Frequently Asked Questions

Horizon Nuclear Power Wylfa Limited new bespoke environmental permit application

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 Environment Agency (EA) and 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.

2) **What is the Environment Agency's role?**
   The EA is the environmental regulator for England. The EA's nuclear specialists will provide support and advice to NRW in the determination of Horizon's nuclear RSR permit application, in accordance with the Service Level Agreement between the EA and NRW.

3) **What is the Office for Nuclear Regulation's role?**
   The ONR regulates the safety and security aspects of nuclear power stations. The ONR grants Nuclear Site Licences to allow the development and operation of nuclear power stations. Before agreeing to construction they must be satisfied about the safety aspects of design, manufacture, construction, commissioning, operation, maintenance, decommissioning and the management of radioactive material on site.

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 licenses and Site of Special Scientific Interest (SSSI) consents.

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 and;
- 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 (BEIS).

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.

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

6) **When will Horizon submit the other permit and marine license applications?**

We expect Horizon to submit further permit and marine license applications either shortly before, or at the same time, as the DCO.

The consultation

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

The consultation is a chance for everyone to view and provide comments on the application we have received for a new bespoke nuclear RSR permit under the Environmental Permitting (England and Wales) Regulations 2016 from Horizon Nuclear Power Wylfa Limited. We must decide whether to refuse or grant the application and, if we grant it, what conditions we should include in the permit. To inform our work, we welcome comments on the application.

The application we have received and the consultation addresses radioactivity only. We expect the applicant to submit further applications for Environmental Permitting (England and Wales) Regulations 2016 permits for water discharges, combustion activities and construction activities in due time. We will consult on those applications as they are received.

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

You may view the application on Horizon's website by following the link below:

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

This application is also available to view at the following locations:

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

Anglesey Business Centre, Bryn Cefni, Llangefni, LL77 7XA

Cemaes Library, Longlascoed, Cemaes Bay, LL67 0NN

Wylfa Newydd Site Office, Cemaes Bay, Anglesey, LL67 0AA

You can inspect the information free of charge during normal opening hours of the above locations. If you want to view the application at our (NRW's) office, please call our Customer Care Centre in advance on 0300 065 3000 to arrange this.

3) **When and where are the consultation events?**

There will be three consultation events:

Monday 20 November 2017 2pm-7pm – David Hughes Hall, Cemaes, LL67 0LW
Tuesday 21 November 2017 2pm-7pm – Storiel, Bangor, LL57 1DT
Wednesday 22 November 11am – 4pm – Ebeneser Centre, Llangefni, LL77 7PN.

4) **How do I comment on the application?**
To inform our work, any comments, in respect of the use and disposal of radioactivity only, should be made in writing by **14th January 2018** to us at the address below:

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

Or via email to: **WylfaNewyddConsultations@naturalresourceswales.gov.uk**

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, the way radioactive waste is managed, sampling arrangements, 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 6th November 2017 and will end on the 14th January 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 issue of a permit for radioactive substances.

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, should we make one, before publishing any final outcome in our Decision Document.

Content of the nuclear RSR application

1) **What have Horizon included in their application?**
Horizon have applied for a permit to make discharges or transfer radioactive wastes from a proposed nuclear power station called Wylfa Newydd.

2) **If granted, what will the nuclear RSR permit allow Horizon to do?**
The granting of an environmental permit will set in place limits and conditions under which Horizon may legally make disposals and transfers of radioactive waste from the site.

   The primary requirement of the permit is that the amount of radioactive waste 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) **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 2.7GW electricity.

4) **How will the safety of the reactors be tested?**
The ONR are responsible for the oversight of the safety of the reactors and their operation. This application to NRW is about the minimisation of the amount and impacts of radioactive wastes produced by the operational power station.

5) **In what form will radioactive waste be released from the power station?**
Horizon have applied to make gaseous discharges to the atmosphere, aqueous discharges to the sea and to be able to transfer solid wastes to regulated facilities for disposal.

6) **How much radioactive waste will be released and will it affect people and the environment?**
Horizon have applied for the following limits:

Gaseous discharges

Radionuclide	Limit Applied for (GBq/year)
Tritium	2.1 e4
Carbon-14	3.5 e3

Argon-41	1.0 e4
Iodines	1.1 e0
Nobel gases	4.3 e2

Liquid discharges

Radionuclide	Limit Applied for
Tritium	1.5 e3

The Becquerel (Bq) is the activity of a quantity of radioactive material in which one nucleus decays per second.

Horizon will be legally limited by the conditions of the permit. We expect the application of BAT to mean that in practice, discharges will be significantly lower than the limits in the permit. However, we require the operator to estimate the impact on the population and the environment as if they were discharging at the limit for the full operational period of the power station (60 years).

Limits and Constraints	Dose (milli-Sieverts)
The average UK public dose from all (natural and man-made) sources	2.7mSv[1]
The public dose limit from man-made sources	1mSv
The Government also constrains new facilities to ensure that doses are	less than 0.3mSv
No site e.g. both Wylfa stations taken together gives rise to more than	0.5mSv
Horizon have estimated that at the limits applied for the most exposed members of the public would not be exposed to more than	0.04mSv

The Sievert (Sv) is a measure of the health effects of low levels of ionising radiation on the human body.

[1] https://www.gov.uk/government/publications/ionising-radiation-dose-comparisons/ionising-radiation-dose-comparisons

For comparison these figures is of the same range as eating a banana[2],[3] every day (0.0001mSv/banana x365 = 0.036mSv/year) or half the dose from a trans-atlantic flight (0.08mSv)[1].

Power stations like the ABWR are designed with layered defences to minimise the amount of radioactive waste that may require disposal under the conditions of the permit:

[2] http://www.bbc.co.uk/news/magazine-15288975
[3] http://www.ppe.gla.ac.uk/~protopop/teaching/NPP/P2-NPP.pdf

Release: Releases of radioactivity to the environment is the last resort. Where it is absolutely necessary systems are used to dilute and disperse the waste (e.g. stacks, CW dilution) to minimise the impact on the population and the environment..

Mitigation: Releases of gases, liquids to the environment is minimised through techniques such as gaseous hold-up systems, absorbers, filters, IX-resins, de-mineralisation and evaporation.
These techniques will concentrate and retain radioactive species into the solid waste route.

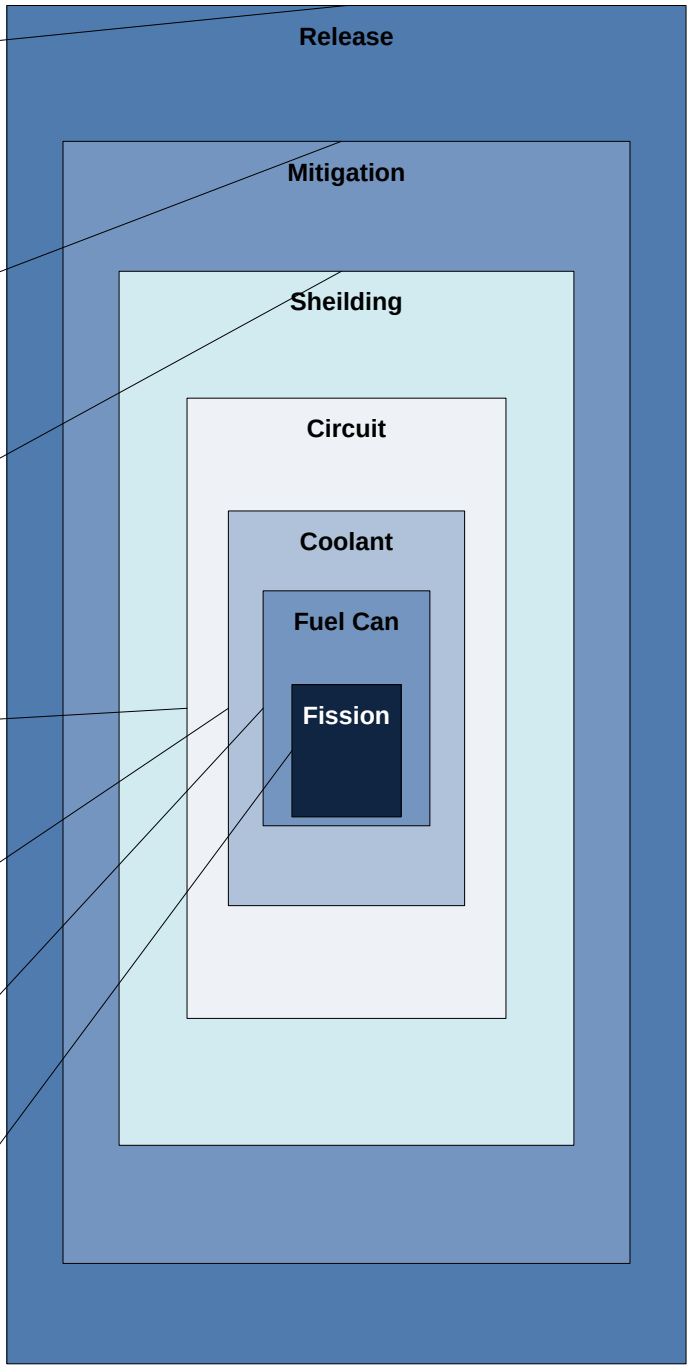
Shielding/Construction: The reactor and steam circuit is shielded to keep direct doses ALARP.

Circuit construction: the circuit is constructed to contain the steam and water. Materials are chosen to minimise the production of radioactive activation products – reduce the production of radioactive sludge

Coolant: The coolant is light water. Use of reactivity control through the water steam balance negates the need for chemical shims that can give rise to further radioactive discharges

Fuel can: The fuel can serves as the primary containment for the radioactive waste.

Fission: The fission of U-235 results in the production of neutrons, gamma rays and highly radioactive fission products plus heat.



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Natural Resources Wales

7) What will happen to the solid radioactive waste that will be created?
Solid radioactive waste is categorised by its radioactivity content and its disposal will depend on its category.

Categories include:

Waste Category	**Criteria**
Spent fuel	Will become waste at the point it has cooled sufficiently for consignment for disposal (after the station has ceased operation) to the Geological disposal facility (GDF) as High Level waste. Government policy is currently not to reprocess fuel to recycle the unburned U-235 and separate the fission products for packaging for disposal.
High level waste (HLW)	Thermal power >2kW/m^3 + >12GBq/t β/γ and 4 GBq/t α, disposal to the Geological disposal facility (GDF)
Intermediate level waste (ILW)	Thermal power $\leq$2kW/m^3 + $\geq$12GBq/t β/γ and $\geq$4 GBq/t α, disposal to the Geological disposal facility (GDF)
Low level waste (LLW)	$\leq$12GBq/t β/γ and $\leq$4 GBq/t α - meeting the waste acceptance criteria for the Low Level Waste Facility, Cumbria. LLW not meeting the criteria may need to be disposed of as ILW wastes in the GDF.
Very low level waste (VLLW)	VLLW are sufficiently low in radioactivity to be disposed of to appropriately permitted VLLW landfill facilities
Out of scope	Wastes that are insufficiently radioactive to require being brought into the regulatory regime. The wastes other properties should be considered in making a disposal.

For reference Figure 4.1 in Horizon's application summary indicates the routes by which it proposes wastes may be disposed.

8) 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.

[4] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/42628/3797-guidance-funded-decommissioning-programme-consult.pdf

Horizons application under the Environmental Permitting (England and Wales) Regulations 2016 is for a permit for operational discharges. During the operational period (60 years) we will keep the conditions and limits within the permit under regular review – usually every 5 years but potentially sooner depending on operational performance. The change from operational to decommissioning activities is a key change that will trigger just such a review.

Other questions

1) **How does the application for a nuclear RSR permit tie in with GDA?**
   The Generic Design Assessment (GDA) process enables the regulators (ONR and EA working with NRW) to get involved at the earliest stage where they can have most influence, assessing the environmental, safety and security aspects of the reactor designs before construction of the reactor starts. The regulators provide advice to the designers about any problems we identify so that these can also be addressed at the design stage.

   The GDA process is based on a generic site. When considering the nuclear permit application for the operation of a new nuclear power stations at Wylfa, NRW will carefully consider those proposals and, take into account the work we have done on GDA, (whether completed or not), when making decisions about whether the proposals are acceptable.

2) **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.

3) **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.

4) **What is the likely operational life span of the power station?**
   Horizon expect that the operational life of each reactor will be 60 years