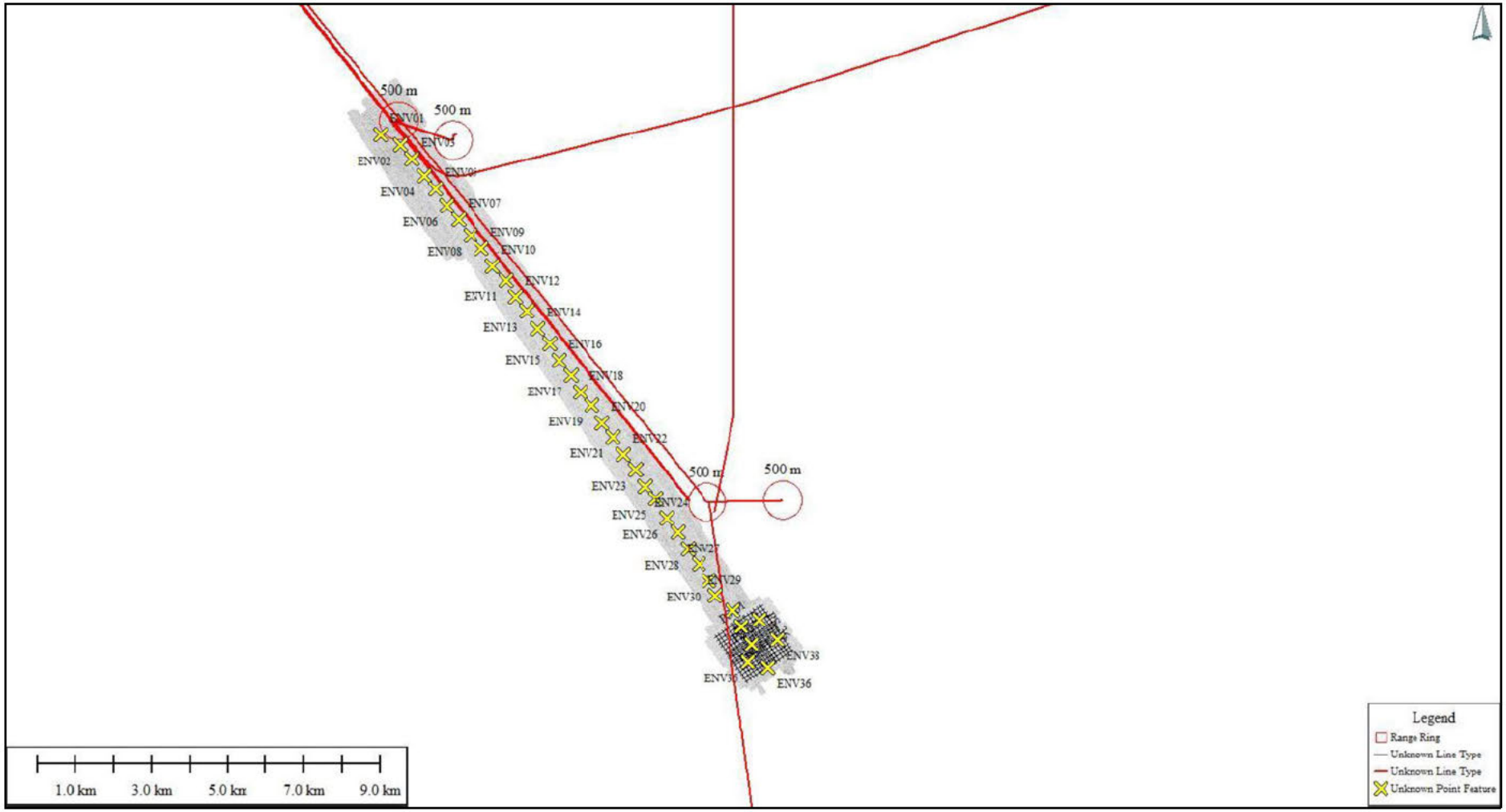


Figure 2.2 Preliminary Bathymetry Data with Environmental Target Stations/Transects

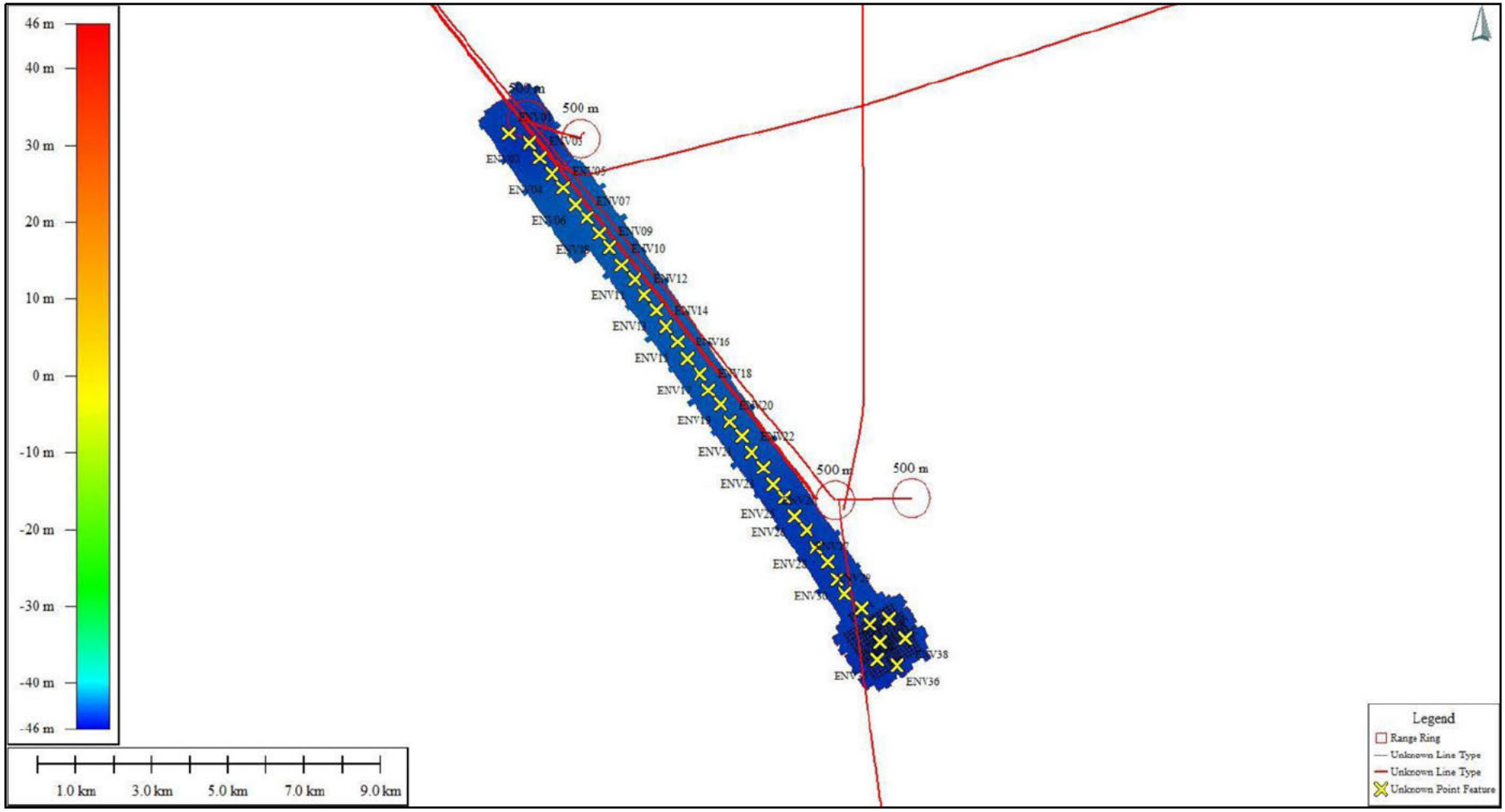


Table 2.1 Environmental Targets

| Target ID | Description | Type | Easting | Northing | Sampling | Anticipated Finding | Completed |
|---|---|---|---|---|---|---|---|
| ENV01 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 600 373 | 6 089 582 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV02 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 600 898 | 6 089 319 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV03 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 601 183 | 6 088 948 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV04 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 601 504 | 6 088 522 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV05 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 601 794 | 6 088 160 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV06 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 602 099 | 6 087 722 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV07 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 602 411 | 6 087 369 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV08 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 602 737 | 6 086 944 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV09 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 603 020 | 6 086 597 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV10 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 603 320 | 6 086 132 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV11 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 603 682 | 6 085 763 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV12 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 603 918 | 6 085 329 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV13 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 604 230 | 6 084 958 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV14 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 604 480 | 6 084 503 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV15 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 604 804 | 6 084 113 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV16 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 605 043 | 6 083 676 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV17 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 605 379 | 6 083 266 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV18 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 605 606 | 6 082 849 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV19 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 605 915 | 6 082 484 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV20 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 606 168 | 6 082 023 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV21 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 606 476 | 6 081 655 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV22 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 606 731 | 6 081 196 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV23 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 607 050 | 6 080 815 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV24 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 607 293 | 6 080 369 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV25 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 607 577 | 6 080 041 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV26 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 607 856 | 6 079 542 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV27 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 608 164 | 6 079 175 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV28 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 608 419 | 6 078 716 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV29 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 608 731 | 6 078 341 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV30 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 608 981 | 6 077 889 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV31 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 609 174 | 6 077 508 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV32 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 609 626 | 6 077 119 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV33 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 609 848 | 6 076 699 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV34 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 610 108 | 6 076 236 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV35 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 610 021 | 6 075 772 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV36 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 610 543 | 6 075 628 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV37 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 610 324 | 6 076 860 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |
| ENV38 | General flat seabed, side-scan sonar low reflectivity, sandy sediment | Station | 610 770 | 6 076 341 | 4 acceptable Day grab samples. | Fine sandy sediment | TRUE |

## 2.3 Agreed Acquisition, Methods, Settings and Tolerances

As part of the project, specific settings or acquisition methods which will impact the data quality have been agreed by the client. Details of the specific acquisition settings, software versions and sampling tolerances are detailed in Table 2.2. Details of the methods used during this survey are presented in Appendix B.

Table 2.2 Acquisitions Settings and Tolerances

| Category | Item | Setting/Tolerance |
|---|---|---|
| Sediment Sampling | Macrofauna Sieve Size(s) | 0.5mm |
| Sediment Sampling | Macrofauna Sample Containers | 1-litre polypropylene, screw-top, squat jars |
| Sediment Sampling | Hydrocarbon Sample Containers | 125ml amber glass jars/1L amber glass jars |
| Sediment Sampling | Metals Sample Containers | Polyethylene double-lined zip-lock bags |
| Sediment Sampling | Particle Size Sample Containers | Polyethylene double-lined zip-lock bags |
| Sediment Sampling | Minimum Acceptable Volume | 40% |
| Sediment Sampling | Maximum Acceptable Distance from Target | 10m |
| Sediment Sampling | Sampler Positioning Methodology | USBL/Deployment Point/Vessel Offset |
| Sediment Sampling | Chemical Decontamination Solution | Pentane |
| Sediment Sampling | Sub-sampling Method | Stainless steel spoon – Hydrocarbons<br>Plastic scoop – Metals |
| Sediment Sampling | Faunal Preservation Solution and Sample Concertation | Formaldehyde solution (<20% formalin) for a ~4% sample concentration |
| Sediment Sampling | Deployment Cable | 13mm dry-core galvanised steel cable |
| Imagery | Laser Scale | 10cm |
| Imagery | Minimum Transect Length | 100m |
| Imagery | Minimum Number of Photos per Target | 5 stills |
| Imagery | Maximum Interval Between Photos | 10 seconds |
| Imagery | Overlay Information | Date, time, position, depth, target, project name and client name. |
| Data | Primary Storage Formats | G-Speed |

# 3 MITIGATION PROCEDURES

In order to achieve survey aims and objectives the following roles and quantities were required per 12-hour shift:

- 1 x Marine Mammal Observer (MMO)
- 1 x Passive Acoustic Monitoring System (PAMS) Operative

Details of the crew and their experiences are presented in Table 3.1.

Table 3.1 Details of MMO/PAM Operative(s)

| Operative Name | Role | Dedicated or Non-Dedicated? | Period onboard Vessel | Shift Pattern | Level of Training and Training Provider | Number of Previous Mitigation Assignments | Number of Years of Offshore Mitigation Experience |
|---|---|---|---|---|---|---|---|
| 5.1.2.e | MMO/PAM/ ENV | Dedicated | 01-Jun-2023 12-Jun-2023 | 12:00 – 00:00 | Sieche MMO and Pro-PAMS | 10 | 2 |
| | MMO/PAM | Dedicated | 01-Jun-2023 12-Jun-2023 | 00:00 – 12:00 | Ocean Intelligent MMO/PAMS | 22 | 5 |
| | MMO/ENV | Dedicated | 01-Jun-2023 12-Jun-2023 | 00:00 – 12:00 | Sieche MMO | 5 | 1 |
| | MMO | Dedicated | 01-Jun-2023 12-Jun-2023 | 12:00 – 00:00 | Sieche MMO | 1 | <1 |

A summary of mitigation equipment available onboard for this survey is presented in Table 3.2, whilst the PAMS deployment specifications are presented in Table 3.3.

Table 3.2 Main Mitigation Equipment

| Acquisition Category | Type | Version | Quantity | Associated Analyses |
|---|---|---|---|---|
| Mitigation | Binoculars | Celestron binoculars (10 x 42)<br>Nikon Sporter binoculars (8 x 36) | 2 | Sightings |
| Mitigation | PAMS[1] | Gardline Mk III | 2 | Acoustic Detections |
| Mitigation | PAMS Computer | Captec rackmount computer | 2 | |

1 PAMGuard Version 1.15.16

Table 3.3 PAMS Deployment

| Set up | Specification |
|---|---|
| Location and type of deployment | Towed deployment via port boom to 100m:<br>• PAMS to COG X: -10.27<br>• PAMS to COG Y: -134.51 |
| Vertical deployment depth | 10m |
| Distance and bearing from acoustic source | Geophysical phase, towed deployment:<br>• Sparker: 46(m), 238°<br>• Pinger: 160m and 180° |
| Any technical issues encountered? | None |

In order to meet the terms and conditions of the Guidelines, certain items of equipment require mitigating actions. Details of the relevant equipment and associated mitigation actions agreed upon for the survey are presented in Table 3.4 and Table 3.5.

Table 3.4 Summary of Monitoring Procedures

| Item | Detail |
|---|---|
| Guideline requirements | JNCC Guidelines (2017) followed as best practice |
| Effort required/requested | MMO – daytime operations<br>PAMS – nighttime coverage and periods of poor visibility |
| Pre-shoot watches | 30 minutes prior to all pinger and sparker operations |
| Location of watches | Bridge, bridge wings, monkey island |
| Height of platform | Bridge wings: 13.0m above sea level; bridge: 13.5m above sea level |
| Monitoring equipment used | Celestron binoculars (10 x 42), Nikon Sporter binoculars (8 x 36), range-finder |

Table 3.5 Mitigation Procedures

| Equipment Requiring Mitigation | Pre-Shooting Search? | Soft Start Duration | Soft Start Method | Line Turns |
|---|---|---|---|---|
| Pinger | Yes | 15-25 min | Increased power output | Reduced power output for line turns <40 mins, >40 mins switched off |
| Sparker | Yes | 15-25 min | Increased frequency | Reduced power and increased shot-put interval (SPI) for line turns <40 mins, >40 mins switched off |

# 4 RESULTS

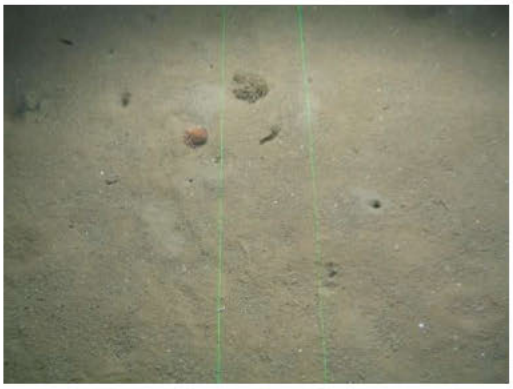
## 4.1 Observed Habitat and Features

The seabed observed was generally sand with occasional shell fragments. Sediment characteristics and habitat were found to be homogenous throughout the survey area. Examples of the habitat observed in the seabed imagery are presented in Figure 4.1.

A single pair of siphons of the bivalve *A. islandica* were observed at Station ENV30. This species is listed on the OSPAR (2008) list of threatened and/or declining species and habitats. No specimens of this species were observed in grab samples.

Figure 4.1 Observed Habitat

Station: ENV01 Fix: 10
Sediment Description: Fine sand with occasional shell fragments



Station: ENV17 Fix: 655
Sediment Description: Fine sand with occasional shell fragments

## 4.2 Observed Species

Fauna observed in camera imagery included:

- Annelida (*A. aculeata*, Polychaeta)
- Arthropoda (Brachyura, Paguroidea)
- Chordata (Actinopterygii, *M. aeglefinus*, Pleuronectiformes)
- Cnidaria (Hydrozoa)
- Echinodermata (Asteroidea, *A. rubens*, *A.* irregularis, Echinoidea, Ophiuroidea)
- Mollusca (*A. islandica*, Bivalvia, Gastropoda, Scaphopoda).

## 4.3 Sampling

Samples recovered from grab sampling consisted of fine sand with occasional shell fragments. Overall, the Day grab returned consistently good samples with recovery ranging from 40 to 80%. The small amount of no samples were mainly due to misfiring of the grab.

Fauna observed in grab samples included:

- Annelida (*Aphrodita aculeata*, Polychaeta)
- Arthropoda (Brachyura)
- Echinodermata (Asteroidea, *Echinocardium cordatum*, Ophiuroidea)
- Mollusca (Bivalvia, Gastropoda).

Details of field observation are presented within the seabed imagery and sampling deck logs in Appendix D.

## 4.4 Mitigation

Mitigation was conducted according to best practice procedures in line with the JNCC (2017) guidelines. Details of the geophysical survey which required mitigation are presented in Table 4.1. There were no sightings or acoustic detections during the project and no delays to data acquisition due to marine animal encounters. There were two instances when line turns exceeded 40 minutes due to unexpected issues with the bird compass on the hydrophone array and despite efforts to fix the issue and reach the start of line in the allotted time. Total line turn time for line PSD-08 (1) was 51 minutes and line PSD-01 (2) was 63 minutes. Full details of each of the scope deviations and concessions are presented in Appendix C.

Table 4.1 Survey Summary

| Survey Summary | |
|---|---|
| Dates of geophysical firing | Pinger: 02-Jun-23 to 12-Jun-2023<br>Sparker: 04-Jun-23 to 05-Jun-2023 |
| Number of lines | 139 UHR virgin lines<br>6 infill lines |
| Number of tests | 5 test lines, 4 with the pinger and 1 with the sparker |

Table 4.2 Compliance Summary

| Compliance | JNCC Guidelines (2017) |
|---|---|
| Number and type of Deviation from Best Practice | Two deviations from best practice |
| Were there any issues with complying with the requirements? | Line turns exceeded guideline of 40 minutes for lines PSD-08 (51 minutes) and PSD-01 (63 minutes) |

# APPENDICES

# APPENDIX A SPECIFICATIONS

## A.1 Camera Specifications

| Equipment | HD Camera System | Stills Camera System | Stills Camera System |
|---|---|---|---|
| Manufacturer | SubC Control Ltd. | C-Tecnics Subsea Electronics | Kongsberg/Simrad. |
| Model | 1Cam Alpha Mk3/5/6 | CT3022 | OE14-208 |
| Lens | Wide angle (26.3mm), f 3.8 ~ 38.0 mm (5/32 ~ 1 1/2 in.), 10x optical zoom and automatic or manual focus control | Sony E PZ 16-50mm f3.5-28.0, automatic or manual focus control | f 7.2 – 28.8 (35mm format equivalent to 38 – 140mm) 4x optical zoom and automatic or manual focus control |
| Pixels | 12.0 M (Picture mode) OR 8.3 M (Video mode) | 24.3M | 5.0 M |
| Video Resolution | 1920 x 1080p | PAL 625 Line / 50 Hz PAL | PAL 625 Line / 50 Hz PAL |
| Image Resolution (pixels) | No stills in HD video mode | 6000 x 4000 | 2592 x 1944 |
| Field of View | 47.8° horizontal (β) by 36.2° vertical (α) | 90° (6.7mm) to 60° (13mm) diagonal in water | 48.4° horizontal (β) by 29.9° vertical (α) |
| Video Overlay | EdgeDVR Inspection System (Digital Edge Subsea Ltd) | | |
| Trigger | Remote from deck | | |
| Height Control | USBL Beacon and/or Video footage | | |
| Lighting | 1 fixed strobe, 2 fixed LED lamp | | |
| Scale bar | Green line lasers with 100mm separation between lines. | | |

Table unit definitions: M = megapixels, p = progressive scan, PAL = phase alternating line

## A.2 Day Grab

The modified (0.1m$^2$) Day grab has been constructed entirely of stainless steel and is routinely used for projects where the water depths are less than 250m. The modification incorporated guides for the cables to prevent them becoming trapped during triggering. Low-slung pad feet when in contact with the seabed trigger the instrument. On retrieval (once triggered) the weight of the instrument is transferred along the warp wires, closing the jaws of the grab. The recovered samples are fully enclosed to reduce disturbance and can obtain up to 15 litres of well-preserved sample in most silts and sandy substrates.

The modified grab is also constructed to carry additional weights (providing better penetration) and an extended bucket lip (to reduce sediment washout during retrieval). Storm feet and elastic straps were used to reduce the likelihood of the instrument triggering in the water column during deployment.

On recovery, the sample can be processed directly through the large access doors or by emptying the contents into a plastic tray. Consequently, this means that relatively undisturbed samples can be collected directly from the grab where surficial sediments are required.

## A.3 Passive Acoustic Monitoring System

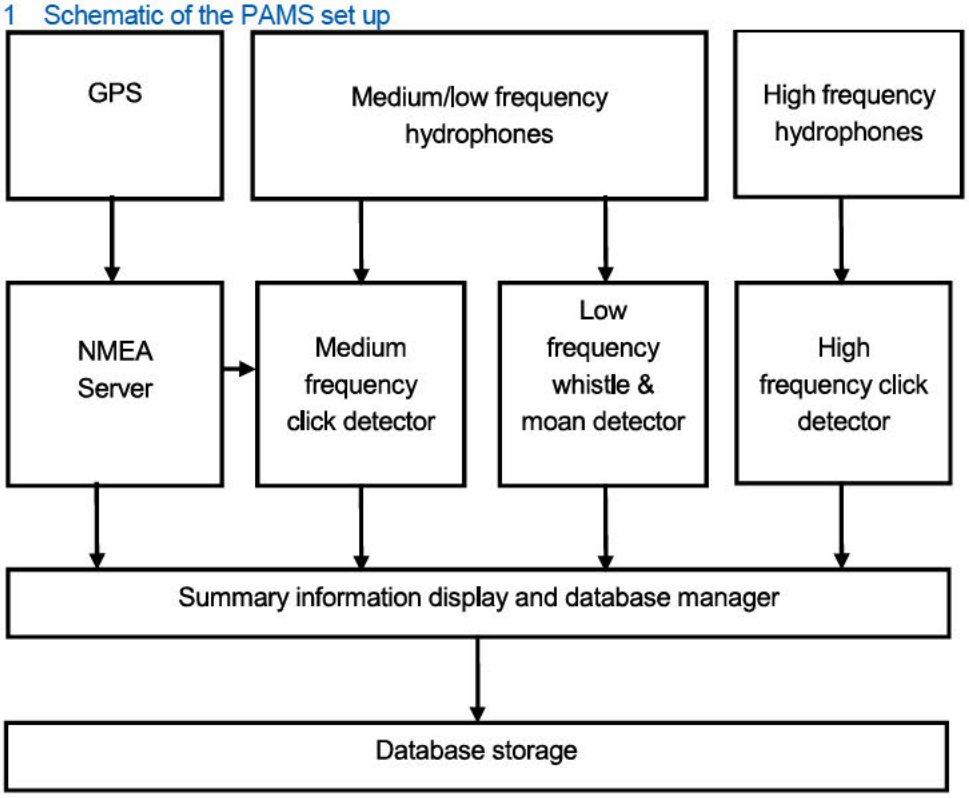
The PAMS comprised a towed hydrophone array connected to a data processing system, which enables aural and visual inspection of the acquired sound (specifications detailed in Table A. 1). In summary, an interface unit digitises the analogue signal from the hydrophones, allowing it to be read by the computer system. The computer runs analysis software, which highlights the variety of clicks and whistles produced by different species of marine mammals, using a mixture of preset and customised detection algorithms.

Table A. 1 PAMS Specification

| General | |
|---|---|
| Manufacturer | Gardline Limited |
| Model | MK 3 |
| **Towed streamer section** | |
| Length | N/A integrated into tow cable |
| Section diameter | 14/16mm over cable, 24/29mm over mouldings |
| Number of Hydrophones | 4 |
| Hydrophone type | Custom built by Gardline Limited. 1 low frequency, 3 broadband |
| Receive sensitivity (dB re 1 V/µPa) | -204 |
| Hydrophone separation | Hydrophone 1 and 2; 0.25m<br>Hydrophone 2 and 3; 1.2m<br>Hydrophone 3 and 4; 1.2m |
| Preamplifiers | 1 low frequency, 3 broadband |
| Preamplifier type | Sensor Technology SA-02 |
| Depth sensor manufacturer | SensorTechnics |
| **Tow cable** | |
| Length | 250m |
| Diameter | 14mm |
| Termination | 37 pin CEEP Connectors |
| **Deck cable** | |
| Length | 100m |
| Diameter | 14mm |
| Termination | 37 pin CEEP Connectors |

The system utilises medium and high frequency hydrophones in order to cover the frequency range of marine mammal vocalisations. The signal received by the hydrophones is processed in real-time by the dedicated software PAMGuard (see Table 2.2), which through the use of click detectors, whistles and moan detectors, and filters, allows the automatic detection of the presence of marine mammals. Detectors and filters can be adjusted manually by the PAMS operative in order to increase the likelihood of positive detections. Any detections identified are then stored in a database. The configuration is summarised in Figure A. 1. The directionality and range of the marine mammal is determined by the time difference of the arrival of the acoustic signal (vocalisation) to each hydrophone in the array.

Figure A. 1 Schematic of the PAMS set up



# APPENDIX B METHODS

## B.1 Drop Camera Procedure

Environmental seabed images were taken by means of a digital camera system (see Section A.1 for details) which was mounted within a stainless-steel frame. The camera system was deployed from the vessel with footage viewed in real time, assisting in the control of the digital stills camera. This allowed for shot selection to capture sediment changes or features at the seafloor.

Seabed photographs were taken across each target using a hover and drift technique at appropriate intervals with at least the minimum agreed transect length and number of photos obtained (see Table 2.2). This technique allowed the frame to move progressively along the seabed as the vessel traversed the work area on its thrusters or drifted. The images were captured remotely using the surface control unit and stored on the camera's internal memory card. Video footage was overlaid with the required information (see Table 2.2) and recorded directly onto onboard server. On completion, photographs were downloaded onto a PC via a USB download cable. All digital data (stills and video) were copied to the primary storage format and backed up to the appropriate secondary storage format to prevent loss (see Table 2.2). All storage formats were labelled clearly with the relevant job details, write-protected and stored.

## B.2 Grab Sampling Procedure

The vessel's sampling area was cleaned using a powerful deck fire-hose and seawater. The grab (see Table 1.3) was thoroughly washed down using the appropriate chemical decontamination solution (see Table 2.2) prior to deployment at every station to prevent hydrocarbon cross contamination. A deployment cable (see Table 2.2 for type) was used to lower the grab to the seabed.

All containers were thoroughly washed with appropriate solvents and labelled externally prior to use. In addition, biology samples were provided with an additional internal waterproof label.

Where required in deeper waters, the grab may be winched down to approximately 10 to 15 metres from the seabed prior to release to sea floor. Communication between the deck, bridge crew and the surveyors was conducted by means of VHF radio. When directly over the sampling station the grab was winched to the seabed and recovered so that the sample could be obtained, and the apparatus prepared for the next deployment.

Positional fixes were taken for each grab sample immediately following the grab reaching the sea floor. The precise time that the grab reached the seabed was determined by observations of the tension on the winch cable.

## B.3 Sediment Sub-sampling and Preservation Procedures

Sediment samples deemed acceptable for analyses were photographed and described prior to sub-sampling.

Surficial (<2cm depth) sediments were taken directly from the sampler for physico-chemical analysis. Two sediment samples, one for hydrocarbon determination the other to act as a spare, were scooped either directly or using a suitable sampling tool (see Table 2.2) into the appropriate containers that had been previously washed with an appropriate decontamination solution (see Table 2.2) to remove any organic contaminants. Three further sub-samples of approximately 500g comprising one each for metals

determination, particle size distribution analysis and a spare were taken and stored in the relevant containers (see Table 2.2). All physico-chemical samples were stored at less than -18°C prior to analysis.

For each faunal sample the entire contents of a single grab sub-section were washed into a clean plastic tray using seawater and then transferred to a sieve with the requisite mesh diameter (see Table 2.2). Finer sediment fractions were washed from the sample using an auto-sieve, which sprayed a low-powered seawater jet onto the underside of the sieve. The sieve residue was transferred to uniquely labelled appropriate containers (see Table 2.2) using a scoop and/or funnel, making sure that none of the sample was lost or trapped in the sieve mesh. Sieved samples were immediately preserved with a known concentration of suitable faunal preservation solution (see Table 2.2).

## B.4 Marine Mammal Observation Methods

The MMOs conducted dedicated watches for marine animals during geophysical survey operations in daylight hours. Watches were carried out from the bridge, bridge wings and monkey island. The primary observation technique used to locate marine animals was to scan the visible area of sea using the naked eye, with binoculars (magnification 10 x 42 or 8 x 36) used to scan areas of interest and verify potential sightings. This technique gave both a wide field of view and the ability to observe a sufficient range of 3 to 4km in ideal conditions. Distances were estimated by the MMOs using range finder sticks.

## B.5 Passive Acoustic Monitoring Methods

The mitigation personnel used a PAMS to acoustically monitor for marine mammals. The PAMS used during the survey was a MK 3 system and consisted of four hydrophones: 1 low frequency, and 3 broadband. The hydrophone array was wired into a 250m tow cable, of which 100m was deployed via a boom on the port side stern of the vessel to a depth of approximately 10m. The acoustic signal acquired by the PAMS was displayed in PAMGuard (Version 1.15.16) and monitored by the PAMS operatives in real-time.

# APPENDIX C SCOPE DEVIATIONS AND CONCESSIONS

Vessel: MV Ocean Geograph
Job Number: 53794 – ONE-Dyas
Location: F06A Pipeline route
BEIS Permit Number: N/A
Report Number: 01
Date: 05/06/23

GARDLINE LIMITED
Endeavour House, Admiralty Road
Great Yarmouth, Norfolk NR30 3NG UK
Tel: +44 (0)1493 845600
Fax: +44 (0)1493 852106

## DEVIATION FROM BEST PRACTICE REPORT

| | |
|---|---|
| Start Time (UTC) | (1) 23:40<br>(2) 01:29 |
| End Time (UTC) | (1) 00:31<br>(2) 02:32 |
| Nature of Issue | Line turn over 40 minutes whilst at reduced power and increased shot point interval (SPI) |

**Actions taken during the event**

A line change of less than 40 minutes was planned to run into the line PSD_08 (1) and PSD-01 (2), during this time the JNCC guidelines (2017) were followed, which states:

Section 2.1.4 Line changes

*"b) If line changes are expected to take **less than 40 minutes:***

*If line changes are expected to be completed within 40 minutes, regardless of airgun volume:*

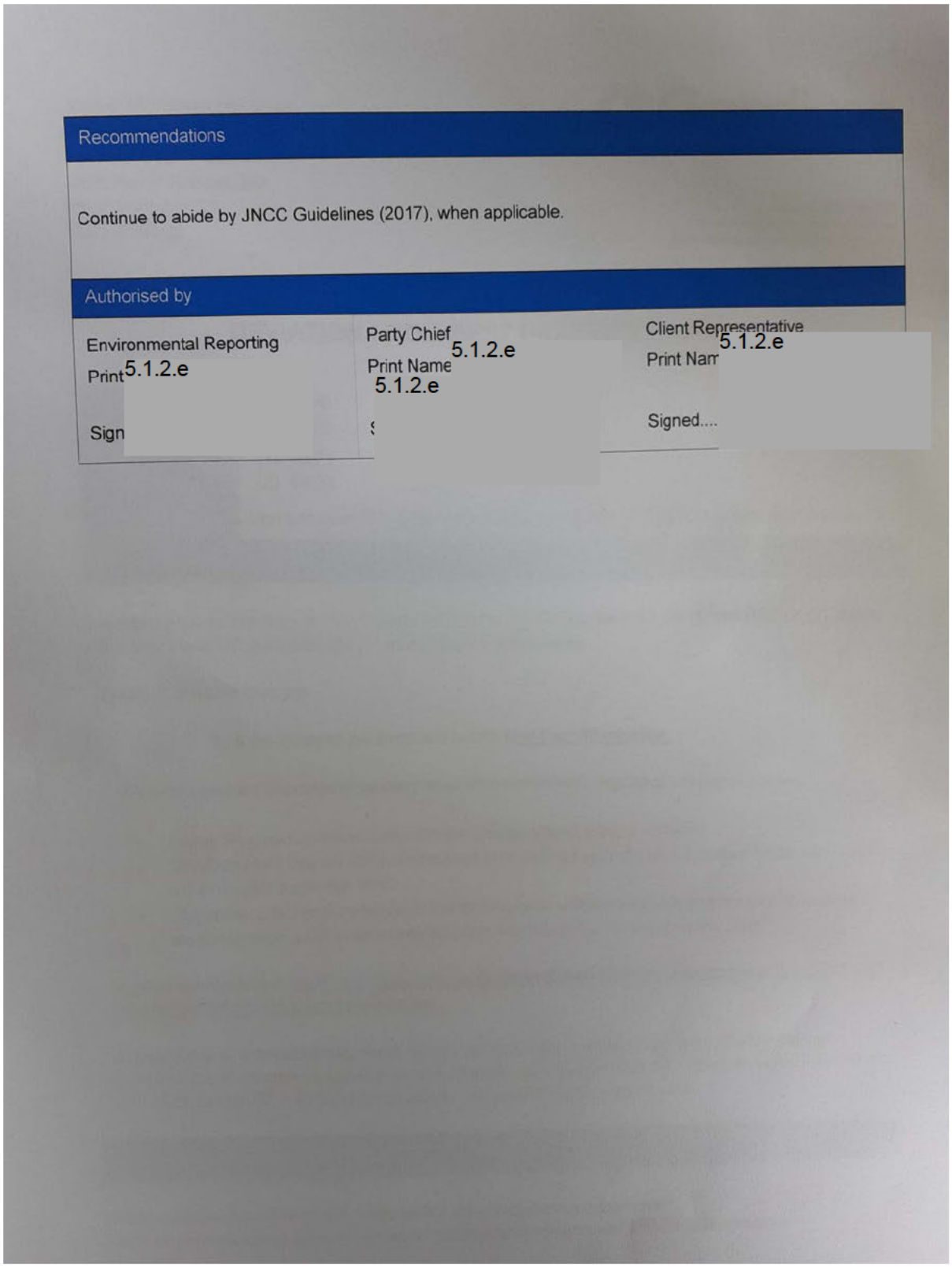
- *Airgun firing can continue during the line change only if power is reduced.*
- *The Shot Point Interval (SPI) is increased to provide a longer duration between shots, with the SPI not to exceed 5 minutes; AND*
- *The power is increased and the SPI is decreased in uniform stages during the final 10 minutes of the line change, prior to data collection recommencing (i.e. form of mini soft start).*

*If above is not practical, then airgun firing should be determinated and a pre-shooting search and soft-start implemented prior to the start of the next line".*

However, due to unexpected issue with the bird compass on the hydrophone array, the line change exceeded the 40 minutes, despite efforts to fix the issue with the bird and reach the start of line in the allotted time. Total line turn time for PSD-08 (1) was 51 min and PSD-01 (2) was 63 min.

**Actions taken after the event**

All survey crew were briefed and made aware of the mitigation requirements.
Improve communication between surveyor, geophysical engineers and MMO/PAMs operators.



| Recommendations |
| --- |
| Continue to abide by JNCC Guidelines (2017), when applicable. |

| Authorised by | | |
| --- | --- | --- |
| Environmental Reporting<br>Print 5.1.2.e<br>Sign | Party Chief<br>Print Name 5.1.2.e<br>5.1.2.e<br>S | Client Representative<br>Print Nam 5.1.2.e<br>Signed.... |

# APPENDIX D DECK LOGS

# APPENDIX D DECK LOGS

**SEABED IMAGERY LOG SHEET (Deck)** — FOR-ENV-0538

| | | | |
|---|---|---|---|
| Job No: | 53794 | Area: | Dutch Blocks F02, F03, F06 |
| Project: | F06A Pipeline Route and Platform Area Survey | Equipment: | 1Cam / OE14-208 / CT3022 |
| Client: | ONE-Dyas B.V. | Vessel: | MV *Ocean Geograph* |
| Scale: | Green Line Lasers (10cm) | | |

| Station Number | Date | Time on Overlay Start | Time on Overlay Finish | Duration | HD Video HDD File Name(s) | Topside SD Video File Name (s) | Sediment Description | Fauna Description | Operator(s) | No. of Photos | First Fix No. | Last Fix No. | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ENV01 | 09-Jun-2023 | 04:05:48 | 04:19:39 | 00:13:51 | 53794_ENV01 00010.MTS | 53794_ENV01_2023-06-09_040548_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Chordata (Actinopterygii), Echinodermata (Asteroidea), Mollusca (Gastropoda) | RH, CD, SG | 38 | 1 | 38 | C-Technics camera used |
| ENV02 | 09-Jun-2023 | 05:44:01 | 05:58:23 | 00:14:22 | 53794_ENV02 00011.MTS | 53794_ENV02_2023-06-09_054451_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Arthropoda (Paguroidea), Chordata (Actinopterygii, Pleuronectiformes), Echinodermata (Asteroidea), Mollusca (Gastropoda) | CD, SG | 37 | 39 | 75 | |
| ENV03 | 09-Jun-2023 | 07:52:41 | 08:10:33 | 00:17:52 | 53794_ENV03 00012.MTS | 53794_ENV03_2023-06-09_075241_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Chordata (Actinopterygii), Mollusca (Gastropoda), | CD, SG | 25 | 76 | 117 | Fixes 77 to 93 missing from EELs, lost connection with Voyager |
| ENV04 | 09-Jun-2023 | 09:41:31 | 09:58:29 | 00:16:58 | 53794_ENV04 00013.MTS | 53794_ENV04_2023-06-09_094131_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Chordata (Actinopterygii), Cnidaria (Hydrozoa), Echinodermata (Asteroidea) | CD, SG | 38 | 118 | 155 | |
| ENV05 | 09-Jun-2023 | 11:20:06 | 11:37:11 | 00:17:05 | 53794_ENV05 00014.MTS | 53794_ENV05_2023-06-09_112006_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Arthropoda (Paguroidea), Cnidaria, Echinodermata (Asteroidea), Mollusca (Gastropoda) | RH, SA | 43 | 156 | 198 | |
| ENV06 | 09-Jun-2023 | 12:51:21 | 13:07:16 | 00:15:55 | 53794_ENV06 00015.MTS | 53794_ENV06_2023-06-09_125121_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Annelida (Polychaeta), Arthropoda (Paguroidea), Cnidaria (Hydrozoa), Echinodermata (Asteroidea), Mollusca (Gastropoda) | RH, SA | 47 | 199 | 245 | |
| ENV07 | 09-Jun-2023 | 14:09:48 | 14:26:49 | 00:17:01 | 53794_ENV07 00016.MTS | 53794_ENV07_2023-06-09_140948_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Chordata (Pleuronectiformes), Cnidaria (Hydrozoa), Echinodermata (*Astropecten irregularis*, Ophiuroidea) | RH, SA | 47 | 246 | 292 | |
| ENV08 | 09-Jun-2023 | 15:37:21 | 15:49:18 | 00:11:57 | 53794_ENV08 00017.MTS | 53794_ENV08_2023-06-09_153721_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Annelida (Polychaeta, *Aphrodita aculeata*), Chordata (Pleuronectiformes), Echinodermata (Asteroidea) | RH, SA | 39 | 293 | 331 | |
| ENV09 | 09-Jun-2023 | 17:00:26 | 17:14:14 | 00:13:48 | 53794_ENV09 00018.MTS | 53794_ENV09_2023-06-09_170026_Ch1/2_00 53794_ENV09_2023-06-09_170452_Ch1/2_01 | Fine sand with occasional shell fragments and faunal burrows | Echinodermata (Asteroidea) | RH,SA | 41 | 332 | 372 | DVR crashed, issues with Konsberg flash |
| ENV10 | 09-Jun-2023 | 18:21:07 | 18:32:47 | 00:11:40 | 53794_ENV10 00019.MTS | 53794_ENV10_2023-06-09_182107_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Annelida (Polychaeta, *A. aculeata*), Arthropoda (Paguroidea), Echinodermata (Asteroidea) | RH,SA | 39 | 373 | 411 | |
| ENV11 | 09-Jun-2023 | 19:36:18 | 19:53:01 | 00:16:43 | 53794_ENV11 00020.MTS | 53794_ENV11_2023-06-09_193618_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Chordata (Pleuronectiformes), Echinodermata (Asteroidea) | RH,SA | 43 | 412 | 454 | |
| ENV12 | 09-Jun-2023 | 20:59:49 | 21:17:03 | 00:17:14 | 53794_ENV12 00021.MTS | 53794_ENV12_2023-06-09_205949_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Arthropoda (Brachyura), Chordata (Actinopterygii, Pleuronectiformes), Echinodermata (*Asterias rubens*, *A. irregularis*, Ophiuroidea) | RH,SA | 42 | 455 | 496 | |
| ENV13 | 09-Jun-2023 | 22:26:13 | 22:42:32 | 00:16:19 | 53794_ENV13 00022.MTS | 53794_ENV13_2023-06-09_222623_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Arthropoda (Paguroidea), Chordata (Pleuronectiformes), Echinodermata (Asteroidea, Ophiuroidea) | RH,SA | 44 | 497 | 540 | |
| ENV14 | 10-Jun-2023 | 00:16:22 | 00:33:56 | 00:17:34 | 53794_ENV14 00023.MTS | 53794_ENV14_2023-06-10_001622_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Arthropoda (Brachyura), Chordata (*Melanogrammus aeglefinus*, Pleuronectiformes), Cnidaria (Hydrozoa), Echinodermata (Asteroidea) | CD, SG | 39 | 541 | 579 | |

# APPENDIX D DECK LOGS

**SEABED IMAGERY LOG SHEET (Deck)** FOR-ENV-0538

| | | | |
|---|---|---|---|
| Job No: | 53794 | Area: | Dutch Blocks F02, F03, F06 |
| Project: | F06A Pipeline Route and Platform Area Survey | Equipment: | 1Cam / OE14-208 / CT3022 |
| Client: | ONE-Dyas B.V. | Vessel: | MV *Ocean Geograph* |
| Scale: | Green Line Lasers (10cm) | | |

| Station Number | Date | Time on Overlay Start | Time on Overlay Finish | Duration | HD Video HDD File Name(s) | Topside SD Video File Name (s) | Sediment Description | Fauna Description | Operator(s) | No. of Photos | First Fix No. | Last Fix No. | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ENV15 | 10-Jun-2023 | 01:52:48 | 02:09:53 | 00:17:05 | 53794_ENV15 00024.MTS | 53794_ENV15_2023-06-10_015248_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Arthropoda (Brachyura), Chordata (Pleuronectiformes), Cnidaria (Hydrozoa), Echinodermata (Asteroidea) | CD, SG | 38 | 580 | 617 | |
| ENV16 | 10-Jun-2023 | 03:23:03 | 03:35:05 | 00:12:02 | 53794_ENV16 00025.MTS | 53794_ENV16_2023-06-10_032309_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Arthropoda (Paguroidea), Chordata (Pleuronectiformes), Cnidaria (Hydrozoa), Echinodermata (Asteroidea) | CD, SG | 30 | 618 | 647 | |
| ENV17 | 10-Jun-2023 | 04:37:30 | 04:50:15 | 00:12:45 | 53794_ENV17 00026.MTS | 53794_ENV17_2023-06-10_043730_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Arthropoda (Brachyura, Paguroidea), Chordata (Pleuronectiformes), Cnidaria (Hydrozoa), Echinodermata (Asteroidea) | CD, SG | 28 | 648 | 675 | |
| ENV34 | 10-Jun-2023 | 17:54:26 | 18:05:45 | 00:11:19 | 53794_ENV34 00000.MTS | 53794_ENV34_2023-06-10_175426_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Arthropoda (Brachyura), Chordata (Pleuronectiformes), Echinodermata (*A. irregularis*, Ophiuroidea) | RH, SA | 45 | 676 | 720 | |
| ENV35 | 10-Jun-2023 | 19:16:18 | 19:33:28 | 00:17:10 | 53794_ENV35 00001.MTS | 53794_ENV35_2023-06-10_191618_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Chordata (Pleuronectiformes), Echinodermata (Asteroidea, Ophiuroidea) | RH, SA | 45 | 721 | 765 | |
| ENV36 | 10-Jun-2023 | 20:32:09 | 20:50:03 | 00:17:54 | 53794_ENV36 00002.MTS | 53794_ENV36_2023-06-10_203209_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Arthropoda (Brachyura), Chordata (Pleuronectiformes), Cnidaria (Hydrozoa), Echinodermata (*A. irregularis*, Ophiuroidea) | RH, SA | 44 | 766 | 809 | |
| ENV38 | 10-Jun_2023 | 22:04:06 | 22:20:46 | 00:16:40 | 53794_ENV38 00003.MTS | 53794_ENV38_2023-06-10_220406_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Arthropoda (Brachyura), Chordata (Pleuronectiformes), Echinodermata (Asteroidea, Ophiuroidea) | RH, SA | 38 | 810 | 855 | Fixes 838 to 845 missing from EELs, lost connection with Voyager |
| ENV37 | 10-Jun_2023 | 23:39:05 | 23:57:12 | 00:18:07 | 53794_ENV37 00004.MTS | 53794_ENV37_2023-06-10_233905_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Annelida (*A. aculeata*), Arthropoda (Brachyura, Paguroidea), Chordata (Actinopterygii, Pleuronectiformes), Echinodermata (Asteroidea, Ophiuroidea), Mollusca (Bivalvia, Scaphopoda) | CD, SG | 39 | 856 | 894 | |
| ENV33 | 11-Jun-2023 | 01:05:02 | 01:22:38 | 00:17:36 | 53794_ENV33 00005.MTS | 53794_ENV33_2023-06-11_010520_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Annelida (*A. aculeata*, Polychaeta), Chordata (Actinopterygii, Pleuronectiformes), Echinodermata (Asterioidea) | CD, SG | 46 | 895 | 940 | |
| ENV32 | 11-Jun-2023 | 02:26:29 | 02:43:39 | 00:17:10 | 53794_ENV32 00006.MTS | 53794_ENV32_2023-06-11_022629_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Annelida (Polychaeta), Arthropoda (Paguroidea), Cnidaria (Hydrozoa), Echinodermata (Asteroidea), Mollusca (Scaphopoda) | CD, SG | 36 | 941 | 976 | |
| ENV31 | 11-Jun-2023 | 04:01:36 | 04:13:38 | 00:12:02 | 53794_ENV31 00007.MTS | 53794_ENV31_2023-06-11_040140_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Annelida (Polychaeta), Chordata (Pleuronectiformes), Echinodermata (Asteroidea) | CD, SG | 35 | 977 | 1011 | |
| ENV30 | 11-Jun-2023 | 05:21:24 | 05:32:56 | 00:11:32 | 53794_ENV30 00008.MTS | 53794_ENV30_2023-06-11_052129_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Annelida (*A. aculeata*, Polychaeta), Cnidaria (Hydrozoa), Chordata (Pleuronectiformes), Echinodermata (*A. irregularis*), Mollusca (*Arctica islandica*) | CD, SG | 36 | 1012 | 1047 | |
| ENV29 | 11-Jun-2023 | 07:04:47 | 07:17:43 | 00:12:56 | 53794_ENV29 00009.MTS | 53794_ENV29_2023-06-11_070447_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Annelida (Polychaeta), Cnidaria (Hydrozoa), Echinodermata (*A. irregularis*), Mollusca (Bivalvia, Scaphopoda) | CD, SG | 37 | 1048 | 1084 | |
| ENV28 | 11-Jun-2023 | 08:25:27 | 08:37:53 | 00:12:26 | 53794_ENV28 00011.MTS | 53794_ENV28_2023-06-11_082527_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Annelida (Polychaeta), Arthropoda (Brachyura), Echinodermata (*A. irregularis*) | CD, SG | 35 | 1085 | 1119 | |

# APPENDIX D DECK LOGS

| SEABED IMAGERY LOG SHEET (Deck) | | | | | | | | | | | | | FOR-ENV-0538 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Job No: 53794 | | | Area: Dutch Blocks F02, F03, F06 | | | | | Scale: | Green Line Lasers (10cm) | | | | |
| Project: F06A Pipeline Route and Platform Area Survey | | | | | | | | Equipment: | 1Cam / OE14-208 / CT3022 | | | | |
| Client: ONE-Dyas B.V. | | | | | | | | Vessel: | MV *Ocean Geograph* | | | | |
| Station Number | Date | Time on Overlay Start | Time on Overlay Finish | Duration | HD Video HDD File Name(s) | Topside SD Video File Name (s) | Sediment Description | Fauna Description | Operator(s) | No. of Photos | First Fix No. | Last Fix No. | Comments |
| ENV27 | 11-Jun-2023 | 09:45:56 | 09:57:55 | 00:11:59 | 53794_ENV27 00012.MTS | 53794_ENV27_2023-06-11_094556_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Annelida (Polychaeta), Arthropoda (Brachyura), Cnidaria (Hydrozoa), Echinodermata (*A. irregularis*), Mollusca (Scaphopoda) | CD, SG | 36 | 1120 | 1155 | |
| ENV26 | 11-Jun-2023 | 11:21:11 | 11:32:50 | 00:11:39 | 53794_ENV26 00013.MTS | 53794_ENV26_2023-06-11_112111_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Annelida (Polychaeta), Echinodermata (*A. irregularis*), Mollusca (Gastropoda) | RH, SA | 41 | 1156 | 1196 | |
| ENV25 | 11-Jun-2023 | 12:32:53 | 12:44:45 | 00:11:52 | 53794_ENV25 00014.MTS | 53794_ENV25_2023-06-11_123253_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Chordata (Pleuronectiformes), Echinodermata (Asteroidea, Ophiuroidea), Mollusca (Gastropoda) | RH, SA | 34 | 1197 | 1233 | Fixes 1222 to 1225 missing from EELs, lost connection with Voyager |
| ENV24 | 11-Jun-2023 | 13:44:11 | 13:55:51 | 00:11:40 | 53794_ENV24 00015.MTS | 53794_ENV24_2023-06-11_134411_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Annelida (Polychaeta, *A. aculeata*), Arthropoda (Brachyura), Cnidaria (Hydrozoa), Echinodermata (*A. irregularis*) | RH, SA | 35 | 1234 | 1268 | |
| ENV23 | 11-Jun-2023 | 14:56:38 | 15:08:18 | 00:11:40 | 53794_ENV23 00016.MTS | 53794_ENV23_2023-06-11_145635_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Chordata (Pleuronectiformes), Cnidaria (Hydrozoa), Echinodermata (*A. irregularis*) | RH, SA | 38 | 1269 | 1306 | |
| ENV22 | 11-Jun-2023 | 16:30:21 | 16:41:56 | 00:11:35 | 53794_ENV22 00017.MTS | 53794_ENV22_2023-06-11_163021_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Annelida (Polychaeta), Chordata (Pleuronectiformes), Cnidaria (Hydrozoa), Echinodermata (*A. irregularis*) | RH,SA | 39 | 1307 | 1345 | |
| ENV21 | 11-Jun-2023 | 17:32:56 | 17:44:04 | 00:11:08 | 53794_ENV21 00018.MTS | 53794_ENV21_2023-06-11_173256_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Chordata (Pleuronectiformes), Echinodermata (Asteroidea, Ophiuroidea) | RH, SA | 38 | 1346 | 1383 | |
| ENV20 | 11-Jun-2023 | 18:38:14 | 18:49:25 | 00:11:11 | 53794_ENV20 00019.MTS | 53794_ENV20_2023-06-11_183814_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Chordata (Pleuronectiformes), Echinodermata (*A. rubens, A. irregularis*) | RH, SA | 38 | 1384 | 1421 | |
| ENV19 | 11-Jun-2023 | 19:43:06 | 19:54:25 | 00:11:19 | 53794_ENV19 00020.MTS | 53794_ENV19_2023-06-11_194306_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Cnidaria (Hydrozoa), Echinodermata (*A. irregularis*, Ophiuroidea) | RH,SA | 37 | 1422 | 1458 | |
| ENV18 | 11-Jun-2023 | 20:53:48 | 21:05:37 | 00:11:49 | 53794_ENV18 00021.MTS | 53794_ENV18_2023-06-11_205348_Ch1/2_00 | Fine sand with occasional shell fragments and faunal burrows | Arthropoda (Brachyura), Chordata (Callionymidae, Pleuronectiformes), Cnidaria (Hydrozoa), Echinodermata (*A. irregularis*) | RH, SA | 36 | 1459 | 1494 | |

# APPENDIX D DECK LOGS

**SEABED SAMPLING LOG SHEET (Deck)** FOR-ENV-0539

| | | | |
|---|---|---|---|
| Job No: | 53794 | Area: | Dutch Blocks F02, F03 and F06a, North Sea |
| Project: | F06A Pipeline Route and Platform Area Survey | | |
| Client: | ONE-Dyas B.V. | | |

| | | | |
|---|---|---|---|
| Sieve Size: | 0.5mm | | |
| Equipment: | Day Grab | | |
| Vessel: | MV *Ocean Geograph* | | |

| Sample Number | Station Number | Date | Time | Penetration | Sample Retention | Sample Receptacle | Sediment Description | Fauna Description | Operator(s) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ENV01 | 09-Jun-2023 | 04:39 | 60% | MFA | 1 x 1L Pot Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/3 | Annelida (Polychaeta) | RH, CD, SG | |
| 2 | ENV01 | 09-Jun-2023 | 04:48 | 50% | MFB | 1 x 1L Pot Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/3 | Annelida (Polychaeta), Echinodermata (Asteroidea, Ophiuroidea) | RH, CD, SG | |
| 3 | ENV01 | 09-Jun-2023 | 04:58 | 60% | MFC | 1 x 1L Pot Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/3 | Annelida (Polychaeta) | RH, CD, SG | |
| 4 | ENV01 | 09-Jun-2023 | 05:05 | 60% | CHEM | 2 x 125ml Jar 3 x ziplock bag | Fine sand with occasional shell fragments Munsell: 2.5Y 3/3 | No visible fauna | RH, CD, SG | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 5 | ENV02 | 09-Jun-2023 | 06:19 | 60% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/3 | Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia) | CD, SG | |
| 6 | ENV02 | 09-Jun-2023 | 06:28 | 60% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/3 | Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia) | CD, SG | |
| 7 | ENV02 | 09-Jun-2023 | 06:36 | 60% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/3 | Annelida (Polychaeta), Arthropoda (Brachyura), Echinodermata (Ophiuroidea), Mollusca (Bivalvia) | CD, SG | |
| 8 | ENV02 | 09-Jun-2023 | 06:45 | 65% | CHEM | 2 x 125ml Jar 3 x ziplock bag | Fine sand with occasional shell fragments Munsell: 2.5Y 3/3 | No visible fauna | CD, SG | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 9 | ENV03 | 09-Jun-2023 | 08:32 | 70% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia, Gastropoda) | CD, SG | |
| 10 | ENV03 | 09-Jun-2023 | 08:40 | 60% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia) | CD, SG | |
| 11 | ENV03 | 09-Jun-2023 | 08:49 | 65% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | Annelida (Polychaeta), Echinodermata (Ophiuroidea) | CD, SG | |
| 12 | ENV03 | 09-Jun-2023 | 08:58 | 70% | CHEM | 2 x 125ml Jar 3 x ziplock bag | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | No visible fauna | CD, SG | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 13 | ENV04 | 09-Jun-2023 | 10:19 | 60% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | Annelida (Polychaeta), Mollusca (Bivalvia) | CD, SG | |
| 14 | ENV04 | 09-Jun-2023 | 10:25 | 70% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | Annelida (Polychaeta), Anthropoda (Brachyura), Echinodermata (Ophiuroidea), Mollusca (Bivalvia, Gastropoda) | CD, SG | |
| 15 | ENV04 | 09-Jun-2023 | 10:32 | 70% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | Annelida (Polychaeta), Anthropoda (Brachyura), Echinodermata (Ophiuroidea), Mollusca (Bivalvia, Gastropoda) | CD, SG | |

# APPENDIX D DECK LOGS

| SEABED SAMPLING LOG SHEET (Deck) | | | | | | | | | | FOR-ENV-0539 |
|---|---|---|---|---|---|---|---|---|---|---|
| Job No: | 53794 | | | Area: | Dutch Blocks F02, F03 and F06a, North Sea | | | Sieve Size: | 0.5mm | |
| Project: | F06A Pipeline Route and Platform Area Survey | | | | | | | Equipment: | Day Grab | |
| Client: | ONE-Dyas B.V. | | | | | | | Vessel: | MV *Ocean Geograph* | |
| Sample Number | Station Number | Date | Time | Penetration | Sample Retention | Sample Receptacle | Sediment Description | Fauna Description | Operator(s) | Comments |
| 16 | ENV04 | 09-Jun-2023 | 10:44 | 65% | CHEM | 2 x 125ml Jar<br>3 x ziplock bag | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/2 | No visible fauna | CD, SG | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 17 | ENV05 | 09-Jun-2023 | 11:53 | 40% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/2 | Annelida (Polychaeta) | RH, SA | |
| 18 | ENV05 | 09-Jun-2023 | 12:00 | 60% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/2 | Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum* ) | RH, SA | |
| 19 | ENV05 | 09-Jun-2023 | 12:08 | 60% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/2 | Annelida (Polychaeta) | RH, SA | |
| 20 | ENV05 | 09-Jun-2023 | 12:15 | 50% | CHEM | 2 x 125ml Jar<br>3 x ziplock bag | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/2 | No visible fauna | RH, SA | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 21 | EMV06 | 09-Jun-2023 | 13:21 | 50% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/2 | Annelida (Polychaeta) | RH, SA | |
| 22 | ENV06 | 09-Jun-2023 | 13:26 | 60% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/3 | Annelida (Polychaeta) | RH, SA | |
| 23 | ENV06 | 09-Jun-2023 | 13:34 | 50% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/4 | Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum* ) | RH, SA | |
| 24 | ENV06 | 09-Jun-2023 | 13:40 | 60% | CHEM | 2 x 125ml Jar<br>3 x ziplock bag | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/2 | No visible fauna | RH, SA | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 25 | ENV07 | 09-Jun-2023 | 14:46 | 50% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/2 | Annelida (Polychaeta), Echinodermata (Asteroidea, Ophiuroidea), Mollusca (Bivalvia) | RH, SA | |
| 26 | ENV07 | 09-Jun-2023 | 14:52 | 50% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/2 | Annelida (Polychaeta), Mollusca (Bivalvia) | RH, SA | |
| 27 | ENV07 | 09-Jun-2023 | 14:59 | 50% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/2 | Annelida (Polychaeta) | RH, SA | |
| 28 | ENV07 | 09-Jun-2023 | 15:06 | 60% | CHEM | 2 x 125ml Jar<br>3 x ziplock bag | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/2 | No visible fauna | RH, SA | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 29 | ENV08 | 09-Jun-2023 | 16:06 | 50% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/2 | Annelida (Polychaeta) | RH, SA | |

# APPENDIX D DECK LOGS

| SEABED SAMPLING LOG SHEET (Deck) | | | | | | | | | | FOR-ENV-0539 |
|---|---|---|---|---|---|---|---|---|---|---|
| Job No: | 53794 | | | Area: | Dutch Blocks F02, F03 and F06a, North Sea | | | Sieve Size: | 0.5mm | |
| Project: | F06A Pipeline Route and Platform Area Survey | | | | | | | Equipment: | Day Grab | |
| Client: | ONE-Dyas B.V. | | | | | | | Vessel: | MV *Ocean Geograph* | |
| Sample Number | Station Number | Date | Time | Penetration | Sample Retention | Sample Receptacle | Sediment Description | Fauna Description | Operator(s) | Comments |
| 30 | ENV08 | 09-Jun-2023 | 16:11 | 50% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | Annelida (Polychaeta), Mollusca (Bivalvia) | RH, SA | |
| 31 | ENV08 | 09-Jun-2023 | 16:18 | 40% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | Annelida (Polychaeta) | RH, SA | |
| 32 | ENV08 | 09-Jun-2023 | 16:25 | 70% | CHEM | 2 x 125ml Jar 3 x ziplock bag | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | No visible fauna | RH, SA | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 33 | ENV09 | 09-Jun-2023 | 17:29 | 60% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | Annelida (Polychaeta), Mollusca (Bivalvia) | RH, SA | |
| 34 | ENV09 | 09-Jun-2023 | 17:35 | 60% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum* ) | RH, SA | |
| 35 | ENV09 | 09-Jun-2023 | 17:41 | 70% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | Annelida (Polychaeta), Mollusca (Bivalvia) | RH, SA | |
| 36 | ENV09 | 09-Jun-2023 | 17:47 | 60% | CHEM | 2 x 125ml Jar 3 x ziplock bag | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | No visible fauna | RH, SA | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 37 | ENV10 | 09-Jun-2023 | 18:47 | 60% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | Annelida (Polychaeta) | RH, SA | |
| 38 | ENV10 | 09-Jun-2023 | 18:52 | 60% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum* , Ophiuroidea) | RH, SA | |
| 39 | ENV10 | 09-Jun-2023 | 18:58 | 60% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | Annelida (Polychaeta) | RH, SA | |
| 40 | ENV10 | 09-Jun-2023 | 19:05 | 60% | CHEM | 2 x 125ml Jar 3 x ziplock bag | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | No visible fauna | RH, SA | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 41 | ENV11 | 09-Jun-2023 | 20:13 | 60% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | Annelida (Polychaeta) | RH, SA | |
| 42 | ENV11 | 09-Jun-2023 | 20:18 | 50% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | Annelida (Polychaeta) | RH, SA | |
| 43 | ENV11 | 09-Jun-2023 | 20:24 | 50% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | Annelida (Polychaeta) | RH, SA | |

# APPENDIX D DECK LOGS

| SEABED SAMPLING LOG SHEET (Deck) | | | | | | | | | | FOR-ENV-0539 |
|---|---|---|---|---|---|---|---|---|---|---|
| Job No: | 53794 | | | Area: | Dutch Blocks F02, F03 and F06a, North Sea | | | Sieve Size: | 0.5mm | |
| Project: | F06A Pipeline Route and Platform Area Survey | | | | | | | Equipment: | Day Grab | |
| Client: | ONE-Dyas B.V. | | | | | | | Vessel: | MV *Ocean Geograph* | |
| Sample Number | Station Number | Date | Time | Penetration | Sample Retention | Sample Receptacle | Sediment Description | Fauna Description | Operator(s) | Comments |
| 44 | ENV11 | 09-Jun-2023 | 20:30 | 50% | CHEM | 2 x 125ml Jar<br>3 x ziplock bag | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/2 | No visible fauna | RH, SA | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 45 | ENV12 | 09-Jun-2023 | 21:34 | 0% | NS | N/A | | | RH, SA | No Sample, Misfire |
| 46 | ENV12 | 09-Jun-2023 | 21:40 | 50% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/2 | Annelida (Polychaeta), Mollusca (Bivalvia) | RH, SA | |
| 47 | ENV12 | 09-Jun-2023 | 21:45 | 40% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/2 | Annelida (Polychaeta) | RH, SA | |
| 48 | ENV12 | 09-Jun-2023 | 21:51 | 40% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/2 | Annelida (Polychaeta) | RH, SA | |
| 49 | ENV12 | 09-Jun-2023 | 21:58 | 50% | CHEM | 2 x 125ml Jar<br>3 x ziplock bag | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/2 | No visible fauna | RH, SA | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 50 | ENV13 | 09-Jun-2023 | 23:27 | 40% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments<br>Munsell: 2.5 3/1 | Annelida (Polychaeta), Echinodermata (Ophiuroidea) | CD, SG | No photo of sieve |
| 51 | ENV13 | 09-Jun-2023 | 23:33 | 55% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments<br>Munsell: 2.5 3/1 | Annelida (Polychaeta), Echinodermata (Ophiuroidea) | CD, SG | |
| 52 | ENV13 | 09-Jun-2023 | 23:41 | 50% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments<br>Munsell: 2.5 3/1 | Annelida (Polychaeta), Echinodermata (Ophiuroidea) | CD, SG | |
| 53 | ENV13 | 09-Jun-2023 | 23:48 | 50% | CHEM | 2 x 125ml Jar<br>3 x ziplock bag | Fine sand with occasional shell fragments<br>Munsell: 2.5 3/1 | No visible fauna | CD, SG | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 54 | ENV14 | 10-Jun-2023 | 00:58 | 80% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments<br>Munsell: 2.5 3/2 | Annelida (Polychaeta), Echinodermata (Ophiuroidea) | CD, SG | |
| 55 | ENV14 | 10-Jun-2023 | 01:04 | 75% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments<br>Munsell: 2.5 3/2 | Annelida (Polychaeta), Echinodermata (Ophiuroidea) | CD, SG | |
| 56 | ENV14 | 10-Jun-2023 | 01:10 | 50% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments<br>Munsell: 2.5 3/2 | Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia) | CD, SG | |
| 57 | ENV14 | 10-Jun-2023 | 01:16 | 45% | CHEM | 2 x 125ml Jar<br>3 x ziplock bag | Fine sand with occasional shell fragments<br>Munsell: 2.5 3/2 | No visible fauna | CD, SG | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |

# APPENDIX D DECK LOGS

| SEABED SAMPLING LOG SHEET (Deck) | | | | | | | | | | FOR-ENV-0539 |
|---|---|---|---|---|---|---|---|---|---|---|
| Job No: | 53794 | | | Area: | Dutch Blocks F02, F03 and F06a, North Sea | | | Sieve Size: | 0.5mm | |
| Project: | F06A Pipeline Route and Platform Area Survey | | | | | | | Equipment: | Day Grab | |
| Client: | ONE-Dyas B.V. | | | | | | | Vessel: | MV *Ocean Geograph* | |
| Sample Number | Station Number | Date | Time | Penetration | Sample Retention | Sample Receptacle | Sediment Description | Fauna Description | Operator(s) | Comments |
| 58 | ENV15 | 10-Jun-2023 | 02:30 | 55% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5 3/2 | Annelida (Polychaeta), Echinodermata (Asteroidea, Ophiuroidea) | CD, SG | |
| 59 | ENV15 | 10-Jun-2023 | 02:36 | 45% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5 3/2 | Annelida (Polychaeta), Mollusca (Bivalvia) | CD, SG | |
| 60 | ENV15 | 10-Jun-2023 | 02:42 | 70% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5 3/2 | Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia) | CD, SG | |
| 61 | ENV15 | 10-Jun-2023 | 02:50 | 50% | CHEM | 2 x 125ml Jar 3 x ziplock bag | Fine sand with occasional shell fragments Munsell: 2.5 3/2 | No visible fauna | CD, SG | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 62 | ENV16 | 10-Jun-2023 | 03:53 | 50% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5 3/1 | Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia) | CD, SG | |
| 63 | ENV16 | 10-Jun-2023 | 03:59 | 70% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5 3/1 | Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia) | CD, SG | |
| 64 | ENV16 | 10-Jun-2023 | 04:04 | 65% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5 3/1 | Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia) | CD, SG | |
| 65 | ENV16 | 10-Jun-2023 | 04:10 | 65% | CHEM | 2 x 125ml Jar 3 x ziplock bag | Fine sand with occasional shell fragments Munsell: 2.5 3/1 | No visible fauna | CD, SG | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 66 | ENV17 | 10-Jun-2023 | 05:07 | 55% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | Annelida (Polychaeta), Echinodermata (Ophiuroidea) | CD, SG | |
| 67 | ENV17 | 10-Jun-2023 | 05:12 | 50% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia) | CD, SG | |
| 68 | ENV17 | 10-Jun-2023 | 05:20 | 70% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | Annelida (Polychaeta), Echinodermata (Ophiuroidea) | CD, SG | |
| 69 | ENV17 | 10-Jun-2023 | 05:26 | 70% | CHEM | 2 x 125ml Jar 3 x ziplock bag | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | No visible fauna | CD, SG | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 70 | ENV34 | 10-Jun-2023 | 18:21 | 50% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/3 | Annelida (Polychaeta) | RH, SA | |
| 71 | ENV34 | 10-Jun-2023 | 18:27 | 50% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/3 | Annelida (Polychaeta), Echinodermata (Ophiuroidea) | RH, SA | |

# APPENDIX D DECK LOGS

| SEABED SAMPLING LOG SHEET (Deck) | | | | | | | | | | FOR-ENV-0539 |
|---|---|---|---|---|---|---|---|---|---|---|
| Job No: | 53794 | | Area: | Dutch Blocks F02, F03 and F06a, North Sea | | | Sieve Size: | 0.5mm | | |
| Project: | F06A Pipeline Route and Platform Area Survey | | | | | | Equipment: | Day Grab | | |
| Client: | ONE-Dyas B.V. | | | | | | Vessel: | MV *Ocean Geograph* | | |
| Sample Number | Station Number | Date | Time | Penetration | Sample Retention | Sample Receptacle | Sediment Description | Fauna Description | Operator(s) | Comments |
| 72 | ENV34 | 10-Jun-2023 | 18:33 | 30% | NS | N/A | | | RH, SA | No Sample, Low retention |
| 73 | ENV34 | 10-Jun-2023 | 18:40 | 60% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/3 | Annelida (Polychaeta), Arthropoda (Brachyura), Echinodermata (*Echinocardium cordatum* , Ophiuroidea) | RH, SA | |
| 74 | ENV34 | 10-Jun-2023 | 18:45 | 60% | CHEM | 2 x 125ml Jar 3 x ziplock bag | Fine sand with occasional shell fragments Munsell: 2.5Y 3/3 | No visible fauna | RH, SA | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 75 | ENV35 | 10-Jun-2023 | 19:49 | 50% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/1 | Annelida (Polychaeta), Echinodermata (Ophiuroidea) | RH, SA | |
| 76 | ENV35 | 10-Jun-2023 | 19:55 | 40% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/1 | Annelida (Polychaeta) | RH, SA | |
| 77 | ENV35 | 10-Jun-2023 | 20:00 | 50% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/1 | Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum* ) | RH, SA | |
| 78 | ENV35 | 10-Jun-2023 | 20:06 | 40% | CHEM | 2 x 125ml Jar 3 x ziplock bag | Fine sand with occasional shell fragments Munsell: 2.5Y 3/1 | No visible fauna | RH, SA | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 79 | ENV36 | 10-Jun-2023 | 21:07 | 0% | NS | N/A | | | RH, SA | No Sample, Misfire |
| 80 | ENV36 | 10-Jun-2023 | 21:15 | 50% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/1 | Annelida (Polychaeta) | RH, SA | |
| 81 | ENV36 | 10-Jun-2023 | 21:20 | 50% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/1 | Annelida (Polychaeta) | RH, SA | |
| 82 | ENV36 | 10-Jun-2023 | 21:28 | 40% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/1 | Annelida (Polychaeta), Arthropoda (Brachyura) | RH, SA | |
| 83 | ENV36 | 10-Jun-2023 | 21:35 | 50% | CHEM | 2 x 125ml Jar 3 x ziplock bag | Fine sand with occasional shell fragments Munsell: 2.5Y 3/1 | No visible fauna | RH, SA | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 84 | ENV38 | 10-Jun-2023 | 22:38 | 50% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/1 | Annelida (Polychaeta), Arthropoda (Brachyura) | RH, SA | |

# APPENDIX D DECK LOGS

| SEABED SAMPLING LOG SHEET (Deck) | | | | | | | | | | FOR-ENV-0539 |
|---|---|---|---|---|---|---|---|---|---|---|
| Job No: | 53794 | | Area: | Dutch Blocks F02, F03 and F06a, North Sea | | | Sieve Size: | 0.5mm | | |
| Project: | F06A Pipeline Route and Platform Area Survey | | | | | | Equipment: | Day Grab | | |
| Client: | ONE-Dyas B.V. | | | | | | Vessel: | MV *Ocean Geograph* | | |
| Sample Number | Station Number | Date | Time | Penetration | Sample Retention | Sample Receptacle | Sediment Description | Fauna Description | Operator(s) | Comments |
| 85 | ENV38 | 10-Jun-2023 | 22:43 | 60% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/1 | Annelida (Polychaeta) | RH, SA | |
| 86 | ENV38 | 10-Jun-2023 | 22:49 | 50% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/1 | Annelida (Polychaeta) | RH, SA | |
| 87 | ENV38 | 10-Jun-2023 | 22:57 | 50% | CHEM | 2 x 125ml Jar 3 x ziplock bag | Fine sand with occasional shell fragments Munsell: 2.5Y 3/1 | No visible fauna | RH, SA | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 88 | ENV37 | 10-Jun-2023 | 00:18 | 65% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/1 | Annelida (Polychaeta) | CD, SG | |
| 89 | ENV37 | 10-Jun-2023 | 00:24 | 60% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/1 | Annelida (Polychaeta), Echinodermata (Ophiuroidea) | CD, SG | |
| 90 | ENV37 | 10-Jun-2023 | 00:29 | 65% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/1 | Annelida (Polychaeta), Echinodermata (Ophiuroidea) | CD, SG | |
| 91 | ENV37 | 10-Jun-2023 | 00:35 | 50% | CHEM | 2 x 125ml Jar 3 x ziplock bag | Fine sand with occasional shell fragments Munsell: 2.5Y 3/1 | No visible fauna | CD, SG | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 92 | ENV33 | 11-Jun-2023 | 01:39 | 65% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/3 | Annelida (Polychaeta), Echinodermata (Ophiuroidea) | CD, SG | |
| 93 | ENV33 | 11-Jun-2023 | 01:44 | 60% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/3 | Annelida (Polychaeta), Arthropoda (Brachyura), Echinodermata (Ophiuroidea) | CD, SG | |
| 94 | ENV33 | 11-Jun-2023 | 01:49 | 65% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/3 | Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia) | CD, SG | |
| 95 | ENV33 | 11-Jun-2023 | 01:55 | 70% | CHEM | 2 x 125ml Jar 3 x ziplock bag | Fine sand with occasional shell fragments Munsell: 2.5Y 3/3 | No visible fauna | CD, SG | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 96 | ENV32 | 11-Jun-2023 | 03:07 | 65% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 3.5Y 4/1 | Annelida (Polychaeta), Echinodermata (Ophiuroidea) | CD, SG | |
| 97 | ENV32 | 11-Jun-2023 | 03:14 | 70% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 3.5Y 4/1 | Annelida (Polychaeta), Echinodermata (Ophiuroidea) | CD, SG | |
| 98 | ENV32 | 11-Jun-2023 | 03:19 | 40% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 3.5Y 4/1 | Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia) | CD, SG | |

# APPENDIX D DECK LOGS

| SEABED SAMPLING LOG SHEET (Deck) | | | | | | | | | | FOR-ENV-0539 |
|---|---|---|---|---|---|---|---|---|---|---|
| Job No: | 53794 | | | Area: | Dutch Blocks F02, F03 and F06a, North Sea | | | Sieve Size: | 0.5mm | |
| Project: | F06A Pipeline Route and Platform Area Survey | | | | | | | Equipment: | Day Grab | |
| Client: | ONE-Dyas B.V. | | | | | | | Vessel: | MV *Ocean Geograph* | |
| Sample Number | Station Number | Date | Time | Penetration | Sample Retention | Sample Receptacle | Sediment Description | Fauna Description | Operator(s) | Comments |
| 99 | ENV32 | 11-Jun-2023 | 03:26 | 45% | CHEM | 2 x 125ml Jar 3 x ziplock bag | Fine sand with occasional shell fragments Munsell: 3.5Y 4/1 | No visible fauna | CD, SG | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 100 | ENV31 | 11-Jun-2023 | 04:27 | 40% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 4/1 | Annelida (Polychaeta), Echinodermata (Ophiuroidea) | CD, SG | |
| 101 | ENV31 | 11-Jun-2023 | 04:32 | 60% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 4/1 | Annelida (Polychaeta), Mollusca (Bivalvia) | CD, SG | |
| 102 | ENV31 | 11-Jun-2023 | 04:37 | 50% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 4/1 | Annelida (Polychaeta), Echinodermata (Ophiuroidea) | CD, SG | |
| 103 | ENV31 | 11-Jun-2023 | 04:44 | 55% | CHEM | 2 x 125ml Jar 3 x ziplock bag | Fine sand with occasional shell fragments Munsell: 2.5Y 4/1 | No visible fauna | CD, SG | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 104 | ENV30 | 11-Jun-2023 | 05:48 | 70% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5YR 3/3 | Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia) | CD, SG | |
| 105 | ENV30 | 11-Jun-2023 | 05:53 | 65% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5YR 3/3 | Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia) | CD, SG | |
| 106 | ENV30 | 11-Jun-2023 | 05:59 | 70% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5YR 3/3 | Annelida (Polychaeta), Mollusca (Gastropoda) | CD, SG | |
| 107 | ENV30 | 11-Jun-2023 | 06:05 | 70% | CHEM | 2 x 125ml Jar 3 x ziplock bag | Fine sand with occasional shell fragments Munsell: 2.5YR 3/3 | No visible fauna | CD, SG | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 108 | ENV29 | 11-Jun-2023 | 07:36 | 70% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 2/5 | Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum* , Ophiuroidea) | CD, SG | |
| 109 | ENV29 | 11-Jun-2023 | 07:41 | 75% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 2/5 | Annelida (Polychaeta), Echinodermata (Ophiuroidea) | CD, SG | |
| 110 | ENV29 | 11-Jun-2023 | 07:47 | 75% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 2/5 | Annelida (Polychaeta), Echinodermata (Ophiuroidea) | CD, SG | |
| 111 | ENV29 | 11-Jun-2023 | 07:54 | 65% | CHEM | 2 x 125ml Jar 3 x ziplock bag | Fine sand with occasional shell fragments Munsell: 2.5Y 2/5 | No visible fauna | CD, SG | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 112 | ENV28 | 11-Jun-2023 | 08:54 | 50% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 4/2 | Annelida (Polychaeta), Arthropoda (Brachyura), Echinodermata (Ophiuroidea), Mollusca (Bivalvia) | CD, SG | |

# APPENDIX D DECK LOGS

**SEABED SAMPLING LOG SHEET (Deck)** FOR-ENV-0539

| | | | |
|---|---|---|---|
| Job No: | 53794 | Area: | Dutch Blocks F02, F03 and F06a, North Sea |
| Project: | F06A Pipeline Route and Platform Area Survey | | |
| Client: | ONE-Dyas B.V. | | |

| | | | |
|---|---|---|---|
| Sieve Size: | 0.5mm | | |
| Equipment: | Day Grab | | |
| Vessel: | MV *Ocean Geograph* | | |

| Sample Number | Station Number | Date | Time | Penetration | Sample Retention | Sample Receptacle | Sediment Description | Fauna Description | Operator(s) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 113 | ENV28 | 11-Jun-2023 | 09:00 | 70% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 4/2 | Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia) | CD, SG | |
| 114 | ENV28 | 11-Jun-2023 | 09:08 | 45% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 4/2 | Annelida (Polychaeta) | CD, SG | |
| 115 | ENV28 | 11-Jun-2023 | 09:16 | 60% | CHEM | 2 x 125ml Jar 3 x ziplock bag | Fine sand with occasional shell fragments Munsell: 2.5Y 4/2 | No visible fauna | CD, SG | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 116 | ENV27 | 11-Jun-2023 | 10:13 | 45% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/1 | Annelida (Polychaeta) | CD, SG | |
| 117 | ENV27 | 11-Jun-2023 | 10:20 | 0% | NS | N/A | | | CD, SG | No Sample, Misfire |
| 118 | ENV27 | 11-Jun-2023 | 10:25 | 0% | NS | N/A | | | CD, SG | No Sample, Misfire |
| 119 | ENV27 | 11-Jun-2023 | 10:31 | 0% | NS | N/A | | | CD, SG | No Sample, Misfire |
| 120 | ENV27 | 11-Jun-2023 | 10:41 | 55% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/1 | Annelida (Polychaeta) | CD, SG | |
| 121 | ENV27 | 11-Jun-2023 | 10:48 | 50% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/1 | Annelida (Polychaeta) | CD, SG | |
| 122 | ENV27 | 11-Jun-2023 | 10:56 | 50% | CHEM | 2 x 125ml Jar 3 x ziplock bag | Fine sand with occasional shell fragments Munsell: 2.5Y 3/1 | No visible fauna | CD, SG | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 123 | ENV26 | 11-Jun-2023 | 11:47 | 40% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/1 | Annelida (Polychaeta), Echinodermata (Asteroidea) | RH, SA | |
| 124 | ENV26 | 11-Jun-2023 | 11:53 | 40% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/1 | Annelida (Polychaeta) | RH, SA | |
| 125 | ENV26 | 11-Jun-2023 | 12:00 | 50% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/1 | Annelida (Polychaeta) | RH, SA | |

# APPENDIX D DECK LOGS

| SEABED SAMPLING LOG SHEET (Deck) | | | | | | | | | | FOR-ENV-0539 |
|---|---|---|---|---|---|---|---|---|---|---|
| Job No: | 53794 | | | Area: | Dutch Blocks F02, F03 and F06a, North Sea | | | Sieve Size: | 0.5mm | |
| Project: | F06A Pipeline Route and Platform Area Survey | | | | | | | Equipment: | Day Grab | |
| Client: | ONE-Dyas B.V. | | | | | | | Vessel: | MV *Ocean Geograph* | |
| Sample Number | Station Number | Date | Time | Penetration | Sample Retention | Sample Receptacle | Sediment Description | Fauna Description | Operator(s) | Comments |
| 126 | ENV26 | 11-Jun-2023 | 12:06 | 50% | CHEM | 2 x 125ml Jar<br>3 x ziplock bag | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/1 | No visible fauna | RH, SA | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 127 | ENV25 | 11-Jun-2023 | 12:59 | 60% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/1 | Annelida (Polychaeta) | RH, SA | |
| 128 | ENV25 | 11-Jun-2023 | 13:05 | 70% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/1 | Annelida (Polychaeta), Echinodermata (Ophiuroidea) | RH, SA | |
| 129 | ENV25 | 11-Jun-2023 | 13:10 | 70% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/1 | Annelida (Polychaeta, *Aphrodita aculeata*) | RH, SA | |
| 130 | ENV25 | 11-Jun-2023 | 13:17 | 70% | CHEM | 2 x 125ml Jar<br>3 x ziplock bag | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/1 | No visible fauna | RH, SA | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 131 | ENV24 | 11-Jun-2023 | 14:11 | 50% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/2 | Annelida (Polychaeta), Echinodermata (Ophiuroidea) | RH, SA | |
| 132 | ENV24 | 11-Jun-2023 | 14:17 | 50% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/2 | Annelida (Polychaeta), Arthropoda (Brachyura), Echinodermata (Ophiuroidea) | RH, SA | |
| 133 | ENV24 | 11-Jun-2023 | 14:22 | 50% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/2 | Annelida (Polychaeta), Echinodermata (Asteroidea, *Echinocardium cordatum*, Ophiuroidea) | RH, SA | |
| 134 | ENV24 | 11-Jun-2023 | 14:28 | 40% | CHEM | 2 x 125ml Jar<br>3 x ziplock bag | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/2 | No visible fauna | RH, SA | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 135 | ENV23 | 11-Jun-2023 | 15:21 | 50% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/2 | Annelida (Polychaeta) | RH, SA | |
| 136 | ENV23 | 11-Jun-2023 | 15:26 | 70% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/2 | Annelida (Polychaeta) | RH, SA | |
| 137 | ENV23 | 11-Jun-2023 | 15:33 | 70% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/2 | Annelida (Polychaeta) | RH, SA | |
| 138 | ENV23 | 11-Jun-2023 | 15:39 | 60% | CHEM | 2 x 125ml Jar<br>3 x ziplock bag | Fine sand with occasional shell fragments<br>Munsell: 2.5Y 3/2 | No visible fauna | RH, SA | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |

# APPENDIX D DECK LOGS

| SEABED SAMPLING LOG SHEET (Deck) | | | | | | | | | | FOR-ENV-0539 |
|---|---|---|---|---|---|---|---|---|---|---|
| Job No: | 53794 | | Area: | Dutch Blocks F02, F03 and F06a, North Sea | | | Sieve Size: | 0.5mm | | |
| Project: | F06A Pipeline Route and Platform Area Survey | | | | | | Equipment: | Day Grab | | |
| Client: | ONE-Dyas B.V. | | | | | | Vessel: | MV *Ocean Geograph* | | |
| Sample Number | Station Number | Date | Time | Penetration | Sample Retention | Sample Receptacle | Sediment Description | Fauna Description | Operator(s) | Comments |
| 139 | ENV22 | 11-Jun-2023 | 16:53 | 70% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia) | RH, SA | |
| 140 | ENV22 | 11-Jun-2023 | 16:58 | 50% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum* , Ophiuroidea), Mollusca (Bivalvia) | RH, SA | |
| 141 | ENV22 | 11-Jun-2023 | 17:04 | 60% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | Annelida (Polychaeta) | RH, SA | |
| 142 | ENV22 | 11-Jun-2023 | 17:10 | 60% | CHEM | 2 x 125ml Jar 3 x ziplock bag | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | No visible fauna | RH, SA | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 143 | ENV21 | 11-Jun-2023 | 17:58 | 70% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum* , Ophiuroidea) | RH, SA | |
| 144 | ENV21 | 11-Jun-2023 | 18:04 | 50% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | Annelida (Polychaeta), Arthropoda (Brachyura), Echinodermata (*Echinocardium cordatum* , Ophiuroidea), Mollusca (Bivalvia) | RH, SA | |
| 145 | ENV21 | 11-Jun-2023 | 18:10 | 70% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | Annelida (Polychaeta) | RH, SA | |
| 146 | ENV21 | 11-Jun-2023 | 18:16 | 60% | CHEM | 2 x 125ml Jar 3 x ziplock bag | Fine sand with occasional shell fragments Munsell: 2.5Y 3/2 | No visible fauna | RH, SA | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 147 | ENV20 | 11-Jun-2023 | 19:02 | 50% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5YR 3/3 | Annelida (Polychaeta),Mollusca (Bivalvia) | RH, SA | |
| 148 | ENV20 | 11-Jun-2023 | 19:07 | 50% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5YR 3/3 | Annelida (Polychaeta), Mollusca (Bivalvia) | RH, SA | |
| 149 | ENV20 | 11-Jun-2023 | 19:12 | 50% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5YR 3/3 | Annelida (Polychaeta), Mollusca (Bivalvia) | RH, SA | |
| 150 | ENV20 | 11-Jun-2023 | 19:18 | 50% | CHEM | 2 x 125ml Jar 3 x ziplock bag | Fine sand with occasional shell fragments Munsell: 2.5YR 3/3 | No visible fauna | RH, SA | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 151 | ENV19 | 11-Jun-2023 | 20:07 | 0% | NS | N/A | | | RH, SA | No Sample, Misfire |

# APPENDIX D DECK LOGS

| SEABED SAMPLING LOG SHEET (Deck) | | | | | | | | | | FOR-ENV-0539 |
|---|---|---|---|---|---|---|---|---|---|---|
| Job No: | 53794 | | Area: | Dutch Blocks F02, F03 and F06a, North Sea | | | Sieve Size: | 0.5mm | | |
| Project: | F06A Pipeline Route and Platform Area Survey | | | | | | Equipment: | Day Grab | | |
| Client: | ONE-Dyas B.V. | | | | | | Vessel: | MV *Ocean Geograph* | | |
| Sample Number | Station Number | Date | Time | Penetration | Sample Retention | Sample Receptacle | Sediment Description | Fauna Description | Operator(s) | Comments |
| 152 | ENV19 | 11-Jun-2023 | 20:12 | 40% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5YR 3/3 | Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum* , Ophiuroidea), Mollusca (Bivalvia) | RH, SA | |
| 153 | ENV19 | 11-Jun-2023 | 20:17 | 40% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5YR 3/3 | Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia) | RH, SA | |
| 154 | ENV19 | 11-Jun-2023 | 20:22 | 40% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5YR 3/3 | No visible fauna | RH, SA | |
| 155 | ENV19 | 11-Jun-2023 | 20:28 | 40% | CHEM | 2 x 125ml Jar 3 x ziplock bag | Fine sand with occasional shell fragments Munsell: 2.5YR 3/3 | No visible fauna | RH, SA | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |
| 156 | ENV18 | 11-Jun-2023 | 21:19 | 40% | MFA | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5YR 3/3 | Annelida (Polychaeta) | RH, SA | |
| 157 | ENV18 | 11-Jun-2023 | 21:23 | 50% | MFB | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5YR 3/3 | Annelida (Polychaeta) | RH, SA | |
| 158 | ENV18 | 11-Jun-2023 | 21:28 | 50% | MFC | 1 x 1L Pot | Fine sand with occasional shell fragments Munsell: 2.5YR 3/3 | No visible fauna | RH, SA | |
| 159 | ENV18 | 11-Jun-2023 | 21:34 | 50% | CHEM | 2 x 125ml Jar 3 x ziplock bag | Fine sand with occasional shell fragments Munsell: 2.5YR 3/3 | No visible fauna | RH, SA | CHEM and CHEM Spare PSA, Metals/TOC/TOM and PSA Spare |