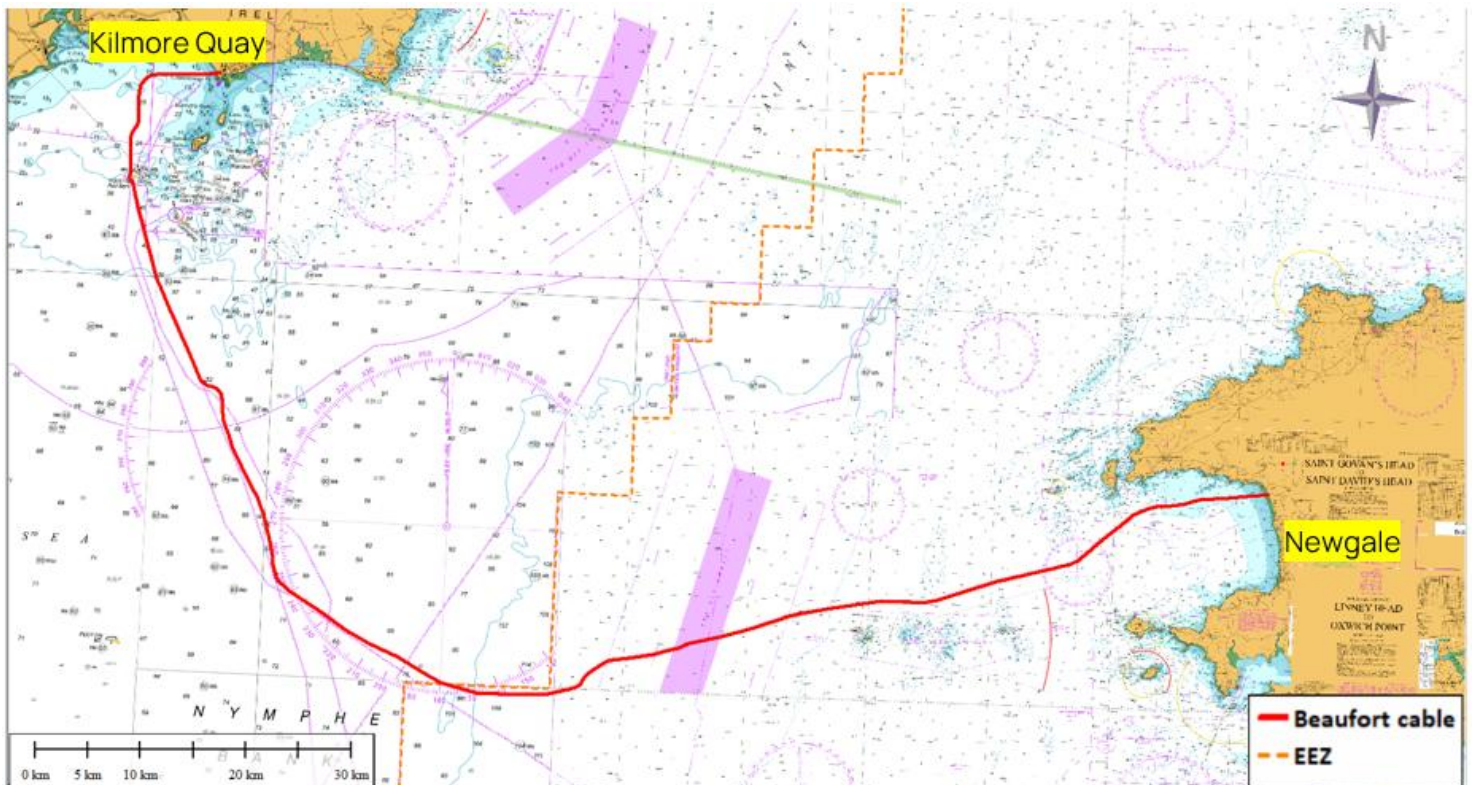


# Beaufort Subsea Fibre Optic Cable System

## PRELIMINARY REHABILITATION SCHEDULE

&

## SUPPORTING INFORMATION



## Contents

Contents .....	2
Abbreviations List.....	2
1.0 INTRODUCTION .....	3
2.0 BACKGROUND .....	5
3.0 MARINE SURVEY .....	7
4.0 Health, Safety, Security & Environment (HSSE) .....	8
Health, Safety, Security & Environment (HSSE) .....	8
Pre-Decision Factors .....	9
Post-Decision Factors.....	9
Pre Decommissioning Legal Checks .....	10
Salvage HSSE Considerations .....	10
Environmental Considerations.....	11
Operational Health, Safety and Environmental Considerations.....	11
Rehabilitation Schedule Guiding Principles .....	12
5.0 Decommissioning .....	14
Cable Recovery Methods .....	14
Works Corridor in IRL waters .....	14
Sequence of Works .....	15
Disposal Methods.....	21
Post-decommissioning Reporting .....	21
6.0 CONSULTATION AND NAVIGATION .....	21
Stakeholder Consultation.....	21
Navigation .....	22
7.0 BEST PRACTICE AND PROPOSED MITIGATION MEASURES .....	23
8.0 Decommissioning Vessels and Equipment .....	24
Typical Decommissioning Vessels .....	25
Typical Decommissioning Equipment .....	26
9.0 APPENDIX A - ICPC Recommendation 1 .....	29
10.0 APPENDIX B - (ESCA) Guideline No.8 - Guidelines for Submarine Cable Decommissioning .....	29

## Abbreviations List

Abbreviation	Definition
ACP	An Coimisiún Pleanála
API	American Petroleum Institute
BMH	Beach Manhole

COLREGs	International Regulations for Preventing Collisions at Sea
DA	Double Armoured cable
DA-HA	Double Armoured – Heavy cable
DC	Direct Current
EEZ	Exclusive Economic Zone
EPA	Environmental Protection Agency
ESCA	European Subsea Cable Association
FLO	Fisheries Liaison Officer
HDPE	High Density Polyethylene
HSSE	Health, Safety, Security & Environment
ICPC	International Cable Protection Committee
IMO	International Maritime Organization
IRL	Ireland / Irish Waters
LEA	Limited Environmental Assessment
LW	Lightweight (cable type)
LWA	Light Wire Armoured cable
MAC	Maritime Area Consent
MARA	Maritime Area Regulatory Authority
MDPE	Medium Density Polyethylene
OOS	Out-of-Service (redundant cable)
P&I	Protection & Indemnity (marine insurance)
PPE	Personal Protective Equipment
Q1	First Quarter of the Year
Q2	Second Quarter of the Year
SOLAS	Safety of Life at Sea Convention
U.S.	United States
UKHO	United Kingdom Hydrographic Office

## 1.0 INTRODUCTION

1.1 This preliminary rehabilitation schedule has been prepared by McMahon Design and Management Ltd on behalf of the applicant and forms part of an application to An Coimisiún Pleanála for planning permission for the Beaufort fibre optic cable system from 12nm limit of the territorial sea to the IRL EEZ boundary.

1.2 The installation Beaufort cable system is planned for 2027. The cable system will land in Kilmore Quay, Co. Wexford; linking Ireland to the UK as shown in Figure 1 below. The new Beaufort system will help ensure the long-term security of communications and resilient connectivity for Ireland and the UK. The system will make use of existing infrastructure such as ducts and the cable landing compound in Kilmore Quay.

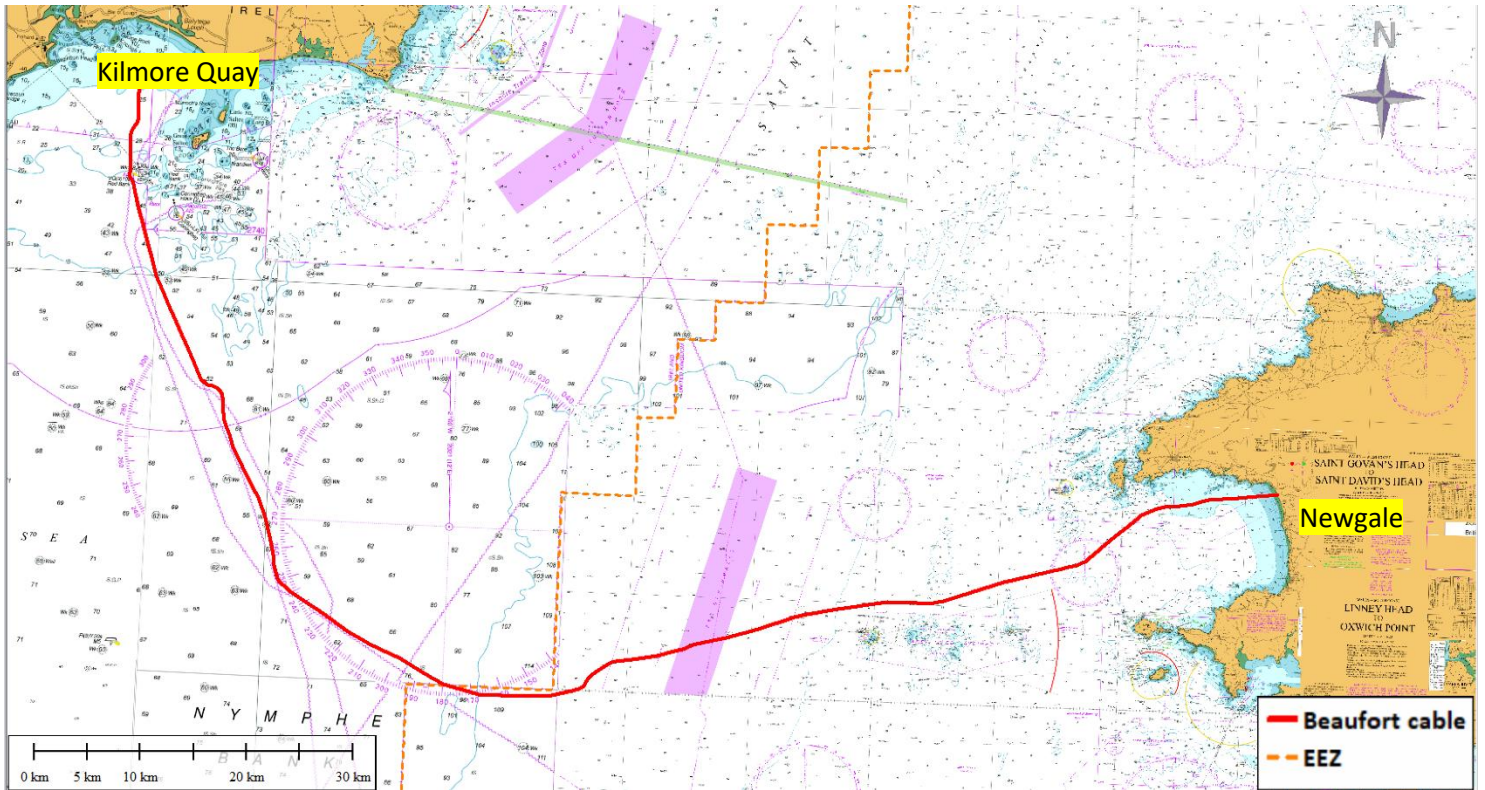


Figure 1. Planned Beaufort Telecoms Cable System.

typically be after 20 to 25 years of service but could be longer depending on technological advances in fibre optic communication systems, it will be taken 'out of service' and decommissioned partially or in full. The decommissioning works will include the removal of the cable from the beach manhole (BMH) at the Kilmore Quay landfall (Figure 2) and from the seabed to the EEZ limit where it is feasible and safe to do so. The final decision on the extents of the cable removal will be taken in conjunction with the relevant authorities at the time of decommissioning and in accordance with industry and environmental best practices at the time.



Figure 2. Planned Beaufort Landfall and BMH at Kilmore Quay.

1.4 The decommissioning works will involve disturbance of the upper layers of the seabed in order to remove the cable. In the case that the cable cannot be removed from the seabed at any location it will be cut and the cable ends secured on the seabed using clump weights following standard cable industry practices.

## 2.0 BACKGROUND

2.1 The Beaufort fibre optic cable will be approximately 33mm in diameter and will be “un-repeated” (i.e. not powered). It is to be an industry-standard cable with the capability to transmit high-speed data and voice via light waves through up to 96 bundled optical fibre pairs contained within the core. The cable will be armoured in Irish waters (DA or RA) depending on seabed conditions. Figure 3 below shows a cut away section of a typical fibre optic cable and the mechanical characteristics are listed in Table 1.

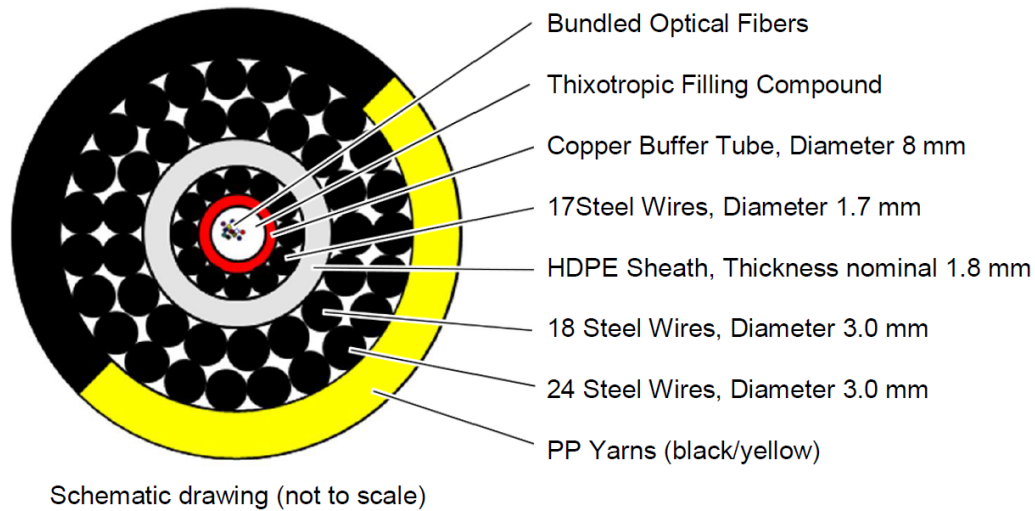


Figure 3. Cable Properties (DA)

- 2.2 A combination of methods are considered for the removal of the cable as follows;
- i. Exposure and removal of the cable on the beach from MHWS to low water using mechanical excavators.
  - ii. Recovery of the cable by pulling from the seabed and winching onto the decommissioning vessel.
  - iii. Recovery of surface or shallow buried cable using a hydraulic subsea grab.
  - iv. Recovery of the cable by winching assisted by a subsea jetting system.

Table 1: Cable Mechanical Properties

## Mechanical Characteristics

Outer diameter		nominal	33	mm
Fiber count		up to	192	Fibers
Weight in air		nominal	3150	kg/km
Weight in seawater		nominal	2550	kg/km
Specific gravity in seawater		nominal	5.2	
Minimum bending radius with load			1000	mm
Cable breaking load	(CBL)	ITU-T G.976	580	kN
Dynamic tension	(NTTS)	ITU-T G.976	270	kN
Operational tension	(NOTS)	ITU-T G.976	230	kN
Static tension	(NPTS)	ITU-T G.976	150	kN

## 3.0 MARINE SURVEY

3.1 Once the cable system is designated ‘out of service’ and a decision made to decommission the cable, a geophysical survey may be acquired along the as-laid cable route from the landfall at Kilmore Quay to the EEZ limit to assist in the planning and implementation of the decommissioning and removal of the cable from the seabed. A terrestrial survey of the landfall at Kilmore Quay may also be undertaken.

3.2 A geophysical survey corridor along the route would have an average width of 250m with water depths varying between 5m and 90m.

3.3 The acquisition of geophysical survey data would include bathymetric survey (Multi-Beam Echo sounder), Side Scan Sonar, and Magnetometer.

3.4 The purpose of the geophysical surveys is to provide adequate quality and quantity of geophysical and depth of burial high-resolution information for decommissioning of the Beaufort cable including;

- gathering accurate bathymetric data as well as seabed classification based on backscatter;
- collecting magnetometer data and locating the position of the Beaufort cable;
- identification of any magnetic anomalies including other cables and pipelines;

- identifying any locations where the cable is at or near the seabed surface.

3.5 The Marine Survey data will be used in the production of ecological, environmental and archaeological assessments and will be provided to the Decommissioning Contractor for the planning and execution of the works.

## 4.0 Health, Safety, Security & Environment (HSSE)

### Health, Safety, Security & Environment (HSSE).

4.1 In deciding the desirability of recovering a decommissioned cable system or section, a major consideration has to be the duty of care that the cable owner has towards other seabed users, marine operators and any other parties that may be relevant to a specific case. Due to the diverse nature of the marine environment, every case must be considered on the particular circumstances that are relevant to that section, segment, system and environment.

4.2 In Offshore areas, the initial consideration is the fishing industry, with the safety of crew and in extreme cases the actual vessels if fishing gear can foul a cable. However, in the shallow waters immediately off cable landings concerns can arise of small leisure craft fouling their anchors and immediately off the beach the general public.

4.3 If a cable is well buried none of these concerns should arise, but the passing of time can lead to a buried cable being exposed, particularly in a sandy seabed, by longshore drift, violent storms, or possibly nearby future dredging activity. If the cable has been surface laid on a rocky seabed, then these concerns will be immediate and clear. However, where the cable has been buried a risk assessment should be made of the type of seabed and the chances of cable exposure over time.

4.4 Equally, where the cable has been buried in a stable seabed the assessment must be made of the risk that attempting recovery may create a hazard where none existed before, such as a broken cable end which can be fouled by fishing gear or again close to shore pose a hazard to the general public.

When considering decommissioning, there are a number of HSSE factors to consider which can generally be grouped into two categories:

- Pre-Decision Factors
- Post-Decision Factors

### Pre-Decision Factors

4.5 Pre decision factors are those which cable owners will consider in deciding whether to remove an out of service or decommissioned Cable. These will include the following:

- Any potential effect on the safety of surface navigation or other uses of the sea including a comparison of whether removal is reasonable or realistic given the presence of other manmade objects on the seabed such as shipwrecks, debris, and oil and gas or renewables (wind, wave) structures and installations.
- Present and possible future effects on the marine environment. Where the cable is composed of material that is inert or environmentally benign, consideration should be given to leaving the cable in place.
- The risk that the cable will significantly shift position at some future time.
- The costs and technical feasibility associated with removal of cables.
- The determination of a new use or other reasonable justification for allowing the cable or parts thereof to remain on the seabed.
- The comparative environmental impact of leaving the cable in place compared to the disruption caused by attempting to remove the cable.
- The management of out-of-service cables as part of the cable protection program.
- The potential socio-economic & economic benefits of recovering the cable.

### Post-Decision Factors

4.6 If the decision is to retain a redundant cable for future use or to leave an out-of-service cable in place, cable owners will consider implementation of the following:

- Notification to International & National charting authorities that the cable is no longer in service.
- Notification to local fishermen and other seabed users of the change in status, and confirmation that any future claims for sacrificed gear will be considered on their merits.

- Confirmation that the cable owner remains responsible to any party by insurance cover or otherwise for the OOS Cable.
- Consideration of alternative uses for the cable such as donation to a scientific research body.

### Pre Decommissioning Legal Checks

4.7 The range of legislation and regulations that might cover cable recovery is wide and continually changing. Prior to any decommissioning a legislative review will be undertaken. It will cover in particular any new legislation that may apply to the cable corridor that did not exist or apply at the time of cable installation.

Checks will be made within:

- EU Recommendations and Directives
- Resultant national state legislation and regulations
- Local environmental directives and recommendations.

4.8 Subject areas for research will include: Habitats; birds; coastal conservation areas; underwater heritage & conservation areas; air, sea surface, submarine, seabed environment; sound pollution; waste pollution; waste Duty of Care and disposal.

### Salvage HSSE Considerations

4.9 Under maritime law, third party salvors have no title to the cable or rights to salvage cables without the permission of the legal owners of the cable system. Maritime courts have interpreted permission to be explicit and generally in writing - it is not lightly inferred.

4.10 Any cable salvage or recovery will include the following considerations:

1. Proper equipment and trained crew are used,
2. Any cable segments left on the seabed are carefully documented and properly capped or terminated with a clump weight,
3. All cable components are disposed of in an environmentally sound manner,
4. The salvor has marine salvage liability cover that lists the cable owner as an assured for third party claims caused by negligent salvage. (Salvor's

liability extension cover is normally part of the salvage vessel's hull and machinery or P&I marine insurance policies.)

### Environmental Considerations

4.11 The impacts of removal of a cable at the end of its service life may not be the same as those obtaining at installation since:

- Removal processes may be different and more or less significant to the environment than the installation processes used,
- Over the operational lifetime of a cable, it could conceivably have become a significant factor in the local ecology,
- Perception of ecological values in areas the cable transits may have changed over time,
- The regulatory regime as it relates to the areas the cable transits may have changed over time.

4.12 All these points require that, in conjunction with other factors, the cable owner and the cable recovery contractor take due regard of the environmental impact of either removing the cable or leaving it in situ.

4.13 Prior to decommissioning of the system, the cable owner will work to understand the environmental impacts that might result from decommissioning actions, even where consent is not required. To this end a 'Limited Environmental Assessment' (LEA), may be used to provide an insight into the broad environmental values affecting the cable route and the likely impacts of removal. The LEA may be sufficient to inform the consenting process (if required) and will serve to also identify areas that may require more detailed assessment by the cable owner.

### Operational Health, Safety and Environmental Considerations

4.14 All cable owners and operators have a Duty of Care to ensure that 'all reasonable steps' are taken to ensure that waste is disposed of in a responsible manner, which prevents pollution of the environment.

4.15 Following the EU Waste Hierarchy, where feasible, the constituent parts of the decommissioned subsea cable & plant may be recycled or processed for recovery of materials or energy.

4.16 The following basic principles will be followed;

- Waste shall be securely contained to prevent it escaping into the environment during storage and transit.
- Waste shall only be transferred to someone licensed to carry or manage it.
- Records will be kept, which will include the full and accurate description of the waste, and any special requirements that may affect its handling. Copies of all licences will be retained by the waste originator for a minimum of two years after disposal.
- The agent selected for the storage, transport & disposal of any decommissioned cable will be suitably licensed.

### Rehabilitation Schedule Guiding Principles

4.17 The guiding principles of the Beaufort rehabilitation schedule are those recommended by The European Subsea Cable Association (ESCA) Guideline No.8 - Guidelines for Submarine Cable Decommissioning, Issue 5, March 2016 and the International Cable Protection Committee (ICPC) Recommendation No. 1 - Management of Decommissioned and Out-of-Service Cables, Issue 14, June 2020.

1. The specific decommissioning requirements of each cable shall be investigated on a Case by Case basis, taking full account of the individual company's obligations and each system's individual physical, environmental, licensing & permitting requirements.
2. Before a cable owner decommissions any cable system, they determine a clear 'Decommissioning Objective', which is supported by a 'Decommissioning Strategy' to assist in meeting these objectives.
3. General principles as listed in Table 2 are considered:

No.	Location	Guideline
1	Beach, area between land and Low Water Mark	Generally, recover cable to leave beach clear from potential exposed cables in the future.

2	Low Water Mark to 12 Nautical Mile Limit  (or Median Line if less than 12 miles)	Investigate on a case by case basis. Generally, recover cable if it is on seabed surface, burial is marginal or the cable presents a hazard to other seabed users. Cable may be left if it is well buried in a stable seabed.
3	12 Nautical Mile Limit to Median Line or EEZ or Continental Shelf Edge	Investigate on a case by case basis. Generally, leave cable, but can recover if cable on seabed surface, burial marginal or presents a hazard to other seabed users.
4	Deep water, beyond Median, EEZ or Continental Shelf Edge	Please refer to ICPC recommendation No 1

*Table 2. General cable decommissioning principles.*

4. The project shall conduct a risk assessment on the effects of cable recovery on the environment. This shall include a 'pre-recovery desk-top' assessment of the as-laid cable.
5. There are crossings of other subsea assets within IRL waters and there may be additional crossings of new infrastructure laid over the Beaufort Cable System in future. At a crossing for a subsea cable or pipeline, the out of service Beaufort cable will be cut on each side of the crossing with the cable ends weighted to the seabed by clump weights in accordance with the procedure outlined in *ICPC Recommendation 1*.
6. Where cable is to be recovered, the cable route should be divided into homogenous sections each of which can be defined by one of the following three recovery categories:
  - a. Fully recovered. Cable corridor is completely cleared of the cable.
  - b. Not recovered. Cable left in situ in the corridor, for reasons other than environmental, e.g. cable is buried too deep to recover intact, cable is beneath another cable or pipeline etc.
  - c. Environmental. Cable left in situ on environmental grounds. May or may not be buried, i.e. there may be environmental reasons to leave the site alone regardless of the state of the cable.
7. The scope of any cable recovery is to be agreed with the relevant licensing authority, in writing, before any recovery operations commence and may be subject to conditions. The relevant authorities include but are not limited to the Maritime

Regulatory Authority, An Coimisiún Pleanála and the relevant land owner for cable between the mean High & Low water marks and to the BMH

8. All recovered cable and plant will be disposed of in a responsible manner, in accordance with all current applicable national and international legislation.
9. During cable recovery operations, as a minimum, liaison shall be conducted with the local and national fishing organisations.

## 5.0 Decommissioning

5.1 The decommissioning works will involve disturbance of the upper layers of the seabed in order to remove the cable. In the case that the cable cannot be removed from the seabed at any location it will be cut and the cable ends secured on the seabed using clump weights following standard cable industry practices.

### Cable Recovery Methods

5.2 A combination of recovery methods considered for the removal of the cable as follows;

- v. Removal of the cable at the landfall from the cable duct using mechanical winch.
- vi. On the beach and intertidal area, the cable will be excavated, exposed, cut and recovered using a land-based team supported by excavators.
- vii. Recovery of the cable by pulling from the seabed and winching onto the decommissioning vessel.
- viii. Recovery of surface or shallow buried cable using a hydraulic subsea grab or grapnel tool.

5.3 The cable will be rinsed as it is pulled onto the vessel to remove any sediment and biological material that may be attached.

### Works Corridor in IRL waters

5.4 The planned cable route is situated off the coast of Wexford at Kilmore Quay (Figure 4). The system has a length of approximately 76.9 km to the EEZ and the works corridor required for decommissioning would be of the order of 250m in width. The decommissioning works will be undertaken along the line of the cable only; however a works corridor is proposed to allow for operational flexibility in the recovery of the cable offshore.

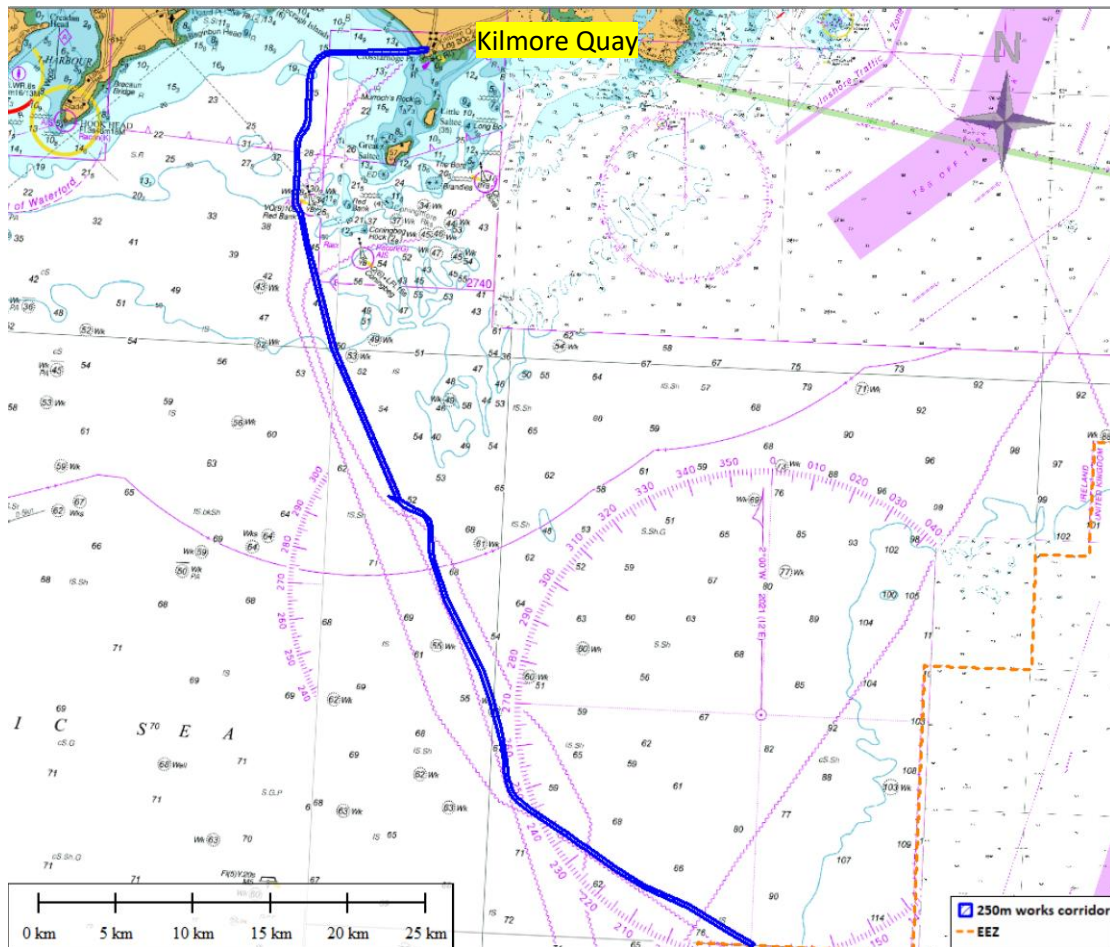


Figure 4. Indicative Decommissioning Works Corridor

## Sequence of Works

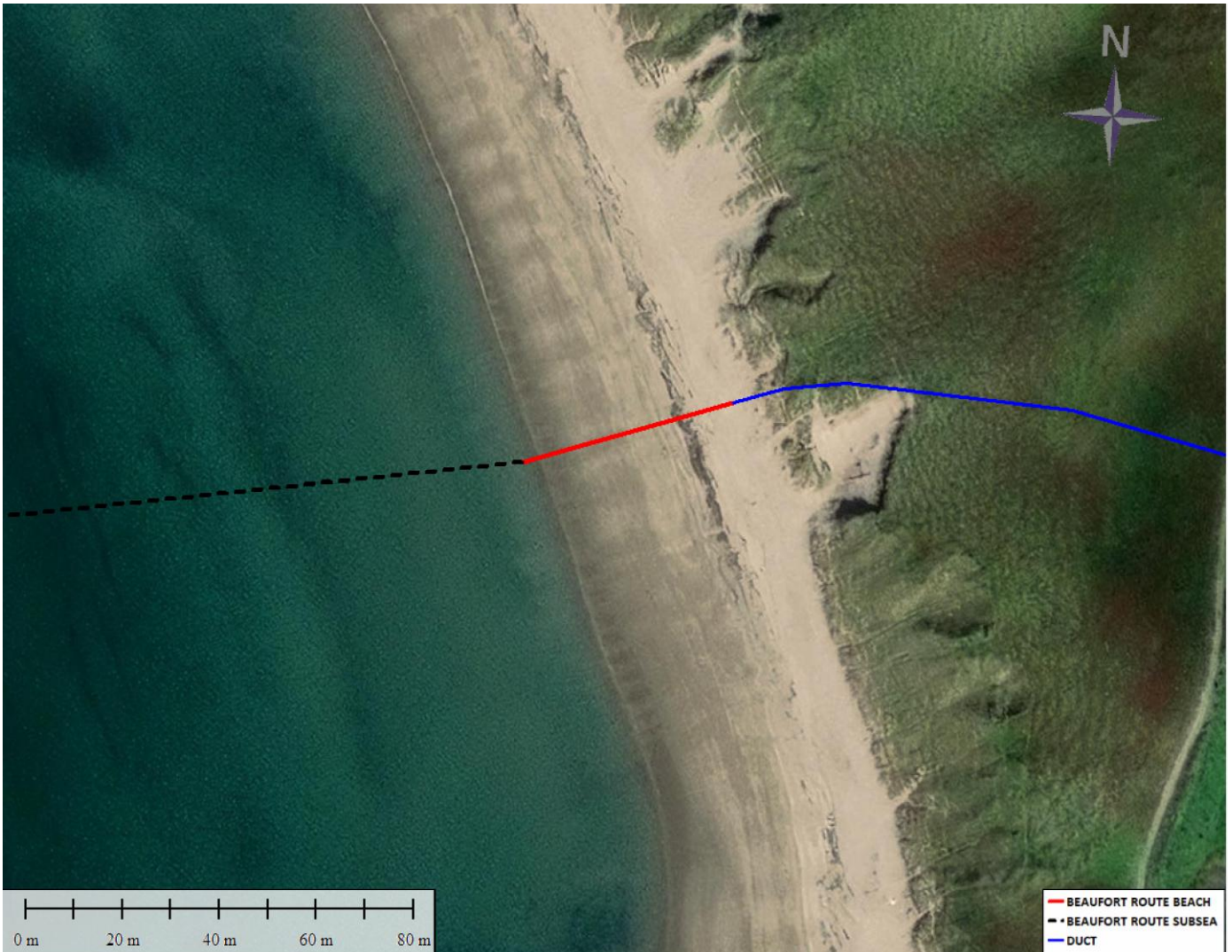
5.5 A summary of the cable decommissioning works is outlined in the following sections.

5.6 Works will commence at the landfall (Figure 2) with the cable cut in the BMH chamber. A hand held cable tracker will be used to identify the end of the landfall cable duct on the beach. The end of the duct will be excavated and uncovered. The cable will be cut at the point where it leaves the duct and winched from the BMH to remove it from the landfall duct. The cable on the beach from the end of the landfall duct to the Low water mark will excavated, exposed, cut and recovered using a land-based team supported by excavators. The cable will be removed from within the landfall duct and the duct will remain in situ.

5.7 The area in the vicinity of the landfall works will be appropriately marked to warn members of the public and operations will only be carried out when safe to do so. All equipment and materials will be removed from the area immediately on completion of the works.

5.8 Prior to the commencement of the offshore section of the work, a load cell test to evaluate the current breaking strength of the cable will be undertaken with a sample of the cable, thereby giving an indication of the force that can be applied offshore.

5.9 The decommissioning of the cable will then proceed across the nearshore zone with a shallow draft decommissioning vessel approaching the landfall within safe working depths at high tide to pick up the cut cable end which will have been attached to a buoy and a pulling wire. The buoy and pulling wire will be recovered and lifted onto the vessel. The pull wire will be spooled onto the vessel winch and the cable recovery can commence, working with the tides to deeper waters where the offshore decommissioning vessel can operate.



*Figure 5. Landfall decommissioning works.*

5.10 The decommissioning of the cable will then proceed seawards with the offshore decommissioning vessel recovering the cable in a similar fashion.

5.11 The Decommissioning Vessel will be suitable for the works and will be equipped with winches, grapnels and other de-burial tools and support craft to undertake the removal and disposal of the cable to a licenced disposal facility. Plant and equipment may include:

- Decommissioning vessel equipped with suitable navigation / survey equipment to enable it to follow the position of the cable in the seabed. A typical decommissioning vessel and equipment details are described in a later section.
- Grapnels (e.g. de-trenching, cutting and holding, Rennies, Giffords);

- Winches (e.g. 1 x main towing winch, 1 x recovery winch / second towing winch, tugger winches, capstan winches);
- Tracked tensioner to provide sufficient pull force to pull the cable out of the seabed;
- Chutes to guide the cable onto the deck and into the cable tank / crates;
- Subsea grab for subsea cutting and recovery of the cable;
- Shears;
- Support craft;
- Dive spreads;
- Static cable tank or open top crates to hold the decommissioned cable or cable sections.

5.12 The general methodology is as follows:

- On a rising tide, the works vessel will approach and attach the winch wire to the cut cable end.
- The vessel will move seawards de-burying the cable by winching it onboard or through a cable tensioner while the vessel continues moving along the line of the cable.
- Throughout the works, the pull tension will be monitored to ensure it does not exceed 50% of the cable break strength that will be known from the beach trials.
- Subsea cable de-burial extends seawards.
- As de-burial works progress, the cable will be stored in the cable tank or cut and stacked in open top crates on board the vessel.
- The recovered cable will be offloaded and disposed of in accordance with Irish and EU waste management regulations and rules applicable at the time. The cable materials will be re-processed or recycled.
- A decommissioning report will be prepared to provide detailed information on the cable recovery and shared with the appropriate authorities and stakeholders.

5.13 In the case that the cable breaks during the recovery operations a subsea grab or grapnel will be used to recover the cable end and reasonable endeavours will be made to continue the recovery operations. The general sequence of works for grapnelling will be as follows;

- i. The grapnel train will consist of a combination of the Gifford, Rennie, Long Prong, Sand, or other types depending on the specific seabed conditions at the grapneling location.
- ii. The catenary length of the grappling line and the layback of the grapnel train relative to the ship will be calculated and the grapnel will be lowered over the stern of the vessel and paid out to establish a suitable tow rope catenary.
- iii. The load on the grapnel will be continuously monitored with any sharp increase above the background towing load indicative that the grapnels may have encountered the cable.
- iv. If the cable has been encountered it will be fully recovered to the deck of the vessel and decommissioning efforts will recommence.
- v. If the cable cannot be recovered from the seabed due to being too deeply or firmly buried, the vessel will transit along the cable line to attempt recovery at another location, in steps of approximately 100m.
- vi. The grapnel will be deployed and attempts made until the cable has been encountered and recovered to the vessel.
- vii. The cable will be cut with recovery rigging attached to one end and lowered back to the seabed for later recovery. The other cable end will be fed into the tensioner/winch and cable recovery will recommence. The vessel will return and recover the other cable end and cable section at a later stage.

5.14 In areas of deep burial or stiff sediment a subsea jetting sled may be attached to the cable, once it has been attached to the vessel winch, to fluidise the seabed above the cable to ease cable recovery (Figure 6). It will only be used, if necessary, at limited specific locations, and if effective in aiding cable recovery. In such a case the jetting tool will be reconfigured with jetting swords to the front of the machine and a vertical bell-mouth with the cable enclosed to assist with propulsion and guidance. The footprint of a typical jetting tool would be approximately 4m long by 2 m wide but interaction with the seabed is limited to the jets localised at the cable and sled runners / wheels.



*Figure 6. Example Jetting Sled as Option for Easing Cable Recovery*

5.15 Reasonable endeavours will be made to remove the cable. In the first instance winching and vessel pull will be employed to pull the cable from the seabed. If this is not successful and if there is a risk of breaking the cable a jetting tool may be employed to fluidise the seabed and aid recovery. Winching is expected to be effective for recovery where the cable burial is less than 1.5m and depending on the stiffness of the seabed. Use of a jetting tool in soft (sandy) sediments may allow successful recovery where the burial is buried up to 1.5m. If the cable is buried greater than such depths or in stiff sediments it may not be feasible to recover, with the cable breaking before it can be recovered. In such cases there may be no alternative but to leave the cable in-situ with any exposed cable ends secured on the seabed with clump weights in accordance with *ICPC Recommendation 1* and the location will be recorded in the decommissioning file.

5.16 Following any section where cable recovery is unfeasible, the vessel will transit along the cable line and attempt to recover the cable at another location and to recommence recovery operations. If the exact location of the cable is known a subsea grab may be effective to recover the cable if burial depth is <0.5m. Grapneling to recover the cable is likely to be effective to burial depths up to 1.5m. The amount of sea space required for cable recovery by grapnel will be minimised. In deeper waters of the works area the vessel position will have to take a position outside of the works corridor for sufficient layback and run on to the cable position. However, the grapnel position on the seabed will at all times be within the 500 m works corridor.

5.17 The cable will not be recovered at crossings where future third party infrastructure such as cables or pipelines cross over the Beaufort Cable System. This is to ensure the integrity of the third party asset is not impacted by the decommissioning operations. In these instances, the cable will be cut approximately 250m or 1 x Water Depth, (whichever is greater) in advance of the crossing location with the cable end weighted to the seabed with a clump weight in accordance with the procedure outlined in *ICPC Recommendation 1* (detail provided in Appendix A). The cable will be recovered at an equal distance from the other side of the crossing and cut. The cut cable end will be weighted to the seabed with a clump weight and the other end will be attached to the vessel winch or put through the cable tensioner for recovery operations to resume.

### Disposal Methods

5.18 After completion of cable recovery the cable will be offloaded to the quay side where it will be cut and transferred to covered 20ft containers (or similar) for onwards disposal / recycling at suitably licensed waste facilities for possible re-processing/scraping of recovered cable product. All operations will comply with national waste management regulations at the time of the operations.

### Post-decommissioning Reporting

5.19 The recovery operation will precisely document what cable has been recovered from the seabed and the detailed information of cable recovery locations will be shared with the UKHO for inclusion on subsequent updates of Admiralty Charts.

## 6.0 CONSULTATION AND NAVIGATION

### Stakeholder Consultation

6.1 Stakeholder consultation will be undertaken prior to finalisation of decommissioning operation methodologies. A stakeholders matrix review will be undertaken prior to the commencement of any operational discussions. This stakeholder review shall:

- Review the current stakeholders,
- Understand which current stakeholders are still applicable
- Identify new stakeholders

When the stakeholder matrix has been updated, the project team can then reach out to the stakeholders describing the nature, time and extent of the proposed works. A fisheries liaison officer will be appointed to lead the engagement with the fishing communities of Waterford, Wexford and the South East that may be impacted by the decommissioning of the Beaufort Cable System.

## Navigation

6.2 The decommissioning operations will adhere to the following:

- Comply with all maritime safety related legislation and guidance, including COLREGs;
- Publish Notice to Mariners through Department of Transport in advance of works.
- Issue local notification to marine users - including fisherman's organisations, neighbouring port authorities (Kilmore Quay, Rosslare Harbour, Dunmore East, Waterford Port) and other local stakeholders - to ensure that they are made fully aware of the activity; and
- While undertaking decommissioning operations, the decommissioning vessel shall display the appropriate lighting and navigational warnings to other vessels to indicate that the survey vessel is restricted in its ability to manoeuvre.
- Whilst undertaking the decommissioning works, the vessel crew will be mindful of fishing interests and in particular, fixed gear in the vicinity of the route, and where appropriate, shall put in place measures to minimise and / or avoid interaction. The project FLO shall liaise with local stakeholders from the fishing industry.
- While on station, suitably trained personnel shall maintain a watch from the bridge to monitor vessel traffic.
- Vessel marine crew shall have assigned emergency duties and muster points stipulated on the vessel's muster list. Safety inductions of all onboarding crew shall be undertaken not more than 24-hours after arrival onboard.

## 7.0 BEST PRACTICE AND PROPOSED MITIGATION MEASURES

7.1 The following mitigation measures and environmental best practice will be adhered to throughout the decommissioning work to minimise risk to the marine environment and designated sites:

- All equipment associated with the works will be removed on completion of the works;
- Bunding, storage facilities and spill kits will be employed to contain and prevent the release of fuel, oils and chemicals associated with the equipment into the marine environment;
- Plant, vehicles and machinery will not be refuelled on the foreshore;
- Coatings and treatments will be suitable for use in the marine environment and are used in accordance with best environmental practice;
- All equipment, materials, machinery and PPE used will be in a clean condition prior to their arrival on site, and upon removal from site, to minimise risk of introducing non-native species into the marine environment;
- Dropped objects procedure shall include reporting and notification procedures to comply with statutory requirements;
- Vessels shall have appropriate fully certified safety equipment to comply with SOLAS codes or equivalent, including adequate marine lifesaving equipment and personal protective equipment, and shall have trained personnel onboard who are familiar with its use;
- Working areas on board shall be kept clean and clear of trip hazards and flammable materials;
- No waste shall be discharged from the vessels offshore with all waste disposed shore side in accordance with Client and statutory requirements;
- The Contractor shall propose a suitable operational port nearby to the work area that allows for safe and efficient survey operations, 24-hour vessel port access and suitable facilities for safe loading/unloading of personnel, equipment and supplies;
- A dedicated person for watching and monitoring vessel traffic will be present on the bridge at all times.

## 8.0 Decommissioning Vessels and Equipment

8.1 The offshore decommissioning vessel will typically be 30 - 40m in length with potential for smaller support vessels to be used in nearshore / shallow water areas. The decommissioning vessel will have a shallow water draft to allow for the inshore works, adequate bollard pull and engine capacity for the decommissioning works and a sufficiently large cable tank or deck space to accommodate the recovered cable. The decommissioning vessel(s) may use a local port for personnel / equipment mobilisation, bunkering and provisioning.

8.2 The decommissioning works will consist of a dedicated marine spread which will be suitable for the scope of work required, the water depth and the anticipated seabed conditions along the cable route. The exact equipment to be used will be confirmed following a tender process to procure the marine contractor but will generally include the following;

- Suitable navigation / survey equipment to enable the vessel to follow the position of the cable in the seabed;
- Grapnels (e.g. de-trenching, cutting and holding, Rennies, Giffords);
- Winches (e.g. 1 x main towing winch, 1 x recovery winch / second towing winch, tugger winches, capstan winches);
- Tracked tensioner to provide sufficient pull force to pull the cable out of the seabed;
- Chutes to guide the cable onto the deck and into the cable tank / crates;
- Subsea grab for subsea cutting and recovery of the cable;
- Shears for cutting the recovered cable;
- De-burial jetting tool (possible option for areas of deep burial to ease removal);

8.3 All decommissioning vessels will be fit for purpose, will possess all relevant classification certificates and capable of safely undertaking the survey work required. Health, safety, environment and welfare considerations will be a priority and will be actively managed during the course of the survey scopes of work. Appointed contractors will be required to comply with all legislation relevant to the activities within their scope of work.

8.4 The vessels will conform to the following minimum requirements as appropriate:

- Compliance with Safety of Life at Sea (SOLAS), International Maritime Organization (IMO) and all maritime safety related legislation and guidance, including COLREGs.
- Station-keeping and sea keeping capabilities required to carry out the proposed survey operations safely;
- Calibrated equipment and spares with necessary tools for all specified works;
- Endurance (e.g. fuel, water, stores, etc.) to undertake the required survey works;
- Sufficient qualified staff to allow the survey operations to be carried out efficiently, (may be 24 hour continuous for offshore works, 12 hour for nearshore works); and
- Appropriate accommodation and crew welfare facilities.

### Typical Decommissioning Vessels

8.5 Examples of typical vessels that could be used for the works are shown in Figures 7 – 9 below.





Figure 8. Example 2 Shallow draft work platform / Pontoon system



**DP2 RENEWABLE SERVICE VESSEL**

GENERAL		MAIN DIMENSIONS	
Vessel type	Multipurpose Service Vessel (MPSV)	Length OA	36,00 m
Model	EuroTug 3515	Breadth MLD	15,00 m
Year of built	2020	Min/Max draft	1,8 / 2,1 m
Flag	French 	Gross tonnage	499 UMS
Homeport	Brest	Bollard pull	40 t
Material	Steel	Clear deck area	290 m <sup>2</sup>
Mission type	Diving support, ROV support, burying, cable landing and laying, excavation,	Deck loading capacity	Up to 140 t

## Typical Decommissioning Equipment

8.6 A tracked cable tensioner with 10t line pull may be employed on the decommissioning vessel to provide sufficient force to draw the cable out of the seabed. A typical example of a tracked cable tensioner is shown in Figure 10.



*Figure 10. Example Tracked Cable Tensioner*

8.7 A subsea grab may be employed for recovery of the cable in areas where the cable location is known and is at or within 0.5m of the seabed surface. A typical example of a subsea grab is shown in Figure 11. The typical surface area of a grab that may be used would be approximately 0.55m<sup>2</sup>.



*Figure 11. Example Subsea Grab*

8.8 De-trenching grapnels will be used to recover the cable from the seabed to the vessel if the cable breaks or if the cable cannot be recovered in any location and the vessel moves to another location to recommence recovery. Typical examples of cable grapnels are shown in Figure 12.



*Figure 12. Examples of de-trenching Grapnels*

## 9.0 APPENDIX A - ICPC Recommendation 1

## 10.0 APPENDIX B - (ESCA) Guideline No.8 - Guidelines for Submarine Cable Decommissioning



---

# ICPC Recommendation

## Recommendation No. 1

### Management of Decommissioned and Out-of-Service Cables

---

**Note:** The presence of a Suffix letter after the Issue number indicates inclusion of updated peripheral information that does not change the wording of this Recommendation

## Contact for Enquiries and Proposed Changes

If you have any questions regarding this document or suggestions for improving it, please send an email to the ICPC's [general.manager@iscpc.org](mailto:general.manager@iscpc.org)

## Suggested Citation

International Cable Protection Committee. ICPC Recommendation #1, Management of Decommissioned and Out-of-Service Cables, Issue 14A, 12 June 2020.

Available by request at <http://www.iscpc.org> or [secretariat@iscpc.org](mailto:secretariat@iscpc.org)

## Disclaimer

*An International Cable Protection Committee Ltd ("ICPC") Recommendation ("Recommendation") implies a consensus of those substantially concerned with its scope and provisions. A Recommendation is intended as a guide to aid cable owners and other seabed users in promoting the highest goals of reliability and safety in the submarine cable environment. The existence of a Recommendation does not in any respect preclude anyone, whether he has approved the Recommendation or not, from laying or repairing undersea cables or employing procedures to these ends which may be required by the ordinary practice of seamanship or by the special circumstances of each case, but which may not be conforming to the Recommendation.*

*The ICPC does not develop standards and will in no circumstances give an interpretation of a Recommendation in the name of the ICPC. The ICPC and its members do not accept any liability for any errors in the Recommendation or for any consequences resulting from its use as a planning guide. Nothing in this Recommendation should be viewed as relieving anyone from the rights and obligations of seabed users under international law, including but not limited to the United Nations Convention of the Law of the Sea ("UNCLOS").*

*NB: ICPC Recommendations are subject to periodic review and users are cautioned to obtain the latest issues. This Recommendation may be revised or withdrawn at any time without further notice to the recipient.*

## Environmental Considerations

The ICPC is committed to ensuring the sustainable use of the seafloor. Within the following text, we have endeavoured to include reference to environmental considerations pertinent to each specific recommendation; however, we recognise that unique environmental considerations may be required for different cable routes, marine settings and/or activity interactions and thus the recommendations will inevitably not provide a comprehensive overview of all plausible environmental scenarios or potential impacts. As a result, cable operators and owners should ensure they are cognisant of any potential environmental impacts from the earliest planning stages and should strive to minimise those impacts throughout the full project lifecycle.

## TABLE OF CONTENTS

Disclaimer .....	2
Environmental Considerations .....	2
Table Of Contents .....	3
1. Introduction .....	4
2. OOS Cables - Planning Considerations .....	4
3. OOS Cables - Recovery Considerations .....	5
4. References .....	8
5. Definitions .....	8
6. Attachments .....	8

## 1. INTRODUCTION

This document provides the ICPC's recommendations in relation to a submarine cable system that has been decommissioned or taken out of service, hereafter collectively referred to as an "OOS Cable". The recommendations are given in 2 parts as follows:

- OOS Cables - Planning Considerations
- OOS Cables - Recovery Considerations

An OOS Cable may be recovered for reasons that may include the following:

- 1) Where a new cable crosses the OOS Cable in an area of burial so that the new cable can be buried without obstruction. In this case, a short section of cable is "cleared" in what is described as a route clearance operation enough to allow the cable burial plow to pass,
- 2) Where there is a longer section of OOS Cable that runs in close parallel to a new route so that the new cable can be buried and/or maintained without interference,
- 3) Where a government permit requires the cable to be recovered at the end of its useful life,
- 4) Where the cable owners wish to be released from liability for leaving the OOS Cable on the seabed,
- 5) Where a cable recycling company takes ownership of the cable to recover the material for its economic value.

Considerations may be different in shallow water where cable ends could become a snag hazard if not mitigated as opposed to deep water recovery.

This Recommendation is intended to address these situations.

## 2. OOS CABLES - PLANNING CONSIDERATIONS

To promote best industry practice and facilitate a good working relationship with other seabed users it is recommended that:

- 2.1. the drafting of new system development and governance documents, such as a construction and maintenance agreement or joint build agreement, provide for the recovery of limited lengths of the cable after it has been taken out of service.
- 2.2. when constructing a new cable following a route in the vicinity of an OOS Cable, the owners of the new cable should, in agreement with the owners of the OOS Cable, arrange for the recovery of those sections of the OOS Cable that are required to be clear for installation on the new route. *NB: A 1,000 metre wide corridor is typically required, but actual size will be dependent on local operational conditions.*
- 2.3. the above principle should be followed when approached by other seabed users who wish to install subsea plant or extract seabed material in the vicinity of an OOS Cable.
- 2.4. all cable recovery operations are planned to minimise future interference to other seabed users by leaving remaining cable, if possible, in no worse condition than it was prior to the recovery. This may be achieved by weighting the cable ends with clump weights or chains and lowering to the seabed on slip ropes while maintaining tension on the cable – attached diagram refers.

### 3. OOS CABLES - RECOVERY CONSIDERATIONS

#### 3.1. Legal Background

- 3.1.1. Under UNCLOS and customary international law, there is no requirement for the removal of OOS Cables in any maritime zone beyond the territorial sea. If a coastal state requires removal of a submarine cable outside its territorial seas, cable owners should (unless it was an accepted condition of a national permit) request that the relevant government explain the jurisdictional basis for such a requirement. In the absence of a valid jurisdictional basis, such a requirement is inconsistent with UNCLOS and customary international law and may be challenged. Because there is no legal basis for removal beyond the territorial sea, removal of OOS Cables in maritime zones beyond the territorial sea is primarily a decision made by cable owners. Notwithstanding this, increasingly, OOS Cable recovery does proactively occur, to allow for the recycling of copper and other commercially valuable components. Cable owners considering recovery offers and third-party companies providing such recovery services should still be aware of applicable principles of maritime law.
- 3.1.2. The fact that a cable is an OOS Cable does not change ownership rights, responsibilities, and obligations. Under maritime law, third-party recovery companies will have no title to the cable or right to recover any cable without the permission of the legal owners of the cable system. Courts have interpreted permission to be explicit and generally in writing - it is not lightly inferred. Recovery of a cable by a third party without the owner's permission is conversion and any proceeds belong to the cable owners along with a claim for damages. The actions of unauthorized or incompetent recovery companies, such as leaving sections with "bird cages" and cable displacement may expose cable owners to increased risk for indemnity claims for sacrificed anchors or fishing gear and/or damage to the marine seabed environment.
- 3.1.3. Cable Owners who decide that cable recovery is warranted should carefully negotiate a recovery contract with a reputable recovery company that ensures (1) proper equipment and trained crew are used, (2) any cable segments left on the seabed are carefully documented and properly capped or terminated with a clump weight, (3) all cable components are recycled and/or disposed of in an environmentally sound manner, (some cable owners are bound by state treaties which require specific environmental actions on the part of owners or salvors under certain circumstances) and (4) the recovery company has marine salvage liability cover that lists the cable owner as insured for third-party claims and indemnifies the Cable Owners against all claims and proceedings, damages and costs caused by negligent actions during recovery operations (liability extension cover is normally part of the any vessel's hull and machinery or P&I marine insurance policies).
- 3.1.4. Before deciding to remove any OOS Cable or any portion of thereof, the recovery company should make a good-faith effort to confirm its legal authority for such removal, particularly if the potential removal is not being undertaken on behalf of the owner that installed and operated the OOS Cable. Such confirmation should include a thorough evaluation of the recovery factors discussed in section 3.2 below. Should a dispute arise regarding ownership of

an OOS Cable for which removal is contemplated, the recovery company and any parties claiming ownership of the OOS Cable or portions thereof should resolve their dispute in advance of any recovery operations.

- 3.1.5. In the case of cables that may be abandoned – some of telegraph era - historical review of even telegraph cables will determine that the interests of the original owners have been assumed by successor companies in current existence. Alternatively, third parties may obtain title to the cables through an admiralty proceeding in a court of competent jurisdiction, for which the third party must demonstrate to the court that despite reasonable efforts, the owners of the cable are no longer in existence, not traceable or have explicitly renounced their interests in the cable. If an admiralty court determines a cable is abandoned, title of the abandon cable is vested in the third party who can then proceed to recover the cable.

### **3.2. Pre-Decision Factors**

In deciding whether to remove an OOS Cable, cable owners and third-party recovery companies should generally consider the following factors, among others:

- 3.2.1. Any potential effect on the safety of surface navigation or other uses of the sea including a comparison of whether removal is reasonable or realistic given the presence of other manmade objects on the seabed such as shipwrecks, debris, and oil and gas structures and installations.
- 3.2.2. Present and possible future effects on the marine environment. The comparative environmental impact of leaving the cable in place compared to the disruption caused by attempting to remove the cable should be considered, including consideration of composition and condition of cable materials, burial and sedimentation conditions, and the benthic environment.
- 3.2.3. The risk that the cable will significantly shift position at some future time.
- 3.2.4. The costs and technical feasibility associated with removal of cables, with special consideration to the presence of in-service cables that may impact the recoverable length. ICPC Recommendation No. 2 explains the necessary separation of grapnel drives from parallel and crossed cables.
- 3.2.5. The determination of a new use for allowing the cable or parts thereof to remain on the seabed.
- 3.2.6. The management of out-of-service cables as part of the cable protection program.
- 3.2.7. The potential socio-economic benefits of recovering the cable.
- 3.2.8. Any planned recovery operations in International Seabed Authority (“ISA”) authorized deep sea mining contract areas should be notified to both ISA and the mining contractor.

- 3.2.9. The recovery company has the complete responsibility of direct notification of the owners of cables impacted by the recovery operation. While details of recovery are responsibility of the owner or recovery company, notification of the ICPC Secretariat is an efficient aid in communicating to the industry. Notification by the recovery company should include verification that contact with owners has been completed (as this is not the responsibility of the ICPC). Notification information should be passed to the ICPC at least four (4) weeks in advance of planned operations as a courtesy and prudent practise. Notification to the ICPC Secretariat regarding planned recovery of an OOS Cable or portion thereof shall in no way ratify a claim of ownership or authority to conduct a recovery, and ICPC expressly disclaims any inference or assertion that reliance on this Recommendation, processes described therein, or forms created in reliance thereon, supports a claim of ownership or a right to conduct recovery operations. Similarly, notification to the ICPC Secretariat does not absolve the interested party of the responsibility of negotiating impacts with infrastructure in the vicinity but can be a useful aid in ensuring seabed users of information.

### **3.3. Post-Decision Factors**

If the decision is to retain a decommissioned cable for future use or to leave an OOS Cable in place, Cable Owners should consider implementation of the following:

- 3.3.1. Notification to all applicable charting authorities that the cable is no longer in service.
- 3.3.2. Notification to local fishermen and other seabed users of the change in status, and confirmation that any future claims for sacrificed fishing gear will be considered on their merits.
- 3.3.3. Confirmation that the cable owner remains responsible to any party by insurance cover or otherwise for the OOS Cable.
- 3.3.4. Consideration of alternative uses for the cable such as donation to a scientific research body.
- 3.3.5. Notify the ICPC Secretariat to allow updating of the cable database.

## 4. REFERENCES

<b>Document Number</b>	<b>Title</b>
137 Journal of Maritime Studies 22 (July/August 2004)	The Legal Status of Out-of-Service Submarine Cables
Schoenbaum	Admiralty and Maritime Law, 4 <sup>th</sup> Ed. (2001), Chapter 16 [Salvage] (General information on the laws of salvage and finds)
Submarine Cables: The Handbook of Law and Policy – Publishers: Martinus Hijoff (2014)	Chapter 8, Out-of-Service Cables

## 5. DEFINITIONS

The following words, acronyms and abbreviations are referred to in this document.

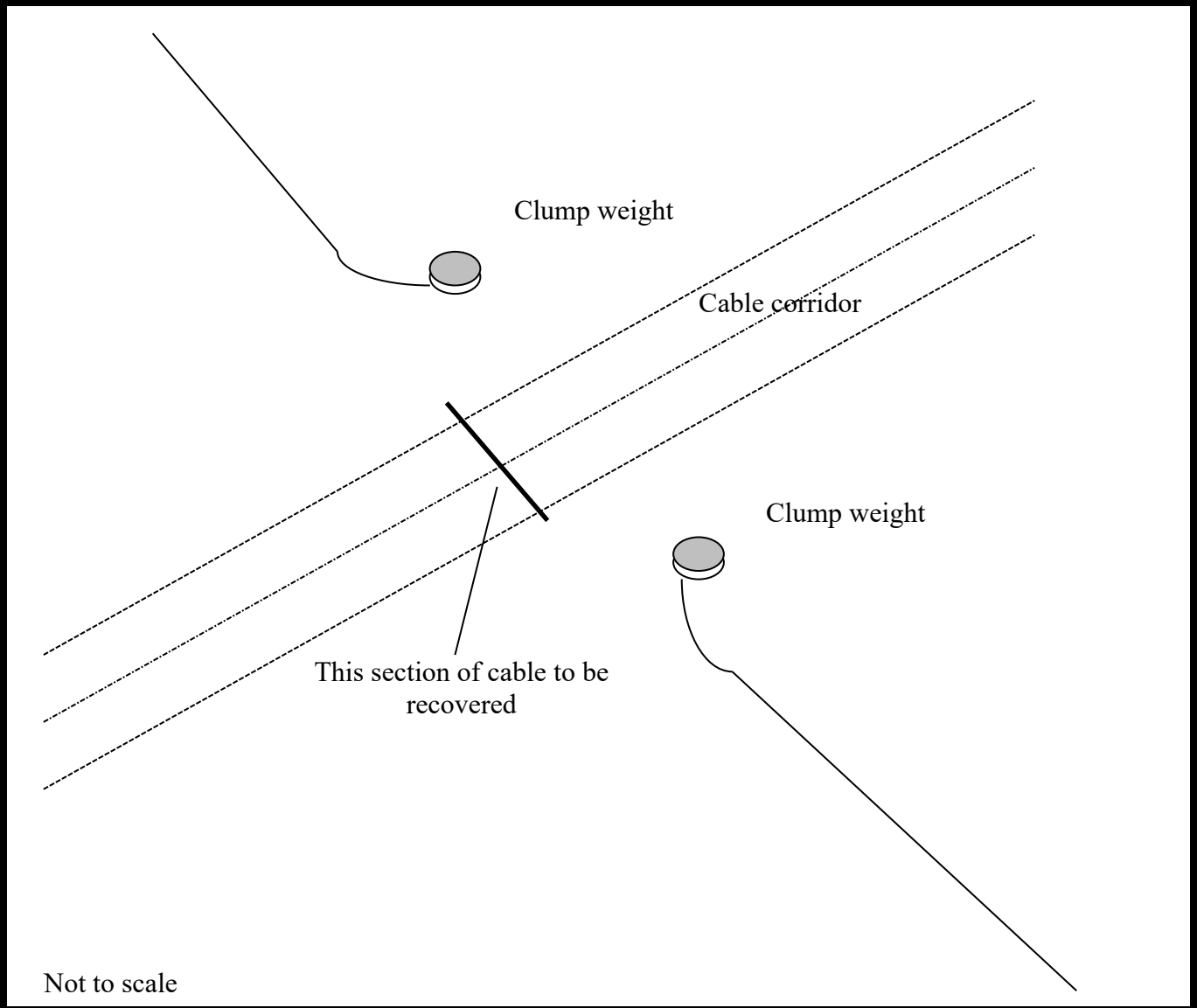
<b>Term</b>	<b>Definition</b>
<b>Bird Caging</b>	Bird caging is caused when an armoured cable is cut or damaged and the armour wiring is mechanically cut. The tightly wound armour wire is then released and spreads out to form a birdcage shape. Bird caging increases the risk of fishing gear snags. Bird caging is avoided by capping a cut cable or attaching clump weights following standard cable industry practices.
<b>Hull &amp; Machinery Policy</b>	Marine insurance on the vessel and its machinery for loss, damage, salvage charges, collision, general average and expenses associated with these claims or their avoidance.
<b>Out-of-Service</b>	The status where a submarine cable is part of a decommissioned telecommunication or electrical transmission system.
<b>Protection and Indemnity (P&amp;I) policy</b>	Marine insurance for risks not covered by the hull & machinery policy including contractual liabilities and claims by third parties and their legal defence.
<b>UNCLOS</b>	The United Nations Law of the Sea Convention (1982) (Articles 21, 51, 58, 78, 79, 87, 112-115, and 297 deal with submarine cables)

## 6. ATTACHMENTS

<b>Document Number</b>	<b>Title</b>
-	Diagram

**DIAGRAM**

Treatment of cable ends when recovering sections of out-of-service cables for pipeline or cable crossing.



The clump weights shall be concrete discs, typically 0.5 metres diameter by 0.2 metres thick, or other thin sectioned weights, alternatively chain may be used. The object of the weight is to minimise risk of fastening to fishing gear.

UNCONTROLLED COPY WHEN PRINTED  
(Please check website for current version: [escaeu.org](http://escaeu.org))



# ESCA Guideline No.8

## Guidelines for Submarine Cable Decommissioning

*The information supplied in this document ("Information") has been compiled by members of the European Subsea Cables Association based upon their shared experience and knowledge of the industry and is published in good faith with the aims of promoting the highest standards of reliability and safety in the submarine cable environment. Whilst the European Subsea Cables Association believes the Information to be valid, it is up to the individual members or others who may seek to rely on such Information to satisfy themselves as to the accuracy thereof. The European Subsea Cables Association does not accept any liability for any errors in the Information or for any adverse consequences arising from its adoption.*

**Document History**

Issue No.	Name	Comments	Date
1		Initial Issue	Jun 2005
2		Revision to format	Sep 2006
3		Subgroup name changed. Revised for government department changes	Aug 2011
4		Revision to format	May 2012
5		Re-branding to ESCA	Mar 2016

## Table of Contents

<b>1</b>	<b>Introduction .....</b>	<b>4</b>
<b>2</b>	<b>Recommendations.....</b>	<b>4</b>
<b>3</b>	<b>Decommissioning Issues .....</b>	<b>6</b>
3.1	General .....	6
3.2	Safety & Risk .....	6
3.3	Legal Status, Permitting Issues & Liabilities.....	7
3.3.1	Legal Status .....	7
3.3.2	Permitting Issues.....	7
3.3.3	Liabilities .....	8
3.4	Commercial.....	8
3.5	Environmental .....	9
3.6	Cable & Plant Disposal .....	9
3.7	Liaison Activities .....	10
3.8	Other uses for Recovered Decommissioned cables.....	10
<b>4</b>	<b>Operational Issues .....</b>	<b>11</b>
4.1	Cable Recovery .....	11
4.1.1	Beach Clearance Operations.....	11
4.1.2	Marine Clearance Operations.....	11
4.1.3	Cable Owner’s Representatives .....	11
4.2	Cable Abandonment .....	11
4.3	Licences, Permits & Wayleaves.....	12
4.4	Liaison Activities .....	12
4.5	Cable & Plant Disposal .....	13
4.6	Repeaters & Joints .....	13
4.7	Review & Reporting .....	13
<b>5</b>	<b>Definitions &amp; Acronyms .....</b>	<b>13</b>
<b>6</b>	<b>Links &amp; Attachments.....</b>	<b>14</b>
6.1	Internet Links .....	14
6.2	Appendices .....	15
6.2.1	UK Continental Shelf Boundaries.....	15
6.2.2	Typical Completion Report for Crown Estate .....	15

## 1 Introduction

The purpose of this recommendation is to provide technical and operational guidance to the membership of EUROPEAN SUBSEA CABLES ASSOCIATION, on all topics associated with the decommissioning of submarine cables in UK territorial waters.

This recommendation only covers the decommissioning of submarine cables in the UK and Irish Waters (Including the Channel Islands, & the Isle of Man), and should be read in conjunction with ICPC Recommendation No1 (Management of Redundant and Out-of-Service Cables).

This recommendation is intended to provide a forward looking view on 'Industry Best Practice', and address the following issues:

- Cable Decommissioning Recommendations
- Cable Decommissioning Issues including - Safety & Risk management, Legal & Permitting, Commercial, Environmental, Cable & Plant Disposal & Liaison Activities
- Operational Issues including - Cable Recovery, Cable Abandonment, Licences & Permits, Liaison Activities, Cable & Plant Disposal, Repeaters & Joints, Review & reporting

For the purposes of this recommendation, UK waters are defined as the area between the Mean High Water Mark to either the 12mile limit, the Median Line or the Continental Shelf Edge as appropriate.

This recommendation is provided by EUROPEAN SUBSEA CABLES ASSOCIATION and is intended to provide guidance to the EUROPEAN SUBSEA CABLES ASSOCIATION membership only. This recommendation is not mandatory.

## 2 Recommendations

2.1 It is recommended that when taking any submarine cable out of service from UK waters, 'the specific decommissioning requirements of each cable shall be investigated on a Case by Case basis', taking full account of the individual company's obligations and each systems' individual physical, environmental, licensing & permitting requirements.

2.2 It is recommended that before a cable owner decommissions any cable system, they determine a clear 'Decommissioning Objective', which is supported by a 'Decommissioning Strategy' to assist them meet these objectives.

Typical examples are shown below:

Decommissioning Objective - To terminate all redundant licences, radically reduce fees and reduce the risks of future fishing compensation claims.

Decommissioning Strategy - To decommission cables taking account of their physical & environmental conditions, attempting to recover all plant that is or is likely to conflict with other

marine stakeholders, and leaving cables ‘in situ’ where it is likely to create an adverse environmental (or other) impact by removing them.

- 2.3 It is recommended that all members shall consider the Guidelines (shown in table 1 below) which shall be integral to the investigation referred in 2.1 above.

<b>Table 1 – EUROPEAN SUBSEA CABLES ASSOCIATION - Guidelines for Cable Recovery</b>		
	<b>Location</b>	<b>Guideline</b>
<b>1</b>	Beach, area between land and Low Water Mark	Generally <b>Recover</b> cable to leave beach clear from potential exposed cables in the future.  Please refer to section 4.1.1
<b>2</b>	Low Water Mark to 12 Nautical Mile Limit (or Median Line if less than 12 miles)	Investigate on a case by case basis. Generally <b>Recover</b> cable if it is on seabed surface, burial is marginal or the cable presents a hazard to other seabed users. Cable may be left if it is well buried in a stable seabed. Reference shall be made to the terms of the Crown Estate licence.
<b>3</b>	12 Nautical Mile Limit to Median Line or EEZ or Continental Shelf Edge	Reference should be made to ICPC Recommendation No 1.  Investigate on a case by case basis. Generally <b>Leave</b> cable, but can recover if cable on seabed surface, burial marginal or presents a hazard to other seabed users.
<b>4</b>	Deep water, beyond Median, EEZ or Continental Shelf Edge	Please refer to ICPC Recommendation No 1

- 2.4 It is recommended that all members shall conduct a risk assessment on the affects of cable recovery on the environment, which shall be integral to the investigation referred to in 2.1 above.

This should be based on a ‘pre-recovery desk-top’ assessment of the as-laid cable. A copy of the EMU LEA (Limited Environmental Appraisal) is available on the EUROPEAN SUBSEA CABLES ASSOCIATION website ([www.escaeu.org/members/reports](http://www.escaeu.org/members/reports) ), which may be used for this purpose.

- 2.5 It is recommended that where cable is to be recovered, within the 12 nautical mile limit, the cable route should be divided into homogenous sections each of which can be defined by one of the following three recovery categories:

1. **Fully recovered.** Cable corridor is completely cleared of the cable.

2. Not recovered. Cable left in situ in the corridor, for reasons other than environmental, eg cable is buried too deep to recover intact, cable is beneath another cable or pipeline etc.
3. Environmental. Cable left in situ on environmental grounds. May or may not be buried, ie there may be environmental reasons to leave the site alone regardless of the state of the cable.

**Note.** The cable corridor is the track of the cable together with its no-works zones as defined in the relevant Crown Estate Licence.

- 2.6 It is recommended that the scope of any cable recovery is agreed with the relevant licensing authority, in writing, before any recovery operations commence. The relevant authorities include but are not limited to the MMO & DEFRA (via MCEU), the Crown Estate (under the terms of the licence for the cable system), and the relevant land owner for cable between the mean High & Low water marks.
- 2.7 It is recommended that all recovered cable & plant will be disposed of in a responsible manner, in accordance with all current applicable national and international legislation.
- 2.8 It is recommended that during cable recovery operations, as a minimum liaison shall be conducted with the local and national fishing organisations as defined in the EUROPEAN SUBSEA CABLES ASSOCIATION Recommendation No 1 (Fishing Liaison).
- 2.9 It is recommended that these recommendations are read in conjunction with the ICPC Recommendation No 1 – Cable Recovery, and that the ends of cables left in-situ are treated as specified in that document.

### 3 Decommissioning Issues

#### 3.1 General

When an owner or operator is considering decommissioning a Submarine Cable, there is a broad spectrum of issues which need to be considered. The issues highlighted in the following sections (3.2 – 3.8) are a brief summary of the more critical areas, and provide some background information as well as the EUROPEAN SUBSEA CABLES ASSOCIATION view for the long term.

#### 3.2 Safety & Risk

In deciding the desirability of recovering a decommissioned cable system or section, a major consideration has to be the duty of care that the cable owner has towards other seabed users, marine operators and any other parties that may be relevant to a specific case. Due to the diverse nature of the marine environment, every case must be considered on the particular circumstances that are relevant to that section, segment, system and environment.

At beach landings the cable is generally buried, however with a number beach materials the shifting of sand or gravel in storms or due to local conditions can expose the cable, potentially creating a hazard to the general public. This risk should be carefully considered during the decommissioning process.

In Offshore areas, the initial consideration is the fishing industry, with the safety of crew and in extreme cases the actual vessels if fishing gear can foul a cable. However, in the shallow waters immediately off cable landings concerns can arise of small leisure craft fouling their anchors, divers

who could be injured on exposed corroded armour wires, and immediately off the beach the general public.

If a cable is well buried none of these concerns should arise, but the passing of time can lead to a buried cable being exposed, particularly in a sandy seabed, by long shore drift, violent storms, or possibly nearby dredging activity.

If the cable has been surface laid on a rocky seabed then these concerns will be immediate and clear. However, where the cable has been buried a risk assessment should be made of the type of seabed and the chances of cable exposure over time.

Equally, where the cable has been buried in a stable seabed the assessment must be made of the risk that attempting recovery may create a hazard where none existed before, such as a broken cable end which can be fouled by fishing gear, or again close to shore pose a hazard to the general public.

Where a cable has been laid close to port approaches, it may be limiting the seabed available as a vessel anchorage. Whilst the cable is in service it will be clearly marked on navigation charts, but upon decommissioning it may be removed giving the false impression to the mariner that it is safe to anchor. A fouled anchor may endanger the safety of a vessel in bad weather or strong tidal currents, whilst clearing a fouled anchor is always a safety risk to the crew members carrying out the task.

In summary, the UK submarine cable industry is responsible for assessing the risks of any of its activities, but must appreciate that the decisions made today affect the safety of many for years to come.

### 3.3 Legal Status, Permitting Issues & Liabilities

#### 3.3.1 Legal Status

The range of legislation and regulations that might cover cable recovery is wide and continually changing, such that it is not practicable to list relevant items in this Recommendation. However, it is recommended that legislation is reviewed widely, covering in particular any new legislation that may apply to the cable corridor now that did not exist or apply at the time of cable installation. A starting point is given in ICPC Recommendation No.1.

Checks should be made within:

- EU Recommendations and Directives
- Resultant national state legislation and regulations
- Local environmental directives and recommendations.

Subject areas for research should include:

Habitats; birds; coastal conservation areas; underwater heritage & conservation areas; air, sea surface, submarine, seabed environment; sound pollution; waste pollution; waste Duty of Care and disposal, etc.

#### 3.3.2 Permitting Issues

##### Government Permits

It is recommended that the route installation consent provided for the cable by DfT/DEFRA, or the Scottish Office at the time of installation be consulted for any conditions on recovery terms. In some cases a new consent may be required for recovery if the original consent was considered to be for installation only and expired once the cable entered service. In other cases it has been found that the authorities may consider the original consent as giving permission for recovery without further consent being required.

##### Crown Estate

Issued and Owned by: Technical & Regulatory Subgroup

Issue No: 5

Date: 23<sup>rd</sup> March 2016

In the case of the Crown Estate Licence, required for all cables landing in the UK, the recovery terms in the respective licence should be consulted. It is recommended that the Crown Estate should be advised of the intended scope of recovery of the cable within its defined corridor, based on the recovery categories described in Recommendation 2.5 above and then advised again on the completion of the recovery works.

Note that in general, the agreement of the Crown Estate is required for leaving cable on the seabed. The exact terms will be given in the individual licence, but these may be negotiable depending on the age of the system, and the outcome of the investigation proposed in Recommendation 2.1. If the number of cable sections left on the seabed is large, for any one company (regardless of the cable system they came from), it is possible to have a 'company' Deed agreed with the Crown Estate to record these sections and to define ongoing liabilities for the cable owner. This Deed may then replace the original licences for each cable system, which would otherwise need to continue at the appropriate annual fee until all cable is actually recovered.

#### Other Permits and Wayleaves

It is recommended that the other permits, consents, wayleaves etc are consulted for recovery terms. These would cover the beach landing and any private wayleaves covering land cable above the high water mark and the cable station.

#### 3.3.3 Liabilities

Any cable or component parts of cables or recovery works left on the seabed after a cable is decommissioned always remain the property of, and liability of the cable owner. This obligation originated in the Submarine Telegraph Act of 1885 and is more fully described in the EUROPEAN SUBSEA CABLES ASSOCIATION Members Handbook, Section 3 (Legislative Background).

It is recommended that the cable owner thus plans for liability to third party claims after decommissioning, mainly from fishermen if they foul on a cable end that has become exposed. Note that the Crown Estate are particularly keen to avoid becoming liable for such third party activity and any subsequent Deed covering decommissioned cable sections (see 3.3.2 above) will ensure they are not liable.

One area where a cable owner will have an ongoing liability is to be responsible for the recovery of any cable section that is only left on the seabed because it is trapped under a crossing of another in-service cable or pipeline. In this instance, it is best industry practice for the owner to engage in a dialogue with the owner of the other product, and to agree a future recovery strategy. However, liability remains with the original cable owner unless ownership is legally transferred.

### 3.4 Commercial

There are a number of commercial drivers which individual cable owners may wish to take into account during the cable decommissioning decision making process. These commercial drivers should be assessed by the owners on a case by case basis as specified in Recommendation 2.1, to balance short term financial savings with the long term environmental & strategic affects decommissioning decisions may have on the Industry as a whole.

EUROPEAN SUBSEA CABLES ASSOCIATION cannot provide guidance on any specific commercial matters, but trusts that its members will consider the future, and make decisions based on sound & responsible rationale.

### 3.5 Environmental

The installation of a submarine cable creates impacts on the receiving environment that are assessed at the development stage, with mitigations implemented where appropriate. The impacts of removal of a cable at the end of its service life may not be the same as those obtaining at installation since:

- Removal processes may be different and more or less significant to the environment than the installation processes used
- Over the operational lifetime of a cable, it could conceivably have become a significant factor in the local ecology
- Perception of ecological values in areas the cable transits may have changed over time
- The regulatory regime as it relates to the areas the cable transits may have changed over time

All these points require that, in conjunction with other Project imperatives, the cable owner and the cable recovery contractor take due regard of the environmental impact of either removing the cable or leaving it in situ.

In the current regulatory regime it is not likely that an Environmental Impact Assessment (EIA) will be a requirement for consent to recover a cable, where such consent is needed. However, a consenting authority may require that an ‘appropriate assessment’ is carried out to assess the impacts of the cable’s removal.

It is prudent for a cable owner to be pro-active in understanding the environmental impacts that might result from his actions, even where consent is not required.

Generally the environmental agenda is developing in significance with increased surveillance of projects, including those that hitherto have been non-EIA and ‘below the horizon’. Projects, including decommissioning, can face significant risk of delay or failure if environmental constraints are not identified and the risks addressed early.

To this end the use of the BT/AT&T sponsored ‘Limited Environmental Assessment’ (LEA), as referenced in Recommendation 2.4 above, may be a valuable first step in providing an insight into the broad environmental values affecting the cable route and the likely impacts of removal.

The LEA may be sufficient to inform the consenting process (if required) and will also identify areas that may require more detailed assessment by the cable owner.

### 3.6 Cable & Plant Disposal

All cable owners and operators have a Duty of Care under the EPA (Environmental Protection Act - 1990) to ensure that ‘all reasonable steps’ are taken to ensure that waste is disposed of in a responsible manner, which prevents pollution of the environment.

It is currently industry best practice for recovered submarine cable to be recycled. By using properly licensed contractors & processes, it is common to recycle the majority of the constituent parts of the cable & plant.

In order to comply with the EPA, the following basic principles must be followed;

- Waste shall be securely contained to prevent it escaping into the environment during storage and transit.
- Waste shall only be transferred to someone licensed to carry or manage it.

- Records shall be kept, which must include the full and accurate description of the waste, and any special requirements that may affect its handling. Copies of all licences must be retained by the waste originator for a minimum of two years after disposal.
- Even when the waste has been transferred to a suitably licensed person, the owner's liability does not cease as appropriate measures must be taken to ensure that others involved in handling or disposal comply with the law.

Failure to comply with the EPA is a criminal offence and can lead to fines and /or imprisonment (of up to 5 years) for both the company and its directors, and the individual managers who arranged for the disposal.

As most EUROPEAN SUBSEA CABLES ASSOCIATION members do not arrange for direct disposal of their waste, they must ensure that the person they select for the storage, transport & disposal is suitably licensed and must be one of the following;

- a) A waste collection authority (normally the local authority) or in Scotland a waste disposal authority or
- b) A person who is the holder of a waste management licence under the Environmental Protection Act 1990 or
- c) A person who is the holder of a disposal licence under section 5 of the Control of Pollution Act 1974.
- d) A licensed carrier under section 2 of the Control of Pollution (Amendment) Act 1989.

### 3.7 Liaison Activities

It is recommended that Liaison activities are conducted with all applicable stakeholders. The list of organisations that must be liaised with varies considerably, and depends on a wide variety of circumstances. However experience has shown that 'pro-active' liaison activities can significantly improve relations during decommissioning operations, and will generally fall into one of the following two categories:

Permitting – Liaison that is required in order to obtain or comply with a consent, such as with licensing authorities, land owners and other marine plant operators. Note that this typically takes a minimum of 12 weeks from initial contacts.

Operational – Liaison that is required in order to conduct a recovery operation, such as with local fishing communities, and other marine plant owners.

Note that this can be achieved in 4 weeks, but typically best practice is to allow 12 weeks.

### 3.8 Other uses for Recovered Decommissioned cables

During the decommissioning of a submarine cable, there are a number of 'Non-Disposal' scenarios that can be considered for the recycling of submarine cable and plant. The main considerations must be that the new use is environmentally and legally acceptable, and that all future liabilities associated with the cable are transferred to the new owner. These options include but are not limited to:

Recovery for re-use – Submarine systems can be either recovered in full working condition, which enables them to be re-laid and re-used as a working submarine system, or alternatively may be left in situ for another owner, which may provide for a new use such as for the scientific community.

Recovery for use in Artificial Reefs – There are a number of sites around the world where submarine cables are used to construct artificial reefs. These reefs are being built for a number of purposes, but submarine cable has been shown to be a flexible construction material, which can actively promote the creation of new marine habitats. Research is currently being conducted in the UK to investigate the potential of this scenario in UK waters.

## **4 Operational Issues**

### **4.1 Cable Recovery**

#### **4.1.1 Beach Clearance Operations**

When clearing submarine cables from a beach, the recovery operation should be scheduled to coincide with a Low Spring Tide, and the cable recovered and cut at the Low water position. It is also best practice to terminate the cable end in such a manner that avoids future exposed stray ends in the surf zone, which could become hazardous.

#### **4.1.2 Marine Clearance Operations**

If it is decided that a submarine cable is to be recovered for any distance offshore, then the recovery operation should be carried out in accordance with ‘best industry practice’, using a contractor which operates in compliance with all relevant international and national legislation relating to submarine cables and health and safety. The recovery operation should also be conducted such that other seabed users should not be hampered or endangered by any out of use cable remaining. The guidance of ICPC Recommendation No 1 on cable recovery should be followed.

The technical specification and scope of work for cable recovery should form part of the contract with the contractor. The contractor should be provided with all appropriate information necessary to undertake the scope of work (e.g. cable ownership, maintenance records, Route Position Lists and Straight Line Diagrams for the cable section to be recovered, and cable and/or pipeline crossings with any specific requirements from those plant operators).

Where a crossing occurs with another cable, the relevant cable owner should be advised of the impending recovery and consulted about the proposed procedures in the vicinity of the cable crossing. Where the cable to be recovered is under the other cable, a safe distance to cease recovery from the crossing should be agreed. Even if the cable for recovery is on top, liaison should occur. Relevant cable crossing agreements should be consulted for recovery terms.

Where a crossing occurs with a pipeline, regardless of whether under or over, the crossing agreement should be consulted, as most will have a section on decommissioning. Liaison with the pipeline operator should be initiated, and procedures agreed.

The contractor should conduct the recovery along the route of the cable where specified by the Cable Owner. All National, International & Environmental laws should be adhered to by the Cable Owner and its contractors at all times.

#### **4.1.3 Cable Owner’s Representatives**

It is recommended that an owner’s representative be on board the recovery vessel or on the beach as appropriate to oversee the operations at all times.

### **4.2 Cable Abandonment**

Any cable that is not recovered, for any reason, must be left so as to cause minimum impact on the surrounding environment, and to other seabed users. Where bare ends are left on the seabed, they must be weighted and laid onto the seabed in accordance with ICPC recommendation No1, and the positions recorded.

### 4.3 Licences, Permits & Wayleaves

Prior to the recovery or otherwise of any submarine cable & plant, all the relevant licenses and wayleaves should be consulted, to determine if they contain any specific decommissioning requirements. Once the cable owner has reviewed these, a 'Decommissioning strategy' can be developed to meet the owner's specific objectives, in accordance with the recommendations within section 2.

A period of consultation should then be conducted to ensure that this strategy is acceptable, complies with the terms of the licences, and will result in the cable owners meeting their specific decommissioning objectives. Consultation is typically required with the following organisations,

Beach Cable (Above MLWM)

Beach Owner, this could be a private land owner (such as the Duchy of Cornwall) or a local council/authority.

English Nature – Permission to work is required from MCEU. On beaches, or in other areas protected under environmental legislation sites such as those designated as SSSIs, SACs or SPAs, English Nature provide advice to authorities on environmental issues, and therefore a direct consultation is recommended.

Marine Cable (MLWM to 12 nautical mile limit) –

MCEU – A Permit is required in English and Welsh waters to conduct cable recovery operations.

Crown Estate – The Crown Estate requires notification of cable recovery operations, and may require notification / consultation if payments are to be reduced or stopped. Where a cable is to be recovered out to the 12 mile limit in order to clear it from the Crown Estate land, it would be wise to request from the Crown Estate at the planning stage what position on the cable route they define as the edge of their property.

English Nature – Permission to work is required from MCEU. On beaches, or in other areas protected under environmental legislation sites such as those designated as SSSIs, SACs or SPAs, English Nature provide advice to authorities on environmental issues, and therefore a direct consultation is recommended.

Joint Nature Conservation Committee - JNCC fulfil the same function as English Nature from the 12 nautical mile limit out to the limit of UK jurisdiction and therefore a direct consultation can be conducted. However, this is a complicated area of law, and reference should be made to ICPC Recommendation No1 prior to any direct consultation.

### 4.4 Liaison Activities

Whilst the MCEU will consult other stakeholders in relation to any planned recovery operation, it is industry best practice for the owner to be aware of the likely relevant stakeholders, and to independently consult with them, early in the decommissioning process. This will highlight any potential problems early in the decommissioning process, and help the owner to determine solutions to any contentious issues prior to the MCEU consultation. Failure to do this could result in delays to the recovery operation.

Typical organisations that should be consulted include but are not limited to:

Local & national fishing community, local authorities, English Nature.

## 4.5 Cable & Plant Disposal

When recovering submarine cables, both the cable owners and marine contractors have a Duty of Care under the EPA (Environmental Protection Act - 1990) to ensure that ‘all reasonable steps’ are taken to ensure that waste is disposed of in a responsible manner, which prevents pollution to the environment.

It is currently industry best practice for recovered submarine cable to be recycled. By using properly licensed contractors & processes, it is common to recycle the majority of the constituent parts of the cable & plant.

Further details are provided in section 3.6.

## 4.6 Repeaters & Joints

During the recovery of submarine cable, it is highly likely that additional plant such as repeaters and joints will also be recovered. The same strict disposal criteria that apply to cable (4.5 above) also apply to these. Such plant should be identified within the scope of work for each recovery and disposal activity.

Joints will be disposed of in a similar manner to the submarine cable, but repeaters will require separate arrangements as they contain a variety of different components.

Note: Some older systems may contain devices with radio-active content, which require specialist handling.

## 4.7 Review & Reporting

On completion of any recovery operation, the Cable Owner must review the results of the operation to ensure that the objectives have been met.

In addition to the normal contractor’s comprehensive Completion Report, a summary final report should be compiled, which contains sufficient positional information only for the Hydrographic Office, Kingfisher, the MMO, the Crown Estate, relevant land owner, & centralised charting parties (such as the GMSL/ASN/Tyco, ACMA etc).

The purpose of this summary report should be to clearly convey to these parties the information relevant to them, without it being lost within the detailed information provided by a normal contractor’s completion report. If planned with the contractor in advance, this summary report will consist simply of certain pages extracted from the main Completion Report, and should therefore not result in addition work.

An example of a summary recovery operation report is provided in the appendices.

It is important that the final report fully addresses the final state of the cable sections left on the seabed and this should correlate with the planned works as agreed with, at least, the Crown Estate, or explanations given on any discrepancy. The objective is to enable the Crown Estate to update their database on cable corridors and to avoid conflict as they may have the right under their licence, to insist on further recovery works.

## 5 Definitions & Acronyms

DEFRA – Department for Environment, Food & Rural Affairs

DfT – Department for Transport

EEZ – Exclusive Economic Zone  
EIA – Environmental Impact Assessment  
EPA – Environmental Protection Act (1990)  
EU – European Union  
ICPC – International Cable Protection Committee  
LEA – Limited Environmental Appraisal  
MCEU – Marine Consents & Environment Unit  
MHWM – Mean High Water Mark  
MLWM – Mean Low Water Mark  
MMO – Marine Management Organisation  
SAC – Special Area of Conservation  
SPA - Special Protected Area  
SSSI – Site of Special Scientific Interest  
UK – United Kingdom  
UKCS - UK Continental Shelf

## **6 Links & Attachments**

### **6.1 Internet Links**

Crown Estate

<http://www.crownestate.co.uk/>

Department for Environment, Food & Rural Affairs

<http://www.defra.gov.uk/>

Department for Transport

[http://www.dft.gov.uk/stellent/groups/dft\\_control/documents/homepage/dft\\_home\\_page.hcsp](http://www.dft.gov.uk/stellent/groups/dft_control/documents/homepage/dft_home_page.hcsp)

EMU Limited Environmental Appraisal – Link via the EUROPEAN SUBSEA CABLES ASSOCIATION website

<http://www.escaeu.org>

ICPC Recommendation No 1 – Link to website

<http://www.iscpc.org/>

Marine Consents Unit

[http://www.mceu.gov.uk/MCEU\\_LOCAL/mceu1-test-E.htm](http://www.mceu.gov.uk/MCEU_LOCAL/mceu1-test-E.htm)

European Subsea Cables Association

<http://www.escaeu.org>

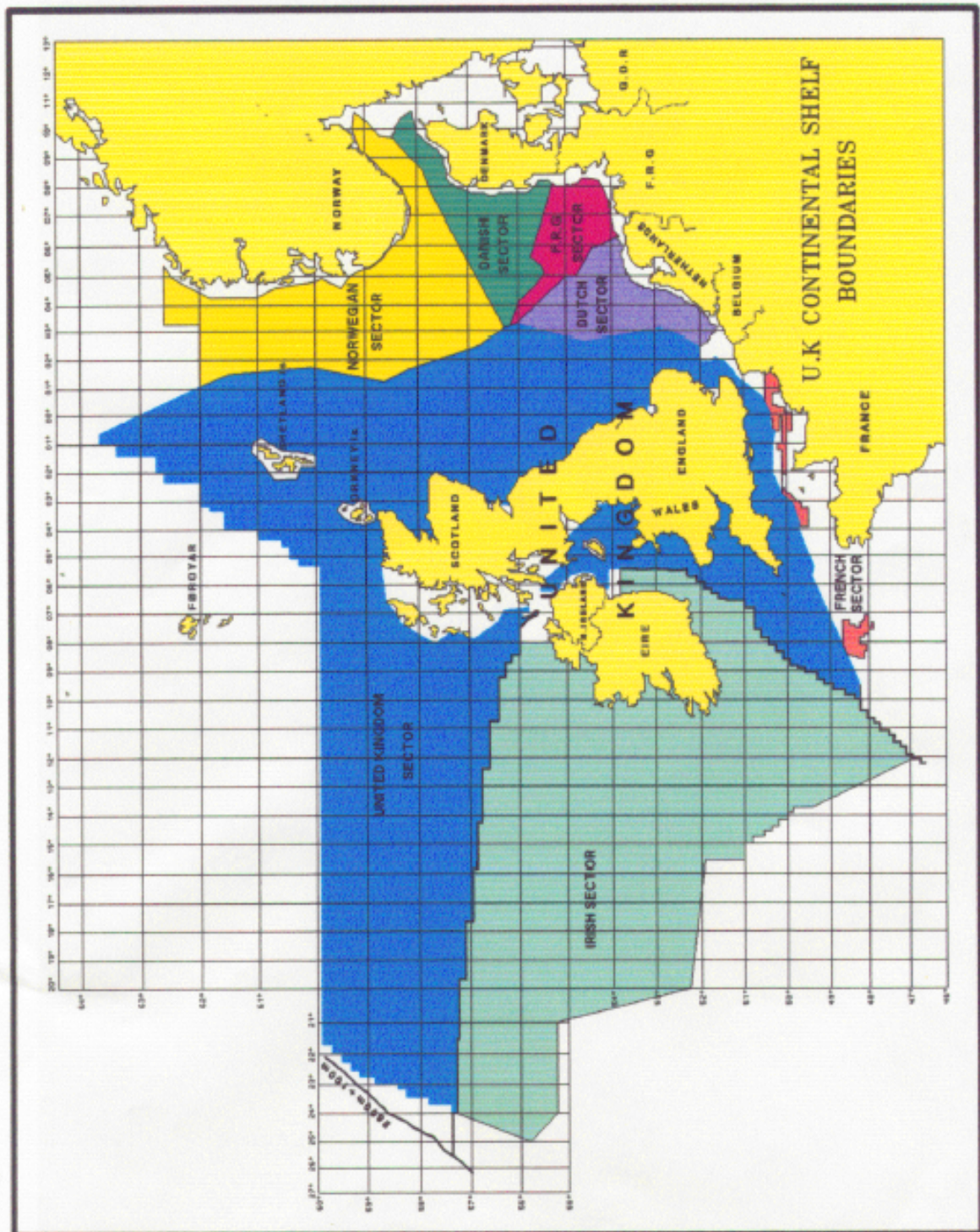
## **6.2 Appendices**

### **6.2.1 UK Continental Shelf Boundaries**

### **6.2.2 Typical Completion Report for Crown Estate**

Appendix 6.2.1

Chart showing UK Continental Shelf Boundaries



## **Appendix 6.2**

For Typical Completion Report for Crown Estate see separate EUROPEAN SUBSEA CABLES ASSOCIATION document 4.8, appendix 6.2.

**ESCA**  
EUROPEAN   
**SUBSEA CABLES**  
 ASSOCIATION