

T: +44 (0)1224 295579 F: +44 (0)1224 295524  
E: [MS.MarineLicensing@scotland.gsi.gov.uk](mailto:MS.MarineLicensing@scotland.gsi.gov.uk)

## Marine Renewable Energy Projects in the Territorial Sea and UK Controlled Waters Adjacent to Scotland

### Marine (Scotland) Act 2010

**IMPORTANT:** Before completing this form, please read these notes carefully.

The following numbered paragraphs correspond to the questions on the application form and are intended to assist applicants in completing the form. These explanatory notes are specific to this application and so applicants are advised to read these in conjunction with the General Guidance document. If further clarification is needed please contact Marine Scotland Licensing Operations Team (MS-LOT) on 01224 295579 or email:

[MS.MarineLicensing@scotland.gsi.gov.uk](mailto:MS.MarineLicensing@scotland.gsi.gov.uk)

Please refer to the General Guidance for information regarding payment methods.



## Explanatory Notes

### 2. Applicant

The person, company or organisation making the application that will be named as the licensee on any licence issued.

### 3. Agent

Any person, company or organisation acting under contract (or other agreement) on behalf of any party listed in the answer to question 2, and having responsibility for the control, management or physical deposit of materials anywhere below the tidal limit of the mean high water springs (MHWS) (e.g. a consultancy company submitting the application or a contractor who will be carrying out the works.)

### 4. Duration of Project

Provide details of the proposed commencement and completion dates of the project. The start date will not normally be backdated, except in exceptional circumstances, since to commence a project for which a licence has not been obtained may constitute an offence resulting in appropriate legal action. A licence is normally valid for 1 calendar year or the duration of the project (whichever is longer). After this period, it may be necessary for licence holders to re-apply for a further licence to continue any ongoing work (i.e. the project will be reviewed to establish whether original details are being adhered to). Although Marine Scotland Licensing Operations Team (MS-LOT) will aim to write to licence holders one month before the expiry date of a licence, it is the licensee's responsibility to apply for any further licences or an extension prior to the expiry of the initial licence.

### 5. Description and Cost of the Proposed Project

- (a) This estimate should only cover work taking place below the tidal level of MHWS and should take into consideration the cost of materials, labour fees etc.
- (b) Where the project is expected to take longer than 12 consecutive months, this description must detail which elements are to be undertaken in the first 12 months, with an outline of the schedule for each further 12 month period (the method of work should be described in the answer to question 7). In the event that MS-LOT must undertake a wider consultation on your application this description may be used as a basis for informing other bodies as to the nature of the proposed work.
- (c) Best describe the type of work proposed. Where the project involves a number of elements, please complete all appropriate boxes.

### 6. Location of Project

Include a list of the National Grid References (NGR) or latitude and longitude co-ordinates of the boundary points of the proposed project. In some cases, (e.g. the laying of cables) it may only be practicable to supply NGR or latitude and longitude co-ordinates for the start and end points.

**NGR:** Should consist of two letters followed by 10 digits (e.g. TL6320031700) where the first 5 digits are the eastings (read from the south west corner of an Ordnance Survey map) and the last 5 digits are northings.

**Latitude & longitude:** For positions read from charts of 1:25,000 scale or smaller, the format should be, e.g. 55°55.55'N 2°22.22'W. The decimal point specifies that decimals of minutes are used and the datum is stated explicitly. If seconds are used then the datum should be explicitly marked, e.g. 55°55'44"N 2°22'11"W. For positions read from larger scale charts, e.g. 1:10,000, three decimal places of minutes should be used, e.g. 55°55.444'N 2°22.222'W.

**It is important that the correct positions are included with this application, as any errors may result in the application being refused or delayed.**



To supplement the information given in section 6, the following must be provided with the completed application form:

- a suitably scaled extract of an Ordnance Survey Map (1:2,500 scale but not more than 1:10,000) or Admiralty Chart which should be marked to indicate:
  - the full extent of the project in relation to the surrounding area;
  - either NGR or latitude and longitude co-ordinates defining the area of operation.
  - the level of MHWS;
  - any adjacent Special Area of Conservation (SAC), Special Protection Area (SPA), Site of Special Scientific Interest (SSSI), Ramsar or similar conservation area boundary.

These drawings/plans may be copied to others as part of the MS-LOT consultation process. If they are subject to copyright, it is the responsibility of the applicant to obtain necessary approvals to reproduce the documents and to submit suitably annotated copies with the application.

## 7. Method Statement

Please provide a full method statement, including details of any temporary structures/deposits that may be required below MHWS during the project, the ultimate fate of the structure and material used in its construction. Details of temporary structures will be included in any licence issued.

Proposed measures to ensure the marine environment is adequately safeguarded during the project should also be described, as should those taken to minimise any interference with other uses of the sea or foreshore.

## 8. Permanent (and Temporary) Deposits

- (a) Complete the appropriate box(es) to indicate all materials to be deposited below MHWS. If you propose using types of materials for which a specific box is not provided, please describe the nature of such material in the box marked "Other".
- (b) If any materials to be placed below MHWS are to be brought to the site by sea, give details of the material (e.g. clean rock, average particle size) the vessels to be used,

A chart should also be provided showing the proposed vessel route to the project site and details of any trans-shipment areas (i.e. where material may be off-loaded to smaller vessels/barges for transport inshore).

If temporary deposits are required, please provide details as with the permanent deposits above. The temporary deposit location details (NGR or Lat/Long) should be added to section 6 of the form, and the period of time the site will be used must be provided. If issuing a licence, MS-LOT will include on the document details of any area that has been approved as a temporary deposit site

## 9. Producer/Contractor

The person, company or organisation whose activities produce the material intended for deposit in the sea (e.g. the dredging or excavation contractor).

## 10. Holder

The person, company or organisation that will be in possession of the waste prior to its deposit in the sea. This will include those providing temporary storage facilities or transporting the material to the vessel for conveyance to the sea disposal site etc.

## 11. Agent

Any person, company or organisation acting under contract (or other agreement) on behalf of any party listed in the answer to sections 1, 9 or 10 and having responsibility for the control, management or deposit anywhere below the tidal limit of MHWS (e.g. a consultancy company submitting the application or a contractor who will be carrying out the operations).

## 12. Duration of Dredging/Drilling Operation

Provide details of the proposed commencement and completion dates of the operations. The start date will not normally be backdated, except in exceptional circumstances, since to commence a project for which a licence has not been obtained may constitute an offence resulting in appropriate legal action. A licence may be issued for up to 3 calendar years, although MS-LOT will aim to write to licence holders two months before the expiry date of a licence, it is the licensee's responsibility to apply for any further licences or an extension prior to the expiry of the initial licence.

## 13. Details of Dredging/Drilling and Disposal Vessel(s)

The name, operator and type of vessel, including the type of dredging/drilling plant (e.g. cutter-suction) should be entered. If vessel details are not available at the time of application, please indicate this on the form as these details will be required prior to licence issue.

## 14. Method Statement of Dredging/Drilling Operation

Provide a full method statement of the dredging/drilling operation. This should include details such as the rate of dredging/drilling, timing of the operation, order of the areas to be dredged/drilled and the precautions taken to protect both navigation and the environment.

## 15. Use of Explosives

Indicate whether explosives are to be used as part of the dredging operations. If yes, please indicate if a method statement has been provided with your application. If a method statement has been produced but is not available, please provide an explanation in the space provided.

## 16. Details of Areas to be Dredged/Drilled

This section requires data to be provided about the source area to be dredged and the type of material to be deposited.

**Name of Area** - An annotated chart/location plan (either at A3 or A4 format) of suitable scale (1:2,500 but no more than 1:10,000) should be provided, with each proposed dredge area marked and named. The chart/location plan should show the full extent of the project in relation to the surrounding area. These drawings/plans may be copied to others as part of MS-LOT consultation procedures. If they are subject to copyright, it is the responsibility of the applicant to obtain necessary approvals to reproduce the documents and to submit suitably annotated copies with the application.

**Co-ordinates** - Include a list of the National Grid References (NGR) or latitude and longitude co-ordinates of the boundary points for the proposed dredge areas.

- **NGR:** Should consist of two letters followed by 10 digits (e.g. TL6320031700) where the first 5 digits are the eastings (read from the south west corner of an Ordnance Survey map) and the last 5 digits are northings.
- **Latitude & longitude:** For positions read from charts of 1:25,000 scale or smaller, the format should be, e.g. 55°55.55'N 2°22.22'W. The decimal point specifies that decimals of minutes are used and the datum is stated explicitly. If seconds are used then the datum should be explicitly marked, e.g. 55°55'44"N 2°22'11"W. For positions read from larger scale charts, e.g. 1:10,000, three decimal



places of minutes should be used, e.g. 55°55.444'N 2°22.222'W.

**Nature of Dredge/Drill Area** - provide a description of the type of area to be dredged/drilled (e.g. river bed, sea, harbour, approach channel, estuary)

## 17. Details of Material to be Dredged/Drilled

Information is required for each of the areas listed in the answer to section 16. The applicant should indicate the following:

A pre-dredge survey and sediment chemical analysis report will be required by MS-LOT prior to the issue of a sea disposal licence. Please contact MS-LOT for details in relation to specific projects. In addition to those samples analysed by the applicant, sediment sub-samples must be submitted to MS-LOT as check monitoring may be required.

**Physical Composition of Material** - indicate the approximate proportions (by volume) of the different types of dredged materials which are expected to be removed from each area.

For the purposes of this application the following descriptions should be used:

Average particle size (Based on the Wentworth Table)		
Description	Lower range	Upper range
Boulders	256 mm+	
Cobbles	64 mm	256 mm
Pebbles	4mm	64 mm
Granules	2 mm	4mm
Sand	62 microns	2mm
Silt and clay		62 microns

**Depth of Material to be Removed** - indicate the maximum depth (in metres) below the current seabed level, to which it is expected dredging is to be carried out.

**Estimated Specific Gravity** - indicate the specific gravity of the material to be disposed.

**Quantity to be Dredged/Drilled per Year** - the amount of material to be dredged (per year) from each area. Indicate unit of measure, either in-situ cubic metres or metric tonnes.

## 18. Dredged/Drilled Material: Additional Information

**Contamination** - information should be given regarding contamination in any of the areas to be dredged/drilled e.g. waste discharges, man-made rubbish or industrial activity in close proximity.

**Type of dredger** - indicate the type of dredging plant to be used within each area.

**Beneficial uses** – include any intended beneficial use of material (details to be provided in the BPEO).

## 19. Details of Dredged/Drilled Material Quality

The applicant is required to have representative sediment samples analysed at a laboratory of choice. This is liable to extend the time required to consider your application **as no licence will be issued without provision of this chemistry data**. As part of the application consideration process, an assessment will be made of the

chemical and physical characteristics of the material to be deposited at sea and its potential effects upon the marine environment.

As part of the licence conditions, you may be required to take representative samples of the dredged/drilled material during the dredging/sea disposal operations for analysis by MS-LOT. In such cases, samples should be taken at specified locations and depths and placed in containers which will be provided. The samples should then be returned to MS-LOT at the Marine Laboratory Aberdeen. This process enables the UK to fulfil its obligations under international conventions.

## 20. Best Practicable Environmental Option (BPEO) Assessment

Under Part 4, Section 27(2) of the Marine (Scotland) Act 2010 (there is no equivalent provision under the Marine and Coastal Access Act 2009), the Licensing Authority has an obligation to consider the availability of practical alternatives when considering applications involving disposal of material at sea. In order for Marine Scotland to thoroughly assess the available alternative options and reach a properly considered decision, all sea disposal licence applications must be supported by a detailed assessment of the alternative options - a Best Practicable Environmental Option (BPEO) assessment. This should include a statement setting out the reasons which have led to the conclusion that deposit of the materials at sea is the BPEO. **Sea disposal applications will not be considered unless they are accompanied by a BPEO assessment.** All options in the BPEO should be explored fully (as per the guidance documents) otherwise your form and BPEO are liable to be returned to you thereby delaying processing of the application.

## 21. Sea Disposal Site Details

Provide details of the proposed sea disposal site for the dredged material and, if necessary, any alternative sea disposal site(s) considered. In determining whether to issue a licence, MS-LOT will take into account any site nominated by the applicant. However, should this site be unsuitable, the nearest suitable disposal site for the dredged material will be identified. Should you wish to establish a new site, please provide details in a covering letter with your application and MS-LOT will contact you to discuss your proposal before your application is determined. The cost of any site investigations to identify any new sea disposal site will normally be the responsibility of the applicant.

## 22. Other Consents

Detail all consents required for the proposed project and indicate those that you have applied for or received. In all cases the applicant must provide the name and address of the nearest Local Planning Authority for the location of the project.

## 23. Statutory Consenting Powers

Please describe in the answer to this question what (if any) statutory responsibilities you (or your client) have to consent any aspect of the project.

## 24. Advertising and Consultation

- (a) Confirm whether the proposed project has been advertised, and if so how and where?
- (b) Have the public been invited to comment on the proposed project? If so to whom and what was the closing date?
- (c) Have any consultation meetings been held with the public? If so where and when?

## 25. Consultation with Conservation Bodies

Consenting Authorities have a duty to ensure marine projects will not have a significant adverse environmental impact, particularly upon designated conservation areas (e.g. SSSI, SAC, SPA, Ramsar sites etc). All details of



consultations with conservation bodies (e.g. SNH, JNCC) should be given, particularly where the applicant has statutory powers for consenting aspects of the project

In addition, guidance can be obtained from [www.foodstandards.gov.uk/](http://www.foodstandards.gov.uk/) with regards to the Shellfish Waters Directive (2006/113/EC) which has parameters set to protect the water quality in which edible shellfish are grown.

## 26. Designated Conservation Areas

Indicate whether the proposed project is located within or close to the boundaries of a conservation area such as a SAC, SPA, SSSI or Ramsar site (further information can be found on the SNH SiteLink webpage <http://gateway.snh.gov.uk>).

## 27. Environmental Assessment

Under the Marine Works (EIA) Regulations 2007, there may be a requirement for certain projects to undergo an Environmental Impact Assessment (EIA) and produce an Environmental Statement (ES). If an EIA/ES is deemed necessary, MS-LOT cannot issue a marine Licence until the outcome of the EIA/ES has been determined. Please indicate whether any EIA has been carried out in respect of the proposed project, either under your own powers or as required by another authority. If such an assessment has been undertaken, please indicate if a copy has been provided with your application. If the statement/assessment has been completed but is not available, please provide an explanation in the space provided.

Additionally, please also give details regarding if and where a copy has been/is being made available for public inspection.

## Other Considerations

Applicants should also be aware of the need to pay due regard to coastal and marine archaeological matters and attention is drawn to Historic Scotland's Operational Policy Paper HP6, "Conserving the Underwater Heritage". Please ensure that you have:

- completed all applicable sections of the application form;
- signed and dated the declaration;
- provided the correct relevant documents, charts, and continuation sheets (where necessary); and
- enclosed the correct payment (together with the remittance slip) or paid by means of BACS (if appropriate).

**Otherwise your application may be delayed or returned to you.**

# Application for Marine Renewable Energy Projects in the Territorial Sea and UK Controlled Waters Adjacent to Scotland

(ML-003)

## Marine (Scotland) Act 2010

**It is the responsibility of the applicant to obtain any other consents or authorisations that may be required.**

**Under Part 4, Section 54 of the Marine (Scotland) Act 2010 and Section 101 of the Marine and Coastal Access Act 2009 all information contained within or provided in support of this application will be placed on the Public Register. There is no national security grounds for application information not going on the Register under the 2010 Act. Under the 2009 Act, application information goes on the Register unless the Secretary of State determines that it's disclosure in the Register would be contrary to the interests of national security.**

### Public Register

Is there any information contained within or provided in support of this application that you consider should not be included on the Public Register on the grounds that its disclosure

- (a) would be contrary to the interests of national security; or YES  NO
- (b) would adversely affect the confidentiality of commercial or industrial information where such confidentiality is provided by law to protect a legitimate commercial interest? YES  NO

If **YES**, to either (a) or (b), please provide full justification as to why all or part of the information you have provided should be withheld.

### 1. Project Title and Payment Details

Please give a brief identifiable description, including the location, of the project.

Aberdeen Offshore Wind Farm Limited (AOWFL) is proposing to develop an offshore wind farm and deployment centre off the coast of Aberdeen, known as the European Offshore Wind Deployment Centre (EOWDC). The project will comprise 11 offshore wind turbines, foundations and inter-array cabling. Export cabling to connect the site to a landfall location will be installed.

**Payment:**      Enclosed payment       BACS       OR Invoice



## 2. Applicant Details

Title: Miss Initials: E Surname: Sleightholme

Trading Title (if appropriate): Aberdeen Offshore Wind Farm Limited

Address:  
Johnstone House,  
52-54 Rose Street,  
Aberdeen,  
Scotland,  
AB10 1HA

Name of contact  
(if different)

Position within Company:  
Offshore Consenting Manager  
(if appropriate)

Telephone No. +44 (0) 1434  
611319  
(inc. dialing code)

Fax No.  
(inc. dialing code)

Company Registration No.  
SC278869

Email: [edwina.sleightholme@vattenfall.com](mailto:edwina.sleightholme@vattenfall.com)

## 3. Agent Details (if any) – Not Applicable

Title Initials Surname

Trading Title (if appropriate)

Address

Name of contact  
(if different)

Position within Company  
(if appropriate)

Telephone No.  
(inc. dialing code)

Fax No.  
(inc. dialing code)

Company Registration No.

Email

## 4. Duration of Project

Start date 2013 (Beginning of The  
Crown Estate Lease and  
provisional construction date)

Expected completion date

2035 (End of The  
Crown Estate Lease  
and provisional  
decommissioning  
date)

## 5. Description and Cost of the Proposed Project

### (a) Estimated gross cost of the works proposed seawards of the tidal limit of MHWS

The capital expenditure for construction has been valued at approximately £260 million.

### (b) Give a detailed description of the proposed schedule of work.

The specific schedule for construction will depend on a number of factors including the outcome of the Marine Licence and Section 36 application process.

An indicative construction programme (including indicative wind turbine sizes) has been provided within the Environmental Statement and is presented below:

- Phase 1 2013 (First 12 month period)
  - 4 x 6.5 MW wind turbines installed
  - Export cables installed
  - Inter-array cables installed
- Phase 2 2014 (Second 12 month period)
  - 4 x 7.5 MW wind turbines installed
  - 3 x 10 MW wind turbines installed
  - Further inter-array cabling installation
  - Potential further export cable installation.

Subsequent 12 month periods will see maintenance and operations procedures as required. Further details can be found in section 3.12.3 of Chapter 3 (Project Description) in the EOWDC Environmental Statement.

It is anticipated that the final year of the 22 year The Crown Estate Lease will include decommissioning. A schedule is not yet in place but a decommissioning plan will be submitted to the Department of Energy and Climate Change prior to any construction works for the proposed EOWDC.

### (c) Types of Work Proposed

General Marine Project (e.g. wave, tidal device, monopile turbine)

Offshore Wind Deployment Centre, to include 11 offshore wind turbines (between 4 and 10 Mega Watts), export cables, inter-array cables and foundations (foundations could be monopile, gravity base, tripod, steel jacket, suction caisson / bucket).

Scientific/Marine Survey (e.g. geotechnical, geophysical, waverider):

N/A

Moorings (e.g. private, commercial):

N/A



## Dredging/Drilling Operations

Horizontal Directional Drilling could be required and would pass under the inter-tidal zone to exit the seabed a suitable distance from the shore. Drilling may be required for steel monopile installation where ground conditions make driving more difficult.

## 6. Location of Project (including any temporary deposit locations)

This should include either National Grid References (NGR) or Latitude and Longitude co-ordinates defining the extent of the project.

The Crown Estate Lease Boundary (See Figure 1a):

<b>Coordinates of The Crown Estate Lease Boundary (UTM30N (WGS84 Datum))</b>		
Lease Boundary Node	Easting (m)	Northing (m)
1	559430	6345131
2	563485	6346152
3	561740	6340780
4	557684	6339759

Export Cable Corridor Coordinates (including landfall corridor)(See Figure 1a)

<b>Coordinates of Export Cable Corridor (including landfall corridor) (UTM30N (WGS84 Datum))</b>		
	Easting (m)	Northing (m)
A	560438	6340453
B	557963	6340764
C	557500	6339002
D	556103	6338882
E	556817	6341879
F	559646	6342721
G	559820	6340967
H	561224	6341887
I	561111	6342868
J	561931	6342472
K	562349	6342655
L	561740	6340780

Wind Turbine Locations (including possible inter-array cabling) (See Figure 1b):

<b>Wind Turbine Coordinates (UTM30N (WGS84 Datum))</b>		
Turbine ID	Easting (m)	Northing (m)
1	559820	6340967
2	559719	6341842
3	559619	6342717
4	560481	6341400
5	560374	6342325
6	560269	6343249
7	561224	6341887
8	561111	6342868
9	560999	6343849
10	561931	6343472
11	561811	6344515

For clarity the project boundary points have been plotted on a separate Figure (1a) to the wind turbine locations and inter-array cable options (1b).

## 7. Method Statement

Because final decisions on the foundation and turbine types have not been made it is not possible at this stage to provide an exact method statement. Options have been discussed in detail within Chapter 3 (Project Description) of the proposed EOWDC Environmental Statement. Key extracts for foundation, turbine and cable installation have been included below.

To ensure the marine environment is adequately safeguarded during the project and to minimise any interference with other uses of the sea or foreshore a draft Environmental Management Plan has been included within the Environmental Statement (Chapter 28, Mitigation, Management and Monitoring). This document contains all obligations outlined within the Environmental Statement that are designed to safeguard the environment and minimize interference with other uses of the sea or foreshore. This document will be continually developed throughout the project and will incorporate any obligations outlined within any consent granted. The document will be used throughout construction, operation and decommissioning.

Key extracts for foundation, turbine and cable installation:

### ***Foundation Installation***

#### **Gravity Base**

Seabed Preparation:

At the EOWDC site the seabed generally consists of sand overlying clay, with the thickness of the top layer of sand varying across the site. In some instances, some levelling or soil removal may be necessary across the base of the foundation. The amount of soil removal or replacement would be evaluated during detailed engineering, however it is expected to be less than the height of local sand waves which are up to 1 m in places. Levelling would be done by using either local sand or a gravel bed. Preparation of the seabed is expected to last 1 – 4 per foundation. It is expected that the seabed may be prepared for one foundation at a time immediately prior to foundation installation.

Installation:

Installation is likely to be carried out from a floating vessel, either a shear-leg barge or a purpose made barge. The gravity based foundations may be floated using a tug prior to ballasting operations when at location.

#### **Monopile**

Seabed Preparation:

Generally, seabed preparation is not required although some removal of obstructions may be required but is unlikely.

Installation:

Monopiles could be transported to site by:

- sealing ends and floating out to the installation vessel
- transporting out on a transportation barge and lifted off on site by crane from a separate installation vessel
- transported out directly on crane vessel (either jack-up type or floating)

Once on site the piles are lifted up by a crane on the installation vessel and held in place until driven to final depth.

Pile driving of a single monopile could take from less than 2 hours to up to 24 hours if the geology and piling operation proves to be difficult. It is estimated that on average it would take 4 – 6 hours to drive a single monopile. The overall installation time would however be longer as the pile must first be lifted, stabbed and the hammer located on top of the pile. The total length of operation may be up to 5 days as the worst case.



Generally installation of only one monopile at a time occurs as mobilising multiple vessels for a development the size of EOWDC would not be feasible.

#### Steel Tripod/ Piled Concrete Tripod

Seabed preparation and installation methods for this option are similar to those of the gravity foundation.

#### Jacket Installation

##### Installation:

At site the jacket structure is lifted into position by the installation vessel crane. The jacket is then fixed to the seabed by driving piles through the feet by use of hydraulic hammer. An alternative would be to install a guide frame and pre-install the piles prior to jacket installation. Once driven the piles are fixed to the piled sockets by grouting or swaging. Prior to lifting the jacket into position, seabed preparation may be required to ensure the jacket is level prior to piling. The jacket would be temporarily supported on mudmats prior to piling.

#### Suction Caisson/ Bucket

##### Seabed Preparation:

It is not anticipated any seabed preparation would be necessary.

##### Installation:

Installation is likely to be carried out from a floating vessel, either a shear-leg barge or a purpose made barge. Floating to site of the suction caisson foundations with tug control may also be an option with ballasting operations when in place.

#### ***Installation of Wind Turbines***

##### Base Case Method:

The wind turbines are expected to be installed using a crane of suitable size located on a jack-up vessel. A jack-up vessel is a barge or ship that once in position lowers its legs onto the seabed and when the legs are sufficiently stable the vessel then jacks itself up out of the water. Jack-up vessels come in a range of specifications and can either be self propelled or require the assistance of tugs and anchor handling vessels to locate.

The wind turbines would be transported to site either on the jack-up vessel or to the jack-up on a barge or another jack-up. The installation crane lifts the wind turbine parts from the jack-up/barge onto the foundation.

Experience has shown that it normally takes 24 hours to position the jack-up and erect a wind turbine requiring a total of 4–5 lifts per wind turbine to complete installation. Normal procedure would be that the bottom tower is mounted first followed by the top section. Following the top section the nacelle and the rotor/blades are mounted.

##### Alternative Methods:

As part of the Deployment Centre aspect of the project, the applicant would look for alternative methods for wind turbine installation. This may include installation of the wind turbine and foundation as a single operation or utilising dynamically positioned vessels rather than jack-up vessels.

Should alternative methods be utilised the impact on the marine environment would be the same or less than that described and evaluated above.



### ***Installation of Cables***

The installation of the inter-array and export cables is likely to be carried out by a specialist cable lay vessel, with the cables stored either on reels or a carousel designed to carry the necessary lengths and maintain the minimum bend radius.

The vessel is likely to be fully equipped with specialised cable lay equipment, including cable tensioners and a full survey suite to provide details of the final cable positions. The vessel would follow the cable route either through use of a four or eight point moving system or a fully DP (Dynamically Positioned) or a DP assisted operation. The vessel is likely to be specifically mobilised to undertake the work and would be selected for the ability to work in the shallow water and tidal conditions that prevail on site. A typical DP vessel is shown in Plate 3.4, however barge based vessels may also be utilised.

Depending on the vessels used for the installation, for the shallow water sections beyond the landfall it may be necessary to use additional barges or anchored platforms to allow for the cable installation.

All the subsea cables would be buried in order to provide protection from all forms of hostile seabed intervention, such as fishing activity (trawler and otter boards), dragging of anchors and the minor risk of dropped objects. The subsea cables are also buried to ensure stability in the tidal conditions and eliminate the risk of free-spans causing cable fatigue.

The degree of cable burial proposed relates to a combination of the anticipated ground conditions as well as the perceived threat, and as such it is not proposed to bury deeper than is considered necessary.

The final method of cable installation and depth of burial would be determined at a later date and would vary depending on more detailed soil condition surveys and equipment selected.

The cables are likely to be buried using a combination of two or three techniques:

#### Ploughing

Ploughing would be carried out using an underwater cable plough that executes a simultaneous lay and burial technique by lifting a wedge of sediment, allowing the cable to fall into this trench. A separate operation may be necessary to fold the sediment back on top of the cable. Such an operation mobilises very little sediment. The trench could typically be controlled to match the burial depth requirement which maybe between 0.6 m and 3 m deep. The trench width for the greatest depth maybe up to 10 m wide depending on soil conditions and would displace 405, 000m<sup>3</sup> over the 26 km cable length, with a potential for a loss of 10.38 m<sup>2</sup> of habitat per metre of cable laid.

#### Jetting

Cable burial from a ROV (Remote Operated Vehicle) that utilise high pressure water jets to fluidise a narrow trench into which the cable is located. A working assumption for the trench dimension is 0.5 m wide and up to 2 m deep. The jetted sediments settle back into the trench and with typical tidal conditions the trench coverage is reinstated over several tidal cycles. This could be undertaken in a single operation or multiple operations.

#### Mass Flow Excavation

Cable burial using mass flow excavation where a propeller is placed above the target and a jet of water is directed to the target to wash the seabed away in a specific location. The cable is then laid into the open trench. The propeller can then be reused to provide infill or allow natural backfill.

As the export cables are relatively short, it is proposed to install the export cables in the same way as the inter-array cables, should conditions allow.

The seabed in the proposed export corridor and inter-array area consists of sand overlaying glacial clays. The method chosen would depend on the depth of overlaying sand and detailed analysis of the soils along the proposed route.



## 8. Permanent (and Temporary) Deposits

(a) Quantity of permanent (and temporary, where applicable) materials to be deposited below MHWS:

Type of Deposit	Nature of Deposit (P = Permanent, T = Temporary)	Deposit Quantity
Steel/Iron	Temporary  Possible permanent for monopile foundation	<p>Typical weight for 10 Mega Watt wind turbine:</p> <ul style="list-style-type: none"> <li>•rotor: (would include) 150 tonnes steel</li> <li>•nacelle: 70–600 tonnes mainly steel</li> <li>•tower: 700 tonnes steel</li> </ul> <p>Per foundation weight range:</p> <p>Gravity based foundation: steel-reinforcement: 200–1,000 tonnes</p> <p>Steel monopile: steel: 300 – 1,000 tonnes</p> <p>Steel tripod: steel: 400 – 1,200 tonnes</p> <p>Steel jacket foundation: steel: 400–1200 tonnes</p> <p>Suction caisson / Bucket steel: unknown</p>
Timber		None proposed
Plastic/Synthetic	Temporary	It is possible that plastic could be used for the j-tubes that hold and protect the cables to and from the foundation structure. If plastic j-tubes are used for all foundations this would equate to approximately 75 tonnes. The plastic would be designed and manufactured of suitable marine grade materials so there was no degradation.
Concrete	Temporary	<p>Per foundation: gravity based foundation: concrete: 2,000–8,000 tonnes</p> <p>Steel monopile: concrete for fixing of transition piece: 25–100 tonnes (the volumes do not include for additional volumes of grout or concrete that may be used to secure the monopile in rock).</p> <p>Steel tripod: concrete for fixing of transition piece: 25 – 100 tonnes</p> <p>Piled concrete tripod: concrete: 2,000–8,000 tonnes</p>
Silt		None proposed
Sand	Temporary	For a Gravity based structure (ballast): 0–4,000 m <sup>3</sup>
Stone/Rock/Gravel	Temporary	<p>Gravity based structure: stones for scour protection: up to 2,000 m<sup>3</sup></p> <p>Steel monopile: gravel/rock for scour protection: 150–1,250 m<sup>3</sup></p>





Name of contact  
(if different)

Position within Company  
(if appropriate)

Telephone No.  
(inc. dialing code)

Fax No.  
(inc. dialing code)

Company Registration No.

Email

### 11. Agent – Unknown at this time

Title

Initials

Surname

Trading Title (if appropriate)

Address

Name of contact  
(if different)

Position within Company  
(if appropriate)

Telephone No.  
(inc. dialing code)

Fax No.  
(inc. dialing code)

Company Registration No.

Email

If more than one 'Agent' please continue on a separate sheet and tick the box

### 12. Duration of Dredging/Drilling Operation

When is it proposed to begin the dredging/drilling operation?

Unknown at this time.

When are dredging/drilling and disposal operations expected to be completed?

Drilling, if required, would take place during this indicative construction programme:

Phase 1 2013 (First 12 month period)

- 4 x 6.5 MW wind turbines installed

Phase 2 2014 (Second 12 month period)

- 4 x 7.5 MW wind turbines installed
- 3 x 10 MW wind turbines installed

It is currently not known whether dredging will take place on the site and it is not considered within this application.

**13. Details of Dredging/Drilling and Disposal Vessel(s)**

	Name of Vessel and Operator	Type of Vessel
(a)	Name of Vessel and Operator not determined yet.	Vessel details are not currently available. Aberdeen Offshore Wind Farm Limited recognise that vessel details will be required prior to any award of licence.

**14. Method Statement for Dredging/Drilling Operation**

Please see section 7 above and Chapter 3 (Project Description) of the proposed EOWDC Environmental Statement for methods of drilling operations.

For Horizontal Directional Drilling the following information is available at this time:

Horizontal Directional Drilling

Horizontal directional drilling may offer a solution with lower environmental impacts to the intertidal area, however is more suited to harder seabed materials and may have a limited application on the EOWDC. Softer seabed materials may require the use of drilling muds to support the hole on a temporary basis.

The hole would be drilled from behind the dune area under the tidal zone to exit the seabed a suitable distance from the shore. Each hole would be supported either temporarily with drilling mud or a steel liner to allow the cable to be pulled through.

**15. Use of Explosives**

Will any part of the dredging operation involve the use of explosives? YES  NO

If YES,

Has a method statement regarding the use of explosives been submitted with this application? YES  NO

If a method statement is not being submitted, please provide an explanation as to why.

**16. Details of Areas to be Dredged/Drilled**

Dredge/Drill Areas	Name of Area to be Dredged/Drilled	Co-ordinates	Nature of Dredged/Drilled Area
A	<p>Possible drilled areas will be around the wind turbine locations provided in Figure 2 of this application form.</p> <p>If Horizontal Directional Drilling is used the start point would be a suitable distance from, the shoreline and within the export cable corridor.</p> <p>Figure 2 highlights the indicative Horizontal Directional Drilling area of</p>		



	search. If required Horizontal Directional Drilling would take place below a specific section of this area.		
--	---	--	--

*If necessary please continue on a separate sheet and tick this box*

**17. Details of Material to be Dredged/Drilled**

For each of the areas at rows A –E above (plus any listed separately), provide the following information:

Dredge/Drill Areas	Estimated Specific Gravity	Physical Composition of Material	Depth of Material to be Removed (metres)	Quantity to be Dredged/Drilled per Year (either in-situ m <sup>3</sup> or metric tonnes)
A	Average specific gravity of removed material is 10kN/m <sup>3</sup> (Submerged in seawater).	A full geotechnical survey would be carried out prior to wind turbines being installed. Geophysical surveys carried out to date indicate that the area is covered by silty sand lying above glacial till, which in turn lies on Devonian Old Red Sandstone.	The extent to which drilling will be required is unknown; it may not be required at any stage. Further information can be found in Chapter 3 (Project Description), section 3.7.1.2 of the proposed EOWDC Environmental Statement.	For possible drilling of monopile foundations the worst case scenario is 23,200 m <sup>3</sup> (based on 2,100 m <sup>3</sup> per turbine as stated in Chapter 3 Project Description of the proposed EOWDC Environmental Statement. This would take place during the construction phase outlined in section 5b above).  If Horizontal Directional Drilling is used the exact quantity of material drilled would depend on the location chosen for drilling. It is anticipated that a worst case scenario could remove 1,000 m <sup>3</sup> .

*If necessary please continue on a separate sheet and tick this box*

**18. Dredged/Drilled Material: Additional Information**

For each of the areas at rows A – E above (plus any listed separately), provide the following information:

Dredge/Drill Areas	Type of Contamination	Type of Dredger	Beneficial Uses
A	N/A	Uknown	Unknown

If necessary please continue on a separate sheet and tick this box

**19. Details of Dredged Material Quality**

Has the dredged/drilled material been chemically analysed in the last 3 years? YES  NO

Can the samples be made available if required? YES  NO

If NO, when will they be available?

Prior to foundation installation further surveys (including geotechnical) will be carried out to further determine the material quality.

It is currently not known whether dredging will take place on the site and it is not considered within this application. Therefore for the purposes of this application sediment sampling and analysis is not required.

**20. Best Practicable Environmental Option (BPEO) Assessment**

Has an up to date BPEO assessment been included with your application? YES  NO

**21. Sea Disposal Site Details**

Name of Disposal Site (or Oslo Code)	Co-ordinates of Disposal Site
It is possible that sediment volumes may be excavated or released during the installation process. The sediment can either be cast-aside or disposed on a licensed disposal ground. Disposal licenses would be applied for from Marine Scotland as appropriate prior to any disposal activities taking place.	



## 22. Other Consents

Provide details below of all consents you have applied for or received.

Type of Consent	(Tick appropriate box)		Reference No.	Date of Issue of Consent
	Applied for	Not Applied for		
1. Local Planning Authority (LPA) (e.g. Town and Country Planning Act)				
Name and address of LPA for Location of proposed works:				
2. Land Owner e.g. The Crown Estate	Aberdeen Offshore Wind Farm Limited has a signed Agreement for Lease in place with The Crown Estate.			
3. Local Port or Harbour Authority e.g. local work licence				
4. Scottish Environment Protection Agency (SEPA)				
5. Others	Section 36 with deemed planning permission under Section 57 of the Town and Country Planning (Scotland) Act 1997.  It is anticipated that the onshore infrastructure associated with this project will be applied for later in 2011.			

**23. Statutory Consenting Powers**

Do you, or (if appropriate) your client, have statutory powers to consent any aspect of this project?

No

**24. Advertising and Consultation**

Have these proposals been advertised to the public?  
If YES, how and where?

YES  NO

Public exhibitions held and a Request for Scoping Opinion submitted (a formal advert will also be distributed alongside this proposal). Public exhibitions listed below:

Where:

(2005)

The Palace Hotel, Peterhead 31 Oct  
 The Kilmarnock Arms Hotel, Cruden Bay 1 Nov  
 Oceanlab, Newburgh 2 Nov  
 Kirk Centre, Ellon 3 Nov  
 Collieston Community Centre 4 Nov  
 White Horse Inn, Balmedie 7 Nov  
 Aberdeen Exhibition and Conference Centre 8 Nov  
 Tullos Primary School foyer, Aberdeen 9 Nov  
 Beach Ballroom, Aberdeen 10 Nov

(2006)

The Palace Hotel, Peterhead 19 June  
 The Kilmarnock Arms Hotel, Cruden Bay 20 June  
 Oceanlab, Newburgh 21 June  
 Kirk Centre, Ellon 22 June  
 Collieston Community Centre 23 June  
 White Horse Inn, Balmedie 26 June  
 Aberdeen Exhibition and Conference Centre 27 June  
 Tullos Primary School foyer, Aberdeen 28 June  
 Patio Hotel, Aberdeen 29 June

(2010)

The Palace Hotel, Peterhead 22 November  
 Udney Arms Hotel, Newburgh 23 November  
 Kirk Centre, Ellon 24 November  
 Beach Ballroom, Aberdeen 25 November  
 White Horse Inn, Balmedie 26 November

Have the public been invited to submit comments?

YES  NO





If **YES**, to whom and by what closing date?

Yes, via comment forms made available during public exhibitions and in response to a Request for Scoping Opinion submitted to Marine Scotland which was available on Vattenfall website.  
The public have also been invited to comment via the public notices accompanying the application.

Have any consultation meetings with the public been arranged?

YES  NO

If **YES**, where and when are these to be held?

Public exhibitions as above.

Further public exhibitions have been provisionally booked for the week commencing 29<sup>th</sup> August 2011.  
The provisional locations are as follows:

Peterhead Palace Hotel, Peterhead

Udny Arms Hotel, Newburgh

Kirk Centre, Ellon

Whitehorse Inn, Balmedie

Double Tree Hilton, Aberdeen

## 25. Consultation with Conservation Bodies

Provide details of any consultation with Conservations Bodies, and, if appropriate, include copies of any correspondence with your application.

A Request for Scoping Opinion was sent to all relevant nature conservation bodies including:

Scottish Natural Heritage

Joint Nature Conservation Committee

Scottish Environmental Protection Agency

Royal Society for the Protection of Birds

## 26. Designated Conservation Areas

Are any parts of the proposed project located within the boundaries of a designated conservation area?

If yes, indicate approximate distance of the project from the boundary of the nearest conservation area(s)

No

If appropriate, are any parts of the proposed dredging and/or deposit operations located within the boundaries of a designated conservation area?

If yes, indicate approximate distance of the operations from the boundary of the nearest conservation area(s)

## 27. Environmental Assessment

Has an Environmental Impact Assessment (EIA)/Environmental Statement (ES) been undertaken to support any application in respect of the project, your own statutory powers (if applicable) or any other reason? YES  NO

If **YES**, is a copy of the EIA/ES included with this application? YES  NO

If the EIA/ES has been undertaken but has not been included with this application, please provide an explanation below.

Is the EIA/ES available for public inspection? YES  NO

If **YES**, at what locations:

Vattenfall Wind Power Ltd  
3rd Floor  
The Tun  
Holyrood Road  
Edinburgh  
EH8 8AE

Balmedie Library  
Eigie Rd  
Balmedie  
AB23 8YF

Aberdeen Central Library  
Rosemount Viaduct  
Aberdeen  
AB25 1GW

Peterhead Library  
51 St Peter Street  
Peterhead  
AB42 1QD

Ellon Library  
Station Road  
Ellon  
AB41 9AE



Bridge Of Don Library  
Scotstown Road,  
Bridge Of Don,  
Aberdeen  
AB22 8HH

Volumes 1,2 and 3 of 4 may also be downloaded from the Vattenfall website:  
<http://www.vattenfall.co.uk/en/aberdeen-bay.htm>.

**Declaration**

I declare to the best of my knowledge and belief that the information given in this form and related papers is true.

**WARNING**  
**It is an offence under the Act under which this application is made to fail to disclose information or to provide false or misleading information.**

Signature *E Sleightholme*

Date 01/08/2011

Name in BLOCK LETTERS EDWINA SLEIGHTHOLME

Position within company (if appropriate) OFFSHORE CONSENTING MANAGER

**Please check carefully the information you have given and that all the enclosures (including copies) have been included.**



# Application Check List

## 1. Electronic Application

- Completed application form x 1
- Project drawings x 1
- Method Statement x 1
- Maps/Charts x 1
- Additional environmental information, eg. Photographs, Environmental Impact Assessment etc (if required) x 1
- Payment (signed cheque or BACS details)

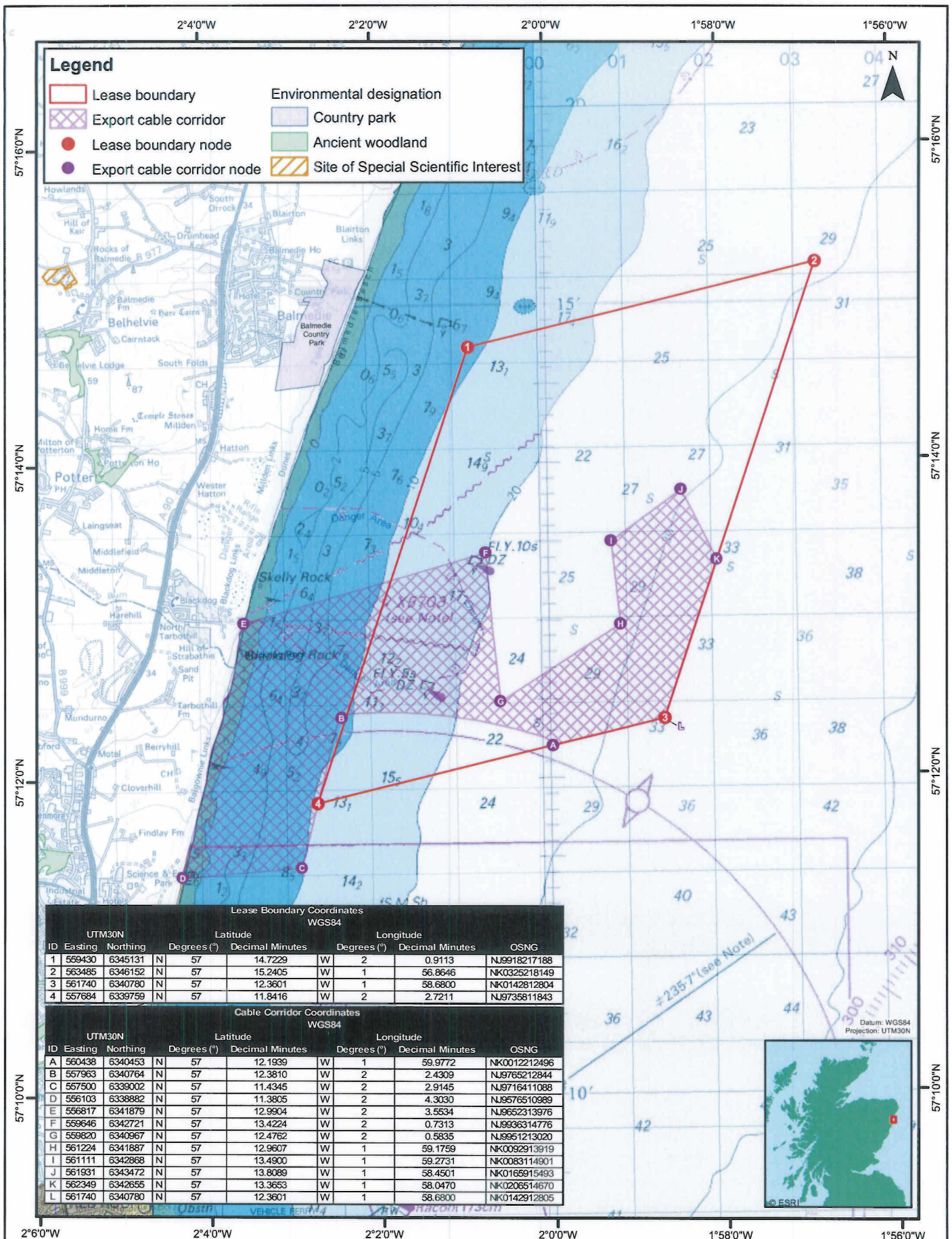

## 2. Non-electronic Application

- Completed, signed application form x 7
- Project drawings x 7
- Method Statement x 7
- Maps/Charts x 7
- Additional information, eg. photographs, Environmental Impact Assessment etc (if required) x 7 (**dependent on size and relevance to consultees**)
- Payment (signed cheque or BACS details)

✓
✓
✓
✓
✓
✓







**Legend**

- Lease boundary
- Export cable corridor
- Lease boundary node
- Export cable corridor node
- Environmental designation
- Country park
- Ancient woodland
- Site of Special Scientific Interest

Lease Boundary Coordinates  
WGS84

ID	UTM30N		Latitude		Longitude		OSNG
	Easting	Northing	Degrees (°)	Decimal Minutes	Degrees (°)	Decimal Minutes	
1	559430	6345131	N 57	14.7229	W 2	0.9113	NJ9918217188
2	563485	6346152	N 57	15.2405	W 1	56.8646	NK0325218149
3	561740	6340780	N 57	12.3601	W 1	58.6800	NK0142812804
4	557684	6339759	N 57	11.8416	W 2	2.7211	NJ9735811843

Cable Corridor Coordinates  
WGS84

ID	UTM30N		Latitude		Longitude		OSNG
	Easting	Northing	Degrees (°)	Decimal Minutes	Degrees (°)	Decimal Minutes	
A	560438	6340453	N 57	12.1939	W 1	59.9772	NK0012212496
B	557963	6340764	N 57	12.3810	W 2	2.4309	NJ9765212844
C	557500	6339002	N 57	11.4345	W 2	2.9145	NJ9716411088
D	556103	6338882	N 57	11.3805	W 2	4.3030	NJ9576510989
E	556817	6341879	N 57	12.9904	W 2	3.5534	NJ9652313976
F	559646	6342721	N 57	13.4224	W 2	0.7313	NJ9936314776
G	559820	6340967	N 57	12.4762	W 2	0.5835	NJ9561213020
H	561224	6341887	N 57	12.9607	W 1	59.1759	NK0092913919
I	561111	6342868	N 57	13.4900	W 1	59.2731	NK0083114901
J	561931	6343472	N 57	13.8089	W 1	58.4501	NK0165915493
K	562349	6342655	N 57	13.3653	W 1	58.0470	NK0206514670
L	561740	6340780	N 57	12.3601	W 1	58.6800	NK0142912805

**VATTENFALL**

**areg**  
Aberdeen Renewable Energy Group

**Technip**

0 0.5 1 km  
0 0.25 0.5 nm

Original A4 Plot Scale  
1:60,000

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**European Offshore  
Wind Deployment Centre  
Indicative Site Layout**

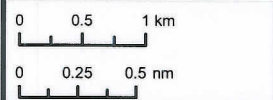
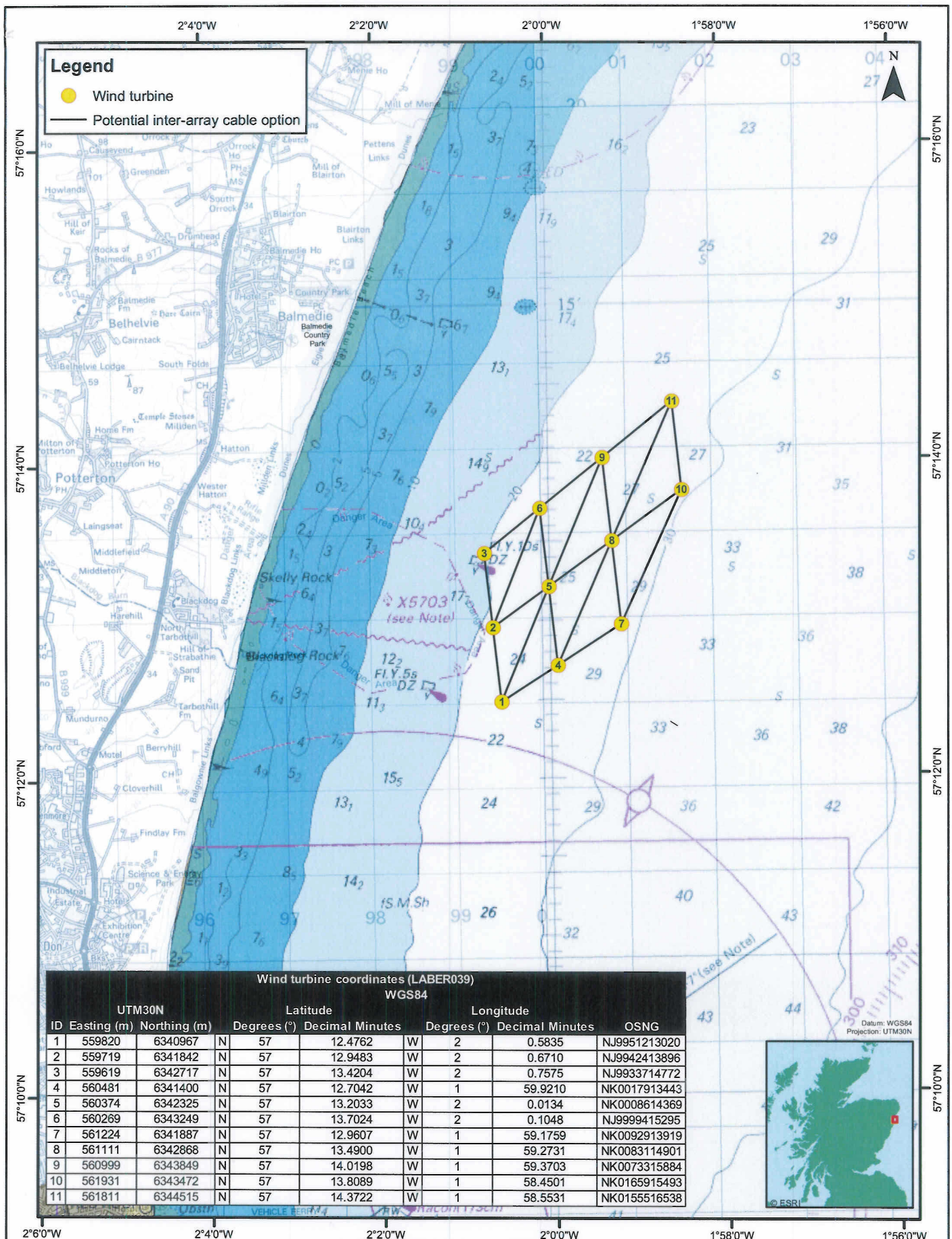
Layout	By	Date	Rev	Dwg No.
N/A	BO	01/08/2011	B	6129-700-PA-142

Figure 1a

Ref: ABER\_LeBdry\_v08\_1005286b\_UTM30N\_PT.ABER\_CabCerr\_v03\_110216R\_UTM30N\_pt.ABER\_LeBdry\_v08\_1005286b\_UTM30N.ABER\_CabCerr\_v03\_110216R\_UTM30N\_CNTRYPK\_Scotland\_110629.AncientWoodlands\_Scotland\_110629.SSSI\_Scotland\_110406.ABER\_BLANK\_OSNG







Original A4 Plot Scale  
1:60,000

### European Offshore Wind Deployment Centre

Indicative Site Layout

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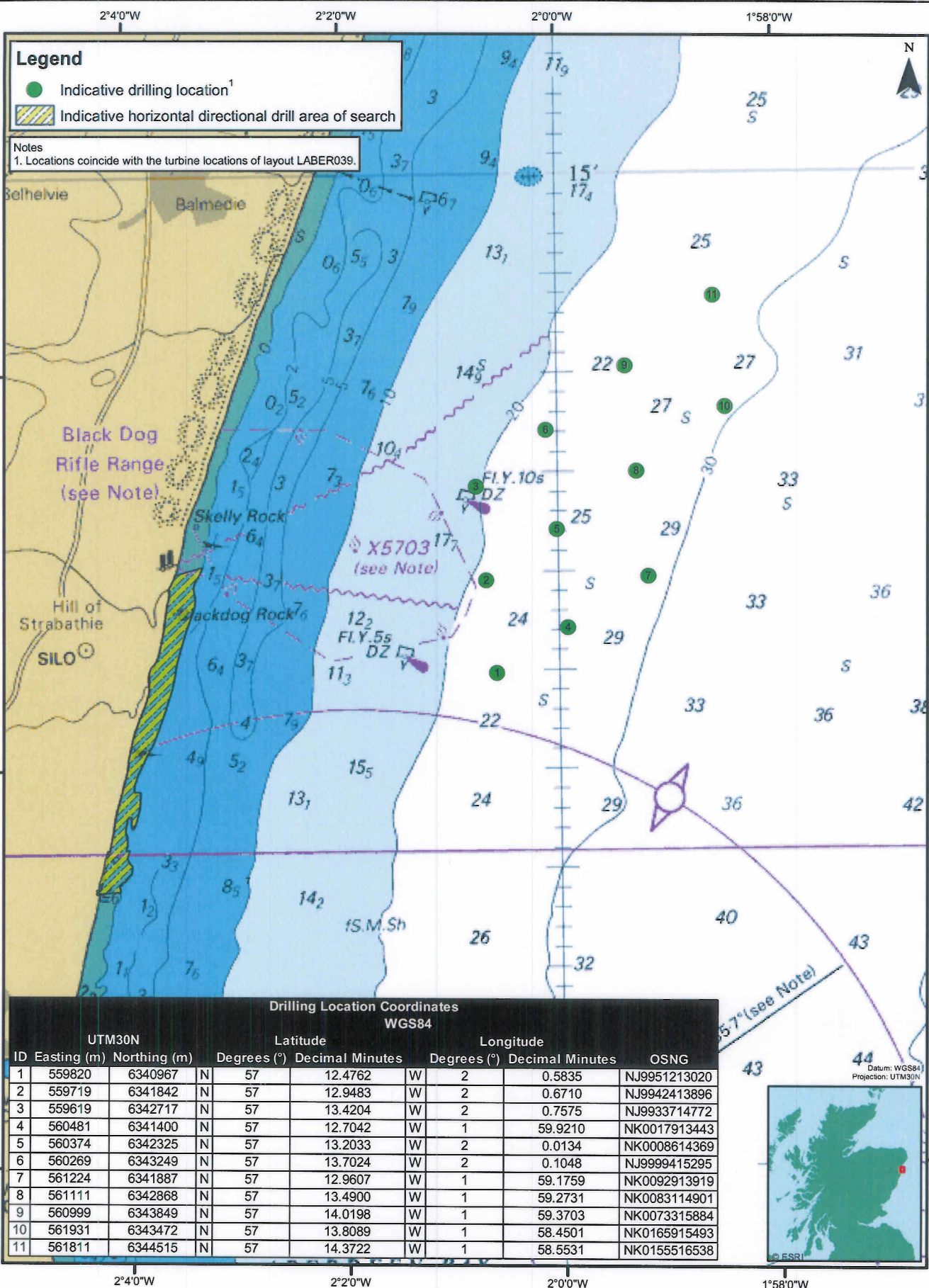
Layout	By	Date	Rev	Dwg No.
LABER039	BO	01/08/2011	B	6129-700-PA-144

Figure 1b

Ref: ABER\_Trc01\_v09\_110623h\_UTM30N\_ABER\_BLANK\_OSNG





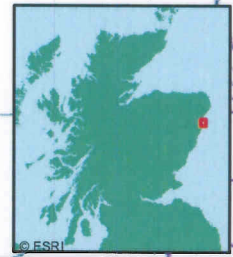


**Legend**

- Indicative drilling location<sup>1</sup>
- ▨ Indicative horizontal directional drill area of search

**Notes**  
 1. Locations coincide with the turbine locations of layout LABER039.

ID	UTM30N		Latitude	Longitude		OSNG
	Easting (m)	Northing (m)		Degrees (°)	Decimal Minutes	
1	559820	6340967	N 57 12.4762	W 2 0.5835	NJ9951213020	
2	559719	6341842	N 57 12.9483	W 2 0.6710	NJ9942413896	
3	559619	6342717	N 57 13.4204	W 2 0.7575	NJ9933714772	
4	560481	6341400	N 57 12.7042	W 1 59.9210	NK0017913443	
5	560374	6342325	N 57 13.2033	W 2 0.0134	NK0008614369	
6	560269	6343249	N 57 13.7024	W 2 0.1048	NJ9999415295	
7	561224	6341887	N 57 12.9607	W 1 59.1759	NK0092913919	
8	561111	6342868	N 57 13.4900	W 1 59.2731	NK0083114901	
9	560999	6343849	N 57 14.0198	W 1 59.3703	NK0073315884	
10	561931	6343472	N 57 13.8089	W 1 58.4501	NK0165915493	
11	561811	6344515	N 57 14.3722	W 1 58.5531	NK0155516538	



**VATTENFALL**

**areg**  
Aberdeen Renewable Energy Group

**Technip**

0 0.5 1 km  
 0 0.25 0.5 nm

Original A4 Plot Scale  
 1:50,000

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**European Offshore Wind Deployment Centre**  
 Potential Drilling Locations

Layout	By	Date	Rev	Dwg No.
N/A	BO	01/08/2011	B	6129-700-PA-143

Figure 2

