Frequently Asked Questions

Horizon Nuclear Power Wylfa Limited new bespoke environmental permit and marine licence applications

Our role and the role of other regulators

1) **How is NRW involved with nuclear power stations?**

   Natural Resources Wales (NRW) is the environmental regulator for Wales and one of our main jobs is to make sure that people and the environment are protected from industrial activities. We are the key decision maker that will decide if a company will be granted permits they legally require to operate a nuclear power station. If permits are granted, we will regulate the permitted site/operator to ensure they comply with the conditions of their permits. Together with the Office for Nuclear Regulation (ONR), we are responsible for making sure that any new nuclear power stations built in Wales meet high standards of safety, security, environmental protection and waste management. We will also provide specialist advice to other decision makers such as the UK Government and Isle of Anglesey County Council.

   NRW's energy policy can be found here:
   https://naturalresources.wales/media/684911/energy-guidance-note-eng.pdf

What permits are required, the permitting process and timings

1) **What permits will Horizon require from NRW to be able to operate a nuclear power station?**

   To operate a nuclear power station, Horizon will need environmental permits to cover radioactive emissions and radioactive waste management, diesel backup generators and cooling water discharges from NRW.

   Before operation, Horizon will also need a permit to cover water discharges during the proposed construction phase and a marine licence to cover all the construction and construction related activities (e.g. blasting, tunnelling, dredging and disposal of marine sediment) at sea.

   There are also many other permits that will be required, particularly for the proposed construction phase of works. The application processes for these other permits are, by comparison, generally less complex and less specific to the construction or operation of a nuclear power station. Examples include; flood risk activity permits, European protected species licences and Site of Special Scientific Interest (SSSI) consents.

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Natural Resources Wales

2) What permits or authorisations will Horizon require from other organisations?

Horizon will need many other authorisations from other organisations. For the main site, these include:

- Nuclear Site Licence from the ONR
- Development Consent Order (DCO) examined by the Planning Inspectorate (PINS) and ultimately decided upon by the Secretary of State for Department of Business, Energy and Industrial Strategy (DBEIS).

3) What happens once an application has been submitted to NRW?

Once an application is submitted we log it on our systems and then check it has enough information to start considering it. If it does have enough information to start with, we call it 'duly made' and it allows us to begin our 'determination'. One of the first major steps of that determination process is public consultation. At the same time, we'll also be carrying out consultations with organisations such as the ONR, Food Standards Agency, Anglesey Council, Public Health Wales and Dŵr Cymru Welsh Water, the Maritime and Coastguard Agency, the Crown Estate, Welsh Government Marine Enforcement officers and local ports.

4) What criteria will Horizon have to meet to get a permit?

We will need to be satisfied that Horizon's proposals contain sufficient safeguards to protect people and the environment in line with all the legal, environmental, technological and health requirements of UK and European law.

If we did think the proposals were satisfactory for the permits (excluding the marine licence), we would consult with the public first on a draft decision or 'minded-to' consultation. If we weren't satisfied, we would refuse the application.

5) When is a decision likely to be made on the applications?

Whilst we are not bound to do so, we are aiming to be able to share our views on the environmental permit applications (either a draft decision or a refusal) prior to the close of the PINS examination of the DCO application.

The decision about the marine licence is likely to be made following any decision from the Secretary of State for the Department of Business, Energy and Industry Strategy (DBEIS).

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The consultation

1) **What is the consultation about?**

The consultation is a chance for everyone to view and provide comments on the applications we have received for new bespoke permits under The Environmental Permitting (England and Wales) Regulations 2016 and for a marine licence under the Marine and Coastal Access Act 2009 from Horizon Nuclear Power Wylfa Limited.

These applications are for activities relating to:

- **Construction Water Discharge -** to control and minimise the impact from site drainage and contaminated water during the main construction period. For example, this could include discharges of rainfall runoff and discharges from a sewerage system
- **Marine licencing** – this is required for any work that involves building, removing and disposing of materials below the high water mark. This includes features such as breakwaters, a facility to off-load cargo from ships (MOLF – marine off-loading facility) or marine dredging
- **Cooling water discharge** – to minimise the environmental effect of abstracting sea water to cool the plant's systems and of discharging it (warmer and with some chemicals) back into the sea
- **Combustion installation** – to make sure that emergency back-up generators and boilers have measures to protect the local environment

We must decide whether to refuse or grant these applications and if we grant them, what conditions we should include in the permits. To inform our work, we welcome comments on the applications.

2) **Where can I see the application?**

The applications are available to view via our public register at NRW's offices in Bangor (Please call 03000 65 3000 in advance to arrange a viewing at this office)

Alternatively, Horizon have made the applications available on their website;

https://www.horizonnuclearpower.com/our-sites/wylfa-newydd/documents

and at the following locations (as hosted by Horizon Nuclear Power Wylfa Limited):

- Anglesey Business Centre, Bryn Cefni, Llangefni, LL77 7XA
- Wylfa Newydd Site Office

3) When and where are the consultation events?

There will be three consultation events:

Monday 16th July 2018 2pm-7pm	Storiel, Bangor, LL57 1DT
Tuesday 17th July 2018 Midday – 7PM	David Hughes Hall, Cemaes, LL67 0LW
Wednesday 18th July Midday – 5:30PM	Ebeneser Centre, Llangefni, LL77 7PN

4) How do I comment on the application?

To inform our work, any comments in respect of the content of the permits only, should be made in writing by 6th September 2018 to us at the address below. Please include the relevant permit reference number (below) on the envelope;

Permitting Team, Natural Resources Wales, Maes y Ffynnon, Penrhosgarnedd, Bangor, Gwynedd, LL57 2DW

Or alternatively by sending an email including the relevant permit reference number (below) in the subject line to the following email address;

WylfaNewyddConsultations@naturalresourceswales.gov.uk

Permit or Licence	Reference number
Cooling water discharge environmental permit	PAN-002427
Construction water discharge environmental permit	PAN-002428
Combustion environmental permit	PAN-002429
Marine Licence	CML1832

5) What kind of comments can I make?

Issues we can consider comments on include, but are not limited to, the applicant's competency to meet permit conditions and correcting information in the application. Issues we cannot consider comments on include, but are not limited to; Government Energy Policy, nuclear safety and security and planning matters. For more information please see our "How to Have Your Say" document.

6) **When will the consultation period end?**

The consultation will run for 10 weeks from 28th June 2018 and will end on the 6th September 2018.

7) **How will my comments be considered?**

We will consider all comments in our determination assessment of this application where issues raised are relevant to the permits being considered.

We appreciate that the issues you have raised are important to you, but unfortunately, we are not able to consider comments in our assessment of this application under Schedule 23 of the Environmental Permitting (England and Wales) Regulations 2016 if they are not relevant or outside our responsibilities.

However, Horizon Nuclear Power (Wylfa) Ltd will need to apply for other environmental permits. Where comments made are relevant to another application made to NRW, then we will endeavour to consider them as part of that application. Where we are clear that the comments will be relevant to another statutory body, then we will endeavour to make them available to that body for their consideration.

For this application, we will document all the relevant issues raised during the consultation along with our response, initially in a Draft Decision Document.

We will consult again on our draft decision for environmental permits, should we make one, before publishing any final outcome in our Decision Document for the environmental permits and marine licence.

Content of the combustion activity application

1) **What have Horizon included in their application?**

Horizon is seeking permission to carry out combustion activities (under Environmental Permitting Regulations 2016) on the Wylfa Newydd site with equipment which would have an aggregated thermal input of more than 50 megawatts.

The combustion equipment Horizon wishes to operate is primarily made up of standby electrical generator and site boilers. Both sets of equipment are described as diesel powered. The standby generation equipment will provide power to the site should there be a loss of power from the National Grid, and in the event of a loss of

coolant accident. The purpose of the boilers is to provide a continuous production of steam to other on-site processes.

2) If granted, what will the combustion installation permit allow Horizon to do?

Emissions can expect to arise from operating the combustion equipment on site. If granted, the permit would allow Horizon to operate this equipment in a controlled manner so that these emissions are minimised and kept within an acceptable set of limits.

3) What kind of pollution could be released as part of this activity

As part of the permit determination, the impact the site's emissions on local features will be assessed. Emissions can expect to impact the local area through different pathways; emissions to air, water and land. The risk of emissions through each of these pathways will be considered through the application determination process. The combustion application Horizon have submitted reports that there will not be any emissions to land, and the emissions to water from this site is expected to only cover clean rainwater, which are to be directed to the site's seal pits.

The primary air emission from this type of combustion activity are expected to include;

- Carbon Dioxide (CO_2)
- Carbon Monoxide (CO)
- Oxides of Nitrogen (NOx)
- Oxides of Sulphur (SOx)
- Particulates (PM)
- Volatile Organic Compounds (VOCs)
- Noise/Vibration
- Odour

These emissions can have different impacts on various sensitive receptors and will be assessed to understand this risk. This assessment will consider the releases that the sources, as well as at local sensitive features.

4) How will contributions of pollution from other sources be considered?

When the impacts of the combustion activity equipment are assessed, the emissions will be considered at both the release point and at sensitive local features. To understand the full impact on the features, the contribution from the

Wylfa Newydd site would be assessed together with the understood level of background concentrations, which would also include other local sources of pollution.

5) How will the impact of the combustion installation upon human health and ecological receptors be considered?

To comply with any granted environmental permit, the Wylfa Newydd combustion facility will need to ensure that the emissions that it releases reflect the Best Available Techniques standards.

Using physical factors of the release points, the contribution of pollution which would emanate from the Wylfa Newydd combustion equipment is then calculated. This is known as the 'process contribution'. Both the weather and the local geography will influence how the process contribution behaves in the atmosphere, and computer modelling can be used to understand how this behaviour can impact features in different parts of the local area. Features that're examined can include areas of human population, as well as sensitive ecological features.

The sensitive features that're examined will have their own limits, which will describe maximum exposure levels for different process contributions. Other consideration will also be accounted for, including duration of exposure, time of exposure, and current pollution background levels.

6) How will the impact on climate change be addressed?

The environmental permit will assess, and look to manage, local environmental impacts from the Wylfa Newydd combustion activities. Climate impacts will not be considered as part of this assessment, however due to the size of the combustion activities occurring on site, Horizon will need to apply for a Greenhouse Gas Permit before the operation of their combustion plant.

As part of the efficiency requirements of the environmental permit application, Horizon will need to have submitted details of their processes for managing their use of raw materials and production of waste materials. This will also have to include details on the global warming potential of their site.

7) How will risks resulting from fuel storage be considered in the application?

As part of their application, Horizon will have needed to supply a description of their proposed Environmental Management System (EMS). This is a pack that covers Horizons response to a number of different objectives, including the approach to

documents control, operator competency, efficient raw material and accident management.

As part of their approach to accident management, Horizon will have had to identified some of the major hazards and responses to emergency events. This will need to include information on emergencies related to the storage of fuel on site.

The details that Horizon submit in this capacity will be assessed with relation to our guidance 'How to comply with your environmental permit'. Request for further information may be asked of Horizon if there is information missing, or restrictions may be applied to any granted permit until any outstanding information is available.

8) How will any impacts on transportation routes, resulting from the operational combustion installation, be considered as part of the application?

The environmental permit will only assess impacts emanating from the area identified within the installation boundary and can only manage activities within this boundary accordingly. Aspects relating to transport activities outside of this boundary are not covered by the permit.

Aspect specifically relating to transport will be a consideration of the planning permission for the site.

The installation boundary will be a layout plan which Horizon will have submitted with their application. All regulated combustion activities, and any directly associated unregulated activities, must only occur within this area.

Content of the operational water discharge (cooling water and process effluent) application

1) What have Horizon included in their application?

Horizon is seeking permission to carry out water discharge activities (under Environmental Permitting Regulations 2016) involving the abstraction of seawater, the control of biofouling and the removal of heat and other pollutants from the Power Station to the Irish Sea (at Porth Wnal).

The scope of this permit application is for the discharge of cooling water and process effluents from the cooling water outfall in Porth Wnal, during the commissioning and operation of the Power Station. The water intake activities (located in Porth-y-pistyll) have also been included within the scope of the application. There will be no discharges of trade effluent to any water bodies other than the sea. There will not be any abstraction of groundwater or water from surface watercourses for the operation of the Power Station. Activities relating to liquid discharges during construction and construction stage testing are the subject of a separate environmental permit application

The Power Station uses seawater to provide once-through cooling of the steam turbine condenser and auxiliary systems and will discharge up to a maximum of 130 m^3/s of cooling water and process effluent to the Irish Sea on a continuous basis.

2) If granted, what will the cooling water and process effluent permit allow Horizon to do?

The granting of an environmental permit will set in place limits and conditions under which Horizon may legally discharge cooling water and process effluent (trade effluent) from the site.

The primary requirement of the permit is that the amount of heat waste and trade effluent produced is minimised through the application of Best Available Techniques (BAT). Similarly, BAT must be applied to minimise the impact of any discharges on people and the environment.

3) What will the cooling water and process effluent consist of?

- **Waste heat** - Seawater is abstracted at the cooling water intake in Porth-y-pistyll, and then pumped round cooling water systems to exchange heat with cooling systems and the main steam condensers, before being returned to the Irish Sea at the cooling water outfall in Porth Wnal. The seawater discharged at the cooling water outfall will therefore be warmer than that abstracted at the cooling water intake, with the system designed so that this differential temperature (the ΔT) will be no more than 12°C during power operation. During outage the ΔT will be lower as a consequence of a lower heat transfer required, whilst during some of the expected events the ΔT may be higher than 12°C for a short duration
- **Biocides** - The characteristics of the marine environment around the Power Station means that a mechanism to control of the growth of marine organisms within the cooling water system is required. Dosing of a biocide (sodium

hypochlorite) into the system at the cooling water intake will be the approach used for the Power Station.

- **Non-radioactive liquid waste** - Process effluents generated within the Power Station are managed through on-site treatment and retention for re-use, in line with the principles of BAT, so that discharges to the environment (with the cooling water return) are kept to a minimum. The reactor cooling circuit and fuel pool (i.e. the plant areas containing water that comes into direct contact with irradiated fuel elements) will be operated as closed loop systems and will not be discharged to the environment.

- **Fish recovery and return system/ Fish deterrents** - Abstracting the volume of seawater required for the once-through cooling system means that marine organisms (including fish) that are present in the seawater in the vicinity of the cooling water intake structure may be drawn in with the flow of seawater. In order to minimise this, Horizon will install measures to deter marine organisms away from the cooling water intake and facilitate their escape from the flow of seawater. The marine organisms that cannot be excluded will unfortunately become entrained into the cooling water system and exposed to condition which may result in their death or injury. Horizon believes that it has demonstrated that the FRR system selected is the Best Available Technique and will reduce the detrimental impact to an absolute minimum.

  Fine mesh screens (5 mm mesh size) across the intakes to the cooling water system will exclude larger organisms from the cooling water system. Further measures will wash the organisms from the fine mesh screens and return them to the sea with as minimal further impact as possible. Collectively these deterrent, exclusion and return measures comprise the fish recovery and return (FRR) system.

4) How many reactors do Horizon plan to build at the proposed power station and how much electricity will they generate?

Horizon plan to build two UK Advanced Boiling Water (UK-ABWR) reactors capable of generating 3.1GW electricity.

5) How would the discharge of water (cooling water and process effluents) from the nuclear power station affect the coastal water?

To help understand the impacts the proposed water discharge will have on the receiving environment, the developer has submitted supporting information as part of the permit application to identify how the discharge of water will affect the

receiving environment. Their supporting information includes a Water Framework Directive Assessment and a shadow Habitats Regulation Assessment (HRA) to support NRW's own Habitats Regulation Assessment.

Complex hydrodynamic modelling has also been completed and submitted to show the extent of the thermal plume and the TRO mixing zone (along with modelling for other substance that do not screen out of the H1 risk assessment). We will consider this before coming to a decision on the application.

The grant of any permit was ensure appropriately determined emission limits and strict monitoring conditions are in place.

6) **How can you be sure that contaminated water won't be discharged into Porth Wnal?**

Given the scale and nature of the proposed activity, the discharge will contain contaminants with a defined mixing zone. The term 'mixing zone' is used to refer both to the zone of physical mixing processes and to the extent of the area where water quality parameters are allowed to exceed defined acceptable limits as defined by the *WFD (Standards and Classifications)* Direction 2015.

It will be NRW's role to assess the proposed mixing zone extent and what impacts that will have on the environment.

If issued, the permit would include strict monitoring conditions to regulate emission limits in the discharged water. The will include regular checks at the discharge location, regular testing and regular reporting to NRW.

Content of the construction water discharge application

1) **What have Horizon included in their application?**

Horizon is seeking permission to carry out water discharge activities (under Environmental Permitting Regulations 2016) during the construction phase of the new nuclear site involving:

- Surface water drainage
- Discharge from the dewatering of deep excavations
- Discharge from the dewatering of the bund cofferdam and outfall cofferdam
- Discharge from the dewatering of the circulating water discharge tunnels
- Surface run-off from the concrete batch plant
- Vehicle wash-water

- Treated sewage effluent from a package treatment plant

The discharges are expected to be temporary until 2027 when construction has ceased.

2) Where do the effluents come from?

- During the construction phase, a total of 5 soil mounds will be created and stored at various locations around the site. The mounds will arise from stripping of topsoil and earthworks to develop the platforms necessary to accommodate the Power Station and associated infrastructure. Rainwater falling onto these soil mounds and the areas where vegetation and soil have been stripped, will have the potential to pick up polluting substances, resulting in run-off containing elevated sediment and leached contaminants which are already present in the soil.

- Parts of the main buildings are designed to be embedded in the ground, constructed on solid rock. To enable excavation below the groundwater table, dewatering will be required.

- Two temporary cofferdams will be constructed and then de-watered to create a dry working environment for the construction of the intake which will abstract sea water and for the circulating water discharge tunnels.

- There will be two circulating water discharge tunnels for the discharge of the cooling water effluent. Probe-hole drilling of the tunnel route will be undertaken to verify rock quality and assess the potential for groundwater ingress. If required, pre-excavation grouting will be carried out through the probe-holes to limit groundwater flow rates. Any groundwater that enters the areas during construction, will have to be pumped out.

- Concrete will be produced in on-site concrete batching plants. Process water that is generated as part of the concrete production process will either be recycled within the system or where there is excess, it will be tankered off site. Run-off from the concrete batching plant would drain into the main site surface water drainage.

- The application will also include a discharge for treated sewage effluent for the construction workers on site. It is estimated that during construction, the main construction site will host up to a maximum of 9000 personnel. The sewage effluent, approximately 990m3/day, will be treated via an on-site package treatment plant and discharged to the marine environment.

3) Where will the effluents go?

There are 14 discharge points associated with the construction phase. There will be 7 discharges to fresh water and 7 to the marine environment. These fresh water and marine environments are:

- Unnamed watercourses around Tre'r Goff
- Nant Cemaes
- Cemaes Bay
- Nant Caerdegog Isaf
- Afon Cafnan
- Porth-y-pistyll

4) How will the effluents be treated?

Horizon have proposed various treatment methods to minimise the effect that the activities will have on the environment. These include:

- Drainage systems and settlement ponds
- Attenuation ponds
- Lamella clarifiers/settlement units
- Polyelectrolytes
- Hydroseeding or impregnated matting of the soil mounds to reduce runoff
- Sustainable Drainage Systems (SuDS)
- Oil interceptors
- Secondary sewage effluent treatment which can treat to 20mg/l BOD and 30mg/l Suspended solids

5) If granted, what will the Construction Phase Activity permit allow Horizon to do?

The granting of an environmental permit will set in place numerical limits and conditions under which Horizon may legally discharge surface water run-off, surface water drainage, de-watering effluents and secondary treated sewage effluent from the site.

The primary requirement of the permit is that the quantity of suspended solids and any hazardous substances and treated sewage effluent within the discharges are

minimised through suitable treatment and management controls which will be detailed in their management system.

Content of the marine licence application

1) What have Horizon included in their application?

Horizon is seeking permission to construct a range of temporary and permanent works seawards of the current line of mean high water spring tides (MHWS)
Temporary marine works comprise:

- access ramp
- barge berth
- Cooling water system (CWS) intake channel cofferdam
- CWS intake structure cofferdam
- CWS outfall structure cofferdam
- aids to navigation
- waste water outfall.

The permanent marine works comprise of

- Marine offloading facility with a bulk quay and a Roll on-Roll off (Ro-Ro) quay
- layby berth
- pontoon berth
- reclaimed land area
- permanent aids to navigation
- CWS structures
- breakwaters including a west breakwater and east breakwater
- surface water drainage outfalls
- shore protection works built into some of the permanent marine works.

Horizon have also applied for the permission to perform capital (new) dredging activities to enable them to build the marine works and to dispose of some of the dredged material into a nearby disposal site at sea, off the coast of Holyhead

2) If granted, what will the marine licence permit allow Horizon to do?

If granted, Horizon will be able to excavate areas of the sea bed using techniques such as dredging, peckering, and blasting.
They will be able to dispose of some, or all of the dredged material, at sea, in a licenced disposal site. They will be able to carry out building works to construct the temporary and permanent works listed above.

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Natural Resources Wales

Other questions

1) **When will construction of the power station begin and how long will it take?**

   Horizon can only begin constructing the power station once the relevant permissions have been granted. Within Horizon's Pre-application Stage Three consultation (May 2017), they set out their indicative programme of beginning Site Preparation and Clearance Works in 2018 and Bulk Earthworks in 2019.

2) **Where exactly will the new power station be located?**

   Horizon plan to construct the Power Station to the west of the village of Cemaes and south of the existing Magnox power station on the north coast of Anglesey in North Wales.

3) **What is the likely operational life span of the power station?**

   Horizon expect that the operational life of each reactor will be 60 years

4) **How does NRW regulate Environmental permits and licenses? What happens when the company breaches /exceeds their permit or licence?**

   NRW would check that a permit or licence is being complied with through unannounced visits to the site and by taking samples at the permitted discharge points. We may also request the applicant to report their monitoring data. NRW's decision on all significant breaches to permits could result in a range of actions depending on the impact - from advising and warning the operator to formal caution or prosecution.

5) **How will the permits and licenses consider Designated Sites?**

   The activities that have been applied for are within areas designated as cSAC or cSPA. Potential impacts to these designated areas are considered in the Habitat Regulations Assessment (HRA) which is part of the permitting and licensing process.

   We will assess the impacts on individual site features during our determination process.

   The impacts of each of the activities on the nearby SACs, SPA's, Ramsars and SSSIs will also be assessed, including candidate sites.

NRW may normally only give permission for the project after having ascertained that it will not adversely affect the integrity of any Natura 2000 site. If NRW is satisfied that there are no alternative solutions and the project must be carried out for imperative reasons of overriding public interest (IROPI), permission can be granted, provided we have notified Welsh Government (WG) and either 21 days have elapsed with no response, or WG has notified us that we may grant permission. WG must secure that the necessary compensatory measures are taken.

6) Would the bathing water area be affected?

We regularly monitor bathing water quality from May to September and we would investigate immediately any bathing water or other water quality issues should they arise and take action. We would direct developers to meet the required standards of operations during construction and operation.

7) Does the application take account of decommissioning?

The Government legislated in the Energy Act 2008 (the Energy Act) to ensure that Operators of new nuclear power stations will have secure financing arrangements in place to meet the full costs of decommissioning and their full share of waste management and disposal costs. Under the Energy Act, Operators of new nuclear power stations are required to have a Funded Decommissioning Programme (FDP) approved by the Secretary of State for Business Energy and Industrial Strategy (Secretary of State) in place before construction of a new nuclear power station begins, and to comply with this FDP thereafter[4]. The funded decommissioning plan is not part of this application but a requirement before power station construction can commence.