Export transmission cables for offshore renewable installations

GUIDELINE FOR LEASING OF EXPORT CABLE ROUTES/CORRIDORS
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1 Introduction

This guideline is intended to serve as guidance to developers when bringing forward their application to The Crown Estate for a cable route/corridor for an export transmission cable from an offshore renewable installation.

The guideline is a generic document suitable for all export cables in relation to offshore energy generation projects, although the terms “OWF”, “wind farms” or “Round 3” are referred to from time to time for convenience.

The guideline encourages early dialogue between the developer and The Crown Estate to facilitate securing an appropriate cable route without frustrating the use of the seabed for others, and it outlines the process of cable route application, assessment and approval (or rejection).

The guideline also outlines the process for formalising the cable route in an Agreement for Lease and the levels of protection offered during this phase, and it describes the rules surrounding the entering into the construction phase and exercising the option for the Lease.

The guideline does not provide guidance on best practice of cable spacing and route design but it provides a link to an evidentiary desktop study commissioned by The Crown Estate in March 2012 to assess appropriate spacing between export transmission cables placed adjacent to each other within a cable route/corridor. The study report and a link to the website of The Crown Estate are further described in section 4.
2 Definitions, glossary and abbreviations

**Definitions**
The following provides a description in plain language of relevant terms as used in this guideline (the precise meaning of which is set out in the Agreement for Lease and Lease documents):

**Cable Route** means an area of the seabed spatially laid out by the developer to allow the passage of a number of export/supply cables from an offshore generation project to shore for a specific project used for the passage or transmission of electricity generated by the wind farm; by the time the Cable Route is established in the Agreement for Lease it is called ‘Option Route’ (see below) which later becomes a ‘Designated Area Route’ (see below) in the Lease;

**Cable Corridor** or **Cable Channel** are terms used by wind developers to describe an area of seabed spatially laid out to accommodate a number of (parallel) Cable Routes serving different projects;

**Designated Area Route** (in the AFL called ‘DA Route’) means an area extending up to \[y\] metres either side of a centre line shown on a plan in the Lease, situated within the Option Route and within which up to \[n\] Designated Area(s) will be situated. The location and width of the Designated Area Route are to be approved by The Crown Estate based on the developer’s justified requirements and determined by the number of cables and their granted spacing;

**Designated Area** means such part of the foreshore and seabed in which a wind farm export/supply cable is to be
located and which is to be the Designated Area under the Lease. Each Designated Area is a strip of the foreshore and seabed 30 metres in width for each cable running from the wind farm area to the shore;

**Dredging Restriction Zone** means the area extending to 235 metres either side of each Designated Area;

**Export Cable[s]** (in the AFL and Lease documents defined as ‘Supply Cable[s]’ or ‘Generator Cable[s]’) means cable[s], wire[s] or other conduits used for the passage or transmission of electricity generated by the generation project or otherwise required for the operation of the generation project (but excluding the inter-array cables);

**Option Route** (in the AFL called ‘Option Site’) means an area of the seabed as established in the Agreement for Lease to allow the passage of a number of export cables for a specific project. The location and width of the Option Route are to be approved by The Crown Estate based on the developer’s justified requirements. The Option Route also encompasses the passage for supply cables between the edge of the wind farm and the offshore ‘Substation Site’ (which area is otherwise part of the wind farm AFL);

**Substation Site** means the area of the seabed [circular in shape with a diameter of 200 metres] in which an offshore substation or an offshore converter station is to be erected within a wind farm.

**Glossary and abbreviations**

**Agreement for Lease (AFL)** means an agreement between a Project Company and The Crown Estate granting the Project Company an option to enter into a Lease;

**Automatic Identification System (AIS)** means an automatic tracking system used on ships and by vessel traffic services;

**Cable Project Approval Information** means the information to be provided by the developer in their application for a cable route/corridor as specified in Appendix 1 to this Guideline;

**Cable Route Project Identification and Approval (or Cable Route PIA)** means the process applied by The Crown Estate to review and approve applications from developers for a cable route/corridor;

**Desk Top Study** means a high level investigation to focus early planning and engineering of a marine project;

**Geographic Information System (GIS)** means a system designed to capture, store, manipulate, analyze, manage, and present geographical data;

**Lease** means an agreement between a Project Company and The Crown Estate granting the Project Company certain property interests/rights over a relevant area of the seabed in order to carry out a project;

**Marine Asset Planning (MAP) team** means the part of The Crown Estate’s marine business set up to ensure that a coordinated and transparent approach to the planning and complex development of the marine estate is achieved;

**Marine Resource System (MaRS)** means a marine spatial planning decision support system in The Crown Estate, analysing marine spatial data and knowledge using GIS technology to help identify potential areas for development;

**Marine Route Survey** means a survey of the proposed route, generally consisting of hydrographic, geotechnical and geophysical investigations;

**NM** means Nautical Mile (1.852 km);

**Office of Gas and Electricity Markets (Ofgem)** means the government regulator for the electricity and downstream natural gas markets in Great Britain;

**Offshore Transmission Owner (OFTO)** — means a company appointed and licenced by Ofgem to acquire or install and own the export transmission cables and ancillary equipment forming part of the offshore electricity system for an offshore renewable installation;

**OWF** means offshore wind farm;

**Project Identification and Approval (PIA)** means the process applied by project developers under Round 3 to identify projects within a Zone and apply to The Crown Estate for an Agreement for Lease;

**Project Company** means a special purpose limited liability company established specifically for the purpose of developing a particular project;

**Strategic Environmental Assessment (SEA)** means a system of incorporating environmental considerations into policies, plans, programmes and strategies.
Early UK offshore wind practice was generally not to include a cable route either before or during the period of an Agreement for Lease (AFL) although the AFL contained provisions for the tenant to require a cable route when exercising the option to enter into the Lease.

Later Round 2 practice was to include provision for an indicative cable route within the AFL, usually described as a number of Designated Areas, each of 30m width, within an agreed distance of a centre line (so in effect an agreed number of cables within an agreed cable route), following initial developer search and investigation and prior to settling on a final route.

Round 3 practice has developed into a process where (some) developers present a preferred route (or routes) from Zone to shore post initial survey. The route could be presented to The Crown Estate through the Project Identification and Approval (‘PIA’) process or afterwards. Provided the proposed route has been adequately defined it can be included in the AFL in the form of an Option Route which is included in the document either as a redline boundary or as a centre line with limits of deviation within which the cables are to be laid once the Lease is entered. In the Lease the rights of the tenant over the cable route is through a Designated Area Route (see definitions in section 2).

The Crown Estate has developed a set of template OFTO AFLs and OFTO Leases for use in relation to the introduction of the offshore transmission regime in which certain parts of the generation project assets are transferred to an Offshore Transmission Owner (“OFTO”), and more specifically the
'Generator Build' option. These agreements provide property rights for the Option Route and Designated Area Route and Substation Site to be granted separately from the wind farm AFL and Lease. The wind farm agreements would then provide rights over the wind farm site only (and not any export cable routes). This effectively splits what has traditionally been seen as a complete wind farm project (generating assets and transmission assets) between two separate Crown Estate agreements.

A proposed cable route can be submitted to The Crown Estate for approval either:

(a) at the point that project approval information (the Round 3 PIA process) has been approved by the Commissioners; or

(b) once the developer has defined a cable route for consideration by The Crown Estate applying the “Cable Route Identification and Approval” process outlined in section 6.

The process for formalising the cable route in an Agreement for Lease would vary depending on whether or not a preferred cable route has been identified early enough for inclusion in the wind farm AFL documentation, and also depending on whether the developer would wish to use the opportunity at this stage to split the AFL into one for the wind farm project and one for the OFTO assets.

The overall process is outlined in Figure 2.

**Early split (upper half of Figure 2)**

Whilst the OFTO AFL or Lease would ultimately be granted to the OFTO, The Crown Estate is offering the option to the wind farm developer to initially enter into both the OFTO AFL and the wind farm AFL – in order to separate but retain the property rights offered over both the wind farm site and the Designated Areas, prior to an OFTO being appointed. This simply splits the rights offered into two property documents (one for the wind farm site and one for the export cables and substation if applicable). The rights granted here are neither different nor any stronger than those granted previously, although there can be advantages, in terms of administration and agreements with third party crossings.

The delineation of the Leases after the wind farm-OFTO split is further discussed in section 10.

**Convergence process and late split (lower half of Figure 2)**

If a specific cable route cannot be defined within the PIA process then the wind farm AFL should be established based on the available information and the developer should afterwards maintain a dialogue with The Crown Estate regarding cable route options. An internal Crown Estate process of ‘pencil notings’ on its GIS is needed at each revised stage. Source of data, date of revision and The Crown Estate contact would need to be saved as data attributes on the GIS. As plans evolve and options refine over time there must be a convergence of developer’s retained flexibility requirements and The Crown Estate’s needs for a definition of the area required.

Once ready, a cable route is defined and the wind farm AFL is amended to include the agreed cable route in the form of an Option Route to be annexed to the AFL. This AFL would later be split into a wind farm Lease and an OFTO Lease as further discussed in section 10.
4 Planning of cable routeing and spacing (evidence based study)

In order to assist the developers when planning cable routes for offshore wind projects, The Crown Estate commissioned a cable spacing study in March 2012. The objective of the study was to identify, review and assess the factors affecting the routeing and spacing of transmission cables for offshore wind farm developments.

The findings, conclusions and recommendations from the study are compiled in a report: “Red Penguin Associates Ltd 2012, Export transmission cables for offshore renewable installations – Principles of cable routeing and spacing”. The study report can be found on the website of The Crown Estate on the address:

http://www.thecrownestate.co.uk/marine/cables-and-pipelines/studies-and-guidance/

The report aims to provide the reader with a technical, environmental and commercial overview of the effects of routeing transmission cables in relative close proximity. It is anticipated that the contents of the report will form a point of reference that will assist developers when planning cable routes for offshore wind projects. Whilst directed primarily at developers, it is also hoped that the report will inform and educate the wider investment, insurance, OFTO and regulatory communities and offer a better appreciation of the matters influencing the spacing between transmission cables.

The report provides a number of worked examples that are designed to illustrate the conclusions from the study. The figures quoted are not designed to be prescriptive but are intended to provide an indicative spacing between cables to give developers an appreciation of various scenarios. It is generally proposed that a risk based approach will form the foundation of any cable spacing advocated in the route development.

The study report identifies four important issues that will have a defining influence on the routeing and spacing of transmission cables.

• Route design and development;
• Cable spacing to meet the requirements of Security and Quality of Supply Standard (SQSS);
• Installation/operation and maintenance of existing and future transmission cables;
• The effects of electromagnetic fields on navigation and the ecology.

The main conclusions and recommendations from the report are summarised in the following for easy reference.

Route design and development

Cable route design must necessarily address diverse issues in order to fully consider the key objectives of:

• Achieving acceptable risk levels;
• Safeguarding system supply through transmission redundancy;
• Achieving cost efficiencies;
• Managing interactions and conflicts with other seabed users.

In order to establish the “safe spacing” so as to reduce the risk of damage to acceptable levels, analysis of AIS data and the filtering of ship movement tracks to identify anchoring activity is recommended. The Desk Top Study should make use of site specific AIS data to obtain a clear indication of all shipping movements in a specific area. The Marine Route Survey should specifically obtain preliminary information on the nature of the seabed in areas where the hazards from shipping activity are at the highest level.

The advantage of using AIS data at the desk top study stage is that it provides an immediate indication of the areas of elevated risk. It is also possible to translate the data into cable fault probabilities using mathematical modelling.

Spacing to meet the requirements of SQSS

The Security and Quality of Supply Standard (SQSS) sets out the minimum criteria that transmission licensees must comply with and requires that consideration should be given to the operation and maintenance of the National Electricity Transmission System (NETS). In this context the NETS consists of both the Onshore Transmission System and the Offshore Transmission System.

In regard to the planning and development of an offshore transmission network, the issue of security of supply for the overall system will be under consideration and thus security and diversity of the transmission routes will be of particular importance. This is particularly relevant in regard to multiple cable hits where a sequence of supply failures over a specified period could have a serious consequential loss to the whole UK network.

To assess the probability of anchor damage the developer will need to evaluate AIS data in areas of high shipping
activity. Whilst the incidence level for cable damage is low the potential for multiple cable hits will remain and the developer will need to make a considered decision when advocating specific cable spacing. An overriding consideration will be the requirements of the SQSS criteria where any amount of risk, however small, could be unacceptable.

It should be recognised that cable spacing forms part of the broader cable protection strategy. Developers will need to consider all ways in which risks can be mitigated (cable burial, protection such as rock dumping, spacing, maintenance response time, etc).

**Effective engineering during cable installation**
The installation of cables in close proximity to any existing cables will present an obvious hazard and the developer is advised to consider the limitations of current cable installation techniques, procedures and equipment when advocating a specific cable separation.

Bipolar HVDC cables can be installed as a bundled pair or individually in water depths where the magnetic field will have minimal influence on magnetic compass navigation. Subject to the acceptable impacts on ecology each cable will be installed separately and the spacing between the two cables will greatly depend on the footprint of any installation or burial equipment.

If one considers the maximum width of any such machinery to be in the order of 10-12 metres, a separation of 25 to 50 metres between each cable will alleviate any risk to either cable during installation and subsequent burial, dependent upon the engineering, equipment and operational techniques used.

Factors influencing the spacing will need to be assessed on a case-by-case basis.

**Minimising risks during cable maintenance**
The developer is advised to consider the repair and maintenance of adjacent cables and in particular the risks associated with the fault location, recovery, repair and deployment of the repair bight on the seabed. With an HVDC cable there will be a requirement to repair two cables and possibly on occasion a separate but co-located fibre optic cable, with an assumption that all three cables will be laid out on the same side of the cable route. In some instances it may be acceptable to deploy the repair bight over an adjacent cable, but the commercial and technical risks associated with such a strategy will have to be fully assessed.

The final bight length (displacement from the original cable line) of a cable repair or final installed joint in a cable system is a function of water depth, the physical characteristics of the cable, constraints of the repair vessel layout and prevailing environmental conditions at the time of the laydown operation.

The worked examples and proximity tables in the report illustrate the minimum distances required to effectively lay down a cable bight, but this does not constitute a definitive distance and each repair operation should be assessed on a case by case basis. Extra distance may be required to set out the cable bight correctly, but the variable nature of each operation makes this impractical to include in a simple illustrative table.

**The effects of electromagnetic fields**
Unlike the magnetic field from a HVAC cable, which is reversed in polarity at the same frequency as the alternating current, the magnetic field from a HVDC cable will have a direct influence on the intensity of the local geomagnetic field.

The report suggests that the values of magnetic field strength as a function of spacing will need to be researched further, as will the acceptable levels of interference with ships compasses; but it is apparent that in shallow water bipolar cables will need to be bundled together; whereas in deeper water, where they will have little influence on surface navigation, they can be laid separately and spaced apart.

In respect of the effects of electromagnetic field on the ecology the report suggests that further study are required, and the developer is advised to liaise with local environmental groups and administrations as part of the permitting process.
5 Early dialogue and conflict checking

Through the regular interactions between the developer and The Crown Estate during the zone and project development activities there is an opportunity to have on-going dialogue about cable route issues well in advance of the submission of a formal application for a cable route.

The dialogue should seek to clarify a number of important questions in relation to the proposed route, including the anticipated consenting process and how the developer’s planning of cable routing and spacing (applying the evidence based study or similar) will lead to a mutually acceptable agreement on cable spacing, with acceptable risk levels to the cables, but at the same time allowing the development of other commercial enterprises.

Essentially, The Crown Estate must ensure that the legitimate interests of others are not constrained whilst developer uncertainty remains high.

**Conflict checking of indicative cable route(s)**

For all proposed (indicative) cable routes a conflict check should be carried out by The Crown Estate to identify any existing assets or plans granted or noted by The Crown Estate which may be affected by the proposed cable route/corridor. This includes consideration of relevant trigger distances set by each of the impacted industry sectors.

In order to undertake such a conflict check the developer should submit the geographical data for the proposed cable for assessment in The Crown Estate GIS database. The data should be supplied in ESRI shape file or file geodatabase format in a Geodetic WGS1984 (EPSG code 4326) projection with MEDIN standard (v.2.3.7) metadata.

The geographical information on indicative cable routes provided by the developer will be conflict checked and the initial findings will be fed back to the developer, highlighting any conflicts (subject to Data Protection Act). The data will be retained in the GIS database (as confidential information) in order to enhance The Crown Estate’s understanding of the developer’s likely intent.

The Crown Estate is prepared to take account of ‘pencil notings’ (i.e. an informal indication of a preferred route before it has been worked up sufficiently to be incorporated into the AFL). This will allow The Crown Estate to be aware of the various possibilities to which they have been alerted when faced with a likely conflicting or competing interest.
6 Cable route project identification and approval

As indicated in section 3 the proposed cable route can be submitted to The Crown Estate for approval either:

(a) at the point that project approval information (the Round 3 PIA process) has been approved by the Commissioners; or
(b) once the developer has defined a cable route for consideration by The Crown Estate applying the “Cable Route Identification and Approval” process outlined in this section 6.

Contents of the application
Before the developer presents an application to The Crown Estate for a proposed cable route he is expected to have gone through a careful analysis of the cable routeing and spacing issues in compliance with the principles laid out in section 4 and preliminary survey activity.

The contents of the application should follow the template table of contents provided in Appendix 1 to this guideline – Cable Route Project Approval Information, which has three main sections:

Part 1 – Project justification and specification
Part 2 – Identification criteria
Part 3 – Corporate set-up and Guarantor.

The developer must in Part 1 present the proposed routeing and justify the particular case. When advocating a specific spacing between adjacent cables, the developer will need to assess the operational and technical risks against his own commercial interests and those of the investors and other financial stakeholders. The description should include the issues the developer has considered in arriving at the
The proposed cable project using cable spacing principles suggested in the evidence-based study report (or similar) would also be useful for The Crown Estate’s understanding of the assessments made to be informed in the application about which consultants have provided input to this.

The application must include a draft specification of the works, i.e. a list of the equipment to be installed on the site for the cable project. The list should include indicative information on substations, converter stations, ancillary equipment, communications equipment/cables, cable protection (mattresses/rock dumping etc.), cable joint chambers, etc. The list will be appended to the Agreement for Lease (either OFTO or wind farm).

The developer may not necessarily have clear details of cable spacing, number and equipment requested in Part 1 at the time of application but will rather take a ‘Rochdale Envelope’ approach. The developer must then as a minimum provide a justification of the sought-after Option Route, likely to be the extent of the survey area for detailed survey investigations. The developer will then have an opportunity to work further with the technical layout so that the specific information can be provided latest by the time the Lease is to be formalised as further discussed in section 8.

The developer has an obligation to ensure that the proposed cable project is compliant with certain Identification Criteria requested in Part 2 such as planning restrictions, relevant Appropriate Assessments and any potential consequences for third party interests. The developer must demonstrate that he has given consideration to the requirements of existing parties and that discussions have been held to find a mutually acceptable solution.

Part 3 deals with the anticipated corporate set-up of the cable project entity. If the developer’s application envisages an early split of the assets into a wind farm project and OFTO assets, then a separate legal entity must be established by the time the sought after OFTO AFL is to be signed. The application must include information of the anticipated corporate set-up of the cable project entity, and also of the financing and OFTO strategy, and the expected guarantors once the Lease option is executed.

**Initial technical assessment of cable route by The Crown Estate**

Prior to submission of the full Cable Route PIA information, the developer should submit the coordinates of the proposed cable route to The Crown Estate for the undertaking of a conflict check. Together with the cable route the developer should also submit his draft technical cable project for an initial technical assessment by The Crown Estate. This allows The Crown Estate to take a view on the completeness of the technical documentation and to potentially request additional information in advance of the full application being drafted.

**Formal review and approval of cable route**

Following the feedback from The Crown Estate, the developer will prepare the full Cable Route PIA documentation in compliance with the application template, and submit it to The Crown Estate through the Development Manager for formal review and approval.

If The Crown Estate determines that the Identification Criteria have been satisfied and that the Cable Route Project Approval Information is acceptable, the relevant OFTO Agreement for Lease shall be entered into with the relevant entity (an OFTO, the Project Company under a wind farm project AFL or a group company of a Project Company).

The Crown Estate will, in all cases, provide a formal response to a valid application to secure a cable route within 30 working days of receipt. An AFL must be entered into within 3 months to avoid the need for the application to be refreshed and minimise the risk of other interests overtaking the formal process of executing an AFL.
7 Formalising the cable route in the Agreement for Lease

If a preferred and adequately defined cable route has been agreed between the developer and The Crown Estate, either through the PIA process or as a result of the above convergence process, the route can be included in the AFL in the form of an Option Route which is included in the document either as a redline boundary or as a centre line with limits of deviation within which the cables are to be laid.

The Option Route (if defined as a redline boundary) can be an irregular shape/polygon thereby allowing some flexibility to avoid known conflicts. As mentioned above, The Crown Estate expects to see evidence that this is a ‘sensible’ and reasoned route with acceptable spacing between cables and that the limits of deviation sought are justified.

The developer is not obliged to pursue only the cable route for which an option has been granted (i.e. within the agreed Option Route) albeit that if an alternative is pursued it remains at risk until an option for it has been secured. The Crown Estate will grant a revised route, if needed and agreed, through a variation to the existing AFL. Should the new route be substantially different the AFL will be terminated and a new AFL granted.

Rights of protection in the Agreement for Lease

The developer is afforded only limited protection over the Option Route under the AFL in which a non-exclusive right to lay a cable has been secured. The Crown Estate is still entitled to grant rights to third parties which cross or otherwise conflict with the developer’s Option Route (with an obligation to simply notifying the developer if this is the case) – with a reservation made in the third party lease to allow the future grant of the developer’s Lease without consent.

A Dredging Restriction Zone is not applied in the AFL. If the Option Route passes through already established dredging rights granted to a third party, these rights must be terminated by The Crown Estate (following agreement with the dredging operator) before the lease is granted, should the tenant need that particular part of the Option Route for its final cable route.

On exchange or update of the AFL, the area of the Option Route shall be entered onto The Crown Estate GIS database and MaRS.
8 Formalising the cable route in the Lease

Once the project has received all necessary consents and the project development has reached a stage where the developer is ready to serve notice to take the Lease with a Designated Area Route, the final cable route and project must be submitted to The Crown Estate for review prior to formalising the Lease documentation.

It is strongly recommended that the developer provides periodic updates during the period of the AFL as the definition of the final route is developed, to mitigate the risk of non-approval at this stage.

Unless the details of cable of spacing and number were already known and agreed by the time the Agreement for Lease was entered, the developer is required at this stage, and after all Front End Engineering Design (FEED) studies have been finalised, to provide The Crown Estate with the following specific information:

(i) The final centre line of the Designated Area Route;
(ii) The number of cables;
(iii) The requested spacing between the cables and thereby the width of the Designated Area Route;
(iv) Justification for the cable spacing chosen (e.g. heat dissipation, access for maintenance/repair etc.);
(v) Specification of the works, i.e. a list of the equipment to be installed on the site for the cable project. The list will be appended to the Lease and should include:
   • Maximum number and working voltage of cables (AC or DC);
   • Substations (including details of foundation type and dimensions of structure);
- Converter stations (including details of foundation type and dimensions of structure);
- Any ancillary equipment;
- Communications equipment or cables;
- Cable protection (e.g. anticipated burial depths, matting, rock dumping, inshore protection);
- Cable joint chambers (this is relevant for the foreshore);
- Conduit;
- Etc.

The cable spacing study mentioned in section 4 will be used to assist the wind developers and The Crown Estate in agreeing – on an evidence basis – the appropriate spacing to be applied in the specific Lease.

In the Lease (note that this could be a wind farm project Lease or an OFTO Lease – the provisions are the same) the cable route will be defined as a Designated Area Route comprising a number of Designated Areas each 30 metres wide within a distance of the centre line positioned within certain limits of deviation. In practice it is impossible to show individual cables on the lease plan so a single line is shown and the agreed number of cables within a defined distance from the line is specified. An inset should preferably be incorporated into the lease plan to show the number of cables, especially at land fall points.

**Rights of protection in the Lease**

Once the wind farm Lease has been granted, more extensive rights of protection are introduced. Importantly, once a lease is in place, the consent of the tenant is required (not to be unreasonably withheld or delayed) before The Crown Estate grants any leases or licences which cross or come into conflict with the restriction zones of the cables or the cables themselves.

There is a Dredging Restriction Zone extending 235 m on either side of each individual Designated Area, so in effect (based on the usually seen export cable distances) a Dredging Restriction Zone extending 250 m from the centre line of the outer supply cable in either side of the Designated Area Route. The Crown Estate will be entitled to grant rights, without restriction, where the distance between export cables exceeds the combined restriction zones of adjacent cables.

As mentioned above, during the Agreement for Lease The Crown Estate only affords protection to the Option Route itself and there is no formal dredging restriction zone outside of the Option Route. But on the basis that the Designated Area could ultimately be right at the edge of the Option Route, the Dredging Restriction Zone under the Lease could theoretically be 235m from the edge of the Option Route. The Crown Estate would bear this in mind if granting any new dredging licences in close proximity to the cable, but in practice any proposals within 2km would be flagged by The Crown Estate as a conflict and would need discussion.
9 As-laid coordinates and potential adjustments to the route

The cable route established in the Lease is expected to show the ‘final’ cable positions subject to any slight adjustments needed during installation. The Designated Areas will only properly come into being once the cables are installed, and are the 30 m strips of land centered on the as-built cable positions.

As laid plans are not, as a matter of course, incorporated into the Lease unless the final route ends up being partially out-with the originally defined Designated Area Route. As-laid co-ordinates must be submitted to The Crown Estate once the construction of the route has been completed in order that the GIS database can be updated accordingly with the final cable position and relevant Dredging Restriction Zones. The Crown Estate reserves the option to require evidence, to its reasonable satisfaction, of works being completed in accordance with the agreed specification.

Also future repairs of export cables with potential bights laid down off the original route after repair must be fed back to The Crown Estate for update of the GIS database. A clear process will be agreed between The Crown Estate and the lessee(s) to ensure this data is obtained from the lessee following completion of any works. The Crown Estate needs this information to ensure developers’ interests are accurately flagged during its conflict checking process for other seabed developments.

The same applies to post installation cable protection, the coordinates for which The Crown Estate will require for conflict checking. It should be noted that rock protection along the cable route is not permitted under the lease without prior submission of a specification and approval of it by The Crown Estate.
If a Lease with a Designated Area Route was signed (in respect of generating assets and transmission assets) by the Project Co/Generator in anticipation of later transfer to an OFTO following the conclusion of the OFTO tendering process, the Lease is at that point in time surrendered and replaced with a wind farm Lease re-granted to the Project Co/Generator and an OFTO Lease granted by The Crown Estate directly to the OFTO. However, recent experience on transitional projects suggests that both leases need to be granted to the Project Co/Generator before the Substation Site is assigned from the Project Co/Generator to the OFTO.

**Figure 6 Overview of Leases after the Generator-OFTO split**

- **OWF Lease:** Lease of the windfarm site which excludes the Substation Site and which does not grant any rights to own supply cables to the shore.
- **OFTO Lease:** Lease of the seabed on which the substation is located and rights to own and operate supply cables between the substation and the shore.

- a) The area of seabed between the substation and the edge of the wind farm site is leased under the Project Co/Generator’s OWF Lease;
- b) The rights of the Project Co/Generator in that area are subject to the rights of the OFTO;
- c) The Designated Area Route under the OFTO Lease overlaps that small area;
- d) The OFTO Lease gives the OFTO rights to run cables etc. over that small area (as well as between the substation and the shore).
If the split of the Lease into a wind farm Lease and an OFTO Lease was dealt with at the time the Lease was granted, the Project Co/Generator will assign the OFTO Lease to the OFTO along with ownership of the OFTO assets following conclusion of the OFTO tender process.

The Designated Area Route overlaps the area of seabed within the generation project site where the cables are to be laid – i.e. from the edge of the generation farm to and including the site for the offshore substation. This part of the seabed is leased under the wind farm Lease which contains a reservation for cable route and provisions for a non-exclusive agreement for a third party (the OFTO) to take over these rights in the future. The OFTO Lease will generally include the site of the offshore substation, even though this sits within the wind farm lease. Essentially this site will be carved out of the wind farm Lease.

The rights of the generator in the Substation Site area are subject to the rights of the OFTO, whilst the OFTO Lease gives the OFTO rights to run cables etc. over that small area (as well as between the substation and the shore).

The process of two separate Leases with a subsequent assignment from the generator to the OFTO of the offshore substation and cable route lease has proved a workable solution in the transitional regime.

On surrender and re-grant of a Lease, new crossing agreements have to be sought for all third party crossings of the supply cables and this can be a time consuming and complicated process. By assigning the OFTO Lease this process can be simplified, although the third parties will still seek to ensure the relevant OFTO can satisfy their indemnities. Further guidance is available from http://www.thecrownestate.co.uk/marine/cables-and-pipelines/crossing-agreements/
Appendix 1 – Cable Route Project Approval Information

The developer will be required to provide the following information in their Cable Route Project Approval Information to The Crown Estate:

<table>
<thead>
<tr>
<th>Cable Route Project Approval Information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Summary information</strong></td>
<td></td>
</tr>
<tr>
<td>The developer must in his application include a summary description comprising the following topics:</td>
<td></td>
</tr>
<tr>
<td>0.1 Purpose of the application;</td>
<td></td>
</tr>
<tr>
<td>0.2 Introduction and narrative summary of the cable project;</td>
<td></td>
</tr>
<tr>
<td>0.3 The cable project in the zone/wind farm project context.</td>
<td></td>
</tr>
<tr>
<td><strong>Part 1 – Project justification and specification</strong></td>
<td></td>
</tr>
<tr>
<td>The developer must submit the following:</td>
<td></td>
</tr>
<tr>
<td>1.1 The proposed cable route with specified coordinates along the entire length. The data should be supplied in ESRI shape file or file geodatabase format in a Geodetic WGS1984 (EPSG code 4326) projection with MEDIN standard (v.2.3.7) metadata;</td>
<td>Maximum number and working voltage of cables (AC or DC);</td>
</tr>
<tr>
<td>1.2 A narrative presentation of the proposed routeing and a justification of the proposed cable spacing as part of the overall cable protection strategy. The developer should in his approach demonstrate that he has taken into consideration overall cable routeing and spacing principles as suggested in the evidence based study (or similar).</td>
<td>Substations (including details of foundation type and dimensions of structure);</td>
</tr>
<tr>
<td></td>
<td>Converter stations (including details of foundation type and dimensions of structure);</td>
</tr>
<tr>
<td></td>
<td>Any ancillary equipment;</td>
</tr>
<tr>
<td></td>
<td>Communications equipment or cables;</td>
</tr>
<tr>
<td></td>
<td>Cable protection (e.g. anticipated burial depths, matting, rock dumping);</td>
</tr>
<tr>
<td></td>
<td>Cable joint chambers (this is relevant for the foreshore);</td>
</tr>
<tr>
<td></td>
<td>Conduit,</td>
</tr>
<tr>
<td></td>
<td>Etc.</td>
</tr>
<tr>
<td>1.3 A draft specification of the works, i.e. a list of the equipment to be installed on the site for the cable project. The list will be appended to the Agreement for Lease (and eventually appended to the Lease in due course) and should include:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Part 2 – Identification criteria

The developer must demonstrate in his application that the proposed Option Route for a project satisfies the following spatial planning and environmental criteria (Option Route Identification Criteria):

| 2.1 The proposed Option Route must accord with any relevant Appropriate Assessment; and |                                                                                                           |
| 2.2 The proposed Option Route must accord with any relevant Appropriate Assessment; and |                                                                                                           |
| 2.3 The potential impact of the proposed Option Route on existing third party interests arising out of an existing lease, licence or other rights, whether issued by The Crown Estate or otherwise, must have been addressed. The developer must demonstrate that he has given consideration to the requirements of existing parties and that discussions have been held to find a mutually acceptable solution; and |                                                                                                           |
### Cable Route Project Approval Information continued

<table>
<thead>
<tr>
<th>2.4</th>
<th>Such other criteria as may reasonably be expected to be relevant having regard to the location of the proposed Option Route.</th>
</tr>
</thead>
</table>

#### Part 3 – Corporate set-up and Guarantor

The developer must provide together with his cable route application the following commercial information:

<table>
<thead>
<tr>
<th>3.1</th>
<th>A description of the corporate set-up of the cable project entity and its corporate linkage to the developer. The cable project entity may either be an OFTO, the Project Company under a wind farm project AFL or a group company of a Project Company;</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2</td>
<td>A high level summary of the financing delivery plan for the project;</td>
</tr>
<tr>
<td>3.3</td>
<td>A summary of the proposed OFTO strategy, including key decision dates;</td>
</tr>
<tr>
<td>3.4</td>
<td>The name(s) and corporate status of the legal entity(ies) which are envisaged to provide any security bond or other form of guarantee or requisite security instrument or document required by the Commissioners by the time of completion of the Lease by the cable project entity, ref Agreement for Lease cl 9.13 (though this is not a binding commitment at this stage of the development).</td>
</tr>
</tbody>
</table>

#### Relevant Appendices

Such other details which the developer deems to be relevant for the assessment of the proposed cable route may be included as Appendices to the application.