

**From:** [REDACTED]  
**To:** [Wylfa Newydd](mailto:Wylfa.Newydd)  
**Subject:** Final Evidence for Deadline 7 - Wylfa Newydd - PAWB  
**Date:** 14 March 2019 11:52:32

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Dear PI Secretariat,

I understand that Rob Davies of PAWB has submitted a draft version on my evidence below already - I have emailed him to send in the final version below - it contains some small additions and changes to point (i) and also includes a point about vibration monitoring (ii).

However, Mr Davies may be working so may not see my email in time. Dylan Morgan of PAWB has asked me this morning to send you this final version below so please regard the evidence text below as the PAWB response.

Apologies for slight confusion.

Thanks

Neil Crumpton

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**PAWB responses to Issue Specific and Oral Evidence Sessions, Trearddur Bay Hotel, Ynys Mon, 4-8 th March 2019**

This submission comprises :

i) a response to Inspector Mr Hayes 'stream of consciousness' call for commentary at the Issue Specific Hearing on Tuesday 5th March about the landscaping and visual appearance of the site and power station buildings

Summary : The evidence in (i) below focuses on landscaping plan options for the waste stores and other related site matters in the post-decommissioning period (circa 2110 - 2230). It discusses possible options and eventualities that future generations may face and the funding provision, and the lack of applicant consideration or public consultation about this period which would likely be as long to twice as long as the construction and operational period of the scheme being considered for a DCO. The prospect of a GDF for radioactive waste generated in Wales not being available resulting in the interim stores defaulting to long-term stores are considered.

ii) consideration of including seismic (vibration) monitoring at the SPA 'noise' monitoring points during the construction period (ie from start of all major earthworks, platform levelling, mounding, 'blasting', Interim Store construction post commissioning)

Neil Crumpton

PAWB member (representing PAWB as deputy co-chair BEIS-NGO nuclear Forum) 14th March 2019

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### **i) Site and Interim Stores Landscaping in the post decommissioning period (circa 2110 - 2230)**

Since 2005 when the current nuclear energy policies began formulation, I have had a front row seat at most of the Government's (BERR) nuclear stakeholder engagements as the lead anti-nuclear campaigner for Friends of the Earth EW&NI (between 2005 and 2010) and as a member of the then DECC, now BEIS-NGO nuclear Forum since 2010. I have been involved in many discussions on inter-generational equity and long-term radioactive waste management and on the various issues relating to the provision of a Geological Disposal Facility (GDF). It is with this involvement in mind that I make the following points.

The Wylfa Newydd DCO and Waste Management Overview document (11th October 2018) carries the National Policy Statement assumption or prospect that a national (UK) Geological Disposal Facility (GDF) will be constructed and ready to facilitate removal of the part cooled and decayed Spent Fuel from the planned new-build nuclear sites from around 2135 to 2230. Waste removal dates would be depending on heat-dissipation characteristics of the GDF rock, and order in the queue, but the Overview document states that Horizon currently estimates that SF could be removed 70-80 years after generation (page 18) ie around 2160-2170. Horizon has stated during PI examination (March 2019) that there would be a management plan and (unquantified) financial provision (independent funding arrangements) for the Interim Store buildings post decommissioning (ie after the decommissioning / site clearance period circa 2090-2110).

However, it is not evident from the written DCO or in oral answers to PAWB and other questioners that Horizon has considered in any sufficient detail post 2100 landscaping relating to the Interim Stores (eg photomontages of possible options and relationship with the existing ANOBs), and the consequent and surrounding site ecological management, land-use, and rights of way provision. The 2010 DECC Appraisal of Sustainability for the Wylfa Newydd site also offers low expectations - see Annex 1.

Under questioning at the PI examination (March 2019) the Horizon advocate made responses to the effect that 'how was he to predict what the viewpoint of people in the time around decommissioning would be - he would not be around'. While such comments were expressed as a personal view they did reflect mounting evidence that Horizon has not put much effort into generating options regarding landscaping or other aspects relating to the stores and site in the 70+ year post-decommissioning period. The National Trust made the point that they routinely plan for a century hence.

On a personal note, during the advocate's comments I happened to be sat directly behind two local children (aged around 10 years) who may be around in 2090. So the comments appeared even more insensitive. While the public at that time would be better placed to make post decommissioning decisions on such matters it should be the applicant, not today's and tomorrow's children, who should pay for the plan decided.

As a result of this lack of forethought, the Horizon funding provision required in the Funded Decommissioning Programme, set aside for this 'up to 140 year' period, may not be adequate to achieve a reasonable outcome. For example, it may only be sufficient to grass over the flat platform area, or at best plant or undulate the area to a moderate degree, and to just functionally maintain the very large, high, angular, visually stark (concrete / metal clad ?) HAW / SF Interim Store building (approximately 75 x 75 metres by 5 metres high) and adjacent smaller ILW Store.

Funds for significant landscaping around the stores eg extensive mounding, grass-covered roofs or part burial of the stores (while facilitating the required cooling for that time) may

not be available in the Funded Programme because such matters have hardly been considered or included in the DCO. The Waste Transfer Contract would see the taxpayer liable for any such funding (Overview page 20) and presumably store clearance following waste removal IF the stores were to be removed.

Considering possible stores removal, the large dimensions of the stores and their two metre thick concrete walls, and concrete roof and base, would result in a considerable tonnage of concrete waste arising (no post-waste removal options appear to have been considered). There would also be further disturbance (noise, dust, vibration) to the Tern Colony SPA given the proposed store location. I estimate the tonnage at around 30,000 tonnes (see Annex 2). Pouring wet concrete into two metre wide shuttering is one thing, breaking up reinforced concrete (quietly) is quite another. So there may be a case, or at least a default scenario, that the store buildings themselves remain in perpetuity, after the waste is removed.

### GDF considerations

There is the prospect that the waste might not be removed. The collapse of the MRWS / voluntarism process in January 2013 indicates that finding a suitable geological site In England, Wales or wider afield for a GDF with a willing host community above is not certain. Indeed, public consultation on a GDF has only just restarted over six years after the MRWS collapse (eg GDF consultation RWM webinar on mid-day 14 th March 2019 for North Wales).

Furthermore, Wales may be an independent nation in 120 years time, which may preclude or frustrate export of Spent Fuel to any GDF in England or elsewhere. Plaid Cymru has, in a recent response to the latest GDF consultation process, stated that it opposes a GDF in Wales, despite its local AM (Rhun Ap Iorwerth) and a few others in the party supporting the Wylfa Newydd project :

[https://www.partyof.wales/don\\_t\\_make\\_wales\\_a\\_nuclear\\_dumping\\_ground\\_says\\_plaid](https://www.partyof.wales/don_t_make_wales_a_nuclear_dumping_ground_says_plaid).

PAWB has long expressed the view that a 'Wylfa B' would be foisted on Wales by a Westminster Government (this is what has happened as Welsh Government is only a statutory consultee) and so why should Wales host a GDF or Wylfa Newydd wastes. There is some evidence that the people of Anglesey would much prefer jobs in renewable energy given the choice - see Public Attitude Survey, Bangor University 2010 : [http://www.nuclearpolicy.info/docs/recent\\_events/Anglesey\\_Study\\_Presentation.pdf](http://www.nuclearpolicy.info/docs/recent_events/Anglesey_Study_Presentation.pdf) and <https://www.bbc.co.uk/news/uk-wales-north-west-wales-11876211>. Given the reduction of costs and increasing public support for offshore wind and solar PV since 2010 it seems likely that an even greater percentage of the Anglesey, Welsh and UK public would favour renewable energy technologies rather than nuclear energy given the choice in 2019.

Others may argue that Ynys Mon would have had the jobs benefit of a Wylfa Newydd (at considerable net jobs detriment UK-wide compared to a renewable energy policy, at least double - see Annex 3) and so it would be hypocritical for the people of Ynys Mon or Wales to say no to hosting the waste the scheme generated. Others still make a case that higher-activity radio-active wastes should be stored long-term in near surface stores and the canisters remain retrievable in case of failure (as distinct to 'disposal' by geological burial).

CoWRM offers little guidance on new-build wastes. It has recently stated 17th Nov 2018 : [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/773648/corwm-position-paper-why-geological-disposal.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/773648/corwm-position-paper-why-geological-disposal.pdf) . The paper states in Conclusions Section 7 page 7 :

*'To date, the Committee has **not** been requested to provide any particular advice on, or scrutiny of, the effect of **new build wastes** on the overall management of higher active radioactive waste in the UK.'*

Given the various scenarios and factors above the prospect of a Wylfa Newydd Interim Store becoming a permanent long term store for hundreds of years or longer is a possibility despite the locally and nationally (Wales) expressed public and political opposition to the idea.

That default prospect has hardly been considered in any, let alone reasonable, detail in any formal forum or Horizon consultation. One community councillor (a member of PAWB) in the local Mechell Community Council informed me that there has been no substantive discussion about the Interim Stores post-decommissioning other than an Horizon presentation explaining the Waste Management Overview document, particularly as regards consideration of landscaping (eg no landscaping option photomontages), biodiversity management plans, site security, or public pathways routing.

The Mechell councillors were informed by Horizon that some SF/HLW concrete storage casks (pictured page 13) may or could be left in the open air outside the store though in what period or for how long was not clear. IF such open air storage was to enhance cooling then it may be the case the the final batch of Spent Fuel, after a period of cooling in the elevated fuel ponds circa 2090-2095, may then be canistered / casked and only left outside during the de-commissioning / site clearance period eg 2090-2110. Leaving exposed casks in the open air in the post-decommissioning period circa 2110-2230 would presumably be interpreted by future generations as 'making a statement' rather than 'blending with the landscape'.

Given the considerations and possible controversies detailed above and below I predict the latter (blending) landscape design aim is more likely to be supported by the 2090 public. At the very least the design principles of Dame Sylvia Crowe should be revisited if for functional reasons (cooling, security) the stores cannot be grass-covered or part-buried in the early 2100s at least- see Chapter page 92 : [https://www.lda-design.co.uk/wp-content/uploads/2015/11/DCFW\\_LANDMARKS\\_ENG1.pdf](https://www.lda-design.co.uk/wp-content/uploads/2015/11/DCFW_LANDMARKS_ENG1.pdf) :

*' Rather than trying to hide the forms, there was a role here for screening, for blending heights, lines, mass and colour and for interlocking, knitting the forms into the surrounding shapes within the land.'*

It is clear that there is no planning contingency or application in the DCO for a situation where no viable or accessible (eg in an independent Wales) GDF exists. While there is an intended prospect that a viable and accessible GDF may exist **there is also a substantive prospect that a viable and accessible GDF may NOT exist for Wylfa Newydd ILW / HLW / SF wastes** (due to either technical, geological, political or public constraints).

Furthermore, few local people or energy ministers have been informed of, let alone conceptualised, the high level of radioactivity of the 'high-burn-up' Spent Fuel stored on-site. I've given evidence which estimates the radioactivity at planned decommissioning could be nearly 40 mTBq peak or approaching half the level of all UK legacy waste arising over 60 years mostly stored Sellafield which peaked at 87 mTBq (in the absence of estimates or rebuttals from official bodies). So, there could be significant security issues for decades considering the likely level of HAW / SF waste arisings.

Summary

Summarising the points above, there is the possibility that the Interim Stores containing a relatively massive amount of radioactive material, which would likely not be emptied or cleared for at least 70-80 years after 2090 and which could by default remain in perpetuity, could also remain barely or badly landscaped in perpetuity, yet would be set adjacent to areas of scenic beauty, heritage coast and high conservation status.

Surely it cannot be right that a structure of such a nationally significant and functional nature, which could feature by default for hundreds of years if not in a geological timescale, should not have been subject to full public and political debate to formulate a sufficiently funded plan for Inspectorate examination and Secretary of State decision. Such a possibility should not be allowed to slip through the planning system due to focus or distraction on the construction phase.

Indeed, in contrast, only a few miles from the Wylfa site Wales's first and relatively small Rhyd y Groes windfarm which will feature in the north Anglesey landscape for just 25 years before re-powering was subject to consideration at several well attended public meetings (some of which I spoke at or attended), many photomontages and a public inquiry (at which I gave evidence for Friends of the Earth Cymru).

A DCO plan for the stores and site, in the (generating site) decommissioning and post decommissioning periods, should at least comprise :

- i) consideration of the possible options and eventualities, including GDF default / on-site waste storage over indefinite time, and including store building (post-waste) clearance or decommissioning / re-purposing
- ii) landscaping, bio-diversity (mounding, planting, etc) and land-use options for the possible options and eventualities in (i), including options proposed by independent specialist bodies eg Design Commission for Wales
- iii) funding provisions sufficient to cover the cost of whatever landscaping, ecological, security and public rights of way plan options are generated in (ii)

PAWBs concern on these matters is not just about post-decommissioning funding but also about lack of consideration and public consultation for this substantive period of the DCO which could be twice as long as the 60 year operational period.

Consequently, PAWB asks that any recommendation by the Planning Inspectorate for approval of the Wylfa Newydd DCO should be subject, amongst other matters, to the provision of fully-funded and more detailed landscape and ecological management plan options for the Interim Stores and surrounding site in the de-commssioning and post-decommissioning period, including the prospect of the stores remaining indefinitely or in perpetuity by default.

Neil Crumpton, Pobol Atal Wylfa B

14 th March 2019 (Deadline 7)

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**Annex 1**

DECC, October 2010 : Appraisal of Sustainability: Site Report for Wylfa EN-6: Revised Draft National Policy Statement for Nuclear Power Generation

5.61 Indirect adverse landscape and visual effects **during construction and operation** are likely to extend over localised parts of the Anglesey Area of Outstanding Natural Beauty (parts of which are within the nominated site boundary) and North Anglesey Heritage Coast (which extends to within 125m of the nominated site). The nominated site also falls directly within the Anglesey Coastline Regional Landscape Character Area. There are likely to be some effects on the setting of registered historic parks and gardens at Cestyll and Carreglywd and views from them, although these can only be fully assessed at the EIA stage.

and

5.64 The **decommissioning** of the facilities **may allow** some landscape restoration / enhancement of previously developed areas in the long term, however, long-term land uses for the restored areas are difficult to predict over the long timescale involved.

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**Annex 2** : Estimate of Interim Stores tonnage of reinforced concrete

Overview page 8 : the ILW store has external dimensions of approximately 75 metres by 25 metres, so the walls (ex roof/ base + one internal wall ) would have an approximate mass of over 4,300 tonnes ie  $(75 \times 2 + 25 \times 3) \times 2 \times 4$  m high (estimated)  $\times 2.41$  tonnes /m<sup>3</sup> and roof and base/foundations of 4,500 tonnes  $(75 \times 25 \times 2 \times 0.5$  thick roof and floor  $\times 2.41)$ . So total concrete mass of roughly 8,800 tonnes ( 1m<sup>3</sup> concrete weighs 2.41 tonnes)

The much larger main SF store looks to be approximately 75 m x 75 m and possibly 5 m high so the concrete mass would be about 21,000 tonnes =  $(75 \times 4 \times 2 \times 5 \times 2.41) + (75 \times 75 \times 0.5 \times 2 \times 2.41)$

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**Annex 3** : Estimate of job.years of Wylfa Newydd compared to equivalent renewable electricity scenario

The Wylfa Newydd scheme would generate 800 TWh over a 35 year CfD contract period (2.9 GW x 8.76 x 0.9 capacity factor x 35 years).

The recent BEIS offer to Hitachi was a CfD at £ 75 / MWh (Hinkley C was £ 92.50 / MWh). Offshore wind and PV PLUS the additional system costs (back-up and balancing) for commissioning circa 2025 are likely to be about £ 60-65 / MWh (eg £ 52.50 / MWh cap for next round offshore wind auction) for 15 years (additional RE system costs of roughly £ 7.50 - £ 12.50 / MWh). Offshore wind and PV schemes are forecast to require no subsidy by or before 2040 so post CfD period (circa 2065 - 2090) Wylfa electricity would be competitive / equal with post 2065 offshore wind electricity costs - so no substantive technology cost benefit either way post 2065

So assuming a cost differential of £ 10 / MWh (ie 75 - 65), which is £ 10 million / TWh, the subsidy to a Wylfa Newydd project would amount to £ 8 billion (800 TWh x £ 10 million / TWh) over 35 years.

£ 8 billion could pay for 5,700 direct jobs at £ 40 k pa for 35 years. This is in addition to the direct jobs created in construction and operation of both nuclear and offshore wind /

PV projects which a broadly similar per MWh generated.

So, Wylfa Newydd would create about 50,000 job.years during construction (from Horizon DCO jobs vs years construction graph) + about 900 direct jobs for 60 years during operation (54,000 job.years) + possibly 10,000 job.years (20 years x 500 jobs) during decommissioning = **114,000 job.years**

Offshore wind and PV deployment (generating same MWhs) would create roughly 100,000 direct job.years in construction/operation/decom over the same 60 years but lets say 50,000 j.y to be conservative and the nuclear subsidy avoided would pay for 200,000 job.years (£ 8 billion / £ 40,000 per year) in other gainful employment = **250,000 job.years or more**

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ii) consideration of including seismic (vibration) monitoring at the SPA 'noise' monitoring points during the construction period (ie from start of all major earthworks, platform levelling, mounding, 'blasting', Interim Store construction post commissioning)

During an ISH discussion (8th March) which focussed on the noise effects on the Tern Colony SPA I asked if any of the Interested Parties had included monitoring for vibration disturbance (as no specific mention had been made). I was envisaging that seismometers as well as microphones could be included at the monitoring stations around the site (if they weren't included already). The Horizon advocated dismissed my comparison of ground vibration effects in Bethesda from the nearby slate quarry blasting. I'm aware that there are different types of blasting (shaped charges, slow expansion etc) and while I have worked in seismic survey (subsea oil and gas exploration) I have no expertise in the effects of construction vibration on birds.

However, even the rumble of rock and earth settling over a few seconds (rather than a blast jolt) can deliver unearthly sub-sonic vibrations over distance depending on the strata. Possibly over a million tonnes of earth and rock may be excavated on the Wylfa Newydd site and possibly over two million tonnes of concrete and steel would be used in construction (the slightly larger 3.2 GW Hinkley C project will comprise 3 million tonnes of concrete and require an extensive movement of 4 million m3 / 6 million tonnes of earth excavations : <https://www.glenigan.com/hinkley-point-c-powering-our-future/>). Heavy construction would take place for a period of possibly over 10 years (including the Interim Stores construction post generating site commissioning) just 2 km from the tern nesting areas.

So it may be prudent to include vibration monitoring if it is not already specified.

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