



|   |  |         |
|---|--|---------|
| <b>Development Specification and Layout<br/>Plan</b>    | Document Reference:<br>GB-CZT-00-TOTA-000006 |         |
|   | Revision: 02                                 | Status: |
| CULZEAN FLOATING OFFSHORE WIND TURBINE PILOT<br>PROJECT | Date: 24/02/2025                             |         |
|   | Page   | 1 of 26 |

|   |  |   |
|---|--|---|
|  | <p><b>Culzean Floating Wind</b></p> <p><i>A semi-submersible pilot project</i></p> |  |
|---|--|---|

**Development Specification and Layout  
Plan (DSLPP)**

**GB-CZT-00-TOTA-000006**

| Rev. | Date       | Issued by        | Checked by      | Approved by     |
|------|------------|------------------|-----------------|-----------------|
| 002  | 25/02/2025 | Claire MacDonald | Nicolas Mazevet | Charles Howorth |

|   |  |         |
|---|--|---------|
| <b>Development Specification and Layout<br/>Plan</b>    | Document Reference:<br>GB-CZT-00-TOTA-000006 |         |
|   | Revision: 02                                 | Status: |
| CULZEAN FLOATING OFFSHORE WIND TURBINE PILOT<br>PROJECT | Date: 24/02/2025                             |         |
|   | Page   | 2 of 26 |

**TABLE OF REVISIONS**

| Revision | Modification   |
|----------|--|
| 00A      | Draft for review   |
| 01       | Revision addressing comments received from MD-LOT 16/01/2025.      |
| 02       | Revision addressing comments received from MD-LOT dated 04/02/2025 |
|          |  |
|          |  |

|   |  |         |
|---|--|---------|
| <b>Development Specification and Layout<br/>Plan</b>            | Document Reference:<br>GB-CZT-00-TOTA-000006 |         |
|   | Revision: 02                                 | Status: |
| <b>CULZEAN FLOATING OFFSHORE WIND TURBINE PILOT<br/>PROJECT</b> | Date: 24/02/2025                             |         |
|   | Page   | 3 of 26 |

### DETAILED CHANGE LOG

| Date       | Rev. Status                       | References | Description of changes   |
|------------|-----------------------------------|------------|--|
| 28/01/2025 | Resubmission to MD-LOT for review |            | <p>Section 1.1 – update to the title of the project to - <i>Culzean Floating Offshore Wind Turbine Pilot Project</i>’</p> <p>Sections 1.3 and Acronyms table has been updated to confirm CFW is Culzean Floating Wind.</p> <p>Sections 2.1 and 3.7 has been updated to remove ‘approximately’ relating to the length of the cable.</p> <p>Table 3-2 has been updated with the WTG parameters in AMSL.</p> <p>Appendix A has been updated to correctly reflect the number of moorings.</p> <p>Reference to Development and Specification and Layout plan has been updated throughout the document.</p> <p>Removal of text in the footer of each page regarding the sharing of the document.</p> |
| 24/02/2025 | Resubmission to MD-LOT for review |            | Table 3-2 now includes the WTG in LAT (as well as AMSL)  |
|            |                                   |            |  |



|   |  |         |
|---|--|---------|
| <b>Development Specification and Layout<br/>Plan</b>            | Document Reference:<br>GB-CZT-00-TOTA-000006 |         |
|   | Revision: 02                                 | Status: |
| <b>CULZEAN FLOATING OFFSHORE WIND TURBINE PILOT<br/>PROJECT</b> | Date: 24/02/2025                             |         |
|   | Page   | 5 of 26 |

## Contents

|  |           |
|--|-----------|
| <b>1. INTRODUCTION</b> .....   | <b>7</b>  |
| 1.1 PURPOSE OF THE DOCUMENT .....  | 7         |
| 1.2 DOCUMENT STRUCTURE .....   | 7         |
| 1.3 SCOPE AND OBJECTIVES OF THE DSLP .....   | 7         |
| 1.4 CONSENT COMPLIANCE.....  | 7         |
| 1.5 LINKAGES WITH OTHER CONSENT PLANS .....  | 9         |
| 1.6 PLAN AUDIENCE.....   | 9         |
| 1.7 PLAN LOCATIONS.....  | 9         |
| 1.8 UPDATES AND AMENDMENTS.....  | 9         |
| <b>2. INTRODUCTION</b> .....   | <b>10</b> |
| 2.1 PROJECT DESCRIPTION.....   | 10        |
| <b>3. DEVELOPMENT SPECIFICATION AND LAYOUT</b> .....   | <b>12</b> |
| 3.1 INTRODUCTION.....  | 12        |
| 3.2 CULZEAN WIND LAYOUT AND SPECIFICATION .....  | 12        |
| 3.2.1 <i>WTG Identification</i> .....  | 14        |
| 3.2.2 <i>WTG Foundation Type</i> .....   | 14        |
| 3.2.3 <i>Wind Farm Bathymetry and Seabed Conditions</i> .....                                      | 17        |
| 3.2.4 <i>Key Constraints</i> .....   | 20        |
| 3.3 COORDINATES.....   | 21        |
| 3.4 WTG DIMENSIONS.....  | 21        |
| 3.5 GENERATING CAPACITY .....  | 23        |
| 3.6 WTG FINISHES .....   | 23        |
| 3.7 LENGTH AND PROPOSED CABLE ARRANGEMENT.....   | 23        |
| <b>APPENDIX A COMPARISON OF THE CONSENTED DESIGN ENVELOPE AND DSLP DESIGN<br/>PARAMETERS</b> ..... | <b>25</b> |
| <b>APPENDIX B – GIS SHAPEFILE CULZEAN WIND PILOT PROPOSED LOCATION</b> .....                       | <b>26</b> |

|   |  |         |
|---|--|---------|
| <b>Development Specification and Layout<br/>Plan</b>            | Document Reference:<br>GB-CZT-00-TOTA-000006 |         |
|   | Revision: 02                                 | Status: |
| <b>CULZEAN FLOATING OFFSHORE WIND TURBINE PILOT<br/>PROJECT</b> | Date: 24/02/2025                             |         |
|   | Page   | 6 of 26 |

## ACRONYMS, ABBREVIATIONS and DEFINITIONS

|         |  |
|---------|--|
| AMSL    | Above Mean Sea Level                         |
| BGS     | British Geological Society                   |
| CaP     | Cable Plan                                   |
| CFW     | Culzean Floating Wind                        |
| CNS     | Central North Sea                            |
| CPF     | Central Processing Facility                  |
| DSLPL   | Development Specification and Layout Plan    |
| HES     | Historic Environment Scotland                |
| kV      | Kilovolts                                    |
| LAT     | Lowest Astronomical Tide                     |
| LMP     | Lighting and Marking Plan                    |
| MCA     | Maritime and Coastguard Agency               |
| MD-LOT  | Marine Directorate Licensing Operations Team |
| MoD     | Ministry of Defence                          |
| MW      | Megawatt                                     |
| NLB     | Northern Lighthouse Board                    |
| SFF     | Scottish Fishermen's Federation              |
| TEPNSUK | TotalEnergies E&P North Sea UK Limited       |
| UKCS    | United Kingdom Continental Shelf             |
| UKHO    | United Kingdom Hydrographic Office           |
| ULQ     | Living Quarters and Utility Platform         |
| WHP     | Wellhead Platform                            |
| WTG     | Wind Turbine Generator                       |

|   |  |         |
|---|--|---------|
| <b>Development Specification and Layout<br/>Plan</b>            | Document Reference:<br>GB-CZT-00-TOTA-000006 |         |
|   | Revision: 02                                 | Status: |
| <b>CULZEAN FLOATING OFFSHORE WIND TURBINE PILOT<br/>PROJECT</b> | Date: 24/02/2025                             |         |
|   | Page   | 7 of 26 |

## 1. INTRODUCTION

### 1.1 Purpose of the Document

This Development Specification and Layout Plan (DSLPL) has been prepared by TotalEnergies E&P North Sea UK, hereafter referred to as TEPNSUK, to satisfy conditions of the Marine Licence.

The overall objective of the DSLPL is to set out the final design and layout parameters associated with the Culzean Floating Offshore Wind Turbine Project (also known as Culzean Floating Wind) required under the offshore consent conditions. The DSLPL confirms that the design and layout parameters of the Project align with those considered in the Application for the Marine Licence Consent.

### 1.2 Document Structure

The DSLPL is structured as follows:

Section 1 & 2 Provides an overview of the Project and the consent requirements that underpin the content of this DSLPL. It also sets out the purpose, objectives and scope of the DSLPL and sets out the process for making updates and amendments.

Section 3 Details the details the layout, key constraints and key design parameters associated with the Culzean Floating Wind Project.

### 1.3 Scope and Objectives of the DSLPL

In line with the requirements of the Marine Licence consent conditions (Section 1.4) along with industry standards and good practice, the DSLPL confirms the following:

- Location of the Floating Wind Turbine Generator (WTG), including the latitude and longitude co-ordinates;
- The Culzean Floating Wind (CFW) layout;
- Dimensions of WTG;
- The generating output of the WTG;
- The finishes for the WTG; and
- The length and proposed arrangements on or above the seabed of the inter array cable (IAC).

### 1.4 Consent Compliance

Table 1.1 includes reference to how and where the condition clauses have been addressed within the DSLPL.

This DSLPL has been prepared to address the specific requirements of the relevant Marine Licence consent condition. The relevant conditions setting out the requirement for a DSLPL, and which are to be discharged by this DSLPL, are presented in full in Table 1-1.

|   |  |         |
|---|--|---------|
| <b>Development Specification and Layout Plan</b>            | Document Reference:<br>GB-CZT-00-TOTA-000006 |         |
|   | Revision: 02                                 | Status: |
| <b>CULZEAN FLOATING OFFSHORE WIND TURBINE PILOT PROJECT</b> | Date: 24/02/2025                             |         |
|   | Page   | 8 of 26 |

**Table 1.1 Consent conditions to be discharged by this DSLP**

| Condition reference   | Condition  | Relevant section  |
|---|--|---|
| 3.2.6<br>Development Specification and Layout Plan                                  | The Licensee must, no later than six months prior to the Commencement of the Licensed Activity, submit a Development Specification and Layout Plan ("DSLPL"), in writing, to the Licensing Authority for its written approval.   | This document sets out the DSLP for approval by the Scottish Ministers. |
|   | Such approval may only be granted following consultation by the Licensing Authority with the MCA, NLB, NatureScot, the Ministry of Defence ("MOD"), Scottish Fishermen's Federation ("SFF"), Historic Environment Scotland ("HES") and any such other advisors or organisations as may be required at the discretion of the Licensing Authority. | Consultation to be undertaken by the Scottish Ministers.                |
|   | The DSLP must include, but not be limited to the following:  | Section 3.2   |
|   | a) A plan showing the location of the individual WTG (subject to any required micro-siting), including information on WTG identification/numbering, seabed conditions, bathymetry, confirmed foundation type for the WTG and any key constraints recorded on the site;   |   |
|   | b) The latitude and longitude co-ordinates accurate to three decimal places of minutes of arc for the WTG. This should also be provided as a Geographic Information System ("GIS") shape file using WGS84 format;  | Section 3.3<br>Appendix B   |
|   | c) The grid co-ordinates of the centre point of the proposed location of the WTG;  | Section 3.3   |
|   | d) A table or diagram of the WTG dimensions including: height to blade tip (measured above Lowest Astronomical Tide ("LAT")) to the highest point, height to hub (measured above LAT to the centreline of the generator shaft), rotor diameter and maximum rotation speed;   | Section 3.4   |
|   | e) The generating output of the WTG used on the site (see Annex 1) and a confirmed generating output for the site overall;   | Section 3.5   |
|   | f) The finishes for the WTG (see condition 3.2.12 on WTG lighting and marking); and  | Section 3.6   |
| g) The length and proposed arrangements on or above the seabed of the export cable. | Section 3.7  |   |

|   |  |         |
|---|--|---------|
| <b>Development Specification and Layout<br/>Plan</b>            | Document Reference:<br>GB-CZT-00-TOTA-000006 |         |
|   | Revision: 02                                 | Status: |
| <b>CULZEAN FLOATING OFFSHORE WIND TURBINE PILOT<br/>PROJECT</b> | Date: 24/02/2025                             |         |
|   | Page   | 9 of 26 |

## 1.5 Linkages with other Consent Plans

Table 1.2 lists the Consent Plans with linkages to this DSLP.

**Table 1.2 Consent Plans with linkages to this DSLP**

| Other Consent Plans and Documents      | Linkage with DSLP   |
|--|---|
| Culzean Floating Wind Cable Plan (CaP) | The CaP provides details on the cable specification, installation methods and cable protection. The detailed cable route layout is also presented in line with the cable arrangements provided within the DSLP.           |
| Lighting and Marking Plan (LMP)        | Provides details of lighting and marking of the project during construction and operation. Operational lighting requirements have been defined based upon the Culzean Floating Wind Project layout presented in the DSLP. |

## 1.6 Plan Audience

The DSLP is intended to be referred to by personnel involved in the design and construction of the Culzean Offshore Floating Wind Project, including TEPNSUK personnel and Contractors. All marine construction statements and documents produced in relation to the Project must comply with this DSLP.

Compliance with this DSLP will be monitored by the Culzean Floating Wind Project Team, and the Marine Directorate - Licensing Operations Team (MD-LOT).

## 1.7 Plan Locations

The latest version of this DSLP can be obtained from TEPNSUK's document management system (New Prodom), and from Marine Directorate website<sup>1</sup>.

In addition, copies of the DSLP are to be held in the following locations:

- TotalEnergies office In Westhill;
- With the CFW Marine Coordinator (MC); and

## 1.8 Updates and Amendments

This DSLP will be revised as relevant to ensure the information is kept up to date, at intervals agreed with the Scottish Ministers. Linkages exist between a number of offshore Consent Plans (Section 1.5 within Table 1-2). As plans are updated, there will be a review of inter-linkages with other Consent Plans to ensure these are also updated as relevant.

The document is controlled via TEPNSUK's document control system (Prodom).

---

<sup>1</sup> <https://marine.gov.scot/ml/marine-licence-culzean-floating-offshore-wind-turbine-pilot-project-east-aberdeen-00010724>

|   |  |          |
|---|--|----------|
| <b>Development Specification and Layout<br/>Plan</b>            | Document Reference:<br>GB-CZT-00-TOTA-000006 |          |
|   | Revision: 02                                 | Status:  |
| <b>CULZEAN FLOATING OFFSHORE WIND TURBINE PILOT<br/>PROJECT</b> | Date: 24/02/2025                             |          |
|   | Page   | 10 of 26 |

## 2. INTRODUCTION

### 2.1 Project Description

The Culzean Floating Wind project is located in the central North Sea (CNS), approximately 222 kilometres (km) east of Aberdeen in the UK Continental Shelf (UKCS) Block 22/25a. The Culzean Floating Wind project will deploy one floating WTG with a capacity of 3 MW with test floater and mooring system technologies for offshore floating wind. This is a pilot project which aims to; i) test and qualify the floater technology designed by Ocergy, and ii) perform a hybridisation showcase for TotalEnergies to demonstrate the feasibility of platform electrification in an offshore environment.

The Culzean Floating Wind project will be installed approximately 2.5 km west of the Culzean oil and gas platform, linked via an export cable to the Culzean Central Processing Facility (CPF) (Figure 2-1). The wind turbine will be connected to the plant power management system to allow the export of the produced electricity to the site. The Culzean facility is a stand-alone development involving three bridge linked platforms including a Wellhead Platform (WHP), Central Processing Facility (CPF) with flare tower, and separate Utility and Living Quarters Platform (ULQ).

The Project does not require a grid connection to shore and will be entirely within the offshore region between 12 nautical miles (nm) and the Exclusive Economic Zone (EEZ) boundary.

The floating WTG will be connected to the Culzean facilities via an existing J-tube on the platform. The key components include:

- One WTG;
- One floating substructure;
- Up to six mooring lines
- Up to six drag anchors;
- One 2.5 km long inter array cable (IAC) and its ancillaries; and
- Associated scour and cable protection (if required).

The design life for the WTG is 10 years.



|   |  |          |
|---|--|----------|
| <b>Development Specification and Layout<br/>Plan</b>            | Document Reference:<br>GB-CZT-00-TOTA-000006 |          |
|   | Revision: 02                                 | Status:  |
| <b>CULZEAN FLOATING OFFSHORE WIND TURBINE PILOT<br/>PROJECT</b> | Date: 24/02/2025                             |          |
|   | Page   | 12 of 26 |

### 3. DEVELOPMENT SPECIFICATION AND LAYOUT

#### 3.1 Introduction

This section of the DSLP details the Culzean Floating Wind development and layout specification as required by the Marine Licence condition (Table 1-1).

#### 3.2 Culzean Wind Layout and Specification

The Marine Licence condition 3.2.6 requires that this DSLP includes the following:

*A plan showing the location of the individual WTG (subject to any required micro-siting), including information on WTG identification/numbering, seabed conditions, bathymetry, confirmed foundation type for the WTG and any key constraints recorded on the site;*

The Culzean Floating Wind is comprised of a single floating WTG moored to the seabed, the layout is presented in Figure 3-1 below. The floating WTG will be located approximately 2km to the west of the Culzean platforms.

# Development Specification and Layout Plan

Document Reference:  
GB-CZT-00-TOTA-000006

Revision: 02      Status:

CULZEAN FLOATING OFFSHORE WIND TURBINE PILOT  
PROJECT

Date: 24/02/2025

Page                  13 of 26

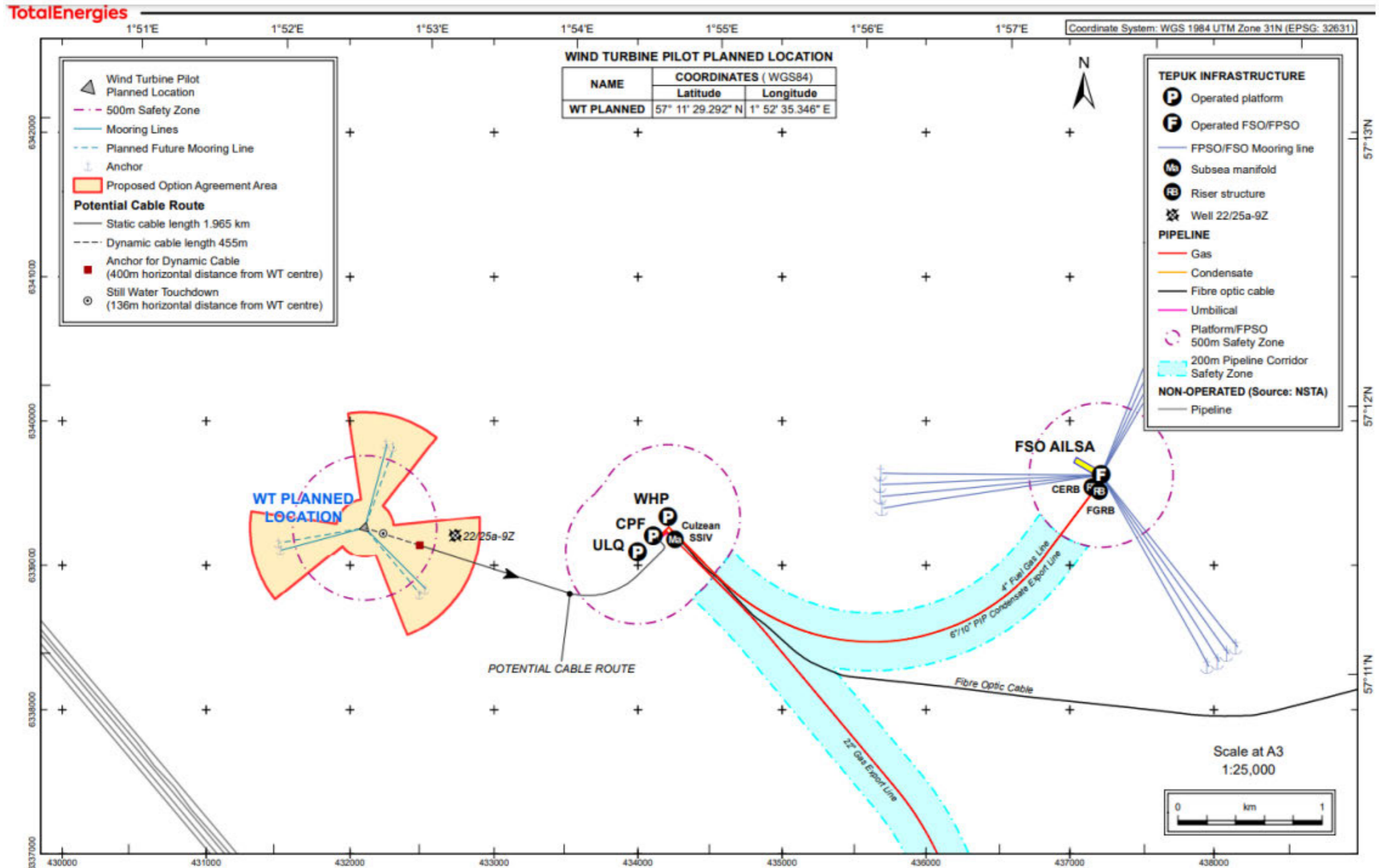


Figure 3-1 Culzean Floating Wind planned layout

|   |  |          |
|---|--|----------|
| <b>Development Specification and Layout<br/>Plan</b>            | Document Reference:<br>GB-CZT-00-TOTA-000006 |          |
|   | Revision: 02                                 | Status:  |
| <b>CULZEAN FLOATING OFFSHORE WIND TURBINE PILOT<br/>PROJECT</b> | Date: 24/02/2025                             |          |
|   | Page   | 14 of 26 |

### 3.2.1 WTG Identification

The WTG will be marked with an alpha-numeric identifier, in line with the following principles and/or requirements:

- The WTG identifier is prefixed with a capital “CW-01”;
- The identifier consists of black letters and numbers on yellow background; and
- 360° visibility;

The identifier will be displayed on an ID panel attached to the WTG’s floating substructure to provide adequate visual coverage such that they can be read from all directions. The lettering will be black on a yellow background that is clearly readable by an observer stationed 3 m above sea level, at a distance up to 150 m away from the WTG and illuminated via low-level baffled lighting which can be controlled remotely.

Aviation identifiers will be on top of the WTG’s nacelle in clear black lettering and designed so as to be visible from a height of 500 ft (152 m) above the highest part of the WTG (excluding the blades). The WTG markings will be designed taking into account the MGN 654 SAR Annex 5 and any feedback provided by the Civil Aviation Authority (CAA) and MCA during consultation on the Culzean Floating Wind Lighting and Marking Plan (LMP).

Further details on the WTG marking will be provided within the LMP (GB-CZT-00-TOTA-000002).

### 3.2.2 WTG Foundation Type

The WTG will be supported by a floating (semi-submersible) substructure, a buoyancy stabilised platform which floats semi-submerged on the surface of the ocean whilst anchored to the seabed.

#### 3.2.2.1 Floating Substructure

The floating substructure is a triangular OCG-WIND substructure (designed and commercialised by Ocergy). The WTG is installed on top of the centre column. The three outer columns (maximum height of 23 m) are connected to the central column through a frame composed of top and bottom tubular beams interconnected by V-shaped braces. The outer columns contribute to the stability of the unit and are linked by tendons, which are designed to stiffen the structure, reduce the fatigue, and optimise the structural weight. An example is provided in Figure 3-2.

#### 3.2.2.2 Moorings

The floating WTG will be anchored via 3 mooring lines, the connection point for the mooring lines will be located at the base of the substructure. These will be anchored using 3 drag anchors (12mT Stevshark). The mooring layout is provided in Figure 3-3.

A second set of mooring lines is planned for installation in 2026 (or beyond). This additional mooring system is a trial (part of the pilot nature of the project) to test a new, innovative and low-impact mooring techniques with the aim to assess their feasibility for future electrification projects. The design is still being finalised, but will feature either a taut or semi-taut mooring system. This DSLP will be updated at a later date once details of the additional mooring system are finalised.

|   |  |          |
|---|--|----------|
| <h1>Development Specification and Layout Plan</h1>          | Document Reference:<br>GB-CZT-00-TOTA-000006 |          |
|   | Revision: 02                                 | Status:  |
| <b>CULZEAN FLOATING OFFSHORE WIND TURBINE PILOT PROJECT</b> | Date: 24/02/2025                             |          |
|   | Page   | 15 of 26 |

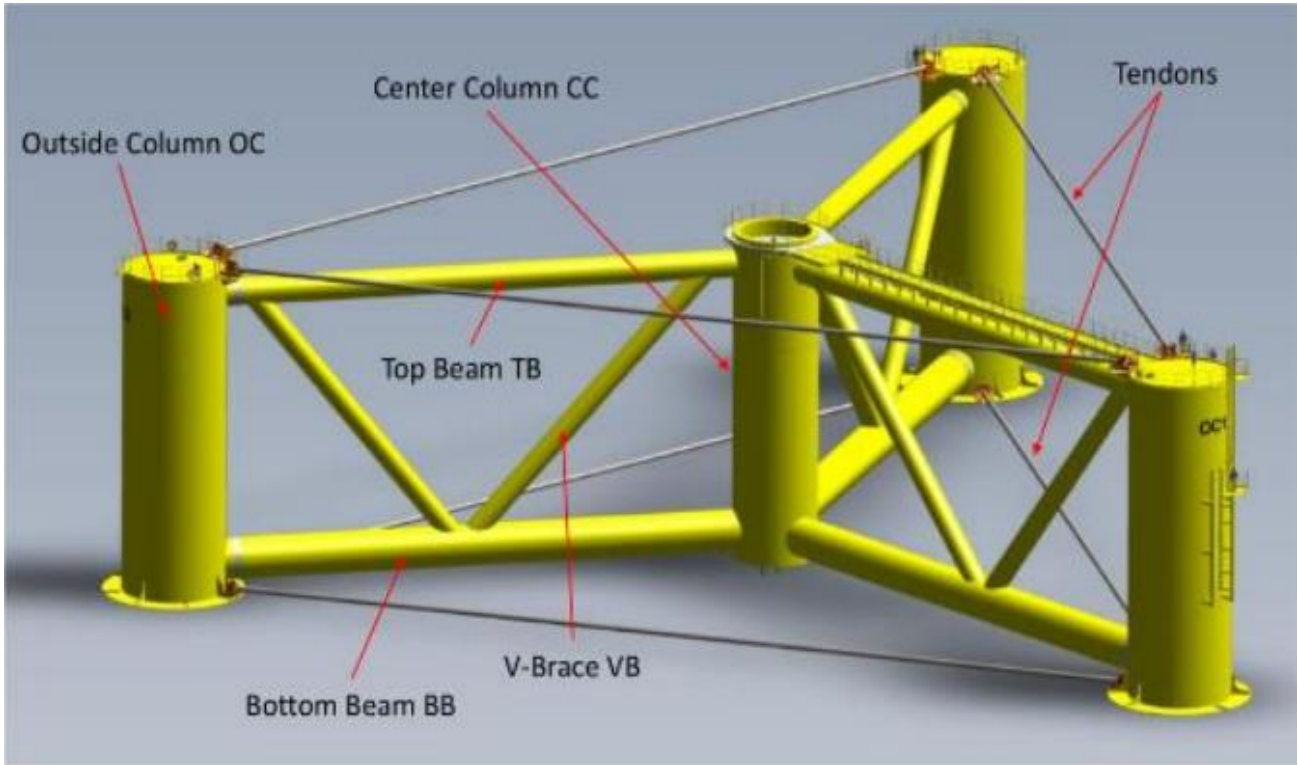


Figure 3-2 OCG-WIND substructure design

|   |  |  |          |
|---|--|--|----------|
| <b>Development Specification and Layout<br/>Plan</b>            |  | Document Reference:<br>GB-CZT-00-TOTA-000006 |          |
|   |  | Revision: 02                                 | Status:  |
| <b>CULZEAN FLOATING OFFSHORE WIND TURBINE PILOT<br/>PROJECT</b> |  | Date: 24/02/2025                             |          |
|   |  | Page   | 16 of 26 |

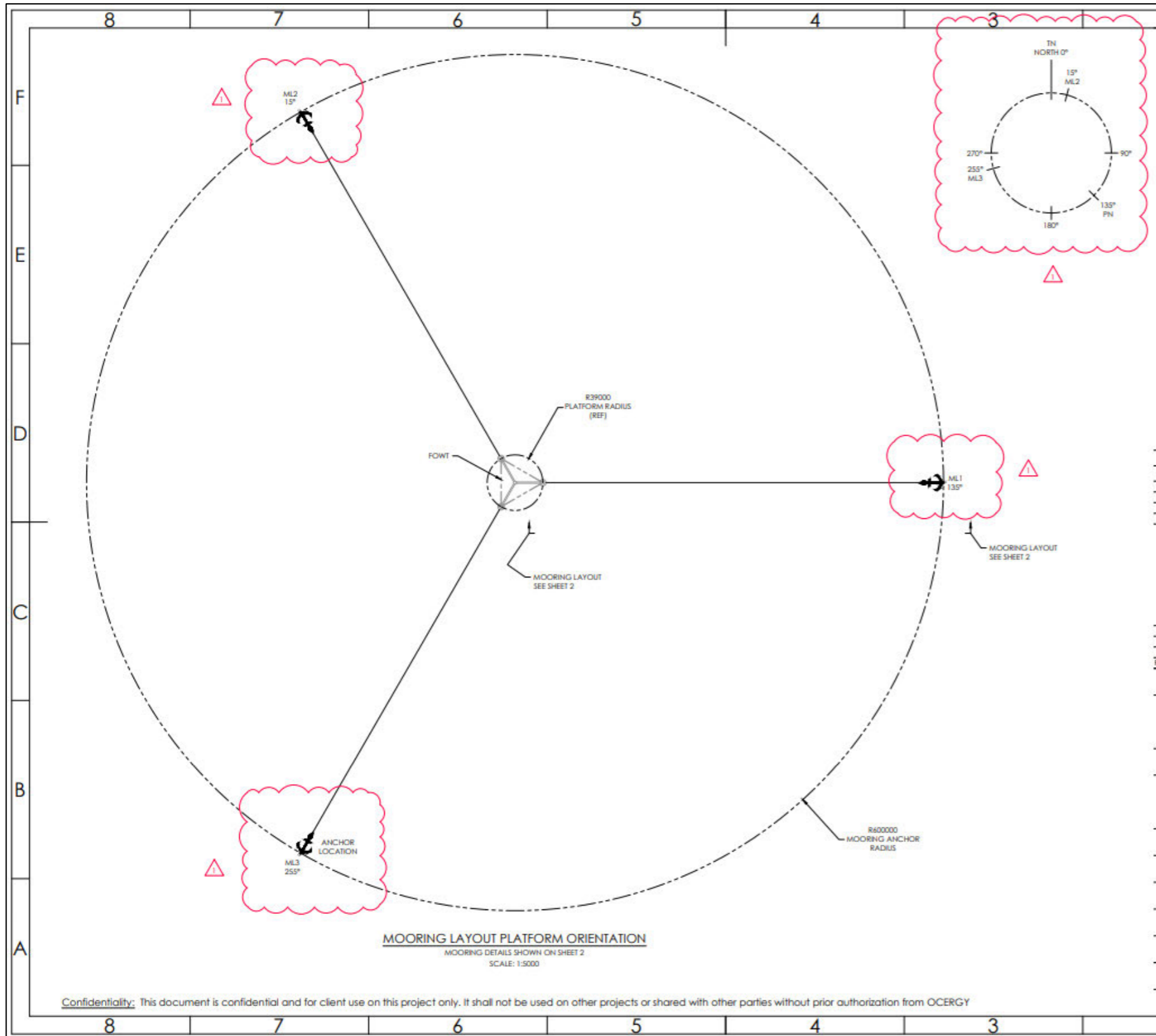


Figure 3-3 Mooring layout and orientation

|   |  |                 |
|---|--|-----------------|
| <b>Development Specification and Layout<br/>Plan</b>            | Document Reference:<br>GB-CZT-00-TOTA-000006 |                 |
|   | Revision: 02                                 | Status:         |
| <b>CULZEAN FLOATING OFFSHORE WIND TURBINE PILOT<br/>PROJECT</b> | Date: 24/02/2025                             |                 |
|   | <b>Page</b>                                  | <b>17 of 26</b> |

### 3.2.3 Wind Farm Bathymetry and Seabed Conditions

The water depth is relatively consistent across the Culzean Floating Wind Project area, with the deepest depth at approximately 100 m lowest astronomical tide (LAT), although, the site-specific geophysical survey indicates a depth range between 87 m and 91 m LAT (Figure 3-4).

Throughout the Culzean Floating Wind Project area, the seabed is dominated by muddy sand (Figure 3-5).

The completed geophysical surveys identified the presence of infrequent boulders across the Culzean Floating Wind Project area, which were all present on the surface. No subsurface boulders were detected. Boulder clearance is therefore not anticipated to be required.

|   |  |          |
|---|--|----------|
| <h1>Development Specification and Layout Plan</h1>            | Document Reference:<br>GB-CZT-00-TOTA-000006 |          |
|   | Revision: 02                                 | Status:  |
| <h2>CULZEAN FLOATING OFFSHORE WIND TURBINE PILOT PROJECT</h2> | Date: 24/02/2025                             |          |
|   | Page   | 18 of 26 |

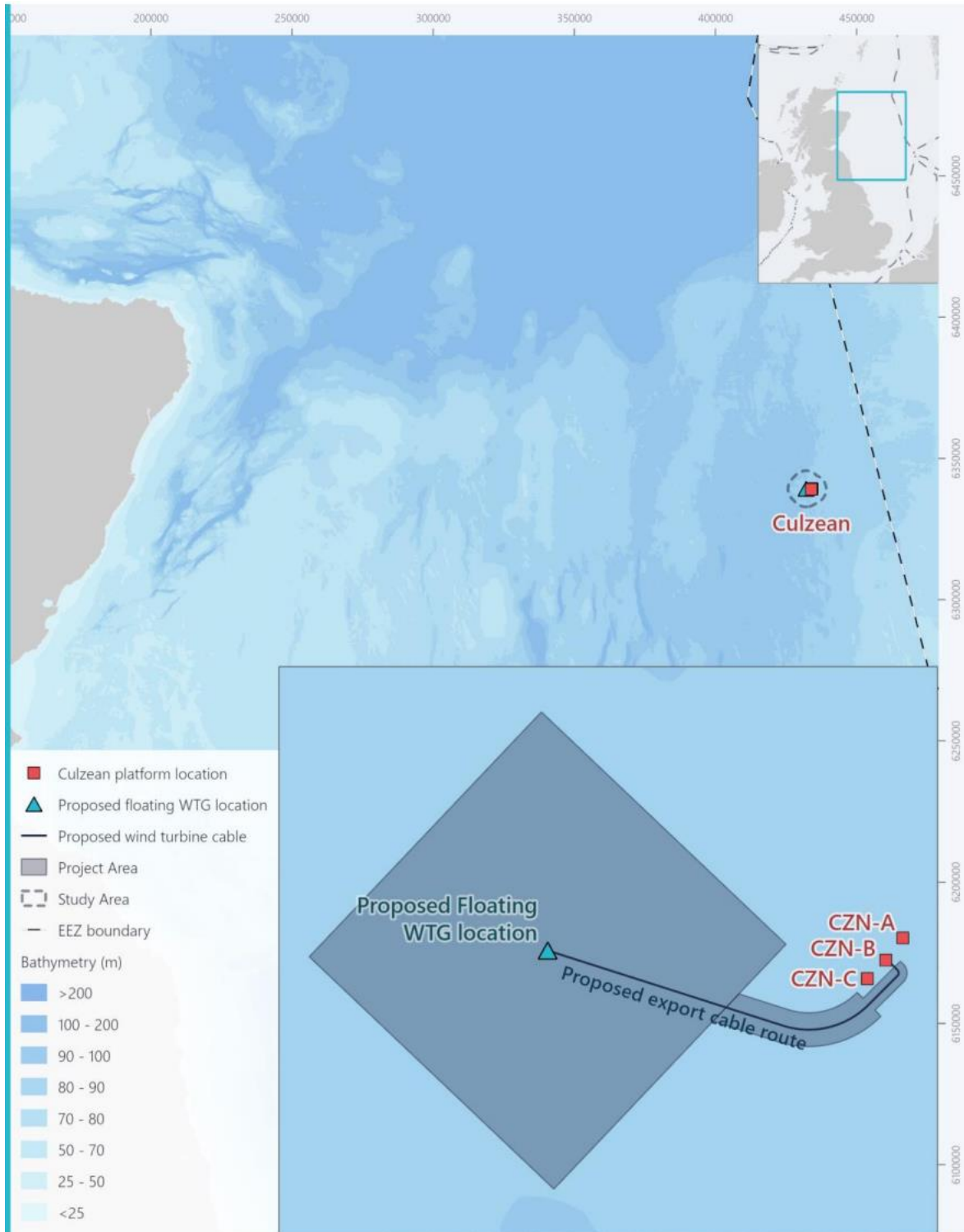


Figure 3-4 Culzean Floating Wind Project area bathymetry

# Development Specification and Layout Plan

Document Reference:  
GB-CZT-00-TOTA-000006

Revision: 02

Status:

CULZEAN FLOATING OFFSHORE WIND TURBINE PILOT PROJECT

Date: 24/02/2025

Page

19 of 26

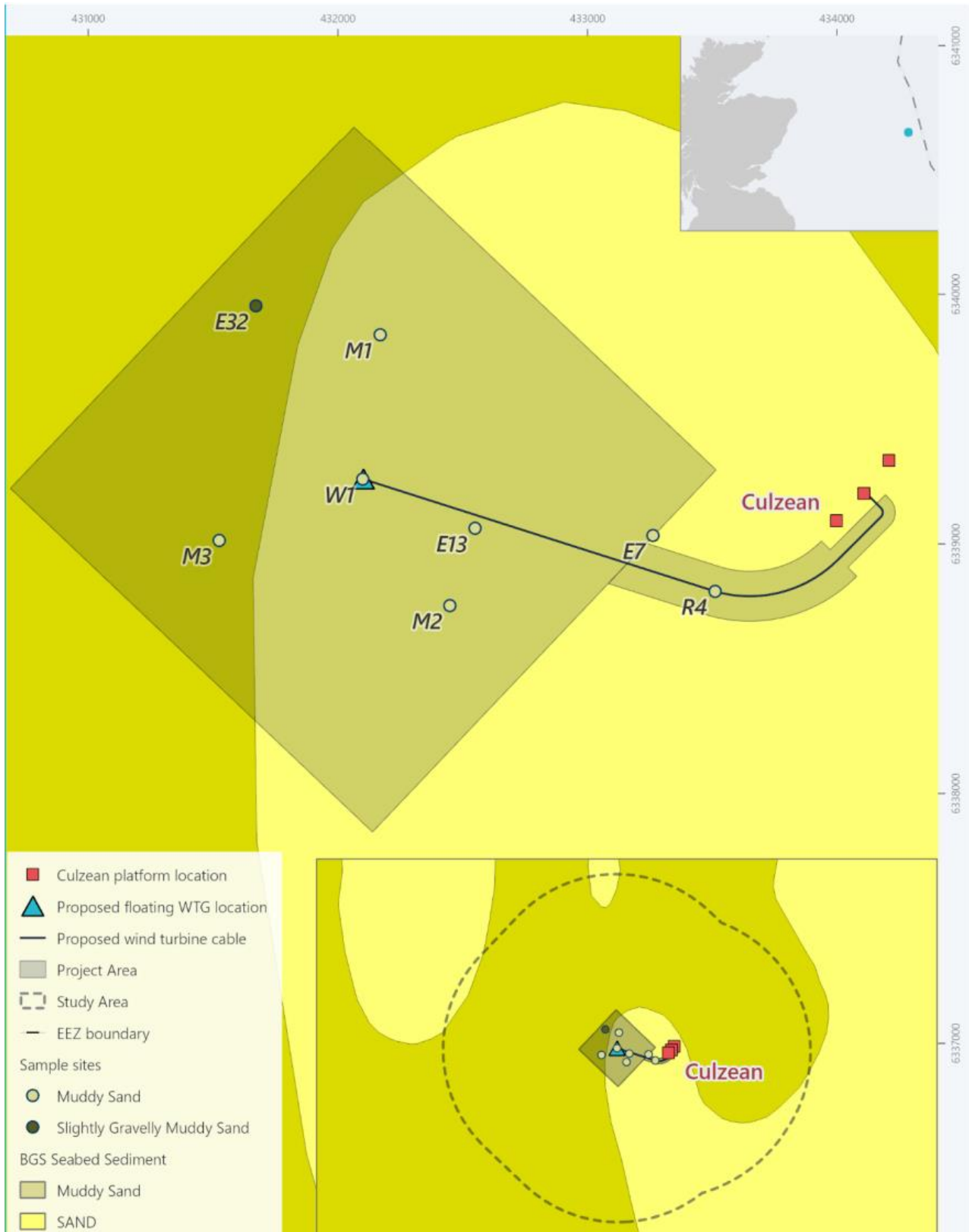


Figure 3-5 Sampled seabed sediment properties across the Culzean Floating Wind Project area (in relation to BGS)

|   |   |                 |
|---|---|-----------------|
| <h1>Development Specification and Layout Plan</h1>          | <b>Document Reference:</b><br>GB-CZT-00-TOTA-000006 |                 |
|   | <b>Revision:</b> 02                                 | <b>Status:</b>  |
| <b>CULZEAN FLOATING OFFSHORE WIND TURBINE PILOT PROJECT</b> | <b>Date:</b> 24/02/2025                             |                 |
|   | <b>Page</b>   | <b>20 of 26</b> |

### 3.2.4 Key Constraints

There are a small number of physical spatial constraints within the CFW Site (see Figure 3-6). The final layout ensures that infrastructure avoids the following constraints:

- Culzean bridged platforms and associated subsea assets (including abandoned wells),

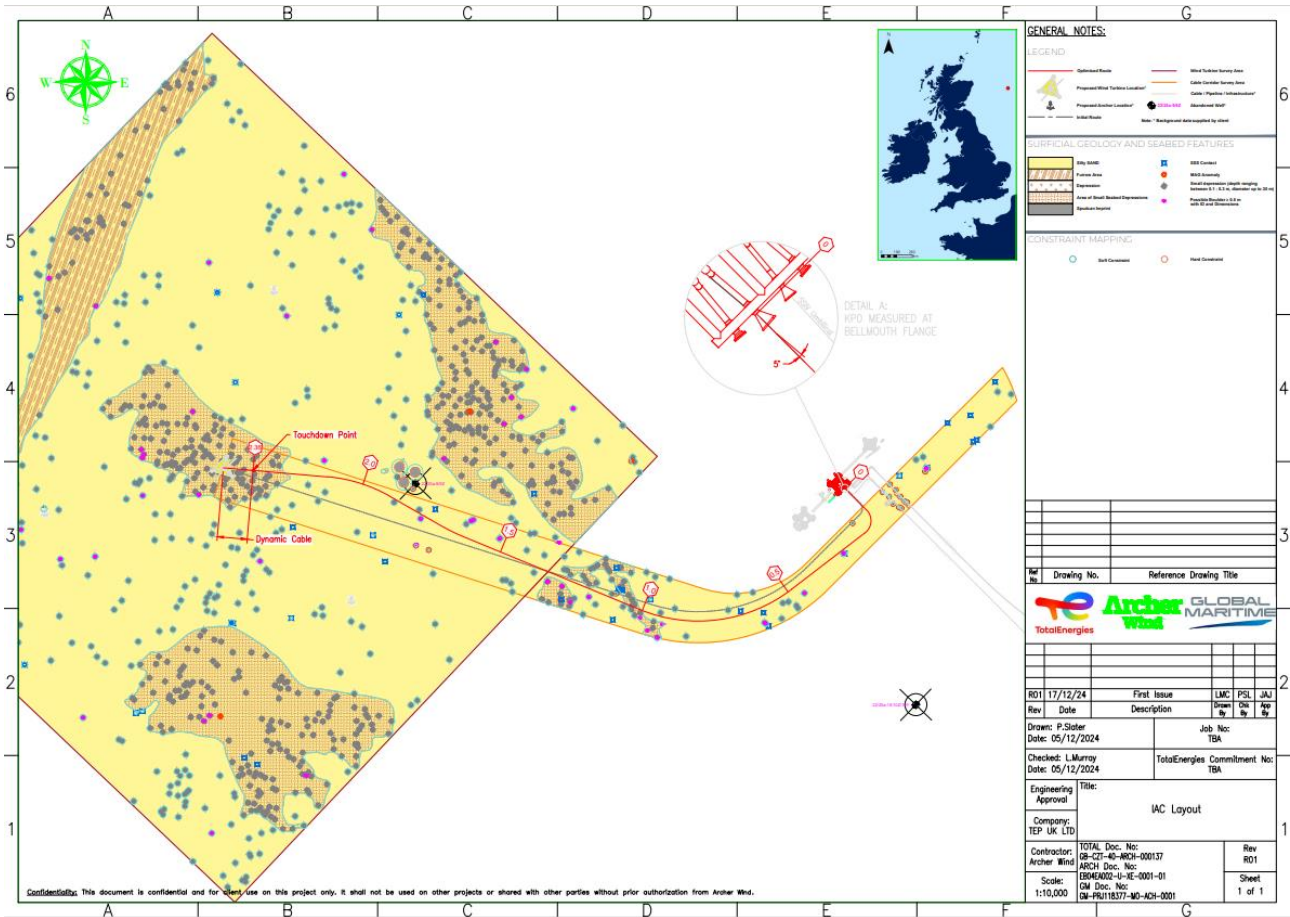


Figure 3-6 – Map of the CFW and relevant constraints.

|   |  |          |
|---|--|----------|
| <b>Development Specification and Layout<br/>Plan</b>    | Document Reference:<br>GB-CZT-00-TOTA-000006 |          |
|   | Revision: 02                                 | Status:  |
| CULZEAN FLOATING OFFSHORE WIND TURBINE PILOT<br>PROJECT | Date: 24/02/2025                             |          |
|   | Page   | 21 of 26 |

### 3.3 Coordinates

The Marine Licence condition 3.2.6 requires that this DSLP includes the following:

*The latitude and longitude co-ordinates accurate to three decimal places of minutes of arc for the WTG. This should also be provided as a Geographic Information System ("GIS") shape file using WGS84 format;*

and

*The grid co-ordinates of the centre point of the proposed location of the WTG*

The floating WTG coordinates are presented in Table 3-1.

**Table 3-1 WTG location co-ordinates (WGS84)**

|              | Latitude        | Longitude      | Status            |
|--------------|-----------------|----------------|-------------------|
| Centre point | 57° 11' 29.3" N | 1° 52' 35.3" E | Proposed location |

A GIS shapefile (WGS84 format) with the co-ordinates of arc for the WTG has also been provided to accompany this document.

### 3.4 WTG Dimensions

The Marine Licence condition 3.2.6 requires that this DSLP includes the following:

*A table or diagram of each WTG dimensions including - height to blade tip (measured above Lowest Astronomical Tide ("LAT")) to the highest point, height to hub (measured above LAT to the centreline of the generator shaft), rotor diameter and maximum rotation speed;*

As the project is relating to a floating wind turbine, it is therefore not tide related, unlike a fixed bottom turbine. Therefore, the dimensions given below are above mean sea level (AMSL) as per the license application (but also have been given in LAT to satisfy the Marine Licence condition.

TEPNSUK has chosen to install Vesta V112 floating wind turbine. The dimensions of the WTG are summarised in Table 3-2.

**Table 3-2 Key dimensions of the WTG**

| WTG Parameter                              | Dimensions           |
|--|----------------------|
| Height to blade tip (AMSL)                 | 134 (135m above LAT) |
| Height to hub (AMSL)                       | 78 (79m above LAT)   |
| Rotor diameter (m)                         | 112                  |
| Blade width (m)                            | 4                    |
| Minimum blade clearance from sea level (m) | 22                   |
| Maximum wind speed (m/s)                   | 25                   |

|   |  |          |
|---|--|----------|
| <h1>Development Specification and Layout Plan</h1>          | Document Reference:<br>GB-CZT-00-TOTA-000006 |          |
|   | Revision: 02                                 | Status:  |
| <b>CULZEAN FLOATING OFFSHORE WIND TURBINE PILOT PROJECT</b> | Date: 24/02/2025                             |          |
|   | Page   | 22 of 26 |

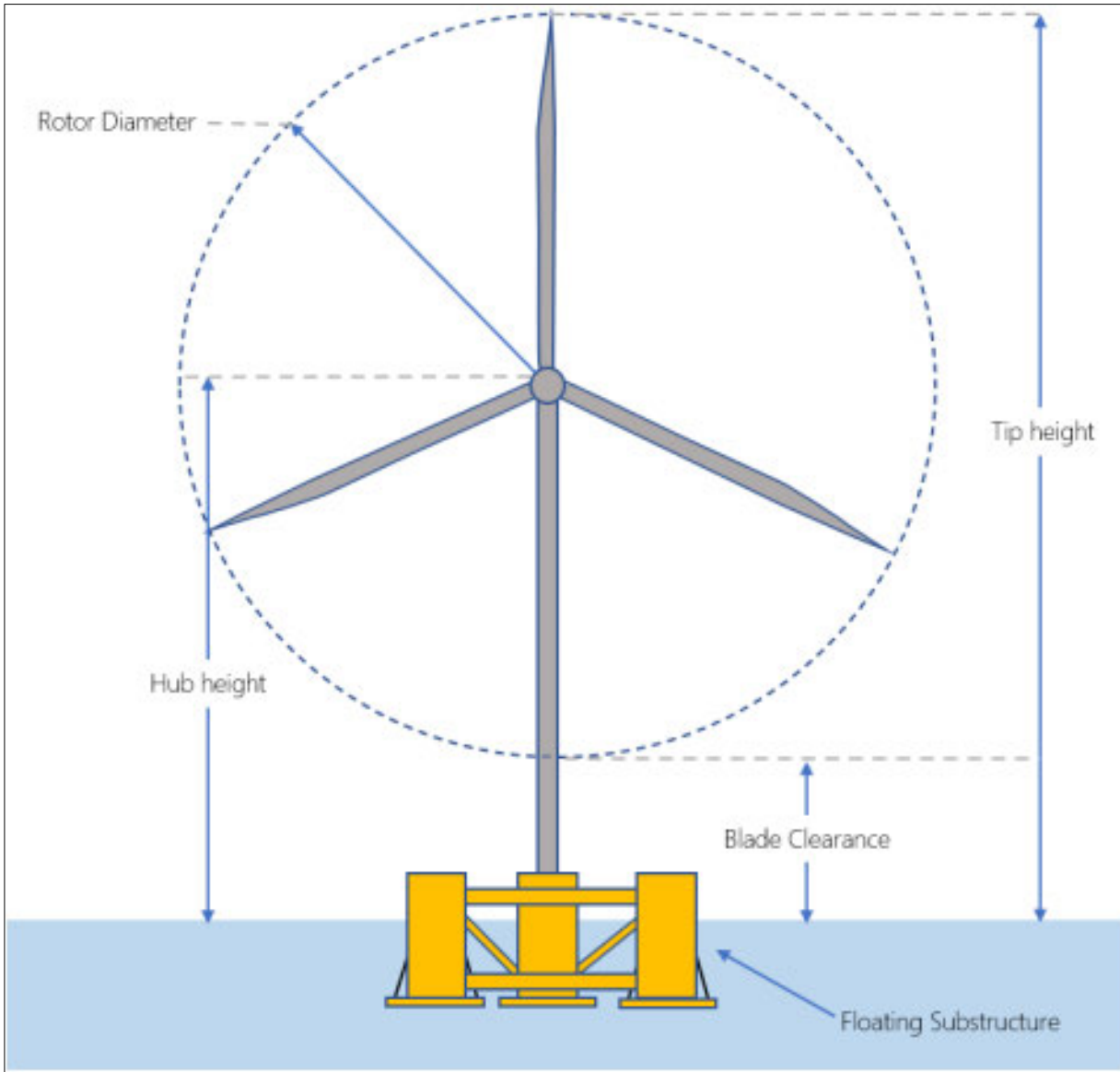


Figure 3-7 Illustration of the design parameter definition for a WTG (not to scale)

|   |  |          |
|---|--|----------|
| <b>Development Specification and Layout<br/>Plan</b>            | Document Reference:<br>GB-CZT-00-TOTA-000006 |          |
|   | Revision: 02                                 | Status:  |
| <b>CULZEAN FLOATING OFFSHORE WIND TURBINE PILOT<br/>PROJECT</b> | Date: 24/02/2025                             |          |
|   | Page   | 23 of 26 |

### 3.5 Generating Capacity

The Marine Licence condition 3.2.6 requires that this DSLP includes the following:

*The generating output of the WTG used on the site and a confirmed generating output for the site overall;*

The chosen WTG for installation at the Culzean Floating Wind Project is the Vestas V112, which has a generating capacity of 3 MW. As a single WTG, the overall export capacity is 3 MW.

### 3.6 WTG Finishes

The Marine Licence condition 3.2.6 requires that this DSLP includes the following:

*The finishes for the WTG (see condition 3.2.12 on WTG lighting and marking);*

The WTG (tower sections, nacelle and blades) will be finished in the standard light grey, RAL 7035.

To comply with aviation and marine navigation requirements the WTG will have additional marking which are detailed within the LMP. This is likely to include:

- Blade markings: three marked dots along the blade (at 10, 20 and 30 m intervals from root of the blade) will be painted in red to provide SAR helicopter pilots with a reference when hovering over the nacelle during a rescue;
- Blade tip marking: three stripes each 370 cm with 370 cm distance between each stripe, the tip itself is painted 370 cm (corresponding to 2% of the blade length when measured from tip);
- ID marking on the WTG nacelle roof; and
- Foundations will be painted yellow (RAL 1004, Golden Yellow) all around from the waterline to a height of 15m.

The LMP (GB-CZT-00-TOTA-000002) should be referred to for full details of WTG marking.

### 3.7 Length and Proposed Cable Arrangement

The Marine Licence condition 3.2.6 requires that this DSLP includes the following:

*The length and proposed arrangements on or above the seabed of the export cable;*

The floating WTG will be connected to the Culzean CPF via a 2.5 km 11 kV export cable. The total length of the cable will be 2.5 km maximum (see Table 3-3 for cable start and end point and length data).

The cable will be buried along its length or protected where burial is not possible. Full details of the cable installation methods and cable protection arrangements will be provided in the Culzean Floating Wind CaP (GB-CZT-00-TOTA-000010).

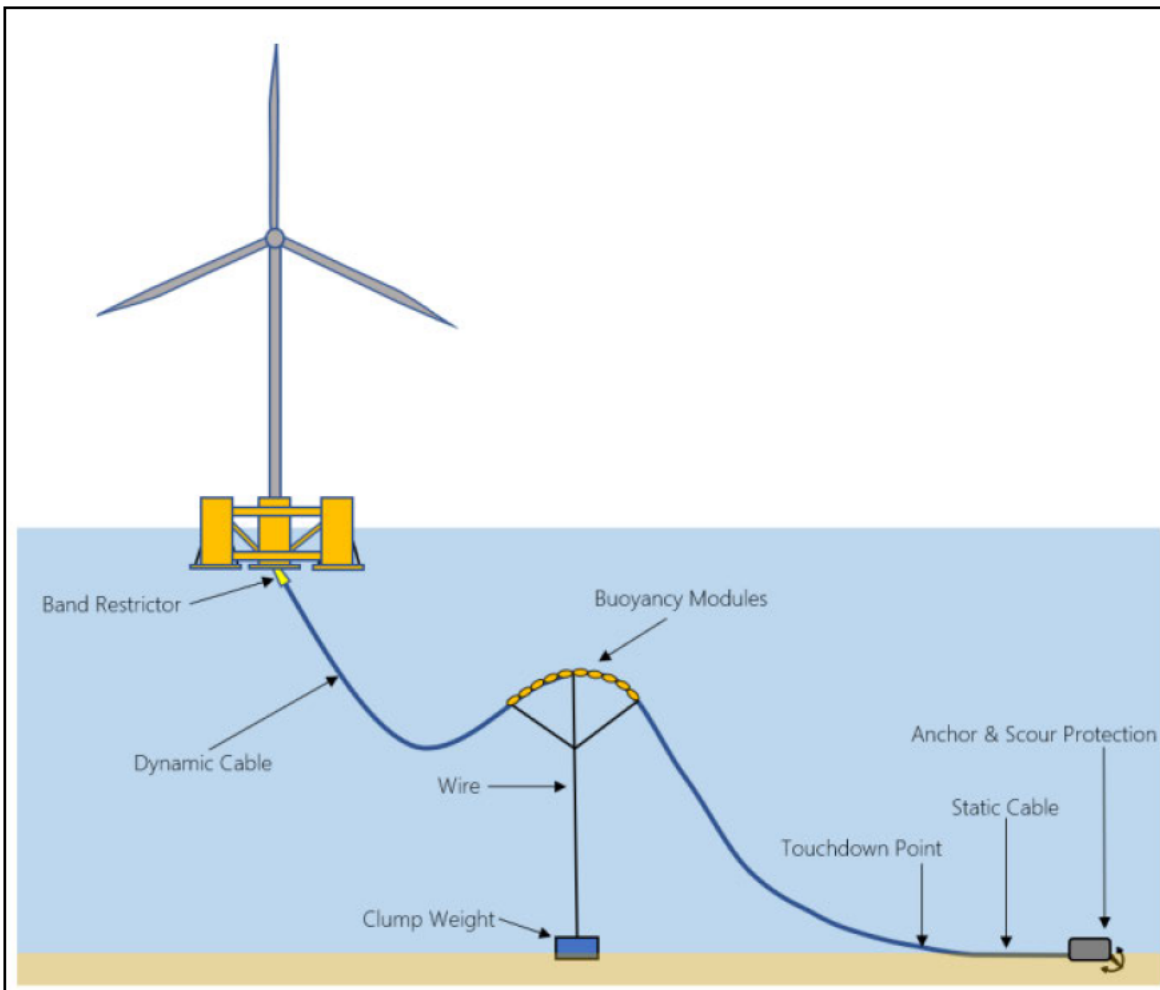
|   |  |          |
|---|--|----------|
| <b>Development Specification and Layout<br/>Plan</b>            | Document Reference:<br>GB-CZT-00-TOTA-000006 |          |
|   | Revision: 02                                 | Status:  |
| <b>CULZEAN FLOATING OFFSHORE WIND TURBINE PILOT<br/>PROJECT</b> | Date: 24/02/2025                             |          |
|   | Page   | 24 of 26 |

**Table 3-3 Cable proposed arrangements and approximate cable lengths**

| Cable |             | Start Point          |                       | End Point            |                       | Route Length (m) |
|-------|-------------|----------------------|-----------------------|----------------------|-----------------------|------------------|
| Start | End         | Latitude (DDM) WGS84 | Longitude (DDM) WGS84 | Latitude (DDM) WGS84 | Longitude (DDM) WGS84 |                  |
| WTG   | Culzean CPF | 57° 11' 29.3" N      | 1° 52' 35.3" E        | 57° 11' 28.47" N     | 01° 54' 34.91" E      | 2,500            |

One of the key design differences between cables for a fixed-bottom wind farm development and those for floating WTGs is the dynamic nature of the cables. The cable system must be able to accommodate the movement of the floating substructure without imparting any direct loads on the cables (i.e., acting as a form of mooring). As such, the cable design often adopts a 'lazy-s' configuration using buoyancy modules attached to a portion / midpoint of the cable. Although other configurations may be adopted for the same purpose, the 'lazy-s' allows the cable configuration to expand and contract in shape, in response to the movements of the floating substructure.

An illustration of a typical dynamic cable arrangement is provided Figure 3-8.



**Figure 3-8 Example dynamic cable Lazy-S arrangement (not to scale)**

|   |  |          |
|---|--|----------|
| <b>Development Specification and Layout<br/>Plan</b>    | Document Reference:<br>GB-CZT-00-TOTA-000006 |          |
|   | Revision: 02                                 | Status:  |
| CULZEAN FLOATING OFFSHORE WIND TURBINE PILOT<br>PROJECT | Date: 24/02/2025                             |          |
|   | Page   | 25 of 26 |

**APPENDIX A COMPARISON OF THE CONSENTED DESIGN ENVELOPE AND DSLP DESIGN  
PARAMETERS**

| Parameter                    | Consented Parameter Range | Final Design Parameter |
|------------------------------|---------------------------|------------------------|
| Maximum number WTG           | 1                         | 1                      |
| Maximum WTG hub height       | 78 m                      | 78 m                   |
| Maximum WTG tip height       | 134 m                     | 134 m                  |
| Maximum WTG rotor diameter   | 112 m                     | 112 m                  |
| Minimum blade tip clearance  | 22 m                      | 22 m                   |
| WTG substructure design      | Floating                  | Floating               |
| Maximum number of moorings   | 6                         | 6                      |
| Number of cables             | 1                         | 1                      |
| Total length of cabling (km) | 2.5                       | 2.5                    |

|   |  |          |
|---|--|----------|
| <b>Development Specification and Layout<br/>Plan</b>            | Document Reference:<br>GB-CZT-00-TOTA-000006 |          |
|   | Revision: 02                                 | Status:  |
| <b>CULZEAN FLOATING OFFSHORE WIND TURBINE PILOT<br/>PROJECT</b> | Date: 24/02/2025                             |          |
|   | Page   | 26 of 26 |

## APPENDIX B – GIS SHAPEFILE CULZEAN WIND PILOT PROPOSED LOCATION

GIS Shapefiles provided separately in WGS84 projection.