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## Morlais Project

# Proof of Evidence Andrew D. Billcliff – Project and Compulsory Acquisition

Applicant: Menter Môn Morlais Limited

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**TRANSPORT AND WORKS ACT 1992**

**THE MORLAIS DEMONSTRATION ZONE**

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**PROOF OF EVIDENCE OF**

**ANDREW D BILLCLIFF**

**ON BEHALF OF THE APPLICANT**

**PROJECT AND COMPULSORY ACQUISITION**

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**Application for an Order pursuant to the Transport and  
Works Act 1992 for the Morlais Demonstration Zone**

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## 1. PROJECT WITNESS

**Andrew D Billcliff IEng MIET Power industry professional for 40 years**

I have been working on the Morlais project as a consultant for over 7 years, my primary responsibility is as grid and permitting manager, but we are a small team and my experience allows me to contribute to many areas of the project. I am also a director of Menter Môn.

My career began in Shipbuilding, building submarines and surface vessels for the MoD. Before joining the Merchant Navy as a watchkeeping Engineer.

I am a Mechanical Engineer registered as I Eng., with good practical working knowledge of power plant design construction and operation underpinned with practical knowledge of all current forms of power generation.

I left the Merchant Navy to join the Central Electricity Generating Board in 1991 at Heysham 1 Nuclear power station and continued my career in the successor companies following privatisation: National Power, nPower, RWE, Innogy and nPower Renewables where I became Director of nPower renewables, taking early retirement in December 2013.

I developed, constructed/refurbished, and operated over 20 hydro Power plants in England Scotland and Wales. Often in heavily regulated and environmentally sensitive areas across UK including National parks, SSSI, AONB, scheduled (Ancient) monuments, listed buildings and areas with many other designations.

I was heavily involved in consenting, design, procurement, installation, and operation of onshore and offshore wind farms, including North Hoyle the first commercial scale offshore wind farm in 2004.

Previously authorised under the High Voltage safety rules, I managed these rules for the Wind and Hydropower businesses.

I am a Director of the British Hydropower Association, a Governor of Grwp Llandrillo Menai FE & HE college, Operations Director North Wales Tidal Energy and Coastal protection Ltd., Director of Menter Môn having worked on Morlais project for 7 years. I am also a member of the Scottish Power Customer Engagement Group challenging Scottish Power Business Plan proposals under RII0-ED2 price control framework on behalf of OFGEM.

Previously a member of the CBI Council for Wales, I chaired the CBI North Wales committee for 2 terms and chaired the Marine Energy Task & Finish Group reporting to the Minister for the Economy within Welsh Government.

I have been living with my family in North Wales since 1991 and I am an active member of the local community.

Statement of Truth:

**This proof of evidence has been prepared by A D Billcliff MIET and represents my true and professional opinion, based on my knowledge and experience in accordance with the guidance of my professional institute.**

## 2. INTRODUCTION

- 2.1 This evidence has been gathered in support of Menter Môn and the Morlais Tidal Energy project. The evidence begins by introducing the organisation responsible for delivering the project, the evidence then goes on to address the background to the project, the need for the project and its objectives, how the project is to be funded and delivered and provides the justification for the need for compulsory acquisition of land to facilitate the delivery of the project.
- 2.2 This evidence explains the requirement for CPO powers necessary to acquire the land on which to build the onshore infrastructure for the Morlais Tidal Energy project.
- 2.3 The project is part funded by European Union Structural Funds and administered by the Welsh European Funding Office. The project is not adversely affected by the UK decision to leave the EU, project completion by the end of 2023 has always been the end date for this funding round.
- 2.4 The Covid 19 pandemic of 2020 has impacted the project to some extent but the overall project is still on track for completion by the end of 2023. The project can form part of the 'Covid Green Recovery' following the pandemic. The project meets many of the aims of Wales' low carbon future and the Future Generations act.
- 2.5 Although termed a 'demonstration' zone, the zone will operate on a commercial basis and allow developers to deploy commercial turbine arrays.
- 2.6 The energy is extracted from the tide by rotating devices either mounted on the seabed, suspended in the middle of the water column, or hung below floating structures. The rotors or propellers rotate at very low speed and each is connected to a generator. The Electricity produced by these generators is fed to a substation on the shore by a series of cables.
- 2.7 The cables are fed from the seabed through ducts to the shoreside substation. It is intended to provide directionally drilled (HDD) boreholes to accommodate these cables to avoid the cliff face. This may not be possible if certain geological conditions are encountered. It is very difficult to identify the presence of these conditions without commencing horizontal drilling.
- 2.8 An alternative route that may be necessary to get the cables ashore has been planned in case HDD is unsuitable. This alternative consists of a series of 'j' tubes bolted to the cliff face that the cables can be drawn up then laid in trenches to the substation.

- 2.9 The shoreside substation provides a means of connecting each developer's turbines to a single electrical circuit that then transmits the combined power via cables buried in the road to the grid connection point around 8000m away at Penrhos. The project chose an underground route to avoid the need for pylons.
- 2.10 There are 2 points of connection one at 33kV and another at 132KV. It is important to 'future-proof' the project. The zone can support up to 240MW of devices and in order to attract investment, a pathway to this increased capacity must be available and understood.
- 2.11 Menter Môn
  - 2.11.1 Menter Môn is a 3<sup>rd</sup> sector company established in 1995 to deliver socio economic development projects and benefits in North West Wales.
  - 2.11.2 Menter Môn has a good reputation locally, within the Local Authority and within the Welsh Government for delivering these projects.
  - 2.11.3 The Menter Môn directors do not stand to benefit personally from the success of this project, there are no associated financial bonuses. The company has no shareholders to satisfy. Success will be measured by delivering employment, opportunities, wealth, and security to many families in the area.
  - 2.11.4 Its directors are bound and motivated by cultural and socio-economic aspirations, providing a sustainable future for local inhabitants, opportunities for young people, and a stable basis for the Welsh language and culture.
  - 2.11.5 Its primary objective is to provide long term secure jobs for the people of North West Wales.
  - 2.11.6 It also aims to Secure European Union Funding for the benefit of the local economy providing a platform for the growth of predictable renewable energy: and to deliver on the objectives of the Welsh Government's Future Generations Act, its Carbon reduction targets and its intent to see formal local participation in renewable energy.
  - 2.11.7 Specifically, in relation to the Morlais project, Menter Môn is the promoter, local manager and owner of the project, with a central role in its development. Furthermore, any income made by Menter Môn from the Morlais project will be used to support its work in the area.
- 2.12 Aims of the Morlais Project:
  - 2.12.1 To create local high-quality jobs



- 2.12.2 To mitigate the jobs lost by the closure of the Wylfa nuclear power plant and Hitachi's decision to pull out of the Wylfa Newydd 2700MW proposed Nuclear power plant.
- 2.12.3 To maximise local skills, training, and job opportunities in the development, construction, and operational phases.
- 2.12.4 To harness the opportunity for Anglesey and North Wales to become globally significant in the development and commercialisation of tidal stream energy generation technology.
- 2.12.5 To maximise community benefit from the project.
- 2.12.6 To provide a source of low carbon electricity and contribute to meeting Wales's Net Zero Carbon 2050 target. *Essential reading MDZ/J3.*

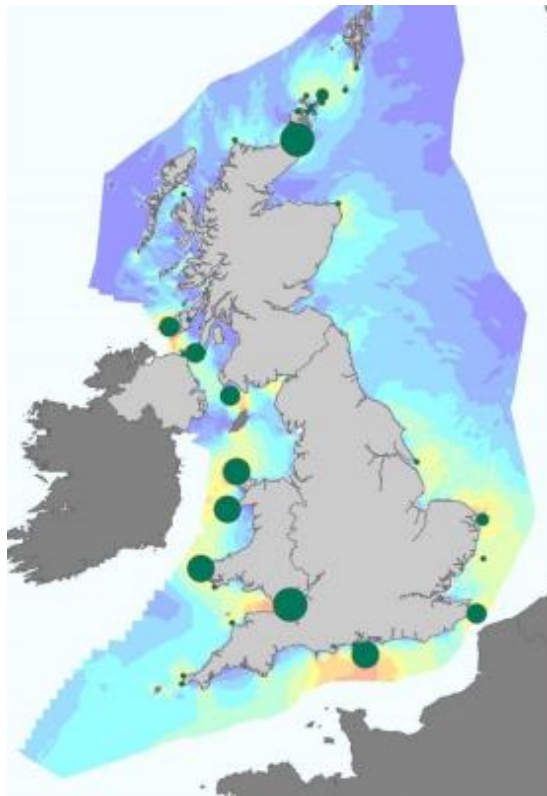
### 3. **Essential Reading**

- 3.1 MDZ/A25.4 Environmental Statement Chapter 4
- 3.2 MDZ/C1 Project Appraisal for Welsh European Funding Office.
- 3.3 MDZ/A16 Book of Reference and land plans
- 3.4 MDZ/J1 Marine Energy Plan for Wales 2016
- 3.5 MDZ/J4 Cymraeg 2050 Welsh language Strategy p61-64
- 3.6 MDZ/J3 Prosperity for All: A Low Carbon Wales
- 3.7 MDZ/J2 Well Being of Future Generations (Wales) Act 2015
- 3.8 MDZ/D1 Planning Policy Wales Edition 10 December 2018 p87-90
- 3.9 MDZ/J7 Morlais Land CPO process schedule
- 3.10 MDZ/A6 Funding Statement
- 3.11 MDZ/A5 Statement of Aims
- 3.12 MDZ/A29 Special Category Land Application
- 3.13 MDZ/D54 Draft policy statement – Local ownership of energy generation.
- 3.14 MDZ/P10 Project Witness - Dr James Orme
- 3.15 MDZ/P9 Planning Policy - David Bell.

## 4. THE MORLAIS PROJECT

### 4.1 Origins of the Project

- 4.1.1 In 2013 the Crown Estate identified several areas of sea bed around the UK coast that they thought could be used to develop tidal stream and wave energy. The sites were in Scotland, England and Wales and were designated for either Wave or Tidal stream depending on the natural resources present. The area off West Anglesey was designated for tidal stream energy. The West Anglesey demonstration Zone (WADZ).



*Figure 1 Crown Estate Designated Zones*

- 4.1.2 Menter Môn wanted to be an integral part of any power developer's plans not just the recipient of 'community benefit' hand-outs as is often the case from the big wind power companies, where most of their profits leave the UK and the 'community' would hardly benefit.
- 4.1.3 Menter Môn decided to bid for the rights to operate the West Anglesey Demonstration Zone on behalf of the Crown Estate and in 2014 following submission of a detailed application and formal interview Menter Môn were awarded the lease.

- 4.1.4 The lease instructs the leaseholder to collect a small rent from developers in the zone, which is then passed on to The Crown Estate. Crucially the lease also allows Menter Môn to charge a reasonable additional rent for enhancements they have made to the zone. The lease is effective for 40 years.
- 4.1.5 The 'WADZ' was then renamed the 'Morlais' Tidal Energy project. Morlais meaning 'voice of the sea' in Welsh, and the project began in earnest.
- 4.1.6 To earn some revenue from the project, both to sustain the project and to give something back to local communities, Menter Môn decided that the zone enhancement they would develop would be to provide a 'plug and play' solution for tidal stream energy developers. There was grid capacity within a reasonable distance so securing grid became a priority and a broad consenting envelope was devised to encompass all existing technologies that may wish to deploy in the designated zone.
- 4.1.7 Menter Môn applied for a share of a 100 million Euro European Union fund for Marine Energy to part fund the project and then set about raising the match funding. Raising match funding is a requirement of European Union funding, the match normally equates to around 25% of the capital sum to be awarded.
- 4.1.8 Menter Môn was originally allocated £7m for the consent and development work required for the Morlais project, covering the period 2015-2020. This funding is currently being extended to £10m to cover additional costs. A further sum of £35m is being secured to pay for the post consent infrastructure costs.
- 4.1.9 This funding would allow the provision of grid connectivity and consent, letting the developers concentrate on delivering their tidal energy devices, benefitting from the group approach, non-recourse debt and the potential cost benefits of cost sharing with other developers. Grid and Consent costs could then be amortised over the life of the project and Morlais could secure a small revenue based on developer rent.
- 4.2 Relocating the Demonstration zone.
  - 4.2.1 Early in the project whilst undertaking desk top studies Menter Môn noted that the zone as proposed did not encompass the most significant areas of tidal energy resource and that by moving the Zone slightly North and East this more energetic area could be incorporated within the zone. *This is covered fully in the Proof of Evidence MDZ/P10 submitted by Dr James Orme - Project Witness*

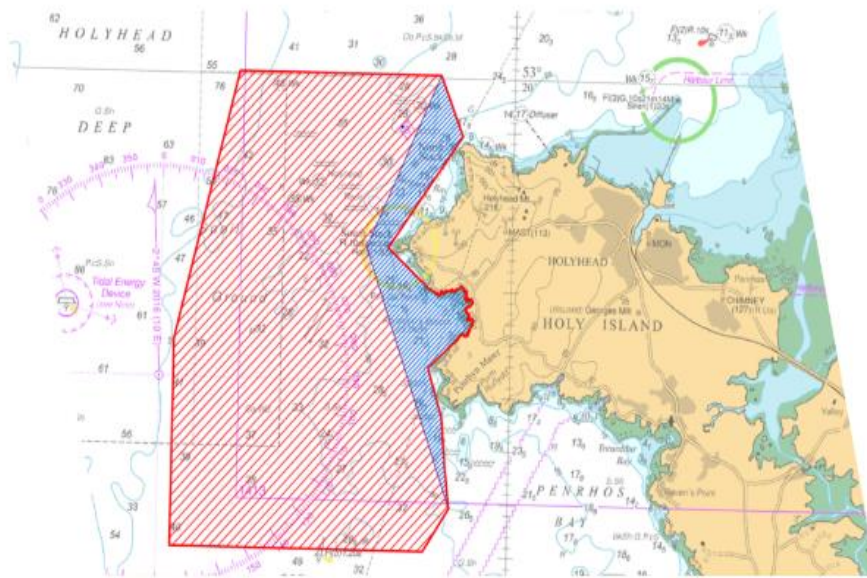


Figure 2 Morlais Tidal Energy Zone

#### 4.3 Phases of the Morlais Project.

The Morlais project consists of 3 distinctly different phases of activity:

- 4.3.1 **Morlais Development.** This part of the project costs around £7-10m – and provides the consent and development for the project, providing the foundation for the Construction and Operational phases. Included in this phase is the establishment of the delivery team, fundraising, preparation for the consenting process including all environmental studies, engagement of specialists to support the consent application, selection of developers for the zone, creation of sub-leases and the establishment of processes and procedures, consent submission, the Front End Engineering Design (FEED) study, creation of technical specifications for the works, setting up construction contracts, obtaining land rights and obtaining all permissions, consents and licences to allow the project to progress to the next phase. This phase includes the promotion of the Order and securing the necessary consents to deliver the project
- 4.3.2 **Morlais construction.** The infrastructure build phase. With a total cost of around £35m, the build encompasses: directional drills out to sea, a coastal substation, a small substation at Parc Cybi, a larger substation at Penrhos and a buried cable linking all elements together. Once consents are in place and pre-construction conditions are cleared construction will commence. This part of the project will take around 2

years and will be regulated by the consents and agreements obtained in the development phase. It is important to understand that Morlais construction means the construction, installation and commissioning of the land side substations and onshore cable route NOT the installation of Marine Energy Devices within the zone. Once fully commissioned the operational phase will begin.

- 4.3.3 **Morlais Operation.** This is the longest part of the project. Developers will deploy their turbines during this part of the project as they need a secure electrical connection to export their energy. This part of the project will last from commissioning/hand over of the Morlais cable for the duration of the project life and will include decommissioning at the end of the project. The TCE lease lasts until 2059.

#### 4.4 Key land affected along the route.

- 4.4.1 The cable route was chosen to minimise the effect on land owners. Existing roads were to be utilised for cable routes wherever possible.
- 4.4.2 Most of the land to the sides of the road was low grade farm land or land within existing developments, although some land was in private ownership for residential housing and particular care was taken in these areas.
- 4.4.3 Brownfield sites were to be repurposed where possible.

#### 4.5 Alternatives considered before finalising the route.

- 4.5.1 One proposal consisted of a 132KV connection directly connected via a bay at the Wylfa 400KV substation, but this was rejected due to access restrictions at site and the requirement for around 20Km of overhead pole route to Holy Island, and the traversing of the Inland sea. This was also thought to be difficult to consent within the time window and would add to the poles and wires crossing the island, thereby increasing consenting risk. Linking the zone by submarine cable was considered and rejected due to the many factors discussed in section 4.9. The A5 that crosses the cob onto Holy Island was found to be full of existing services and National Grid were unable share the existing 132KV cable duct housing their 2 circuits due to risk of failure of third-party assets and consequential damage.
- 4.5.2 A grid connection offer was pursued in the Valley area close to the National Grid transition tower where the overhead line changes to a buried cable. However, getting access to the proposed site meant crossing the inland sea. Installing a new duct across the sea bridge adjacent to the A55 was difficult due to segregation issues with the 5x

33KV cables already in the bridge and in use by Scottish Power. The cable bridge as constructed was not designed for additional cables and would have required a new cable bridge. An alternative was to utilise a disused duct along the railway line, this was discounted due to the condition of the duct and the close proximity to the rail line for over 500m.



*Figure 3 Inland Sea 33KV cable bridge*

- 4.5.3 An alternative cable route was considered between Parc Cybi and Orthios, crossing the A55 and railway on existing bridges. The recent bridge over the A55 looked ideal but the pre-installed ducts were too small, better suited to street lighting and communications cables. The road deck on the bridge was also too shallow to install the required diameter of cable duct and retain sufficient cover to meet the road standard.
- 4.6 There were fewer than 20 land owners affected. Orthios, Land & lakes, Conygar/Horizon, Isle of Anglesey County Council (IoACC), Network Rail, and The Crown Estate were the larger land owners, and the others were small businesses or private land owners.
  - 4.6.1 The cables are to come ashore in an area known as Abrahams Bosom, to a substation on Ty Mawr farm, where the cables then follow the road along the coast to Porth Dafarch road, then run inland and head right, down Mill Road and then leave the road into the Kingsland area, passing Holyhead Hotspur football ground and the Holyhead Leisure Centre, then heading right again to Parc Cybi where the cables then leave the road and follow the Wales and West Utilities (WWU) gas main, through the land owned by Land & Lakes and Conygar before heading beneath the

A55 trunk road and the London Holyhead main railway line into the substation at Penrhos on the Orthios site.

4.6.2 **Land & Lakes.** Land & lakes own a substantial amount of land (land parcels numbered 26,29,40 and 43) to the south of the A55 and they intend to build a leisure village on the site. Their planning permission is linked into the Wylfa New Nuclear development, as part of the development was to provide worker accommodation. This accommodation is no longer required but the leisure village may go ahead. The Morlais cable route now skirts the proposed development following detailed discussions with Land & Lakes to ensure a cable route that minimises the impact of the Morlais project on their development proposals.

4.6.2.1 In the area known as Caeglas provision will be made for directional drilling beneath the A55 and the railway in order to reach the proposed grid connection on the land owned by Orthios.

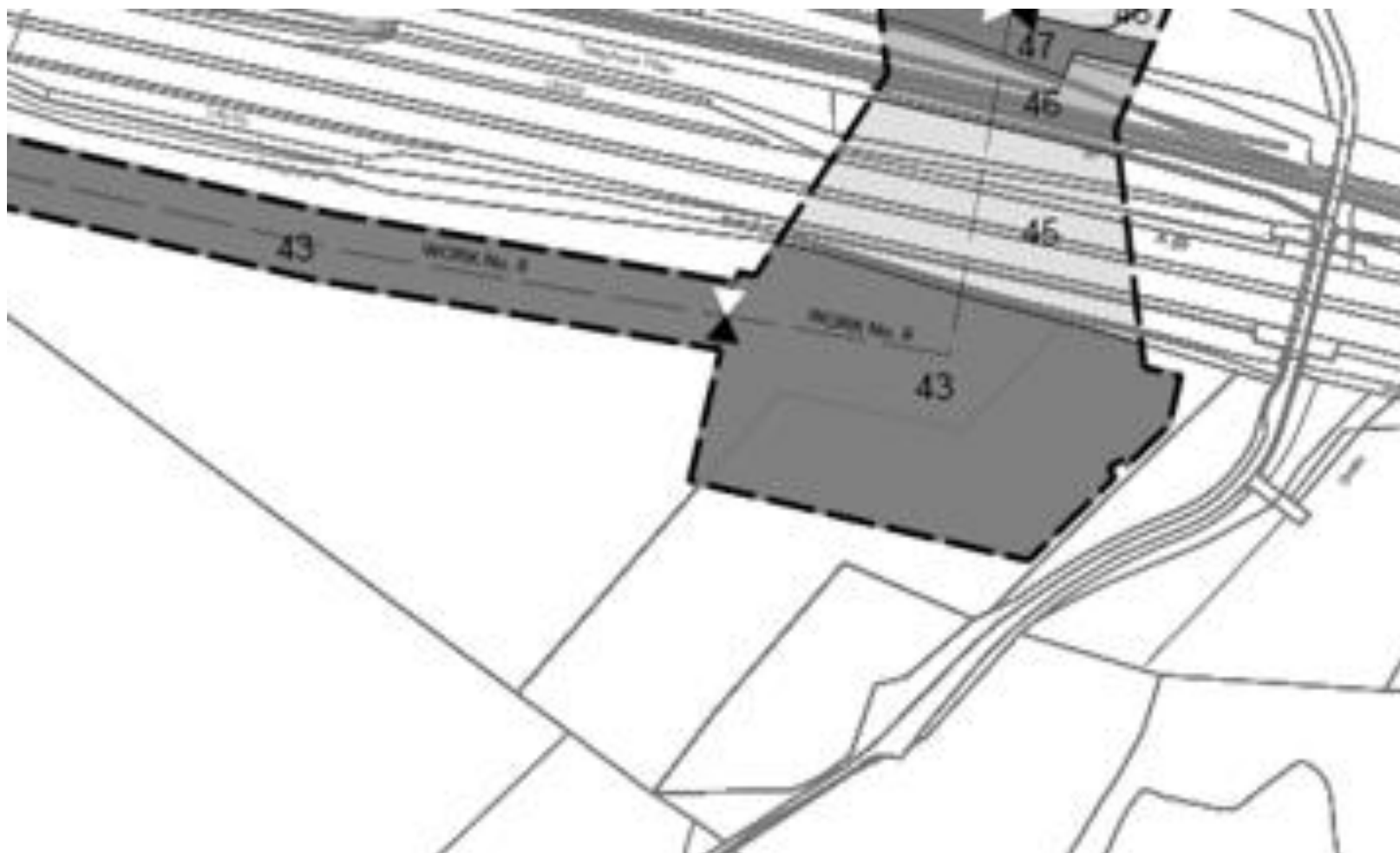


Figure 4 land & Lakes plot 43 Caeglas.



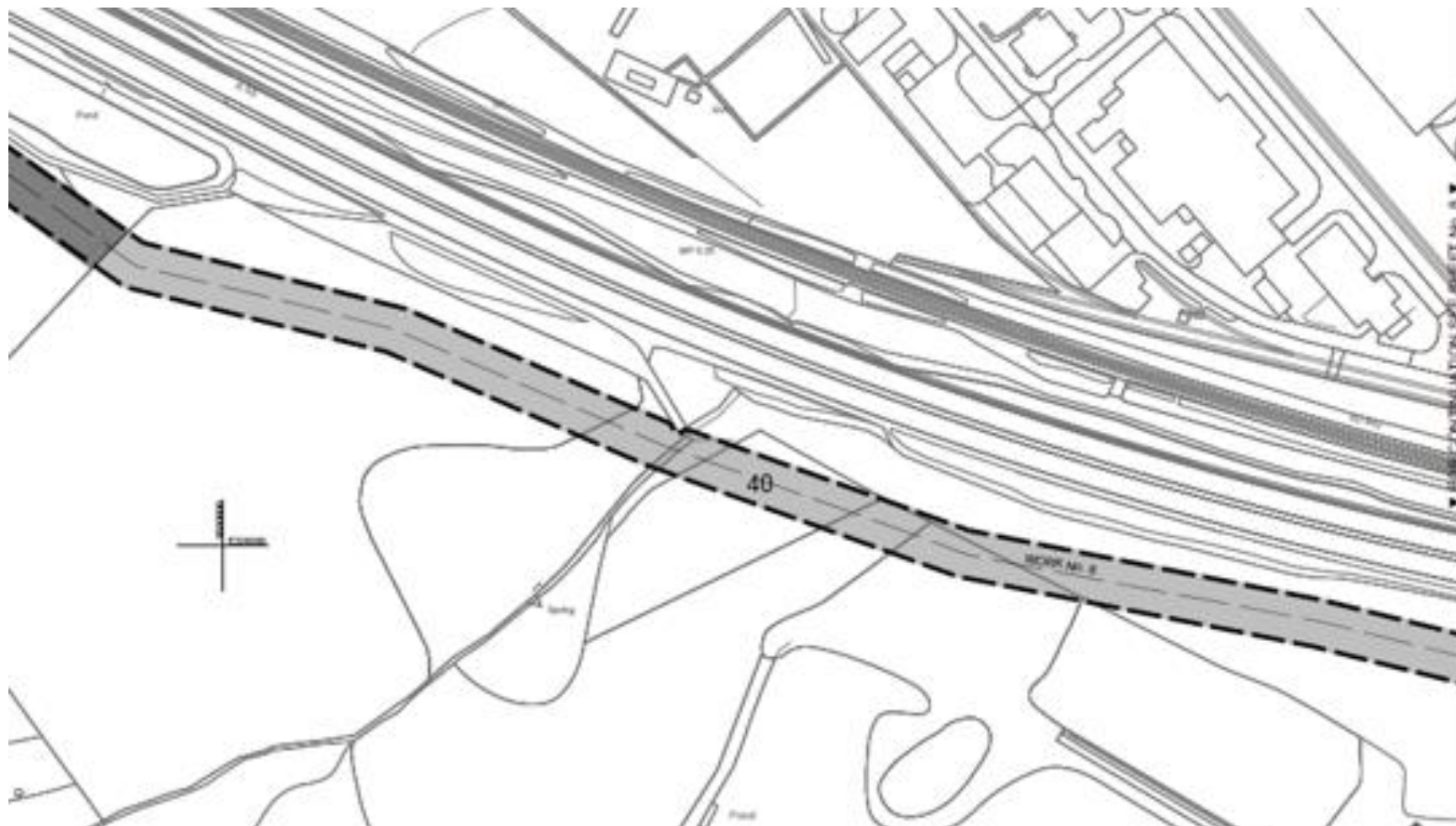


Figure 5 Land & Lakes plot 40

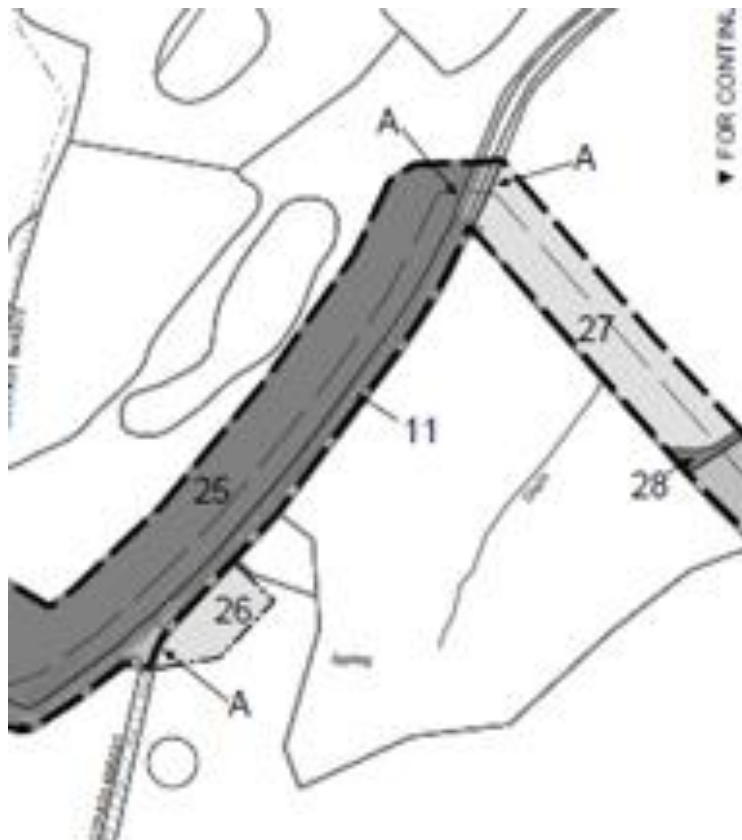


Figure 6 Land & Lakes plot 26. Mill Road.

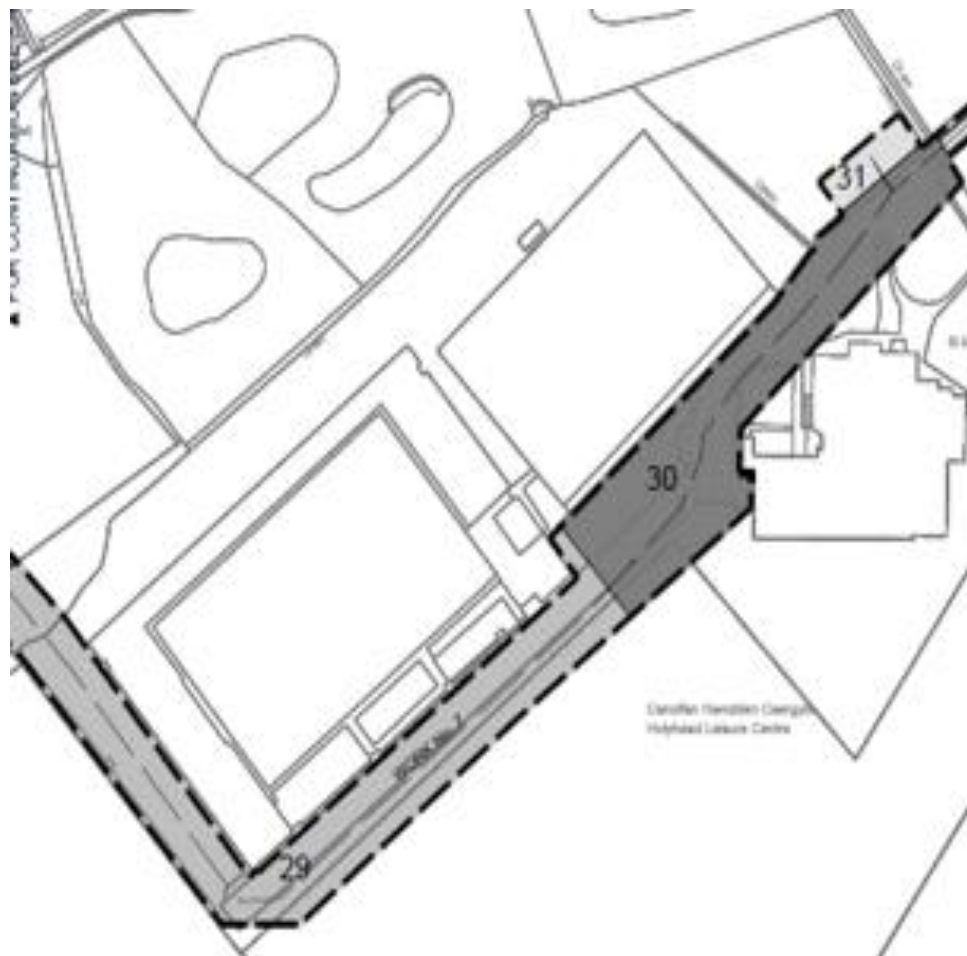


Figure 7 Land & Lakes plot 29 Kingsland

- 4.6.2.2 **Conygar/Horizon.** Conygar owns a stretch of land (land parcel number 39) between two stretches of land owned by Land & Lakes. Conygar have a commercial deal with Horizon to provide a logistics centre on the Conygar land to service the proposed nuclear power plant currently the subject of a Development Consent Order (DCO). Menter Môn is in advanced discussion with Horizon to ensure that the Morlais works do not interfere with the proposed logistics centre in the event that the scheme still goes ahead.
- 4.6.2.3 The proposed new Nuclear development at Wylfa is the subject of a DCO application which is now due for determination on 31<sup>st</sup> December 2020. In September 2020 Hitachi announced it was pulling out of the project. Menter Môn is currently exploring the likely effects this will have on ongoing discussions with Horizon.
- 4.6.2.4 Menter Môn has asked specifically if Horizon will withdraw their objection to the project but at the time of writing has had no response.

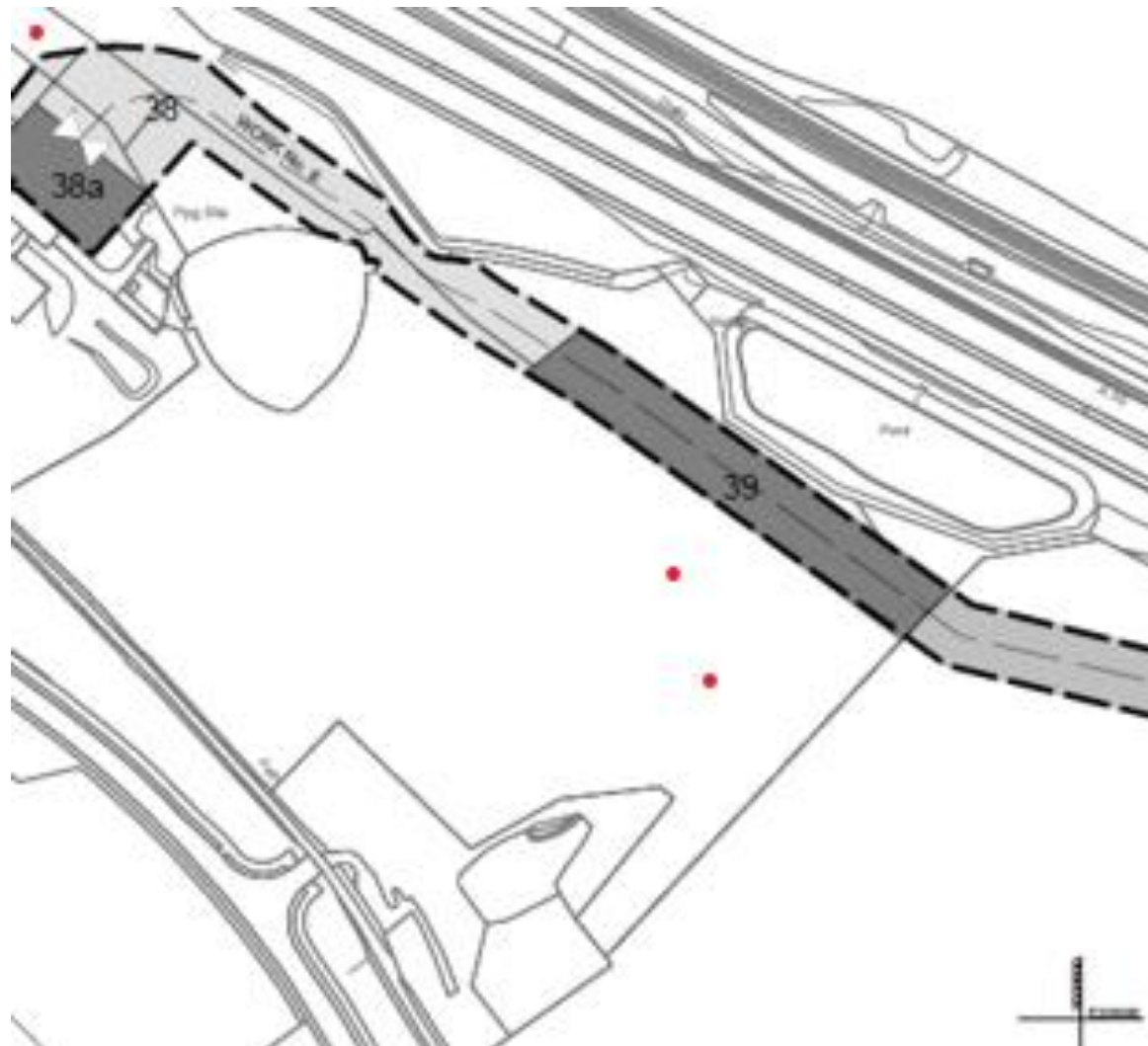


Figure 8 Conygar Horizon plot 3

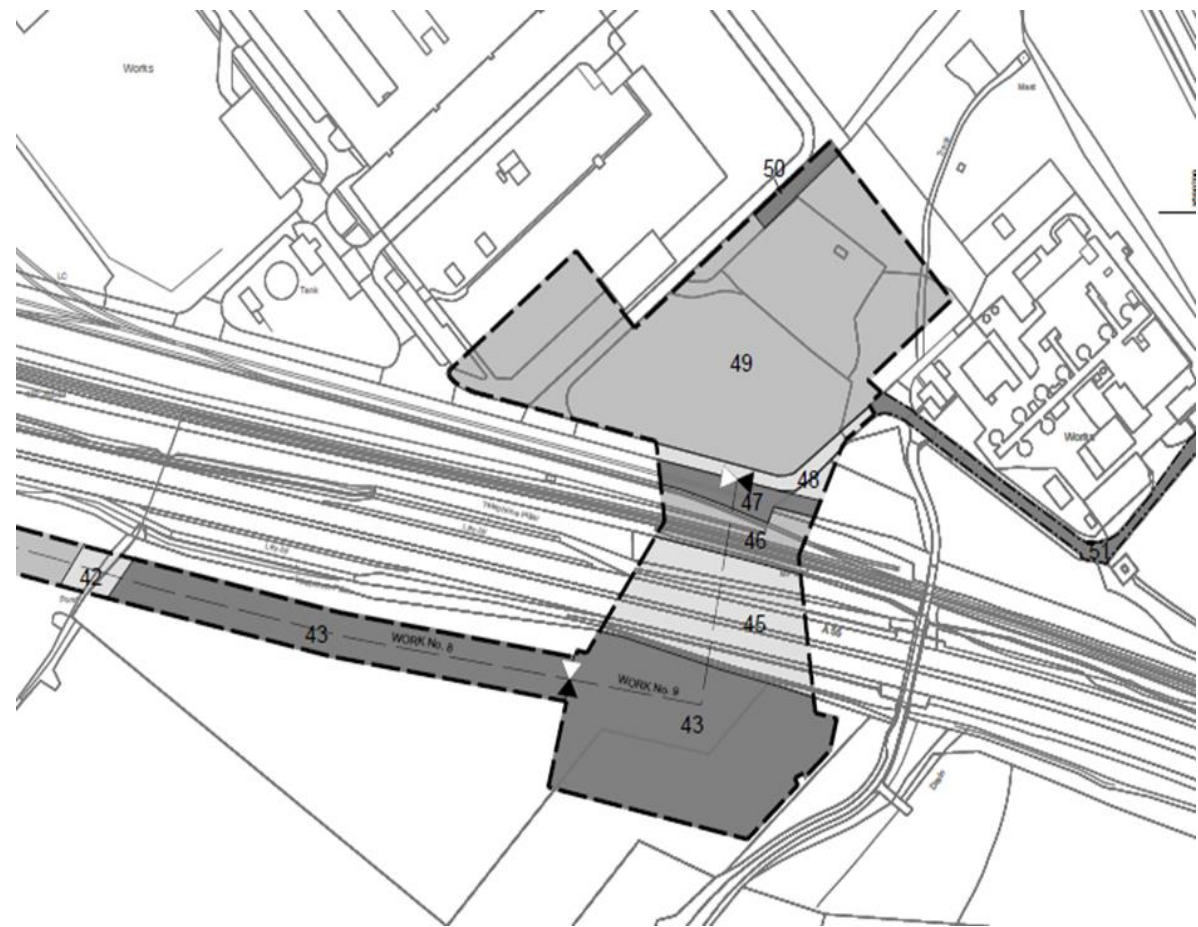


Figure 9 Plot 47-51 Orthios



- 4.6.3 **Orthios.** Orthios owns a substantial plot to the north of the A55 (land parcel numbers 47,48,49,50 and 51), previously an Aluminium Works but now a site in various stages of disrepair. It is in private ownership and unusually contains a 132KV double circuit 300MW electrical spur, connected to the national grid and fed from Wylfa 400KV substation.
- 4.6.3.1 The National grid spur contains 2 x 300MW circuits originally configured n+1, which meant that if one circuit failed 300MW could still be transmitted on the other circuit. Therefore the circuit capability is 600MW in all. National Grid have confirmed that this is still the case.
- 4.6.3.2 The facility was originally established to provide uninterrupted power from the Nuclear Power Station to the smelters at the Aluminium Works.
- 4.6.3.3 The 132KV cable sealing ends within the Orthios site are owned by National Grid but the land surrounding the cables is owned by Orthios. This has created problems for the Morlais project as the National Grid substation is entirely surrounded by Orthios land. There is no right of access to the National Grid network at this point.
- 4.6.4 **Network Rail.** Menter Môn believes Network rail owns the land between Orthios and Land & Lakes (land parcel number 46). This land contains the London-Holyhead main railway line. Originally it was planned to take the cables over a road bridge to access the site but that was found to be full of services and replacing the very old bridge was considered too costly for the project.



*Figure 10 Rail bridge unsuitable for additional cables*

4.6.4.1 Taking the cables across the railway on overhead lines was considered too much of an operational risk, due to possible cable failures in later life and the requirement to shut the road and railway to repair. Network rail suggested the drilling beneath the railway as they would be more comfortable long term with that approach.

#### 4.7 Other significant developers in area:

##### 4.7.1 **Minesto**

4.7.1.1 Minesto have a crown estate lease for a plot of sea bed in Holyhead deep approximately 1000m from the MDZ at its closest point.

4.7.1.2 Morlais is working closely with Minesto on the provision of shared services.

4.7.1.3 The company is listed on the Swedish stock Exchange. They have a tidal energy device under development that needs deeper water and ultimately they wish to deploy up to 80MW of these devices in Holyhead deep. It was not possible to accommodate this particular developer within the MDZ as the water depth requirement of 80-100m is too deep for the zone.

4.7.1.4 Minesto currently has access to 6.75MW of the Morlais 18MW 33kV grid capacity and would like to connect to grid via the proposed Morlais infrastructure, ultimately wishing to export 80MW of sustainable renewable energy into the grid down this shared route.

#### 4.8 Description of the Project.

4.8.1 A full description of the proposed development is set out at Chapter 4 (Project Description) in the Environmental Statement. This should be read alongside this proof. *Essential reading MDZ/A25.4*

4.8.2 The Project will provide a consented area for the installation and commercial demonstration of multiple arrays of tidal energy devices, to a maximum installed capacity of 240 Megawatts (MW). The Project will also provide permanent communal infrastructure through the provision of electrical infrastructure, including substations and onshore electrical cable route to grid connection. This proof deals with the onshore

infrastructure and the transition between sub sea and land based cables in terms of securing of necessary land rights.

- 4.8.3 The area of seabed identified by The Crown Estate off West Anglesey combined with water depth and proximity to grid connectivity, is the best area for tidal energy resource deployment around the UK.
- 4.8.4 Consent for a broad Project Design Envelope (PDE) is sought, to ensure maximum flexibility in the tidal technology types consented for deployment by the Project. This approach allows for deployment of a variety of currently available technologies, whilst also allowing for evolution of the designs of tidal devices over time. This is explained further at Chapter 4 (Project Description) of the Environmental Statement. The PDE is dealt with further in the evidence of David Bell on planning matters. Offshore, tidal devices will be deployed in multiple arrays within the Morlais Demonstration Zone (MDZ), to a maximum installed capacity of 240 MW. The tidal devices will have the following key elements:
  - 4.8.4.1 A foundation or anchor on or within the seabed.
  - 4.8.4.2 A supporting substructure or mooring.
  - 4.8.4.3 Tidal Energy Convertors (TEC); and
  - 4.8.4.4 Cable connections.
- 4.8.5 Each single array will be comprised of the same type of tidal device (technology type) and located within a discrete location, or berth, within the MDZ. The installed capacity per array is expected to generally be up to 30 MW, but may in practice be smaller than this, being determined by a number of factors including the individual capacity of the export cables supporting each array, the installed capacity of the Project in full, and the requirements of the tidal devices.
- 4.8.6 The MDZ and a corridor between the MDZ and the landfall location, at Abraham's Bosom on the west coast of Holy Island, will contain the following ancillary infrastructure:
  - 4.8.6.1 Up to nine export cables;
  - 4.8.6.2 Up to nine export cable tails (shared with onshore components);
  - 4.8.6.3 Navigation and environmental monitoring equipment;
  - 4.8.6.4 Mooring and foundation structures; and



- 4.8.6.5 Offshore electrical infrastructure, including submerged, floating or surface emergent hubs. The key components of the onshore works associated with the Project include:
  - 4.8.6.6 Cable landfall works;
  - 4.8.6.7 Up to nine export cable tails;
  - 4.8.6.8 A landfall substation at Ty-Mawr farm;
  - 4.8.6.9 A switchgear building at Parc Cybi;
  - 4.8.6.10 A grid connection substation at the existing Orthios Eco-Park to the east of Holyhead (the site of the former Anglesey Aluminium works), the Penrhos substation.
  - 4.8.6.11 Onshore cable circuits installed between Landfall Substation, Switchgear Building and Grid Connection Substation; and,
  - 4.8.6.12 Onshore cable joint bays (along onshore cable route between Landfall Substation, Switchgear Building and Grid Connection Substation).
- 4.8.7 A phased approach to deployment of the project will be taken, with scale and timeframe of phasing determined by assessments and consideration of mitigation and management. Dependent on the type of tidal device, full deployment to 240 MW could comprise up to a maximum of 620 tidal devices, supporting up to 1,648 Tidal Energy Converters and up to 740 inter-array cables within the MDZ (which represents the assessed 'worst-case', as set out in the Environmental Statement).
- 4.8.8 The landfall consists of exposed rocky shore, backed by a hinterland of coastal heath and farmland. The Landfall Substation location is within currently farmed land, in the area of Holy Island known as Penrhos Feilw.
- 4.8.9 From the Landfall Substation it is proposed that the majority of the onshore cable will be trenched where possible within the existing minor road network. The proposed cable corridor follows South Stack Road, Porthdafarch Road, Lon Isallt and Mill Road towards the Switchgear Building. The cable will be trenched from the Switchgear Building to the Grid Connection Substation, with a section installed via Horizontal Directional Drilling (HDD) beneath the A55 and the Holyhead to London rail line.

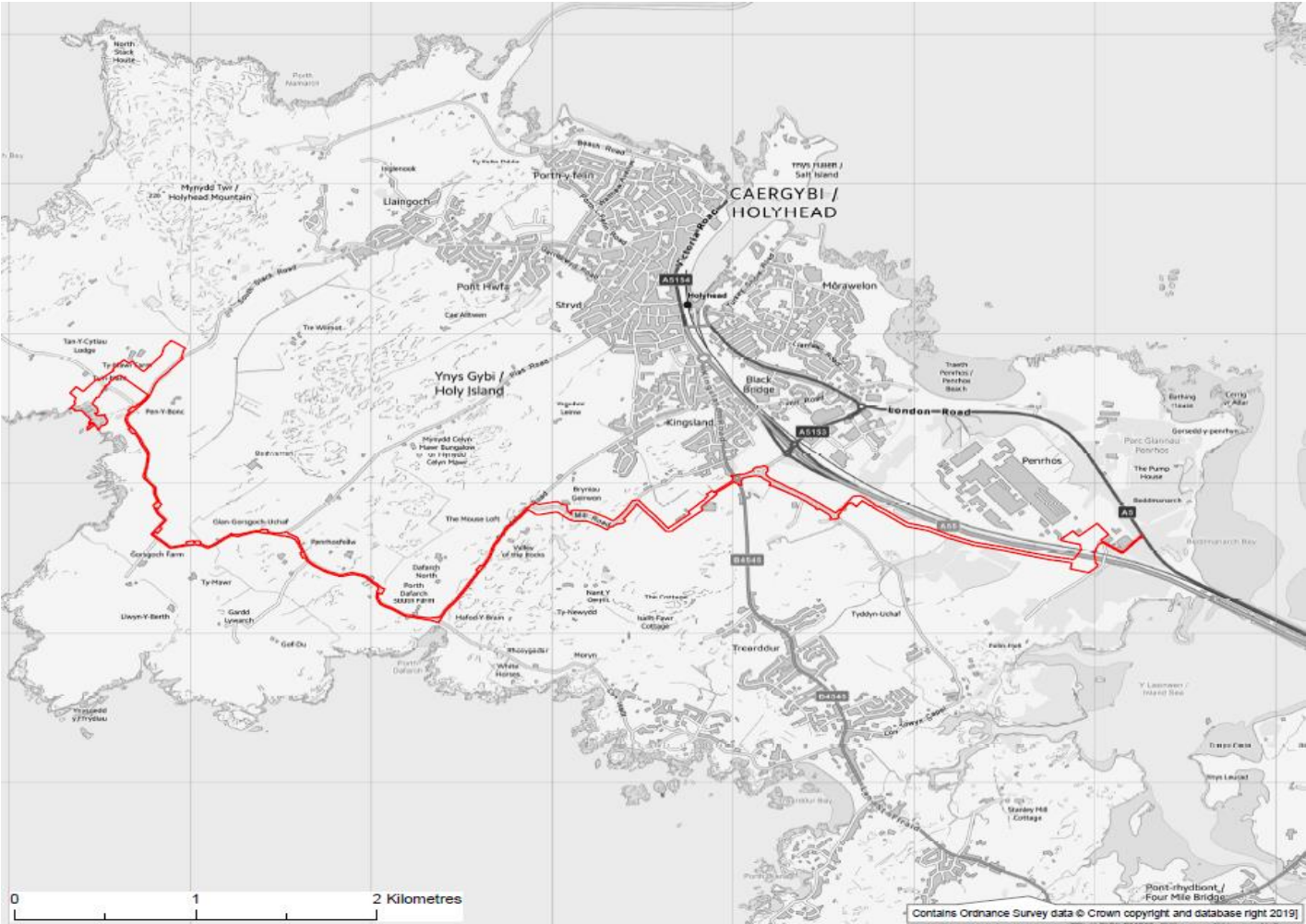


Figure 11 Proposed Cable Route

#### 4.9 Summary of cable route design and why the design was chosen.

4.9.1 The cable route has been designed to minimise use of land, utilise brownfield sites where possible, blend in to existing farm buildings and minimise visual intrusion where it is an issue. For example, utilising buried cabling rather than having overhead lines (which would result in lattice towers or 'H' poles.) has been selected to minimise visual intrusion.

4.9.2 Taking a subsea cable right around the headland and beaching at Penrhos beach was considered and rejected due to:

4.9.2.1 Cost of submarine cable.

4.9.2.2 Cost of installation.

4.9.2.3 Length of weather windows available to complete the project.

4.9.2.4 Impact of weather on ongoing operations.

4.9.2.5 Insurance risk to Menter Môn. Insurance premia would be a significant additional cost as the increased offshore cable length moves Menter Môn into a new arena technically and commercially.

4.9.2.6 Owning offshore infrastructure over 100MW would require an Offshore Transmission Operators Licence (OFTO).

4.9.2.7 Subsea hub connection technology is difficult technically and commercially to join several operators to a single cable at sea unless some form of surface penetrating platform is used.

4.9.2.8 A platform constructed on a monopile would be required (similar to an offshore wind turbine base), would be around £60m without any apparatus and would dominate the zone.

4.9.2.9 Ongoing subsea cable maintenance costs are extremely high due to the requirement for specialist maintenance teams and associated equipment including cable laying vessels, jack-up barges, seaborne cranes, diving rigs and transfer vessels.

4.9.2.10 Fault repairs could take months if equipment is not available during weather 'windows', or if those weather windows are too short to undertake the work planned. This would lead to long cable outages, where plant and staff are on standby, turbines are

idle and fixed costs such as grid connection fees continue to accrue.

- 4.9.2.11 A subsea cable fault would lead to the replacement of over 500m of cable due to capillary action of water alone. Securing the equipment to repair the fault would add significant cost and risk.

#### 4.10 Onshore Infrastructure Works required for project.

- 4.10.1 The onshore infrastructure work consists of a series of cables connecting tidal energy turbines to the electricity grid. The cables begin around 200m offshore where in the upstream direction the cables will be joined to cables from the device developers' machines further into the zone.
- 4.10.2 The MDZ aims to provide a consented tidal technology demonstration zone with communal onshore civil and electrical infrastructure for Developers to install tidal energy devices. The MDZ consists of a c.35km<sup>2</sup> area to the west of Holy Island, Anglesey and will have a generating capacity of up to 240MW.
- 4.10.3 The onshore infrastructure works focus on the construction of the onshore civil and electrical infrastructure to allow the Developers to connect with the UK electricity grid. In summary, the onshore works include:
  - 4.10.3.1 HDD Ducts at landfall (or alternative onshore cable trenching and cliff pinning solution) extending from the Transition Pit(s) to an offshore location.
  - 4.10.3.2 Landfall Cables linking the Transition Pit(s) to a Landfall Substation.
  - 4.10.3.3 Landfall Substation, providing communal facilities for Developers and a common connection to the Grid via the Onshore Cable 132kV circuit.
  - 4.10.3.4 Onshore Cable 132kV circuit linking the Landfall Substation to the Grid Connection Substation. A proportion of the Onshore Cable is required to pass beneath the existing A55 highway and rail line.
  - 4.10.3.5 A switchgear building providing the interface connection between a 33kV back feed circuit from the Grid Connection Substation to the existing 33kV Distribution Network Operator (DNO)'s Infrastructure at Parc Cybi.

- 4.10.3.6 A (132kV) Grid Connection Substation providing interface to existing National Grid Infrastructure at Orthios/Penrhos.
- 4.10.4 Upon completion of the onshore infrastructure Works and during operation of the scheme, each Developer will be able to connect their tidal energy technologies to the Grid through installation of:
  - 4.10.4.1 Export cabling between the tidal energy devices and the Transition Pit(s) or some agreed point within the substation.
  - 4.10.4.2 Conventional onshore cabling between the Transition Pit(s) and the Landfall Substation and the jointing of this cabling with the export cabling; and
  - 4.10.4.3 Electrical plant and cooling equipment within the Landfall Substation.
- 4.10.5 For the HDD Ducts at landfall, the onshore HDD entry points will be positioned within the Transition Pit(s) whilst the offshore HDD exit points will be positioned on the seabed some 200m offshore from landfall. An alternative solution to the HDD approach may need to be adopted, which will adopt conventional cable trenching/ducting from the Transition Pit(s) to the edge of the cliff, the pinning of ducting to the cliff face and the placement of pipework on the foreshore.
- 4.10.6 Up to 9no. Transition Pit(s), which are buried chamber(s), will be provided and which can be accessed by the Developers during the operation of the Project. The Transition Pit(s) will be sufficiently sized to enable Developers to install and joint the submarine export and onshore cabling.
- 4.10.7 Up to 9no. sets of onshore cable ducting (with buried draw cords and pull pits) will be provided between the Transition Pit(s) and developer bays within the Landfall Substation. The sets of ducts will be laid to accommodate onshore power and auxiliary cables installed by Developers during the operation of the Project.
- 4.10.8 The Landfall Substation provides the following facilities:

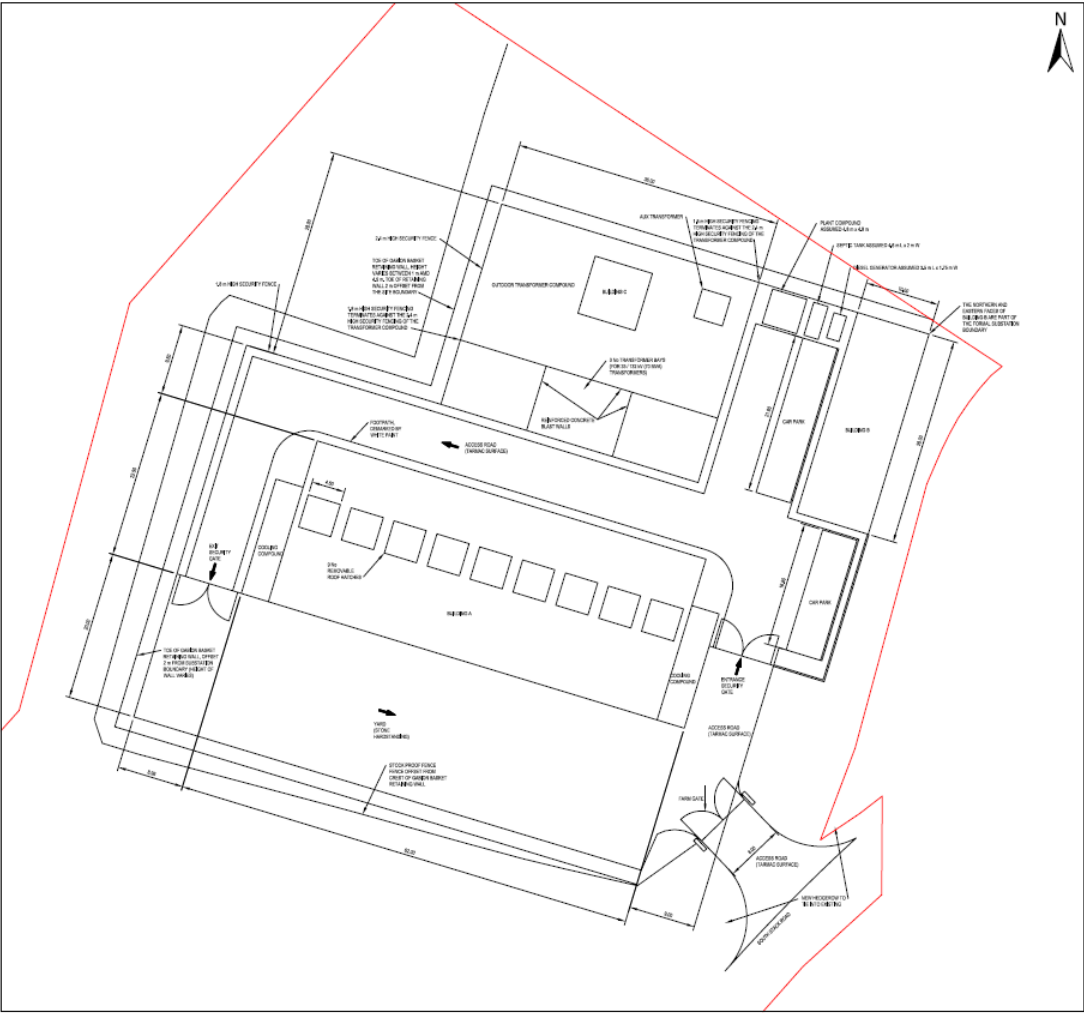


Figure 12 Proposed landfall substation

4.10.8.1 A High Voltage (HV) Building that includes 9no. developer bays that terminate the onshore cable ducts from the Transition Pit(s). Developer bays will house technology specific electrical plant and equipment to condition and transform the power coming ashore. The building will include cooling enclosures and associated pipework to service the developer bays (with cooling equipment also installed by the Developers).

4.10.8.2 The HV Building will include a 33kV switchboard room and battery room to accommodate power fed from the Developers. A control junction room will marshal fibre optic feeds from the Developer bays to direct towards the LV Building.

4.10.8.3 A communal Low Voltage (LV) Building that includes a LV supply room, main control, metering and Developer's control rooms, Permitting office, stores and welfare facilities.

4.10.8.4 An external transformer enclosure that houses the 33/132kV transformers to step up the 33kV voltage to 132kV. Full load generated power will require 3no. 33/132kV (circa 90MVA) transformers connected in parallel. A key consideration in determining the number of transformers required is the maximum size and mass of a unit that can be safely delivered to site. A study into the inland delivery of Abnormal Indivisible Loads (AIL), such as transformers, to the site highlighted vehicle width and mass restrictions which has resulted in the selection of 3no. transformers units rather than a single large unit. Additionally, adopting 3no. transformers also reduces the overall height of outdoor plant compared to larger units. A 132kV Switchboard provides the connection to the 132kV circuit installed as part of the Onshore Cable route.

4.10.8.5 A commercial scale battery installation.

#### 4.10.9 Onshore Cable:

4.10.9.1 Commencing at the Landfall Substation near the western coast of Holy Island, the Onshore Cable route follows South Stack Road, Porthdafarch Road, Lon Isallt, Mill Road and passes beneath the A55 highway (and rail line) before terminating at the Grid Connection Substation at Orthios. The cabling shall pass through HDD Ducts installed beneath the A55 highway and rail line.

4.10.9.2 A 132kV circuit will connect the 132kV switchboard at the Landfall Substation to a 132kV switchboard at the Grid Connection Substation. In addition, a 33kV back feed circuit from a 33kV switchboard at the Grid Connection Substation will connect to DNO's existing Infrastructure at Parc Cybi via the Switchgear Building.

4.10.9.3 The single 132kV circuit will include power cabling and auxiliary cabling (e.g. fibre optics). The cabling is to be laid as single cores (each in a separate duct) in a trefoil formation. **The cable trench will also contain a series of ducts to enable the installation of a further 132kV circuit to support increased export capacity of the Project in the future.**

4.10.9.4 The cabling will be pulled through the cable ducting via pull pits and joint bays. The decision to locate the cables in the road was taken as carrying the cable on overhead lines was considered too visually intrusive especially as Wylfa Newydd had so much opposition to a new overhead line.

4.10.10 An additional 33kV circuit will return from the Grid Connection Substation to the Switchgear Building and will be laid in parallel with the 132kV circuit. The 33kV circuit will connect the facility to the grid at the DNO's existing Infrastructure at Parc Cybi via the Switchgear Building. This is to retain maximum flexibility and support Scottish Power needs for battery storage and additional capacity for Electric Vehicle charging points and to support the potential incorporation of Hydrogen liberation and generation (potential future energy scenario) it is planned to feed a 33KV supply back to Parc Cybi from the Penrhos substation. It will also provide a limited export capability should the 132KV circuit be out of service for any reason, planned or fault.



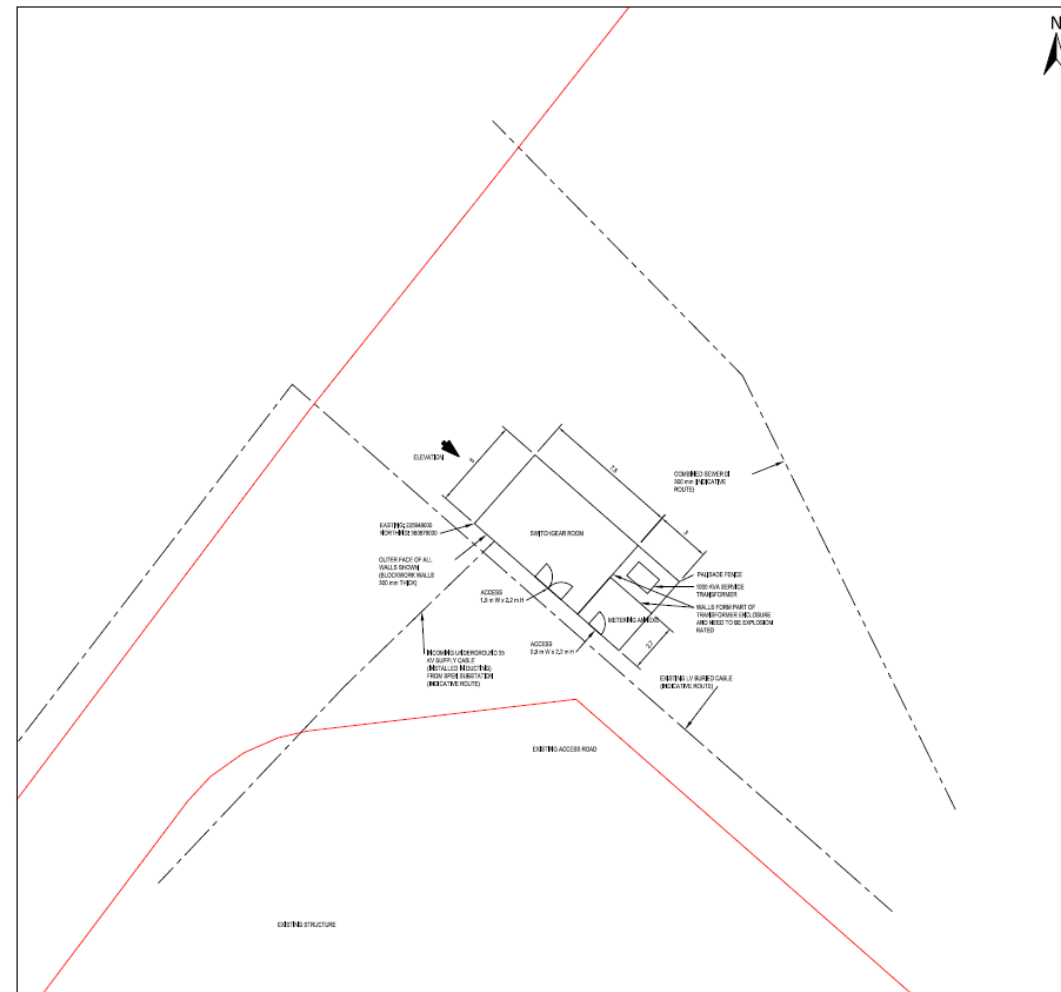


Figure 13 Proposed Parc Cybi 33KV substation

- 4.10.11 This power at 33KV is then stepped up to 132KV through a 33/132KV transformer. Full load will require a number of transformers connected in parallel, the main limiting factor here being transformer weight as road access is limited to around 90 tonnes empty (without oil). Choosing multiple 60MVA transformers also reduces the overall building height compared to 90MVA units.
- 4.10.12 A Grid Connection Substation is required at the Penrhos substation to connect the 132KV circuit to the National Grid infrastructure either directly or via the Orthios eco-park proposed substation. Dependant on the number and type of Developer technologies connected for generation of power, harmonic mitigation and/or reactive compensation may be necessary to ensure compliance with Grid/Distribution codes.

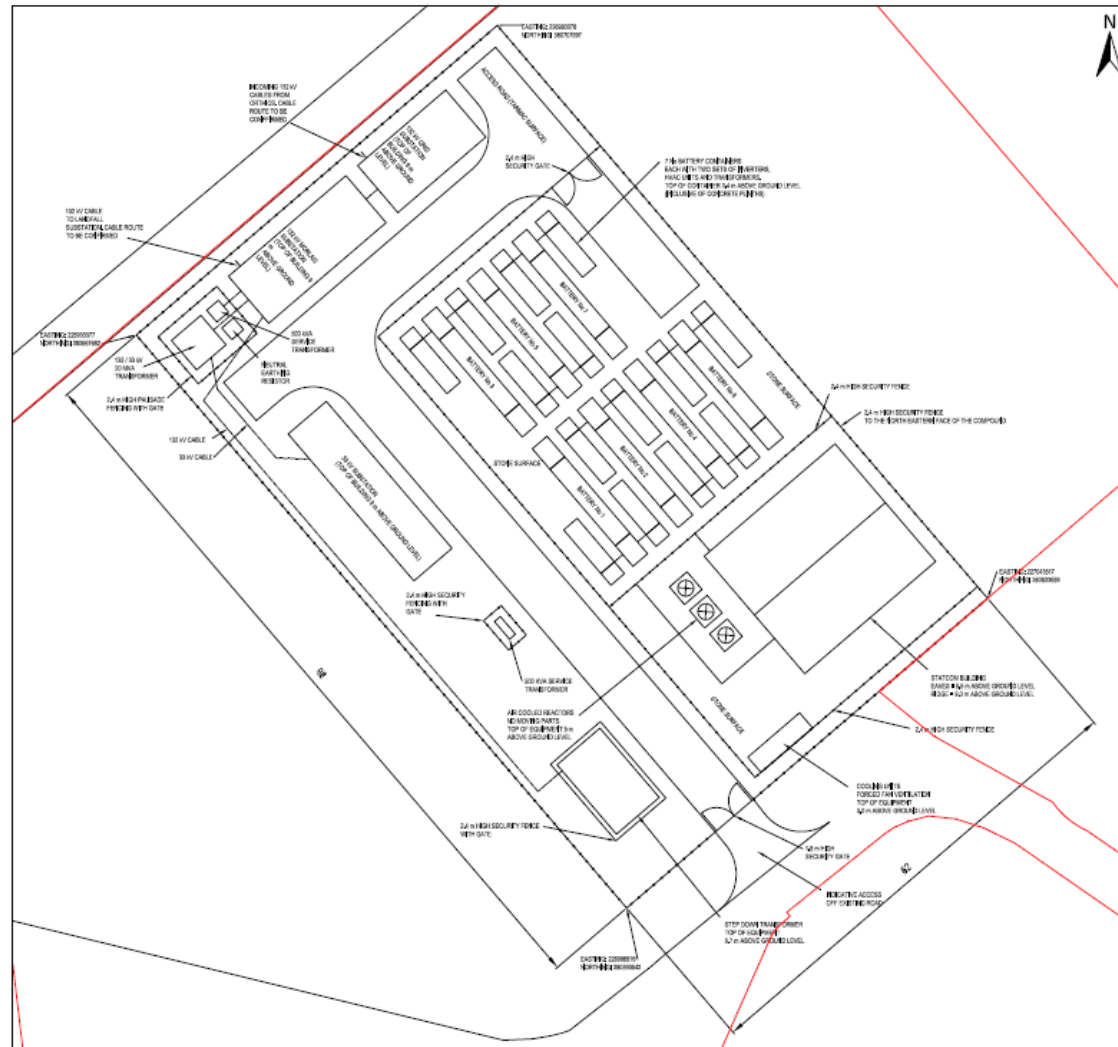


Figure 14 Proposed 132KV Substation at Orthios

4.10.13 The Switchgear Building shall include a 33kV switchboard room, a metering room and an external auxiliary transformer enclosure, all furnished with appropriate electrical plant. The building will facilitate the connection of the 33kV back feed circuit from the Grid Connection substation to the DNO's Infrastructure at Parc Cybi.

4.10.14 Optimising the 33KV connection may require a commercial scale battery, this is planned to be incorporated within the development on the Orthios brownfield site.

#### 4.11 Summary of special engineering techniques used for the onshore infrastructure part of the project:

4.11.1 It is the intention of the project to drill several ducts from a transition pit located on Ty Mawr farm out 200m or so into the bay at Abrahams Bosom. These ducts once bored will be capped off ready for cables to be installed. These cables once installed will transmit the power from the tidal energy devices to the substation at TY Mawr farm. The transition pit is where the cables transition from specialised submarine cable to standard XLPE cables used throughout the Electricity supply industry.

4.11.2 HDD into the sea is a complex and specialised task and is therefore expensive and time consuming.

4.11.3 There are many contractors able to provide directional drilling services for land-based activities for going beneath roads and railways. However, drilling projects that begin or end in the sea are considered to be much higher risk and therefore only undertaken by a small number of specialist drilling contractors.

4.11.4 Why directional drilling may not be possible.

4.11.4.1 HDD is a specialist construction technique that cannot cope well with voids contained within the drill path and needs solid rock if possible. If any pre-drilling geological survey work identifies significant voids, or if a drill encounters a void during HDD then the drill may need to be relocated within the planning envelope. If this is not possible then an alternative approach to accommodate the Developers' export cabling will be adopted.

4.11.4.2 Accurate below ground information is difficult to acquire and definition decreases with depth when using non-invasive techniques. Boreholes may miss particular geological features. A trial bore has been utilised on other projects to best determine the suitability of the substrate.

- 4.11.4.3 The overall viability of directional drills out to sea may not be known until drilling has started. If large voids are encountered that cannot be bypassed, then directional drilling will not work.
- 4.11.4.4 Menter Môn want to get to the coast without affecting the cliffs if possible and directional drilling is the only way. If directional drilling does not work – and it may work for several bores, then a hybrid solution may be needed where some cables can be fed through the ducts and the others may need to be trenched to the coast and then fed down the cliff face.
- 4.11.4.5 If drilling fails or becomes non-viable at any stage during the project it may become necessary to take up the over cliff option,
- 4.11.4.6 The over cliff option is an alternative solution, scoped within the project and if required, will adopt conventional cable trenching/ducting from the Transition Pit(s) to the edge of the cliff, the pinning of ducting to the cliff face and the placement of pipework on the foreshore.
- 4.11.5 On the main cable route, burying cables in the road is a more technical and costly exercise than stringing cables on overhead lines, but it increases reliability especially during inclement weather and eliminates the possibility of bird or tree strikes and once installed leaves no visual impact. Appropriate cable laying options will be utilised here to allow maximum laying rates with minimum local intrusion due to construction noise, dust, and temporary road closures.
- 4.11.6 A key objective in deriving the substation layouts was to develop a solution that minimises the visual impact of the substation compound, external plant, and buildings. Several design scenarios (e.g. installation capacity, export voltage) that represent a reasonable prediction of the future use of the Project over its service life were proposed based on the current state-of-the-art of tidal energy technologies and projections on how the industry may mature. Using these design scenarios, the substation layouts were developed based on the following steps:
  - 4.11.6.1 Identification of suitable communal and Developer specific electrical plant to be housed within the substations during its service life. Consideration of AIL study findings.
  - 4.11.6.2 Based on the dimensions of the anticipated electrical plant, develop layout of buildings and external compounds through consideration of perimeter clearance and personnel and vehicular access requirements with due consideration of installation, maintenance, operation, and inspection needs.

4.11.6.3 Consideration of welfare of staff, safe operation of the facility over its service life and proposed spatial requirement of individual room/outdoor plots.

4.11.6.4 Develop a working layout of general civil works (including buildings, transformer compounds, roadways and pathways) with due consideration of the plant to be installed, safe access and manoeuvring of anticipated vehicles and plant during installation, maintenance and operation, and safe routing of pedestrian access.

4.11.6.5 Propose a means of site security with reference to relevant legislation.

4.11.7 The design of the buried Onshore Cable (132kV and 33kV) circuits has been undertaken in accordance with guidance provided in appropriate engineering standards, industry best practice and Technical Specifications. For example, derating considerations and minimum clearances from existing services.

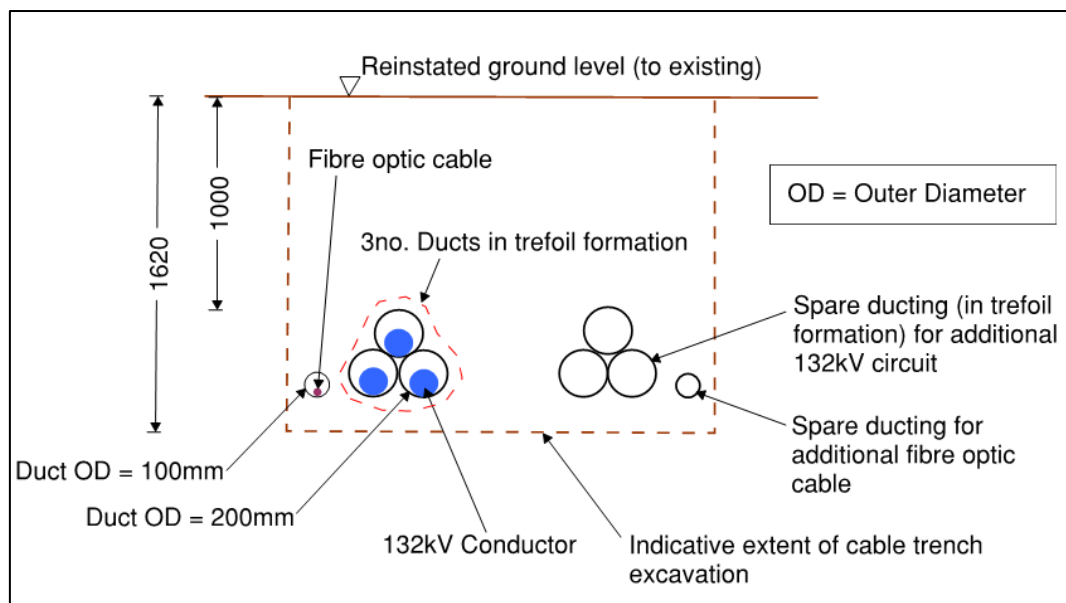


Figure 15 typical cable trenching section

4.11.8 Whilst cable trenching is considered conventional practice by electricity supply contractors, there is considerable risk associated with the amount of rock that may be encountered along the route which will be far more difficult to trench than glacial till. Appropriate cable laying options will be utilised to suit the ground conditions to

allow maximum laying rates with minimum local intrusion such as noise, dust, temporary road closures.

#### 4.12 How the requirements of the onshore infrastructure works influence the footprint of the land acquisition sought:

4.12.1 The Land requirement along the whole route including substations has been designed to use the minimum amount of land both during construction and throughout the operational phase whilst retaining a safe working environment and ensuring adequate separation between construction activities, ongoing landowner activities and the day to day activities of the general public.

4.12.2 Most of the Onshore Cable Route between the Landfall substation and the Switchgear Building is in the existing road. In this instance the limits of permanent rights for maintenance and repair will be the verge of the roads (maintained within the limits of the highways). However, the width required to construct the 132kV joint bay is likely to be greater than the width of the roads in some cases. In this instance, the position of a joint bay has been asymmetrically offset to one side of the road. An offset rectangular envelope of 40m (length) x 16m (width, from the nearby road verge) is proposed to allow for manoeuvring space for locating each joint bay and undertaking construction activities. It is intended that the limits of permanent rights allow access to the offset joint pits

4.12.3 The limits of permanent rights for the off-road segments of the Onshore Cable Route varies from c.9m wide along the cable trench to between c.12m at the buried chambers. The following is assumed:

4.12.3.1 Working corridors each side of the cable trench allow an excavator to reach the base of the trench allowing the majority of the Onshore Cable Route between the Landfall substation and the Switchgear Building to be in the existing road. In this instance the limits of permanent rights for maintenance and repair will be the verge of the roads (maintained within the limits of the highways). However, the width required to construct the 132kV joint bay is likely to be greater than the width of the roads in some cases. In this instance, the position of a joint bay has been asymmetrically offset to one side of the road. An offset rectangular envelope of 40m (length) x 16m (width, from the nearby road verge) is proposed to allow for manoeuvring space for locating each joint bay and undertake construction activities. It is intended that the limits of permanent rights allow access to the offset joint pits for differing ground conditions and angles of repose.

4.12.3.2 A footway is to be established alongside the cable trench.

4.12.3.3 A vehicle accessway is to be established alongside the trench.

4.12.3.4 Additionally, it is assumed that the stockpiling of excavated material and replacement/repair materials can be positioned directly over a backfilled segment of the cable trench rather than adjacent to.

4.12.4 The permanent land requirement is significantly less than the amount required for construction.

4.12.5 Once cables have been laid, the intention is to reach agreement with landowners to return any land that is no longer required for the project so as to allow normal activities to restart in the area of the final easement. Some restrictions on the use of the land will however need to be imposed over the final permanent easement area in order to protect the underground infrastructure and maintain safety of land owners and the public.

4.12.6 Construction compounds and working space:

Much of the Onshore Cable route between Landfall Substation and the Switchgear Building will be along the existing road. In this instance the limits of temporary rights for construction will be the verge of the roads (maintained within the limits of the highways). However, the width required to construct a 132kV joint bay is likely to be greater than the width of the roads. In this instance, the position of a joint bay has been asymmetrically offset to one side of the road. An offset rectangular envelope of 40m (length) x 16m (width, from the nearby road verge) is proposed to allow for manoeuvring space for locating each joint bay and to undertake construction activities. No such local 'enlargement' to the limits of temporary rights is assumed for the pull pits as these are construction features.

4.12.7 In some instances, it is not possible to route the Onshore Cable through the road due to the prevalence of services, difficult ground conditions, tight bends and the width of road etc. In these instances, the cable may be required to be installed in land adjacent to the roads. For off-road sections of the Onshore Cable, a maximum width of c.23m has been adopted for the limits of temporary rights which allows for the following:

4.12.7.1 Working corridors each side of the cable trench to allow an excavation to reach the base of the trench allowing for differing ground conditions and angles of repose.



- 4.12.7.2 A haul road to allow the safe passage of construction traffic and machinery and designated footway will be established alongside the length of the cable trench as required.
- 4.12.7.3 Space for stockpiling excavated material and raw construction materials.
- 4.12.8 Storage of arisings and bedding material. Trench material will need temporary storage along the route. There are laydown areas allocated, but all trenches will be excavated in short sections, ducts and cables laid then backfilled. Minimising the handling and storage requirements of trench materials is standard industry practice. If the 'over cliff' option is exercised, then the same philosophy will apply to any trenching requirements. In line with the relevant management plans.
- 4.12.9 The development of the limits of temporary rights is based on historic experience and allows for reasonably unrestricted construction work. There is scope for the temporary working width to be reduced to account for local constraints or to adopt a more restrictive construction methodology. However, this could in turn increase the construction time and therefore the disruption time and have an adverse impact on project costs.
- 4.12.10 Two main site compounds are proposed, one near to the Landfall Substation and one near to the Grid Connection Substation. Both compounds allow for site offices, parking, welfare facilities, storage of materials and temporary works (e.g. fencing).
- 4.12.11 In addition to the main site compounds, four satellite compounds will be located along the route of the Onshore Cable (and adjacent to the Switchgear Building), located in adjacent land. These compounds allow for the general storage of temporary items (e.g. traffic management), 'day-works' materials for cable trenching and/or construction of the Switchgear Building, parking, and temporary office/welfare facilities. It is envisaged that material will be delivered to either of the Main Site Compounds and transported to the satellite compounds as required. Arisings from the work will need to be stored prior to removal and or reused. The satellite compounds are sited to optimise transport efficiency to work faces whilst minimising intrusion. Most equipment will be ordered on 'Just in time'
- 4.12.12 Onshore Cable Route drawings are provided and illustrate the proposed route of the 132kV (and 33kV circuits) between the Landfall Substation, Switchgear Building and Grid Connection Substation. The drawings also

indicate the anticipated positions of joint bays and construction phase pull pits.

4.12.13 The Onshore Cable route along Mill Road has been identified as being particularly challenging due to the presence of existing services in the road, the presence of rock outcrops within adjacent fields and the narrow width of road. Given these challenges in defining a route without further pre-construction survey and detailed design, the limits of temporary rights along Mill Road have been widened to generally follow the Onshore Project Boundary Line adopted for the Environmental Statement. This decision was made to maximise the opportunity to ultimately achieve a workable cable route. The corridor for the limits of permanent rights will follow the cable route and will adopt a significantly reduced land take area.

4.12.14 Cable route drawings will be provided showing route and position of joint bays, pull pits and construction lay down areas. Final 'as built' drawings will be created on completion of the works.

4.12.15 Flexibility within the design:

4.12.15.1 Rather than specific HDD bore routes, a more general HDD corridor envelope has been proposed for the crossing beneath the A55 highway and railway. This envelope provides flexibility for the design of the HDD Ducts for the 33kV and 132kV circuits (and spare ducting). The reasonably wide envelope is primarily to address the Network Rail requirement for the HDD bores not to pass below existing track welds and to ensure sufficient clearance with National Rail infrastructure (it is noteworthy that a weld survey has been undertaken). During detailed design, justification will be provided to the appropriate authorities to demonstrate that the integrity of the A55 Highway or rail line will not be adversely impacted by the HDD works. It is anticipated that the HDD beneath the A55 Highway and railway is lower risk than HDD at landfall.

4.12.15.2 The limits of temporary rights (i.e. construction widths) for off-road segments of the Onshore Cable route will be significantly greater than the final width required for the limits of permanent rights and as much land as possible will be returned subject to the ability for Menter Môn to undertake occasional repairs and maintenance

4.12.15.3 The cable route width shown on the drawings is required to allow for minor deviations along route due to unidentified services and other obstacles encountered and to allow for flexibility in cable installation and any bending required.

4.12.15.4 Construction widths will be greater than the final width required and as much land as possible will be returned to the landowners subject to the ability for Menter Môn to undertake occasional repairs and maintenance, and for appropriate restrictions on the use of the land above the buried infrastructure.

4.12.15.5 The design allows High Voltage connections at the Penrhos substation via alternative providers, offering either a regulated connection (subject to OFGEM regulations) or via an unregulated provider that may be able to offer 'behind the meter' ancillary energy related services.

4.12.15.6 Both connections are necessary, as the NG 132KV option is a single circuit interruptible or non-firm connection and will be out of service from time to time. The 33KV connection can then be used in conjunction with battery storage to provide limited export capacity for the duration of 132KV outages, planned or unplanned. It also introduces greater flexibility to support the distribution network operator.

#### 4.12.16 Detailed design:

4.12.16.1 Detailed design is to be undertaken by the Principal Contractor once appointed. This ensures design risk is carried by the Principal Contractor and the work is carried out in a way that the Principal Contractor is accustomed to, ensuring work is carried out safely and efficiently.

4.12.16.2 The Principal Contractor's design shall be in accordance with UK law, the appropriate British and European Standards, engineering standards, industry best practice and the Technical Specifications provided.

4.12.16.3 Detailed design will not vary significantly from the outline designs provided.

## 5. THE NEED FOR THE PROJECT

*'I'm setting a target of Wales generating 70 per cent of its electricity consumption from renewable energy by 2030. The latest data show that, in 2015, we generated 32 per cent of electricity consumption in*

*Wales from renewable energy. Secondly, I am setting a target for 1 GW of renewable electricity capacity in Wales to be locally owned by 2030. In 2014, 330 MW of renewable electricity capacity in Wales was locally owned.....The ability to meet our needs from clean energy is, therefore, part of the foundation for delivering the future set out in our new national strategy, 'Prosperity for All'. In parallel with the need to decarbonise, the economic case for renewables continues to strengthen.....*

*We need many more such projects at all scales and technologies to transform our energy system, play our part in tackling climate change, deliver benefits for Wales and address likely increases in electricity needs as we use more electricity for transport and heating..... Finally, by 2020, I expect new renewable energy projects to have at least an element of local ownership.*

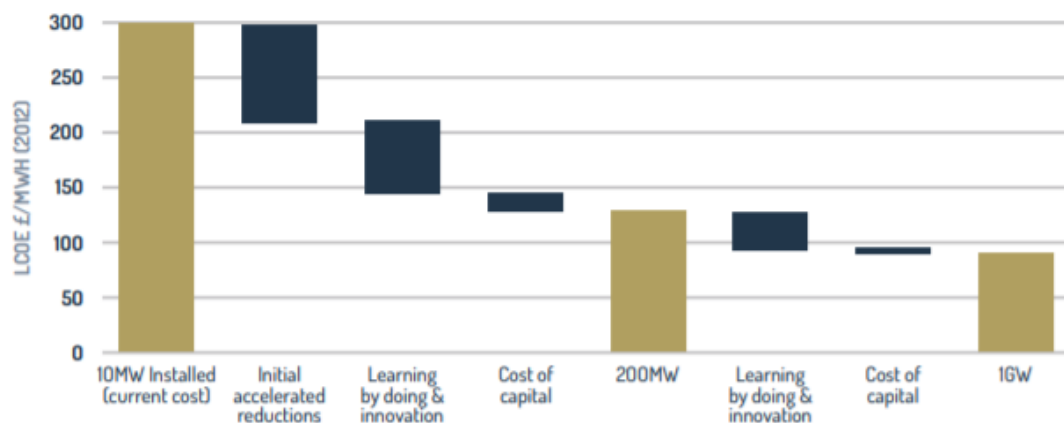
*Lesley Griffiths Cabinet Secretary for Energy Planning and Rural Affairs. Addressing Wales Parliament 26/09/2017*

- 5.1.1 The Morlais project has the support of the First Minister of Wales and is also welcomed by the Minister for Economy and Transport and the Minister for Environment Energy and Rural Affairs. This is illustrated by the continuing support for the project in the North Wales Growth Deal and the continued WEFO funding, Morlais was specifically mentioned in the First Minister's opening address in Marine Energy Wales conference in 2019. Menter Môn representatives met with the Minister for Economy Cardiff 09/10/18 where he reiterated his support. On 29/03/19 Menter Môn met with the First Minister at the School of Ocean Sciences Bangor where a general discussion on the project took place. *See appendix 6 - Government support.*
- 5.1.2 The Morlais Project has the potential to be the UK's largest locally owned renewable Energy Project. Tidal stream technologies are already at high technology readiness levels, with turbines deployed at operational sites in the Pentland Firth and the Shetlands, with further prototype, pre-production and commercial devices deployed for extended periods at the European Marine Energy Centre (EMEC) in Orkney.
- 5.1.3 The Morlais project fits well within the context of the Welsh Government Draft Policy Statement – 'Local ownership of energy generation in Wales-benefitting Wales today and for future generations'. Where local ownership by third sector organisations, such as Menter Môn, is listed along with local authorities, businesses and farms and estates, and new renewable projects must have at least an element of local ownership from 2020. *Essential reading MDZ/D54*
- 5.1.4 The National Planning Policy (Wales) requires planning authorities to plan positively for the use of locally generated electricity and heat to help meet the national target of one Gigawatt by 2030. The latest version of Planning Policy Wales (PPW), published in December 2018, states planning authorities should use their evidence base to inform policies and proposals for local energy. Development plans should support identified opportunities for district heating, local renewable and low carbon energy generation schemes, and the co-location of new

proposals and land allocations with existing developments, heat suppliers and heat users. *Essential reading MDZ/D1*

- 5.1.5 Tidal energy devices extract consistent and predictable energy from the flow of water created by tides. Devices need to be fitted where there is high energy in the tide. Great Britain is estimated to have more than 30GW of tidal stream resource, representing roughly half of Europe's tidal energy resource. *See MDZ/P10 Dr James Orme - project witness.*
- 5.1.6 Recent Organisation for Economic cooperation and Development (OECD) country analysis of green recovery measures indicate that a number of governments are using post-COVID measures to roll back existing environmental regulation and taxes and increase fossil-fuel intensive infrastructure and electricity. The Morlais project gives additional non-fossil opportunity to Wales.
- 5.1.7 In practical terms studies have shown an extractable resource of more than 6GW from 30 key tidal sites in the UK. Tidal stream resource is concentrated around headlands and straits producing a few key areas for deployment. The MDZ is one of those. Tidal stream technologies are already at high technology readiness levels, with single turbines deployed at operational sites in the Pentland Firth and the Shetlands.
- 5.1.8 Tidal current turbines cannot be placed anywhere – the devices must be located where the resource (high tidal flow) is present. This is the same requirement for wind turbines as they need to be placed where the wind resource is most prolific. Both device types use fluid flow to convert energy, one of course uses water and the other uses air, and both can suffer from wake effects of adjacent devices.
- 5.1.9 The proximity to shore reduces cable heat losses (transmission losses) and project installation costs. and more importantly, it is where the tidal energy is most prolific.
- 5.1.10 Proximity to shore also reduces operator fatigue during maintenance visits as vessel journey times are low.
- 5.1.11 There is a need for new technologies to provide UK with a low carbon mixed generation portfolio in line with latest legislation in the UK and Wales.
- 5.1.12 The UK needs more than wind and gas power, tidal energy provides a strong indigenous resource.
- 5.1.13 The generation from tidal energy devices is **reliable and predictable**. Wind, hydropower and solar generation depend upon accurate weather forecasting to predict future output. Tidal stream energy is linked to the tides and this data is published in tide tables, so future output is known.

- 5.1.14 Enabling this project allows the development of tidal energy devices to be deployed around the world and not just in this local area.
- 5.1.15 The Morlais project is an enabler for tidal stream energy to develop and reduce its Levelised cost of energy (LCOE). Something that wind generation has been permitted to do over the last 50 years.
- 5.1.16 Cost trajectories by ORE Catapult show that tidal stream has significant cost reduction potential, from LCOE of £150 per MWh by 100MW capacity deployed, down to £90 per MWh by 1GW deployed and £80 per MWh by 2GW. *Essential reading MDZ/C1*



**1 OREC: Tidal Stream and Wave Energy Cost Reduction and Industrial Benefit, April 2018**

*Figure 16 ORE Catapult study on cost reduction due to deployment*

- 5.1.17 Providing and burying the grid cabling infrastructure meets the Welsh Governments preferred position on new power lines see para. 5.7.11 of Planning Policy Wales 2018. *Essential reading MDZ/D1.*
- 5.1.18 Tidal energy can and will provide a viable contribution to the UK's future low carbon energy mix.
- 5.1.19 The Environment (Wales) Act 2016 requires the Welsh Government to reduce emissions by at least 80% by the year 2050. Tidal energy supports that objective.
- 5.1.20 The Welsh Government Carbon Budget plan for period (2016-2020) sets out how WG will reach its targets by doing the following:

- Direct emission reduction activities or ones which support clean growth.
- Actions to develop an evidence base to make future decisions.
- Knowledge transfer to share learning.
- Funding mechanisms and the role and establishment of advisory bodies and collaborative groups

5.1.21 This section is covered more fully elsewhere and should be read in conjunction with:

*MDZ/P9 MMC443 David Bell - Planning and Policy , and*

*MDZ/P10 MMC444 Dr James Orme - Project Witness.*

5.2 Why 240MW? and what other schemes were considered?

- 5.2.1 The demonstration zone has been created to provide a commercial proving ground for tidal energy devices deployed in arrays of up to 30MW each. For project scale See Proof of Evidence submitted by *Dr James Orme. MDZ/P10*
- 5.2.2 This project is not about filling the current energy gap or reducing the UK's current reliance on gas. But it is about ultimately providing a low-cost low maintenance source of energy generation from a resource that the UK has in abundance - tidal energy, and thereby providing a viable contributor to UK and Wales' 2050 net zero target.
- 5.2.3 Installing fixed bed wind, floating wind, floating solar or combined cycle gas fired plant for example, is not the purpose for the creation of this zone. This project is to set the foundations for a new industry in tidal stream energy conversion that could be deployed worldwide.
- 5.2.4 Tidal energy is **predictable**, therefore **firm energy**. Energy 'shapes' can be traded in energy markets through many products, from many years ahead, to real time trades and all stages between. Predictable, firm energy has a greater value than energy produced by its intermittent counterparts - such as wind it is less reliant on linked large scale energy storage that is needed (but not necessarily factored in to project lifetime costs) to ensure the viability of the next round of wind turbine deployment.
- 5.2.5 Taking no action to achieve consent would result in the project going no further.

#### 5.2.6 Public benefits that will be realised by the Project:

- 5.2.6.1 A new industry. Development at Morlais will generate experience of fabrication, assembly, construction, vessel management and local supply chain utilisation.
- 5.2.6.2 Export opportunities. Morlais provides a platform from which developers and manufacturers will sell their skills, devices and components across the world.
- 5.2.6.3 Attract developers from across the world. Morlais has already signed up 4 developers from the US and Canada, 3 from Europe and 3 from the UK.
- 5.2.6.4 To enable developers to demonstrate their technology and its proper commercial operation at scale and to facilitate the development of similar projects around the UK and the world.
- 5.2.6.5 Technical jobs. In addition to the direct local benefits in Anglesey there will be further investment and jobs created across North Wales, and elsewhere in Wales. These are estimated to be a further 500 FTE years during construction and up to 180 FTE jobs during operations. There will be indirect jobs in the extended supply chain and induced jobs in other sectors, which are estimated to be similar in number to the direct jobs created
- 5.2.6.6 Increased local spend. Local spend targets will be incorporated into the developer berth agreements and a key factor in any tendering process will be around the commitment to provide local opportunities for direct jobs and suppliers.
- 5.2.6.7 Supply chain opportunities: Engineering, fabrication, technical, divers & sub-sea, surface vessels, commercial and legal services, hospitality, environmental services, tourism.
- 5.2.6.8 Training provision opportunities for local providers to accredit training course in conjunction with developers and then sell these globally. As has been done by wind providers as their market developed.
- 5.2.6.9 Education opportunities at Bangor University and Grwp Llandrillo Menai Further Education/Higher Education and further afield.
- 5.2.6.10 Support for the Marine Energy Test Area (META) project in Pembrokeshire where strong cross Wales links are already in place.



- 5.2.7 Low carbon electricity generation to help meet the 2050 net zero carbon target. *Essential reading MDZ/J3*
- 5.2.8 There is already significant support for the project from Welsh Government and the Local Authorities.
- 5.2.9 Unite – the Union, sees that the project can provide well paid jobs and career paths for members, where in other fields significant numbers of manufacturing jobs are being lost across Wales. Indeed, manufacturing could be lost to Wales altogether without projects such as this.
- 5.2.10 Menter Môn's overarching aim for the Project is to secure maximum benefit to the local area from establishing Anglesey as a hub for the marine energy industry. Menter Môn's motivation for the Project is to position itself as a community agency at the centre of renewable innovation and to establish Anglesey as a marine energy hub, thereby securing maximum added value for the local economy and community and to use the income from Morlais to fund local projects to secure maximum local socio-economic gain. The headline objectives are:
  - 5.2.10.1 Developing a long-term and sustainable source of revenue to reinvest locally via Menter Môn.
  - 5.2.10.2 Develop local supply chain and skills to enable local people to capitalise on the economic opportunities.
  - 5.2.10.3 Attract new global investment to Anglesey and North West Wales.
  - 5.2.10.4 Establish a world leading cluster for marine energy technologies in North Wales. *Essential reading MDZ/J1*
  - 5.2.10.5 Enabling Menter Môn to set the 'bar' creating international standards for the new industry.
  - 5.2.10.6 Hosting International groups, knowledge capture and sharing.
  - 5.2.10.7 Safeguard the environment and help meet Welsh government targets. *Essential reading MDZ/J3*
  - 5.2.10.8 Provide a sustainable renewable energy company with local ownership.
  - 5.2.10.9 Secure a safe, renewable, and reliable source of electricity for the area.

- 5.2.10.10 Menter Môn will control the zone on behalf of the Crown Estate. Menter Môn understands the local communities and will ensure that its good reputation grows as a result of this project. Any sub-lease holders within the zone will be responsible for compliance with local rules and sub-lease conditions
- 5.2.11 There is a need for all the land and rights sought in the Order as the project must secure a long-term future in order for developers and their funders to invest the sums needed to establish themselves on the Island. The land side element of the project must be completed as a single project end to end in order to ensure electrical connectivity and not prejudice the ability to mitigate the project during construction.
- 5.2.12 Menter Môn has been transparent in making clear its intentions from the start and recognises that delivery of full capacity will be in steps, taking time as evidence has to be gathered and understood before the next tranche of devices can be deployed. But also recognises the need to minimise disruption wherever it can. Menter Môn wants to remain a good neighbour with the interests of the wider community at its heart.
- 5.2.13 Menter Môn has been working for several years to secure private treaty agreements with as many land owners and other stakeholders as possible. In many cases agreements are in place or in final stages with solicitors.
- 5.2.14 The road route was chosen to minimise number of land owners affected and minimise environmental disruption by choosing the 'well-trodden path' as much as possible.
- 5.2.15 Agreement with all land owners is needed for the project to work but the project recognises this may not be possible for many reasons, so it has been necessary for Menter Môn to seek compulsory acquisition powers to ensure project goes ahead. The project must not fail due to inability to reach agreement with a minority of landowners. The backstop here would be the granting of compulsory purchase powers.
- 5.2.16 The project is a significant project being delivered to enable an industry and help it grow – wind power benefitted from that support many years ago allowing it to develop and drive costs down to where they are now, making it competitive on the world stage. Tidal stream energy can develop in the same way given this opportunity.
- 5.2.17 How has Menter Môn considered the Human rights act?
- 5.2.17.1 Menter Môn is not removing a landowner's ability to make a living.

- 5.2.17.2 Where temporary restrictions are required Menter Môn will adequately compensate the affected party.
- 5.2.17.3 Menter Môn has been considerate in its land take, only taking what is required for project allowing for slight deviations along cable route.
- 5.2.17.4 Most land is to be returned to landowner after cable laying or completion of other works, with minimal ongoing restrictions.
- 5.2.17.5 Sympathetic programming of disruptive works to minimise consequential impacts on businesses, private landowners, and the general public.
- 5.2.17.6 Emergency services access to be retained at all times and suitable procedures to facilitate this to be incorporated in contractor method statements and working practices.
- 5.2.17.7 Enjoyment of land to be retained as much as possible throughout works and during the operational phase, whilst maintaining safe segregation of construction and operational activities.
- 5.2.17.8 Mains connected electricity and water and communications services to be maintained or suitable alternative temporary arrangements put in place.
- 5.2.18 What are the consequences for the area and energy policy/targets should the Order not be confirmed?
  - 5.2.18.1 North West Wales, and the Holyhead area, falls into further decline, compounding the job losses due the closure of Anglesey Aluminium and Wylfa Nuclear Power station and the recent announcement casting doubt on the development of Wylfa Newydd, the new Nuclear Power Plant development.
  - 5.2.18.2 The Welsh language and Welsh culture suffers. See p61-63 of Cymraeg 2050 where it is understood that failure to invest in the community through the local economy causes young Welsh speakers to leave and never return. There is a known lack of Engineering, Marine, Energy and Environmental career opportunities in North West Wales. *Essential reading MDZ/J4*
  - 5.2.18.3 Loss of new work opportunity for local young people. This project is important in retaining high achieving young people in a naturally Welsh speaking area.

5.2.18.4 Residents of working age move away for work and do not return.

5.2.18.5 Potential supply chain disappears, investment diverted elsewhere.

5.2.18.6 Engineering and fabrications skills especially are lost.

5.2.19 Compliance with The Wellbeing of Future Generations act is not achieved. A pillar of the Act is Decarbonisation. Emissions in Wales have fallen by 25% since 1990 but need to reduce dramatically by 2030, the target being 45%. The economy should deliver an equitable distribution of wealth, health and well-being. . *Essential reading MDZ/B15*

5.2.19.1 The ability to shape a new energy industry is lost

5.2.19.2 Welsh Government targets on carbon reduction not achieved.  
*Essential reading MDZ/J3*

5.2.19.3 Tax revenue opportunities lost

5.2.19.4 Foreign investment not secured

5.2.19.5 Export opportunities missed

5.2.19.6 Business rates opportunity not delivered

5.2.19.7 More local families become reliant on benefits.

## 6. **NATURE OF LAND AND RIGHTS REQUIRED.**

6.1 Menter Môn through the Morlais project has followed CPO guidance to engage with the landowners in the area.

6.1.1 A book of reference was created and maintained. Bailey and Partners, land agents, were engaged early in the project to establish and maintain the 'book of reference'. The Book of Reference contains details of all land owners, lessees, tenants and occupiers of land affected by the project.  
*Essential reading MDZ/A16*

6.1.2 Notices were posted in the area explaining the project and these notices were maintained in good legible condition and records kept. Notices were displayed in English and Welsh to ensure the public and landowners had the information required to engage with the project team.

- 6.1.3 Specific landowners identified in the book of reference were engaged by visit and/or phone.
- 6.1.4 Landowners were engaged individually to produce the Heads of Terms and create agreements to use or acquire the affected land. All were informed of their right to engage legal and land agent representation at Menter Môn cost in order to draw up agreements.
- 6.1.5 A series of 5 public meetings were held in the local area. Designed to allow access for all, to inform the public of project intentions, solicit feedback good and bad, record this feedback and act wherever possible, or give reasons why action not possible.
- 6.1.6 The schedule of interactions with all land owners along the route is contained in a spreadsheet 'Morlais Land CPO process schedule' the most up to date copy being provided within the core documents The spreadsheet is regularly updated and contains the latest position on agreements, contact details and the nature of the powers sought in the order. *Essential reading MDZ/J7*
- 6.1.7 The annex 1 objectors are contained in a separate spreadsheet and this contains the latest communications and objection status. The schedules show extensive engagement with land owners and the offers made and how they have been followed up and in many cases already reached agreement. See spreadsheet tab 2 'Morlais Land CPO process schedule' *Essential reading MDZ/J7*
- 6.1.8 The nature of the land rights under private treaty negotiations are option for cable easement, Option for Lease and Easements.
- 6.1.9 Construction and maintenance strips used for the duration of construction but inclusive of covenants not to alter or build over such strips without the prior consent of the Grantee.
- 6.1.10 The nature of land rights being sought under TWAO are as described namely freehold acquisition, temporary possession for the working compounds and new rights and restrictive covenants along the cable corridor. whilst Menter Môn would be happy to limit its acquisition to rights and a restrictive covenant for the cable route, there is uncertainty over whether Welsh Ministers will authorise the imposition of a restrictive covenant which is necessary to protect the underground infrastructure. Menter Môn wrote to Welsh Ministers before the application was submitted to seek a view but they didn't give a clear steer, therefore there was little option but to provide for a worst case freehold acquisition for the cable route to guarantee that Menter Môn can control the land.

6.1.11 A proportionate approach to acquisition has taken place through a mixture of agents seeking to reach agreement under private treaty wherever possible and seeking to attend to concerns wherever raised. The risk of all the land and rights in the order not being obtained is to find the scheme unable to proceed to deliver the project objectives.

6.1.12 The overall strategy and process for the acquisition of land:

6.1.12.1 The land requirement for the project has been minimised through analysis and design to ensure a viable, constructable and maintainable project that causes minimum disruption along its route.

6.1.12.2 Menter Môn's preference will always be to secure land rights on a voluntary basis if possible. This will be through negotiation with individual landowners to obtain option agreement for the grant of an easement, a lease or licence for temporary construction land and for the acquisition of land where necessary.

6.1.12.3 Negotiations with landowners and occupiers to secure voluntary option agreement have been ongoing since 2016. Whilst Menter Môn would wish wherever possible to avoid seeking powers to compulsory purchase, in order to ensure the timely delivery of the project it is now necessary to seek these powers. Negotiations to obtain, by agreement, the remainder of the necessary land and rights will continue in parallel to the compulsory purchase process.

6.1.12.4 Whilst Heads of Terms have been reached in many cases (and agreements concluded) It should be noted that the land has been retained in the order to ensure the compulsory acquisition powers are still available in the event that unforeseen interests and/or circumstances arise.

6.1.12.5 The Order then also provides for the alternative option of acquiring new rights (similar to an easement) coupled with a restrictive covenant in the event that Welsh Ministers are willing to permit restrictive covenants. This would be Menter Môn's preferred approach and a more proportionate approach for the cable route, thereby lessening impacts on land. To provide for this, Menter Môn identifies in Part 2 of Schedule 6 to the draft Order those plots over which Menter Môn would acquire new rights and impose a restrictive covenant if permitted to do so. This would be for the purposes of the: "*Protection of underground cables and infrastructure*" and it relates to the following plots: 3,

8, 10, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 27, 28, 29, 30, 31, 32, 33, 38, 38a, 39, 40, 42, 43, 48, 49 and 50

6.1.12.6 It is important to restrict the use of the land through which cables are laid, primarily for safety and asset protection purposes. Menter Môn would expect restrictive covenants on building on, excavating or ploughing this land without permission from Menter Môn.

6.1.13 There are certain parcels of land affected by the project over which the Crown has an interest, and therefore, cannot be compulsory acquired. Active discussions continue with the agent of the Crown Estate and Menter Môn are confident that this will not impede delivery of the project. The Crown Estate continues to support the project and maintains a keen interest through regular briefing sessions. Indeed, of course, it was the Crown Estate that identified this area of sea bed for tidal stream energy, and appointed Menter Môn as its agent to manage the sea bed zone on its behalf.

6.1.13.1 Plot 1 – the foreshore – with respect to the alternative method of installing cables to sea, a letter has been received from The Crown Estates indicating that under the crown estate lease section 29(c) that the grantor only needs to inform the lease holder of the intention of Morlais to install cables over the Cliff and Foreshore. Morlais also has a response from IoACC the leaseholder stating that they are aware of the need for the alternative method of installation should HDD fail, to allow Morlais the necessary permissions to install the cables. *See Appendix 3 TCE letter and appendix 4 IoACC letter.*

6.1.13.2 Plot 2 – the cliff face – as plot 1.

6.1.13.3 All plots – The Crown Estates – a deed is being sought through TCE representatives Wardell Armstrong. The agreement will allow all mines and minerals to be 'disturbed' along the whole cable route.

6.1.13.4 A certificate for special category land has been applied for and the letter will be placed on the Morlais website for the required 21 days as stated in the request made by Eversheds LLP to Welsh Ministers. . *Essential reading MDZ/A29*

6.1.13.5 The Public Trustee. Welsh Ministers have consulted MHCLG and are minded to issue a certificate in respect of the special category land application, subject to allowing any representations to be made by affected landowners and certain consultees. The

notice was served on 24<sup>th</sup> October 2020 and at the time of setting this proof, no representations had been made. The consultation period remains open for 21 days. *See Appendix 5 special category land.*

#### 6.1.14 Landowners

6.1.14.1 The engineering solution for the Onshore Cable is to bury cabling along the existing road route, as far as is reasonably practicable. This approach will minimise the number of affected landowners and avoid hugely unpopular pylons required by overhead lines. Nonetheless, there are certain areas adjacent to, and outside of, the existing road that are required in order to install the cabling. Typically, additional land take may be required at tight bends in the road due to the large bending radius of cable, the presence of existing services, difficult ground conditions and the requirement to joint cables in designated joint bay chambers.

6.1.14.2 All landowners along the route have responded at some stage during the process.

## 7. **RESPONSE TO OBJECTIONS**

- 7.1 The schedule objection log describes the objections received following the TWA0 consultations.
- 7.2 Menter Môn is working with local land owners and companies to remove objections wherever possible by reaching local agreements.
- 7.3 Menter Môn has been working with objectors to address their concerns and where possible offer alternatives. Although this has not always been possible. It was possible for example to avoid a parcel of land originally identified for directional drilling beneath, by reaching agreement with an adjacent land owner to drill beneath their land instead.
- 7.4 Menter Môn is negotiating a series of Asset Protection Agreements (APA) with statutory undertakers. These organisations are generally required to lodge an objection as they have a statutory duty to protect their assets, and objections will be removed once a suitable APA has been agreed with each undertaker. Additional engineering to be undertaken at identified points along cable route to protect buried Gas, Electricity, Water and Telecoms Assets.



- 7.5 There was much concern in the press and locally about overhead lines and it was decided early in the project to lay the export cable in the ground and not rely on overhead lines wherever possible in order to reduce the number of objections.
- 7.6 Several business owners, especially caravan site owners, were concerned about access to their businesses whilst the cable was being laid in the road. The construction programme will take this into account and minimise disruption and the requirement to do so will be included in the IoACC planning conditions. Ensuring where possible suitable detours are in place or roads are stopped for the minimum duration and at a time of year to minimise disruption.
- 7.7 The cable route was realigned in several areas, one was to avoid commercial fence construction activities, another avoided a private driveway and garden and another avoided significant buried potable and waste water infrastructure. Cables were designed to be incorporated in a proposed noise attenuation bund alongside A55 trunk road and the cable route has been diverted in another related area to reduce impact on siting of holiday lodges following discussions with developer. Menter Môn had planned to cross a field diagonally with the cable but following discussion the cable route was redesigned to follow the field boundary in an 'L' shape to avoid proposed building foundations.
- 7.8 Cables running beneath road and railway to be drilled at a suitable depth to eliminate potential asset damage. Drill bores sited to avoid welded joints on rail line, and to cross beneath the railway within angular tolerance requirements of Network rail, level crossings will be avoided at network rail request. Network Rail has completed weld survey on behalf of Menter Môn.
- 7.9 Cable will be procured in long lengths potentially reducing the need for some joint bays along the route, it may also be possible to remove the need for 'iron-work' by backfilling joint bays and resurfacing.

## 8. SUMMARY of REMAINING OBJECTIONS (CPO RELATED)

- 8.1 Summary of latest position with Individual landowners and small businesses
  - 8.1.1 Plot 19 – FEI OBJ009 – **Objection Removed**. Mr Richard Tuke's land now sold to Mr William Spencer, Menter Môn has made contact with the new land owner and both parties are progressing to Heads of terms.

- 8.1.2 Plot 31 Mr Collet **No Objection**. Has engaged a Land Agent and is now working towards Heads of Terms. See fig.18. for plot location.

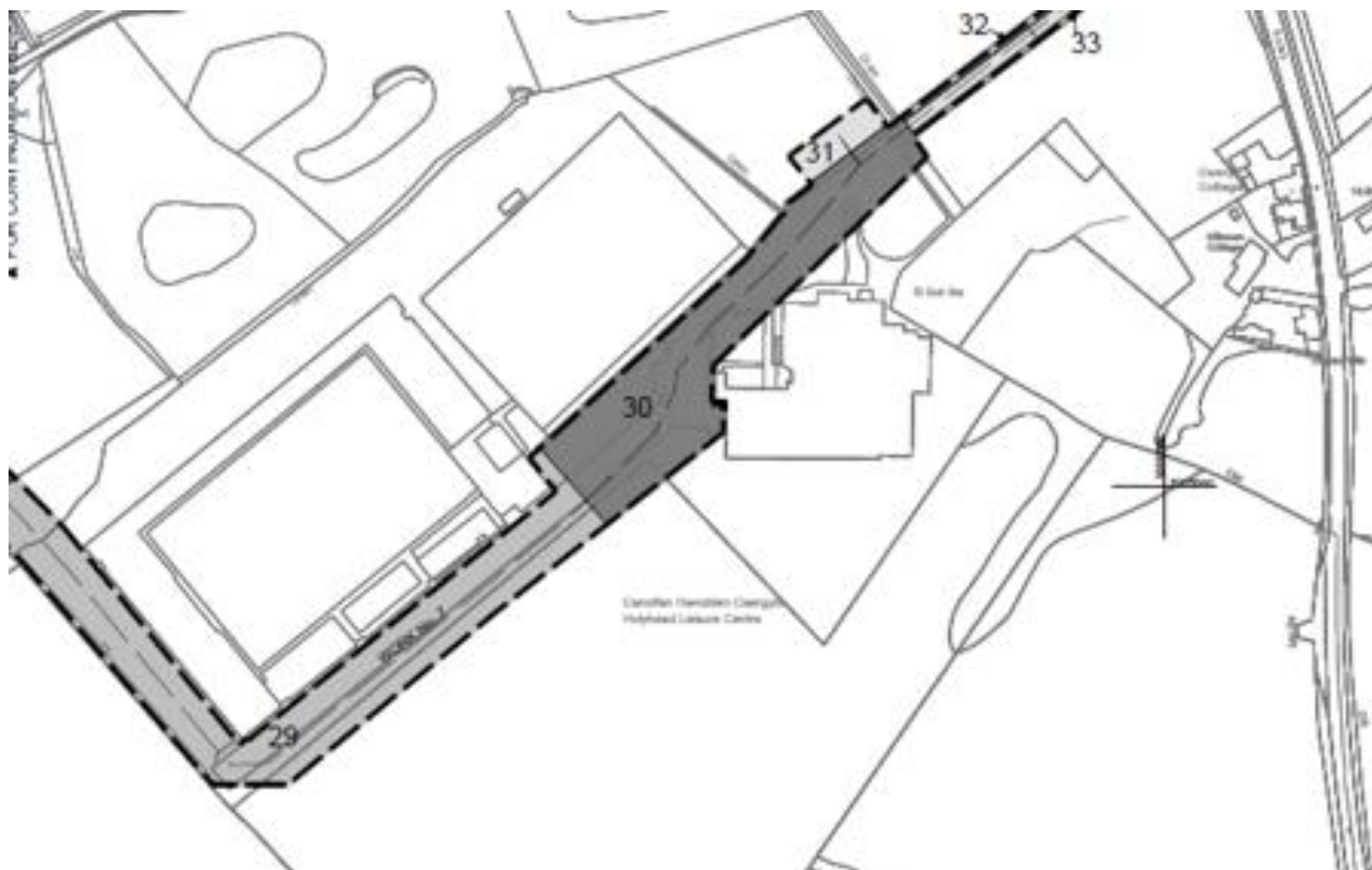


Figure 17:Plot 31 Mr Collett

8.1.3 Plot 11,12,13 – OBJ020 – **Objection Removed.**

8.1.4 Plot 22,23 – OBJ 036 – **Objection Removed**

8.1.5 Plot 21 - Grass converters. **No Objection** progressing towards Heads of Terms.

## 8.2 Summary of position with statutory undertakers.

### 8.2.1 Isle of Anglesey County Council:

8.2.1.1 Morlais and IoACC have reached agreement on the majority of matters that were originally raised in response to the TWAO application. The Deemed Planning Conditions and the Order have been subsequently amended to address their concerns and to secure further consultation and mitigation measures.

8.2.1.2 Discussions between Morlais and IoACC continue with regard to the establishment of a compensation fund, that will be secured through a Section 106 agreement (or similar), to mitigate for impacts upon Seascape, Landscape and Visual Impact.

8.2.1.3 Heads of Terms substantially agreed, incorporating 3 small land plots leased to IoACC from Land & Lakes has increased the time taken to agree but all agreements expected to be concluded imminently.

8.2.1.4 **Objection** to be removed on reaching agreement.

8.2.2 Network Rail. **Objection** on grounds of asset protection. Asset Protection Agreement being developed. Legal undertakings in place. Menter Môn to cross main railway line at an agreed depth beneath, between Caeglas (L&L) and Penrhos 132KV substation connection point. The extent of Network Rail's land interest can be seen on figure 9 (plot 46). Commercial terms now agreed. **Objection to be withdrawn once agreement reached.**

8.2.3 Dwr Cymru Welsh Water (DCC) **Objection.** Agreement completed **Objection withdrawn 02/11/2020.**

8.2.4 Wales & West Utilities (WWU) Agreement reached in principle; final wording being settled. **Menter Môn expects agreement shortly and objection to be withdrawn.**

- 8.2.5 National Grid (Electricity). **Objection withdrawn**
- 8.2.6 Scottish Power **Objection withdrawn.**
- 8.2.7 Celtix Connect Aquacomms. **No Objection.** Side agreement to be finalised, may rely solely on New Street Works Act compliance – awaiting their instruction.
- 8.2.8 JSM ZAYO Fibrespeed. **Objection Withdrawn.** Side agreement to be finalised, may rely solely on New Street Works Act compliance – awaiting their instruction.
- 8.2.9 GTC gas infrastructure – **No Objection.** No assets in area.
- 8.2.10 BT Openreach - **No Objection.** Standard procedure to be followed once contractor appointed. Project route only affects small number of telecoms cables.
- 8.2.11 ESP Gas Infrastructure – **No Objection.** No assets in affected area.
- 8.2.12 Welsh Government - **No Objection.** In final stages of land purchase agreement for plot 6 at Parc Cybi. Costs agreed, option being drafted awaiting final sign off from Minister for Economy who remains fully supportive of the project.
- 8.2.13 National Grid (Gas) – **No objection.** No assets in affected area.
- 8.2.14 Trunk Road Authority (TRA) – **No Objection.** Cable route crosses at agreed depth beneath A55 between Caeglas and Orthios. Figure 9 (Plot 45).
  - 8.2.14.1 In relation to crossing below the A55, contact has been made with Mid and North Wales trunk Road Agency (NMWTRA) and the Overseeing Organisations Geotechnical Adviser (OOGA). The scope of the Ground Investigation has been agreed and they have agreed to the production of a combined report that will be prepared encompassing the Preliminary Sources Study Report (PSSR), Ground Investigation Report (GIR) and Geotechnical Design Report (GDR) elements of the approval process. This will need to be advanced by the contractor after appointment and it is likely that the GDR will need to be amended to reflect the proposed construction methodology. A geotechnical Feedback Report will be required on completion of the works.

8.2.14.2 Based on the ground conditions established from desk-based sources, the OOGA has agreed to the following scope of works for the ground investigation:

- (a) Rotary Cored borehole at each end of the proposed crossing, one to south of A55, at top of highway cutting and two on Orthios Land directly north of the railway.
- (b) Laboratory testing and groundwater monitoring
- (c) Ground investigation Report
- (d) Geological inspection of accessible A55 rock cutting along line of proposed crossing
- (e) Topographical survey of proposed crossing.

### 8.3 Summary of position with larger corporate owners:

8.3.1 Alpoco. **Objection.** A private company sharing the Northern Access road (Plot no. 51) to the proposed site. Alpoco objected on the grounds of construction traffic interfering with their day to day operations. Agreement reached and being signed 02/11/2020. Objection to be withdrawn imminently.

### 8.3.2 Conygar/Horizon. **Objection.**

8.3.2.1 The land is owned by Conygar, but Horizon enjoy an Option to Purchase over part of the freehold estate dated December 2016. Conygar are not objecting to the scheme, however Horizon ARE objecting, to protect their interests under their DCO application. Conygar have flagged Horizon's interest. This relates to works no 39. Conygar share their interest with Horizon. Horizon are developers of Wylfa Newydd Nuclear Power Station and the land is being considered under the DCO process. The land itself is proposed to be used as a logistics centre handling transshipments and holding facilities for the proposed Nuclear Power Station. Discussions are at an advanced stage and Menter Môn has redesigned the proposed cable route to skirt the periphery of the proposed Horizon vehicle park. Agreement is taking longer than normal due to scale back of staffing on Horizon project, and the restrictions caused by the Covid 19 pandemic. Baileys and Partners and Menter Môn have had several meetings with Horizon

following a letter of objection that Horizon submitted in response to the TWA0 application dated 31st October 2019.

8.3.2.2 Horizon have plans for the site linked to the development of Wylfa. Their proposal is for the site to accommodate a logistics centre/ lorry park linked to the logistics of the early build stage of Wylfa Newydd. The future of Wylfa Newydd is unknown and the outcome of the DCO has already been put back from 23rd October 2019 to now December 2020. Horizon are concerned that any impact of an easement over land they want to develop in this location may hinder or prejudice their development potential for the site. They are not able to give any indication of timing in relation to the development.

8.3.2.3 Menter Môn have sought to address their concerns by modelling through measurements, the limited impact the permanent rights being pursued are likely to have on their development proposals. The worst-case scenario is an overlap into land that is likely to remain undeveloped (landscaping) of circa 4.8m. There is very little flexibility to minimise this impact further because of the proximity of a gas pipeline in this vicinity but the belief is that much of this permanent easement is likely to be where the boundary fence is going to be located which may be able to be accommodated within the proposed easement area required by Menter Môn. The last meeting with Horizon was positive. Horizon have now confirmed that they are satisfied sufficiently for the Heads of Terms to be considered. **Menter Môn expects agreement imminently.**

### 8.3.3 Orthios.

8.3.3.1 **Objection.** Discussions between Menter Môn and Orthios have been ongoing since the project was introduced to them during March 2016. Menter Môn and Orthios are currently working towards agreement and this section is dealt with in greater detail in an annex to this document entitled 'Orthios'.



Figure 18 National Grid cable tails within Orthios site

- 8.3.4 Land & Lakes, **objection**, on basis that the Morlais project interferes with L&L proposal to develop the land at Caeglas and Kingsland. Kingsland commercial terms have been agreed, Agreement at Caeglas is close, subject to final agreement.
- 8.3.5 Objection will be removed on reaching agreement. **Both agreements are likely to be completed prior to the enquiry and Objection withdrawn.**

## 9. DELIVERY & FUNDING

### 9.1 Project delivery

- 9.1.1 Menter Môn is the client for the onshore infrastructure works.
- 9.1.2 Menter Môn is to appoint a principal contractor for specialist directional drilling between Ty Mawr Mynydd farmland adjacent to the Abrahams Bosom bay and a point approximately 200m out on the sea bed, in the bay, outside the intertidal region.
- 9.1.3 Menter Môn to appoint a principal contractor for civil, electrical and cabling works – i.e. all other works Ty Mawr farm to Penrhos substation.
- 9.1.4 EU procurement guidance will be followed.



- 9.1.5 Under the terms of Crown Estate head lease Menter Môn cannot own generating devices.
- 9.1.6 Menter Môn is the 'enabler' installing connection infrastructure and obtaining consent for developers.
- 9.1.7 Developers will then pay 'rent' for consent and infrastructure, thus amortising this cost over the life of the project rather than paying upfront capital expenditure.
- 9.1.8 There are likely to be around 7-8 developers chosen on their merit. In the early days entry into the zone may be limited to 2 or 3 developers.
- 9.1.9 Developers will also take a sub-lease for up to 30MW max, from the Crown Estate, for which template agreements are in place.
- 9.2 Phasing, the role of Parc Cybi, and the need to consent the entire project:
  - 9.2.1 Developers and funders need to see the ability to expand in the future, this is predominantly based around the availability of grid capacity.
  - 9.2.2 The area has the capability to export large amounts of electrical energy onto the National Grid Transmission network at 132KV - 240MW and more.
  - 9.2.3 Parc Cybi.
    - 9.2.3.1 Parc Cybi is the connection point to the **distribution** system owned by Scottish Power Energy Networks under their MANWEB Electricity licence. The maximum export available at this point is 18MW and this is at 33KV.
    - 9.2.3.2 There is no additional export capacity available at this point on the Scottish Power network.
    - 9.2.3.3 Increasing capacity at this location would cost £60/70m. far more than the cost of connecting to the Transmission network some 2000m further away.
  - 9.2.4 Exporting any more than 18MW at any time in the future will need 132KV infrastructure.
  - 9.2.5 There will also be a need to 'condition' this power before it reaches the grid hence the need for a larger footprint and the land requirement at Orthios.

- 9.2.6 The only 132KV assets on Holy Island are owned and operated by National Grid.
- 9.2.7 The nearest 132KV circuit owned by Scottish Power is at the Caergeiliog Substation, across the inland sea. This substation is currently running close to capacity.
- 9.2.8 The export cables will be routed down the road wherever possible and it is sensible to cater for the maximum capacity envisaged rather than revisit the cable route several times. This minimises disruption to people and businesses and gives the natural environment time to fully recover.
- 9.2.9 To that end the project wishes to lay cables capable of transmitting 180MW and a further set of ducts to allow an additional cable to be laid at a later date with minimum further disruption, in order to meet the full stated capacity of 240MW.
- 9.2.10 OFGEM, the Electricity Regulator, believes in 'limiting the number of asset interventions' and Menter Môn wishes to adopt this methodology as it aims to reduce 'cost to consumer' long term.
- 9.2.11 In 2018 an Energy Systems Catapult Project Appraisal report for the Welsh European Funding Office supported the concept of providing a larger capacity grid connection than would be required initially as it 'future proofs' the project and encourages project investment. . *Essential reading MDZ/C1*

### 9.3 Progress to date and key agreements that have been concluded:

- 9.3.1 Agreement for lease made with The Crown Estate for the seabed lease in 2014
- 9.3.2 Agreement for lease being finalised with Mr Markey for the shore side substation at Ty Mawr farm. Heads of Terms agreed and signed 24<sup>th</sup> December 2019.
- 9.3.3 Agreement for lease being finalised with Mr Davies for cable route between Mr Markey's farm Ty Mawr, and coast. Heads of Terms agreed and signed spring 2020.
- 9.3.4 Offer accepted for 13.5MW of SP Manweb distribution connected capacity at Parc Cybi substation. On 12<sup>th</sup> September 2020 Menter Môn has received upgraded offer to 18MW valid until 12<sup>th</sup> December 2020. See *Appendix 1. SPEN connection offer.*
- 9.3.5 Accepted offer with National grid for 180MW transmission connected capacity at Penrhos sub-station. Connection due in September 2023.

Offer accepted by Menter Môn 28<sup>th</sup> August 2020. *See Appendix 2. National Grid offer.*

- 9.3.6 Agreements have been signed with 10 tidal turbine developers. Not all will be allocated a berth in the next allocation round. The allocation methodology is currently being finalised by Morlais.

#### 9.4 The Project Timeline.

- 9.4.1 In order to draw down the EU funding element the project must be completed and invoiced by December 2023
- 9.4.2 Generation export capability is required for the end of 2023, SPEN connection at 33KV can be achieved in 2022.
- 9.4.3 There are likely to be 2 main contracts: 1. A specialist contract for coastal directional drilling & associated cabling works, and 2. A general contact for substations & connecting cables.
- 9.4.4 The principal contractor is to be in place by summer 2021. The Pre-Qualification Questionnaire (PQQ) has been assessed and the invitation to tender for the works will be published on the 'Sell to Wales' procurement platform shortly.
- 9.4.5 Design and clearance of conditions commence once planning permission has been granted.
- 9.4.6 Procurement of long lead items will begin once detailed design has been completed by principal contractor and items identified. Expect the list to be main HV cables and 33/132 KV 60MVA transformers.
- 9.4.7 Construction is being planned to avoid times/areas where work is restricted (for example bird nesting times).

#### 9.5 How the Project is being funded. *Essential reading MDZ/A6.*

- 9.5.1 It is important to understand that the funding described in this section relates to the funding necessary for the development and consenting process and to deliver the onshore infrastructure and grid connectivity that the project requires.
- 9.5.2 The funding does not refer to the funding required by individual developers in order to build and install their devices within the MDZ.
- 9.5.3 £7.7m funding for Morlais A (the Consent and Development project – Approved - delivered between 2014 and December 2020; currently

going through approval process to extend to March 2022, increasing total secured to £10.2m).

- 9.5.4 £2.4m match for Morlais A which forms part of the 10.2m total (Approved and in delivery to March 2022)
- 9.5.5 £34m funding for Morlais B (the Infrastructure project)
- 9.5.6 Application to the Wales European Funding Office for £25m submitted late 2018. The status of this funding is 'conditional approval'. The three conditions are match funding, first phase consent and a deliverable timescale which ensures the funding is fully defrayed before the close of 2023.
- 9.5.7 Application submitted to the North Wales Economic Ambition Board for £9m in December 2019. Subsequently invited to submit a 5-case business plan in July 2020 for submission in January 2021. Approval will be conditional upon a strong case and first phase consent.
- 9.5.8 Heads of Terms have been signed with a Private Equity Investor as part of normal risk mitigation.
- 9.5.9 An issue has been raised by an objector questioning the financial viability of the project. Menter Môn believes that this wholly unjustified and has no proper basis.
- 9.6 I can confirm that Menter Môn is satisfied that all the necessary resources are likely to be available to achieve what is proposed within a reasonable timescale. Funding negotiations are long lead processes. We cannot expect final funding decisions until we have consent, but the £10m of funding we have attracted thus far indicates public sector intent regarding the delivery of this project

## 10. SUMMARY & CONCLUSION

### 10.1 The Project.

- 10.1.1 This evidence explains the requirement for the CPO powers necessary to acquire the land on and within which to build the onshore infrastructure for the Morlais Tidal Energy project.
- 10.1.2 The applicant, Menter Môn, is a 3<sup>rd</sup> sector company established in 1995 and based in Llangefni Anglesey, its aim is to deliver socio economic development projects and benefits in North West Wales. Menter Môn has a good reputation locally, within the Local Authority and within the Welsh

Government for delivering these projects. The Menter Môn directors do not stand to benefit personally from the success of this project, there are no associated financial bonuses. The company has no shareholders to satisfy. Success will be measured by delivering employment, opportunities, wealth, and security to many families in the area. Its directors are bound and motivated by cultural and socio-economic aspirations, providing a sustainable future for local inhabitants, opportunities for young people, and a stable basis for the Welsh language and culture. Its primary objective is to provide long term secure jobs for the people of North West Wales.

- 10.1.3 Menter Môn wanted to be an integral part of any power developer's plans not just the recipient of 'community benefit' hand-outs as is often the case from the big wind power companies, where most of their profits leave the UK and the 'community' would hardly benefit.
- 10.1.4 In 2014 Menter Môn, won a bidding round set up by the Crown Estate to run a seabed lease for the West Anglesey Demonstration Zone on their behalf. The area of seabed off West Anglesey was subject to tidal flows of 2.0-3.5 m/s and was particularly suited to harnessing the energy from the flowing tides.
- 10.1.5 Menter Môn intends to add value to the zone by attracting Tidal Stream Turbine developers and issuing sub leases for up to 30MW of capacity. Providing a 'plug and play' solution was considered a valuable approach, providing developers with a consented area for their devices and a connection to the Electricity grid. This team-based approach would reduce developer costs significantly and attract developers to the Zone.
- 10.1.6 Menter Môn has 10 developers signed up for the zone from the UK, US, Canada France and Spain using a variety of tidal turbine designs. All the designs work in the same way turning rotational energy of a rotor into electricity.
- 10.1.7 Although termed a 'demonstration' zone, the zone will operate on a commercial basis and allow developers to deploy commercial turbine arrays.
- 10.1.8 This type of energy generation is known as Tidal Stream energy as opposed to Tidal Range (Barriers or Lagoons) or Wave energy. It is predictable and reliable, its magnitude based on tidal flow and duration and that duration is available in readily accessible tide tables.
- 10.1.9 The energy is extracted from the tide by rotating devices either mounted on the seabed, suspended in the middle of the water column, or hung

below floating structures. The rotors rotate at very low speed and each is connected to a generator.

10.1.10 The Electricity produced by these generators is fed to a substation on the shore by a series of cables.

10.1.11 The safest and most reliable way to get this electrical energy from the tidal zone to the land based substation is by special cable either buried within or laid on the seabed.

10.1.12 The cables are intended to be fed from the seabed through ducts to the shoreside substation. It is planned to provide directionally drilled (HDD) boreholes to accommodate these cables to avoid the cliff face.

10.1.13 This may not be possible if certain geological conditions are encountered. It is very difficult to identify the presence of these conditions without commencing the horizontal drilling. Successful completion of one borehole does not necessarily ensure the success of the next as the geological conditions can be very specific to an area.

10.1.14 An alternative route that may be necessary to get the cables ashore has been planned in case HDD is unsuitable. This alternative consists of a series of 'j' tubes bolted to the cliff face that the cables can be drawn up then laid in trenches to the substation.

10.1.15 The shoreside substation provides a means of connecting each developer's turbines to a single electrical circuit that then transmits the combined power via cables buried in the road to the grid connection point around 8000m away at Penrhos. The project chose an underground route to avoid the need for pylons.

10.1.16 There are 2 points of connection one at 33kV and another at 132KV. It is important to 'future-proof' the project. The zone can support up to 240MW of devices and in order to attract investment, a pathway to this increased capacity must be laid out and understood.

## 10.2 The Need for the project.

10.2.1 The Morlais project is about creating a springboard for a new industry, an industry that can grow worldwide and can benefit North Wales and the UK by providing intellectual property, supply chain opportunities, tax revenues, education and training, high quality jobs, opportunities for young people and by doing this also support the language and culture of the area.

- 10.2.2 The project is creating a path to long term sustainable renewable energy using tidal energy, energy that we have in abundance around the UK and across the world.
  - 10.2.3 The project is not providing a short term fix for the current UK energy mix which is so heavily reliant on imported gas, or wind, the next round of which in order to be fully productive will need to be linked to large scale energy storage.
  - 10.2.4 Provision of this solution is being funded by European Structural Funds and public sector 'match' funding. The shoreside substation provides a means of connecting each developer's turbines to a single electrical circuit that then transmits the combined power via cables buried in the road to the grid connection point around 8000m away at Penrhos. The project chose an underground route to avoid the need for pylons.
  - 10.2.5 Menter Môn has no shareholders and any profit from the 'Morlais' project will be used to support local community projects.
  - 10.2.6 The Morlais project fits well within the context of the Welsh Government Draft Policy Statement – 'Local ownership of energy generation in Wales-benefitting Wales today and for future generations'. Where local ownership by third sector organisations, such as Menter Môn, is listed along with local authorities, businesses and farms and estates, and all new renewable energy projects have to have at least an element of local ownership from 2020.
  - 10.2.7 The National Planning Policy (Wales) requires planning authorities to plan positively for the use of locally generated electricity and heat to help meet the national target of one Gigawatt (1GW) by 2030. The latest version of Planning Policy Wales (PPW), published in December 2018, states planning authorities should use their evidence base to inform policies and proposals for local energy.
  - 10.2.8 The project is well suited to form part of the 'Covid Green Recovery' following the 2020 pandemic. The project meets many of the aims of Wales' low carbon future and the Future Generations (Wales) Act.
- 10.3 Land and rights affected
- 10.3.1 The land proposed in the order is required by the project in order to provide a means of getting the subsea cables from a point close to shore, under or over the cliff into the shoreside substation and allow the construction of two main substations and a further switch room and allow cables to be laid in a trench between these substations and switchroom, for the transmission of electricity. Ultimately allowing

connection to the electricity distribution and transmission systems at Parc Cybi and Penrhos.

- 10.3.2 The trench will also include small diameter communications cables for control and safety purposes. The main cables are expected to be around 100mm diameter each.
- 10.3.3 Land above the installed cables will need to have appropriate controls in place to prevent inadvertent damage throughout the operational phase.
- 10.3.4 Other than at the substations and switchroom it is not proposed to have any above ground infrastructure throughout the project except at the cliff if HDD is not possible.
- 10.3.5 The project took the decision many years ago not to add to the burden of overhead lines on the island. Burying cables is a much more costly method compared to overhead lines but will improve plant availability as there will be no outages caused bird or tree strikes and there will be no adverse effects due to weather.
- 10.3.6 Laying a larger cable in the trench does not add significantly to the project cost and adding a series of empty ducts with draw wires ensures a second circuit can be installed with minimum future disruption. Whilst 'future proofing' the installation.
- 10.3.7 The circuit will consist of 3 individual cables one for each phase. Laid as singles or as trefoil depending upon available space within the trench. Trefoil formation is where two cables are laid adjacent to each other and the third placed in the dip between the two, forming a triangular cross section.
- 10.3.8 The final road route was chosen to minimise the number of landowners and reduce the effects on those that were affected. Less than 20 landowners are affected in total.
- 10.3.9 The CPO guidance was followed including creating a book of reference and engaging with all listed within the book. Engagement started in early 2016. Land agents were engaged in 2018.

#### 10.4 Electrical Connectivity

- 10.4.1 Grid connection offers have been secured by Menter Môn at Parc Cybi (Manweb) for 18MW and Penrhos substation (National Grid) for 180MW.
- 10.4.2 Discussions are ongoing with Orthios, the owner of land surrounding the Penrhos National Grid substation.



## 10.5 Landowners Affected

- 10.5.1 The main focus of objections from landowners along the route was around the amount of land required, could it be done with less? could it be done by another route? Why my land?
- 10.5.2 The project took the route with the lowest number of private land owners utilising brown field sites and public or large company owned land where possible, expecting there to be fewer owners with greater land interests and those owners being used to handling property deals of this nature.
- 10.5.3 The amount of land required is the minimum considering 'future-proofing', the ability to adapt and complete the project, and ensure the project complies with all regulatory guidelines.
- 10.5.4 Of course the project will seek to return any land that is not required by the project and landowners will get compensated for what is taken.
- 10.5.5 Menter Môn has engaged with all parties along the route and is working towards agreement, many option agreements have already been signed.
- 10.5.6 The aim has always been to reach agreement through private treaty with all parties, but Menter Môn recognises that this may not be possible and for the ensured success of the project needs CPO powers as a fallback.

## 10.6 Remaining objections and responses.

- 10.6.1 The order affects approximately 17 land interests along the route, of which 9 objected. Heads of Terms have been concluded with 7 and 4 objections have been removed to date leaving 5 objections outstanding.
- 10.6.2 The outstanding objections relate to Orthios, Land & Lakes, Alpoco, IoACC and Horizon/Conygar.
- 10.6.3 Conygar themselves have not objected but Horizon have. The Horizon interest is related to the Wylfa Newydd Nuclear power Plant CPO the future of which is unknown.
- 10.6.4 Menter Môn have written to Horizon asking them to remove their objection due to their current position. At the time of writing this PoE Horizon had not responded.
- 10.6.5 Land & Lakes, IoACC and Alpoco are close to agreement. Heads of Terms are in last stages of agreement in all cases.
- 10.6.6 As well as the 17 land interests the order affects approximately 10 (including TCE & Public Trustee) statutory undertakers along the route

of which 5 objected. Side-agreements have been concluded with 4 and 3 objections have been removed to date leaving 2 objections outstanding.

10.6.7 The statutory undertakers that objected have all now reached the last stages of agreement with Menter Môn and at the time of writing it is anticipated that all their objections will be withdrawn as the agreement processes complete. This includes Network Rail, National Grid, Welsh Water, Scottish Power Energy Networks and Wales & West Utilities. COVID has affected turnaround times in some cases.

10.6.8 Menter Môn is also working with the remaining statutory undertakers and operators that did not object in order to agree similar asset protection agreements to those who objected.

10.6.9 All remaining objections are being addressed by the Menter Môn team.

10.6.10 Plot 31 (Mr Collett) and plot 47-50 (Orthios) are the least likely to reach agreement by private treaty.

10.6.11 Securing the land in plot 49 to access the electricity grid is fundamental to the success of the project.

## 10.7 Funding and Timeline

10.7.1 The funding discussed in this proof of evidence relates to the funding requirements for the onshore infrastructure for the Morlais Tidal Energy project. Funding for procurement and installation of tidal energy devices is a matter for the developers and their funding partners.

10.7.2 £7.7m funding for Morlais A (the Consent and Development project – Approved - delivered between 2014 and December 2020; currently going through approval process to extend to March 2022, increasing total secured to £10.2m)

10.7.3 Application to the Wales European Funding Office for £25m submitted late 2018. The status of this funding is 'conditional approval'. The three conditions are: match funding, first phase consent and a deliverable timescale which ensures the funding is fully defrayed before the close of 2023.

10.7.4 Application submitted to the North Wales Economic Ambition Board for £9m in December 2019. Subsequently invited to submit a 5-case business plan in July 2020 for submission in January 2021. Approval will be conditional upon a strong case and first phase consent.

10.7.5 Menter Môn has signed heads of terms with a private equity investor to provide the match funding as a risk mitigation measure.

10.7.6 I can confirm that Menter Môn is satisfied that all the necessary resources are likely to be available to achieve what is proposed within a reasonable timescale. Funding negotiations are long lead processes. We cannot expect final funding decisions until we have consent, but the £10m of funding Menter Môn have attracted thus far indicates public sector intent regarding the delivery of this project.

## 10.8 Conclusion and the case for a CPO.

10.8.1 The project will create new jobs, position a new industry and become a shop window for the world to see, understand and buy Tidal Stream devices and its associated technology and technologists.

10.8.2 The project will contribute to Wales and the UK's net zero carbon targets and meet Welsh Governments requirements for locally owned renewable energy projects.

10.8.3 The Morlais project could be the largest locally owned renewable energy project in the world. Local universities and colleges will benefit from having this exciting new and developing technology on their doorstep.

10.8.4 Acquiring the land is necessary to make the project happen. Menter Môn needs the ability to access all the land identified along the route both for installation and ongoing maintenance activities.

10.8.5 Menter Môn has worked hard to try and keep disruption to landowners to a minimum. No more land is proposed to be acquired or be subject to the compulsory acquisition of rights than is necessary. The land requirement proposed is the minimum required to ensure the safe delivery of the project taking into account any local minor deviations encountered during the construction process.

10.8.6 Any less land than what is sought in the order will seriously impact the ability to complete the project. Identified temporary areas will be returned to land owners on completion of the works. Only the minimum will be retained by the project

10.8.7 Burying infrastructure cables meets the latest Welsh Government preferred standards, rather than connecting generators by overhead line.

10.8.8 Mitigation measures for landowners and affected stakeholders during the construction and operational phase take the form of: instruction and

deployment of competent contractors with proven track record of delivering such works, utilisation of codes of construction practice, dedicated liaison contact, maintaining access to retained land, re-use of topsoil, drainage mitigation, land reinstatement and regular 2 way communication with all affected land owners and other affected parties and on completion, minimisation of ongoing easements and land hand back wherever possible.

- 10.8.9 Any permanent restrictions to be imposed on the land are necessary to protect land owners and the public from interference/damage to the infrastructure from both a public safety and operational perspective. 132KV and 33KV cables will be buried below. It is important that no activities that could result in contact with these cables are allowed to take place without proper control.
- 10.8.10 The owner of plot 31 has not objected and was not prepared to engage with Menter Môn, but at the time of writing has now appointed a land agent and is entering into discussions.
- 10.8.11 Welsh Government is supportive of the project at the highest level.
- 10.8.12 Making a grid connection via Orthios land has been a difficult proposition from the start. Not being a regulated body under OFGEM has always meant that Menter Môn has needed to provide an alternative way of securing the protection it and its funders need to maintain the security of any electrical connection for the full life of the project.
- 10.8.13 The simplest way to provide this protection is to create an option to purchase sufficient land adjacent to the National Grid cables within the Orthios site with an associated cable easement. This would give Menter Môn the ability to make a grid connection should Orthios cease trading for example. Orthios have not been prepared to sell land for this purpose to date.
- 10.8.14 The owners of the Orthios site have placed a value on their connection that Menter Môn can demonstrate to be significantly more expensive than going to National Grid direct. This has been demonstrated in the National Grid offer recently accepted by Menter Môn.
- 10.8.15 Overall Menter Môn concludes that there is a compelling case in the public interest for the inclusion of compulsory powers in the order and for those powers to cover the whole of the order. Most objections have been negotiated away and Menter Môn has made every effort to sort matters consensually with all involved – some have simply proven intractable.

- 10.8.16 Those objections that remain do not show a CPO should not be granted – to give them credence and make an order over less of the land than sought could cause substantial issues when it comes to ‘futureproofing’ the project and giving the project the flexibility within which to work.
- 10.8.17 Obtaining powers over a part of the project is not a practical option as the cables need to connect at both ends to allow the passage of electricity between the generators and the electricity transmission system irrespective of the amount of capacity connected.
- 10.8.18 Mitigation for the landowners is in place, unnecessary land will be returned and if land needs to be compulsorily acquired the landowners will be compensated at the full rate.

## **Appendix 1 – SPEN connection offer.**

### **SPEN Distribution Connection Offer**

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Menter Mon Cyf  
Neuadd y Dref  
Bulkley Square  
Llangefni  
LL77 7LR,

Date: 9 September 2020

Contact :07753624039

For the attention of: Mr Dafydd Gruffydd

Dear Sir,

Offer for Connection of the Morlais Tidal (the "Proposed Development") to the SP Manweb plc Distribution System – Full Offer Notification Number 615004827, Point of Connection Offer Notification Number 615004827

The Customer to which this Offer is being made is Menter Mon Cyf, Neuadd y Dref, Bulkley Square, Llangefni and registered number 03160233.

I refer to previous discussions regarding the connection to the Morlais Tidal Proposed Development and have pleasure in submitting this Offer for Your consideration. SP Power Systems Limited will act for SP Manweb plc ("We", "Us", "Our", the "Distributor") with regard to this Offer.

#### **MUTUALLY EXCLUSIVE OFFERS**

We have issued two offers for the connection of Morlais Tidal (this Offer for 18MW and a second offer for 13MW dated 7 October 2014, QAS 141728) and together the "Mutually Exclusive Offers". Only one of these Mutually Exclusive Offers shall be capable of acceptance. Upon acceptance of this Offer, the other will immediately be withdrawn.

**GENERAL**  
This letter –

- (a) confirms that We have treated Your request as a notice given under section 16A of the Electricity Act 1989 (the "Act") requesting Us to make the connection under section 16 of the Act,


SP Manweb plc, Registered Office: 3 Prenton Way, Prenton, CH43 3ET  
[www.scottishpower.com](http://www.scottishpower.com)

Telephone: 0141 614 0008

SP Transmission plc, Registered Office: Ochil House, 10 Technology Avenue, Hamilton International Technology Park, Blantyre, G72 0HT. Vat No. GB 659 3720 06  
SP Manweb plc, Registered Office: 3 Prenton Way, Prenton, CH43 3ET. Registered in England and Wales No. 2360627. Vat No. GB 659 3720 06  
SP Distribution plc, Registered Office: Ochil House, 10 Technology Avenue, Hamilton International Technology Park, Blantyre, G72 0HT. Vat No. GB 659 3720 06

## **Appendix 2 – National Grid offer.**

### **National Grid Transmission Connection Offer**



## Offer Summary Document

This document provides an overview of information from the offer documents enclosed. Please make sure you refer to the offer documents for detailed technical and legal information.

**What's included?**

**Summary of documents included in this correspondence:**

Formal letter

Bilateral Connection Agreement  
Construction Agreement  
CUSC Accession  
Transmission Related Agreement

BCA Appendix A, B, C, D, F-F5  
ConsAg Appendix B1, G, H, I, J, K, L, MM, N and O

Exhibit MM1, MM2 and MM3

**Numbers at a glance**

**TEC:**  
**180.0 MW**

**Connection date**  
**1 April 2028**

**Estimated annual connection charge**  
[REDACTED]

**Securities to be placed:**  
[REDACTED]

**Cancellation charge:**  
[REDACTED]

**One-off costs:**  
[REDACTED]

Your details	
Company name	Menter Mon Cyf
For the attention of	Dafydd Gruffydd
Project name	Mentor Mon Cyf
Connection agreement type	Bilateral Connection Agreement (BCA)
Connection agreement reference number	A/MENM/20/2004-04EN(0)

Offer details	
Issued date	17 July 2020
Offer documents valid until date	17 October 2020 (see overleaf for more info)
Connections Contract Manager	Alex Curtis
Contact details	alex.curtis@nationalgrideso.com 07794 395776

The enclosed documents relate to:

A new BCA connection for a multi staged tidal connection to the NETS, with the requested backfeed date met as requested. The charge for Backfeed is shown in Appendix B Part 4 this is £3,406,245 to be paid in monthly instalments from September 2023 until Stage 1 Completion in April 2028.

See next page for further info

Staged connection	Yes												
Stage connection details	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Stage 1</td> <td style="width: 20%;">01/04/2028</td> <td style="width: 50%;">40MW</td> </tr> <tr> <td>Stage 2</td> <td>01/04/2029</td> <td>60MW</td> </tr> <tr> <td>Stage 3</td> <td>01/04/2030</td> <td>100MW</td> </tr> <tr> <td>Stage 4</td> <td>01/04/2031</td> <td>180MW</td> </tr> </table>	Stage 1	01/04/2028	40MW	Stage 2	01/04/2029	60MW	Stage 3	01/04/2030	100MW	Stage 4	01/04/2031	180MW
Stage 1	01/04/2028	40MW											
Stage 2	01/04/2029	60MW											
Stage 3	01/04/2030	100MW											
Stage 4	01/04/2031	180MW											
Transmission Entry Capacity	180.0 MW												
Connection Entry Capacity	180.0 MW												
Point of connection	Penhros 132KV Substation												
Transmission Owner	National Grid Electricity Transmission PLC												
Connections restrictions	Yes												
Type of restrictions	Enduring see Appendix D												

Works and costs	
One-off Works details (if applicable)	NA
Enabling Works (Refer to Appendix H – Part 1)	See App H
Other estimated charges (if known)	N/A
Trigger Date	01 April 2025



### **Appendix 3 – TCE letter regarding cliffs.**

#### **TCE Letter to grant cables over cliff if needed**

1 St James's Market  
London  
SW1Y 4AH

Tel: 0207 851 5000:  
Web: [thecrownestate.co.uk](http://thecrownestate.co.uk)



Jason Golder  
Senior Asset Manager  
Tel: 0207 851 5186

E-mail: [Jason.golder@thecrownestate.co.uk](mailto:Jason.golder@thecrownestate.co.uk)

Sent via email

26 August 2020

Dear Graham

We have spoken about what would be required if you needed to run the cables across the foreshore and over the cliff at the landing point, in the area of Abrahams Bosom, Holyhead. I can confirm that with regard to the cable landing area that we wouldn't need to extract the area from the regulating lease to the Isle of Anglesey County Council as the rights to *install on or over in the Demised Premises...cables...[inc] any necessary ancillary apparatus and to inspect maintain etc etc.* have been reserved to the Commissioners under clause 29( c ) of the Regulating Lease dated 27 March 1990. The regulating lease would not need to be modified. All that we would need to do is inform the Tenant (IoACC) what we intend to do.

In the immediate terms, Morlais should seek a response from IoACC, ensuring that IoACC is agreeable to this arrangement and forward this confirmation to The Crown Estate. This confirms that this work would not be unexpected by the County Council and is permitted by The Crown Estate.

I trust that this is satisfactory to all parties but this requirement is dependent on the outcome of planning consents.

Yours sincerely

A handwritten signature in dark ink, appearing to read "Jason Golder", written in a cursive style.

Jason Golder  
Senior Asset Manager

## **Appendix 4 - IoACC letter regarding cliffs.**

### **IoACC Response to TCE letter allowing over cliffing.**

SWYDDOGOL / OFFICIAL



CYNGOR SIR  
YNYS MÔN  
ISLE OF ANGLESEY  
COUNTY COUNCIL

CHRISTIAN BRANCH B.Sc., P.G. Dip  
Pennaeth Gwasanaeth Dros Dro – Rheoleiddio a  
Datblygu Economaidd  
Interim Head of Service - Regulation and Economic  
Development

CYNGOR SIR YNYS MÔN  
ISLE OF ANGLESEY COUNTY COUNCIL  
Canolfan Fusnes Môn • Anglesey Business Centre  
Parc Busnes Bryn Cefni • Bryn Cefni Business Park  
LLANGFNI  
Ynys Môn • Isle of Anglesey  
LL77 7XA

fôn / tel: 01248 752840

E-bost / Email: [PMO@ynysmon.gov.uk](mailto:PMO@ynysmon.gov.uk)

Dyddiad / Date: 04.09.20

Mr Graham Morley,  
Morlais Project Manager

Dear Mr Morley,

Thank you for forwarding the Council a copy of the letter received from the Crown Estate dated 26<sup>th</sup> August 2020.

The Council confirms that it is aware of the potential need for cables to be installed across the foreshore and over the cliff face (subject to Transport and Works Order under the Transport and Works Act 1992 for the Morlais Demonstration Zone) at the landing point in the area of Abraham's Bosom, Holyhead in order to implement the proposed Morlais Project.

The cable landing area is currently leased by the Isle of Anglesey County Council from The Crown Estate. The Council confirms that it is agreeable to the arrangement set out in the letter from the Crown Estate and confirms that it is satisfied that such rights have been reserved to the Commissioners under clause 29 ( c ) of the Regulating Lease dated 27<sup>th</sup> March 1990.

Please do not hesitate to contact us should you wish to discuss further.

Yours sincerely,

Pennaeth Gwasanaeth Dros Dro – Rheoleiddio a Datblygu Economaidd  
Interim Head of Service - Regulation and Economic Development

Page 1 of 1

## **Appendix 5 – Letter regarding Special Category Land.**

### **Signed letter for Acquisition of Land Decision**

Grŵp Yr Economi, Sgiliau a Chyfoeth Naturiol  
Economy, Skills and Natural Resources Group

Kate Mariea Radford  
Planning and Infrastructure Consenting Team  
Eversheds Sutherland

KateMRadford@eversheds-sutherland.com



Llywodraeth Cymru  
Welsh Government

12/10/2020

**APPLICATION FOR A CERTIFICATE PURSUANT TO PARAGRAPH 6 OF SCHEDULE 3  
TO THE ACQUISITION OF LAND ACT 1981**

1. I refer to your application, dated 23 September 2019, submitted by Menter Môn Morlais Limited ("Menter Môn") to the Welsh Ministers, pursuant to paragraph 6 of Schedule 3 to the Acquisition of Land Act 1981 ("the ALA 1981").
2. On 16 September, 2019, Menter Môn made an application to the Welsh Ministers pursuant to the Transport and Works Act 1992 ("TWA") for the Morlais Demonstration Zone Order ("the Order").
3. Your application seeks a certificate from the Welsh Minister to authorise the compulsory acquisition pursuant to the Order of rights over land which comprises open space.
4. Paragraph 6 of Schedule 3 to the ALA 1981 provides that:

*"(1) In so far as a compulsory purchase order authorises the acquisition of a right over land forming part of a common, open space or fuel or field garden allotment, it shall be subject to special parliamentary procedure unless the Secretary of State is satisfied—*

*(a) that the land, when burdened with that right, will be no less advantageous to those persons in whom it is vested and other persons, if any, entitled to rights of common or other rights, and to the public, than it was before, or*

*(aa) that the right is being acquired in order to secure the preservation or improve the management of the land*

*(b) that there has been or will be given in exchange for the right additional land which will as respects the persons in whom there is vested the land over which the*

*Rydym yn croesawu derbyn gohebiaeth yn Gymraeg. Byddwn yn ateb gohebiaeth a dderbynnir yn Gymraeg yn Gymraeg ac ni fydd gohebu yn Gymraeg yn arwain at oedi.*

*We welcome receiving correspondence in Welsh. Any correspondence received in Welsh will be answered in Welsh and corresponding in Welsh will not lead to a delay in responding.*



BUDDSODDWYR | INVESTORS  
MEWN POBL | IN PEOPLE

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## **Appendix 6 - Government Support.**

### **Letters and notes of meetings demonstrating Welsh Government Support**

e-mail: [john@mentermon.com](mailto:john@mentermon.com)

Ken Skates AM  
Cabinet Secretary for Economy and Infrastructure  
Welsh Government  
5<sup>th</sup> Floor  
Tŷ Hywel  
Cardiff Bay  
CF99 1NA

June 26, 2018

Dear Cabinet Secretary

**‘Morlais’ and Tidal Stream Energy Opportunities in Holyhead**

As the Project Director, I write to introduce ‘Morlais’ and request a follow up meeting at your convenience.

Morlais is a world leading infrastructure enabling project for the off-shore tidal stream energy sector and is strategically placed near Holyhead. Its parent company is a third sector social enterprise with the aim of bringing work and development to North Wales.

For clarity, the Morlais project and associated developments relies on the mature tidal stream technology and is in contrast to the very large civil engineering, capital intensive lagoon technology.

Significantly, the Offshore Renewable Energy Catapult has recently confirmed the commercialisation of Tidal Stream. Furthermore, a recent external audit, commissioned by WEFO has supported Morlais’ delivery mechanism and management of its Tidal Stream project on Anglesey.

We are now focusing on raising finance to allow the second phase of the Morlais project which involves putting in the electrical infrastructure and connections to the National Grid with a potential 240MW capacity. (colloquially ‘the plug in the sea’)

Key to the success of the project will be our bid to the North Wales Growth Fund team.

We would be delighted to meet with you to discuss the Morlais project and discuss the opportunities this project brings to North West Wales, its role in delivery “Prosperity for All” and the ability to significantly contribute towards the Wales target of having 70% of its electricity from renewables by 2030.

Yours sincerely,

John Idris Jones ( Morlais Project Director)

cc Gerallt LI Jones - Morlais

Graham Morley – Morlais



Ken Skates AC/AM  
Ysgrifennydd y Cabinet dros yr Economi a Thrafnidiaeth  
Cabinet Secretary for Economy and Transport



Llywodraeth Cymru  
Welsh Government

Eich cyf/Your ref MOR/Cor/P/001 Ein cyf/Our  
ref KS/02054/18

Dr John Idris Jones  
Morlais Project Director  
Menter Môn [gwenan@mentermon.com](mailto:gwenan@mentermon.com)

Dear John,

July 2018

Thank you for your letter of 29 June regarding the Morlais tidal stream demonstration zone and tidal stream energy opportunities in Holyhead.

I understand your project is being supported by EU funding through the Welsh European Funding Office and has previously received financial support from the Welsh Government.

I would be pleased to meet with you to receive an update regarding progress with your project, in particular the technology developer commitment to the project and your application for North Wales Growth Funds.

Please contact my Diary Secretary, Sandra Wooldridge, to organise a convenient date and time, at the following email address: [DS.CabSecEandT@gov.wales](mailto:DS.CabSecEandT@gov.wales).

Yours ever,  
Ken

Ken Skates AC/AM  
Ysgrifennydd y Cabinet dros yr Economi a Thrafnidiaeth  
Cabinet Secretary for Economy and Transport

Bae Caerdydd • Cardiff Bay  
Caerdydd • Cardiff  
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[Co\\_rrespondence.KenSkates@gov.wales](mailto:Co_rrespondence.KenSkates@gov.wales)

Rydym yn croesawu l derbyn gohebiaeth y Gymraeg. Byddwn yn ateb gohebiaeth a dderbynnir yn Gymraeg yn Gymraeg ac ni fydd gchebu yn Gymraeg yn arwain at cedi.

We welcome receiving correspondence in Welsh. Any correspondence received in Welsh will be answered in Welsh and corresponding in Welsh will not lead to a delay in responding.



gwerth mewn gwahaniaeth  
delivering on distinction

Ken Skates AM  
Cabinet Secretary for Economy and Infrastructure  
Welsh Government  
5th Floor Tŷ Hywel  
Cardiff Bay  
CF99 1NA

**MORLAIS,**  
Menter Môn,  
The Town Hall,  
Llangefni, Anglesey ,  
LL77 7LR

October 18th 2018

Dear Cabinet Secretary

**‘Morlais’ and the North Wales Growth Bid**

I am grateful to you for finding the time to meet with us last week. We were taken with your enthusiasm regarding Morlais and agreement to the suggestion that a senior officer chairs a meeting of all the different parties in Welsh Government as I set out in an earlier letter to Andrew Slade.

During our meeting, I mentioned my meeting at the Department of Business, Energy and Industrial Strategy (DBEIS) at the end of last week. The outcome of this meeting was that DBEIS raised the issue regarding the robustness of the business case and the likelihood of a stranded asset. To respond to these concerns, I have met with WEFO representatives who have been very constructive and as a result Morlais will be submitting a revised OBC to BEIS as part of the Growth Bid.

Once DBEIS have completed their assessment, as you suggested, I shall write to the Secretary of State, Greg Clarke, on this matter confirming your support. I shall do this in consultation with your officials, once DBEIS have had opportunity to consider our response to their concerns in the revised OBC.

Thank you for your help and support.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'J. I. Jones'.

John Idris Jones

Project Director

cc Andrew Slade - Director General, Economy, Skills & Natural Resources Group,

Peter Ryland – Chief Operating Officer WEFO  
Gerallt Ll Jones – Morlais  
Andy Billcliff - Morlais  
Graham Morley - Morlais



Neuadd y Dref / The Town Hall,  
Llangefni, Ynys Môn, LL77 7LR  
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Ken Skates AC/AM  
Ysgrifennydd y Cabinet dros yr Economi a Thrafnidiaeth  
Cabinet Secretary for Economy and Transport



Llywodraeth Cymru  
Welsh Government

Our ref KS/03085/18

John Idris Jones Morlais [john@mentermon.com](mailto:john@mentermon.com)

13 November 2018

*Dear John,*

Thank you for your letter of 18 October regarding Morlais, the North Wales Growth Bid and your ongoing dialogue with the Department for Business Energy & Industrial Strategy (BEIS). I hope the revised Outline Business Case you are drawing up for submission to BEIS will succeed in moving the discussions in the direction required.

I know you are working closely with my officials and I am assured they will provide appropriate support on the specifics of the BEIS response once it is received, and in the meantime continue to work with you on addressing wider aspects of the Morlais project.

*Yours ever,*  
*Ken*

Ken Skates AC/AM  
Ysgrifennydd y Cabinet dros yr Economi a Thrafnidiaeth  
Cabinet Secretary for Economy and Transport

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Rydym yn croesawu derbyn gohebiaeth yn Gymraeg. Byddwn yn ateb gohebiaeth a dderbynnir yn Gymraeg yn Gymraeg ac ni fydd gohebu yn Gymraeg yn arwain at oedi.

We welcome receiving correspondence in Welsh. Any correspondence received in Welsh will be answered in Welsh and corresponding in Welsh will not lead to a delay in responding.

## Summary of meetings with Mark Drakeford – First Minister March 29 2019

### Meeting : School of Ocean Sciences Menai Bridge

#### Present:

Dr Ed Jones (chair) (BU), Prof Colin Jago, Prof David Thomas, Dr Simon (computer modelling specialist) Dr Gemma Versaco(?) (mammals expert), Gerallt, Martin Edlund (Minesto) Osian Roberts (Minesto) Pryderi ap Rhisiart (MSPARC) Peter Murphy, Alwyn Rowlands, Jij (Albert Owen sent his apologies – was in Westminster due to Brexit matters)

1. Dr Ed chaired meeting – gave overview of Anglesey economy and important opportunity of marine tidal stream sector with Wylfa Newydd on hold. We talked about skills and potential apprentices being trained in the new Coleg Menai facility possibly working in tidal stream in Anglesey in 2023. We identified that Morlais has capability to be equivalent to possibly 10x Minesto if we can get permissions and funding.
2. We shared with First Minister Morlais concerns :
  - a. Open ended consenting Process for TWAO and for Marine Licence (cf DCO Process – 15 months)
  - b. Lack of match funding for Morlais from private sector and need for Growth Deal support; possible need for WG backstop to fund £9M
  - c. Lack of revenue funding for tidal stream
  - d. NRW – described our approach re dealing with experts on issues (birds, mammals, visuals) and concern that could end up with non-viable project
  - e. Discussed concern about NRW not able to look at bigger Picture when discussing issues
  - f. Identified that we needed 40 MW consented in First tranche for Morlais to be viable
  - g. First Minister asked to be sent a letter/briefing note **Action: JIJ**
3. Martin Edlund talked about Minesto; Wales natural resource, their Welsh team developing stuff in the Faroes and importance of European Funding to developing the sector. He also reinforced points made about NRW and the need for deploy and monitor. Minesto are now 65 people – 30 in Holyhead and claim to be biggest tidal stream organisation. Was positive in comments regarding working with us. Emphasised need to create more confidence in investors so as to bring in private money.
4. We talked about predictability of tidal stream and the need to factor that in when setting a price for tidal stream electricity compared with unpredictable wind and solar
5. CJ talked about overseas global markets – BU out in China in talks with Shanghai University and about Chinese appetite for tidal stream involvement.  
GV(BU) explained that tidal stream developments are happening at the limit of science knowledge. NRW assessors often asked questions that were very difficult to answer e.g. about wanting information re what was going on in high velocity areas – Bangor kept on losing kit! And the need for computational models to be accepted (Simon) as proxies for getting at data in hard to reach areas.

**MORLAIS,**  
Menter Môn,  
The Town Hall,  
Llangefni, Anglesey ,  
LL77 7LR  
1st of April, 2019

**RE: Morlais**

Dear First Minister,

Thank you for taking the time to meet with us in Anglesey on March 29<sup>th</sup> - both at the School of Ocean Science in Menai Bridge and then at Holyhead Mountain where we were able to show you the location of the Morlais Tidal Stream Demonstration Zone.

Thank you for your interest in our exciting project.

As you requested, we are writing to brief you on concerns that we have about the implementation of the project.

**Background:**

1. Tidal Stream is a young industry where device developers have built prototypes, tested them (often at the European Marine Energy test centre (EMEC) in Orkney) and achieved mature technology readiness levels (TRLs), but few have been deployed commercially. The only commercial Tidal Stream site in the UK is the Meygen project near Orkney which has a handful of tidal turbines deployed.
2. The next step for the Tidal Stream industry is to deploy more turbines in arrays to prove commercial readiness levels (CRLs) and to start the cost reduction process that will allow them to compete with other renewable energy sources such as offshore wind.
3. The Crown Estate set up a number of Tidal Demonstration Zones for this purpose where site managers would:

- o Obtain all the necessary off- and on-shore regulatory and planning approvals;
- o Provide grid-connections for the export of the electricity generated; and
- o Provide opportunities for co-operation among and shared learning for the device developers at the demonstration zone.

This also allows the device developers to focus on perfecting their technologies, and the shared site reduces the capital they need to raise to deploy their devices.

Menter Môn were awarded the West Anglesey Demonstration Zone by Crown Estate in 2012 and named the project Morlais. This is the only zone being progressed.

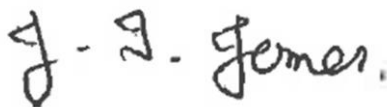
4. Morlais is a unique project in the UK, being set up and run by Menter Môn. Menter Môn is a third sector not-for-profit local development company rooted in North West Wales. The management of the Morlais Tidal Demonstration Zone will ensure that not only the investment by device developers (potentially in excess of £500m) but also any surplus income from the Morlais project would be committed to local economic regeneration.
5. At present, we have ten possible technology developers signed up with Morlais and wishing to locate their technology in the Morlais zone provided they are able to make their individual business case to their individual investors.
6. We are currently in the process of obtaining regulatory and planning approvals, and a grid connection agreement. This part of the process ('Morlais A') is expected to be completed by early 2021, and we will then build the necessary grid connection to be complete by the end of 2022 ('Morlais B'). This is expected to be funded by a mixture of private capital and support from sources such as the Wales European Funding Office. Completion of this work will remove a significant risk for device developers locating their machines in the Morlais zone.

- b. We suggest the opportunity for some other innovation funding approach – perhaps associated with the immature status of the technology and the need for further development of the tidal stream technology.
- c. Another approach would be to seek UK Government to reallocate to Wales the annual revenue that goes to Treasury from Crown Estate. This sum (£8M p.a.) would be sufficient to give revenue funding for some 30 MW of tidal stream development off Anglesey and would allow the Morlais project to move forward. The attached note in Appendix 1 explains this further. We also note that the predictability of tidal stream electricity is not factored into any funding mechanism and that it is unreasonable to include unpredictable wind generation and solar generation in the same pricing category as a predictable source of energy.

Thank you very much for your interest. Please let us know if you require further information.

We look forward and appreciate your continuing interest

Yours sincerely,



J I Jones  
Project Director



G LL Jones  
SRO



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Lesley Griffiths AC/AM

Gweinidog yr Amgylchedd, Ynni a Materion Gwledig Minister for  
Environment, Energy and Rural Affairs



Llywodraeth Cymru  
Welsh Government

Ein cyf/Our ref LG/5913/19

John Idris Jones

Morlais Energy

John@mentermon.com

9 May 2019

Dear John

Thank you for your letter dated 1<sup>st</sup> April to the First Minister. As the Minister with responsibility for energy and marine matters, I have been asked to reply. The Welsh Government's vision is for clean, healthy, safe, productive and biologically diverse seas. I fully support the marine energy industry and want to ensure we work together to deliver sustainable and innovative projects for Wales.

In your letter to the First Minister following your meeting and discussions on 29 March in Bangor, you have raised concerns in relation to the implementation of the project.

It is important we have robust and fit for purpose consenting regimes. I would like to assure you we work productively with NRW and other regulators to consider and explore opportunities for improving consenting processes for developers and decision-makers. The current work in relation to opportunities for the consenting regime in Wales is one example.

Formal arrangements for offshore consenting under the Electricity Act 1989 were consulted on in Spring 2018 and came into force last month. There is no requirement for an applicant to apply for an Order under the Transport and Works Act 1992 ("TWA") in its place. Subject to section 13(2) of the TWA, it is the applicant's choice to apply for a TWA Order in this instance.

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Rydym yn croesawu derbyn gohebiaeth yn Gymraeg. Byddwn yn ateb gohebiaeth a dderbynnir yn Gymraeg yn Gymraeg ac ni fydd gohebu yn Gymraeg yn arwain at oedi.

We welcome receiving correspondence in Welsh. Any correspondence received in Welsh will be answered in Welsh and corresponding in Welsh will not lead to a delay in responding.



I understand your concerns regarding timescales for decisions and the uncertainties this can cause in relation to funding. To ensure any consenting process is as smooth as possible, I would encourage any developer to engage in early pre-application discussions with the relevant regulators and NRW advisors. I have asked NRW to meet with key stakeholders to discuss any issues in relation to consenting because the Welsh Government is committed to a regime which is proportionate, protects the environment and promotes the provision of marine energy possibilities here in Wales.

You raised issues on the matter of financing for Morlais B. The principal requirement is for a series of funding mechanisms to enable marine technologies to deploy and reduce costs, as the industry has set out in its case to UK Government. The First Minister has written twice since the January Marine Energy Summit on the need for continuing support for the sector in order to deliver economic benefit. I will write again to UK Ministers to request an update following the discussions between Claire Perry, Minister of State at the Department for Business, Energy and Industrial Strategy and the Marine Energy Council in relation to the Innovative Power Purchase Agreement and Contract for Difference to ask for an update on progress.

I have asked officials to consider your request in relation to funding as a matter of urgency. This work will determine what role Welsh Government could be able to play in helping to secure the necessary match-funding finance for the infrastructure project. You will receive a further letter in relation to this matter.

Regards  
Lesley

**Lesley Griffiths AC/AM**

Gweinidog yr Amgylchedd, Ynni a Materion Gwledig  
Minister for Environment, Energy and Rural Affairs

## Annex A – Orthios

### Table of figures

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Figure 22 Penrhos substation as it stands 16/9/19 within Orthios site. ....	106

#### 1. Background

- 1.1 The Anglesey Aluminium site began operation in 1971. It was a joint venture between Rio Tinto Group and Kaiser Aluminium. At the time it was the biggest single user of Electricity in the UK using 255MW. It was built on 500 acres of the Penrhos estate, and is adjacent to the public access Penrhos Country Park on Holy Island.
- 1.2 Electricity for the site was provided by the newly commissioned Wylfa Nuclear Power station some 15 miles away. Power was fed from the power station via a 400KV National Grid substation along 2 circuits each capable of supplying 300MW such that if one circuit failed or was out of service for maintenance the other circuit would provide 300MW to the Aluminium plant.
- 1.3 It was particularly important that the aluminium smelting process had this secure supply known as 300MW n+1 firm connection. The smelting of aluminium was a continuous process, loss of supply would wreck the smelter.
- 1.4 The two circuits were routed overland on a series of lattice structure pylons (as is common for National Grid circuits) to a point behind the housing estate at Valley where a transition tower took the overhead lines and fed them underground and onto holy island through a dedicated concrete duct in the pavement adjacent to the A5, over the inland sea. From here the buried cables crossed the A5 and then headed to the Penrhos substation.
- 1.5 The substation at Penrhos was an asset owned by the Central Electricity Generating Board and allowed the direct transmission of up to 300MW of Electricity onto the busbars owned by Anglesey Aluminium.

#### 2. Privatisation of the UK Electricity system

- 2.1 In 1990 the UK Electricity system was privatised.
- 2.2 The Large Generators were split up and the Higher voltage transmission assets, predominantly 275KV and 400KV were given to National Grid, with the distribution companies such as Scottish Power, Scottish & Southern Energy taking the lower voltage 132KV circuits and below.
- 2.3 However, one notable 132KV circuit remained in National Grid ownership. The 300MW double circuit n+1 circuit between Wylfa 400KV substation and the Penrhos substation.
- 2.4 For some reason the Penrhos substation remained 'landlocked' within the Anglesey Aluminium boundary. Not a problem whilst Anglesey Aluminium was operating as there would have been agreements and established access procedures and working practices in place to allow regular access by National Grid.

As an employee of the CEGB working on the pre-vesting asset allocations at the time I can say there was not a great deal of science behind these allocations. Disused CEGB power station sites were divided up, sharing areas equally between National Power and Powergen but not necessarily taking account of covenants, SSSI's and other issues associated with the land. The site at Penrhos could have been easily overlooked. Cwm Dyli in Snowdonia was an example of this.

- 2.5 In 2009, after failing to negotiate a low-cost energy contract, as the CEGB legacy contract fell away, the Aluminium plant ceased production. Its neighbour Alpoco continues to operate making Aluminium Powder. A much less power-hungry process only requiring an 11KV <5MW connection.

### 3. Orthios

- 3.1 Orthios is a group of companies based in Christleton Chester. The Managing Director is Sean McCormick.
- 3.2 Orthios completed the purchase of the Anglesey Aluminium site in January 2016, promising a £1Bn 'food and power plant' on Anglesey.
- 3.3 The power plant was to be a 299MW large scale biomass plant with hydroponic and aquaculture centres using process heat from the biomass plant, selling electrical energy to the grid, farming shellfish and prawns and creating bulk fertiliser for agriculture.
- 3.4 Plans for a large scale biomass plant had been worked up by Anglesey Aluminium, the previous owners, to add value to the land. Orthios

commenced demolition. S36 Planning Consent for a 299MW large Scale Biomass plant was granted in 2009. An addendum was granted by Anglesey County Council on 16/09/2011.

- 3.5 Plots 46-51 did not appear to be associated with the planned Biomass plant.
- 3.6 The UK large scale biomass to energy market had effectively collapsed in 2012/13 when large fossil fired power stations such as the 4000MW Drax power station converted to biomass and secured the available UK Government subsidy. New large scale Biomass is not currently under consideration by BEIS as a contributor to the UK energy mix
- 3.7 The planned operational date of 2018 was not achieved as the plant was put on hold. This was taken from Orthios website: 'Following the 2017 Contract for Difference (CfD) round, Orthios suspended development on this project. Until such a time as the UK energy programs stabilise, and there is a clear path forward for biomass technologies within supported regimes, the biomass driven energy project will be on hold.'



*Figure 19 The Orthios site looking over Penrhos substation.*

- 3.8 Orthios is also moving into non-PET plastic recycling. Again from the website. *'For some plastics, a direct recycling solution does not exist. If however, depolymerisation is used, many of these materials represent a cost-effective means of fuelling energy production systems. Provided processes are managed in an environmentally responsible manner and emissions are adequately controlled, energy from such sources can address an environmental problem and simultaneously reduce the need for fossil-fuelled energy. Orthios is implementing such a technology. A unique polymer processing solution, that decomposes plastics into a mix of reusable oils, gas and heat. The facility will convert industrial scale tonnages of non-recyclable clean, sorted plastics on an annual basis, and the unit will produce commercially relevant volumes of oil on a daily basis, commencing Q2 2020. This facility will not only remove harmful plastics from landfill and the oceans, but will also generate electricity for the National Grid, provide a zero-sulphur oil for industry, and a high quality char that can be processed for use in filters. This is accomplished with virtually zero emissions, and the exothermic heat extracted can be used in the Orthios Combined Food & Power™ approach to support those industries on site.'*
- 3.9 As well as plastics recycling, Menter Môn understands the site is to be used for a gas 'peaking' plant, waste burning and a large-scale battery storage facility. There was even talk of providing refugee camps.
- 3.10 Having the solution for dealing with one of the biggest waste problems of our times, local and national governments would be expected to be very interested and prepared to invest large sums of money in the process of plastics recycling, but as yet this doesn't seem to be the case. The largest Government investment in waste to energy along the North Wales Coast has been Parc Adfer, the Wheelabrator plant on the Deeside industrial park in Flintshire. This site has been set up to provide waste treatment for the 5 local authorities, the North Wales Residual Waste Treatment partnership, including the Isle of Anglesey County Council. This site commenced operation in 2020.
- 3.11 In August 2019 it was reported that a 2700m<sup>2</sup>, 7.5MW gas peaking plant may be built on the site 'in an empty plot' on the Orthios site. Within what later became known as plot 49.
- 3.12 Whilst all these opportunities or proposals may be at various stages of development, I have seen nothing to support these, other than the planning consent for the 299MW Large Scale Biomass Plant and an element of site clearance.
- 3.13 Indeed, the substation itself has been significantly demolished leaving only the National grid owned HV cable tails and associated steelwork.

#### 4. Orthios and Menter Môn

- 4.1 Menter Môn has had a relatively long working relationship with Orthios and for most of that time has been trying to reach agreement to connect to the National Grid substation within its curtilage. What follows is by no means an exhaustive list of the communications between the two organisations, but it is designed to show the level of engagement having taken place over the last 4 years. I, for example, have over 3000 emails relating to dealings with Orthios.
- 4.2 Menter Môn introduced themselves to Orthios at their Chester office on 14/4/16, meeting Ed Everson Finance Director, Chris Pooley (Energy specialist) and Brian Owen.
- 4.3 19/5/16 Had site induction and site visit to Orthios site with Chris Pooley and Nick Marrs. Looked into potential cable crossing points along site boundary. Made Orthios aware Menter Môn had applied for a National Grid connection.
- 4.4 On 15/08/16 Orthios and Menter Môn met National Grid to discuss the possibility of Grid sharing options. Menter Môn require 180MW of export capacity by around 2030.
- 4.5 1/9/16 Agreed to work up a memorandum of understanding. (MoU).
- 4.6 12/10/16 met with Chris Pooley and Mike Masters, Chairman at Orthios office.
- 4.7 9/2/17 Met Chris Pooley and Mike Masters in Llangefni.
- 4.8 21/3/17 Both parties signed MoU regarding connection activities.
- 4.9 5/7/17 held network connection progress meeting at Orthios Chester. Mike Masters and Chris Pooley in attendance.
- 4.10 21/2/18 Draft list of points required by Menter Môn to reach agreement sent to Orthios
- 4.11 7/3/18 Electricity Networks Association (ENA) connection application form submitted to Orthios containing technical connection information for Morlais project.
- 4.12 8/3/18 Discussion with Orthios to undertake ground clearance which was carried out as required.

- 4.13 15/3/18 Site visit to Orthios to assess possibility of utilising drainage culverts beneath railway and A55. Ultimately not considered suitable due to potential upstream fold risk.
- 4.14 27/4/18 Sean McCormick was notified of Menter Môn's requirement to have 'protection' from Orthios ceasing to trade, such as option to buy parcel of land within substation to allow grid connection.
- 4.15 10/5/18 met Orthios, Chris Pooley Discussed potential cable routes and access to substation. Met again 16/5/18.
- 4.16 28/6/18 Chris Pooley was progressing a 240MW connection offer via their infrastructure, for a non-firm connection at Penrhos. Orthios identified space in the south-east corner of switchyard for Menter Môn's feeder cable, circuit breaker and connection equipment.
- 4.17 31/7/18 meeting at Orthios Chester, where Orthios explained that a non-firm 240MW Morlais connection would have no impact on Orthios' activities. Orthios have been interacting with Grid expert Dr Ian Chilvers. Menter Môn reiterated the need for an option of a direct connection to National Grid as well as an option to connect via Orthios. In attendance Sean McCormick and Ian Hodkinson
- 4.18 23/7/18 In order to facilitate clear communications to and from Orthios Bailey and Partners were engaged by Menter Môn, and introduced to Orthios as Menter Môn's land agent. Primary point of contact being Ed Bailey.
- 4.19 04/09/18 Baileys and Partners formally introduced suggesting a meeting in person to go through a proposal received from Orthios.
- 4.20 05/09/20 Orthios responded unwilling to initially meet but requesting full commercial response to a proposal sent to Menter Môn.
- 4.21 All correspondence beyond the above date between Baileys and Partners and the representatives for Orthios (Hodkinson legal) is marked 'without prejudice'.
- 4.22 10/10/18 Menter Môn requested access to Orthios site to undertake Ecological surveys so the project was not delayed. Orthios responded that no access to site would be granted until deal was signed off.
- 4.23 Resolved and access granted for ecological surveys 2/11/18.
- 4.24 22/2/19 Ground investigation request for Information made to Orthios by Caulmert on behalf of Menter Môn. This is ongoing, permission granted September 2020.

- 4.25 On 8/5/19 Following a meeting, Orthios were made aware by email of Menter Môn's need to incorporate a 33KV DNO connection somehow within the substation in order to utilise network capacity already secured with SP Manweb.
- 4.26 Earlier discussions between Menter Môn and Orthios were based around an area inside the original substation of approx. 15m x 20m, with a small corner cut off, i.e. 300 sq.m. less 18 sq.m. = 282 sq.m. Sufficient space to house a 132KV switch, isolator, cable sealing ends, protection and metering, the bare minimum originally thought necessary. The space was the size of a tennis court and could have been accommodated within the confines of the original substation fence, even though limited by substation busbar infrastructure that has now been dismantled and removed.
- 4.27 When the Engineering Consultancy Black & Veitch was engaged to provide the FEED study, a much larger plot was tabled, originally in excess of 2 acres. The design needed to accommodate around 10MW of batteries, a 33KV substation and transformer, a Statcom or other means of controlling reactive power, a shared service building, interconnecting apparatus a 132kV substation, associated access roads, car parking and a security fence. The design tabled by B&V was reduced to an area of around 1.25 acres following significant discussion between Menter Môn, B&V, ICCL (electrical Consultancy) and SES Supply (Electrical Consultancy). Discussion included the stacking of battery modules, sharing common services, utilising GIS switchgear and installing modular bus systems. All to reduce the land requirement.
- 4.28 Until defined by detailed ground surveys it is impossible to fix the final location of the substation within plot 49.
- 4.29 At a meeting with Orthios it was made clear by Orthios that there was no more space available to Menter Môn within the existing substation and Menter Môn would have to look elsewhere. It was finally agreed (subject to contract) with Orthios to use land in what is now plot 49, It was spare land earmarked for a small 7.5MW gas peaking plant, both parties recognised that the gas peaking plant could be re-sited in the general area as no works had commenced.





Figure 20 Approximate position of proposed substation marked in orange.

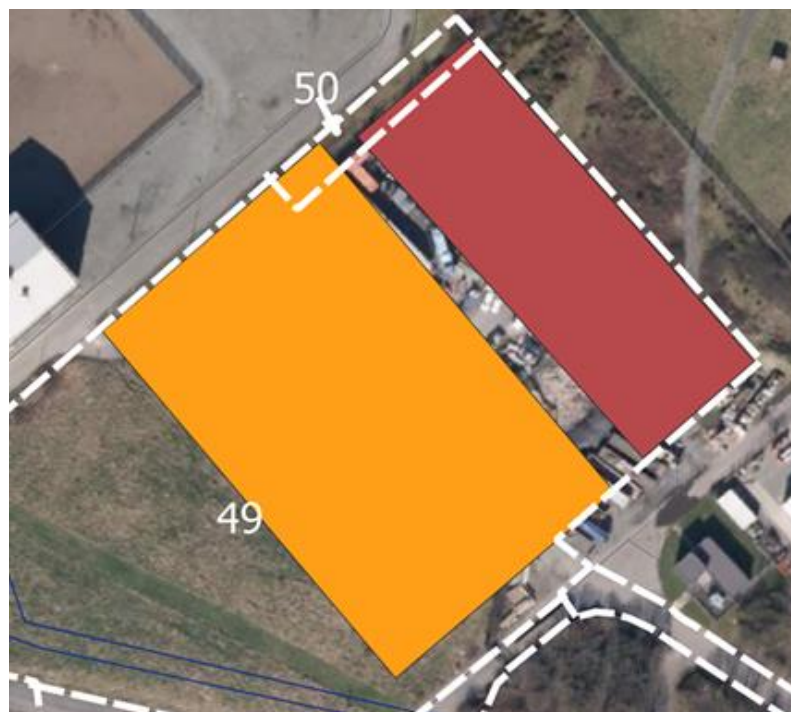


Figure 21 foot print required for gas peaking plant marked in red

- 4.30 The figure 20 above also shows the underground route of the 2 National Grid 132KV circuits buried approximately 1.4m below ground.
- 4.31 A site visit by ICCL on 26/9/19 confirmed that the substation shown in the top left of the aerial photograph (fig.20) above had been substantially dismantled.
- 4.32 The area shaded orange is included in plot 49 in the TWAO. The red shaded area in figure 21 shows the area required by the proposed gas peaking plant.
- 4.33 Orthios appeared to be close to agreeing on a without prejudice and subject to contract basis, an option for Lease over the orange shaded area or thereabouts in plot 49 (Fig.20), and an Option for Easement and Deed of Easement.
- 4.34 Orthios would not sell the land required by Menter Môn.
- 4.35 On this basis, Menter Môn finalised the red line boundary for the project, undertook weld surveys on the railway, engaged with the Trunk Road Authority and laid out an area for directional drilling beneath the road and railway, commenced detailed negotiations with other affected land owners and submitted these plans within the Transport and Works Act Order. Submitted in September 2019.



*Figure 22 Penrhos substation as it stands 16/9/19 within Orthios site.*

- 4.36 16/10/19 Menter Môn invited Orthios to meet with Martin Cave, the new Chair of OFGEM, the Electricity regulator on his visit to North Wales, and we introduced the projects and explained to him how we wanted to work together.
- 4.37 Orthios is not regulated by OFGEM and this has always been a complication in securing a connection agreement with them.
- 4.38 Orthios Power (Anglesey) Limited currently (15/10/20) has two entries on the National Grid TEC register. 150MW effective from 31/10/21 and 60MW effective from 1/4/23. This is the list maintained by National Grid showing all customers connected at the transmission level. Both entries are currently associated with a biomass plant. The total capacity they have secured is 210MW. The circuit itself is capable of transmitting 300MW x2.
- 4.39 Orthios has been aware for some years that at least part of any Menter Môn connected capacity would have to be through an OFGEM regulated body e.g. National Grid or Scottish Power. Potential funders understand the protection offered by the regulator and see this connection solution as a much lower risk than dealing with a private company, even though a 'behind the meter' solution connecting via Orthios appears to be more profitable.
- 4.40 Any option agreed with Orthios would be exactly that, 'an option', until exercised. Creating that option and paying a fee for that option should not eliminate the ability for Menter Môn to pursue alternative options without penalty. Otherwise making the option payment to Orthios crystallises the deal, it ceases to be an option and becomes 'the only way...' unless Menter Môn pays twice.
- 4.41 In the volatile UK energy market it is sensible to retain more than one option for connection, reducing cost to consumers and the project by selecting the most efficient option that still meets programme needs. It makes economic sense for Menter Môn to ensure that more than one method of connection to the Penrhos substation remains on the table. Menter Môn applied for a grid connection directly with National Grid in April 2020, an offer for 180MW was received in July 2020 and accepted in August 2020.
- 4.42 Reducing the connection cost, which is a large part of the project cost, means that Menter Môn's lease holders can take a lower power purchase price for electricity they generate. This directly benefits electricity consumers.
- 4.43 It is important to understand that this accepted National Grid connection offer can be cancelled by Menter Môn at any time, subject to commercial penalties, and therefore should not hinder any deal to be made with Orthios for a connection in the same area.

- 4.44 Accepting the National Grid offer however crystallises the cost of going down that route, and provides a 'reality check' on any proposed Orthios charges and provides connectivity in 2023 as required by the project.
- 4.45 Signing a connection agreement with Orthios allowing connection onto Orthios apparatus would be easier if the physical assets were already in place, or if any agreement was directly attached to a land purchase. There is currently no physical asset to connect to and Orthios does not wish to sell land or land options for that purpose.
- 4.46 Connecting through Orthios at any stage would leave Menter Môn with much greater exposure to risk, than if connecting directly to the National Grid regulated asset.
- 4.47 Orthios objected to the proposed Morlais project and has more recently submitted a statement of case (SoC) supporting their objection. Menter Môn have responded to this statement of case.
- 4.48 Menter Môn does not wish to undertake any works in plot 51 the access road, only to use it as access during construction and operation. Any proposed SPEN 11KV substation to be built in plot 51 to supply Orthios would not be affected by Menter Môn's activities. Menter Môn and SPEN did explore utilising or upgrading this existing 11KV substation to 33KV to support the Morlais project but it was rejected due to cost and practicality.
- 4.49 Menter Môn would keep the road in plot 51 open for emergency access at all times.
- 4.50 Menter Môn recognises that the road in plot 51 serves the Alpoco site and is close to reaching agreement with Alpoco on use of that road.
- 4.51 Menter Môn understands the sensitive nature of the area of the 132KV substation and would always obey all Health & Safety and High Voltage Safety Rule requirements in this area. This would of course include controlling vehicle movements especially cranes and tele-handlers in the proximity of the substation.
- 4.52 Menter Môn and its contractors would be duty bound to share information with the host site (Orthios) regarding each other's undertaking in any case under current H&S legislation.
- 4.53 Menter Môn would not prevent access to Orthios site 11kV supplies and if they remained live Menter Môn would have to ensure operational and emergency access was available at all times. Any requirements for isolation of the 11kV network would be requested through SPEN as they would have

to make alternative arrangements with connected parties, in this case Orthios.

## 5. Current position.

- 5.1 Menter Môn was willing to sign Heads of Terms on a without prejudice and subject to contract basis with Orthios in 2019 and had communicated that fact to WEFO (The project primary funder), however Menter Môn were then subsequently advised by Baileys and Partners that they could not recommend the head of agreement due to a number of new provisions introduced by the advisors of Orthios which Menter Môn were advised could be prejudicial to the scheme. Menter Môn reviewed the new provisions and agreed that in their opinion these changes made it impossible for Menter Môn to sign.
- 5.2 Since that time Menter Môn has been in communication with the Orthios legal team via Baileys and Partners, land agents, to resolve the issues. The communications remain on a 'without prejudice and subject to contract' basis and the correspondence trail between Baileys and Partners and Orthios between September 2018 and October 2020 is substantive.
- 5.3 In September 2020 the Orthios engineering team approached Menter Môn and suggested we should try and work out an engineering solution that worked for both parties. It should be noted that a similar exercise was undertaken between the parties in 2016. This didn't result in agreement at the time, but the parties continued to discuss until September 2019 see 5.1.
- 5.4 Menter Môn were keen to take this opportunity to work out a solution. ICCL Electrical Engineering consultancy is working with Menter Môn to ensure a viable solution and is now setting up communications directly with National grid for the tri-party discussions that may be needed to reach a solution. This had been an Orthios action from an earlier meeting but the action was handed to Menter Môn/ICCL to speed up the process.
- 5.5 Menter Môn has accepted a National grid offer for connection into Penrhos substation for 180MW, commencing with a back feed in 2023. The back feed is where the required circuit is made live by a certain date enabling a power plant to commission High Voltage circuits prior to generating power from its own plant, normally for programme reasons.
- 5.6 In this case the back feed requirement was specified by Menter Môn to ensure that the National Grid substation was constructed during 2023. The circuit is not required for export purposes until 2028. By having the substation in place means it becomes a paper exercise to bring the date of generation forward if required, by implementing a National Grid 'modap', or modification application.

- 5.7 Menter Môn and Orthios have, at the time of writing, have attended 8 weekly meetings and are genuinely trying to work out a technically feasible solution. The solution must contain all the land requirements within the order although they may be disaggregated but remain electrically connected. This means that as the buildings are separate they can potentially be relocated around site and be cabled together as required.
- 5.8 The SoC provided by Orthios lists 2 options that could be facilitated by them, however there are still significant technical issues to overcome before either could become a viable option. Both options require the agreement of other parties:
  - 5.8.1 Network Rail agreeing to cable depth beneath rail line reducing from 9m to 5-6m. Subject to satisfactory ground investigation.
  - 5.8.2 Menter Môn cables to be turned 90 degrees in limited space.
  - 5.8.3 National Grid agreeing to a shared substation
  - 5.8.4 National Grid agreeing the substation location
  - 5.8.5 National Grid agreeing to use Gas Insulated Switching (GIS) Apparatus
  - 5.8.6 Potentially, National Grid agreeing to Morlais cables crossing their existing cable easement.
  - 5.8.7 SPEN agreeing to lift 11KV cables in area by rail line.
  - 5.8.8 WWU gas main may need to be lifted.
- 5.9 In both options A and B, all but the basic connection itself sit outside the existing limits of deviation of the TWAO therefore either option introduces significant planning risk.
- 5.10 Until the issues above have been resolved Menter Môn cannot revise its land requirements within the order.