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Diamond Transmission Partners Walney Extension Ltd Decommissioning Programme

Document History

Issue	Date	Summary of Changes / Reasons	Author(s)	Approved By (Inc. Job Title)
1	09/11/19	First issue from draft v3 with sections 5.2, 6.1, 6.8 and 10 amended in line with BEIS comments dated 14/06/19 and 25/07/19.	T Gwatinyanya/ J Matthews	G Thornton
2	14/12/19	Sections 1, 4, 6.4, 6.6, 6.8, 7 and 15 updated.	T Gwatinyanya/ J Matthews	G Thornton

TABLE OF CONTENTS

Contents

TABLE OF CONTENTS 2
1 INTRODUCTION 3
2 EXECUTIVE SUMMARY 4
3 BACKGROUND INFORMATION 5
4 DESCRIPTION OF ITEMS TO BE DECOMMISSIONED 12
5 DESCRIPTION OF ITEMS TO BE DECOMMISSIONED 13
6 DESCRIPTION OF PROPOSED DECOMMISSIONING MEASURES 16
7 ENVIRONMENTAL IMPACT ASSESSMENT 24
8 CONSULTATION WITH KEY STAKEHOLDERS AND GENERAL PUBLIC 29
9 COSTS AND FINANCIAL SECURITY 30
10 PROPOSED DECOMMISSIONING SCHEDULE 30
11 PROJECT MANAGEMENT AND VERIFICATION 31
12 SEA-BED CLEARANCE 31
13 RESTORATION OF THE SITE 32
14 POST-DECOMMISSIONING MONITORING, MAINTENANCE AND MANAGEMENT OF THE SITE 32
15 SUPPORTING STUDIES 33

1 Introduction

This document presents the proposed OFTO Decommissioning Programme for the Diamond Transmission Partners Walney Extension Limited ("**DTPWE**") assets and is based upon the Decommissioning Programme[1] proposed by Walney Extension Limited ("**WEL**"). The Decommissioning Programme proposed by DTPWE is informed and supported by the Environmental Impact Assessment ("**EIA**") (PINS reference EN010027) in July 2013.

The project is a 660MW wind farm developed by DONG Energy Walney Extension (UK) Limited.

The Walney Extension project has been awarded a number of primary consents necessary for its construction and operation. Those consents with provisions relating to decommissioning of the offshore wind farm are shown in Table 1.1.

Table 1.1: Walney Extension Consents

Regulation	Legislative Context	Achieved Consents	Authority
Secretary of State for the Department for Business, Energy and Industrial Strategy ("**BEIS**") / Planning Inspectorate ("**PINS**")	Section 36 consent dated 07.11.14	Permission to operate onshore and offshore generating stations with a generating capacity above 50MW	Secretary of State for BEIS/ PINS
Secretary of State for BEIS / PINS	Development Consent Order ("**DCO**")	Consent granted November 2014. DCO grants overall consent for the entire scheme, containing the maximum and minimum design parameters that the project must comply with.	Secretary of State for BEIS/ PINS
Marine Management Organisation	Marine and Coastal Access Act 2009: Part 4 – Marine Licensing	Deemed marine licence granted as part of the DCO awarded 7th November 2014, varied August 2017 and May 2018.	Marine Management Organisation

In accordance with Section 105(02) of the Energy Act 2004, WEL was required to prepare a draft Decommissioning Programme for the Walney Extension Offshore Wind Farm and to submit the document to DECC (now Department for Business & Industrial Strategy ("**BEIS**")) for approval prior to the construction of the wind farm.

WEL's Decommissioning Programme has been submitted to BEIS and was approved on 07 September 2017. WEL in their financial security document state that the OFTO assets will be decommissioned by the appointed OFTO. This will remove any obligations they have under the licence and pass this on to the OFTO.

If possible the generator assets will be decommissioned at the same time as the DTPWE assets after the expected operational life time of 25 years. At the end of

[1] 2.7.5.1 WOW03 04 Decommissioning Programme – Version B, Doc. no.2436309, May 2017

its lifetime, the transmission assets will be decommissioned in order to restore the site as far back to its original conditions as possible.

The Decommissioning Programme will be continuously reviewed and revised throughout the life of the project. These reviews will take into account any changes in legislation, circumstances, technological advancements and regulatory requirements.

DTPWE will adopt the principles of the BEIS programme process stages and will follow the process as set out below.

Stage 1: DTPWE discusses draft Decommissioning Programme with BEIS (including proposed financial security measures), developer and other consultation parties including any additional EIA activities;

Stage 2: DTPWE formal submission of the Decommissioning Programme and approval under the Energy Act;

Stage 3: Reviews and modifications of Decommissioning Programme (and any financial security);

Stage 4: Responsible person ensures decommissioning is carried out in accordance with the programme; and

Stage 5: Responsible person adopts decommissioning monitoring, maintenance and management as specified in the programme.

2 Executive Summary

WEL obtained consents and licences necessary for the construction of the wind farm in 2014. The operational lifetime is approximately 25 years. At the end of this time the objective will be to decommission the asset in accordance with the provisions set out in the various licences obtained.

In accordance with section 105(2) of the Energy Act 2004, WEL submitted its Decommissioning Programme for the Walney Extension project to BEIS (formerly DECC) and was approved on 07 September 2017.

The proposed decommissioning measures set out in this Decommissioning Programme aim to adhere to the existing UK and international legislation and guidance notes. In addition, decommissioning industry best practice will be applied, taking into account the legislation applying at the time of decommissioning of the DTPWE assets. DTPWE will pay full regard to the "waste hierarchy", which suggests that reuse should be considered first, followed by recycling, incineration with energy recovery and, lastly, disposal.

It is difficult to determine the decommissioning schedule, as unforeseen issues can arise during the installation and operation of the assets, which ultimately could affect the decommissioning. At the time of writing, no offshore wind farms (including offshore transmission assets) worldwide have been decommissioned[2], so direct experience of the potential challenges are limited. Once other projects start to be decommissioned, it will provide valuable insight into the timing, costs and operational challenges to be faced.

The proposed decommissioning measures for the offshore components of the DTPWE assets can be summarised as:

- Complete removal of the offshore substation;

[2] [2] Danish windfarm Vindeby (1.8km from shore 4.95MW) decommissioned in 2017. Swedish windfarm Yttre Stengrund (2km from shore, 10MW) decommissioned in 2016. Both projects are small scale and do not include transmission assets. Though they provide valuable insights, these can't be used to benchmark for large offshore transmission systems.

- Offshore substation foundations cut off below seabed and removed; and
- Offshore export and interlink cables cut, weighted down and left in situ; and
- Sections of the export and interlink cables which are not buried and will not remain buried post decommissioning will be cut and lifted off the sea-bed for recycling.

In accordance with the Polluter Pays Principle, DTPWE in conjunction with WEL proposes to clear the seabed in accordance with the provisions made in this Decommissioning Programme and in the Marine and Coastal Access Act 2009 (Marine Licence), and to collect and provide evidence to reflect this.

DTPWE in conjunction with WEL is committed to restoring the site and cable corridors to the condition it was in prior to construction, as far as it is reasonably practicable. The key restoration work will relate to ensuring that all cut foundations are made safe and adequately covered, and ensuring that cable ends is adequately buried.

DTPWE in conjunction with WEL proposes that, following post decommissioning, a full geophysical survey (swath, side scan sonar and magnetometer) is carried out. The survey will be carried out by an independent survey contractor and all results issued to BEIS for review and comment. The area covered by the magnetometer and geophysical surveys will be determined prior to decommissioning, but we are aware of oil and gas installation guidance which specifies a 500 metres radius around any installation.

A cost estimate for the plan has been derived, based on the equipment, personnel requirements and the duration of works. Financial security provisions have been carefully considered to ensure that this liability will be met.

In advance of decommissioning, the EIA will be reviewed to assess the potential impacts that may arise and to identify any additional impacts that were not covered in the initial EIA process and subsequent reviews.

Once the assets are nearing the end of their agreed operational life, DTPWE will initiate a final review of this document and the proposed programme of works. Once this review is complete, a “Decommissioning Programme of Works” will be developed, in conjunction with the wind farm owner, and the schedule of works will be determined in agreement with the statutory authorities.

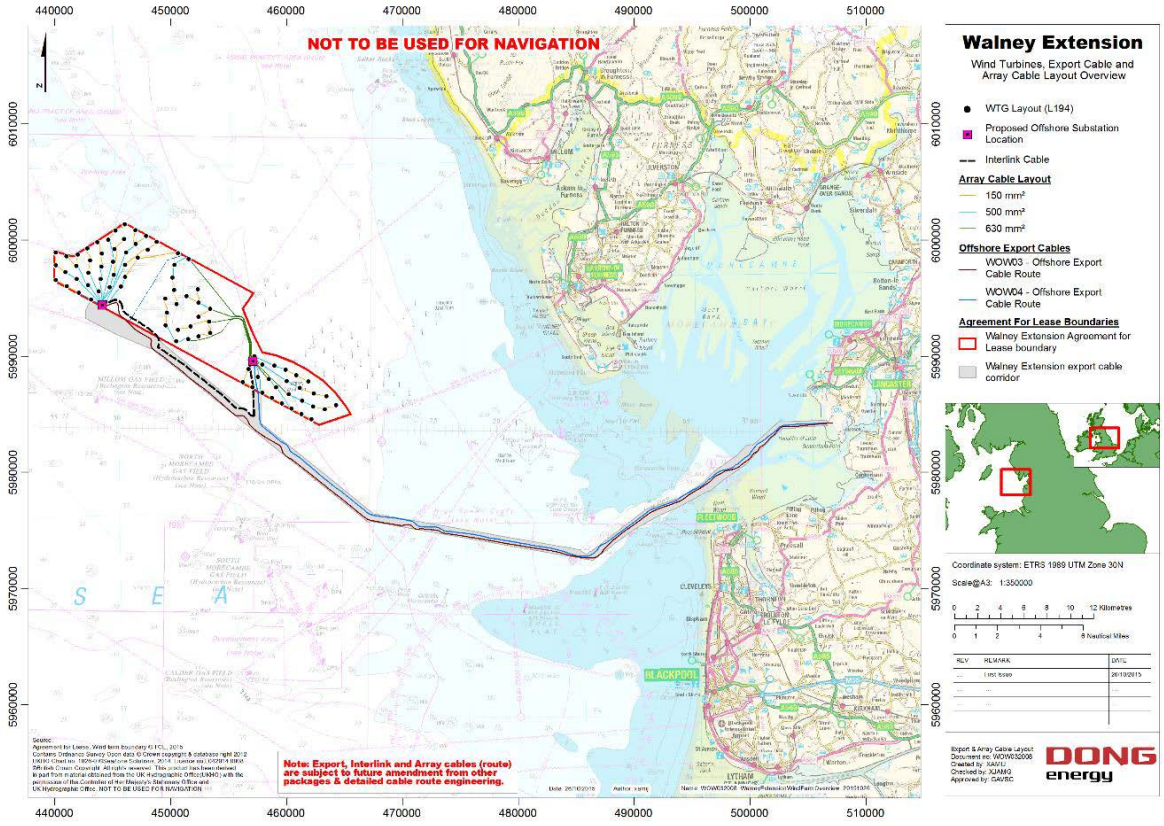
3 Background Information

This section describes the project and gives a brief overview of the biological, physical and human environment in the area.

3.1 Location

The Offshore Site is located approximately 19km west-south-west off the coast of Cumbria. In total, the Offshore Site occupies an area of 149km^2. The location is shown in Figure 3.1.

Figure 3.1: Walney Extension Offshore Wind Farm



3.2 Design and Background

Walney Extension Wind Farm will have an installed capacity of 660MW fed from 87 turbines (47 with a capacity of 7MW and 40 with a capacity of 8MW). Power generated by the turbines will be transmitted through a network of inter array cables.

The array cables will transmit power to two offshore substations.

The two substations have an interlink cable connecting them with an approximate length of 22.8km.

Using a combination of subsea and land cable with an approximate length of 79.6km (75.7km offshore and 3.9km onshore) and 66.3km (62.4km offshore and 3.9km onshore), power will be transmitted to an onshore substation at Middleton called Middleton Substation for connection onto the National Grid, see Figure 3.1.

DTPWE will operate and maintain the Offshore Transmission Assets associated with the Walney Extension Wind Farm.

3.3 As Built Information

DTPWE anticipate that the Construction Design and Management ("**CDM**") Regulations 2015 will apply and will require accurate as-built data as amended during the lifetime of the project to be used as a basis for the decommissioning methodologies. The Developer is responsible at the time of purchase for providing the purchaser with this information. DTPWE will expect that such information is supplied and will include as a minimum:

1. As-built position for all structures;
2. Details of the construction of all structures; and

3. Position depths of burial and other forms of cable protection for all subsea cables (both export cables and inter-array cables).

If at any time during the lifetime of the project the as-built details change, for example, after a repair to a subsea cable, amended details will be prepared for the on-going live status of as-built data.

3.4 Site Characteristics

The site characteristics are described by a comprehensive data set and information collated for the EIA.

3.4.1 Physical Characteristics: Geology, Bathymetry and Morphology.

A brief summary of the key physical characteristics for the offshore locations of the WEOWF site is provided below. Further information about the sub-topics is available in the EIA.

Geology

Surficial sediments at the site are typically sand, gravelly sand and slightly gravelly sand in the north-western part of the Offshore Site and muddy sand in the south eastern part. This material is of variable thickness (typically 12m) overlying a glacial till (consolidated boulder clay).

Bathymetry and Morphology

Locally, water depths vary between 23m to 55m below Lowest Astronomical Tide ("**LAT**") within the offshore site. Depths are greatest along the western boundary of the site (furthest offshore) and shallowest around the eastern margin (closest to the adjacent coastlines). Due to the sedimentary environment seabed levels are relatively stable. However, potentially mobile sand waves present in the northern edge of the Offshore Site imply bathymetry may be temporally and spatially variable in some locations on time-scales of months to years due to potential migration of these features.

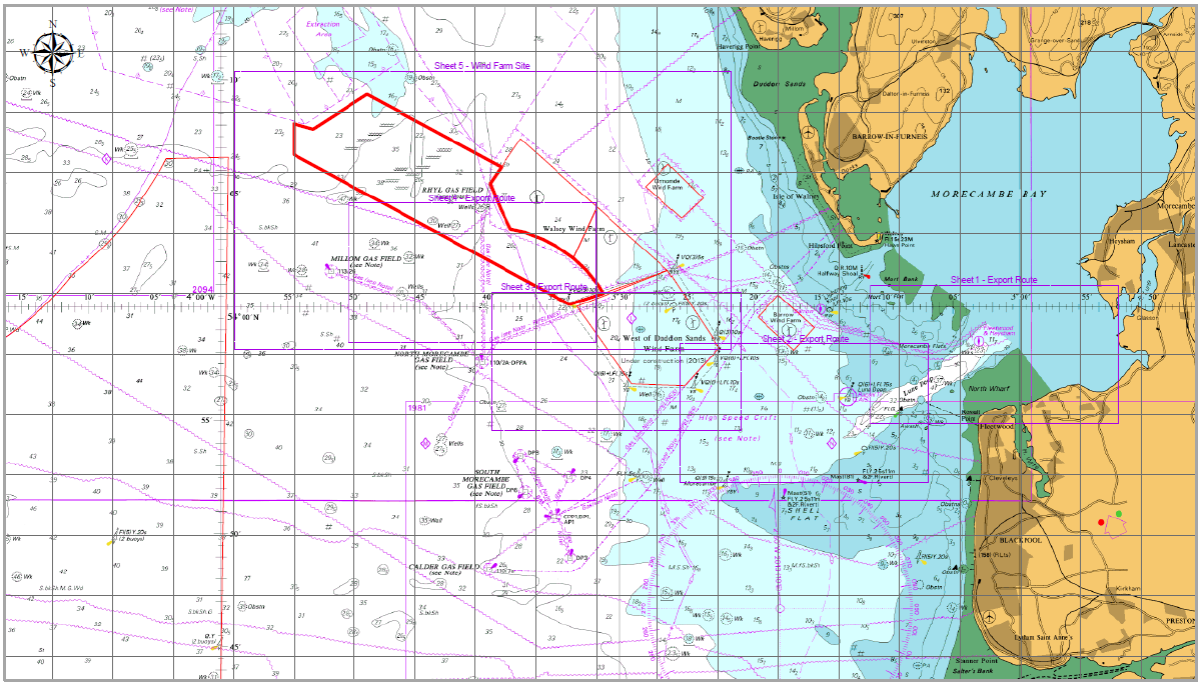
Within the survey area, water depths vary between 57.3m LAT within the Lune Deep and -4.1 LAT at the landfall end of the survey corridor. Within Sections A and B, the seabed generally shoals from 40m LAT to 20m LAT, with a general gradient of <1°. The crest of a sand wave orientated NNW to SSE traverses the corridors in the west, at approximately 452 083mE, 5 988 641mN in corridor A and approximately 452 259mE, 5 987 778mN in corridor B. The sand wave has a height of up to 3m above the surrounding seabed, with gradients of up to 1.5° on its flanks.

Within Section C, the seabed shoals from 20m LAT to a topographic high in the east of the section to 12m LAT, with a gradient of <1°. Interpreted Till outcrops at seabed after this topographic high, forming a broad ridge feature with a height of up to 2m above the surrounding seabed. In the most easterly part of section C, the seabed deepens from 13m LAT on top of the ridge, to 24m LAT at the base. On the flanks of this ridge, gradients reach a maximum of 10°. In the western end of Section D, the seabed gently deepens from 18m LAT to 30m LAT with a gradient of <1°. The seabed then drops down into the Lune Deep, a relict channel formed by ice scour. Water depths within the Lune Deep reach a maximum of 57.3m. The seabed within the western end of the Lune Deep is generally smooth. Gradients reach a maximum of 16° on the edge of an interpreted area of Till outcrop.

Within the inshore section of the route, the seabed shoals from 45m LAT to -4m LAT where the survey corridor reaches landfall. Within the Lune Deep the seabed exhibits a rough nature, with gradients exceeding 20°. In the east of the inshore section, Till is interpreted to outcrop at seabed, resulting in a large ridge that is

up to 10m above the surrounding seabed, with gradients of up to 25° on its flanks. East of the ridge, the seabed shoals to landfall over undulating topography, with an area of megaripples orientated northwest-southeast, up to 50cm high with gradients of 20° on their flanks. A channel is noted traversing the survey corridor near landfall, up to 1m deep, with a gradient of up to 10° on its sides.

Figure 3.4.1: Walney Extension Survey area



3.4.2 MetOcean Coastal Processes and Background Radiation

MetOcean

Tidal behaviour in the area is generally characterised as semi-diurnal and macro-tidal. In the west of the Offshore Site the mean neap and spring tidal ranges are 3.4m and 6.7m, respectively, and the largest astronomical tide range is 8.4m. In the east, the mean neap and spring tide range is 3.7m and 7.5 m, respectively, and the largest astronomical tide range is 9.4m.

At the Offshore Site, waves most commonly come from, and are largest from, the west-south-west.

Typical wave heights during large storms are 2.7m to 5.7m (1:1 year to 1:10 year return periods), although wave heights of up to 6.2m may be experienced during a 1:50 year event. Waves are typically smaller and come less frequently from fetch limited directions such as the north-west (limited by the Isle of Man) or generally from the east (limited by the Cumbrian coastline).

Winds are most commonly from, and strongest from, sectors between south-west and west (225° to 270° N). The longest open fetches for wind (up to 200km) are also from these directions.

Coastal Processes

Sediment transport is predominantly from west to east in offshore areas and mainly driven by tidal asymmetry and residual currents, with higher rates of transport associated with stronger tidal currents, enhanced by wind driven surge and wave action during storm events. The patterns of tidal rotation result in a local convergence and weakening of sediment transport pathways and potential.

This results in a natural sink area for fine sediment in a region called the 'Irish Sea Mud Belt', located between the Project and the operational wind farms, and the adjacent coastlines. Relatively coarser sediments are deposited and become immobile outside of this area as the baseline environment becomes progressively less effective in mobilising them.

Background Radiation

The source of radioactivity in the project area is the seabed sediments, influenced by the input of radionuclides from Sellafield discharges (amongst others). The radionuclide activity in the surface sediments at the wind farm site is (1,272,900 Bq per tonne) are currently significantly lower than the levels qualifying as low waste (4,000,000 Bq per tonne). It is therefore assumed that removal of any of this material during the decommissioning phase will not require disposal at a specialist site for radioactive waste.

3.4.3 **Biological Environment:** Subtidal and Intertidal Benthic Ecology

Designated Areas

A Habitats Regulations Assessment ("**HRA**") was undertaken as part of the DCO application. The HRA considers the potential impacts upon European protected sites, primarily these include Special Areas of Conservation ("**SAC**") and Special Protection Areas ("**SPA**"). Included within the assessment are the sites/ features listed below. The HRA concluded that the project will not have an adverse effect on any of these sites.

- Wintering population of wildfowl and waders in Morecambe Bay SPA and Ramsar sites;
- Wintering populations of red-throated diver and common scoter in Liverpool Bay SPA;
- Breeding populations of herring gull and lesser black-backed gull from Morecambe Bay SPA and Ramsar;
- Breeding population of lesser black-backed gull from the Ribble and Alt Estuaries SPA and Ramsar;
- Breeding population of lesser black-backed gull from the Bowland Fells SPA;
- Atlantic salt meadow habitat and Salicornia habitat of the Morecambe Bay SAC; and
- Breeding Manx shearwater populations of the Copeland Islands SPA, Aberdaron Coast and Bardsey Island SPA, and Skokholm and Skomer SPA.

In January 2016 the West of Walney Marine Conservation Zone ("**MCZ**") was established. A proportion of the Walney Extension Offshore Wind Farm site is covered by the MCZ. As such the impacts to the MCZ will be considered at the time of decommissioning and the guidance in place for the site adhered to (at the time of writing no guidance has been published for the site). As stated in Section 5 the Environmental Statement will be reviewed at the time of decommissioning, and this review will account for the MCZ.

Benthic Fauna

Surveys have shown that the animals recorded at the Offshore Site were typical of those found in shallow coastal waters in the eastern Irish Sea. Important habitats supporting protected cobble reef habitat were recorded along the export cable corridor in close proximity to the Lune Deep and SAC. The Offshore Site cable corridor was adjusted to avoid any interaction with this habitat. The intertidal surveys at the export cable landfall (along a section of the coastline at Middleton Sands) found that no important or highly sensitive habitat was present within the areas surveyed.

Fish and Shellfish Ecology

Spawning and nursery grounds for numerous species have been identified within the project footprint and this has resulted in the implementation of piling restrictions into the DMLs to protect both cod and herring spawning. A number of species of conservation importance may be present in the site or pass through the site on migratory routes. Such species include: European eel; Sea Lamprey; Salmon; Sea Trout; Basking shark and Cod.

Marine Mammals

Information on marine mammals in the vicinity of the Offshore Site area has been obtained from existing data and from data collected during site specific boat-based and aerial surveys. Survey data shows that the Offshore Site is not an important area for marine mammals compared to the southern Irish Sea and Celtic Seas where sightings are generally concentrated. Based on project-specific surveys and wider databases, harbour porpoise and grey seal are likely to be the only marine mammals that are regularly encountered within the Offshore Site study area and the north eastern Irish Sea area, albeit in relatively low numbers and densities.

3.4.4 Offshore Ornithology (Birds)

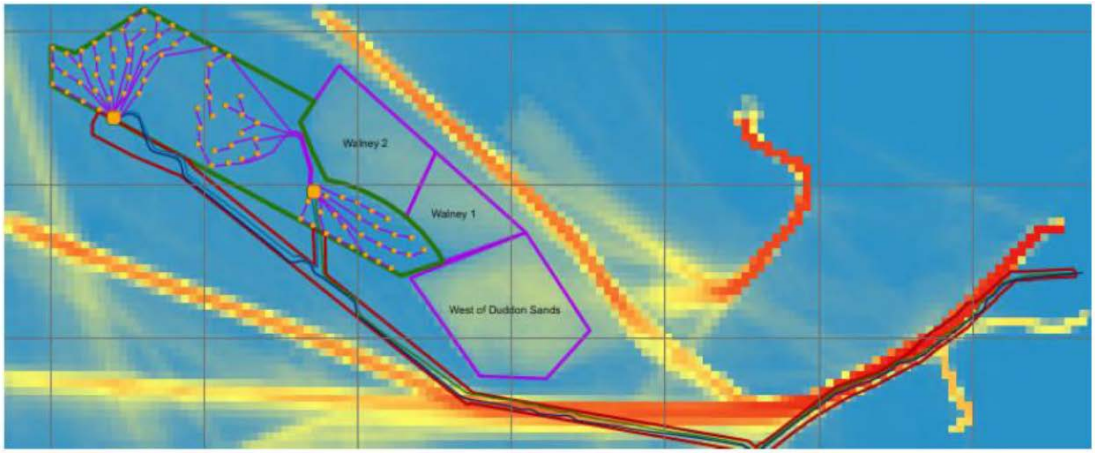
The types, distribution and behaviour of birds in and around the Offshore Site area have been determined by site-specific boat based and aerial surveys. A total of twenty-four bird species and eight taxonomic groups were identified from the images taken during the twenty-two aerial surveys at the Study Area. Kittiwake and auk species (razorbill/guillemot) were the two taxa that were recorded most frequently. Other commonly recorded taxa included gull species, gannet and Manx shearwater. The abundance of birds observed during aerial surveys fluctuated across the study period with notable peaks in abundance occurring in November 2011 and October 2012. A total of forty-six bird taxa were recorded during the twelve boat-based surveys, of which thirty-four were identified to species level. The majority of species involved were true seabirds including Manx shearwater, gannet, fulmar, three species of auk, seven species of gull, two species of tern, two species of skua and one species of storm petrel.

3.4.5 Offshore Human Environment

Shipping and Navigation

A navigational risk assessment ("**NRA**") was undertaken, informed by information on shipping movements around the Offshore Site. The most common types of shipping recorded were regular freight and passenger ferries between Heysham and Belfast, Larne, Douglas, Warrenpoint and Dublin, with the majority passing clear of the Wind Farm site. Offshore Site design measures were considered to reduce commercial shipping and recreational vessel effects by avoiding major shipping routes, aligning with the existing wind farms and maintaining sea room to the SW as far as possible.

Figure 3.4.5: Ship Tracks Relative to Walney Extension Site



Commercial Fisheries

Trawling for Nephrops (Norway lobster) occurs throughout the Wind Farm site. Queen and king scallops are generally targeted to the south of the Wind Farm site. Lobster, edible crab and whelks are generally fished in the nearshore zone. Mixed whitefish and flatfish species, such as plaice, sole, cod, skates and rays are caught both as by-catch from the Nephrops fishery. Bass is targeted by vessels setting gillnets in inshore area and salmon are seasonally targeted by drift netters operating in the Lune Estuary.

Marine Archaeology and Cultural Heritage

There are two known wrecks of high archaeological significance in the export cable corridor and a further four within the 2km buffer zone. No wrecks of high archaeological potential have been located in the site based on the information currently available. There is one recorded loss of a military aircraft at an estimated location in proximity to the export cable corridor. Any military aircraft will be subject to statutory protection under the Protection for Military Remains Act 1986 (Protected Place) if located prior to construction, or at any time in the future. Based on corroborating information derived from the assessment of side-scan sonar, magnetometer, sub-bottom profiler and bathymetric data-sets two anomalies were assigned high archaeological potential.

From a recreational perspective, the extensive sands fronting the Irish Sea are perceived as valued places to undertake activities such as bird watching, sporting activities, leisure fishing, sunbathing and sea bathing. Historically and today, the wider areas of sandflats and mudflats have been widely exploited by fishermen, particularly for shellfish collection. This has an important influence in the cultural heritage and traditions of local fishing communities.

3.4.6 Existing Infrastructure

A range of other activities are carried out in the area around the offshore site including a number of oil and gas interests (licence blocks, operational or in development fields, and various oil and gas infrastructure); offshore cables; other offshore wind farms; marine sand and gravel dredging; maintenance dredging and marine disposal. The potential effects of the project on these other activities have been assessed in consultation with relevant operators and statutory bodies. It was concluded that effects on the majority of other activities and operators in the vicinity would not be significant. A potentially significant impact was determined for holders of adjacent or overlapping oil and gas licence blocks. Confidential cooperation agreements have been reached with the relevant oil and gas providers to ensure the parties can happily coexist within the offshore site.

4 Description of Items to be Decommissioned

As part of the windfarm construction the OFTO assets are also constructed in a way that it is possible to decommission them at the end of its operational life (approximately 25 years[3]), in order to fulfil regulatory requirements at construction consenting stage.

The following decommissioning measures are based on today's known techniques and have been proposed with regard to:

- Decommissioning of Offshore Renewable Energy Installations Under the Energy Act 2004 - Guidance notes for industry (England and Wales) – March 2019;
- The Best Practicable Environmental Option ("**BPEO**");
- OSPAR guidance documents on offshore wind farms;
- IMO 'Guidelines and Standards for the Removal of Offshore Installations and Structures on the Continental Shelf and in the Exclusive Economic Zone';
- Government guidance notes for decommissioning offshore oil and gas installations in compliance with OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic Decision 98/3;
- UNCLOS and OSPAR obligations;
- Safety of surface and subsurface navigation;
- Other users of the sea, and
- Health and safety considerations.

Components left in situ following decommissioning will be aligned with standards set out by the IMO that specify that, an installation or structure need not be entirely removed if:

- It would not involve extreme cost;
- It is not technically feasible (however, the design and construction should be such that entire removal would be feasible);
- It would involve an unacceptable risk to personnel; and
- It would involve an unacceptable risk to the environment.

In addition, DTPWE will also apply the following principles:

Table 4.1: Guiding Principles

Guiding Principles	Comments
Minimise environmental impact	In considering decommissioning measures, the Best Practicable Environmental Option ("**BPEO**") will be chosen in order to minimise impact on the environment at an acceptable cost.
Safety at all times for all	The highest levels of health and safety will be followed throughout the project lifecycle. Safe practices will be followed in implementing decommissioning solutions.

[3] Note Ofgem OFTO regime requires OFTOs to be prepared to decommission the transmission asset after 20 years.

Guiding Principles	Comments
Maximise reuse of materials	DTPWE will aim to maximise the reuse of waste material from the decommissioning phase and will pay full regard to the 'waste hierarchy', see Table 6.3.
Consideration of the rights and needs of legitimate users of the sea	The rights and needs of other users are respected by DTPWE. Decommissioning activities will seek to minimise the impact on stakeholders and emphasis will be placed on clear and open communication.
Follow Polluter Pays Principle	DTPWE decommissioning and waste management provisions acknowledge our responsibility to incur the costs associated with our impact on the environment.

5 Description of Items to be Decommissioned

The items covered in this section for decommissioning by DTPWE are:

- Two Offshore Platform Substations ("**OSP**") (including jacket and ALL components on the platform);
- Two Offshore export cables; and
- Interlink cable.

Rock Berms and Mattressses

It is understood that a number of rock berms and mattresses have been installed both at crossing locations and in locations where additional cable protection was required. Leaving cable protection on the seabed is associated with certain positive effects (leaving the exposed rock habitat and benthic community that will have likely colonised it in place, and avoiding the increased vessel disturbance/damage and sediment effects associated with removing the material). However, leaving cable protection in place is also associated with certain adverse effects (the enduring loss of the original biotopes and potential scouring of surrounding natural seabed sediments). On balance, avoiding impacts arising from removal and the positive impacts of colonisation outweigh the negligible to minor adverse impacts of continued seabed loss and potential scour. A similar rationale applies in relation to cable and pipeline crossings where the exposed cable was covered by rock armour, and where removal is undesirable owing to the risk of damaging the other cable or pipeline.

5.1 Offshore Substation

The project has an installed capacity of 660MW. The offshore element of the project consists of two 34/220kV OSPs. The purpose of the OSP's is to transform the voltages of the electricity generated by the turbines from 34kV up to 220kV for transmission of generated power to the onshore transmission grid system.

The dimensions of the Walney Extension OSPs are as follows:

- Topside weight: approximately WOW03:- 2737 tonnes and WOW04:- 2,728 tonnes;
- Foundation and support structure weight (excl. piles):
  - Substation WOW03- 1384 tonnes; and
  - Substation WOW04- 1557 tonnes.
- Piles: diameter 2.134m, pile length WOW03 59.25m, WOW04 56.25m (penetration 43m / 40m):

- Area of topside: 33m by 18m:

Located on each platform is:

- Two main transformers including coolers;
- Reactor;
- Sixteen medium voltage ("**MV**") switchgear bays;
- Four 220kV Gas Insulated Switchgear ("**GIS**") bays;
- Two auxiliary transformers and two earthing resistors;
- Control and communication room ("**SCADA**")
- Diesel power room;
- LV & utility room;
- Public room Accommodation (emergency)Laydown areas;
- Cable deck; and
- Crane 3.5 tonnes.

Figure 5.1: Walney Extension Topside

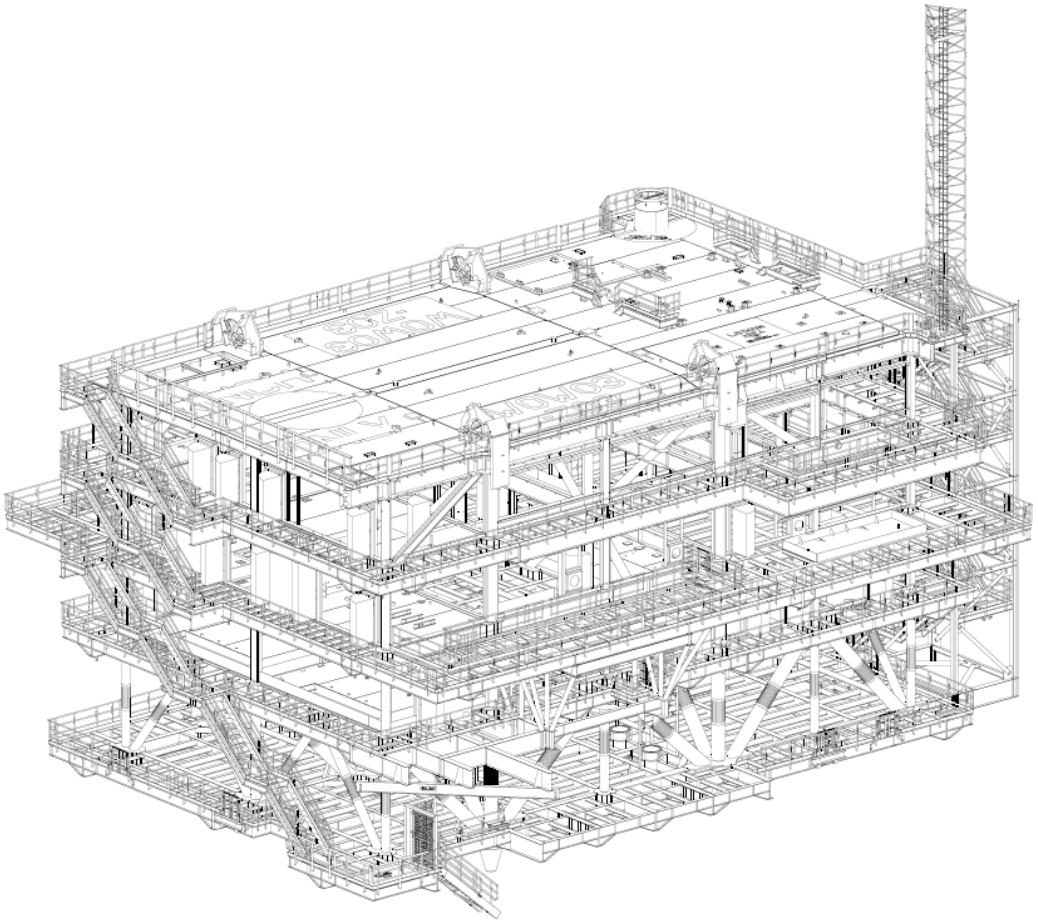
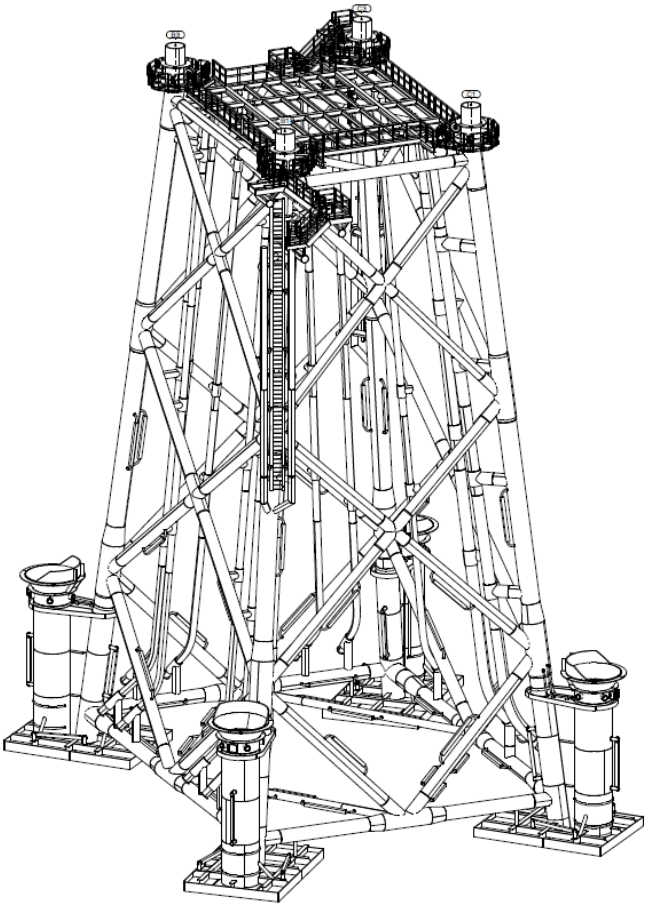


Figure 5.2: Walney Extension Jacket and Foundation



5.2 Offshore Export Cable

The total length of each offshore export cable is 79.6km and 66.3km from the OSP to landfall and 22.8km for the interlink cable. The subsea cable is required to connect the wind farm to the onshore electricity transmission system. As part of their design the cable will also have an internal fibre optic for data transfer and control purposes.

The subsea export cable is buried to a nominal depth of 0.45m to 8.00m. The range is due to the seabed mobility in the KP3.8 to KP5.8 area, see Section 6.8 for further details.

Removing the cables from the seabed is expected to have a far greater negative environmental impact than leaving them in the seabed. In order to minimise any such negative impacts as far as possible, the array and export cable ends will be cut off prior to foundation removal and the remaining lengths buried, and thus allowed to stay in situ.

Whilst it is considered that cables that have remained buried for the life of the wind farm prior to decommissioning will be at low risk of subsequent exposure, contingency plans will be put in place to ensure that appropriate actions are carried out in the event that any cables do become exposed.

The cables are designed for a long service life in marine conditions and will degrade very slowly with no material impact on the surrounding environment. Since any exposed sections of cable will be removed during decommissioning, as will any sections which are deemed likely to become exposed, the cable sections left in situ are considered to be stable and unlikely to become exposed or subject to movement. This will be verified by post-decommissioning surveys and seabed

mobility prognosis for the 50 year period beyond decommissioning, see Section 14 for details on timing of post-decommissioning surveys.

Any changes in the available approaches to decommissioning, the appropriate set of principles, or knowledge concerning the application of these principles will be applied when the Decommissioning Programme is updated. Such an update will be undertaken in the event of a major change in input data and, in any event, in line with the required permitting processes.

6 Description of Proposed Decommissioning Measures

This section gives an overview of legislation and guidance relevant to decommissioning activities and further outlines in more detail how decommissioning of individual parts of the development will be carried out i.e. the OSPs and the export cables.

At the time of writing this document, the decommissioning phase is not expected to commence before a timeframe of at least 20-25 years. Therefore, it is not possible to describe the precise technology and methods of decommissioning works. These will develop over the operational lifetime of the wind farm, and should therefore be reviewed and a detailed decommissioning works schedule finalised before the decommissioning phase starts. DTPWE will also review the plan upon request by BEIS.

However as mentioned in Section 4, certain principles are projected to be followed:

- Health and safety considerations;
- Best Practicable Environmental Option ("**BPEO**");
- Safety of surface and subsurface navigation; and
- Other uses of the sea.

6.1 Adherence to relevant legislation and guidance

The decommissioning measures are based on known techniques of today and have been proposed taking into consideration the following key UK and international legislation and guidance notes:

- Decommissioning of Offshore Renewable Energy Installations under the Energy Act 2004 Guidance notes for industry (England and Wales), March2019;
- Guidelines and Standards for the Removal of Offshore Installations and Structures on the Continental Shelf and in the Exclusive Economic Zone, International Maritime Organisation (IMO), 19th October 1989;
- Guidance Notes for Industry: Decommissioning of Offshore Installations and Pipelines under the Petroleum Act 1998, DECC;
- OSPAR guidance documents on offshore wind farms;
- Guidelines for Environmental Risk Assessment and Management, Defra, September 2002; and
- United Nations Convention on the Law of the Sea (UNCLOS), 1982.

Other relevant legislation includes:

- Hazardous Waste Regulations 2005;
- Marine and Coastal Access Act 2009;
- The Water Resources Act 1991;
- The Conservation of Habitats and Species Regulations 2010;

- The disposal or recovery of waste on land, principally under Part II of the Environmental Protection Act 1990, other legislation relating to the carriage and transfer of waste and, where appropriate, the Hazardous Waste Regulations 2005; and relevant health and safety legislation;
- London Convention 1972 and the 1996 Protocol, relating to the prevention of marine pollution by dumping of wastes;
- Construction (Design and Management) Regulations (CDM) 2015; and
- Appropriate H&S Regulations.

6.2 Phasing and Co-ordination of Decommissioning

The phasing and detailed programme for decommissioning will be defined and submitted to BEIS in advance of decommissioning.

6.3 Plan of Works and Integration

A detailed final Decommissioning Programme will be prepared two years ahead of the proposed decommissioning date and will incorporate the results of a detailed recent EIA, thus allowing sufficient time to implement any measures arising into the final Decommissioning Programme. The process supporting the EIA will include pre-decommissioning surveys. The plan of work will include detailed method statement together with project specific hazard and risk assessments. DTPWE will also liaise with other developers in the North West region to ensure potential synergies for decommissioning facilities are investigated.

6.4 Decommissioning of Offshore Substation

It is planned that the structure for the offshore substations will be removed in its entirety including the foundations. There are some structures that may be left under the seabed i.e. cables and foundation bottom pieces whereby removal may result in greater impact on the environment than leaving them in situ.

The items to be decommissioned are:

- All of the topside equipment and transformers;

  (As the transformers and reactor are oil filled they and the various other components including generators and fuel storage, will be transported to an onshore facility for dismantling, with constituent parts processed for reuse, recycling and disposal. This will be performed in conjunction with the generator)
- The topside's support structure;
- The jacket structure, including all appurtenances such as J-Tubes and boat access system;
- The piles will be cut at such a depth below the surface of the seabed that the remaining parts do not pose a danger for shipping or fishing vessels, even if sediment should become relocated. Following the cutting operation the foundations and the jacket structure may be removed as a single structure after the removal of the topside; and
- The interlink cable and turbine interconnecting cables adjacent to the substructure will be cut at a point below the surface of the seabed to allow the cable to remain buried (cut sections will be removed with minimal disruption to the seabed).

It is expected that the offshore substations will be decommissioned in two main stages, comprising the complete removal firstly of the topside, followed by removal also of the jacket foundation.

Prior to removal of the topside, a number of preparatory activities will be conducted including:

- De-energise and isolate required electrical control and power cables from National Grid and SCADA system;
- It is proposed that the oil filled transformers and reactor are braced for sea transportation, transformer oil levels can be reduced in components like the conservator tank and cooler fins to deal with a liquid load;
- Dismantle terminations for export and array cables; removal of all cables back to cable deck, or seabed;
- Removal of all unsecured loose items from the topside;
- Containment and/or removal of potentially hazardous/polluting fluids. A special agreement will be made with the Gas Insulated Switchgear ("**GIS**") supplier to ensure the safe removal of the SF_6 Gas; and
- Cutting welded stab-in connections between topside and foundation.

A Heavy Lift Barge Vessel ("**HLV**") will be used to dismantle the topside and transport the structure ashore for further dismantling.

The process of decommissioning of the OSP is likely to involve the following second stage sequence:

- A HLV lifts the topside module onto an adjacent barge;
- Topside is transported back to port where the topside is transferred to the quayside;
- Topside will be processed for recycling and or disposal as appropriate; and
- Jacket piles will be cut off at such a depth below the surface of the seabed that the remaining parts do not pose a danger for shipping or fishing vessels, even if sediments should become relocated, the method used could be either water cutting or remote thermal cutting;

Complete removal of the pile below the seabed is considered neither practical nor environmentally desirable. The appropriate depth for removal would depend upon the sea-bed conditions and site characteristics at the time of decommissioning. This is in line with the IMO standards as complete removal of the foundations would involve an unacceptable risk to the marine environment and is likely to involve extreme cost. If an obstruction exists above the sea bed or an obstruction appears following decommissioning which is attributable to the wind farm, this obstruction will be marked by the owner so as not to present a hazard to other sea users. The marking will remain in place until such time as the obstruction is removed or is no longer considered to be a hazard to other sea users. The monitoring of this obstruction will be built into the decommissioning monitoring and maintenance programme.

The general target for cutting of the jacket piles will be at such a depth below the surface of the seabed that the remaining parts do not pose a danger for shipping or fishing vessels, even if sediments should become relocated. When assessing the possibility of cutting below the seabed, it is important to consider the need to overcome frictional forces acting on the pile. Considerable excavation will have to take place, approximately two meters in diameter for every meter in depth below the seabed.

Once cut the jacket will then be lifted onto a barge and transported back to port for recycling or sold off as scrap metal.

Items contained within the topside will be processed for recycling accordingly or disposed as appropriate.

All hazardous waste will be handled accordingly and disposed of in accordance with its classification.

6.5 Decommissioning of Export Cables and interlink cable

The decision whether or not to remove the cables will be taken closer to the end of the project's lifetime and will be subject to consultation as part of an application for consent to cover decommissioning activities. If cables are left in-situ, the ends will be weighted down and buried at the current depth to ensure that no navigational risk arises in the sense that fishing gear or anchor would interface with the as left cables. Also, only export cables and interlink cables which are buried to a depth considered to be safe will be left in-situ. Exposed cables will be removed or buried to a secure depth.

Where a cable is removed on request, the sequence for removal is anticipated to be:

- Identify the location of the export cables that need to be removed;
- Seabed material may need to be removed to locate the cable, likely to be carried out using a water jetting tool similar to that used during cable installation e.g. mass flow excavator. Buried cables will be located using a grapnel to lift them from the seabed. Alternatively, or in addition, it may be necessary to use an Remote Operated Vehicle ("**ROV**") to cut and/or attach a lifting attachment to the cable so that it can be recovered to the vessel;
- The recovery vessel will either 'peel out' the cable as it moves backwards along the cable route whilst picking it up on the winch or cable engines, or, if the seabed is very stiff/hard it may first under-run the cable with a suspended sheave block to lift the cable from the seabed. The use of a suspended sheave block could be carried out before by a separate vessel such as a tug prior to the recovery vessel 'peeling out' the cable;
- The recovery vessel will either spool the recovered cable into a carousel or chop it into lengths as it is brought on-board before transport to shore; and
- Parts will be processed for reuse, recycle or disposal.

6.6 Summary of Proposed Decommissioning Measures

A summary of the proposed decommissioning measures for the offshore components of the DTPWE are outlined in Table 6.1.

Table 6.1: Summary of Proposed Decommissioning Measures for DTPWE

Component		Proposed decommissioning measures
Offshore substation	Topside	Complete removal
	Jacket	Cut off (target 1-2 m) below seabed level and removed
Offshore export cable		Nearshore cables KP03.8 to KP5.8 will be removed. Remaining calbes will be cut off at the base of the platform, the remaining cable will be weighted down and left in-situ.
Offshore interlink cable		Cut off at the base of the platform, the remaining cable will be weighted down and left in-situ.

Table 6.2: Decommissioning Programme Technical and Environmental Summary

Activity	Description	Approach
Dis-connection	Transmission assets disconnected from NGET and wind turbine generators, isolated and earthed.	Undertaken in accordance with the safety rules in place at the time.
Topside Structures Housing the Offshore Substation Platform ("**OSP**")	Houses transmission assets including oil-filled transformers, reactor, gas-insulated switchgear, diesel generators and termination of the OFTO export cables and wind farm array cables. Gross weight of the substation topside is approximately 2,737 tonnes WOW03 and 2,728 tonnes WOW04 (lift weight).	Oil filled transformers and reactor braced for sea transportation, transformer oil levels reduced in the conservator tank and cooler fins to deal with a liquid load. Cables will be removed or cut at the hang-off. Any loose items will be removed. The topside is then cut from the jacket and removed in one piece. Parts will be processed for reuse, recycling and disposal.
OSP platform Structure and Piles	Jacket structure circa 1,446 tonnes WOW03 and 1,623 tonnes WOW04 (lift weight) and supporting foundations and skirt piles.	Critical joints and members of the structure will be inspected. Foundations will be inspected using ROV. Jacket piles will be cut at such a depth below the surface of the seabed that the remaining parts do not pose a danger for shipping or fishing vessels, even if sediments should become relocated. Following the cutting operation the foundations and the jacket structure will be removed as a single structure after the removal of the topside.
Inter Array Cables	Inter array cables are owned by the Developer and connect the wind turbine generators to equipment on the OSP.	In conjunction with the Developer inter array cables will be cut or dismantled at the hang-off to enable removal of the platform.
Offshore Export	OSP is connected to land by two export cables of 76.2km	As per the current industry standard to minimise

Activity	Description	Approach
Cables	and 62.8km in length buried to a target burial depth of between 0.45 and 8 metres. The subsea export cable consists of two XLPE insulated; three core 1200mm^2 (1600mm^2 at landfall) aluminium conductor cables.	environmental disturbance to the seabed, only offshore cables that are exposed at the time of decommissioning will be removed e.g. nearshore cables KP03.8 to KP5.8. Cable requiring removal will be cut as close to the platform foundation, or sea bed, as is possible, with the ends weighted down and buried to a secure depth below seabed level. Recovered cable will be stripped and recycled. Contingency plans will be put in place to ensure appropriate actions are in place if the cables become exposed post decommissioning.
Offshore interlink cable	OSPs are connected to each other by a 22.8km subsea interlink cable buried to a target depth of 1 metre. The interlink cable consists of one XLPE insulated; 3 core 500mm^2 aluminium conductor cable.	

6.7 Proposed Waste Management Solutions

DTPWE is committed to maximising the reuse of waste materials and pays full regard to the 'waste hierarchy' which suggest that reuse should be considered first, followed by recycling, incineration with energy recovery and lastly, disposal. In any event waste management will be carried out in accordance with all relevant legislation and it would be intended that any disposal takes place on land.

At the time of decommissioning, where assets have remaining technical asset life and a second hand market exists DTPWE will look to sell assets. If this is not possible a waste management plan will be drawn up prior to the commencement of decommissioning to ensure that adequate time remains for the proper provisions to be made.

An overview of expected types of wastes and their expected re-use, recycling or disposal is given in Table 6.3. In any event, waste management will be carried out in accordance with all relevant legislation at the time of decommissioning and it is intended that any disposal will take place on land.

Table 6.3: Re-use, Recycle and Disposal Options

Asset	Waste Type	Re-Use	Recycle	Disposal
Jacket and foundations from OSPs	Steel from topside and Foundations		X	
Main power transformers	Steel, iron laminate, copper, transformer oil	X	X	
Gas insulated switchgear	Copper, electronics	X	X	

Asset	Waste Type	Re-Use	Recycle	Disposal
OSP power cables	Copper		X	
Diesel generators	Steel, copper, electronics	X	X	
Reactors	Steel, iron laminate, copper, reactor oil	X	X	
Auxiliary transformers	Steel, iron laminate, copper, transformer oil	X	X	
SCADA, protection panels	Steel, electronics		X	
Neutral earthing resistor	Steel, copper	X	X	
LV switchboard	Steel, electronics	X	X	
Subsea cables	Aluminium, steel		X	
Onshore cables	Aluminium, steel		X	
Other	Non-recyclable materials and fluids			X

During the Examination of the DCO application some concern was raised by the Performance Planning Agreement Authorities ("**PPAA**") regarding the potential for radioactivity in seabed sediments associated with the Sellafield nuclear power station to transfer to the offshore infrastructure, resulting in radioactive contamination requiring disposal of structures or equipment at a recognised low level radioactive waste disposal site at the decommissioning phase.

Some further assessment and clarification was provided on this, and discussed with the PPAAs and Environment Agency. The note concluded that the radionuclide activity in the surface sediments at the Walney Extension (based on analysis of sediments from the adjacent Walney 1 and 2 sites) offshore Wind Farm site are significantly lower than the levels qualifying as low level waste, and therefore there was no mechanism for the offshore substation foundations to become radioactive during their operational lifetime. This was agreed with in the Statements of Common Ground with both parties, subject to production of a Decommissioning Programme prior to construction. This will be revisited prior to decommissioning taking place, further to actual levels of radioactivity present at the time, and relevant legislation, to determine whether any infrastructure should be disposed of as radioactive waste.

6.8 Details of Any Item Left in-situ Offshore Following Decommissioning

As described in the previous sections, it is proposed to leave a major section of offshore cables, interlink cables and the embedded piles of the OSPs in the seabed. The basis of this decision is that the items in question meet at least one of the four situations in which (based on the IMO standards) non-removal or partial removal may be considered.

The four situations are where:

1. The installation or structure will serve a new use, whether for renewable energy generation or for another purpose, such as enhancement of a living resource (provided it would not be detrimental to other aims, such as conservation);
2. Entire removal would involve an unacceptable risk to personnel;
3. Entire removal would involve an unacceptable risk to the marine environment; and
4. Entire removal would involve extreme costs.

The primary reason for leaving cables buried and embedded piles in the seabed is:

1. Decommissioning of the buried cables and embedded piles may require the involvement of divers in significant and dangerous operations e.g. in preparation work for cable/embedded pile removal, installation/recovery/snagging works of any under runners used during the cable removal etc.;
2. The complete recovery of all of the buried cable and pile structures would entail a major excavation of the seabed that would be hugely damaging to the environment in the area. An updated EIA will be produced at the Decommissioning Programme year 18 review to confirm this assumption based on the environmental conditions at the time; and
3. Cost to remove the full export cable is estimated to increase the current decommissioning forecast costs by between 155% and 177%. The cost of decommissioning cable that is expected to remain safely buried, more than doubles the forecast cost of decommissioning the offshore transmission assets, and as such DTPWE considers it will not present value for money for the UK consumer.

DTPWE will enter into discussions with BEIS and TCE regarding long term monitoring and residual liability of any infrastructure left in-situ.

The methodology to determine the export cable seabed mobility and minimum depth of lowering of the cable, to ensure the cable is adequately protected is detailed in document '2.10.5.5.5.1 and is based on a total of five bathymetric surveys undertaken between 2011 and 2016. This report considers a period of 25 years from 2016.

In summary the Reference Seabed Level ("**RSBL**") is calculated for the lowest expected elevation of the seabed level over the lifetime of the project (2016-2041) hence any cable buried lower than the RSBL level is expected to remain adequately buried and protected against seabed mobility.

Based on the installed burial depths, the total length of cable which has not been buried deeper than the RSBL is

- WOW03 – 4,587m
- WOW04 – 3,874m

This represents approximately 5% of the total installed route length of approximately 160km. The remaining cable, which has been buried deeper than the RSBL is forecast to remain buried for the lifetime of the assets and is therefore considered stable, however this will be monitored throughout the lifetime of the assets. At the time of decommissioning any cable that has remained adequately buried for a period in excess of 20 years will be expected to remain buried for the foreseeable future and will be evidenced by a final RSBL assessment prior to decommissioning.

For the sections of the export cables buried above the RSBL level and forecast to become exposed, there are two major seabed actions causing this:

- For the area within the shore face slope (c KP3.8 to KP5.8), the seabed will continuously erode, lowering the seabed level across the 25-year period. This was initially predicted to result in an average lowering of approximately 3m in this area with some localised sections lowered by up to 8.3m, however the latest survey suggests the lowering could be increased further and affect a larger area of the cable route; and
- For the area between approximately KP 7 and KP 10.5 it is possible for spontaneous scour holes to develop with a depth of up to 3.2 m. These scour holes will eventually naturally backfill. Whilst these can occur at any location within this section, it should be noted that the whole section would not be affected, only a relatively small part of the route.

Cable which has not been installed deeper than the RSBL will be reviewed by DTPWE (as part of the overall cable monitoring) at each update of the Decommissioning Programme. If exposures occur during the life of the project and are not forecast to be naturally reburied by bedform movement, then DTPWE will undertake remedial burial works. This additional lowering may result in an overall depth of lowering which ensures long-term stability of the cable and no future exposures. Conservatively, DTPWE has assumed that the sections of cable where the RSBL has not been achieved i.e. due to the unpredictable nature of the seabed in the nearshore area, will be removed during decommissioning in line with Table 6.2.

6.9 Lighting and marking

During the decommissioning of the Walney Extension Offshore Wind Farm, appropriate aviation and nautical marking and illumination will be applied.

In accordance with the Walney Extension consent under Section 36 of the Electricity Act 1989, DTPWE is committed to exhibiting the appropriate marks and lights during the decommissioning of the project.

In relation to aviation safety, the shape, colour and character of the lighting will be compliant with the Air Navigation Order 2005, or as otherwise directed by the Civil Aviation Authority or the relevant legislation at the time.

In relation to navigational safety, lights and marks will be agreed with Trinity House, in consultation with the Maritime and Coastguard Agency prior to decommissioning to specify any obstruction marking that may be required during the removal operations. In the event that any obstruction is left on site, which may be considered to present a hazard to navigation, the necessary and specified marking will be provided.

7 Environmental Impact Assessment

An EIA was completed by DONG Energy Walney Extension (UK) Ltd. for Walney Extension Offshore Wind Farm in July 2013. Table 6.1 summarizes the impacts from the decommissioning phase.

Table 7.1: Summary of Decommissioning Impact Assessment

Topic	Impact Description	Decommissioning Impact
MetOcean	Impacts during construction and decommissioning of the Project are likely to include short term increases in suspended sediment concentrations, localised changes to the seabed and construction vessels	Negligible

Topic	Impact Description	Decommissioning Impact
	leaving small indentations on the seabed. These impacts were considered likely to be localised and short in duration (hours to days). The effects will be localised (to within a few hundred metres) and short term and temporary in duration and as such are not considered to be significant.	
Morphology and coastal processes	Effects during the construction (and decommissioning) phase could occur as a result of foundation or cable installation (or removal) as well as from accidental spills from construction vessels or plant or the use of chemicals. In all cases increases in suspended sediment were predicted to be localised and temporary and as such were not considered significant. With regard to accidental spills a pollution control plan will be implemented as part of a wider environmental management plan in order to manage such events and mitigate against such eventualities. As a result, such effects are not considered likely to be significant.	Negligible
Bottom fauna	These surveys have shown that the animals recorded were typical of those found in shallow coastal waters in the eastern Irish Sea. Important habitats supporting protected cobble reef habitat were recorded along the export cable corridor in close proximity to the Lune Deep and SAC. The offshore Cable Corridor was adjusted to avoid any interaction with this habitat. The intertidal surveys at the export cable landfall (along a section of the coastline at Middleton Sands) found that no important or highly sensitive habitat was present within the areas surveyed. During construction (and decommissioning), the installation of the inter-array and export cables will cause temporary disturbance of the seabed habitats but these are predicted to recover relatively quickly and as such these effects are not considered significant.	Negligible
Fish and Shellfish	The fish and shellfish species found in and around the Project area have been described using data from surveys conducted at the site (using a	Negligible

Topic	Impact Description	Decommissioning Impact
	variety of fishing techniques). The potential effects on fish and shellfish species resulting from decommissioning (including noise effects as described above) were considered including effects as a result of the loss of habitat and increases in suspended sediment. In all cases these were predicted to be localised and/or short term in nature and as such were not considered to be significant.	
Birds	Noisy and disruptive activities during the construction phase will be of short-term and intermittent nature and as such are not generally considered likely to lead to significant longer term effects although some species may be temporarily displaced from the area affected. Effects from decommissioning are expected to be similar to those from construction.	Negligible
Marine mammals	Overall, it is predicted that the impact will be intermittent and of medium term duration (throughout the decommissioning phase). The sensitivity of receptors is considered to be high and the magnitude of the impact is deemed to be negligible.	Negligible
Shipping and navigation	The EIA finds that the Project will have no significant effect on ship routeing and radar. A NRA was undertaken as part of the EIA, which found the main hazards identified were the potential for construction vessel collusion with other vessels and project structures. The increase in risk associated with the wind farm to shipping activities was considered moderate. Further hazard assessments are recommended when the details of decommissioning activities are known to ensure the risks associated with increased shipping traffic in the wind farm area remain low.	Moderate
Commercial fishery	In order to comply with statutory safety policies, temporary safety zones will be required during decommissioning, the extent of which would be dependent upon the final decommissioning strategy adopted, and would be designed to ensure the	Negligible

Topic	Impact Description	Decommissioning Impact
	safety of all vessels including those not directly associated with the development work. In view of the numbers of vessels that might be affected, the relatively short periods of any such displacement, and the scope for relocating to adjacent areas without risks of conflicting with other vessels, the expected residual loss of area impact is expected to be localised, of minor significance and confined to a small number of vessels. Provided all vessels comply with safety zones and standard safety policy, impacts on safety should be negligible. Interference with fishing vessels by construction vessels would be minimised by decommissioning vessels using existing shipping lanes and prescribed transit corridors. Ongoing liaison would also keep fishermen informed of proposed works.	
Cultural heritage	Mitigation for marine archaeology and cultural heritage includes implementation of archaeological exclusion zones (areas of avoidance) around areas of medium and high archaeological potential, and implementation of an archaeological discoveries protocol, to ensure that any potentially important finds during construction works are treated appropriately. A significant hazards associated with the decommissioning phase is the draw-down of sediment into voids left by removed turbine foundations leading to loss of sediment, destabilising archaeological sites and contexts, and exposing such material to natural, chemical or biological processes. Another significant hazard is the penetration and compression effects of jack-up barges and anchoring of decommissioning vessels leading to total or partial loss of archaeological receptors (material or contexts).	Moderate
Contamination	The effect of foundation and cable decommissioning (removal) is anticipated to be broadly similar to the impacts predicted for installation on SSC and is summarised as a localised increase in the order of	Minor

Topic	Impact Description	Decommissioning Impact
	hundreds or thousands of milligrams per litre (locally and temporarily exceeding the range of natural variability, typically <5 mg/l in the upper water column but order of hundreds of mg/l nearbed during large storm events), affecting a relatively confined area (50m to 200m) downstream of the activity (depending upon the local water depth and speed and direction of ambient currents at the time) for the duration of the activity. Contaminant concentrations within the study area are below Cefas AL2 and, with a small number of exceptions, below Cefas AL1. Therefore, the foundation and cable decommissioning is not anticipated to result in significant contaminant mobilisation. Overall, it is predicted that the impact will be direct and of an intermittent nature and of short duration. The sensitivity of the receptor (SSC values of the open marine environment) is considered to be low and the magnitude is deemed to be minor.	
Airborne noise	The EIA finds that the wind farm, considered either on its own or in combination with any other offshore wind farm consented or in planning, should not cause any loss of amenity onshore and therefore the impact is predicted to be not significant.	Negligible
Underwater noise	Refer to 'Marine mammals' above	Negligible
Seascape and visual	The impacts arising from the dismantling and removal of substations and all foundations will be consistent with those recorded in the construction phase such that they will generally of an intermittent and temporary nature and include the periodic movement of jack-up vessels, support tugs and crew boat. Furthermore, decommissioning will be viewed in the context of an established wind farm, rather than an area of open sea as would be the case for the construction phase.	minor

Note: Impact assessment follows the Design Manual for Roads and Bridges ("**DMRB**"), (2008) Volume II, Environmental Assessment. Section 2, Environmental Impact Assessment. Part 5, HA 205/08. Assessment and Management of Environmental Effects.

Consistent with the commitment to undertake reviews of the decommissioning provisions contained within this document, DTPWE will review and update the existing EIA throughout the lifetime of the project. A final review will be undertaken towards the end of the installation when final details of the decommissioning measures are known in order to address the impacts at the time. At this point a decision will be made as to whether a more detailed assessment is required. Key criteria that will inform the decision will include:

- An updated review, identification and assessment of potential impacts on both the physical, biological and human environment. Planned surveys in and around the transmission assets which could inform this process could include:
    - Geophysical surveys (side scan sonar ("**SSS**") and Multibeam Echo Sounder ("**MBES**"));
    - Geotechnical surveys;
    - Benthic grab/camera surveys;
    - Ornithological surveys;
    - Marine mammal monitoring; and
    - Fish surveys.
- An updated review, identification and assessment of activities of other legitimate users of the sea with the potential to be affected by decommissioning. This is because the nature and/or intensity of human activities taking place on/around the transmission assets, such as navigation in and out of the Mersey Estuary, could have changed over the lifetime of the project.
- An updated review, identification and assessment of the potential impacts of decommissioning on the local community, e.g. potential socio-economic impacts.
- An updated review, identification and assessment of potential impacts on historic environment interests, in particular marine archaeological features.

If upon these additional reviews it is concluded that gaps exist in any of the topics above, a specific EIA covering the decommissioning process will be prepared in consultation with the relevant authorities. The EIA will list measures to avoid or otherwise reduce or remedy adverse impacts where possible.

8 Consultation with Key Stakeholders and General Public

DTPWE regards open and effective communication and consultation as an essential element of owning and operating the asset. Carrying on with the good work and relationships established by WEL during the development and construction phase, we will ensure that this is applied during the operational life of the asset through to decommissioning.

DTPWE proposes to seek the advice and opinions on the draft Decommissioning Programme from a range of stakeholders including but not limited to:

- BEIS;
- Historic England;
- Environment Agency;
- Marine Management Organisation ("**MMO**");
- Centre for Environment, Fisheries and Aquaculture Science;
- Maritime and Coastguard Agency;

- Natural England;
- North West Inshore Fisheries and Conservation Authority;
- Heysham Port;
- The Crown Estate;
- National Federation of Fishermen's Organisations;
- British Marine Aggregate Producers Association;
- Trinity House Lighthouse Service;
- Royal Yachting Association; and
- Chamber of Shipping.

DTPWE will apply for a separate decommissioning marine licence from the MMO at the time of decommissioning.

In accordance with the relevant clauses under Section 36 of the Energy Act 1989 and relevant conditions of the Marine Licence, DTPWE will issue timely and efficient Notice to Mariners and other navigational warnings of the position and nature of the decommissioning activities that will be taking place. Efforts will be made to ensure that this information reaches mariners of the shipping and fishing industry as well as recreational mariners. The UK Hydrographic Office will be notified as appropriate on the progress and completion of works.

9 Costs and Financial Security

Cost and financial security information is confidential and therefore not included in Decommissioning Programme. Cost and financial security information is provided separately to BEIS.

10 Proposed Decommissioning Schedule

It is proposed that decommissioning commences between year 20-25, coinciding with the end of life of the asset based on its design life and the mid-life of The Crown Estate lease.

As no offshore windfarm has been decommissioned to date worldwide, it is difficult to anticipate the operational challenges, costs and precise timings of works. Once other farms start to be decommissioned, it will provide valuable information to DTPWE on timings, costs and operational challenges to be faced. Currently we anticipate Walney Extension offshore wind farm will be decommissioned between 2040 and 2044 and will take 24 months to complete.

In line with project management guidelines and DTPWE experience, we acknowledge that the most important step in the decommissioning process is advanced planning and having an option of decommissioning methods. Applying the principles mentioned in earlier parts of this document, DTPWE will carry out regular reviews throughout the project lifecycle.

DTPWE intends to undertake internal reviews of the Decommissioning Programme throughout the life of the project with an internal review of the Decommissioning Programme before the commencement of the formal review in year 9 to ensure the Decommissioning Programme and financial security estimates are up to date. Formal review exercises will be undertaken with BEIS at the following times:

- 12-18 months before the first security provision is due; and
- 18 years following commencement of the transmission licence.

During the formal reviews DTPWE will undertake a review of any items proposed to be left in-situ following decommissioning.

In addition a formal review will be undertaken following any major work or when a material change has occurred with the relevant authorities notified.

The final review will provide an opportunity to scrutinise the detail of the decommissioning provisions in consultation with BEIS and key stakeholders (including the MMO), ensuring the impacts of the decommissioning works have been adequately assessed and the schedule of works and the costs associated are fully understood and agreed. This final review will include the latest bathymetric survey data to confirm the cable burial depths against the RSBL to demonstrate that any cable intended to be left in-situ is adequately buried. At this stage consideration will also be given as to whether a revised EIA and Appropriate Assessment are deemed necessary.

11 Project Management and Verification

The final Decommissioning Programme will provide information on how DTPWE will manage the implementation of the decommissioning works and also provide assurance to the BEIS concerning progress and compliance. The final review of this document and the proposed schedule of decommissioning works will be undertaken towards the end of the operational lifetime (depending on repowering taking place or not). This review will produce a Decommissioning Programme of Works, including current knowledge of decommissioning methods, measures and timing. The Decommissioning Programme will be made available to the public for comment.

The project management of the decommissioning works will be undertaken with the right level of rigor expected of such a project. DTPWE envisages a single main contractor for the decommissioning work and will also appoint an experienced and highly qualified project management team to ensure the decommissioning work proceeds on schedule and in accordance with the requirements of the Decommissioning Programme.

A Decommissioning Report will be issued for the approval from the appropriate regulatory authorities after the decommissioning phase is finished, in compliance with the BEIS Guidance, summarizing how the Programme has been carried out.

As a minimum, this report will include:

- Confirmation that the approved Decommissioning Programme has been adhered to during the decommissioning works; otherwise, an explanation of any major variances from the programme; this includes information of actual costs of the works and an explanation of any major variances from the forecast costs;
- Information on the outcome of the decommissioning phase, including sea-bed clearance;
- Confirmation that relevant authorities have been notified, in case any elements of the development remain protruding from the seabed, of existence of such remains; and
- Information of any appropriate aids to navigation have been installed, where required, to overcome risks posed by such remains.

Upon completion, not more than four months after the decommissioning works, the report will be provided to BEIS.

12 Sea-bed Clearance

In accordance with the Polluter Pays Principle ("**PPP**"), DTPWE proposes to clear the seabed in accordance with the provisions made in this Decommissioning Programme and to collect and provide evidence of this.

Following the completion of decommissioning works, surveys will be carried out to show that the site has been cleared. These surveys will enable identification and subsequent recovery of any debris located on the sea-bed which may have arisen from activities related to the project and which may pose a risk to navigation, other users of the sea or the marine environment. It is currently intended that side scan sonar will be used to identify debris, with an ROV deployed to investigate and recover any potential identified.

The area to be covered will be determined prior to decommissioning but DTPWE is aware of the guidance for oil and gas installations which specifies a 500m radius around any installation.

References will be made to 'Archaeological No Build Areas' in order that these are not inadvertently cleared in the process of removing any debris. Analysis of the survey data will also ensure that items for removal and disposal relate only to the project. The appropriate competent authority will be approached regarding the identification of other anomalies that may be of archaeological interest.

It is important that this process of collecting and presenting evidence that the site is cleared is independent. DTPWE proposes that an independent survey company complete the surveys and that they report in parallel to both DTPWE and BEIS.

13 Restoration of the Site

Following the successful completion of the decommissioning works, the DTPWE site will be restored, as far as reasonably practicable, to the condition it was in pre-construction. This will apply to the area of the platform installation and the export cable corridor within the Welsh waters.

The key restoration works will include the following:

- Securing and adequately covering all cut foundations; and
- Ensuring that cable ends are adequately buried.

Active restoration relying on intervention with equipment is not proposed as it is considered that such works present unnecessary and unacceptable risk to personnel. For the export and interlink cables, it should be noted that the currently envisaged option is to leave the cable buried in the seabed. Allowing the seabed to 'self-settle' is considered sufficient and in proportion to the limited environmental impact of the proposed decommissioning. Should post decommissioning surveys indicate that previously buried cables have become exposed such that they pose a navigational risk, the exposed parts of the cable would be cut away and removed from the seabed.

14 Post-decommissioning Monitoring, Maintenance and Management of the Site

DTPWE proposes to use an independent contractor to carry out surveys post decommissioning. The scope will include identification and mitigation of any unexpected risks to navigation and other users of the sea caused by materials left on the seabed.

DTPWE proposes to undertake magnetometer and geophysical surveys at the completion of decommissioning, and subsequently in Year 1 and 2 post decommissioning with a scope to survey in Year 4 and 6 based on findings from the previous surveys. The area covered by the magnetometer and geophysical surveys will be determined prior to decommissioning, but we are aware of oil and gas installation guidance which specifies a 500 metres radius around any installation.

Should these surveys identify any residual elements from the project protruding above the sea bed, DTPWE will ensure that notification is given to the UK Hydrographic Office so that suitable notation of a potential anchoring hazard can

be marked on relevant charts and mariners informed accordingly. Appropriate measures will then be taken to remove or re-bury in order to avoid posing a risk to mariners potentially using the area. The removal or reburial technique and machinery will be decided depending on the type, size and location of the elements, but will more likely mirror that used for the initial decommissioning works.

15 Supporting Studies

Any supporting studies or investigations which are undertaken in support of future Decommissioning Programmes will be included as annexes to the Decommissioning Programme.

The following documents inform and support the decommissioning provisions contained in this document:

- Walney Extension Offshore Wind Farm Decommissioning Programme;
- Decommissioning of Offshore Renewable Energy Installations Under the Energy Act 2004 - Guidance notes for industry (England and Wales) – March 2019;
- Marine and Coastal Access Act 2009;
- Deemed marine licence granted as part of the DCO awarded 07 November 2014, varied August 2017 and May 2018.
- Section 36 Licence dated 07.11.14;
- DCO granted November 2014;and
- Walney Extension Offshore Wind Farm Environmental Statement (PINS reference EN010027) in July 2013.