Environmental Pillar
working for a sustainable future

Submission to the:

"Transboundary environmental public consultation"

re. Hinkley Point C, UK, Nuclear Power Plant



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Introduction to the Environmental Pillar

The Environmental Pillar is comprised of 29 national independent environmental non-governmental organisations (NGOs), who work together to represent views within the Irish environmental sector.

The Environmental Pillar was established as an independent national social partner by decision of the Government in 2009. It also provides a channel for the Irish government and other social partners to engage with the environmental sector on policy matters.

The work of our members covers a broad range of areas including habitat conservation, wildlife protection, environmental education, sustainability, waste and energy issues, as well as environmental campaigning and lobbying. The members work towards achieving Sustainable Development, according to the Rio Declaration of 1992. These principles require the balancing of the three pillars of Sustainable Development – social, environmental, and economic.

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Introductory Remarks and Executive Summary

The Environmental Pillar welcomes this long awaited consultation with the Irish public in relation to the potential transboundary impacts of the UK's new nuclear power plant, Hinkley Point C, "HPC" in Somerset, circa some 242 kms from Ireland's most densely populated east coast. For reference, the highly controversial context in which this consultation finally arose is provided in Annex I.

While Development Consent[1] (planning permission) was granted for HPC on March 19th 2013 over 5 years ago, the associated Environmental Impact Assessment conducted pursuant to the Environmental Impact Assessment Directive[2] did not include a transboundary consultation in accordance with Article 7 of that Directive, other than with Austria who exercised their rights to be consulted under the Convention on Environmental Impact Assessment in a Transboundary Context, "the Espoo Convention". The UK had determined in its transboundary screening decisions[3] for the project that there was no risk of transboundary impacts, concluding that in effect that:

> a) Normal operations would not results in likely significant effects on the environment, and
>
> b) That the UK's regulatory regime was so robust and effective that accidents and impacts were so remote that no significant impacts were anticipated.

The Secretary of State in his decision[4] concurred with this screening decision of the Planning Inspectorate, additionally stating in response to concerns from the Austrian Government in their submission about transboundary impacts arising in the event of an accident stating in his decision:

> *" ..such accidents are so unlikely to occur it would not be reasonable to "scope in" such an issue for environmental impact assessment purposes".*

[1] Development Consent as defined in Article 1(2)c, is a consent pursuant to Article 2(1) of DIRECTIVE 2011/92/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment (codification), "the Environmental Impact Assessment" or "EIA Directive"- and being the relevant version for the instant application.

[2] DIRECTIVE 2011/92/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment (codification), "the Environmental Impact Assessment" or "EIA Directive"- and being the relevant version for the instant application

[3] UK's second Screening Decision: http://www.housing.gov.ie/sites/default/files/public-consultation/files/en010001-004148-120522_en010001_hinkley_transboundary_screening1_0.pdf

[4] Secretary of State's Decision letter: http://www.housing.gov.ie/sites/default/files/public-consultation/files/en010001-000017-130319_en010001_sos_hpc_decision_letter1_0.pdf
and associated annexes available here: http://www.housing.gov.ie/planning/other/transboundary-environmental-public-consultation-hinkley-point-c-nuclear-power-plant

Thus the Secretary of State, importantly made clear that no environmental impact assessment on transboundary impacts was then conducted as part of his decision in 2013.

Complaints were made to the Espoo Implementation Committee and the Aarhus Convention Compliance Committee as set out in Annex I, and both committees of both conventions[5] found the UK in breach and non-compliant with its obligations under their respective UNECE conventions[6].

While continuing to dispute it had failed in its obligations under the Espoo Convention, the UK committed to initiating a further consultation last July running for 12 weeks until October 20th. The current consultation (February 20th – April 17th) of only 8 weeks with the Irish public – is supposed to address the failure by the UK and Irish Government to ensure that was extended to the Irish public, following our escalation of concerns in particular to the Implementation Committee of the Espoo Convention, last November 2017.

We note the context the UK has set for this consultation in its letter[7] to the Irish Government of last July 28th 2017:

> "We wish to give you an opportunity to comment on the current environmental information in relation to potential transboundary impacts. The link to the non-technical summary for the project Environmental Impact Assessment ("EIA") is included within Annex A in order to assist with your assessment. So that you have ample opportunity to consult within your country, and to engage with other levels of your local or regional government as you deem appropriate, we kindly request that you make any submissions or comments within 12 weeks from the date of this letter that is, by 20 October 2017 to beiseip@beis.gov.uk.
>
> We will then consider the responses received and will publish a summary of those responses and the United Kingdom's response to any substantial issues raised and we will share this with you. If likely significant adverse transboundary effects are identified on the basis of scientific evidence by way of this process, then we will look at how the regulatory regime might address any identified effects.

[5] The Convention on Environmental Impact Assessment in a transboundary context, 1991, UNECE "the Espoo Convention"
The Aarhus Convention on access to information, public participation in decision-making and access to justice in environmental issues, 1998, "the Aarhus Convention"

[6] Para 65-66 of the March 2016, 35th session meeting report of the Espoo Implementation Committee: https://www.unece.org/fileadmin/DAM/env/documents/2016/EIA/IC/REPORT_ENG_ece.mp.eia.ic.2016.2_e.pdf

Para 89 of the Aarhus Convention Compliance Committee findings in **ACCC/C/2013/91**
http://www.unece.org/fileadmin/DAM/env/pp/compliance/CC-58/ece.mp.pp.c.1.2017.14.e.pdf

[7] http://www.housing.gov.ie/sites/default/files/public-consultation/files/28_07_17_-_ie_hpc_espoo_letter_redacted_21.pdf

If a material change to the existing Hinkley Point C development consent is submitted to the Planning Inspectorate, we will again consider whether there are likely transboundary effects and inform you of the application even if we do not consider there are any likely significant adverse effects, in line with our general understanding of the Espoo Convention obligations."

In response, while we welcome the UK's initiative to initiate the consultation we submit that the Environmental Impact Assessment to grant development consent was and remains compromised by virtue of the failure to conduct an transboundary consultation and to also adequately or at all assess a multiplicity of considerations and direct and indirect impacts from the development and operation of Hinkley Point C. Therefore we are concerned the above extract from the UK's letter does not give us a clear assurance with regard to next steps, therefore we:

Seek an assurance that an Environmental Impact Assessment will be undertaken in accordance with the obligations of the Espoo Convention and the EIA Directive on Hinkley Point C, taking into account:

- **the consultation responses and the further considerations raised and the developments; and**
- **issues which have arisen now in relation to the project and become extant; and**
- **indeed the wider context of the feasibility of alternatives which are obliged to be assessed under both the EIA Directive and the EU Habitats Directives for the proper consent for this project.**

We further submit that while we expect the UK will continue to dispute any issue with the legality of the consents granted; that:

In the interests of international good relations between Nations, and in the best interests of the safety of citizens within the UK and in the countries neighbouring the UK, that it would be not only generous but expedient to conduct a full Environmental Impact Assessment, EIA on the project at this juncture. Such might be undertaken without prejudice to the legality of the extant decisions.

This call is made particularly in light of the:

- Serious technical issues emerging in relation to the manufacturing of components for HPC and indeed the clone EPR system in Flamanville III which we highlight later in our submission; and
- The risks associated with the financial exposure and how this may compromise the projects and the approach to quality assurance.

These and other concerns set out in this submission, and indeed other matters raised in other consultations need to be "assessed" for environmental impacts – particularly in a transboundary context if this consultation is to have any meaning or effect.

In a further more legally orientated submission from the Environmental Law Implementation Group at the Irish Environmental Network, further legal argumentation in this regard is set out with specific reference to:

a) The further recommendations of the Espoo Implementation Committee
b) The rulings of the EU Court of Justice, particularly with reference to case c-215/06 and more recent rulings, which such decisions still have material legal implications for this project even in the context of Brexit, and other relevant considerations relating to public participation and transboundary environmental impact assessment.

We wish to rely upon and adopt that argumentation, and any further such argumentation submitted by any consultees to the UK's consultation process.

We also submit that it would have been appropriate to have suspended the works on Hinkley Point C, pending the outcome of the consultation process, as per the considerations of the Espoo Implementation Committee in the report[8] of its February 2017 meeting. We therefore also call on the UK to:

Suspend works on Hinkley Point C pending the outcome of this consultation and the conduct of a full Environmental Impact Assessment in accordance with the obligations of the Espoo Convention and the EIA Directive.

Our engagement within the Environmental Pillar on this issue has always been constructive, in order to ensure the best possible level of information is provided as input to support a robust decision making process to optimise environmental outcomes for all concerned. Therefore in light of the above and the request from the UK for comment on: "the current environmental information in relation to potential transboundary impacts" our primary focus in this consultation response is to highlight:

a) Serious deficiencies in the original assessment and decision making of the UK in respect of its assessment of transboundary impacts, particularly in respect of impacts on Ireland; and
b) Significant events and factors which have arisen since the consent was granted in 2013, which further alter the now changed environmental context in which the UK and other countries and other interested members of the public and the wider

[8] https://www.unece.org/fileadmin/DAM/env/documents/2017/EIA/IC/1_ic_ece.mp.eia.ic.2017.2_e.pdf see paragraph "61 …The Committee also decided to recommend to the Meeting of the Parties that if a potentially affected Party requested to be notified, the United Kingdom should suspend works related to the proposed activity until the transboundary EIA procedure was finalized."

"public concerned" in other countries and as defined in the Aarhus Convention and the EIA Directive, now need to consider the current consultation and welcome re-assessment of potential transboundary impacts, through this consultation and subsequent processes.

We submit these considerations as input to further justify the requirement for further environmental impact assessment, adopting all other valid considerations submitted to the UK Government as part of these consultation processes, which may then result in further design considerations, mitigations, or indeed an alternative approach to the project.

Section 1 of this submission, highlights the considerations in respect of a) above - namely deficiencies in the UK's approach.

Section 2 of this submission highlights further events, developments and considerations now extant.

The nature of deficiencies and further issues highlighted within this submission includes the ultimate failure by the UK to assess transboundary impacts on Ireland and to fully assess the project in advance of consent and includes specific issues in relation to in particular:

Inadequacies in the UK's approach to screening for transboundary impacts on Ireland in the first instance including:

- The basis on which an adequate characterisation of the climatology is provided to underpin calculations of risks associated with changes in climate, and in particular takes issue with:
    - The validity of some model based approaches relied upon by the UK to estimate transport potential of effluent to Ireland;
    - The failure to consider adequately worst case scenarios for Ireland, including the specific exclusion of Ireland from assessments within the Article 37 Euratom submission, relied upon by the UK in its screening determination of transboundary impacts, despite the Planning Inspectorate and the EIS acknowledging Ireland was the nearest EEA state.
    - Serious Gaps and deficiencies in the considerations of flood risk;
    - Issues with the UK's approach to 'beyond design' events in an additional technical analysis from John Large and Associates.

- The failure to assess the actual transboundary impacts of mining for nuclear fuel materials like uranium outside the UK. This failure to consider extraction of fuel sources in considered in the analogous context where the Irish courts have made clear the harvesting of peat for peat burning stations is a clear functional interdependence which requires to be assessed as part of the Environmental Impact Assessment required under EU law. In his judgement in An Taisce v An

Bord Pleanála [2015] IEHC 633 in the case of the Edenderry Peat Burning Station, The Honourable Mr Justice White held that :

> "73 ..here the environmental effects of extracting the peat fuel source for the thermal power plant were not properly assessed for the purposes of the EIA Directive, the respondent is obliged to ensure the effectiveness of the EIA Directive by subjecting those environmental effects to Environmental Impact Assessment before granting planning permission for the thermal power plant.;"

in granting a declaration sought by An Taisce in that challenge.

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- Failures to adequately assess cumulative impacts from normal operational gaseous emissions of radioactive substances are also noted. We submit that it is not adequate to assess merely the values from Hinkley Point A,B and C in this regard as appears to be done in the Volume 2 Appendices of the Environmental Impact Statement for HPC. The cumulative impacts from existing plants, other facilities emitting such substances or similar substances, and the projected further 7 nuclear power plants which the UK clearly envisages developing and deploying are also required to be considered in a proper cumulative impact assessment.

Additional uncertainties and potential impacts arising - but which also warrant consideration highlighted here and some of which are expanded upon in the context of this submission also include considerations such as:

- Increased seismic and tsunami risk because of licences subsequently offered for unconventional gas exploration - typically referred to elsewhere outside the UK as "Fracking" - and in the context of the acknowledged potential for fracking to increase seismic risk;

- Issues encountered in the Le Creusot Forge in France - and the potential risks associated with the ability to manufacture and assess adequately the quality of components for Hinkley Point C ;

- Issues encountered with the development of the Flamanville III plant in France which is an effective clone for the new reactor type proposed for Hinkley Point C, namely an EPR – a third generation pressurised water reactor (PWR) design) are also of concern. This is given the operation of Flamanville III was intended to provide a window of operational certainty for the UK, which would serve to prove various outstanding technical design and manufacturing issues had been resolved. This is in the context of there being no EPR reactor operating anywhere in the world. However given the scandals, controversies and delays in advancing Flamanville III because of quality issues and the forging of quality assurance documentation discovered at the Le Creusot Forge where the heavy forged steel components for both Flamanville III and HPC were being manufactured – this window to provide operational assurance

has been compromised severely. It is hardly necessary to quote references to such matters as the UK and French media are full of such reports, and the French Nuclear Regulatory Authority, Autorité de sûreté nucléaire, ASN has been very clear about the issues in recent years.

- The reduced operational window now available to assess Flamanville III and learn from it for Hinkley Point C and the practical implication of the credit-guarantee for Hinkley Point C from the UK Government;

- Additional questions about the efficacy of the UK Office of Nuclear Regulation role in oversight of the project given the approach to issues with the Le Creusot Forge. This is particularly in light of the fact – they have overseen the advance ordering of parts for HPC, where the French ASN knew of serious problems in the Le Creusot Forge as far back as 2005 according to letters released under Freedom of Information to the French media – which we refer to later in this submission.

- Linkages to the UK's nuclear military programme, and the failure to assess the indirect impacts and linkages between the UK's nuclear energy programme and its military nuclear programme.

- The uncertainties consequent on Brexit and the UK's withdrawal from the Euratom Treaty which is concerned with matters like nuclear safety, radioactive waste and emissions and transport of nuclear materials

- Concerns are also highlighted on the potential impacts to Ireland in the event of a serious accident or terrorist attack - referring to the:

    - A 2016 Economic and Social Research Institute, ESRI report conservatively estimated the discounted economic loss to Ireland of a serious nuclear incident anywhere in North West Europe close to Ireland **as *"€161 Billion".***

    - Additionally, the impacts under the most severe scenario examined in the report *"extend to 60 years"* and it also goes on to state: ***"it is assumed that Irish agricultural production is lost after the nuclear accident."***

    - In fact, **even in the most benign scenario assessed** in that ESRI report, **where there is no actual contamination** in Ireland it states: "the losses are assumed to be limited to reputational losses, particularly in relation to tourism and export markets, and the total discounted loss is estimated at €4 billion."

- In January of this year, 2018 – the Irish Times reported that the Irish Health Services Executive, HSE has warned the Irish Government it has *'no capacity'* to deal with "any" nuclear or biological incident.

- A report published in May 2013 from the Radiological Protection Institute of Ireland, RPII assumes in the event of a worst case scenario arising from one of the new UK nuclear plants – sheltering will be undertaken in Ireland. However, the practicalities of this and the readiness to deal with the simple issue of access to water for human beings and livestock– when we in the Republic of Ireland don't have a covered water supply which could be maintained sage from radio-active contamination - simply haven't been addressed in this report when considering what level of mitigation is feasible.

- We also consider it necessary to reflect respectfully on the adequacy of Ireland's ability to assess independently these proposals and our ability to react in the event of an emergency given we are not a nuclear state.

- We also question the insurance implications in the event of any type of incident impacting upon our state.

In light of such matters above and other considerations, our consequential primary purpose is to achieve:

- Engagement with both the UK and Ireland to arrive at a more correct recognition of the likelihood of transboundary impacts, (even if such a likelihood still remains relatively remote); and
- Fuller consideration of the extent of impacts which could arise in Ireland; leading to:
    - A robust approach to design and mitigation, to avoid impacts in the first instance, and a realistic and robust approach to mitigation of impacts in Ireland in the event of an accident, or
    - Potentially an entirely different view of the merits of the project and re-consideration of whether it should proceed.

As set out above we consider this will involve at the very least the conduct of an Environmental Impact Assessment Procedure under the Convention on Impact Assessment in a Transboundary Context, "the Espoo Convention" as appears to be indicated in the most

recent report of the Espoo Implementation Committee from its meeting in March 2018[9] in light of the concerns on transboundary impacts. We say this without prejudice to our view that the original EIA conducted by the Secretary of State under UK provisions implementing the EU's EIA Directive was and remains flawed.

Without prejudice to our submission on what is required above, we also wish to seek:

> **Formal clarification of how the outcome from these consultations conducted since July 2017 will be dealt with, including:**
>
> - **How a determination is to be now be made that Transboundary Environmental Impact Assessment was, or is now indeed needed, and**
> - **How future consultations can/will be integrated into a final approach to the HPC development consent .**
>
> **We also wish clarification of who will be involved in such a review and decision making process, and the procedural and legislative basis which the UK intends to use to guide itself through this process.**

In short, the primary concern is that the UK in dismissing the possibility of an accident, as being so remote that it doesn't warrant real consideration, there has been therefore no adequate assessment of the real effect of an accident on Ireland and the Irish public. We contend this is a joint responsibility of the Irish and UK Government which both have abjectly failed to address. We welcome this consultation as an opportunity to re-dress that in the interests of both nations and our shared environment, and indeed that of other states where potential impacts may arise.

This submission is made in the context of our recognition of the UK's sovereign right to pursue a strategy in relation to its own energy mix. But equally we also recognise the Irish public have consultation rights in respect of the transboundary impacts of any such energy policy positions and their associated projects. Equally we also note that the UK and Ireland have specific obligations in that regard under both the Espoo Convention and associated SEA Protocol, and the Aarhus Convention, and additionally under the SEA Protocol, and the EU SEA and EIA Directives, as appropriate to the nature of the matter at issue and the phase of its advancement.

In this regard we wish to in the concluding remarks of this Introduction to formally acknowledge and thank the current, former and previous implementation committees of the Espoo Convention for their efforts and considerations in relation to the issue of transboundary impact assessment. This is particularly in respect of projects where the potential impacts are of such a devastating consequence in the event of an accident –

9 https://www.unece.org/fileadmin/DAM/env/documents/2018/EIA/IC/12_04_ece.mp.eia.ic.2018.2_for_submission12.04.2018.pdf

however remote that possibility may be – that consultation with other states must be warranted, such as Hinkley Point C.

We also wish to particularly acknowledge the Espoo secretariat for their assistance particularly in 2017 when we escalated the further issue of failure to extend the July Consultation to the Irish public and the proactive response of the Committee in writing directly to the Irish Government on foot of our concerns in effect confirming our argument and advising them of our rights to be consulted under the convention. We wish to also acknowledge that it appears the UK in fairness did appear to raise the issue of an extension in relation to the requirement for consultation with the Irish public with the Espoo Implementation committee also, as noted in the committee's December 2017 report[10] and its subsequent letter of December 22nd to the Irish Government following our escalation. This is all the more laudable given the apparent failure of the Irish Government to do so.

We also wish to expressly thank Emeritus Professor John Sweeney, National University of Ireland Maynooth, and John Large and Associates for their expert technical analysis submitted with this submission.

Finally, while it is welcome that the UK has now agreed to notify other parties to the convention on applications for Development Consent for its other proposed nuclear power plants. This commitment arose following findings that the UK was non-compliant with its obligations by both the Espoo Implementation Committee and the Aarhus Conventions Compliance Committees[11]. However it must be stated as part of these opening remarks that while welcome, this UK commitment is not sufficient to address our rights and the UK's obligations in respect of the UK's nuclear expansion programme, given matters will be so far advanced at the stage of a development consent application.

It is also of the most serious concern that recent consultations in relation to policy positions in relation to Geological Storage of Radioactive Waste and engagement with communities in relation to siting radioactive waste dumps were not extended to the Irish public in the Republic of Ireland. This is particularly problematic and of issue in our view given the direct relationship of the operation of a nuclear facility and the direct impact which is the creation of nuclear waste. So such matters are directly related to the Hinkley Point C project, and

[10] Para 40
https://www.unece.org/fileadmin/DAM/env/eia/documents/ImplementationCommittee/2017/IC_40/ece.mp.eia.ic.2017.6_advance_copy.pdf

[11]
Para 65-66 of the March 2016, 35th session meeting report of the Espoo Implementation Committee: https://www.unece.org/fileadmin/DAM/env/documents/2016/EIA/IC/REPORT_ENG_ece.mp.eia.ic.2016.2_e.pdf

Para 89 of the Aarhus Convention Compliance Committee findings in **ACCC/C/2013/91**
http://www.unece.org/fileadmin/DAM/env/pp/compliance/CC-58/ece.mp.pp.c.1.2017.14.e.pdf

indeed to go further in our view the waste facility should be assessed together with the application for the project, as the plant is functionally dependent on the waste facility. We also do not consider it reasonable to exclude transboundary impacts from such proposals, particularly where the assessment of alternatives clearly is including consideration for sites in Northern Ireland on the island of Ireland, sites potentially under the sea floor and where such materials have to be transported from the power plant to a waste facility with all the associated risks, and the delays associated with the development of such facilities meaning on-site storage will be relied upon for some decades to come.

We also note reviews on the overall programme including the citing criteria for deployment of new nuclear power plants post 2025, have not been extended to the Irish public, under provisions such as those required under the SEA protocol[12] and SEA Directive[13] in respect of early and effective engagement when all options are open and in line with the Aarhus Convention's[14] Article 7 obligations. We also note the express considerations in the siting criteria proposed consider populations in the UK, but not populations in a transboundary context. So the UK appears to be taking into accounts siting risks for its own populations, but not those of other countries.

In relation to these further consultations, to fail to consult at the earliest opportunity when all options are open is to limit our practical ability to influence decisions which limit the risk to the Irish public and our environment. In particular this includes consideration of more sustainable energy solutions jointly, particularly in the context of the UK energy market which the UK's Prime Minister Theresa May has acknowledged severely as being "broken", and where the has been such recent significant progress and increased competitiveness of renewables, in stark contrast to the ever increasing costs and delays associated with the advancement of Hinkley Point C. These are no mere economic considerations which the UK may consider fall properly within its domain, but they also serve to give rise in our transboundary context to the inevitable concerns about corners being cut down the road of such matters as regulatory oversight and quality controls, with associated transboundary impacts and the risks of them rising.

[12] Protocol on Strategic Environmental Assessment, website: https://www.unece.org/env/eia/sea_protocol.html

[13] Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment

[14] Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, Aarhus, 1998

Section 1: Deficiencies in the UK's assessment of transboundary impacts to Ireland.

We submit there are serious deficiencies in the UK's original assessment and decision making of the UK in respect of its assessment of transboundary impacts from Hinkley Point C, HPV, particularly in respect of impacts on Ireland.

The further screening determination on transboundary impacts made on 11 April 2012[15] by the Planning Inspectorate determined in effect there would be no significant transboundary impacts.

In this it relied on materials presented within the Environmental Impact Statement,"EIS" provided by the Developer and the Euratom Article 37 submission. This view of no transboundary impacts arising was maintained in the final decision of the UK Secretary of State[16].

In summary by way of challenge to that assessment of transboundary impacts we set out below:

A. Failures in the assessment of risks to Ireland in the Article 37 report on which the screening determination relied; including
    a. Issues with the climatological analysis of the risk
    b. Issues with the flood risk at the HPC site
B. Further considerations in relation to flooding and seismic risks and impacts of fracking on seismic risks
C. Issues with the adequacy of beyond design risk assessment – see separate technical report from Large and Associates.
D. Failure to assess the transboundary impact of extraction or uranium
E. Failure to assess the cumulative and transboundary impacts of normal operational discharges HPC, and the UKs existing and proposed nuclear inventory.
F. Failure to assess the transboundary impacts associated with on-site storage of radioactive waste,
G. Failure to assess the transboundary impacts associated with the disposal of radioactive waste,
H. Serious gaps in the considerations within the Environmental Impact Statement,
I. Assessment of the transboundary impact from the construction of the outfall pipe

[15] http://www.housing.gov.ie/sites/default/files/public-consultation/files/en010001-004148-120522_en010001_hinkley_transboundary_screening1_0.pdf
[16] http://www.housing.gov.ie/sites/default/files/public-consultation/files/en010001-000017-130319_en010001_sos_hpc_decision_letter1_0.pdf

A. Failures in the assessment of risks to Ireland in the Article 37 report on which the screening determination relied;

The UK's transboundary impact screening determination relied significantly on the Euratom Article 37 submission made to the European Commission, and information in the Environmental Impact Statement, "EIS" or "ES" as the UK authorities refer to it. Therefore it is significant that this information – the Article 37 submission has not been made available to the Irish public and indeed Irish authorities as part of this consultation exercise and their review of the adequacy of what has been done by the UK. The Article 37 report was specifically sought by an Irish eNGO, An Taisce in the context of it's court case challenging the Development Consent. It was sought in order to assist in their proper consideration in the first instance of the need to challenge the consent granted or not.

This section is primarily concerned with highlighting issues in the Article 37 submission, and its inadequacies and thus the unsound basis for the UK's screening determination that no transboundary impacts arise.

It comments on the extent to which this provides a satisfactory account of the potential transboundary impact of accidental release of radioactive effluent affecting Ireland

Comments are confined largely to:

- The failure to consider adequately worst case scenarios for Ireland
- Concerns on the adequate characterisation of the climatology provided to underpin calculations of risks associated with changes in climate
- Concerns on the validity of some model based approaches used to estimate transport potential of effluent to Ireland

In this regard our commentary relies heavily on analysis and review done by Emeritus Professor John Sweeney, National University of Ireland Maynooth, NUIM on the Article 37 submission. Further more expansive detail is provided in Annex II to this submission which sets out a more detailed report from Professor Sweeney. This report was prepared for the An Taisce challenge to the UK Government's Development Consent, as an expert Witness Statement but was regrettably **not** considered by the court.

In establishing Professor's Sweeney's relevant credentials to comment on the adequacy of the UK's approach we note the following in respect of his experience and acknowledgements that he:

- Is a Founder and past Director of the Irish Climate Analysis and Research Unit (ICARUS), National University of Ireland Maynooth, NUIM;

- Has 35 years teaching and research experience in climatology, climate change and atmospheric pollution at NUIM (approximately 100 publications);
- Has been an expert evaluator for several EU and international research projects;
- Is a Contributing Author to the Intergovernmental Panel on Climate Change's 4th Assessment Report;
- Has a University of Glasgow Ph.D. in "The Meteorology and Climatology of Air Pollution in the Glasgow Basin";
- Is a Former President of the Irish Meteorological Society;
- Is a Fellow of the Royal Meteorological Society.

I - Absence of consideration of Ireland in Art 37 submission

Chapter 6.3 of the Article 37 submission sets out the "evaluation of the radiological consequences of the reference accidents" considered in the submission. Paragraph 870 states:

> "The assessment considers the releases to atmosphere to reference groups in the vicinity of the facility, the Channel Islands, and to the nearest Member State, France".

Ireland has simply been excluded from this assessment.

We consider this exclusion is all the more noteworthy and concerning when the UK's own transboundary assessment screening document[17] under "Geographical area" acknowledges Ireland to be the nearest EEA state with reference to the Environment Impact Statement information – stating:

> "The ES states that the distance to another EEA state as 230km (to Irish Territorial Waters) (see sections 7.10 and Table &E.1 of the Appendix 7E if the ES)"

Further transboundary assessment concerns with the Article 37 submission

In consulting with Emeritus Professor John Sweeney, NUIM serious issues have been noted with the climatological and flood risk assessments as follows:

- Characterisation of the wind regime provided by the applicants does not provide an adequate basis for risk calculation frequencies
- Concerns re certain of the Modelling techniques employed within the Article 37 report
- Flood Risk Assessment

These are expanded upon below

[17] http://www.housing.gov.ie/sites/default/files/public-consultation/files/en010001-004148-120522_en010001_hinkley_transboundary_screening1_0.pdf

Characterisation of the wind regime provided by the applicants does not provide an adequate basis for risk calculation frequencies

The following table is from the Article 37 submission

Table 1.4 Wind speed and direction – 1999 – 2002 data from Hinkley Point

Start of sector (°)	Frequency of wind speeds in sector (%)							
	Calm	0.5-1 m s^{-1}	1-2 m s^{-1}	2-3 m s^{-1}	3-7 m s^{-1}	7-13 m s^{-1}	>13 m s^{-1}	Total*
0	0.03	0.07	0.28	0.26	0.85	0.17	0.00	1.66
15	0.02	0.07	0.28	0.36	1.20	0.29	0.00	2.22
30	0.02	0.06	0.29	0.37	1.57	0.45	0.00	2.75
45	0.01	0.06	0.26	0.43	2.06	0.67	0.01	3.50
60	0.03	0.05	0.29	0.43	2.31	0.79	0.00	3.90
75	0.02	0.07	0.27	0.41	1.86	0.51	0.00	3.14
90	0.03	0.05	0.27	0.38	1.35	0.28	0.00	2.36
105	0.02	0.09	0.30	0.37	1.35	0.20	0.00	2.33
120	0.02	0.06	0.29	0.50	1.49	0.29	0.00	2.65
135	0.01	0.06	0.26	0.53	1.83	0.28	0.00	2.98
150	0.02	0.05	0.27	0.50	1.81	0.41	0.00	3.06
165	0.01	0.07	0.27	0.61	2.28	0.61	0.00	3.85
180	0.02	0.05	0.28	0.63	3.08	0.81	0.01	4.87
195	0.02	0.05	0.28	0.61	3.34	1.01	0.00	5.30
210	0.02	0.05	0.25	0.52	3.05	0.86	0.00	4.74
225	0.02	0.04	0.23	0.45	2.83	0.94	0.00	4.51
240	0.02	0.05	0.20	0.35	2.58	1.27	0.03	4.49
255	0.02	0.05	0.20	0.35	2.61	1.85	0.08	5.15
270	0.02	0.06	0.24	0.41	2.64	2.56	0.35	6.27
285	0.03	0.05	0.29	0.60	6.14	4.47	0.32	11.89
300	0.02	0.08	0.37	0.96	5.62	2.91	0.07	10.03
315	0.01	0.06	0.33	0.69	2.56	0.91	0.02	4.58
330	0.02	0.05	0.33	0.42	1.00	0.23	0.00	2.04
345	0.02	0.07	0.31	0.36	0.70	0.12	0.00	1.58
All	0.46	1.41	6.62	11.49	56.06	22.91	0.91	99.85
Missing data								0.15

* total dataset – 87,670 hours

It indicates at the top of the table “Wind speed and direction for 1999-2002”. So just 3 years.

According to Professor Sweeney in relation to the above table:

- “Using just 3 years of data is wholly insufficient to characterise the wind climate at an individual location. Even if the title of the table is incorrect, as the bottom of the table indicates a total dataset of 87,670 hours (10 Years) still a 10 year data set would not provide a satisfactory fingerprint of wind climatology, especially for rare or extreme events which are highly significant in risk analysis.”
- “It is the recommendation of the World Meteorolgical Organisation that the Climatological Standard Normal is based on 30 years of record and that nothing

less than a 30-year record is adequate to portray a satisfactory fingerprint of local climate. This is especially the case for wind climatology, which shows significant variability on decadal scales. It is particularly inappropriate that a deficient record is provided for wind speed and direction in relation to potential combinations of relevance for long range transport of aerial effluent to Ireland. In common with most parts of Western Europe, the UK windspeed and direction frequencies vary over decadal timescales as quasi cyclical changes in atmospheric circulation (the North Atlantic Oscillation) occur. This makes short-term wind datasets unsafe to use to extrapolate for longer term frequency calculations as the period of observation may be non-representative of conditions applying e.g. over the 60 year lifetime of the proposed development. **No meaningful risk analysis can be inferred from the meteorological data provided in respect of rare or extreme events."**

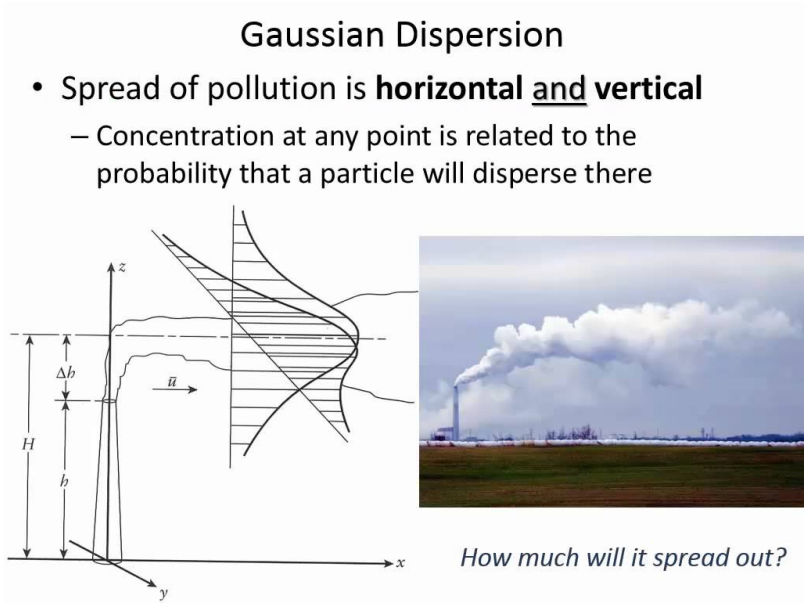
- "Although easterly winds are not the prevailing wind directions in Ireland they do occur with significant frequencies and are known to bring atmospheric pollutants from the UK and Europe to Ireland. "

Concerns re certain of the Modelling techniques employed within the Article 37 report

Chapter 3.4 of the Article 37 submission sets out "the evaluation of transfer to man". Paragraph 500 states:

"Two models were used to evaluate the consequences of releases of airborne radioactive effluents from the proposed Hinkley Point C facility. For the assessment of consequences to the nearest Member State(s) the atmospheric dispersion model described in National Radiological Protection board (NRPB) – 123 (Jones, 1981a) was used to determine the atmospheric concentrations and ground deposition values.

Paragraph 501 clarifies that both models are based on Gaussian plume models"



Professor Sweeney in a briefing to members of the Oireachtas on this matter on March 29th 2018 noted in his presentation

> "The long range model described in Jones (1981) from the National Radiological Protection Board was adapted for use in the impact assessment done in the Article 37 report see Section 501 page 104. However in subsequent guidance issued 5 years later by the model's author – several areas of uncertainty were addressed and a number of caveats to the use of the model were set out."

These caveats to the use of the model were summarised in his remarks and are set out below with reference to their relevance for the use of this modelling approach for HPC transfer per his observations. Again more detail on these issues in available in Annex II.

Caveats (Jones, 1986).	Relevance
"The models given in the first report are intended for application to dispersion over **flat terrain of uniform surface roughness** and heat flux. This restriction applies not only to the terrain over which the plume is dispersing but also to **the terrain for some distance upwind of the source**."	Hinkley is situated on the **coast**, adjacent to an **existing buildings complex** and with south easterly winds, an area of **complex terrain can be considered to exist upwind** (Mendip Hills).
"Additionally there should be no nearby large	

areas where the underlying surface properties are sufficiently different to change the flow conditions significantly. Such situations can occur near to the **coast** or to large urban areas."	It is not clear from the A37 document what consideration, if any, was given in the modelling exercise to the possible influence of upwind topography in affecting westward transport and diffusion of an accidental release
"The models in the first report are appropriate where the airflow at and downwind from the release point is not affected by **nearby buildings.**"	

We submit that it seems clear from the above mismatch between the caveats to use and the profile of the site in question – the use of the model to assess transfer from HPC is of concern.

It is additionally noted that that in the aftermath of Chernobyl in 1986, almost 10,000 upland sheep farms in Wales, Cumbria, Scotland and Northern Ireland had restrictions put on animal movement.

The curbs, which were put in place on food safety grounds, meant that sheep had to be tested for radiation if taken to market. The last remaining post-Chernobyl restrictions on sheep movements were only lifted in 2012.

The level of caesium found in lamb across

Ireland between May and June 1986, measured in Bqkg(-1).

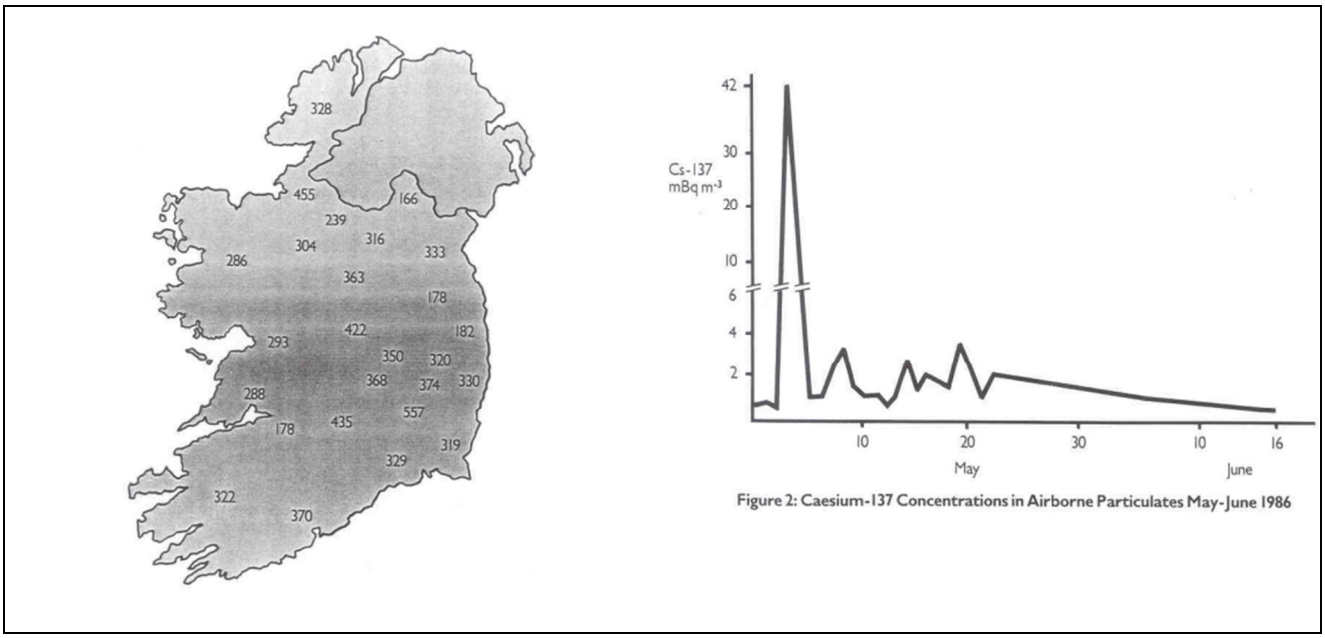


Figure 2: Caesium-137 Concentrations in Airborne Particulates May-June 1986

However according to Professor Sweeney:

> "The Gaussian model employed to assess impacts from Hinkley Point C would not have predicted Chernobyl's impacts on the island of Ireland."

We submit this further highlights concerns in relation to the adequacy of methods and modelling used to assess transboundary impacts on Ireland used by the UK.

Table 1.7 Extreme high water levels

Return period (years)	AEP	Water levels (m AOD)
1 in 1	100%	7.7
1 in 10	10%	8.0
1 in 50	5%	8.2
1 in 100	1%	8.4
1 in 500	0.2%	8.6
1 in 1,000	0.1%	8.7
1 in 10,000	0.01%	9.0

The above table is again taken from the Article 37 submission.

According to Professor Sweeney:

"Calculations are based on an assumption of "stationarity", i.e. that there is not an underlying trend in the data from which the statistics are calculated. However:

- Examination of the annual trend in sea level shown by the tide gauge at Hinkley Point administered by the UK Permanent Service for Mean Sea Level shows a clear upward trend, in common with all tide gauges around the southern part of the UK.
- In addition to an ongoing rise in sea level, water level height is increased further by episodic storm surges. Uncertainty exists regarding how storm activity in the Atlantic Ocean will change over coming decades with climate change and accordingly the ability to calculate long return periods for water height is not possible to substantiate.
- Extrapolating from a small number of years to estimate chance occurrences over thousands of years is not valid when the database is itself changing all the time. The risk of extreme water levels inducing an accident is thus not validly quantified.
- The predicted difference between the annual return period and the once in 10,000 years return period is just 1.3m in the UK's model.
- However, in their recently published 5th Assessment Report the Inter-Governmental Panel on Climate Change estimates of sea level rise alone over the next century or so (RCP8.5) is approximately 0.5-1m

- It is virtually certain that global sea level rise will continue for many centuries, with ultimate rises of up to 3m possible. This means that the high water levels risk table 1.7 cannot be considered credible in its estimates of an increase of 1.3m as a one-in-10,000 year occurrence"

Of additional concern is the following information provided in the Guardian newspaper in relation to unpublished UK Government flood-risk assessments for the UK's nuclear sites, which was obtained under Freedom of Information requests, "FOI". In the context of there being no solution in place to deal with radioactive waste and spent fuel from Hinkley Point C other than on-site storage , and the acknowledgement the waste is to be stored on site for some decades – this flood risk is of serious concern. While the UK Secretary of State indicates total reliance on the regulatory regime within the UK to deal with outstanding matters, concerns raised by such information highlighted by the Guardian begs the question as to whether such confidence is appropriate, and in particular whether Ireland can and should also rely on it.

The Guardian article[18] is from March 2012, a year before HPC was granted consent in March 2013. It stated the following: and a table of unpublished [19] Government data provided in the article is included on the next page of this submission:

> "As many as 12 of Britain's 19 civil nuclear sites are at risk of flooding and coastal erosion because of climate change, according to an unpublished government analysis obtained by the Guardian.
>
> Nine of the sites have been assessed by the Department for Environment, Food and Rural Affairs (Defra) as being vulnerable now, while others are in danger from rising sea levels and storms in the future.
>
> The sites include all of the eight proposed for new nuclear power stations around the coast, as well as numerous radioactive waste stores, operating reactors and defunct nuclear facilities. Two of the sites for the new stations – Sizewell in Suffolk and Hartlepool in County Durham, where there are also operating reactors – are said to have a current high risk of flooding. Closed and running reactors at Dungeness, Kent, are also classed as currently at high risk.
>
> Another of the sites at risk is Hinkley Point in Somerset, where the first of the new nuclear stations is planned and where there are reactors in operation and being decommissioned.
>
> According to Defra, Hinkley Point already has a low risk of flooding, and by the 2080s will face a high risk of both flooding and erosion

[18] https://www.theguardian.com/environment/2012/mar/07/uk-nuclear-risk-flooding

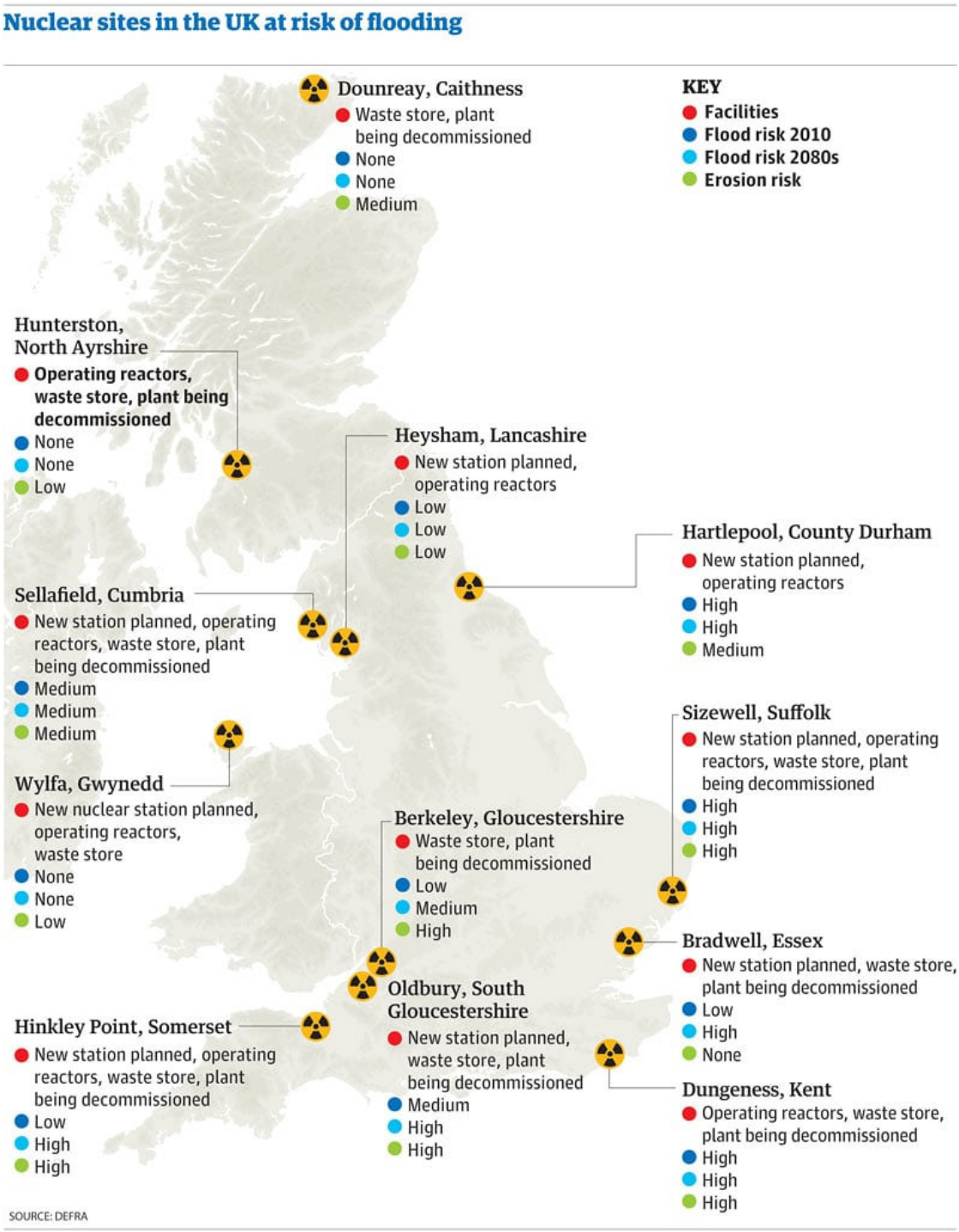
[19] https://www.scribd.com/document/84289220/Nuclear-sites

Nuclear power generation, waste and decommissioning sites – Summary of data

Site	New site?	Waste Store?	NDA site?	In IFP?[1]	Elev.[2]	HAT?[3]	Flood Risk 2010	Flood Risk 2020s	Flood Risk 2050s	Flood Risk 2080s	Comment
Berkeley				Edge	0 to 10	8.6	Yes (low)	Yes	Yes	Yes (medium)	Coast. Sea wall 9.72m AOD
Bradwell				Edge	0 to 5.5	3.0	Yes (low)	Yes	Yes	Yes (high)	Coast. Sea wall 4.6 to 5m AOD
Capenhurst				No	High		No	No	No	No	
Chapelcross				No	High		No	No	No	No	
Culham				No	High		No	No	No	No	
Dounreay				Small	9 to 15	3.0	No	No	No	No	Coast. Long term erosion risk
Drigg				No	High	5.3	No	No	No	No	
Dungeness				Part	2 to 6	4.2	Yes (high)	Yes	Yes	Yes	Coast. Flood and erosion risk. Relies on defences
Hartlepool				Yes		3.3	Yes (high)	Yes	Yes	Yes	Coast
Harwell				No	High		No	No	No	No	
Heysham				No		5.6	Yes (low)	Yes	Yes	Yes	Coast
Hinkley Point				Edge	10 to 14	6.8	Yes (low)	Yes	Yes	Yes (high)	Coast. Relies on defences. Flood and erosion risk.
Hunterston				No	5 to 21	2.0	No	No	No	No	Coast. Erosion risk
Oldbury				Edge	4 to 10	8.4	Yes (medium)	Yes	Yes	Yes (high)	Coast. Relies on defences
Sellafield				No	5 to 30	5.3	Yes (medium)	Yes	Yes	Yes (medium)	Coast. Flood and erosion risk to part of the site.
Sizewell				Edge	3 to 10	1.7	Yes (high)	Yes	Yes	Yes	Coast. Flood and erosion risk. Relies on defences
Trawsfynnydd				No	High		No	No	No	No	
Winfrith				No	High	1.5	No	No	No	No	
Wylfa				No	9 to 13	3.8	No	No	No	No	Coast

[1] Indicative flood plain
[2] Elevation in m Above Ordnance Datum (AOD)
[3] Highest Astronomical Tide

We also note the further map[20] published by the Guardian in relation to the same article[21] which reflect what was known before March 2012 and well before consent was granted.



[20] https://www.theguardian.com/environment/graphic/2012/mar/07/uk-nuclear-sites-flooding-map
[21] https://www.theguardian.com/environment/2012/mar/07/uk-nuclear-risk-flooding

In the context of our summary of Professor Sweeney's remarks on the inadequacies of the flood risk assessment approach in the Article 37 submission, and the above information secured by the Guardian newspaper on information held by the UK authorities acknowledging flood risk at the Hinkley Site from as early as 2010, we additionally remark that of particular concern in this context are:

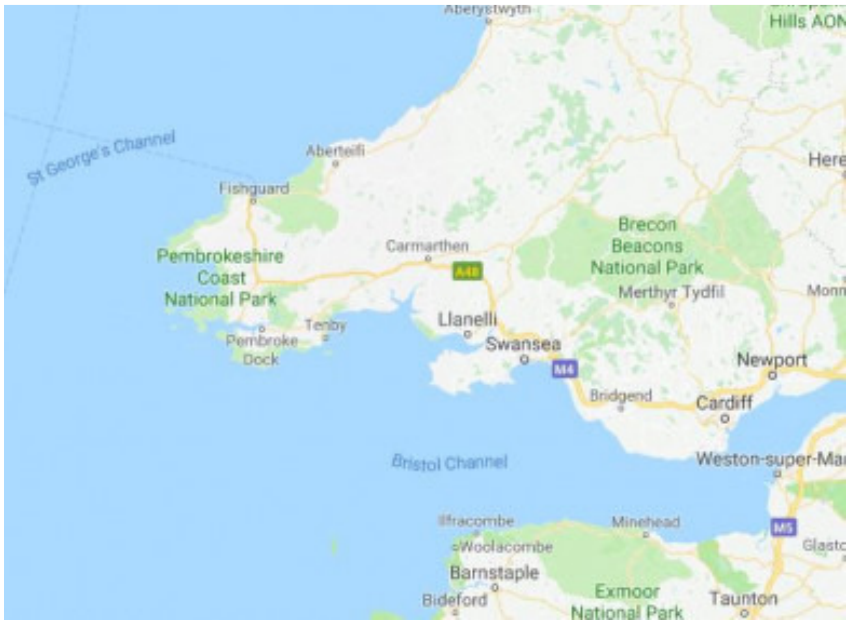
a) The impact and role of flooding on the Fukushima Daiichi disaster (see technical report from Large & Associates in Annex III;
b) The proposals for on-site storage of radioactive wastes, including high-level radioactive wastes arising from the operation of HPC for decades, pending the development of an alternative storage solution and the removal and emplacement of the waste at a yet undetermined solution, at an undetermined location.
c) The original proposal for long term storage for radioactive waste at a site in Cumbria is no longer feasible.
d) The UK Government consider Geological Storage to be "technically feasible" and are in the process of conducting a consultation on a National Policy Statement and an SEA on proposals for such a policy in England. Additionally consultations with communities in Wales, England and Northern Ireland in relation to engagement with communities who may consider siting radioactive waste. However no site is currently extant.
e) Recent decision by the Swedish Courts raise serious issues regarding the technical and practical feasibility of geological solutions[22].
f) Concerns raised by Nuclear Free Local Authorities draft submission for the consultations in respect of UK proposals for Geological Storage for its radioactive waste.

In summary, it would appear the acknowledged scenario per the Environmental Statement for HPC is to provide for on-site storage, the issue is for how long, and the implications of flood risk and the under-assessment of that risk is therefore of serious concern. That is quite apart from the impact flood risk may have on the operation and the adequacy of design and mitigation considerations – given the failure to properly consider the flood risk in the first instance, and the potential accidental risks emerging as a consequence.

[22] https://metamag.org/2018/01/25/swedish-court-rejects-proposed-nuclear-dump/

B. Further considerations in relation to flooding and seismic risks and impacts of fracking on seismic risks

Seismic Risk



While these considerations may in part be considered to be matters which have arisen post the consent on Hinkley Point C – there raise issue with the adequacy of the original consideration of seismic risk, and tsunami risk, and also raise questions on how the UK's regulatory regime is not adequately considering the potential implications of its further decisions on the transboundary impacts which may arise from HPC and the additional risks being added, in particular cumulative considerations in its decision making are if serious concern, and indirect and secondary etc. impacts.

As recently as Saturday 17 February 2018 the Independent[23] reported an earthquake in Britain as follows:

- An earthquake of 4.4 magnitude, thought to be Britain's largest for 10 years, has been felt across Wales and South-west England.
- Thousands of people reported the tremor, with its epicentre falling around eight miles northeast of Swansea city centre, close to the village of Clydach, according to the British Geological Survey (BGS).
- The quake was felt across South-west England, with residents in Bristol and Cornwall reporting the phenomenon, and as far away as Carisbrooke Castle on the Isle of Wight, more than 125 miles away.

[23] https://www.independent.co.uk/news/uk/home-news/swansea-earthquake-south-west-england-wales-a8215521.html

We also note reports of what was a possible Tsunami event in the Bristol Channel in 1607, which is reflected in the contemporary wood-cut depicting the aftermath of the event in the Bristol Channel.



A contemporary wood-cut depicting the aftermath of the 1607 flood in the Bristol Channel.

The 1607 flood in the Bristol Channel and Severn Estuary was we understand the worst ever recorded in the British Isles. Some 570km of coast were affected and 500 deaths occurred. Two earthquakes were felt in the weeks following the event and increased seismic activity seems to have been behind the tsunami. The most likely sequence of events was that seismic activity triggered a submarine landslide which caused the tsunami to develop.

We therefore wish to raise concerns on the adequacy of the assessment of Seismic risk and tsunami – in particular where seismic risk is compounded by Fracking impacts or unconventional gas exploration – given the UK's definition of fracking may be limiting to what we are concerned about, and highlight that further assessment and consideration is specifically needed on this matter.

Specifically in that regard, we note and wish to highlight that on 17 December 2015, (after the consent was granted to HPC back in 2013) the Oil & Gas Authority (OGA) announced[24] that licences for a total of 159 blocks were formally offered to successful applicants under the 14th Onshore Oil and Gas Licensing Round. The map for the sites offered for licences includes the Quantocks and thus we understand relates to the site for Hinkley Point C.

The impact of such proposals on the seismic and tsunami risk for HPC is of serious concern.

The recent Blackpool quakes in April & May 2011 were linked to Fracking. According to the New Scientist magazine:

> "Initial studies by the British Geological Survey (BGS) suggested that the quakes were linked to Cuadrilla's fracking activities. The epicentre of the second quake was within

[24] https://www.gov.uk/government/news/new-onshore-oil-and-gas-licences-offered

500 metres of the drilling site, at a depth of 2 kilometres. Less information was available on the first quake, but it seems to have been similar."

The New Scientist article[25] continues on to state:

> "The link with fracking has now been confirmed by an independent report commissioned by Cuadrilla, *Geomechanical Study of Bowland Shale Seismicity*, which states: "Most likely, the repeated seismicity was induced by direct injection of fluid into the fault zone." The two geologists who wrote the report ran detailed models to show that the fracking could – and most likely did – provoke the quakes."

C Issues with the adequacy of beyond design risk assessment

Please see separate technical report from Large and Associates in Annex III

D. Failure to assess the transboundary impact of extraction or uranium

We submit there has been a failure to acknowledge and assess the actual transboundary impacts of mining for nuclear fuel materials like uranium outside the UK. This failure to consider extraction of fuel sources in considered in the analogous context where the Irish courts have made clear the harvesting of peat for peat burning stations is a clear functional interdependence which requires to be assessed as part of the Environmental Impact Assessment required under EU law. In his judgement in An Taisce v An Bord Pleanála [2015] IEHC 633 in the case of the Edenderry Peat Burning Station, The Honourable Mr Justice White held that:

> "73 ….here the environmental effects of extracting the peat fuel source for the thermal power plant were not properly assessed for the purposes of the EIA Directive, the respondent is obliged to ensure the effectiveness of the EIA Directive by subjecting those environmental effects to Environmental Impact Assessment before granting planning permission for the thermal power plant.;"

in granting a declaration sought by An Taisce in that challenge.

In the same way the operation of HPC depends on the provision of nuclear fuel. Therefore Uranium mining for fuel production and related landscape destruction and other environmental impacts are an integral part of the environmental impact assessment required. These activities take place outside of the UK and the transboundary impacts of this has not been assessed.

The EIA conducted is clearly deficient in this regard for HPC, particularly in respect of transboundary impact assessment.

[25] https://www.newscientist.com/article/dn21120-how-fracking-caused-earthquakes-in-the-uk/

E. Failure to assess the cumulative and transboundary impacts of normal operational discharges HPC, and the UKs existing and proposed nuclear inventory.

We note that Vol 2 of the Environmental Impact Statement documentation sets out information in relation to the normal discharges expected from HPC, including radioactive discharges.

We have serious concerns in relation to the adequacy of the cumulative impact assessment thereof.

The cumulative data analysed appears to relate only to Hinkley Point A,B and C. We submit this is not an appropriate limitation given the proposed additional facilities planned, and indeed the operation of other nuclear energy facilities on the west coast of the UK opposite Ireland, and indeed other nuclear military and civilian facilities.

We are additionally considering the findings of the Nuclear Free Local Authorities report on the effect of normal radioactive discharges and the carcinogenic implications thereof." NFLA New Nuclear Monitor Policy Briefing 51 February 2018, Radioactive Waste and the UK's New Nuclear Programme – submission to the OSPAR RSC and the further briefing 53 additional addendum provided – all included in Annex IV to this submission.)

These NFLA reports are helpful in that the assesses the impacts of the proposed new nuclear energy inventory, not just HPA,B and C. They also highlight concerns in relation to the potential impacts on health in particular arsing even from the normal and predicted gaseous emissions from HPC and the cumulative impact of same. We submit these in particular are considerations which need to be more fully assessed and considered as part of a wider and more thorough Environmental Impact Assessment for HPC, in addition to the other considerations raised in these reports.

F. Failure to assess the transboundary impacts associated with on-site storage of radioactive waste.

We don't intend to rehearse here our earlier concerns in relation to the inadequacy of flood-risk assessment and on-site storage of radioactive waste proposed for decades and the uncertain nature of a Geological or other storage solution. However we do wish to additionally highlight concerns in relation to the potential impacts arising from terrorist attacks in the context of ever-increasing security concerns in this regard, in relation to the on-site storage.

G. Failure to assess the transboundary impacts associated with the disposal of radioactive waste.

Again we don't intend to rehearse here our earlier concerns in relation to the inadequacy flood-risk assessment and on-site storage of radioactive waste proposed for decades and the uncertain nature of a Geological or other storage solution. We wish to simply additionally add:

- There are additional transboundary impacts to be considered associated with the transport of waste to off-site storage facilities, and associated risks.
- The impacts of construction of waste facility need to be considered as a direct consequence of HPC and the EIA is deficient in this regard – and incomplete in relation to Transboundary Impact Assessment.

H. Serious gaps in the considerations within the EIS

We wish to rely on further analysis on gaps and deficiencies within the EIS noted in the submission from the ELIG initiative at the IEN, and highlight further consideration is needed in this regard.

I Assessment of the transboundary impact from the construction of the outfall pipe

We wish to rely on further commentary in the submission from the ELIG initiative at the IEN on this matter.

Section 2. Other considerations emerging contributing to a transboundary risks.

Brexit

In withdrawing from the European Union, the UK has also signalled its intention to withdraw from the Euratom treaty which is concerned *inter alia* with transport of nuclear materials, nuclear safety and nuclear waste. At the time of the SoS's decision, he relied on the UK's regulatory regime to manage risks, which included the UK's obligations and the oversight of the EURATOM mechanisms which rely on and include the European Commission and the EU Court of Justice.

In light of the extreme uncertainty and lack of effective progress pertaining to the outcome of negotiations around the UK's withdrawal, it is unrealistic to assume these current measures can be relied on, regardless of the provisions of the draft withdrawal agreements setting out certain proposals in relation to elements of Euratom, and particularly in light of the varying positions outlined in various speeches made by the UK's Prime Minister in respect of the role of the EU Court of Justice. The very legality of any such agreements even if both parties agree, may in fact be subject to legal challenge given the extent of interests involved by those wedded to "Remain" or "Brexit", or indeed by other parties interested and impacted by the agreement, and thus such commitments may be ultimately compromised. In the absence of certainty of commitments and agreements, the contribution of such regulatory and oversight mechanisms to transboundary impact management simply cannot be relied upon as a matter of fact. Nor is it reasonable to expect the Irish public in the context of the historic issues there have been arising from the UK's nuclear programme to be complacent in this regard.

Flamanville III , Le Creusot Forge and the ONR and the Environment Agency

It is our understanding that the UK's Office of Nuclear Regulation, ONR has made a number of determinations and consents in respect of the advancement of the development of HPC, prior to and subsequent to the Secretary of State's "SoS" decision, and of course the UK Government has entered into significant and highly controversial[26] credit guarantees[27] in respect of Hinkley Point C which rely inter alia on the demonstration of the HPC EPR reactor's capacity or "Other EPR reactors" as referred to in such documents – linking them importantly to the performance of facilities like Flamanville III in France in particular. If Flamanville is not operational by the end of 2020, we understand that the Credit Guarantee provided by the UK government for Hinkley Point C will lapse[28]. The extent to which this

[26] https://www.theguardian.com/news/2017/dec/21/hinkley-point-c-dreadful-deal-behind-worlds-most-expensive-power-plant

[27] https://www.gov.uk/government/publications/hinkley-point-c-documents

[28] http://www.neimagazine.com/features/featurenuclear-cracks-are-beginning-to-show-5768266/ https://docs.gre.ac.uk/__data/assets/pdf_file/0004/1537708/2017-09-E-ArgumentsCancelHinkley.pdf

puts pressure on the advancement of Flamanville, and may in fact to some extent arguably compromise the UK authorities is of concern. We submit this context, and the emerging issues which are flooding the media reports now on a daily basis warrants further consideration. This is given the extent to which the robustness of the design and the approach which the UK had intended to rely upon to prove design and manufacture through Flamanville III, and the approach taken to advance the development of HPC and also procure components for it can now be considered in fact appropriate. The issue now is what additional impact assessments and profiling of such transboundary risks and impacts is now needed given all the risks arising, and indeed ones which were known earlier but seemingly discounted. We refer to just a few of such recent articles below and précis given– highlighting issues with the Le Creusot Forge manufacturing and quality assurance, forging of quality documents, issues with inspection processes, ongoing quality assurance issues, welding issues etc. etc.

http://www.neimagazine.com/features/featurenuclear-cracks-are-beginning-to-show-5768266/

http://www.neimagazine.com/features/featurea-long-and-winding-road-5671917/

https://wiseinternational.org/sites/default/files/NM851-final.pdf

Hinkley

One Flamanville is quite enough: The 1,650 megawatt European pressurised reactor is a mere six years late and three times over budget. And all the more exciting for it being the prototype for an even bigger nuclear disaster: the £20 billion, 3,200MW Hinkley Point C. Still, forget about that for a sec. At least the French nuclear guinea pig is finally on its home run, due to be loaded up with nuclear fuel in the last quarter of this year. Always assuming one thing: that EDF can sort out the dodgy welding on the cooling pipes and stuff. Anyway, it's another EDF success story, up there with the carbon spots on the steel for Flamanville's nuclear dome, the ones that potentially weakened it. Or the lost safety records from its Creusot Forge supplier. And it does make you think. Its bad enough Theresa May signing us up to the world's most financially radioactive energy project, without monthly reminders of EDF's technical ineptitude.

Times 11th April 2018
https://www.thetimes.co.uk/edition/business/one-flamanville-is-quite-enough-d0xbq5l9d

Flamanville

French state-controlled utility EDF (EDF.PA) will have to inspect more weldings at the nuclear plant it is building in Flamanville, France after flaws were discovered in the weldings of the reactor's secondary circuit, nuclear regulator ASN said. EDF said on Tuesday that problems with Flamville's weldings were worse than first expected and

may impact the cost and startup of the long-delayed project. The utility will comment on the start-up schedule at the end of May, after it has verified all 150 weldings in the secondary circuit that conducts steam from the steam generator to the plant's turbines.

Reuters 11th APRIL 2018
https://uk.reuters.com/article/uk-edf-flamanville/asn-imposes-test-on-more-weldings-at-edfs-flamanville-reactor-idUKKBN1HI2A5?rpc=401&

Flamanville EPR reactor: welding flaws not detected during manufacture ASN carried out an inspection on 10th April 2018. On 10th April 2018, ASN carried out an inspection on the Flamanville EPR reactor construction site to examine how the welds on the main secondary systems were checked following EDF's discovery of welding flaws, which had not been detected during the manufacturing checks. The inspection revealed that the organisation and working conditions during the manufacturing completion checks were on the whole prejudicial to the quality of the checks. Inappropriate surveillance of this work by EDF and Framatome also failed to identify and remedy the difficulties being experienced by the operators. Certain flaws are still being investigated, in order to understand why they were not detected during the manufacturing completion inspections. The inspectors consider that the procedures for the performance of the new checks on these welds by EDF are appropriate. ASN does however consider that EDF should propose that these checks be extended to other systems. ASN will issue a position statement on the corrective measures proposed by EDF, notably in the light of the results of the checks which will be sent to it next month.

ASN 11th April 2018
http://www.french-nuclear-safety.fr/Information/News-releases/Flamanville-EPR-reactor-ASN-inspection-on-10th-April-2018

Faults could delay French nuclear reactor using same technology as Hinkley Point C.

New Civil Engineer 11th April 2018
https://www.newcivilengineer.com/latest/faults-could-delay-french-nuclear-reactor-using-same-technology-as-hinkley-point-c/10029974.article

Guernsey Press 11th April 2018
https://guernseypress.com/news/2018/04/11/poor-welding-delays-nuclear-reactor-build-in-flamanville/

Commenting on today's news that EDF has found defects in the welding in pipework of the reactor it is building at Flamanville in Normandy which is the same type as the one proposed for Hinkley Point C, Stop Hinkley spokesperson Roy Pumfrey said "The European Pressurised Water Reactor (EPR) reactor proposed for Hinkley Point C is like watching a car crash in slow motion. It is the unloved, unwanted, and unbuildable child of former EDF boss Vincent de Rivas. We can still stop this before it gets even worse. Although abandoning this ill-fated project now would incur

> cancellation costs consumers could still save almost £1.5bn per year for 35 years from 2027 onwards. 25 years after French engineers began working on the EPR, EDF has yet to get one up and running. Flamanville is seven years late, one in Finland is ten years late and even two in China will be at least five years late."
>
> *Stop Hinkley Press Release 11th April 2018*
> http://www.stophinkley.org/PressReleases/pr180411.pdf

The EPR reactor design proposed for both reactors in HPC is a new design and we understand it does not operate currently anywhere in the world, albeit such design is being pursued in Finland, China and France. UK authorities in signing off on initial proposals in respect of HPC, we also understood had an expectation that Flamanville III (whose EPR reactor is virtually identical to that proposed for HPC) would be 'up and running' for a reasonable period of operation prior to the final decisions in respect of the commissioning of HPC, ensuring any final theoretical design and analysis issues would be in fact resolved and proven by Flamanville III.

In reality, Flamanville is running very far behind target. The Le Creusot Forge from which heavy steel components for elements of the plant, in particular it's Reactor Pressure Vessel, "RPV" has been best with the most serious controversy. The French Nuclear Regulatory Authority, Autorité de sûreté nucléaire, "ASN" effectively shutdown the Le Creusot Forge further to the uncovering of serious carbon anomalies in the heavy forged steel components, which may lead to unpredictable weakness in the components. This issue was compounded by the fact that it appears Le Creusot was not only forging steel components, but it seems also forging/changing quality assurance records – a matter now well established in the public domain.

In light of the concerns on the weakness in the steel components, components from the forge intended for Hinkley Point C – were used in a test, and thus destroyed. Thus the timeline for development has been directly compromised.

Additionally, it seems the Reactor Pressure Vessel, "RPV" already developed for Flamanville III by Le Creusot will need to be replaced within 7 years adding to the cost of the facility, given concerns over the performance of the vessel at the margins.

In effect –the difficulty of being able to evaluate properly the development of tiny fractures in the vessel arising from the carbon anomalies and the consequentially unpredicatable nature of its performance has given rise to a level of concern which has motivated the French regulator to require its replacement in 7 years. What is of particular additional

concern about this seven year time from becomes clear in this report[29] from World Nuclear News which includes the following reported statements from ASN:

> ASN said: "On the basis of the technical analyses carried out, ASN considers that the mechanical characteristics of the pressure vessel head and bottom head are adequate with regard to the loadings to which these parts are subjected, including accident situations. However, the anomaly in the chemical composition of the steel entails a reduction in the margins with respect to the fast fracture risk. ASN therefore considers that EDF must implement additional periodic inspections to ensure that no flaws appear subsequently."
>
> "ASN observes that such inspections can be performed on the vessel bottom head and therefore considers that they must be implemented. **However, the technical feasibility of similar inspections on the pressure vessel closure head is not established. ASN therefore considers that the use of the closure head must be limited in time. It notes that it would take about seven years to manufacture a new vessel head, which could thus be available by the end of 2024. In these conditions, ASN considers that the current closure head shall not be operated beyond that date."**

Flamanville III is already 5 years behind schedule, and it is notable the ASN is openly linking the time taken to manufacture a new head (7 years) for determining the period in which the closure head needs to be replaced (7 years). Thus it is being required to happen – as soon as it is possible to do so.

Even more of a concern is the level of awareness there was about issues in Le Creusot prior to the decision of the ONR and Environment Agency signing off on critical matters like the Generic Design Assessment and Design Acceptance Certificates in 2012, and the Secretary of State's decision to grant permission to HPC and the ordering of components destined for HPC.

It seems from information secured under Freedom of Information Requests by France Inter of Radio France that EDF had alerted Areva and EDF to grave concerns and issues about manufacturing and quality issues at Le Creusot as far back as 2005[30].

While the ASN has no responsibility for authorising parts destined for non-French plants, the extent to which the UK's ONR can plead ignorance of this issue raises either questions of competence or questions of complicity.

The issues encountered at Flamanville give rise to transboundary impact assessment concerns therefore in terms of

[29] http://www.world-nuclear-news.org/RS-French-regulator-says-Flamanville-3-is-safe-to-start-29061701.html
[30] https://www.franceinter.fr/sciences/cuve-de-l-epr-de-flamanville-l-incroyable-legerete-d-areva-et-edf

a) The extent to which the oversight of the ONR and Environment Agency in relation to the oversight and quality assurance of components for HPC can be relied upon;
b) The lack of clarity there is in relation to the ability to manufacture components to the required specifications;
c) The commitment to the cost and operational and energy supply implications of making replacements to key steel components given the technical limitations to the inspection processes;
d) The extent to which there is a sufficient window of time left available for the operation of Flamanville III to serve to provide the requisite clarity to UK authorities in respect of design and operational assurances

Indirect impacts – UK's nuclear military agenda

The extent to which and the manner in which the UK has altered its approach to nuclear power since the mid-2000s has been the subject of extensive commentary in recent years. There is significant informed media speculation that the strategy for nuclear power is closely and in fact intrinsically linked with a nuclear military agenda. Including in the following Guardian article[31] from which extracts are provided below:

> "By the end of 2003, all government policy indicated that Hinkley Point C would never be built, and there was no prospect of any other new nuclear power plants. It seemed certain that nuclear had no future in Britain – which is why, when the government performed a volte-face three years later, so many onlookers were astonished. "Without any obvious change in the world, by 2006, the position in government had been completely reversed," MacKerron told me. "Nuclear power had become extremely beneficial, important and not uneconomic."
>
> "Andrew Stirling believes that there was a crucial, largely unspoken, reason for the government's rediscovered passion for nuclear: without a civil nuclear industry, a nation cannot sustain military nuclear capabilities. In other words, no new nuclear power plants would spell the end of Trident. "The only countries in the world that are currently looking at large-scale civil power newbuild programmes are countries that have nuclear submarines, or have an expressed aim of acquiring them," Stirling told me.
>
> Building nuclear submarines is a ferociously complicated business. It requires the kind of institutional memory and technical expertise that can easily disappear without practice. This, in theory, is where the civil nuclear industry comes in. If new nuclear power plants are being built, then the skills and capacity required by the military will be maintained. "It looks to be the case that the government is knowingly

[31] https://www.theguardian.com/news/2017/dec/21/hinkley-point-c-dreadful-deal-behind-worlds-most-expensive-power-plant

engineering an environment in which electricity consumers cross-subsidise this branch of military security," Stirling told me."

The report continues to outline the extraordinary level of subsidy and payment guarantee the UK Government has entered into with the developers of HPC.

The financial deal that EDF struck with the British in October 2013 to fund the project – which, in Magnin's words, amounts to the British taxpayer funding France's energy needs – remains one of the most controversial elements of the Hinkley deal.

Given its commitment to building Hinkley Point C, the government had no choice but to make EDF an offer that was too good to resist. It offered to guarantee EDF a fixed price for each unit of energy produced at Hinkley for its first 35 years of operation. In 2012, the guaranteed price – known as the "strike price" – was set at £92.50 per megawatt hour (MWh), which would then rise with inflation. (One MWh is roughly equivalent to the electricity used by around 330 homes in one hour.)

This means that if the wholesale price of electricity across the country falls below £92.50, EDF will receive an extra payment from the consumer as a "top-up" to fill the gap. This will be added to electricity bills around the country – even if you aren't receiving electricity from Hinkley Point C, you will still be making a payment to EDF. The current wholesale price is around £40 per MWh. If there had been no inflation since 2012, the consumer would be paying an EDF tax of around £52.50 per MWh produced at Hinkley. However, because it is linked to inflation, the strike price has already risen since 2012. (The price will be reduced by £3 if EDF develops another new reactor in Sizewell in Suffolk, as it is planning to do.)

In short, instead of using taxpayers' money to fund a state subsidy for EDF, the government negotiated a deal whereby the electricity consumer foots the bill. Given that almost every taxpayer in the UK is an electricity consumer, the distinction is largely academic. Furthermore, people in a lower tax bracket often use a similar amount of electricity to higher earners, effectively creating a regressive tax. "The strike price was set when power prices were very high. They signed the contract when there was a bubble," Juan Rodriguez, an analyst at equity research firm AlphaValue, told me. "It's a brilliant deal for EDF." (By contrast, the Department for Business, Energy and Industrial Strategy maintains that "the government negotiated a competitive deal". A spokesperson from EDF told me: "The UK Government agrees that Hinkley will provide value for money for consumers and that the overall costs of the electricity system are lower with nuclear as part of the mix than without it.")

The deal looks particularly bad when compared with the current cost of renewable energy. As Hinkley's pricetag keeps rising, the cost of energy keeps falling. And, as a recent report from the public accounts committee pointed out, although energy costs are falling, this just drives up the top-up payment to EDF. "No one was protecting the interests of energy consumers in doing the deal," the report noted.

In December 2013, the European commission decided that the payments to EDF were so big that they could distort the electricity price across the whole of Europe, and launched an investigation into the deal. The resulting document, published in 2014, can be read as a 33,000-word attempt by the EU to save the UK from its own poor negotiating.

In addition to highlighting the concerns of the Commission, the report continues to also outline quite extraordinarily how:

"… a division of a company employed by EDF was advising the UK government how much to pay EDF. The Department of Energy & Climate Change first identified the potential conflict of interest in 2012, but it wasn't until August 2015 that the department sent a letter to LeighFisher asking the company to ensure "organisational separation" on the project. The government also requested monthly updates on the arrangements, but the NAO says it did not receive these. In October 2015, two years **after** the strike price was agreed, LeighFisher signed the agreement for organisational separation, which included "ethical wall arrangements".

The extent to which the UK Government has pursued this project and associated policy in the context of global trends away from nuclear, the clearly improved potential of renewables is further commented upon in a March 2018 Guardian article[32] asking why is the UK Government now so infatuated by nuclear power and pointing to significant source materials pointing to an underlining nuclear military agenda as follows:

"this nuclear new-build programme is severely delayed, with no chance of operations beginning as intended "significantly before 2025", Costs have mushroomed, with even government figures showing renewables like offshore wind to already be far more affordable. With renewable costs still plummeting, global investments in these alternatives are now already greater than for all conventional generating technologies put together. With worldwide momentum so clear, the scale of UK nuclear ambitions are an international anomaly.

Unswerving British nuclear support contrasts sharply with obstructive national policy on other technologies. In 2015 various strategies supporting renewables and energy efficiency were abandoned, with the cheapest UK low-carbon power(onshore wind), effectively halted. The consequences of these cuts are now clear. The output of community energy projects has fallen by 99.4%. National investment in renewables has halved. Meanwhile, UK industrial strategy continues to prioritise nuclear. Nuclear R&D gets 12 times as much funding as renewables in the Department for Business, Energy and Industrial Strategy's "Energy Innovation Programme". Instead of considering alternatives to spiralling nuclear costs, the UK government is looking to accommodate them with entirely new models of public

[32] https://www.theguardian.com/science/political-science/2018/mar/29/why-is-uk-government-so-infatuated-nuclear-power?

financing. It seems clear that – for some undeclared reason and regardless of comparative costs or global trends – Britain simply *must* have new nuclear power.

The depth of this Whitehall bias creates a challenging environment for reasoned debate over British energy policy. To many, it seems scarcely believable that UK plans are so massively out of sync with current trends. The sheer weight of UK nuclear incumbency has successfully marginalised the entirely reasonable understanding that – like many technologies before it – nuclear power is simply going obsolete.

With direct reasons for the UK's eccentric national position still unstated, we should pay attention to body language. Here, clues may be found in the work of the National Audit Office (NAO). Its 2017 report of 2017 points out serious flaws in the economic case for new nuclear – highlighting "unquantified", "strategic" reasons why the UK still prioritises new nuclear despite the setbacks and increasingly attractive alternatives. Yet the NAO remains uncharacteristically unclear as to what these reasons might be.

An earlier NAO report may shed more light. Their 2008 costing of military nuclear activities states: "One assumption of the future deterrent programme is that the United Kingdom submarine industry will be sustainable and that the costs of supporting it will not fall directly on the future deterrent programme." If the costs of keeping the national nuclear submarine industry in business must fall elsewhere, what could that other budget be?

Although unstated, by far the most likely source for such support is a continuing national civil nuclear programme. And this where the burgeoning hype around UK development of SMRs comes in. Leading designs for these reactors are derived directly from submarine propulsion. British nuclear submarine reactor manufacturer Rolls-Royce is their most enthusiastic champion. But, amid intense media choreography, links between SMRs and submarines remain (aside from reports of our own work) barely discussed in the UK press.

This neglect is odd, because the issues are very clear. Regretting that military programmes are no longer underwritten by civil nuclear research, a heavily redacted 2014 MoD report expresses serious concerns over the continued viability of the UK nuclear submarine industry. And Rolls-Royce itself is clear that success in securing government investment for SMRs would "relieve the Ministry of Defence of the burden of developing and retaining skills and capability" for the UK's military nuclear sector. Other defence sources are also unambiguous that survival of the British nuclear submarine industry depends on continuation of UK civil nuclear power. Many new government initiatives focus intently on realising the military and civil synergies.

Some nuclear enthusiasts have called this analysis a conspiracy theory, but these links are now becoming visible. In response to our own recent evidence to the UK Public Accounts Committee, a senior civil servant briefly acknowledged the

connections. And with US civil nuclear programmes collapsing, the submarine links are also strongly emphasised by a former US energy secretary. Nuclear submarines are evidently crucial to Britain's cherished identity as a "global power". It seems that Whitehall's infatuation with civil nuclear energy is in fact a military romance.

So why does the UK debate on these issues remain so muted? It is now beyond serious dispute that nuclear power has been overtaken by the extraordinary pace of progress in renewables. But – for those so minded – the military case for nuclear power remains. In a democracy, it might be expected that these arguments at least be tested in public. So, the real irrationality is that an entire policy arena should so comprehensively fail to debate such crucial issues. …"

Clearly this linkage means there is a further consequence and effect of the UK's development of Hinkley Point C – which under the EIA Directive would require to be assessed. The ability to continue with a nuclear military programme, and the extent to which this has impact on programmes like Trident in Irish waters, and in putting the UK firmly on the map as a nuclear threat – adds to the transboundary impacts for Ireland, arising from the development of projects like HPC. Indirect and secondary etc. impacts are required to be assessed as part of an Environmental Impact Assessment.

Ability of Ireland to react and mitigate against impacts:

Our introductory remarks highlighted a number of key reports in relation to the impacts on Ireland provided by the RPII and the ESRI and the HSE of the UK's nuclear programme and the impacts of nuclear accidents on Ireland.

To give some context to this level of concern about the assessment of Ireland's ability to react to an accident and in any way effectively mitigate against the following are highlighted.

The potential impact on Ireland has to take account the ability of Ireland to mitigate against such impacts in the event of an accident or attack. There is no information in the UK's assessment which considers such readiness in Ireland - as the UK disputes any such accident could arise in the first instance and has as the UK's SoS said in his decision letter in relation to Austria's concerns:

> " ..such accidents are so unlikely to occur it would not be reasonable to "scope in" such an issue for environmental impact assessment purposes"

We submit that accidents by their very nature are accidental and it is not credible or reasonable to scope them out. Chernobyl and Fukushima Daiichi were not planned events or planned accidents, and in fact Fukushima Daiichi has as set out in Large and Associates report in Annex III – gone way beyond a pathway and a level of cumulative events and

catastrophes which the UK's approach considers reasonable. We have to highlight concern that there is no extant public effective emergency response strategy implemented for the public at large in the event of a serious nuclear event, and people in Ireland are not in any sense ready to deal with the worst if it happens. Such readiness is necessary for mitigation.

What is particularly concerning in that regard is just in January of this Year the Irish Times reported that the Health Services Executive has indicated to Government that it has no capacity to deal with a serious nuclear event.[33] The article indicates:

> "The HSE has warned the Government has virtually no capacity to deal with any chemical, biological, radiological or nuclear incident stemming from an accident or terrorist activity.
> It has signalled that any such incidents could lead to mass casualties, and urged the Government to provide funding to allow the health authority to bring in outside expertise to assess its preparedness and requirements, and to outline a national strategy and training requirements.
> The warning is contained in a confidential internal assessment carried out by the HSE for the Government on critical unmet needs in the health service."

Additionally of concern in this regard is that following the grant of Development Consent for HPC, the Irish Government published on May 1st 2013 a report from the Radiological Protection Institute of Ireland, "RPII" on the "Proposed nuclear power plants in the UK – potential radiological implications for Ireland". In the most severe accident scenario assessed in this report, there is significant reliance on sheltering for humans in order to avoid the most severe impacts. The report acknowledges:

> "Food and agricultural produce would be heavily contaminated and food controls and protective actions would be required for many years to reduce radiation doses from consumption of contaminated food."

The report in relying on sheltering for mitigation entirely fails to address the issue of a contaminated water supply, and the practical efficacy of sheltering over longer periods.

The experience of the recent snow storms with Storm Emma and the Beast from the East – serve to highlight the practical difficulties encountered with disruption to normal services including food supplies. In the context of a snow storm, snow melts over a period of days, however the effect of radioactive contamination is clearly much more complex and longer term.

Additionally further considerations in respect of the Fukushima Daiichi disaster and the profile of radiation are further set out in the ELIG at IEN submission.

[33] https://www.irishtimes.com/news/ireland/irish-news/hse-has-no-capacity-to-deal-with-nuclear-or-biological-incident-1.3363111

Alternatives Assessment.

In the context for the increased performance of renewables in the UK and the emerging price differential between renewables and nuclear in the context of the strike-price agreed for Nuclear and the ever-increasing difficulties, costs and slipping timeline for HPC – it would seem like an opportune time to revisit the matter of alternatives in light of the best available knowledge today.

Conclusion:

While our opening remarks welcomed this consultation – our concluding remarks have to highlight our concerns regarding the efficacy of this consultation and public participation exercise. There has in fact been no realistic attempt to effectively engage with the public in Ireland and to ensure they are aware of this consultation as is required particularly in respect of the Aarhus Convention obligations. The period over which the consultation has been conducted was only 8 weeks compared to the 12 weeks extended by the UK for the original July consultation with other countries last year. Additionally the period over which the consultation with the Irish public was run (February 20th – April 17th 2018) incorporates two major holiday periods – the National Holiday of St Patrick's Day and the Easter Holidays, and also a period when the Oireachtas has risen for 2 weeks toward the end of the consultation, compromising their deliberations and ability of the public to liaise with the members of the Oireachtas when in session.

Additionally, the online access of documents provided on the Irish Government's website has been beset with issues, with links not properly noted and populated for a number of documents, including the important submission from the Austrian Government on their concerns on transboundary risks which was not available for the full 8 weeks. In particular, the Irish Government's website populated only the Environmental Statement documentation and the decision documentation – and it is only if one "clicks" on the letter from the UK Government from July of last year one can see that there is substantial additional information provided by the UK via on-line links, which do not appear to be provided as clear additional links on the Irish Government consultation portal. The information therefore arguably missing includes all the additional information in some 2 pages of listed additional links which the UK provided under the following heading:

> "Additional documents are available at the respective links shown below and the information contained within them may be of interest, but they are not a formal part of the Environmental Statement and are provided in the interest of providing additional background information, and assisting in a broader understanding of the project and the regulatory framework, should you wish to consider them."

It appears the Irish Government took some decision, or failed to consider providing clear access to these particulars in an effective manner. Given the pressures of people at work – and the manner in which people engage online – reliance on the Government's online site is a major feature of this consultation, and it has not been satisfactory.

It would seem that responsibility for those failures rests in the main with the Irish authorities. However our final urging is for the UK to consider whether in fact the spirit of public participation and consultation has been met for the public of its closest neighbour, and what further period might be extended as a consequence. We look forward to the

proper consideration of our submission and a further and proper examination of the environmental impacts arising from Hinkley Point C.

This submission was developed using the Environmental Pillar processes but is not necessarily the policy of each member organisation in the pillar.

Environmental Pillar members: An Taisce. Bat Conservation Ireland. BirdWatch Ireland. CELT - Centre for Ecological Living and Training. Coast Watch. Coomhola Salmon Trust. Cultivate. ECO-UNESCO. Feasta. Forest Friends. Friends of the Earth. Global Action Plan. Gluaiseacht. Good Energies Alliance Ireland. Green Economy Foundation. Green Foundation Ireland. Hedge Laying Association of Ireland. Irish Peatland Conservation Council. Irish Seed Saver Association. Irish Whale and Dolphin Group. Irish Wildlife Trust. Native Woodland Trust. The Organic Centre. The Rediscovery Centre Ireland. Sonairte. Sustainable Projects Ireland, VOICE.Wildlife Rehabilitation Ireland. Zero Waste Alliance Ireland.