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Marine Licence Application for Sediment Sampling

Version 1.0

Marine (Scotland) Act 2010

Marine Scotland, 375 Victoria Road, Aberdeen, AB11 9DB
http://www.gov.scot/Topics/marine/Licensing/marine

Acronyms

Please note the following acronyms referred to in this application form:

MHWS	Mean High Water Springs
MPA	Marine Protected Area
MS-LOT	Marine Scotland – Licensing Operations Team
SAC	Special Area of Conservation
SNH	Scottish Natural Heritage
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
WGS84	World Geodetic System 1984

Explanatory Notes

The following numbered paragraphs correspond to the questions on the application form and are intended to assist in completing the form. These explanatory notes are specific to this application and so you are advised to read these in conjunction with the Marine Scotland Guidance for Marine Licence Applicants document.

1. Applicant Details

The person making the application who will be named as the licensee.

2. Agent Details

Any person acting under contract (or other agreement) on behalf of any party listed as the applicant and having responsibility for the control, management or physical deposit or removal of any substance(s) or object(s).

3. Payment

Indicate payment method. Cheques must be made payable to: The Scottish Government.

Marine licence applications will not be accepted unless accompanied by a cheque for the correct application fee, or if an invoice is requested, until that invoice is settled. Target timelines for determining applications do not begin until the application fee is paid.

4. Application Type

Indicate if the application is for a new sediment sampling site or an existing sediment sampling site. Provide the existing or previous consent/licence number and expiry date if applicable.

5. Project Details

(a) Give a brief description of the project e.g. sediment sampling using vibrocore.

(b) Provide the proposed start date of the project. The start date will not be backdated, since to commence a project for which a licence has not been obtained will constitute an offence, which may result in appropriate legal action. A licence is normally valid for the duration of the project but not exceeding 6 years. If a project will not be completed before a marine licence lapses, it will be necessary for licence holders to re-apply for a further licence to continue any ongoing work at least 14 weeks prior to the expiry date of the licence. **Target duration for determination of a marine licence application is 14 weeks.**

(c) Provide the proposed completion date of the project.

(d) Provide the cost of the works seawards of the tidal limit of MHWS. This estimate should only cover work taking place below the tidal level of MHWS and must take into consideration the cost of materials, labour fees etc.

(e) Describe the location of the proposed works. Include a list of the latitude and longitude co-ordinates (WGS84) of each sampling location. WGS84 is the World Geodetic System 1984 and the reference co-ordinate system used for marine licence applications. Co-ordinates taken from GPS equipment should be set to WGS84. Coordinates taken from recent admiralty charts will be on a WGS84 compatible

datum. Ordnance survey maps do not use WGS84.

Example: For positions read from charts the format should be as in the example: 55°55.555'N 002°22.222'W (WGS84). The decimal point specifies that decimals of minutes are used and the datum is stated explicitly. If seconds are used then the format should be as in the example: 55°55'44''N 2°22'11''W (WGS84).

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

To supplement your application, please provide a suitably scaled extract of an Ordnance Survey Map (1:2,500 scale but not more than 1:10,000) or Admiralty Chart which must be marked to indicate:

- the full extent of the works in relation to the surrounding area;
- latitude and longitude co-ordinates defining the location of the works;
- the level of MHWS;
- any adjacent SAC, SPA, SSSI, MPA, Ramsar or similar conservation area boundary.

Drawings and plans will be consulted upon. 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.**

(f) Indicate if the project is located within the jurisdiction of a statutory harbour authority and provide details of the statutory harbour authority where relevant.

(g) Provide a full method statement, including schedule of work and whether jack-up barge or vessel to be used.

(h) Provide assessment of the potential impacts the works may have, including interference with other uses of the sea. Please include details of areas of concern e.g designated conservation areas, such as a SAC, SPA, SSSI, MPA or Ramsar site and shellfish harvesting areas. Further guidance on designated conservation areas can be obtained from SNH at this website: http://gateway.snh.gov.uk/sitelink/index.jsp and guidance on shellfish harvesting areas can be obtained from http://www.foodstandards.gov.scot/ 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.

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".

Where there are potential impacts from the works, please provide details of proposed mitigation in response to potential impacts.

6. Sampling Details

(a) Indicate all types of sampling proposed, including the number of sampling locations, sampling depth and volume of sediment for removal in cubic metres at each sampling location .

Where the project involves a number of elements, please complete all appropriate sections.

(b) Provide the vessel name, vessel type and name and address of all vessel operators to be used for sediment sampling operations. 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. Continue on a separate sheet if necessary.

(c) Provide details of the vessel role (e.g guard or fisheries liaison), indicate if the vessel(s) will be stationary during any sampling work and provide details of the length of time that the vessel(s) will be stationary.

7. Noise Monitoring

Under the Marine Strategy Regulations (2010), there is now a requirement to monitor loud, low to mid frequency (10Hz to 10kHz) impulsive noise. Activities where this type of noise is produced include seismic airguns, other geophysical surveys (<10kHz), pile driving, explosives and certain acoustic deterrent devices. Where noisy activity is being undertaken, you must complete an initial registration form for the noise registry which allows you to provide details on the proposed work. Completion of a 'close-out' form, which allows licensees to provide details of the actual dates and locations where the activities occurred, is also required within 12 weeks of the completion of the 'noisy' activity or, in the case of prolonged activities such as piling for harbour construction or wind farms, at quarterly intervals or after each phase of foundation installation.

These forms can be downloaded from:
http://www.scotland.gov.uk/Topics/marine/science/MSInteractive/Themes/noise-reduction

Marine licence applications will not be accepted until this form has been completed and submitted.

8. Scotland's National Marine Plan

Scotland's National Marine Plan has been prepared in accordance with the EU Directive 2014/89/EU, which came into force in July 2014. The Directive introduces a framework for maritime spatial planning and aims to promote the sustainable development of marine areas and the sustainable use of marine resources. It also sets out a number of minimum requirements all of which have been addressed in this plan. In doing so, and in accordance with article 5(3) of the Directive, Marine Scotland have considered a wide range of sectoral uses and activities and have determined how these different objectives are reflected and weighted in the marine plan. Land-sea interactions have also been taken into account as part of the marine planning process. Any applicant for a marine licence should consider their proposals with reference to Scotland's National Marine Plan. A copy of Scotland's National Marine Plan can be found at: http://www.gov.scot/Publications/2015/03/6517/0

Indicate whether you have considered the project with reference to Scotland's National Marine Plan and provide details of considerations made including reference to the policies that have been considered. If you have not considered the project with reference to Scotland's National Marine Plan please provide an explanation.

9. Consultation

Provide details of all bodies consulted and give details of any consents issued including date of issue.

10. Associated Works

Indicate whether the application is associated with any other marine projects (e.g. land reclamation, marine/harbour construction works, dredging and sea disposal etc). If this is the case, provide reference/licence number for the related marine projects.

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

Under Section 54 of the Marine (Scotland) Act 2010, all information contained within and provided in support of this application will be placed on a Public Register. There are no national security grounds for application information not going on the Register under the 2010 Act.

Public Register

Do you consider that any of the information contained within or provided in support of this application should not be disclosed:

(a) for reasons of national security; YES ☐ NO ■

(b) for reasons of 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.

Publication of the information provided in Section 5a regarding the estimated cost of the works may prejudice the ongoing commercial tendering process.

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.

Target duration for determination is 14 weeks. Please note that missing or erroneous information in your application and complications resulting from consultation may result in the application being refused or delayed.

Marine licence applications will not be accepted unless accompanied by a cheque for the correct application fee, or if an invoice is requested, until that invoice is settled. Target timelines for determining applications do not begin until the application fee is paid.

Declaration

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

Signature [redacted] Date 22/02/2019

Name in BLOCK LETTER [redacted]

Application Check List

Please check that you provide all relevant information in support of your application, including but not limited to the following:

- Completed and signed application form ☑
- Maps/Charts ☑
- Co-ordinates of the boundary points of the area of harbour jurisdiction (if you are a statutory harbour authority) ☐
- Method Statement ☑
- Additional information e.g. photographs, consultation correspondence (if applicable) ☑
- Noise Registry – Initial Registration Form (if applicable) ☐
- Payment (if paying by cheque) ☐

1. Applicant Details

Title: [redacted] Initials: [redacted] Surname: [redacted]

Trading Title (if appropriate): Moray Offshore Windfarm (West) Limited

Address: Moray Offshore Windfarm (West) Limited
5th Floor, Atria One
144 Morrison Street
Edinburgh, EH3 8EX

Name of contact (if different):

Telephone No. (inc. dialing code): [redacted]

Email: [redacted]@edpr.com

Statutory Harbour Authority? YES ☐ NO ■

If **YES**, please provide a list of the latitude and longitude co-ordinates (WGS84) of the boundary points of the area of harbour jurisdiction using Appendix 01 Additional Co-ordinates form if necessary.

2. Agent Details (if any)

Title: Initials: Surname:

Trading Title (if appropriate):

Address:

Name of contact (if different):

Telephone No. (inc. dialing code):

Email:

3. Payment

Enclosed Cheque ☐ Invoice ■

Contact and address to send invoice to:

Applicant ☐ Agent ☐ Other ■

If **OTHER**, please provide contact details:

Title: [redacted] Initials: [redacted] Surname: [redacted]

Address: Moray Offshore Windfarm (West) Limited
5th Floor, Atria One
144 Morrison Street
Edinburgh, EH3 8EX

Email: [redacted]@edpr.com

4. **Application Type**

Is this application for a new sediment sampling site or an existing sediment sampling site:

New Site ☒ Existing Site ☐

If an **EXISTING SITE**, please provide the consent/licence number and expiry date:

Consent/Licence Number	Expiry Date

5. **Project Details**

(a) Brief description of the project (e.g. sediment sampling using vibrocore):

A geotechnical survey is to be carried out in the offshore export cable corridor. It will include up to 8 nearshore boreholes, up to 60 CPTs and 60 Vibrocores.

Please see attached maps and supporting information document for more detailed information.

(b) Proposed start date **(Target duration for determination of a marine licence application is 14 weeks):**

01/05/2019

(c) Proposed completion date:

31/12/2020

(d) Cost of the works seawards of the tidal limit of MHWS:

£ Confidential

(e) Location:

Moray West Offshore Export Cable Corridor which is located both within and out with 12 nm (see attached map and coordinates enclosed).

Latitude and Longitude co-ordinates (WGS84) defining each sampling location (continue on Appendix 01 Additional Co-ordinates form if necessary):

Latitude											Longitude										
		°			.				' N					°			.				' W
		°			.				' N					°			.				' W
		°			.				' N					°			.				' W
		°			.				' N					°			.				' W
		°			.				' N					°			.				' W
		°			.				' N					°			.				' W
		°			.				' N					°			.				' W
		°			.				' N					°			.				' W
		°			.				' N					°			.				' W
		°			.				' N					°			.				' W

(f) Is the project located within the jurisdiction of a statutory harbour authority?

YES ☐ NO ■

If **YES**, please specify statutory harbour authority:

(g) Method statement including schedule of work and whether jack-up barge or vessel to be used (continue on separate sheet if necessary):

Geotechnical survey within the Moray West Offshore Export Cable Corridor (map attached):

- Up to 8 Boreholes (in the nearshore) - 25 m, 127 mm maximum diameter, sediment removal per borehole is 0.317 m^3
- Boreholes will also comprise composite sampling, in-situ testing in soil and will take place from a jack-up vessel
- Up to 60 CPTs - in-situ test which does not involve any sediment removal
- Up to 60 Vibrocores - 6 m, 110 mm maximum diameter, sediment removal per vibrocore is 0.057 m^3

For further information please see the supporting information document.

(h) Potential impacts the works may have (including details of areas of concern e.g designated conservation and shellfish harvesting areas) and proposed mitigation in response to potential impacts (continue on separate sheet if necessary):

As presented in the attached document (Moray West Geotechnical Campaign Supporting Information Document) it is concluded that the proposed survey activities will not have any adverse effects on any areas of concern (e.g. designated conservation and shellfish harvesting areas). This includes potential effects on the Southern Trench proposed Nature Conservation Marine Protected Area (pNCMPA) through which the Offshore Export Cable Corridor passes. An assessment of potential impacts on other designated nature conservation sites e.g. proposed Moray Firth Special Protection Area (pSPA) and Moray Firth Special Area of Conservation (SAC) is also included in the attached supporting information document.

There are no shellfish harvesting areas in the survey area.

For further information please see the supporting information document.

6. Sampling Details

(a) Please indicate sampling details:

Type of Sampling	**Number of Sampling Locations**	**Sampling Depth** (metres)	**Volume of Sediment for Removal** (from each sampling location in cubic metres)
Mechanical bucket or shovel			
Grabbing – surface sediments			
Boreholes	8	25 m	0.317 m^3
Trial Pits			
Other (please specify)	Vibrocores: 60 CPTs: 60	Vibrocores: 6 m CPTs: n/a	Vibrocores: 0.057 m^3 CPTs: does not involve sediment sampling

(b) Details of any vessel(s) undertaking sediment sampling (please note that a marine licence cannot be issued until the vessel details have been confirmed. Continue on a separate sheet if necessary):

Vessel	**Vessel Name**	**Type of Vessel**	**Name and Address of Operator**
1	To be confirmed (TBC) after contractor has been appointed.	TBC	TBC
2			
3			
4			
5			

(c) Further details of any vessel(s) undertaking sediment sampling (please note that a marine licence cannot be issued until the vessel details have been confirmed. Continue on a separate sheet if necessary):

Vessel	**Vessel Role** (e.g guard or fisheries liaison)	**Vessel to be Stationary** (include length of time to be stationary)
1	Offshore Geotechnical survey vessel	Up to 12 hours per sampling location.
2	Nearshore Geotechnical survey vessel	Up to 12 hours per sampling location.
3	Nearshore Geotechnical Jack-Up Rig	Up to 5 days (duration of drilling will be a maximum of 3 days).

4		
5		

7. Noise Monitoring

Will loud, low to mid frequency (10Hz to 10kHz) impulsive noise be produced by the project? YES ☐ NO ■

If **YES**, which please indicate the noise generating activities and sound frequencies:

Noise Generating Activity	Sound Frequency (Hertz)
Use of Explosives	
Other (please describe below):	

If you have ticked **YES**, please complete the Noise Registry – Initial Registration form located at: http://www.scotland.gov.uk/Topics/marine/science/MSInteractive/Themes/noise-reduction

A marine licence application will not be accepted until this form has been completed and submitted.

8. Scotland's National Marine Plan

Have you considered the application with reference to Scotland's National Marine Plan? YES ■ NO ☐

If **YES**, provide details of considerations made including reference to the policies that have been considered:

The geotechnical survey in the Moray West offshore export cable corridor will support the development of the proposed Moray West Offshore Wind Farm. The delivery of the Moray West Offshore Wind Farm is in line with Scotland's national renewables policies and general policies of Scotland's National Marine Plan. In particular the sustainable development benefit to the Scottish economy (GEN 1, GEN 2 and GEN 3), co-existence with other sectors (GEN 4) and mitigating climate change (GEN 5). The Moray West Offshore Wind Farm will be designed to have minimal impacts on the historic environment (GEN 6), landscape/seascape (GEN 7), coastal process and flooding (GEN 8), natural heritage (GEN 9), water quality (GEN 12) and noise (GEN 13).

If **NO**, please provide an explanation of why you haven't considered the National Marine Plan?

9. Consultation

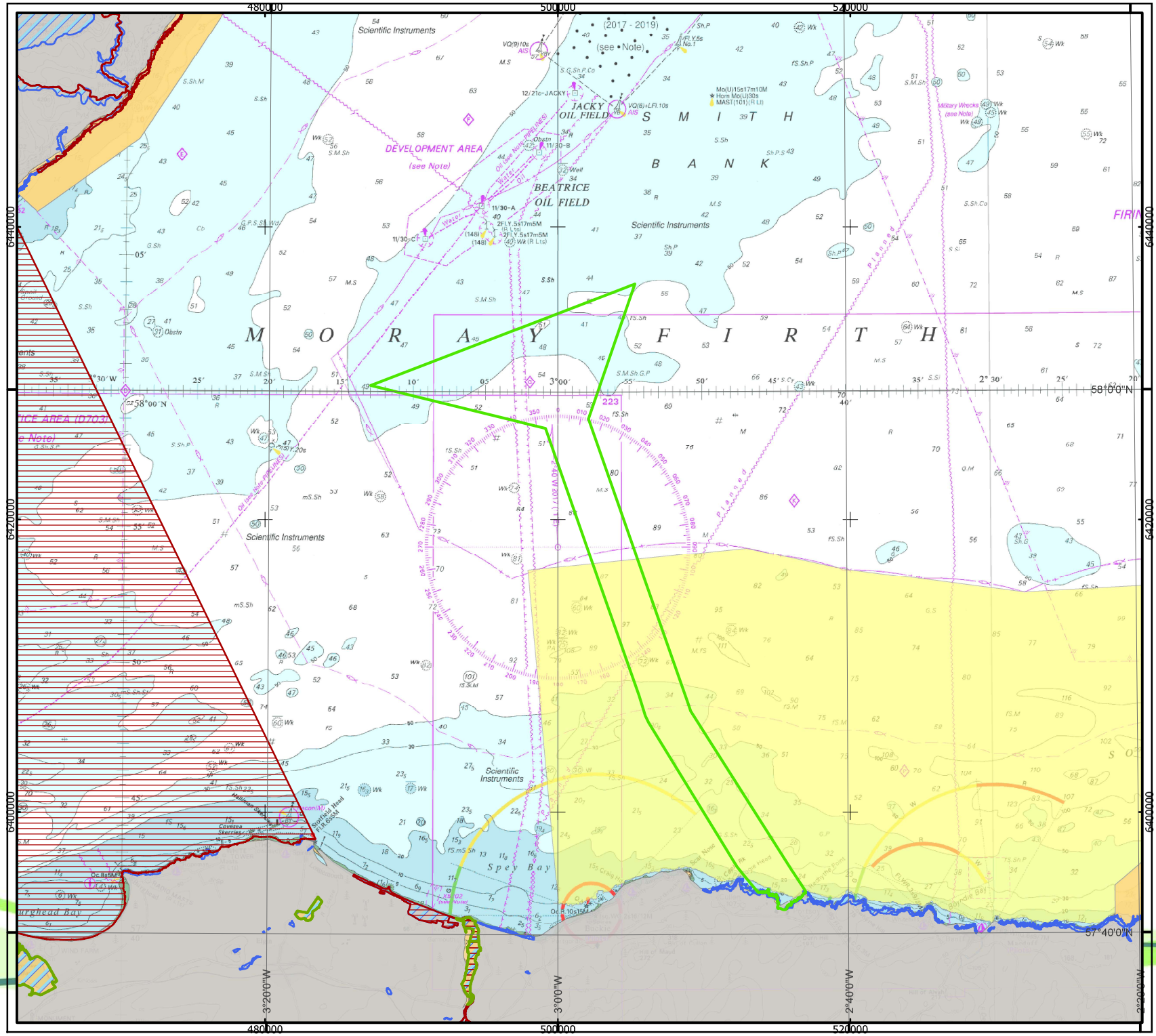
List all bodies you have consulted and provide copies of correspondence:

Moray West have consulted previously with Marine Scotland Licensing Operations Team (MS-LOT) on the proposed geotechnical survey in the offshore export cable corridor. Also approximately 40 consultees were contacted in relation to the Moray West Offshore Wind Farm Section 36 Consent and marine licence applications in July 2018.

10. Associated Works

Provide details of other related marine projects, including reference/licence numbers (if applicable):

- Moray West Offshore Wind Farm Geotechnical Marine Licence Exemption 2019 (Ref: 012/OW/MORLW- 8 Exemption Issued on: 23/01/2019)
- Moray West Offshore Wind Farm Site and Offshore Export Cable Corridor 2019 Geophysical Survey EPS Licence application (Application submitted: 31/01/2019)
- Moray West Floating LiDAR Marine Licence (Ref: 06705/18/0 Licence Issued on: 26/07/2018)
- Moray West Offshore Wind Farm Section 36 Consent and Marine Licence Applications (Applications submitted on: 04/07/2018)
- Moray West Offshore Transmission Infrastructure Marine Licence Application (Application submitted on: 04/07/2018)



MORAY WEST
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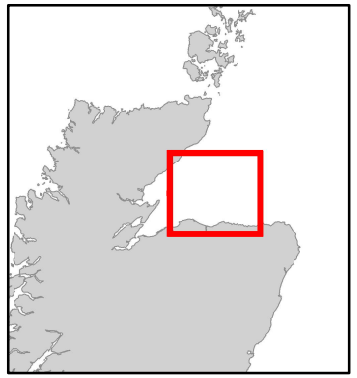
KEY

- Offshore Export Cable Corridor
- Ramsar site
- Special Area of Conservation (SAC)
- Site of Special Scientific Interest (SSSI)
- Special Protected Area (SPA)
- Marine Protected Area (MPA)



Horizontal Scale: 1:350,000 A4 Chart

0 5,000 10,000 Meters

N

Geodetic Parameters:	WGS84 UTM Zone 30N
Produced: MG Reviewed: Approved:	
Date: 17/12/2018	Revision: A
REF: 8460005-AAA0000-AAA-AAA-000	

Figure 1.1 Moray West Offshore Export Cable Corridor

Moray Offshore Windfarm (West) Ltd

OSB36 British National Grid			WGS84 Latitude - longitude				WGS84 UTM Zone 30N	
X_BNG	Y_BNG	NGR	Lat__DM_m	Lon__DM_m	Lat__DD	Lon__DD	X_UTM30N	Y_UTM30N
356150.82	866148.66	NJ5615066148	2° 44.220' W	57° 40.982' N	-2.736997066	57.68303707	515683	6393453
357010.16	867924.26	NJ5701067924	2° 43.374' W	57° 41.944' N	-2.722905329	57.69906779	516516	6395241
357329.83	867424.47	NJ5732967424	2° 43.047' W	57° 41.677' N	-2.717453828	57.69460938	516843	6394746
352925.46	868728.41	NJ5292568728	2° 47.495' W	57° 42.353' N	-2.791584743	57.70588018	512420	6395985
352750.73	869026.29	NJ5275069026	2° 47.675' W	57° 42.512' N	-2.794575041	57.70853718	512241	6396280
346876.37	878957.69	NJ4687678957	2° 53.721' W	57° 47.824' N	-2.895345495	57.79707445	506221	6406123
346660.1	879415.97	NJ4666079415	2° 53.945' W	57° 48.070' N	-2.89908556	57.80116445	505998	6406578
346247.65	880812.3	NJ4624780812	2° 54.380' W	57° 48.819' N	-2.906338283	57.81365546	505565	6407968
345641.34	882625.58	NJ4564182625	2° 55.017' W	57° 49.792' N	-2.916954727	57.82986695	504932	6409772
343023.64	890456.66	NJ4302390456	2° 57.774' W	57° 53.992' N	-2.962901177	57.8998694	502199	6417563
340110.97	899167.33	NJ4011099167	3° 0.854' W	57° 58.663' N	-3.014235975	57.97771326	499158	6426229
328204.85	902286.17	NJ2820402286	3° 12.986' W	58° 0.237' N	-3.216437071	58.00395525	487208	6429171
338013.96	905879.62	NJ3801305879	3° 3.087' W	58° 2.262' N	-3.051450486	58.03770371	496962	6432909
346387.91	908947.13	NJ4638708947	2° 54.621' W	58° 3.981' N	-2.910355677	58.06634407	505289	6436100
343065.45	899771.71	NJ4306599771	2° 57.866' W	57° 59.012' N	-2.964438114	57.98352947	502103	6426877
346020.92	890913.42	NJ4602090913	2° 54.747' W	57° 54.261' N	-2.912446681	57.90434472	505189	6418064
347687.34	885916.91	NJ4768785916	2° 52.994' W	57° 51.580' N	-2.883232724	57.85967056	506929	6413093
349641.11	880059.04	NJ4964180059	2° 50.944' W	57° 48.437' N	-2.849073832	57.80728567	508969	6407265
349760.83	879700.21	NJ4976079700	2° 50.819' W	57° 48.245' N	-2.846983975	57.80407647	509094	6406908
356575.11	868603.79	NJ5657568603	2° 43.820' W	57° 42.308' N	-2.730326232	57.70512905	516071	6395914
357010.16	867924.26	NJ5701067924	2° 43.374' W	57° 41.944' N	-2.722905329	57.69906779	516516	6395241
353222.25	868184.81	NJ5322268184	2° 47.190' W	57° 42.062' N	-2.786499252	57.70102899	512725	6395446
353111.65	867812.17	NJ5311167812	2° 47.297' W	57° 41.860' N	-2.788281891	57.69767059	512620	6395071
353246.71	867819.3	NJ5324667819	2° 47.161' W	57° 41.865' N	-2.786017816	57.69774874	512755	6395081
353624.41	867605	NJ5362467605	2° 46.778' W	57° 41.752' N	-2.779640668	57.69586322	513136	6394872
353935.7	867377.7	NJ5393567377	2° 46.463' W	57° 41.631' N	-2.774375468	57.6938538	513450	6394649
354145.9	867269	NJ5414567269	2° 46.250' W	57° 41.574' N	-2.770829066	57.69289905	513662	6394544
354563.91	867288.91	NJ5456367288	2° 45.829' W	57° 41.587' N	-2.763821875	57.69312041	514080	6394570
354874.3	867428.29	NJ5487467428	2° 45.519' W	57° 41.664' N	-2.75864203	57.69440348	514388	6394714
354935.8	867395.4	NJ5493567395	2° 45.456' W	57° 41.647' N	-2.757604176	57.69411431	514450	6394682
354916.43	867115.38	NJ5491667115	2° 45.473' W	57° 41.496' N	-2.757876667	57.69159742	514435	6394401
355171.1	867114.2	NJ5517167114	2° 45.216' W	57° 41.497' N	-2.753605017	57.69161229	514689	6394404
355428.62	867058.81	NJ5542867058	2° 44.957' W	57° 41.468' N	-2.749275746	57.69114048	514947	6394352
355514.36	866882.24	NJ5551466882	2° 44.868' W	57° 41.374' N	-2.747805034	57.68956306	515036	6394177
355509.19	866574.72	NJ5550966574	2° 44.870' W	57° 41.208' N	-2.747834738	57.68680061	515035	6393870
355558.17	866554.99	NJ5555866554	2° 44.821' W	57° 41.198' N	-2.747009801	57.68662824	515084	6393851
355577.53	866498.88	NJ5557766498	2° 44.800' W	57° 41.168' N	-2.746674729	57.6861262	515105	6393795
355487.07	866201.38	NJ5548766201	2° 44.888' W	57° 41.007' N	-2.748136567	57.6834453	515019	6393496
355990.16	866020.82	NJ5599066020	2° 44.380' W	57° 40.912' N	-2.739667639	57.68187314	515524	6393323

MORAY WEST
OFFSHORE WINDFARM

Information to Support a Marine Licence Application for Geotechnical Survey Campaign in the Moray West Offshore Export Cable Corridor

Moray Offshore Windfarm (West) Limited

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1 Introduction

1.1 Introduction

This document presents environment information to support an application by Moray Offshore Windfarm (West) Limited (Moray West) for a Marine Licence to carry out a geotechnical survey campaign within the area referred to as the Moray West Offshore Export Cable Corridor (see Figure 1.1).

1.2 Requirement for a Marine Licence

Through consultation with Marine Scotland Licencing Operations Team (MSLOT) Moray West has been advised that a Marine Licence is required on the basis that the Offshore Export Cable Corridor passes through the proposed Southern Trench Nature Conservation Marine Protected Area (pNCMPA). Along with minke whale, fronts and shelf deeps one of the features identified for protection is the habitat biotope SS.SMu.CFiMu.SpnMeg 'Seapens and burrowing megafauna in circalittoral fine mud' (burrowed mud). Given that the proposed geotechnical activities (boreholes and vibrocores) involve interactions with the seabed, it was determined that there is potential for these activities to have an adverse effect on this pNCMPA feature. Therefore, it was advised by MSLOT that Moray West would be required to apply for a Marine Licence to ensure potential effects of the survey activities on this pNCMPA feature are assessed and mitigated where necessary.

1.2.1 Associated surveys and permits

In addition to this Marine Licence for geotechnical survey activities along the offshore export cable corridor, Moray West has also applied for the following:

- Marine Licence Exemption for geotechnical survey activities (boreholes, CPTs and vibrocores) within the Moray West Site (Marine Licence Exemption received on 23rd January 2019); and
- EPS Licence for geophysical survey activities both within the Moray West Site and along the Offshore Export Cable Corridor.

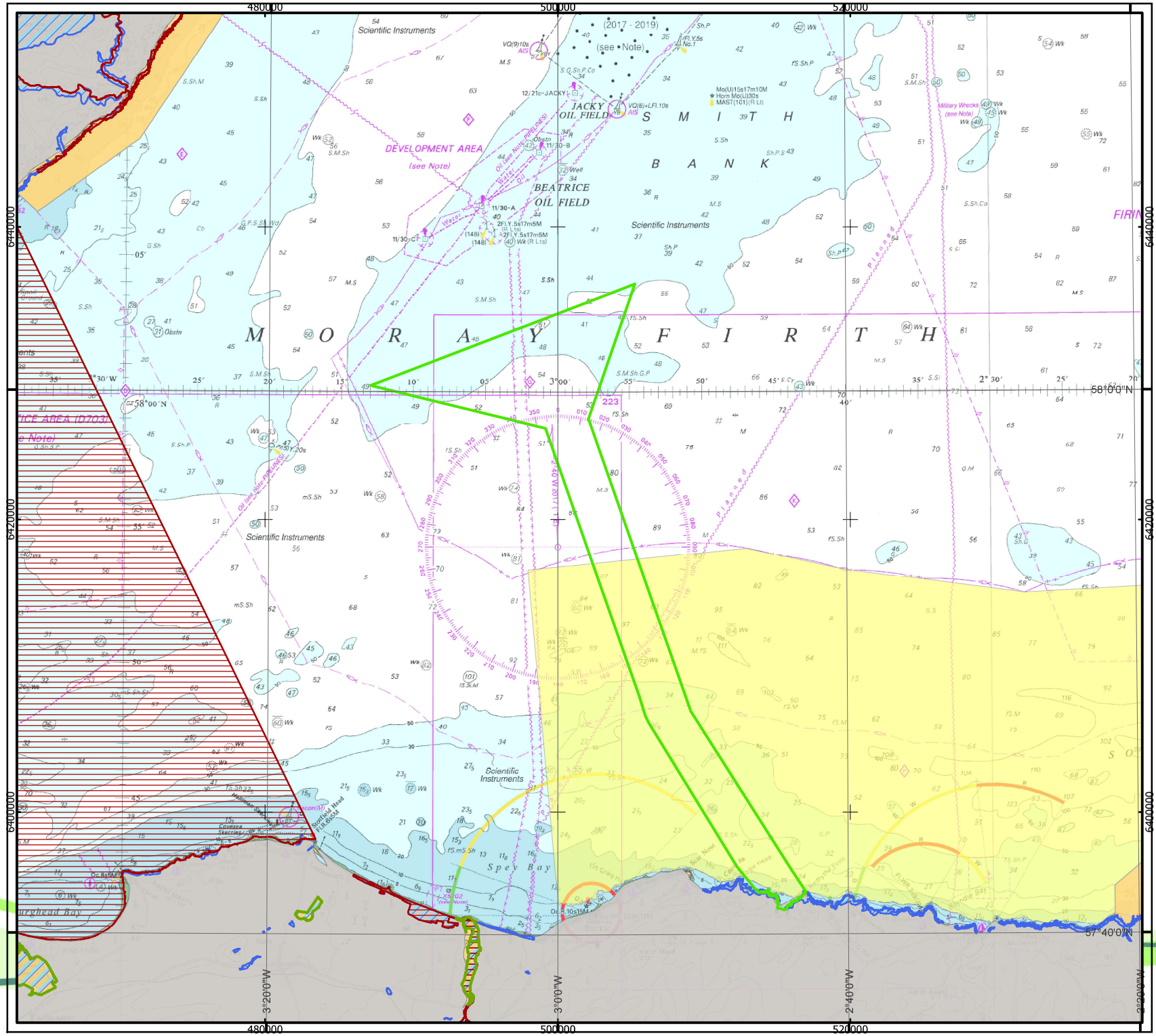
1.3 Description of Geotechnical Survey Campaign

The geotechnical survey campaign along the Offshore Export Cable Corridor will involve the following:

- Up to 8 nearshore boreholes (maximum 127 mm diameter and up to 25 m depth);
  - Total surface area affected per borehole = 0.013 m^2 (total for 8 boreholes = 0.101 m^2)
  - Total sediment removal per borehole = 0.317 m^3 (total for 8 boreholes = 2.536 m^3);
- Up to 60 vibrocores (maximum 110 mm diameter and 6 m depth);
  - Total surface area affected per vibrocore = 0.010 m^2 (total for 60 vibrocores = 0.570 m^2)
  - Total sediment removal per vibrocore = 0.057 m^3 (total for 60 vibrocores = 3.421 m^3); and
- Up to 60 in-situ soil testing (Piezocone Penetration Testing [PCPT])
  - These do not involve sediment removal.

The survey will require up to three vessels (offshore geotechnical survey vessel, nearshore survey vessel (smaller vessel with shallow draft) and jack-up drilling rig for nearshore boreholes). However, it is expected that only one vessel will be in operation at any one time unless weather conditions require some survey activities (offshore and nearshore) to run concurrently.

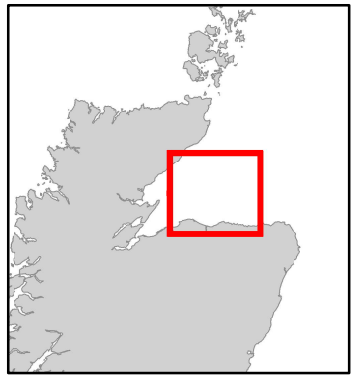
It is anticipated that the survey could take up to three months to complete (depending on weather) and will be undertaken between 1st May 2019 and 31st December 2020.



MORAY WEST
OFFSHORE WINDFARM

KEY

- Offshore Export Cable Corridor
- Ramsar site
- Special Area of Conservation (SAC)
- Site of Special Scientific Interest (SSSI)
- Special Protected Area (SPA)
- Marine Protected Area (MPA)



Horizontal Scale: 1:350,000 A4 Chart

0 5,000 10,000 Meters

N

Geodetic Parameters:	WGS84 UTM Zone 30N
Produced: MG Reviewed: Approved:	
Date: 17/12/2018	Revision: A
REF: 8460005-AAA0000-AAA-AAA-000	

Figure 1.1 Moray West Offshore Export Cable Corridor

Moray Offshore Windfarm (West) Ltd

1.4 Scottish National Marine Plan

These surveys comprise part of the technical investigations required to inform detailed design of the Moray West Offshore Wind Farm. The Scottish Government, in its National Marine Plan (NMP) which was adopted in 2015 (Scottish Government, 2015), highlights the importance of the offshore wind industry to Scotland, not only in in terms of achieving Scotland's targets for renewable energy generation, but also as a key hub for the design, development and deployment of the next generation of offshore wind technologies.

The main purpose of the NMP is to provide an overarching framework for the sustainable management of marine activity in Scottish Waters. The plan sets out a range of planning principles and policies which aim to facilitate the management all existing marine activities and future growth sectors whilst protecting and enhancing the marine environment. These principles and policies are set out in Chapters 6 to 16 which cover sea fisheries; aquaculture; wild salmon and diadromous fish; oil and gas; carbon capture and storage (CCS); offshore wind and marine renewable energy; recreation and tourism; shipping ports and harbours and ferries; submarine cables; defence; and aggregates respectively.

Chapter 4 of the NMP presents a series of general environmental, social and economic policies. These policies provide the framework for the sustainable management the various marine activities, and use of the marine area, discussed in Chapters 6 to 16.

Whilst there is no specific chapter for marine survey activities, it is stated in Section 2.15 that the principles and policies presented in the NMP (general policies and activity specific policies) and future regional plans must be taken into account in the consideration of licence applications for certain activities in the marine area such as the deposits in, or removals from the sea and seabed e.g. the geotechnical survey activities included in this application. Section 2.15 also highlights that it is the role of the marine licencing process to ensure that other aspects of development are taken into consideration in reaching a balanced view on whether proposed activities should be consented.

1.5 Scope of the Assessment

As noted in Section 1.2 above, the basis for this Marine Licence application is to assess potential effects of the proposed geotechnical survey activities on the burrowed mud protected feature of the Southern Trench pNCMPA. However, in order to ensure potential effects of the survey activities on other receptors have also been taken into account in this assessment, a scoping assessment has been undertaken. Results from this assessment are presented in Table 1.1 below. This has been undertaken for all key receptors associated with the Offshore Export Cable Corridor as described in the Moray West EIA Report 2018.

Where it is determined that there will be no impacts on a certain receptor or receptor group, or potential effects identified are negligible / and or will be minimised through the implementation of recognised standard best practice mitigation it is determined that no further assessment is required as part of this supporting document.

Table 1.1 Environmental receptors that could potentially be affected by activities assocaited with the geotechnical survey campaign			
Environmental receptor		**Potential to be affected by geotechnical survey activities within the Offshore Export Cable Corridor**	**Further assessment required?**
Physical processes and water quality			
Physical characteristics	Water levels	The proposed geotechnical survey activities are not expected to affect water levels along the Offshore Export Cable Corridor. This is on the basis that the proposed activities (vibrocoring or drilling of boreholes) will not lead to either an increase or decrease in seabed levels therefore associated water levels will remain unaffected.	No
	Currents	The proposed geotechnical survey activities are not expected to affect currents or waves within the Offshore Export Cable Corridor. This is on the basis that the proposed activities (vibrocoring or drilling of boreholes) will not result in the long-term placement of structures or deposits on the surface of the seabed. Therefore, there is no mechanism for changes to local wave or tidal current regimes.	No
	Waves		No
	Sediments	The proposed geotechnical survey activities will involve the removal of sediment from the seabed. However, given that the total quantities of sediment that will be removed from the seabed along the Offshore Export Cable Corridor will not exceed 5.96 m^3 (2.536 m^3 from 8 boreholes and 3.421 m^3 from 60 vibrocores) from a total survey area of 185 km^2 there is no potential for any adverse effects on sediments.	No
	Morphology	Active seabed bedforms are controlled by the combination of tidal flows and wave induced orbital currents (Moray West EIA Report, 2018). Given that the proposed geotechnical survey activities are not expected to influence either wave or tidal currents it can be concluded that there will be no effect on morphology.	No
	Water quality	There is potential for geotechnical activities to affect water quality through disturbance of contaminated sediment and accidental release of pollutants from vessels / drilling equipment. However, given the limited number of boreholes proposed (8) and negligible quantities of sediment that will be removed (total of 5.96 m^3 for boreholes and vibrocores) the potential for any adverse effects on water quality are negligible. All survey vessels will be required to implement appropriate mitigation measures to prevent any accidental release of contaminants.	No
Important features	Smith Bank	The majority of the Offshore Export Cable Corridor lies to the south of the Smith Bank. Therefore, there is no potential for any significant adverse direct effects on this feature resulting from the geotechnical survey activities.	No
	Protected sites	See below	Yes
	Stratification fronts	There is no potential for the geotechnical survey to affect seasonal thermal stratification fronts on the basis that the main interactions are with the seabed therefore there is no mechanism for activities to affect thermal stratification fronts.	No
	Recreational surfing venues	Although some boreholes will be located in the nearshore area these will not affect the surfing resource on the basis that there	No

Table 1.1 Environmental receptors that could potentially be affected by activities assocaited with the geotechnical survey campaign			
Environmental receptor		**Potential to be affected by geotechnical survey activities within the Offshore Export Cable Corridor**	**Further assessment required?**
		will be no deposits on, or removal of sediment from the seabed (only within the borehole core and only comprising a total of 0.317 m^3 of sediment per borehole). The presence of drilling equipment will also not affect the local wave regime on the basis that the equipment will only be present for a short period of time. No adverse effects of cable installation including Horizontal Directional Drilling (HDD) activities were identified in the Moray West EIA Report (2018).	
Benthic and Intertidal Ecology (for protected sites see below)			
Benthic (subtidal) habitats and species		Given that the geotechnical survey campaign activities (vibrocoring, PCPTs and boreholes) involve direct intervention with the seabed, there is potential for these activities to also effect habitats and species associated with the seabed in the areas where the survey works are being undertaken.	Yes
Intertidal habitats and species		Given that the geotechnical survey campaign activities (vibrocoring, PCPTs and boreholes) involve direct intervention with the seabed, there is potential for these activities to also effect intertidal habitats and species associated with the seabed in the areas where the survey works are being undertaken.	Yes
Fish and shellfish			
Shellfish species (scallop, nephrops, squid, crab, lobster, whelk)		Given that the geotechnical survey campaign activities (vibrocoring, PCPTs and boreholes) involve direct intervention with the seabed, there is potential for these activities to also effect shellfish species located on the seabed in the areas where the survey works are being undertaken.	Yes
Demersal species (haddock, monkfish, whiting, cod and plaice)		Although these species dwell (live and feed) at or near the seabed, given their highly mobile nature they are able to readily move away from any areas of seabed disturbance. Although the geotechnical activities will involve direct interventions with the seabed, these activities are only temporary and short term (up to three months) and do not involve any discharges, release of sediment into the water column or the placement of any permanent deposits on, or removal of materials from, the surface of the seabed. It is therefore concluded that there is no potential for any effects on these species.	No
Pelagic species (herring, sandeel, lemon sole and sprat)		Although these species are present in mid water column, both sandeel and herring are demersal spawners (they spawn in or on the seabed respectively). Given that part of the lifecycle of these species is directly dependent on the seabed, there is potential for geotechnical survey activities to have a direct impact on spawning habitat of these species.	Yes
Diadromous migratory species (river and sea lamprey, Atlantic salmon, European eel, Allis and twaite shad, European smelt, sea trout)		These species are present mid to surface water column. Given that the geotechnical activities involve direct interventions with the seabed only, are temporary and short term (weeks to a few months maximum), do not involve any discharges, will result in minimal release of sediment into the water column and do not involve the placement of any permanent deposits on, or removal	No

Table 1.1 Environmental receptors that could potentially be affected by activities assocaited with the geotechnical survey campaign		
Environmental receptor	**Potential to be affected by geotechnical survey activities within the Offshore Export Cable Corridor**	**Further assessment required?**
	of materials from, the surface of the seabed there is no potential for any effects on these species.	
Skates, rays and sharks	Given that there are no sources of any electromagnetic field emissions (EMFs) associated with the proposed geotechnical activities (vibrocoring, PCPTs and boreholes) there will be no impacts on skates, rays and sharks.	No
Basking shark	Although basking sharks are more common along the western isles of Scotland, there is potential for the survey to coincide with the period of peak basking shark densities in Scotland as they tend to aggregate during July – August to breed. Basking sharks are very slow moving and, if present, there may be potential for collision risk with the survey vessel. However, the survey vessel will only be present at any one location for short periods of time. Therefore, the potential for impacts on basking sharks is considered to be very low and therefore do not require any further assessment.	No
Marine mammals		
Seals (grey and harbour)	Any noise emitted from the geotechnical activities (vibrocoring, PCPTs and boreholes) will be limited and will not exceed noise levels emitted by the survey vessels. Based on information presented in the Moray West EIA Report (Moray West, 2018), it was concluded that there would be no adverse effects on grey or harbour seals from vessel noise during construction or operation of the Moray West Offshore Wind Farm and OfTI. Given the short duration and temporary nature of the geotechnical survey campaign (weeks to few months) and limited number of survey vessels (one) there are not predicted to be any impacts on grey or harbour seals from survey vessel noise.	No
Bottlenose dolphin	Any noise emitted from the geotechnical activities (vibrocoring, PCPTs and boreholes) will be limited and will not exceed noise levels emitted by the survey vessels. It was concluded in the Moray West Geophysical Survey EPS Risk Assessment (Moray West, 2019) that there would be no adverse effects on cetaceans associated with noise from survey vessels. It was also concluded in the Moray West EIA Report (Moray West, 2018) that there would be no adverse effects on cetaceans from vessel noise associated with construction of the Moray West Offshore Wind Farm or installation of the offshore export cable circuits. It is therefore concluded that no further assessment is therefore required with respect to this geotechnical survey campaign.	No
Harbour porpoise		No
Minke whale		No
Ornithology		
Seabirds (razorbill, puffin, guillemot, gannet, kittiwake, herring gull, Arctic skua and fulmar).	The main potential impact on seabirds is disturbance due to the presence of the survey vessel. It was concluded in the Moray West EIA Report (Moray West, 2018) that disturbance impacts due vessel presence during construction would be negligible to minor and not significant. This was based on the presence of up to 25 vessels at the Moray West Site during construction for 36	No

Table 1.1 Environmental receptors that could potentially be affected by activities assocaited with the geotechnical survey campaign		
Environmental receptor	**Potential to be affected by geotechnical survey activities within the Offshore Export Cable Corridor**	**Further assessment required?**
	months. Given that the geotechnical survey will involve one vessel that will be present along the Offshore Export Cable Corridor only for up to three months it is concluded that potential effects will be negligible and therefore further assessment is not required.	
Seaducks, divers and waterfowl (scaup, eider, velvet scoter, common scoter, goldeneye, red-breasted merganser, red throated diver, great northern diver, long tailed duck and Slovenian grebe).	These species occur more frequently in nearshore waters along the Offshore Export Cable Corridor. As with impacts on seabirds, potential disturbance effects due to the presence of vessels along the export cable corridor during construction of the Moray West Offshore Wind Farm were assessed as negligible to minor and not significant. This assumed presence of a cable lay vessel and other support vessels along the export cable route for a period of six months (Moray West, 2018). It is expected that geotechnical activities along the export cable corridor will involve one vessel for up to three months. It is concluded that potential effects will be negligible and therefore further assessment is not required.	No
Commercial fisheries		
Fishing fleets (scallop dredgers, demersal trawls and squid fleet, Nephrops, creel fleet and mackerel jigging)	There is potential for survey activities to lead to disruption to fisheries along the Offshore Export Cable Corridor due to the presence of the survey vessel and associated survey activities. It is expected that survey activities along the export cable corridor will be completed within three months (depending on weather). Appropriate mitigation will be implemented to minimise any potential disturbance from the survey activities. This includes issuing Notice to Mariners (NtMs), Kingfisher Bulletins and presence of an Offshore Fisheries Liaison Officer (OFLO) on the survey vessel. Where there is a requirement for the removal of static fishing gear from an area (e.g. creels), appropriate measures will be implemented to compensate those fishermen known to currently fish the area affected. The compensation process will be managed through the Moray West onshore FLO. Further information on the approach to managing compensation for static gear is presented in the Moray West Draft Commercial Fisheries Mitigation Strategy which was presented in Appendix 11.2 of the Moray West EIA Report (Moray West, 2018). Potential effects on commercial fisheries are therefore considered to be negligible and no further assessment is required.	No
Shipping and navigation		
Commercial traffic, recreational traffic and fishing vessels	There is potential for some localised disruption to / interference with marine traffic passing along / across the Offshore Export Cable Corridor during the geotechnical survey due to the physical presence of the survey vessel. This disruption may involve vessels having to change route to avoid the survey vessel. As noted above with respect to commercial fisheries it is expected that the survey will take up to three months to complete the	No

Table 1.1 Environmental receptors that could potentially be affected by activities assocaited with the geotechnical survey campaign		
Environmental receptor	**Potential to be affected by geotechnical survey activities within the Offshore Export Cable Corridor**	**Further assessment required?**
	survey along the Offshore Export Cable Corridor (depending on weather). For the duration of the survey, a 500 m safety zone will be in place around the survey vessel. Moray West will also implement best practice mitigation as standard (issuing NtMs, Kingfisher Bulletins etc.) and an OFLO will be present on the survey vessel 24 hours an day. Potential effects on shipping and navigation are therefore considered to be negligible and no further assessment is required.	
Aviation; seascape, landscape and visual amenity; and socio-economics		
Aviation; seascape, landscape and visual amenity; and socio-economics	There will be no adverse effects on these receptors on the basis that the survey activities relate to acquiring information about the seabed. Other than the physical presence of a survey vessel along the Offshore Export Cable Corridor there is no potential source of impact from these activities on any of these receptors. Given that there is no potential impact on these receptors no further assessment is required.	No
Cultural heritage		
Archaeological assets (known and unknown)	Given that the geotechnical survey campaign will involve direct interaction with / disturbance of the seabed, there is potential for direct disturbance / damage to features of archaeological importance (known and unknown). Known assets will be avoided during the survey. In the event that an unknown asset is detected during the survey, the location of this potential asset will be reported to Marine Scotland and Historic Environment Scotland and identified as requiring further investigation. With the implementation of appropriate mitigation any potential effects on marine archaeological assets will be prevented and therefore do not require further consideration.	No
Other human activities		
Other offshore wind farm developments Subsea cables Oil and gas infrastructure Telecommunications	Although there are existing cables located along the Offshore Export Cable Corridor, 500 m buffers / exclusion areas have been applied to these cables to ensure any interactions with the survey vessel and survey equipment are avoided. Consequently, given that there is not expected to be any interactions it is concluded that no further assessment is required. The is potential that presence of the survey vessel could disrupt vessels transiting to neighbouring Moray East and Beatrice Offshore Wind Farms. However, given that the survey will involve only one vessel which will be present along the export cable corridor for up to three months (depending on weather) any potential impacts will be negligible and therefore no further assessment is required.	No
Protected sites		

Table 1.1 Environmental receptors that could potentially be affected by activities assocaited with the geotechnical survey campaign		
Environmental receptor	**Potential to be affected by geotechnical survey activities within the Offshore Export Cable Corridor**	**Further assessment required?**
Southern Trench pNCMPA	The Offshore Export Cable Corridor passes through the western part of the Southern Trench possible Nature Conservation Marine Protected Area (pNCMPA). As discussed in Section 1.2, it has been identified that there is potential for the geotechnical survey activities to have a direct effect on the burrowed mud feature associated with the Southern Trench pNCMPA. Further information on the potential effects on this feature is provided in Section 2.4.	Yes
Moray Firth pSPA	The Moray Firth supports a number of important wintering and breeding populations of marine birds, in particular sea ducks and shag. The basis of the proposed Special Protection Area (pSPA) designation is to help protect these birds as well as the rich feeding grounds and sheltered waters on which they depend. Although the Offshore Export Cable Corridor passes through the southern part of the pSPA, potential effects on species for which the site is designated (e.g. long tailed duck, scaup, eider, velvet scoter, common scoter, goldeneye, red-breasted merganser, red throated diver, great northern diver and Slovenian grebe) will be limited to localise disturbance from the presence of the survey vessel. As noted above, it was concluded in the Moray West EIA Report (Moray West, 2018) that potential disturbance effects during installation of the offshore export cable circuits would be negligible to minor and not significant. Given that geotechnical activities along the Offshore Export Cable Corridor will involve one vessel for up to three months (compared to six months cable installation) it is concluded that potential effects will be negligible and not significant. Therefore, no further assessment is required.	No
Moray Firth SAC	The Moray Firth SAC was designated in 2005 to protect the Moray Firth population of bottlenose dolphin which is the only known resident population of bottlenose dolphin the North Sea. The main potential effect on bottlenose dolphin associated with this site is noise from survey activities and presence of the survey vessel. However, as noted above, any noise emitted from the geotechnical activities will be limited and will not exceed noise levels emitted by the survey vessels. It was concluded in the Moray West Geophysical Survey EPS Risk Assessment (Moray West, 2019) that there would be no adverse effects on bottlenose dolphin associated with noise from survey vessels. It was also concluded in the Moray West EIA Report (Moray West, 2018) that there would be no significant adverse effects on bottlenose dolphin from vessel noise associated with construction of the Moray West Offshore Wind Farm or installation of the offshore export cable circuits. It is therefore concluded that no further assessment is therefore required with respect to this geotechnical survey campaign.	No

1.5.1 Conclusions on scope of the assessment required to support the Marine Licence application

Based on the information presented in Table 1.1 it is concluded that further information is required to support the Marine Licence application for the geotechnical survey along the Offshore Export Cable Corridor with respect to the following environmental receptors:

- Benthic and intertidal habitats and species;
- Fish and shellfish:
    - Shellfish species; and
    - Fish (demersal spawners).
- Protected sites:
    - Southern Trench pNCMPA;

An overview of the key characteristics of these receptors (baseline) and an assessment of the potential effects on these receptors is provided in Chapter 2.

2 Assessment of Potential Environmental Effects Associated with the Geotechnical Survey Campaign

2.1 Introduction

The following chapter provides information on the key receptors identified in Table 1.1 as being sensitive to the planned geotechnical survey activities along the Offshore Export Cable Corridor and assesses the potential effects on those receptors. Specific mitigation measures have also been identified where these are required a part of the survey in order to prevent any adverse effect on these receptors.

2.2 Benthic and intertidal ecology

2.2.1 Baseline characteristics

A description of baseline characteristics associated with the Moray West Site and the Offshore Export Cable Corridor is provided in the EIA Report – Volume 2, Chapter 7: Section 7.4. This was informed by a desk-based study and results from a benthic and intertidal survey carried out between May and June 2017. Copies of the survey reports are presented in the EIA Report – Volume 4 Technical Appendices 7.1 (Benthic Ecology Survey Report) and 7.2 (Intertidal Ecology Survey Report).

The survey concluded that most habitats and species present along the Offshore Export Cable Corridor are commonly occurring and representative of the wider area and are considered to have low sensitivity to any potential effects from the installation of the export cable circuits. Habitats at the inshore end of the Offshore Export Cable Corridor include variations of sublittoral sands (SS.SSa), circalittoral coarse sediments (SS.SCS.CCS) or circalittoral mixed sediment (SS.SMx.CMx) with an area of sand/gravelly sand (SS.SCS.CCS). The middle section of the Offshore Export Cable Corridor is characterised by areas of sandy mud or very muddy sand (SS.SMu). Areas of rippled (slightly muddy) sand often with shell debris/grit or occasional small stones SS.SSa (sublittoral sands and muddy sand) are present at the offshore end of the Offshore Export Cable Corridor adjacent to the Moray West Site.

In terms of habitats and species of conservation importance the only Priority Marine Feature (PMF) recorded along the Offshore Export Cable Corridor was the biotope seapens and burrowing megafauna in circalittoral fine mud (SS.SMu.CFiMu.SpnMeg). This was recorded at five sites within the Offshore Export Cable Corridor. A further two other sites within the Offshore Export Cable Corridor also demonstrated attributes that were characteristic of this feature. This biotope is widespread across the southern half of the Moray Firth and also relatively widespread across the waters surrounding Scotland. It is also a protected feature of the Southern Trench pNCMPA.

The landfall area comprises an stretch of rocky coast which extends from the eastern end of Sandend Bay to Redhythe Point and includes the small sandy bay of Redhaven Bay. The rocky shores are typically exposed or moderately exposed to wave action and considered representative of the Moray Firth, with moderately rich fauna on the lower shore (where boulders, cobbles, rock pools and bedrock at varying inclinations area present) and the upper shore being generally poor in species diversity. Sedimentary shores are typically comprised of clean sand or muddy sand and support communities again typical of the Moray Firth, dominated by polychaetes, amphipods and bivalves (Bennett and McLead, 1998).

2.2.2 Identification of potential impacts

Table 2.1 identifies the key potential impacts associated with the geotechnical survey activities and key benthic and intertidal receptors along the Offshore Export Cable Corridor that could be affected by the survey activities.

Table 2.1 Identiifcaiton of potential impacts on benthic and intertidal ecology

Potential impact	Source	Key sensitive receptors
Direct habitat loss and disturbance (subtidal and intertidal)	Direct removal of sediment from the seabed in boreholes (8) and vibrocores (60)	PMF seapens and burrowing megafauna in circalittoral fine mud (SS.SMu.CFiMu.SpnMeg) (burrowed mud habitat) No species or habitats of conservation importance were noted on the approach to the landfall area
Increased suspended sediment concentrations (SSC) and sediment redeposition	Direct removal of sediment from the seabed in boreholes (8) and vibrocores (60)	PMF seapens and burrowing megafauna in circalittoral fine mud (SS.SMu.CFiMu.SpnMeg) (burrowed mud habitat) No species or habitats of conservation importance were noted on the approach to the landfall area
Risk of introduction of Marine Invasive Non-Native Species (MINNS)	Survey vessel (ballast water and biofouling)	All species and habitats

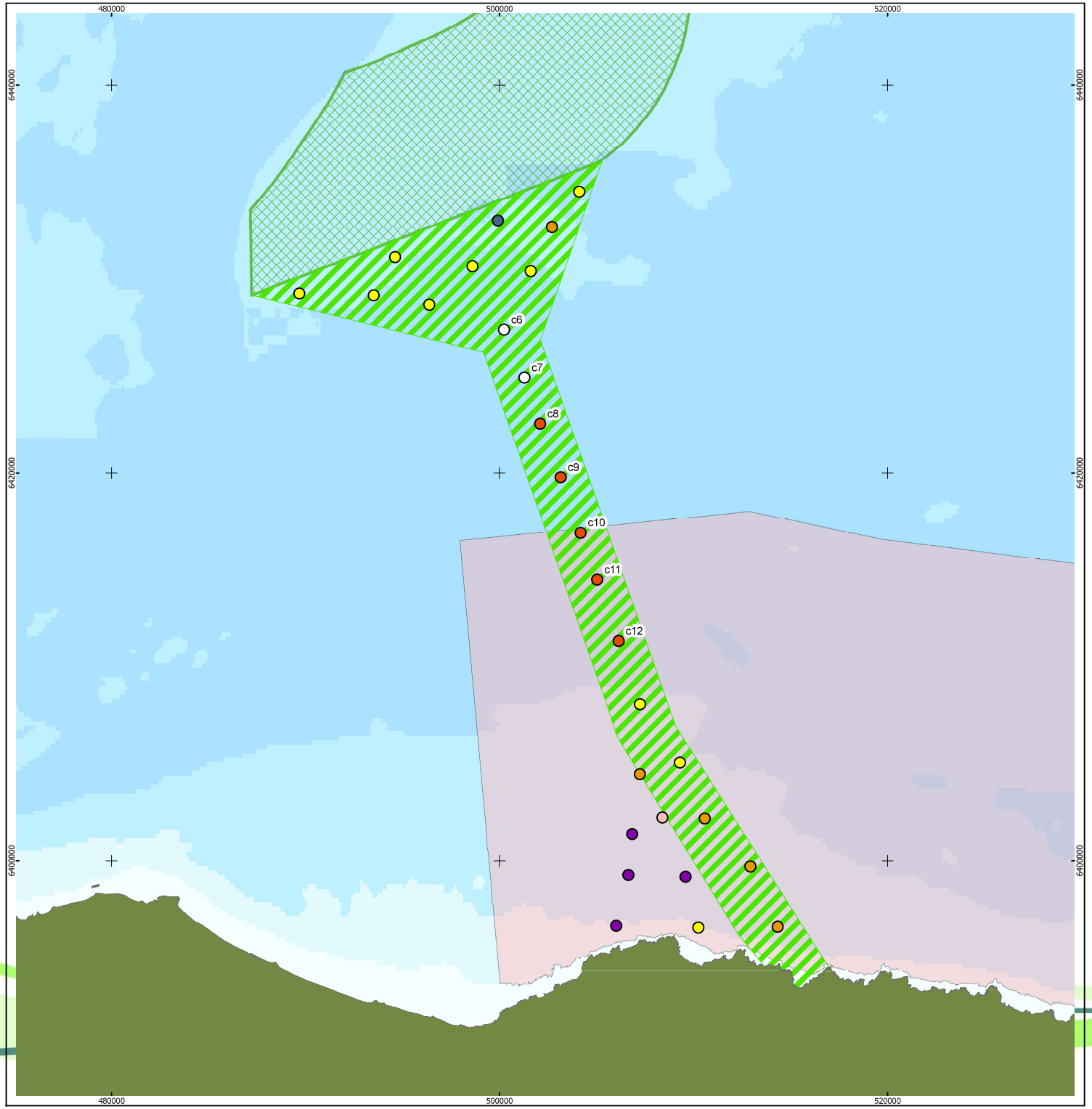
2.2.3 Assessment of potential effects

2.2.3.1 Direct habitat loss and disturbance

There is potential for the borehole and vibrocore activities to have a direct effect on benthic and intertidal habitats and species. This would occur where drilling of a borehole or vibrocore occurs in an area where sensitive habitats or species are present.

Borehole positions will be selected to ensure that sufficient information about ground conditions along the Offshore Export Cable Corridor can be obtained to inform detailed design of the offshore export cable route. Information from the benthic survey carried out in 2017 to inform the EIA (PMSL, 2017) and from the geophysical survey will be used to ensure that borehole and vibrocore locations avoid, where possible, areas where key sensitive habitat and species are present.

As noted above, the key sensitive habitat within the Offshore Export Cable Corridor is the PMF seapens and burrowing megafauna in circalittoral fine mud (SS.SMu.CFiMu.SpnMeg) (burrowed mud habitat). This biotope was recorded along the middle section of the Offshore Export Cable Corridor at the deep water stations C8, C9, C10, C11 and C12 (Figure 2.1) (PMSL, 2017). A slightly sandier and uncertain variant of SS.SMu.CFiMu.SpnMeg was also recorded in adjacent slightly shallower waters towards the northern end of the Offshore Export Cable Corridor (Stations C6 and C7 – Figure 2.1) (PMSL, 2017).



MORAY WEST
OFFSHORE WINDFARM

KEY

- Moray West Site
- Offshore Export Cable Corridor
- Southern Trench Draft Marine Protected

Biotope

- SS.SCS.CCS & SS.SMx.CMx.OphMx
- Mosaic of SS.SCS.CCS/SS.SMx.CMx & inshore variants of SS.SMx.CMx.FluHyd / CR.HCR.XFa.SpNemAdia ?
- SS.SSa
- SS.SSa/SS.SCS.CCS
- SS.SSa/SS.SMx.CMx
- SS.SSa/SS.SMu.CFiMu.SpnMeg ?
- SS.SMu.CFiMu.SpnMeg

Bathymetry (m LAT)

- <=500
- <=100
- <=50
- <=20
- <=10

Horizontal Scale: 1:200,000
0 3,000 6,000 Meters

A3 Chart

N

Geodetic Parameters:	WGS84 UTM Zone 30N
Produced: MG Reviewed: SE Approved: SE	
Date: 23/01/2019	Revision: DRAFT
REF: 8460005-XXXXXX-MWW-MAP-0XX	

Figure 2.1: Location of Burrowed Mud (SS.SMu.CFiMu.SpnMeg) Biotope (derived from survey) in the Offshore Export Cable Corridor.

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Although this biotope is widespread across the southern half of the Moray Firth and also relatively widespread across the waters surrounding Scotland, it was assessed in the Moray West EIA Report – Volume 2, Chapter 7 Benthic and Intertidal Ecology to be of moderate sensitivity to direct disturbance (Moray West, 2018). This reflects the current status of this biotope as a PMF due to its national conservation importance.

In terms of potential impacts on this burrowed mud biotope, it is expected there will be a limited number of boreholes required within the deeper part of the Offshore Export Cable Corridor. This is on the basis that most of the boreholes will be focused towards the landfall to inform options for bring the cables ashore using Horizontal Directional Drilling (HDD) techniques. Geotechnical activities along the middle section of the Offshore Export Cable Corridor area will therefore be focused on the vibrocores.

As noted in Table 1.1 the total volume of sediment to be removed during the geotechnical survey will not exceed 5.96 m^3 for all boreholes and vibrocores (2.536 m^3 from the boreholes (total 8) and 3.421 m^3 from the vibrocores (total 60)). With a maximum diameter of 127 mm the total area affected by the boreholes will be 0.101 m^2 (based on 0.013 m^2 per borehole) and 0.57 m^2 for the vibrocores (based on 0.010 m^2 per vibrocore). Given that the total survey area is 185 km^2 and that the borehole and vibrocore positions will be selected to avoid key habitats and species where possible, it can be concluded that any impact on benthic habitats and species will be negligible and not of significance.

2.2.3.2 Increased suspended sediment concentrations (SSC) and sediment redeposition

Both boreholes and vibrocores involve the removal of a sediment 'core' from the seabed. In order for this to be analysed to provide information about the seabed it is essential for the core to remain fully intact at all times. Therefore, the release of any sediment from the core needs to be avoided at all times. There is potential for some sediment to be disturbed when the equipment required to drill the boreholes and vibrocores is initially placed on the seabed. However, this will be highly localised and the quantities of sediment released will be very limited. It therefore can be concluded that there is no potential for any effects from increased suspended sediment concentrations or sediment resuspension on benthic and intertidal habitats and species.

2.2.3.3 Risk of introduction of Marine Invasive Non-Native Species (MINNS)

As discussed in the Moray West EIA Report – Volume 2, Chapter 7 Benthic and Intertidal Ecology, MINNS are a major threat to biodiversity and ecosystems. In terms of the geotechnical survey the main risk of MINNS is introduction via ballast water or biofouling from the survey vessel. In particular where vessels carrying out the survey are mobilised from locations outside of UK waters.

All survey vessels are required to prepare a marine biosecurity management plan to ensure the risk of introducing MINNS is minimised where possible.

Given that the geotechnical survey will involve a maximum of two vessels (offshore survey vessel and smaller vessel for shallower nearshore waters) the potential risk for the introduction of MINNS is limited. Although most habitat and species are considered to be sensitive to the introduction of MINNS, with the implementation of standard practice mitigation measures as outlined above, potential effects are concluded to be negligible and will not be of any significance.

2.2.4 Mitigation

No specific mitigation has been identified on the basis that all potential impacts have been assessed as negligible and not significant.

2.2.5 Conclusion

Based on the information presented above, it is concluded that potential effects of the geotechnical survey activities on benthic and intertidal ecology in terms of direct habitat loss and disturbance, increased SSC and sediment redeposition and introduction of MINNS, will be negligible and not of any significance.

2.3 Fish and shellfish ecology

The following provides information on the potential effects of the geotechnical survey on fish and shellfish present along the Offshore Export Cable Corridor.

2.3.1 Baseline characteristics

A description of baseline characteristics associated with the Moray West Site and the Offshore Export Cable Corridor are provided in the EIA Report – Volume 2, Chapter 8: Section 8.4. This was informed by a desk based study and survey data collected as part of the characterisations of the Moray East Offshore Wind Farm, the former Moray Firth Zone, and the Beatrice Offshore Wind Farm.

Various types of fish and shellfish are present along the Offshore Export Cable Corridor. However, as noted in Table 1.1, only those species associated with the seabed (shellfish and fish the spawn on or in the seabed (demersal spawners)) are considered sensitive to the proposed geotechnical survey activities.

Key shellfish species present along the Offshore Export Cable Corridor include crab, lobster, Nephrops (Norway lobster) and squid. These species also have high commercial value. Although crab and lobster are present along the entire Offshore Export Cable Corridor, fishing for these species occurs mainly in nearshore, coastal waters. Squid is also targeted in nearshore waters, although some squid fishing also occurs further offshore. Nephrops tends to be targeted further offshore towards to Moray West Site.

Key fish species that spawn on, or in the seabed, include herring and sandeel respectively. Herring is a migratory species that spawn off the Scottish and English east coast before migrating to feeding grounds in the Fladden Grounds and Viking Bank. Herring have a high preference for spawning in coarse grounds and high energy environments.

A review of data on herring spawning and nursery grounds (Coull et al., 1998; Ellis et al., 2010) and data from herring larvae surveys undertaken at the Beatrice Offshore Wind Farm in 2014 and 2015 (BOWL, 2014; 2015) was carried out as part of the Moray West EIA (Moray West, 2018). This review concluded that although herring larvae are present in the Moray Firth, there is limited evidence that the area (including the Offshore Export Cable Corridor) is used for spawning and that the larvae that is present is carried passively on currents from spawning grounds off Orkney/Shetland (Moray West, 2018).

Sandeel spend most of the year buried in the seabed and only emerge into the water column briefly in winter to spawn and for an extended period in spring and summer to feed. Spawning usually occurs in December and January and involves females laying eggs in the sand. After spawning the fish remain buried in the sand until April (Winslade, 1974) when they emerge to feed.

Although Ellis *et al.,* 2010 maps indicate that the Moray West Site and Offshore Export Cable Corridor is located in high intensity spawning grounds and low intensity nursery grounds for sandeel, surveys carried out in 2012 across the Moray Firth Offshore Wind Farm Zone found the overall distribution of sandeel in the area to be patchy. The highest proportion of sandeels were found in the north east part of the Moray West Site and the western part of the adjacent Moray East Site. However, overall abundance was low

across the entire area. Similar findings were observed in the Beatrice Offshore Wind Site where surveys in 2014 also found sandeel abundance to be low and distribution patchy (BOWL, 2014).

2.3.2 Identification of potential impacts

Table 2.2 identifies the key potential impacts of the geotechnical survey activities on fish (demersal spawners) and shellfish along the Offshore Export Cable Corridor.

Table 2.2 Identification of impacts on fish (demerseal spawners) and shellfish

Potential impact	Source	Key sensitive receptors
Direct habitat loss and disturbance	Direct removal of sediment from the seabed in boreholes (8) and vibrocores (60)	Sandeel and herring spawning grounds crab, lobster, Nephrops (Norway lobster) and squid
Increased suspended sediment concentrations (SSC) and sediment redeposition	Direct removal of sediment from the seabed in boreholes (8) and vibrocores (60)	Sandeel and herring spawning grounds crab, lobster, Nephrops (Norway lobster) and squid

2.3.3 Assessment of potential effects

2.3.3.1 Direct habitat loss and disturbance

As with impacts on benthic and intertidal habitats and species, there is potential for the drilling of boreholes and vibrocoring activities to have a direct effect on shellfish species and habitats and spawning habitat of herring and sandeel.

As noted in Table 1.1 the total volume of sediment to be removed during the geotechnical survey will not exceed 5.96 m^3 for all boreholes and vibrocores (2.536 m^3 from the boreholes (total 8) and 3.421 m^3 from the vibrocores (total 60)). With a diameter of 127 mm the total area affected by the eight boreholes will be 0.101 m^2 (based on 0.013 m^2 per borehole) and 0.57 m^2 for the 60 vibrocores (based on 0.010 m^2 per vibrocore with maximum 110 mm diameter). The total area affected by the boreholes and vibrocores will be 0.671 m^2 which is 0.0004% of the total survey area (185 km^2).

In terms of potential effects on herring spawning habitat, as discussed above there is limited evidence that the Offshore Export Cable Corridor is used by herring for spawning. Based on information from the benthic survey carried out to inform the Moray West EIA, the main sediment types along the Offshore Export Cable Corridor include slightly gravelly sand, gravelly sand, gravel, sandy mud and (slightly gravelly) muddy sand. Sediment with the highest gravel content (preferred by herring) occurs mainly along the inshore sections of the Offshore Export Cable Corridor. However, even if areas of potential herring spawning habitat are potentially present along the Offshore Export Cable Corridor, given the size of the area affected by the survey activities (0.0004% of the total area of the Offshore Export Cable Corridor) in relation to the total area of potential herring spawning habitat within the Moray Firth it can be concluded that any potential effects on this habitat would be negligible and not significant.

Similarly for sandeel habitat, when taking into account the total area that would be affected by the survey activities (boreholes and vibrocores), even if there is sandeel spawning habitat present along the Offshore Export Cable Corridor, potential effects on this habitat will be negligible and not significant.

In terms of shellfish, the middle section of the Offshore Export Cable Corridor passes through an area of sandy mud and muddy sand associated with the deeper waters of the Southern Trench pNCMPA. These softer burrowing muds comprise important spawning and nursery habitat for Nephrops. However, given that any spawning and nursery habitat for Nephrops along the Offshore Export Cable Corridor only represents a small proportion of the total Nephrops spawning and nursey habitat within the Moray Firth, and the survey activities will only impact 0.0004% of the total area of the Offshore Export Cable Corridor it can be concluded that any potential effects on Nephrops will be negligible and not significant.

Similarly, potential impacts on habitats for other shellfish species occurring within the Offshore Export Cable Corridor (crab, lobster and squid) will also be negligible given the total area that will be affected by the geotechnical survey activities (0.0004% of the total Offshore Export Cable Corridor). Given that the habitats for these species extend across the Moray Firth it can be concluded that impacts on shellfish would not be significant.

2.3.3.2 Increased suspended sediment concentrations (SSC) and sediment redeposition

Both boreholes and vibrocores involve the removal of a sediment 'core' from the seabed. In order for this to be analysed to provide information about the seabed it is essential for the core to remain fully intact at all times. Therefore, the release of any sediment from the core needs to be avoided at all times. There is potential for some sediment to be disturbed when the equipment required to drill the boreholes and vibrocores is initially placed on the seabed. However, this will be highly localised and the quantities of sediment released will be very limited. It therefore can be concluded that there is no potential for any effects from increased suspended sediment concentrations or sediment resuspension on fish (demersal spawners) and shellfish.

2.3.4 Mitigation

No specific mitigation has been identified on the basis that all potential impacts have been assessed as negligible and not significant.

2.3.5 Conclusion

Based on the information presented above, it is concluded that potential effects of the geotechnical survey activities on fish (demersal spawners) and shellfish in terms of direct habitat loss and disturbance and increased SSC and sediment redeposition, will be negligible and not of any significance.

2.4 Southern Trench pNCMPA

2.4.1 Baseline characteristics of sensitive receptors

The Scottish Government, under the Marine (Scotland) Act 2010, has powers to designate Nature Conservation Marine Protected Areas (NCMPAs). The aim of NCMPAs is to extend the network of existing marine protected sites (e.g. Special Protection Areas (SPAs) and Special Areas of Conservation (SACs)) to provide additional protection to OSPAR Threatened and Declining (T&D) species and habitats which are defined as Priority Marine Features (PMFs) in Scottish Waters.

The proposed Southern Trench MPA is one of four additional MPA proposals that were put forward to Scottish Government by Scottish Natural Heritage (SNH) in 2014 for designation as Nature Conservation MPAs (NCMPAs). A decision on the final designation of this site has not yet been made.

The Southern Trench NCMPA is a large undersea valley consisting of an area of deep water (approximately 200 m depth) extending along the outer Moray Firth, approximately 10 km from the coast between Banff and Fraserburgh (SNH, 2014). It is considered to be an exception example of an enclosed (glacial) seabed basin with associated benthic habitats and geological features. Notable stratification and frontal systems off Fraserburgh supporting local primary production and feeding habitats, in particular for minke whale, one of the key protected features associated with the site.

The main protected benthic habitat is burrowed mud (habitat biotope SS.SMu.CFiMu.SpnMeg 'Seapens and burrowing megafauna in circalittoral fine mud'). The habitat occurs in areas where the seabed is undisturbed, allowing for sediment to be extensively burrowed by several species. With respect to the Southern Trench this tends to be deeper waters within the main part of the trench where water depths reach 150 m. Given that the Offshore Export Cable Corridor passes through the western end of the Southern Trench pNCMPA, much of the burrowed mud habitat occurring in the deepest part of the trench will be avoided.

2.4.2 Assessment of potential effects on the Southern Trench pNCMPA

Potential effects on the key protected habitat associated with the Southern Trench pMPA (burrowed mud) were assessed in Section 2.2.3 above. It was concluded from this assessment that in terms of potential effects associated with direct habitat loss and disturbance and increased SSC and sediment redeposition, these would be negligible and not significant. This on the basis that the total area affected by the survey activities (boreholes and vibrocores) represents only 0.0004% of the total area of the Offshore Export Cable Corridor. Although burrowed mud biotope was recorded in the middle sections of the Offshore Export Cable Corridor, and therefore could potentially be affected by activities in this area, the biotope represents only a small proportion of the burrowed mud habitat present within the Southern Trench NCMPA. Given that impacts on this habitat will be negligible, it is concluded that there will also be no adverse effect on the integrity of the Southern Trench NCMPA designation.

2.4.3 Mitigation

No specific mitigation has been identified on the basis that it is concluded that there will be no adverse effects on the Southern Trench pNCMPA.

2.4.4 Conclusion

Based on the information presented above, it is concluded that there will be no adverse effects on the Southern Trench pNCMPA as a result of impacts on the protected burrowed mud biotope feature.

3 Conclusion

Based on information presented in Table 1.1 it was concluded that in terms of the geotechnical survey activities (boreholes and vibrocoring) these will have limited potential effects on the following receptors:

- Benthic and intertidal habitats and species;
- Fish and shellfish:
    - Shellfish species; and
    - Fish (demersal spawners).
- Protected sites:
    - Southern Trench pNCMPA;

An assessment of the effects on benthic and intertidal habitats and species and fish and shellfish receptors is presented in Chapter 2. This concluded that, for all receptors, given the limited extent of both sediment removal (5.96 m^3) and total area of the Offshore Export Cable Corridor affected by the boreholes and vibrocores (0.671 m^2 which is 0.0004% of the total survey area (185 km^2)), potential effects would be negligible and not significant.

With respect to effects on the Southern Trench pNCMPA, given that potential effects on burrowed mud habitat (one of the protected features of this designation) were assessed as negligible and not significant, it was concluded that there would also be no adverse effect on the integrity of the Southern Trench NCMPA designation.

On the basis that no adverse effects have been identified with respect to the planned geotechnical survey activities, there are no requirements to implement any specific mitigation to minimise these effects. Where standard practice mitigation is required for other receptors, this has been identified in Table 1.1.

4 References

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