Arklow Bank Wind Park 2

Rehabilitation Schedule

Volume III, Appendix 4.1: Rehabilitation Schedule

sse Renewables

Revision	Date		Author	Reviewed by	Approved by
1.0	15/05/2024	Final (External)	GoBe Consultants	GoBe Consultants	Sure Partners Limited

Statement of Authority

Expert	Qualifications	Experience
Marc Walshe	BEng (Hons), MSc.	Marc Walshe is a Consents Manager with SPL/SSE Renewables and a full Member of the Institution of Environmental Sciences. Marc holds an honours degree in Environmental Engineering (BEng), a masters degree in Renewable Energy (MSc) and an Advanced Diploma in Planning and Environmental Law. Marc has over 23 years experience working in both the energy and environmental sectors on a range of projects which include large scale infrastructural developments in both Ireland and the UK. The management of consents has been key to his role whether through the consent application process or ensuring compliance with the subsequent post consent requirements during construction and/or operation.
Kaj Christianen	BEng (Hons.) in Environmental Engineering from the University of Galway MSc (Hons.) in Renewable Energy from University of Aberdeen CEng with Engineers Ireland	Kaj has over 14 years' experience within the renewable energy industry, specifically in the field of offshore wind and solar energy development. Kaj has acted in both project engineering and project management roles for a number of offshore wind projects throughout the North Sea. Within these projects Kaj was responsible for delivering foundation structures and has experience across the project lifecycle; from procurement and design to construction and commissioning. Kaj also has extensive Irish based development management experience in taking solar and offshore wind energy infrastructure through the development cycle; from early conceptual planning stages through to design, construction and operation.

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Glossary

Defined Term	Definition
Arklow Bank Wind Park 1 (ABWP1)	Arklow Bank Wind Park 1 consists of seven wind turbines, offshore export cable and inter-array cables. Arklow Bank Wind Park 1 has a capacity of 25.2 MW. Arklow Bank Wind Park 1 was constructed in 2003/04 and is operated by Arklow Energy Limited. It remains the first and only operational offshore wind farm in Ireland.
Arklow Bank Wind Park 2 – Offshore Infrastructure	"The Proposed Development", Arklow Bank Wind Park 2 Offshore Infrastructure: This includes all elements under the existing Maritime Area Consent.
Arklow Bank Wind Park 2 (ABWP2) (The Project)	Arklow Bank Wind Park 2 (ABWP2) (The Project) is the onshore and offshore infrastructure. This EIAR is being prepared for the Offshore Infrastructure. Consents for the Onshore Grid Infrastructure (Planning Reference 310090) and Operations Maintenance Facility (Planning Reference 211316) has been granted on 26th May 2022 and 20th July 2022, respectively. • Arklow Bank Wind Park 2 Offshore Infrastructure: This includes all elements to be consented in accordance with the Maritime Area Consent. This is the subject of this EIAR and will be referred to as 'the Proposed Development' in the EIAR. • Arklow Bank Wind Park 2 Onshore Grid Infrastructure: This relates to the onshore grid infrastructure for which planning permission has been granted. • Arklow Bank Wind Park 2 Operations and Maintenance Facility (OMF): This includes the onshore and nearshore infrastructure at the OMF, for which planning permission has been granted. • Arklow Bank Wind Park 2 EirGrid Upgrade Works: any non-contestable grid upgrade works, consent to be sought and works to be completed by EirGrid.
Array Area	The Array Area is the area within which the Wind Turbine Generators (WTGs), the Offshore Substation Platforms (OSPs), and associated cables (export, inter- array and interconnector cabling) and foundations will be installed.
Benthic ecology	Benthic ecology encompasses the study of the organisms living in and on the sea floor, the interactions between them and impacts on the surrounding environment.
Cable Corridor and Working Area	The Cable Corridor and Working Area is the area within which export, inter-array and interconnector cabling will be installed. This area will also facilitate vessel jacking operations associated with installation of WTG structures and associated foundations within the Array Area.
Competent Authority (CA)	The authority designated as responsible for performing the duties arising from the EIA Directive as amended. For this application, the Competent Authority is An Bord Pleanála.
Cumulative Impacts	'The addition of many minor or significant effects, including effects of other Projects, to create larger, more significant effects' (EPA, 2022).

Defined Term	Definition
Designated Landscape	Areas of landscape identified as being of importance at international, national or local levels, either defined by statute or identified in development plans.
EIA	An Environmental Impact Assessment (EIA) is a statutory process by which certain planned Projects must be assessed before a formal decision to proceed can be made. It involves the collection and consideration of environmental information, which fulfils the assessment requirements of the Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment as amended by Directive 2014/52/EU of the European Parliament and of the Council (EIA Directive) and the regulations transposing the EIA Directive (EIA Regulations).
EirGrid	State-owned electric power transmission system operator (TSO) in Ireland and Transmission Asset Owner (TAO) for the Project's transmission assets.
Foreshore	The bed and shore, below the line of high water of ordinary or medium tides, of the sea and of every tidal river and tidal estuary and of every channel, creek, and bay of the sea or of any such river or estuary including the subsoil below, and the water column above the bed and shore and extending to the 12 nautical mile limit.
Habitats Directive	Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.
Indirect Impact	'Impacts on the environment, which are not a direct result of the Project, often produced away from (the site) or as a result of a complex pathway' (EPA, 2022).
Land Use	The use and management of the natural, semi-natural and built environment.
Landfall	The area in which the offshore export cables make landfall and is the transitional area between the offshore cabling and the onshore cabling.
Magnitude	Size, extent and duration of an impact.
Maritime Area Consent (MAC)	A consent to occupy a specific part of the maritime area on a non-exclusive basis for the purpose of carrying out a Permitted Maritime Usage strictly in accordance with the conditions attached to the MAC granted on 22nd December 2022 with reference number 2022-MAC-002.
Mitigation Measure	Measures designed to avoid, prevent or reduce impacts.
Permitted Maritime Usage	The construction and operation of an offshore wind farm and associated infrastructure (including decommissioning and other works required on foot of any permission for such offshore wind farm).
Profound Impact	An impact which obliterates sensitive characteristics.
Sensitive Receptor	Physical or natural resource, special interest or viewer group that may experience an impact.
Sensitivity	Vulnerability of a sensitive receptor to change.

Defined Term	Definition
The Application	The full set of documents that will be submitted to An Bord Pleanála in support of the consent.
The Developer	Sure Partners Limited
The Project	All components of ABWP2 together. That is the Offshore Infrastructure, Onshore Grid Infrastructure and Operations Maintenance Facility and EirGrid Upgrade Works.
The Proposed Development	Arklow Bank Wind Park 2 Offshore Infrastructure: This includes all elements to be consented in accordance with the Maritime Area Consent and comprises the development proposed in this application to An Bord Pleanála. This is the subject of this EIAR.
Transboundary impact	An impact on the environment, the physical origin of which is situated wholly or in part within an area under the jurisdiction of another country.
Zone of Influence	Areas within which environmental impact may occur – to be defined for each receptor by technical specialists

Acronyms

Term	Meaning
AA	Appropriate Assessment
ABP	An Bord Pleanála
ABWP1	Arklow Bank Wind Park 1
ABWP2	Arklow Bank Wind Park 2
AHTS	Anchor Handler Tug / Supply vessel
CA	Competent Authority
CEM	Community Engagement Manager
CFE	Controlled Flow Excavation
CIA	Cumulative Impact Assessment
CTV	Crew Transfer Vessels
DCCAE	Department of Communications, Climate Action and Environment
DHLGH	Department of Housing Local Government and Heritage
DMRB	Design Manual for Roads and Bridges
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EPA	Environmental Protection Agency
EU	European Union
HWM	High Water Mark
IPCC	Intergovernmental Panel on Climate Change
LAT	Lowest Astronomical Tide
MAC	Maritime Area Consent
MARA	Maritime Area Regulatory Authority
MGN	Marine Guidance Notes
MP	Monopile
NIS	Natural Impact Statement

Term	Meaning
NPWS	National Parks and Wildlife Service
OGI	Onshore Grid Infrastructure
OMF	Operations and Maintenance Facility
OSP	Offshore Substation Platform
PINS	The Planning Inspectorate
PLGR	Pre Lay Grapnel Run
RS	Rehabilitation Schedule
SLVIA	Seascape Landscape and Visual Impact Assessment
TAO	Transmission Asset Owner
TP	Transition Pieces
TSO	Transmission System Operator
UAU	Underwater Archaeological Unit
UK	United Kingdom
UNECE	United Nations Economic Commission for Europe
WP	Work Packages
WROV	Work-Class Remotely Operated Vehicle
WTG	Wind Turbine Generator

Units

Unit	Description
€	euros
km	Kilometre
m	Meters
M	Million
mm	Millimetre
MW	Mega Watt
t	Tonne

1 Introduction

1.1.1.1 Arklow Bank Wind Park 2 (ABWP2) (the Project) is a proposed offshore wind farm situated on and around Arklow Bank in the Irish Sea, approximately 6 to 15 km to the east of Arklow in County Wicklow.

1.1.1.2 ABWP2 is made up of both onshore and offshore components. The subject of this Rehabilitation Schedule (RS) is the offshore infrastructure (the Proposed Development).

1.1.1.3 In May 2022, Sure Partners Limited, (the Developer) received planning approval for the onshore grid connection infrastructure (OGI) (Case Reference: 310090). In June 2022, the Developer received planning permission for the Operations and Maintenance Facility (OMF) (Planning Register Reference: 21/1316).

1.1.1.4 Arklow Bank Wind Park 2 Offshore Infrastructure hereafter referred to as the 'Proposed Development' comprises the Array Area (the area where the WTGs, the OSPs, and associated foundations and cables will be installed) and the Cable Corridor and Working Area. The total area of the Array Area is approximately 63.4 km^2. The total area of the Proposed Development is 139.4 km^2 (Figure 4.1.1).

1.1.1.5 The proposed Cable Corridor and Working Area (the area where the export, inter array and interconnector cabling will be installed) extends from the Array Area to a landfall to the north of Arklow at Johnstown North where it will interface meet with the consented OGI at the High Water Mark (HWM).

1.1.1.6 A Maritime Area Consent (MAC) (Ref:2022-MAC-002) was granted for the Proposed Development in December 2022 and the Developer has prepared a planning application for the Proposed Development which has been submitted to An Bord Pleanála (ABP), accompanied by an Environmental Impact Assessment Report (EIAR).

2 Proposed Development Overview

2.1.1.1 The Proposed Development includes all offshore infrastructure in the maritime area up to the HWM. The key components of the Proposed Development include:

- Either 56 or 47 WTGs using monopile (MP) foundations with each WTG comprising a tower section, nacelle and three rotor blades;
- Two OSPs using MP foundations;
- A network of inter-array cabling, including back-feeds between collector strings, and interconnector cabling;
- Two offshore export cables utilising the Cable Corridor and Working Area and an interconnector linking both OSPs; and
- Scour protection and cable protection.

2.1.1.2 The WTGs will be connected to each other by a network of inter-array cables, which will also connect into the OSPs. The offshore export cables will transfer the electricity from the OSPs to shore, where they will connect to the OGI. Further details of the Proposed Development are provided in Volume II, Chapter 4: Description of Development in the EIAR.

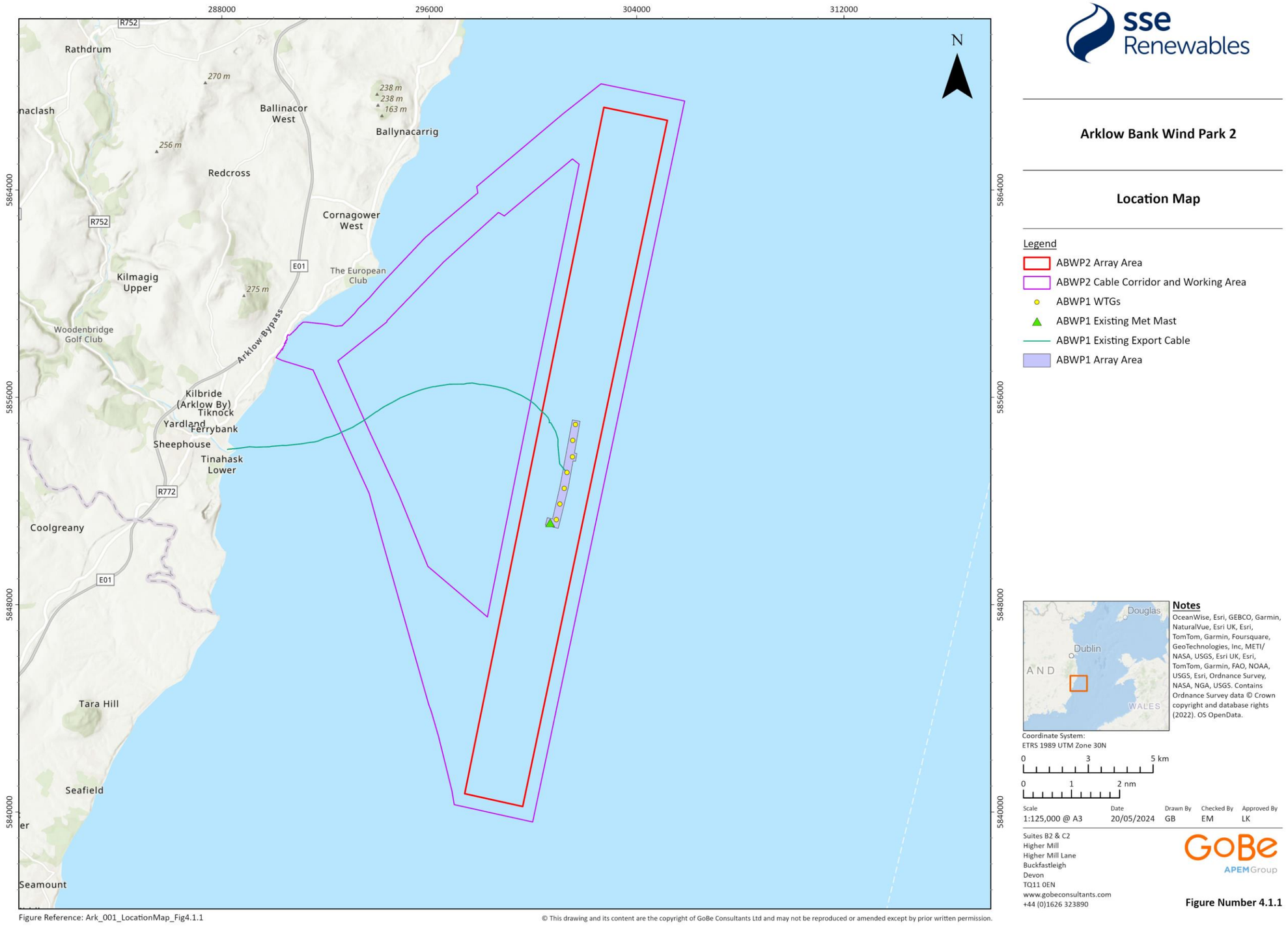

Figure 4.1.1: Arklow Bank Wind Park 2 Location Map

3 Regulatory Background

3.1.1.1 As outlined in the MAC for the Proposed Development, the application for Development Permission shall have attached to it a Rehabilitation Schedule, within the meaning of section 95 of the Maritime Area Planning Act 2021.

3.1.1.2 The holder of a MAC shall, before the expiration of the MAC, rehabilitate that part of the maritime area the subject of the MAC, and any other part of the maritime area, adversely affected by the maritime usage the subject of the MAC.

3.1.1.3 In accordance with section 96 of the Maritime Area Planning Act 2021, the obligation on the holder of a MAC to rehabilitate a part of the maritime area may include one, or more than one, of the following:

(a) the decommissioning of infrastructure;

(b) the removal of infrastructure;

(c) the partial removal of infrastructure;

(d) the re-use of infrastructure for the same or another purpose;

(e) the burying or encasing of infrastructure; and

(f) the removal of any deposited or waste material.

3.1.1.4 The rehabilitation schedule shall also set out the particulars of how the application will discharge the rehabilitation obligations including particulars of the following:

(a) the proposed programme of rehabilitation;

(b) the proposed date, or the occurrence of the event, on which the programme will start to be implemented and (if no ongoing maintenance is required by the programme) the proposed date on which the programme will have been fully implemented;

(c) the estimated costs of the programme; and

(d) the expected timelines for applying for and obtaining the other authorisations referred to in section (3) of section 96 the Maritime Area Planning Act 2021 required in order to enable the holder of the MAC to discharge that obligation.

3.1.1.5 This Rehabilitation Schedule sets out the proposed rehabilitation activities, the expected timelines for applying and for obtaining other authorisations (including the proposed start and end dates for implementation) and the estimated costs for the rehabilitation of that part of the maritime area (and any other part of the maritime area adversely affected by the maritime usage) the subject of the MAC for the Proposed Development. The alternatives considered to inform the Rehabilitation Schedule for the Proposed Development are assessed in the Alternatives Chapter of the EIAR (Volume II, Chapter 3: Consideration of Alternatives). This Rehabilitation Schedule has been assessed in the EIAR and the Natura Impact Statement for the Proposed Development.

3.1.1.6 The main assumptions are:

- The scope of decommissioning and removal (including partial removal) covers all infrastructure associated with the Proposed Development;
- There will be either 47 or 56 WTG units, depending on which Project Design Option is chosen;
- There will be 2 x OSPs;
- Foundations (MPs) will be cut to 2m below the mudline;
- All subsea cables will be left *in-situ* but with the cut ends buried to 2m below the mudline;

- Scour protection materials will be left *in-situ;* and
- It is not yet known which port will be used for decommissioning operations however it will likely be within 150nm of the Proposed Development.

4 Rehabilitation Activities

4.1.1.1 The assets which will be decommissioned are the WTGs, WTG and OSP transition pieces (TPs), MPs, all cabling and ducting above the seabed, followed by the remediation of the seabed. The methodologies for each of these is discussed in the sections below.

4.1.1.2 The RS is informed and supported by the EIAR prepared for the Proposed Development.

4.1.1 Wind Turbine Generators

4.1.1.1 The decommissioning operation for the WTG is largely a complete reverse of the installation process. This means that it requires vessels with cranes and lifting tools with the same technical specification as will be used for installation. The model of WTG for the Proposed Development has been specified in the application for development permission and will consist of either Project Design Option 1 (236m rotor diameter) or Project Design Option 2 (250m rotor diameter) with hub heights between 155m and 162m above Lowest Astronomical Tide (LAT). These parameters imply that hook heights for blade installation / removal will be in the range 180-190m and will require crane lifting capacities over 1600t.

4.1.1.2 Tools and equipment required will be lifting yokes for each component, nacelle turning gear, and the grillages & sea fastenings for the components when loaded onto the vessel.

4.1.1.3 The sequence for removal is:

- Use turning gear to rotate blade into horizontal position. Present the lifting yoke onto the blade and then slacken off the bolts before removing the blade and placing it in the blade rack on the vessel. Repeat for the other two blades.
- Remove any external turning gear, and then rig nacelle for lifting and slacken off the bolts before lifting and placing onto the appropriate grillage.
- Rig tower assembly and then lift off as a single piece, placing it on the appropriate grillage. Note that depending upon vessel hook height that a two part tower lift may be required.

4.1.1.4 After the WTG has been removed, the TP will be made safe, and the gangway removed back to the vessel and preparation for moving to the next location will be made. Once there are four or five (depends upon the vessel's capacity) WTGs on board, then the vessel will transit back to port for offloading.

4.1.2 Transition Pieces

4.1.2.1 The TPs are bolted to the WTG or OSP foundation (MPs) and at a relatively light weight of 400t each lend themselves to a campaign using a smaller vessel than that used for the removal of WTG. Allowing for some marine growth in service, a lift weight of 500t is the assumed weight estimate.

4.1.2.2 The specification of a vessel will include a 600t crane with a hook height capability of 60m above deck level, and a deck load capacity of around 2000t to allow at least three, ideally four, transition pieces to be carried on deck.

4.1.2.3 All loose gear and cable connections across the MP-TP (monopile – transition piece) interface will be removed or broken by the Operations and Maintenance (O&M) team using Crew Transfer Vessels (CTV). The sequence for removal is:

- Put gangway down onto TP;
- Remove any TP cover and rig up TP for lifting;
- Take up slack in rigging;
- Slacken off TP bolts and remove them from the TP;
- Remove gangway and prepare for TP lift;
- Lift off TP and place onto the appropriate grillage; and
- Lift temporary navigation lighting onto the MP.

4.1.2.4 After the temporary navigation lights are in position then the vessel will prepare to jack down, leave and move to the next location. This will be repeated until there are three or four TPs on the vessel, after which it will transit to a port for offloading. This will require fifteen to twenty round trips for both Project Design Options.

4.1.3 Monopiles

4.1.3.1 The monopiles (MP) have a length range of 47-85 m and a weight range of 850-1600 t. They are embedded in the seabed, typically by 20-37 m penetration, leaving 20-55 m length of steel to be removed. Typically, the weight per metre is 20 t, thus 200 t per 10 m section. With a 600 t capacity crane a practical lift will be in the region of 400 t or 20 m of MP.

4.1.3.2 Therefore, if cuts are made at about the 400 t mark, then a smaller capacity vessel can undertake the job.

4.1.3.3 The type of cutting tool utilises an internal high pressure waterjet cutter. This sort of tool has been used for cutting piles in other applications. For a material thickness of 100 mm, the progress rate will be approximately 20 mm per minute. Thus, a 7-14 m diameter pile would take approximately 18-36 hours to cut one section.

4.1.3.4 The sequence will be:

- Remove temporary navigation lights structures.
- Dredge inside the MP to a depth of about 4 m below the mudline. This ensures space for the cutting tool.
- Insert combined internal cutting & lifting tool and make the first cut of 400 t.
- Lift cut section onto vessel deck grillage and secure in place.
- Perform second cut and lift onto deck grillage and secure in place.

4.1.3.5 Cutting operations will take around 60 hours to complete. The vessel will then move onto the next location until its cargo capacity had been reached. With the approximate figures above, the MP at two locations could be removed at a time, requiring 29 round trips.

4.1.4 Cables and Ducting

4.1.4.1 Removal of the ducts at cable crossings and at the landfall area will require significant excavation of the sea defences and intertidal areas resulting in disturbance that is not considered commensurate with the environmental benefits associated with removal. Additionally, the process for the Proposed Development would require construction of a cofferdam requiring a significant campaign which in light of the limited environmental benefits associated with removal of cables and ducting would have unacceptable risks to personnel and the marine environment and engender extreme costs.

4.1.4.2 Cables (export, inter array and interconnector) are to be cut at, or below,seabed level and remain *in-situ*. Cable protection will also remain *in-situ*. Any ducting or cable protection above the seabed will be recovered with the MP once removed.

4.1.4.3 Any sections of cable (including cut ends) that are left in-situ are adequately buried, or otherwise protected with berms of loose rock.

4.1.5 Scour and Cable Protection

4.1.5.1 Where loose rock, rock bags or mattressing is used, this will be left *in-situ* since recovery entails significant impacts on the benthic environment, health and safety risks and significant costs.

4.1.6 Offshore Substation Platform (OSP)

4.1.6.1 The OSP rehabilitation is broadly similar to the removal of the WTGs. The topside will be removed first as a separate activity and then the transition pieces and MPs for the OSP will be removed in the same manner as the WTG transition piece and MP.

4.1.6.2 Durations and overall programme in section 7 include time for the OSP.

5 Seabed Rehabilitation

5.1.1.1 In the event that the protection used for either scour or cable protection presents a hazard to navigation then profiling activities will be completed using a subsea plough and upon completion of the decommissioning works, a survey will be undertaken to ensure that all debris has been removed. The survey will enable identification and recovery of any debris located on the seabed which may have arisen from activities related to the decommissioning process and which may pose a risk to navigation or other users of the sea.

5.1.1.2 Analysis of any survey data gathered will also ensure that items for removal and disposal relate only to the asset. Consultation with the Underwater Archaeological Unit (UAU) will be conducted if other anomalies of archaeological interest are identified during seabed rehabilitation. Appropriate buffer zones will be implemented around any of the identified anomalies.

6 Post-Decommissioning Monitoring, Maintenance and Management of the Site

6.1.1.1 Given that the Developer is not proposing to fully remove all assets relating to the Proposed Development, some post-decommissioning activities will be required, to identify and mitigate any unexpected risks to navigation or other users of the sea.

6.1.1.2 Post-decommissioning monitoring surveys of the seabed will be carried out following the completion of the decommissioning works. Surveys will comprise geophysical survey (such as swathe bathymetry, sidescan sonar and magnetometer) and results will be provided to Maritime Area Regulatory Authority (MARA).

6.1.1.3 A post-decommissioning report shall be compiled and submitted to MARA.

6.1.1.4 Evidence that all infrastructure and deposited or waste material that was due to be removed according to the RS, has been removed.

6.1.1.5 Where infrastructure is left in-situ, evidence that it has been cut-off, buried or otherwise treated in accordance with the RS.

6.1.1.6 A comparative analysis of predicted and actual costs.

6.1.1.7 Post-decommissioning hydrographic surveys will be undertaken in accordance with the requirements set out in the Marine Guidance Notes (MGN) 654.

6.1.1.8 If an obstruction appears above the seabed following decommissioning which is attributable to the Proposed Development, it will be marked so as not to present a hazard to other sea users and remediated as required. Any remediation method will be agreed with MARA and relevant stakeholders. The navigational marking will remain in place until such time as the obstruction is removed or no longer considered a hazard.

6.1.1 Lighting and Marking

6.1.1.1 In accordance with the Development permission (once received), the Proposed Development will be marked and lit, until the point of removal of the structures. The lighting and marking requirements will be complied with, as specified in the Lighting and Marking Plan (Volume III, Appendix 25.6).

7 Durations and overall programme for both Project Design Options

7.1.1.1 Decommissioning and rehabilitation of the Proposed Development is expected to take place over an 18 month period and will be concluded in advance of expiry of the MAC in December 2067. Applying the methodology and using industry norms for activity durations, the decommissioning campaign durations for each of the elements are as set out in the sections or Work Packages (WP) below.

7.1.1 Wind turbines

7.1.1.1 The vessel for the WTG removal work will be a vessel with at least the same technical capability as the vessel used during the installation process. Many new vessels of this type will come into service over the operational life of the Proposed Development, and equivalent vessels are expected to be available for the decommissioning work.

Table 4.1.1: WTG removal activity durations for both Project Design Options

Total Mobilisation, Seafastening, and Demobilisation	15	Days
Operational duration including transits, P0 (ie: excluding weather downtime)	89	Days
Weather and Breakdown Downtime for offshore operations	35%	
Operational duration including transits, weathered	136	Days
Total vessel charter duration, including operations mobilisation & demobilisation	151	Days

7.1.2 Transition Pieces

7.1.2.1 A smaller vessel with a lower lifting capacity compared to the vessel used to remove the WTGs will be used for the TP removal activities. The jacking and transit durations and weather downtime allowance are detailed in Table 4.1.2.

Table 4.1.2: Transition piece removal activities durations for both Project Design Options

Total Mobilisation, Equipment Loading, and Demobilisation	6	Days
Operational duration including transits, P0 (ie: excluding weather downtime)	43	Days
Weather and Breakdown Downtime	20%	
Operational decommissioning time, with weather downtime	54	Days
Total vessel charter duration, including operations mobilisation & demobilisation	60	Days

7.1.3 Monopiles

7.1.3.1 The monopile removal schedule could run with the same vessel as for the transition piece removal schedule after TP removal has been completed. The estimated duration for the monopile removal works is as presented in Table 4.1.3.

Table 4.1.3: Monopile removal activities durations

Total Mobilisation, Equipment Loading, and Demobilisation	13	Days
Operational duration including transits, P0 (ie: excluding weather downtime)	179	Days
Weather and Breakdown Downtime	20%	
Operational decommissioning time, with weather downtime	224	Days
Total vessel charter duration, including operations mobilisation & demobilisation	237	Days

7.1.4 Seabed remediation

7.1.4.1 Seabed remediation activities use a different vessel from WTG and MP & TP removal activities. The estimated schedule is presented in Figure 4.1.2.

Table 4.1.4: Seabed remediation activities durations

Total Mobilisation, Loading/Unloading Equipment, and Demobilisation	5	Days
Operational duration including transits, P0 (ie: excluding weather downtime)	38	Days
Weather and Breakdown Downtime	35%	
Operational decommissioning time, with weather downtime	58	Days
Total vessel charter duration, including operations mobilisation & demobilisation	63	Days

7.1.5 Overall programme

7.1.5.1 Although the two Design Option scenarios have different quantities of turbines the overall programme durations are considered to be comparable. This is because although there are fewer of the larger turbine, each WTG and foundation structure is heavier and larger than the smaller turbine, and the weights and durations are considered to be equivalent. To construct the programme, it is assumed that each WP occur in series and are arranged in finish-to-start relationships. The TP removal activity and MP removal activity could make use of the same vessel and therefore an integrated campaign is possible. However, it is believed that the removal of the TP all at once also suits the recycling operations onshore as that would represent a critical mass of material arriving on a regular schedule (4 TP every few days) rather than one or two units every week if it were performed in conjunction with the MP removal activities.

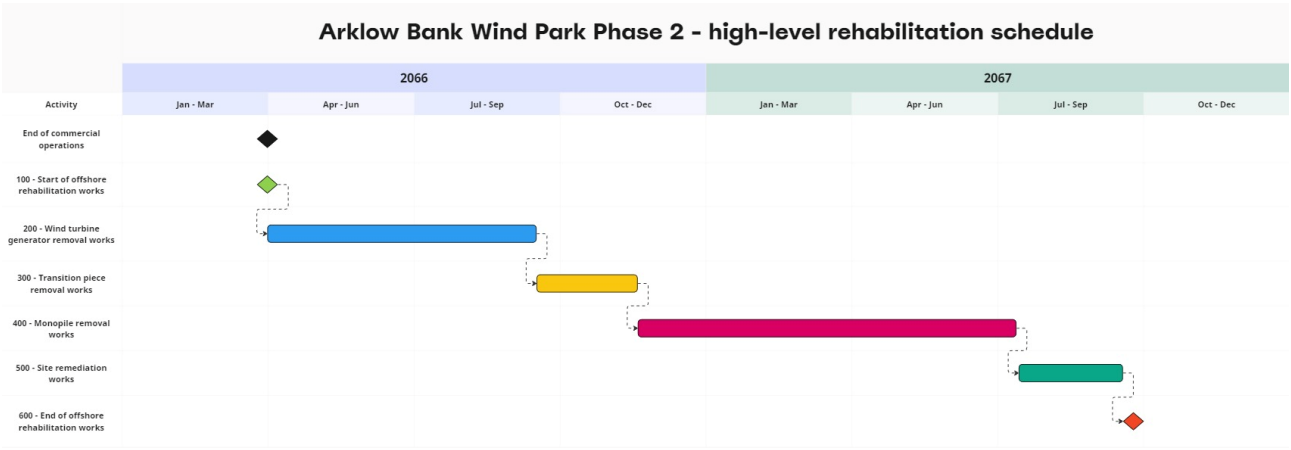

Figure 4.1.2: Outline overall programme for both Project Design Options

8 Estimated Costs for both Project Design Options

8.1.1.1 Although the two scenarios have different quantities of turbines the overall costs are considered to be comparable. This is because although there are fewer of the larger turbine, each WTG and foundation structure is heavier and larger than the smaller turbine, and the weights and durations are considered to be equivalent. Using the durations in section 7 and assumed vessel day rates, cost estimates for each of the work packages have been generated. Minor vessel costs have been estimated based upon data from previous projects. Tooling costs are estimates at this stage.

8.1.1.2 The estimated costs have a range of €100 – 120M based on 2024 prices / rates. This is further broken down as follows in the sub-sections below.

8.1.1 WTG removal

8.1.1.1 The estimated cost of removing WTG using a main jack-up vessel, fuel equipment and tools as well as support vessels is in the range of €60 – 70M in today's prices.

8.1.2 Transition piece removal

8.1.2.1 The estimated cost of removing the transition pieces using a main jack-up vessel, fuel, equipment and tools as well as support vessels is in the range of €7 – 9M in today's prices.

8.1.3 Monopile removal

8.1.3.1 The estimated cost of removing the monopiles using a main jack-up vessel, fuel, equipment and tools as well as support vessels is in the range of €30 – 35M in today's prices.

8.1.4 Seabed remediation

8.1.4.1 The estimated cost of seabed remediation using an AHTS, fuel and equipment spread, as well as post clearance surveys is in the range of €4 – 6M in 2024 prices / rates.

9 Conclusion

9.1.1.1 The requirements as set out in section 96 of the Maritime Area Planning Act 2021 have been addressed in this RS. Once Development Permission has been secured for the Proposed Development this RS will be appended to the MAC.