Submarine Electricity Cables Consultation
What you need to know

Stakeholder Consultation September 2015
What you need to know

We want to make sure all stakeholders who have interests in this process have a strong voice in assessing benefits and drawbacks of the various cable laying and protection methods. This document will give you all the information you need to know about our plans for the submarine electricity cable network.

You can help by responding to the questions outlined in this paper and the accompanying questionnaire before the consultation closes on 13 October 2015.

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Introduction

Fifty-nine Scottish islands are currently connected to the electricity network that serves mainland Great Britain by the Scottish Hydro Electric Power Distribution network. They are connected by submarine electricity cables that supply electricity to homes and businesses on the islands. The combined length of these submarine electricity cables is 454km – with some sections having been in place for over 50 years.

The cost of supplying electricity to the Scottish islands is supported by electricity consumers across the north of Scotland as part of their energy bills.
What’s changed?

Scotland’s National Marine Plan

A statutory National Marine Plan for all activities in Scottish waters out to 200 nautical miles was adopted and published in March 2015.

This provides a single planning framework which will support the sustainable use of the marine resource and contribute to achieving Scottish Ministers’ vision for clean, healthy, safe, productive and diverse seas. The Plan includes policies on how submarine electricity cables are laid and protected on the seabed to achieve seabed user co-existence.

At the moment, 110 of our 111 submarine cables which supply electricity to these islands are laid directly on the seabed and are not subject to protection measures. Changing our long established approach and protecting these submarine electricity cables will require significant additional capital expenditure, a cost which will ultimately be paid for by electricity consumers on the Scottish islands and across the north of Scotland under current arrangements.

The purpose of this consultation is to gather stakeholder views to inform the development of a Cost Benefit Analysis tool which we will use to demonstrate to Ofgem, Marine Scotland, and users of the marine environment as to whether or not the additional cost of protecting or burying submarine electricity cables represents value to Scottish Hydro Electric Power Distribution electricity consumers and wider stakeholders.

Who is involved?

Scottish Hydro Electric Power Distribution (SHEPD), which is part of the SSE Group, owns and operates the distribution network of overhead lines, underground and submarine cables across and around the north of Scotland. Our network delivers a safe and reliable supply of electricity to homes and businesses across the north of Scotland and some of the Scottish islands.

Electricity is delivered to the islands through submarine electricity cables which are almost entirely laid directly on the seabed.

SHEPD is regulated by Ofgem which is responsible for protecting the interests of consumers and ensuring they have access to an affordable, secure and sustainable energy system. Ofgem does this by determining the amount of revenue that SHEPD can receive, from consumers through their bills, in order to maintain the network. This process is known as a price control.

Once within a price control period, any changes to major investment decisions, such as a change in the way in which we lay submarine cables, must be shown to be economic and efficient and not unduly burden consumers if we are to be able to recover these costs.

SHEPD engineering activities within the marine environment are regulated by Marine Scotland which is responsible for managing Scotland’s seas for prosperity and environmental sustainability. It achieves this through its marine planning, licensing and other functions. Marine Scotland produced Scotland’s National Marine Plan.

Both Ofgem and Marine Scotland have been active partners in helping us develop this consultation.
Scotland’s National Marine Plan was adopted on 25 March 2015 and laid before Parliament on 27 March 2015. The plan sets out a framework to manage the competing demands placed on Scotland’s marine environment whilst ensuring economic development of marine industries is encouraged and environmental protection is incorporated into marine decision making.

Ofgem accepted SHEPD’s final business plan for the period April 2015 to March 2023 and determined the amount of revenue that SHEPD can receive, from consumers through their bills, in order to maintain the network in November 2014. At this point SHEPD’s allowances for maintaining the network were set based on the assumption of surface laid submarine cables.

However, provision was made for SHEPD to recover additional costs associated with the protection of submarine electricity cables where the identified benefits (to the cable, a wide range of stakeholders and electricity consumers) justify the additional expenditure and provide best value.

We are embarking on a significant piece of work to fully understand the case for changing our engineering practices to meet the requirements of Scotland’s National Marine Plan in terms of how submarine electricity cables are laid and protected on the seabed.

This will include the development of a Cost Benefit Analysis model which will be used to demonstrate (to ourselves, our consumers, our regulators, Ofgem and Marine Scotland, and all users of the marine environment) that the method(s) we propose to deploy in the future for laying and protecting cables around the coast of Scotland:

- satisfies the current legislation
- employs the most sustainable method when considering the economic, safety, wider social and environmental impacts

The output of this approach will identify the benefits (to the cable, a wide range of stakeholders and electricity consumers) and determine if the additional expenditure provides best value and is justifiable.

The cost of maintaining the electricity distribution network involves substantial upfront investment by us. When you get your bill, our costs are included in the final amount charged by your supplier.

Each year, our charges will automatically change if variable elements outside of our control change – like inflation and taxes. From an electricity consumer perspective, our charges are the cost equivalent to the line rental of a telecoms company. Once finalised, our costs are spread across all the electricity consumers in our area.

You can view the SHEPD Business Plan at: www.yourfutureenergynetwork.co.uk
What’s the process ahead?

We want to feel confident that the outcome will be the right one for electricity consumers and users of the marine environment. This consultation will play an important part in shaping a Cost Benefit Analysis tool which we will use to demonstrate to Ofgem, Marine Scotland and users of the marine environment whether or not the additional cost of protecting submarine electricity cables represents best value to SHEPD electricity consumers and users of the marine environment.

Submarine Cable CBA Process

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<th>Outputs</th>
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<td>Final Report</td>
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<td>Initial Stakeholder Feedback</td>
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<td>3 Sept to 13 Oct 2015</td>
<td>14 Oct to 8 Nov 2015</td>
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- **Risk to health and safety of fishery operators**
  - Example of Quantified Health and Safety Impact (£)
  - Final Draft Method Statement (Possible example of a quantifiable link between submarine cable installation method and impact)

- **Consultation on Impacts and Methods**
  - Assessment Process
  - Final Draft Impact List

- **Stakeholder Views**
  - Engineering and Economic Assessment
  - Evidence Based/Measurable Relationship
Example of Quantified Health and Safety Impact (£)

Final Draft Method Statement (Possible example of a quantifiable link between submarine cable installation method and impact)

1. Risk to health and safety of fishery operators
   - Number and Type of Health and Safety Incidents (per year)
   - Government Valuation of Human Life (£)
   - Lifetime of Submarine Cable (years)

Risk to fishery operatives from Submarine Cables (£)
> The part you play

We want to make sure all stakeholders who have interests in this process have a strong voice in terms of informing the benefits and drawbacks of the various cable laying and protection methods so that they feel confident the method(s) we propose following the development of the Cost Benefit Analysis model is the right one for Scotland’s marine environment and users, whilst delivering the best value for SHEPD electricity consumers.

> External Timeline for Consultation

Consultation Opens 3 Sept 2015
Consultation Closes 13 Oct 2015

Stornoway
Campbeltown/Oban
Aberdeen/Shetland/Orkney
You can help by responding to the questions outlined in this paper before the consultation closes on 13 October 2015.

To make it as easy as possible for you to engage, there are a number of ways in which you can share your views with us: you can respond through our online survey, by email, by post or attend one of our events, details of which will be made available on our website www.ssepd.co.uk/submarinecables

Via this website, you can also register with us to ensure that you are kept up to date with any developments and events.

> How you can contact us

To raise any questions about the consultation, or to obtain a copy of the full technical consultation document please contact the Submarine Cable Cost Benefit Analysis Team:

www.ssepd.co.uk/submarinecables
Email: submarinecables@sse.com

Once the model has been developed and its use accepted, it may form part of the documentation SHEPD submit to Marine Scotland to support licensing applications for future submarine electricity cables.
Meeting the requirements of Scotland’s National Marine Plan

Adopted in March 2015, Scotland’s National Marine Plan (‘Plan’) provides an overarching framework for all marine activities in Scottish waters, including how submarine electricity cables are installed and the planning policies that we, as an electricity network company, are required to adhere to.
The policies relating to submarine cables are detailed in Chapter 14 of the Plan and may mean that SHEPD needs to change the way that it installs new cables or replaces old ones within the marine environment. The policies also mean that if in the future existing cables are considered to be causing an obstruction and/or risk, SHEPD may be asked to address this.

We estimate that this policy could substantially increase the cost of laying and maintaining submarine electricity cables by up to £300 million (from £44 million) over the next eight years. Under current arrangements, costs will ultimately be paid for by all electricity consumers served by the SHEPD network.

> Protecting the interests of SHEPD electricity consumers and users of the marine environment

Under current arrangements, Ofgem has included provisions for efficiently incurred additional costs, which arise due to changes in the way that we install submarine electricity cables, to be considered and passed on to our SHEPD consumers.

Therefore we are conducting a significant piece of work to fully understand the implications should there be a requirement to change our engineering practices. This work will include the development of a Cost Benefit Analysis model which is a risk based project development tool.

The output of this approach will identify the benefits (to the cable, a wide range of stakeholders and electricity consumers), and determine if the additional expenditure provides best value and is justifiable.

This consultation will play an important part in shaping a Cost Benefit Analysis tool which we will use to demonstrate to Ofgem, Marine Scotland and users of the marine environment whether or not the additional cost of protecting submarine electricity cables represents best value to SHEPD electricity consumers.
> What types of cable installation methods will be considered within the Cost Benefit Analysis?

There are a number of ways in which submarine electricity cables can be installed. These are not mutually exclusive, but will depend on the specific submarine topography. At this stage, we are mindful of the following options:

- Surface laying: submarine cable is laid directly on the seabed with no additional protection.
- Ploughing: cuts a narrow trench in the seabed in which to lay the cable.
- Jetting: high pressure water jets ‘fluidise’ the seabed allowing the cable to ‘sink’ into the seabed.
- Mass Flow Excavation (MFE): a non-invasive, well-established method of burial that clears sediment from underneath the cable.
- Mattressing: a concrete ‘mattress’, usually 3m x 6m, is used at key points over the cable to lend protection.
- Rock dumping: placement of rock over the cable.

Any submarine cable installation methods we propose, following completion of the Cost Benefit Analysis, will be demonstrated to be economic, efficient and not to burden consumers with extra unjustified costs.

> Questions 1 and 2 in accompanying booklet

> What will the Cost Benefit Analysis model we will develop show?

SHEPD is committed to not only understanding the engineering and direct costs associated with different submarine electricity cable installation methods; but we also want to explore the impacts that they have on the safety of marine users, the marine environment, SHEPD electricity consumers and wider society.

Cost Benefit Analysis is an internationally recognised process which allows a value to be attributed to the positive and negative impacts associated with an activity. This is then converted into a common measure, which is often money, to allow comparison of different situations on a like for like basis.

We believe that by applying this methodology to different submarine electricity cable installation methods we can provide an economic assessment to our regulator, Ofgem, which will illustrate which submarine electricity cable installation methods are the most economic and efficient across a range of factors – not just based on the engineering and direct costs.

Based on the views that we have heard during pre-consultation engagement and as a result of an extensive literature review of studies which indicate possible impacts\(^6\), we propose to group the impacts we will assess into the following four broad impact categories:

- Health and Safety
- Socio-economic
- Environmental
- Wider Economic and Engineering

During the consultation period, we are open to views on the categories of impacts to be considered within the model.

> Question 3 in accompanying booklet

\(^6\) Annex 3 contains the Literature Review Bibliography
> Proposed methodology for gathering further data evidence of impacts of various cable installation methods

We have taken the decision to use the following evidence base selection criteria to identify those studies that best help to identify and evaluate potential impacts. The selection criteria used in this process are:

- **Date:** given the large volume of available studies, the evidence will be limited to more recent studies from 2000 onwards. It is worth noting that with advances in non-market valuation techniques over the past decade, there is a greater likelihood of obtaining results, which are more robust for the purposes of value transfer, by focusing on more recent studies.

- **Language:** only evidence provided in English will be considered.

- **Geography:** the search will prioritise studies based in similar contexts to the Greater North Sea region, focusing on studies in the UK, and only including studies from other regions where there is a particularly clear case to do so.

- **Technique:** priority will be given to the results of peer-reviewed empirical studies rather than studies based on theoretical models, value transfer, or literature review.

> Proposed methodology for assessing and valuing impacts of submarine electricity cable installation methods

All impacts identified during the pre-consultation discussions, the literature review and consultation will be assessed to determine whether there is sufficient and robust:

- evidence of a measurable relationship between the submarine electricity installation method
- evidence to show the impacts can be reliably quantified or valued

Where evidence is found to support these aspects, the impact will be included within the Cost Benefit Analysis model.

To value impacts, we will utilise a range of recognised economic methods and academic studies, to attribute a reliable economic value that will stand up to scrutiny. It is also expected that some assumptions and sensitivity analyses will need to be carried out for impacts which are material but have not necessarily been investigated for submarine electricity cable installation projects.

We will also seek the advice and experiences of specialists in economic valuation to aid in this valuing process.

The material impact valuations, calculated by the model, will be combined with physical cable survey data to generate a risk based impact value for each of the four broad categories of impact (Health and Safety, Socio-economic, Environmental, and Wider Economic and Engineering) to help inform submarine electricity cable protection measures or mitigation plans.

Within its RIIO-ED1 Business Plan, SHEPD has committed to carrying out new engineering surveys. As this data is collected, it will replace key assumptions with site-specific information about the marine environment to generate a more accurate and specific project assessment.
We will use the following methodology to assess if there is enough evidence to include impacts within the Cost Benefit Analysis model:

1. Does the identified impact have any significant implications for any living organism, natural resource or habitat?

   For example, is there a risk of:
   - loss of human life or injury (safety impact)
   - loss of earnings (social impact)
   - financial impact on marine users (economic impact)
   - habitat damage (environmental impact)

2. Is there a quantifiable link between submarine cable installations and whatever they impact upon?

   For instance, x units of surface lay or protection will result in:
   - y units of health and safety impact
   - y units of socio-economic impact
   - y units of environmental impact
   - £y of wider economic and engineering impact

3. Can this link be valued in a way that fits with the Cost Benefit Analysis model?

4. Is there pre-existing data to allow impacts to be quantified without significant primary data collection?

> Question 4 in accompanying booklet
> Proposed impacts to be assessed

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| **Health and Safety Impacts**     | – Risks to health and safety of those working in the fishing industry  
– Risks to health and safety of those working on submarine cable vessels  
– Risks to health and safety of those working on other marine vessels                                                                                                                                                                                                 |
| **Socio-economic Impacts**        | – Damage to fishing equipment and vessels  
– Temporary loss of access to fishing grounds  
– Temporary displacement of fishing vessels from home port  
– Temporary displacement of non fishing vessels  
– Restriction of watersports and recreational activities (temporary and/or permanent)  
– Restriction of port activities  
– Temporary or permanent restriction of other marine-based commercial activities (e.g. carbon capture and storage)  
– Disturbance of archaeological resources  
– Temporary impact upon island community economies due to energy insecurity in the event of cable failure  
– Possible reduction in renewable generation on the islands  
– Increase in distribution element of end user bills  
– Volume of energy losses due to cable installation method                                                                                                                                                         |
| **Environmental Impacts**         | – Direct collision between marine mammals and cable laying vessels  
– Impacts of electromagnetic fields on fish and marine mammals  
– Noise and vibration impacts on fish and marine mammals  
– Thermal radiation from cables  
– Impacts on benthic habitats and organisms due to seabed disturbance  
– Disturbance to seabirds  
– Disturbance of contaminants in seabed  
– Temporary turbidity from redistribution of sediments  
– Release of contaminants from cabling  
– Temporary emissions and wastes from vehicles  
– Temporary visual impacts particularly close to coastal edge  
– Possible creation of artificial hard substrate habitat  
– Greenhouse gases emissions from use of diesel generators during cable installation                                                                                                                                 |
| **Wider Economic and Engineering Impacts** | – Number of cable laying vessels required  
– Volume of cable protection materials required  
– Project management and engineering costs  
– Catch volumes as a result of submarine cable restrictions  
– Alternative energy supply costs to maintain reliable electricity supply to consumers.  
– Risk of damage to vessels from unexploded artillery |
Throughout the consultation period, we remain open to respondents’ views on the types of impacts that different cable installation methods can have. We request, where possible, that respondents support these views by providing evidence (e.g., scientific studies; vessel monitoring system data; or survey data) to substantiate the impacts they identify. This evidence must be provided in full to enable its use in evaluating and evidencing the net impact of each submarine electricity cable protection method.

> Questions 5 to 11 in accompanying booklet

> Proposed use of the resulting cost benefit analysis model

The output of the Cost Benefit Analysis model will provide transparent evidence of the proportional benefits to the cost of the various cable protection methods. Following this work, we will follow/adopt the method(s) shown to provide the greatest net benefits once all material impacts have been considered.

We will be unable to consider protection methods for submarine electricity cables that do not deliver a safe, reliable and secure supply of electricity to our consumers as we are required to do this within our electricity Distribution Licence.

Any submarine electricity cable installation methods, which we propose following completion of the Cost Benefit Analysis, will have been demonstrated to be economic and efficient and not to unduly burden consumers with excessive costs.

Once the model has been developed and its use accepted by SHEPD, Ofgem and Marine Scotland, it will form part of the documentation SHEPD submit to Marine Scotland to support licensing applications for future submarine electricity cables. It will also be submitted to Ofgem to support appropriate cost recovery.
Getting involved and sharing your views

We intend to publish all consultation responses, unless clearly marked as confidential, but we will not publish personal details of individual respondents. Contact details will be used only by SHEPD and by Ofgem in relation to the current consultation – and to follow up on any issues raised by your response.
> Who is this consultation aimed at?

The purpose of this consultation is to gather stakeholder views, which will inform the impacts to be measured and the evidence that we should consider as part of the Cost Benefit Analysis model. Although every effort has been taken to identify organisations and individuals with a known interest in the consultation, it is recognised that the list of stakeholders identified will not be exhaustive. For this reason, the consultation will be as open as possible to additional participants. All relevant documents are available through our project web page at www.ssepd.co.uk/submarinecables.

An initial group of stakeholders has been identified, including: the users of the marine environment; fishing and fishing-related industries; relevant public and voluntary sector organisations with an interest in Scotland’s marine environment and economy; organisations that represent energy consumers across Great Britain; and relevant trade bodies and renewable energy companies.

> Question 12 in accompanying booklet

How can you get involved?

Structured events and the consultation itself will be advertised widely through a series of proactive press and social media communications issued during the period of the consultation to further raise awareness and encourage stakeholders to respond. One-to-one meetings may also be held between SSEPD and key stakeholders who might wish to discuss their position on our proposals with us.

Responding to this consultation

The consultation will close on 13 October 2015. Responses will be accepted via:

- Our online survey which is accessible via www.ssepd.co.uk/submarinecables
- Post to: Submarine Cable Cost Benefit Analysis Project Team, Scottish Hydro Electric Power Distribution, Inveralmond House, 200 Dunkeld Road, Perth, PH1 3AQ.

All consultation responses not marked as confidential will be published and made available online. Personal contact details will not be published.

Stakeholders will be updated at appropriate milestones in the development and delivery of the submarine Cost Benefit Analysis model.

Queries can be raised at any time with the Submarine Cable Cost Benefit Analysis Team who can be contacted via the project website at www.ssepd.co.uk/submarinecables or by email at submarinecables@sse.com.
**Additional information and reference**

**Annex 1: Scotland’s National Marine Plan in context**

On 27 March 2015 the Scottish Government published Scotland’s first National Marine Plan (NMP). The NMP, as required by the Marine (Scotland) Act, sets out economic, social, marine ecosystem and climate change objectives and also policies for the sustainable development of the marine area. It provides a structure that embeds environmental protection in decision making, improving consistency of decision making and providing greater certainty for developers and users of the sea.

The Plan sets out a single statutory planning framework for all marine activity out to 200 nautical miles in Scottish waters. The NMP framework covers and applies to existing and emerging activities as well as devolved and reserved functions. This includes policies for the sustainable management of a wide range of marine industries, for example fishing and ports and offshore wind and marine renewable energy.

The NMP will affect all public authorities that make authorisation or enforcement decisions, or any other decision that affects the marine environment. They will now have to make these decisions in accordance with the NMP, unless relevant considerations indicate otherwise.

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> **National Marine Plan**

**Preparation and Participation Timetable**

The process involved to create a National Marine Plan followed nine stages as set out below:

**Stage 1:** Initial meetings to consult stakeholders on the scope and content of the National Marine Plan: June – December 2010.

**Stage 2:** Preparation of pre-consultation draft National Marine Plan and undertaking Sustainability Appraisal (SA), which includes Strategic Environmental Assessment (SEA): October 2010 – March 2011.

**Stage 3:** Pre-consultation of the draft NMP and draft SA/SEA (12 weeks): March 2011 – June 2011.

**Stage 4:** Revision of the pre-consultation draft National Marine Plan in response to comments made during the pre-consultation and the SA/SEA pre-consultation followed by Scottish and UK Ministerial clearance process: July 2011 – June 2013.


**Stage 6:** Revision of the Draft National Plan (including a statement on inclusion of retained functions and that the plan is in conformity with MPS) in response to comments made during the Plan consultation, SA/SEA and partial BRIA consultation followed by Scottish and UK Ministerial clearance process: November 2013 – October 2014.


**Stage 8:** Final considerations, adoption and publication of the National Marine Plan. Publication of the SEA Post-Adoption Statement: March 2015.

**Stage 9:** Keep National Marine Plan under review and report in line with the appropriate legalisation.
Annex 2

List of submarine cable policies relevant to this consultation and the development of a Cost Benefit Analysis model

> Cables 1

Cable and network owners should engage with decision makers at the early planning stage to notify of any intention to lay, repair or replace cables before routes are selected and agreed. When making proposals, cable and network owners and marine users should evidence that they have taken a joined-up approach to development and activity to minimise impacts, where possible, on the marine historic and natural environment, the assets, infrastructures and other users. Appropriate and proportionate environmental consideration and risk assessments should be provided that may include cable protection measures and mitigation plans.

Any deposit, removal or dredging carried out for the purpose of executing emergency inspection or repair works to any cable is exempt from the marine licensing regime with approval by Scottish Ministers. However, cable replacement requires a marine licence. Marine Licensing Guidance should be followed when considering any cable development and activity.

> Cables 2

The following factors will be taken into account on a case by case basis when reaching decisions regarding submarine cable development and activities:

- Cables should be suitably routed to provide sufficient requirements for installation and cable protection.
- New cables should implement methods to minimise impacts on the environment, seabed and other users, where operationally possible and in accordance with relevant industry practice.
- Cables should be buried to maximise protection where there are safety or seabed stability risks and to reduce conflict with other marine users and to protect the assets and infrastructure.
- Where burial is demonstrated not to be feasible, cables may be suitably protected through recognised and approved measures (such as rock or mattress placement or cable armouring) where practicable and cost-effective and as risk assessments direct.
- Consideration of the need to reinstate the seabed, undertake post-lay surveys and monitoring and carry out remedial action where required.

> Cables 3

A risk-based approach should be applied by network owners and decision makers to the removal of redundant submarine cables, with consideration given to cables being left in situ where this would minimise impacts on the marine historic and natural environment and other users.

> Cables 4

When selecting locations for landfall of power and telecommunications equipment and cabling, developers and decision makers should consider the policies pertaining to flooding and coastal protection in Chapter 4 of the NMP, and align with those in Scottish Planning Policy and Local Development Plans.

> Regional Policy

Regional marine plans should consider identifying suitable areas for landfall of submarine cables and integrate with spatial priorities for submarine cables within Local Development Plans (applies to inshore waters).
## Annex 3: Literature Review Bibliography

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<td>General advice on assessing potential impacts of and mitigation for human activities on MCZ features, using existing regulation and legislation</td>
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<td>008</td>
<td>Vattenfall</td>
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<td>Impact of electric and magnetic fields from submarine cables on marine organisms the current state of knowledge</td>
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<td>Submarine cables and offshore renewable energy installations: Proximity study</td>
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<td><a href="http://www.google.co.uk/url?sa=t&amp;rct=j&amp;q=&amp;esrc=s&amp;frm=1&amp;ved=0CCUQFjAAahUKEwi-7S7wcTHAhVmCNsKhqzDz8&amp;turl=http%3A%2F%2Fwww.subseacablesuk.org.uk%2Fdownload%2Fid%3D123%26source%3Dguidelines&amp;ei=YTcVF7kAeaQ7a65774Aw&amp;usg=AFQjCNEs9yEYjZF4w_D5qQFKyt3kUsOQ&amp;sig2=IAEfusYZ33VX4LB4alWJFQ">http://www.google.co.uk/url?sa=t&amp;rct=j&amp;q=&amp;esrc=s&amp;frm=1&amp;ved=0CCUQFjAAahUKEwi-7S7wcTHAhVmCNsKhqzDz8&amp;turl=http%3A%2F%2Fwww.subseacablesuk.org.uk%2Fdownload%2Fid%3D123%26source%3Dguidelines&amp;ei=YTcVF7kAeaQ7a65774Aw&amp;usg=AFQjCNEs9yEYjZF4w_D5qQFKyt3kUsOQ&amp;sig2=IAEfusYZ33VX4LB4alWJFQ</a></td>
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<td>Subsea Cables UK Guideline No 6 The Proximity of Offshore Renewable Energy Installations &amp; Submarine Cable Infrastructure in UK Waters</td>
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<td>Submarine power cables: laying procedure, the fleet and reliability analysis</td>
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<td>Risk assessment in maritime transportation</td>
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<td>Guidance Note March 2010 Dealing with munitions in marine sediments</td>
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<td>CPD article – Beneath the waves: UXO threat</td>
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<td>Assessment of the impact of dumped conventional and chemical munitions (update 2009)</td>
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<td>Moray Offshore Renewables Ltd</td>
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<td><a href="http://morayoffshorerenewables.com/getmedia/d389714c-95e-4c7b-b636-27d5a5ba5371/Appendix-5-8-A---UXO?bcsi_scan_E956BCBE8ADBC89F=0">http://morayoffshorerenewables.com/getmedia/d389714c-95e-4c7b-b636-27d5a5ba5371/Appendix-5-8-A---UXO?bcsi_scan_E956BCBE8ADBC89F=0</a></td>
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<td>Environmental Statement Technical Appendix 5.8 A – UXO Threat and Risk Assessment</td>
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For further information please contact:

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