Generic design assessment of General Nuclear System Limited's UK HPR1000 nuclear reactor

Responses to the consultation on the generic design assessment of the UK HPR1000

Date: July 2021

We are the Environment Agency. We protect and improve the environment.

We help people and wildlife adapt to climate change and reduce its impacts, including flooding, drought, sea level rise and coastal erosion.

We improve the quality of our water, land and air by tackling pollution. We work with businesses to help them comply with environmental regulations. A healthy and diverse environment enhances people's lives and contributes to economic growth.

We can't do this alone. We work as part of the Defra group (Department for Environment, Food & Rural Affairs), with the rest of government, local councils, businesses, civil society groups and local communities to create a better place for people and wildlife.

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Email: enquiries@environment-agency.gov.uk

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Introduction

Government is responsible for the UK's energy policy and set out its current position in the December 2020 white paper, 'Powering our Net Zero Future'. In the white paper government highlights the need to address climate change urgently and sets out its strategy for wider energy systems so as to achieve the UK's target of net zero greenhouse gas emissions by 2050. New nuclear power stations are an important part of the government's strategy to help ensure that we have secure supplies of low carbon electricity in the future.

The Environment Agency has published its own plan, 'EA2025 creating a better place', to guide our activities. This plan will act as our compass, enabling us and others to chart a course towards a healthier, greener and more prosperous country in 2025.

Our EA2025 plan sets out 3 main goals:

– a nation resilient to climate change

– healthy air, land and water

– green growth and a sustainable future

Our regulation of nuclear sites aligns with these goals because it helps ensure that these facilities are designed and operated in ways which minimise waste and protect the environment.

As regulators of the nuclear industry, the Environment Agency and the Office for Nuclear Regulation (ONR) are working together to make sure that any new nuclear power stations built in the UK meet high standards of safety, security, environmental protection and waste management. We are scrutinising new nuclear power station designs thoroughly, making sure people and the environment are properly protected.

Generic design assessment (GDA) is the first step in this process.

General Nuclear System Ltd (GNSL) is a UK company that is owned jointly by China General Nuclear (CGN) and Électricité de France (EDF). Both companies are major providers of nuclear technologies, in China and France respectively. CGN has developed and is constructing new nuclear power stations in China using Hualong reactors. The UK HPR1000 power station is based on the Hualong design and has been submitted to the UK nuclear regulators for GDA. GNSL's role is to act on behalf of the 'Requesting Parties', the organisations submitting their reactor designs for this GDA, working directly with the regulators.

GDA allows us to begin scrutinising new nuclear power station designs well in advance of construction starting. This means that we can identify any potential design issues at an early stage and ask the reactor design company to address them. This will help to avoid potential costly and time consuming changes when the reactor is being built.

We have previously carried out GDA on 3 different reactor designs:

– EDF-Areva's UK EPR, completed in December 2012 and currently under construction at Hinkley Point C in Somerset and proposed for construction at Sizewell C in Suffolk

– Westinghouse's AP1000, completed in March 2017

– Hitachi-GE's Advanced Boiling Water reactor, completed in December 2017

General Nuclear System Limited (GNSL) submitted its UK HPR1000 design to the regulators for generic design assessment (GDA) in November 2017. We completed our initial assessment and published our initial assessment report in November 2018. We then carried out our detailed assessment of environmental aspects of the design and consulted on our preliminary conclusions from 11 January 2021 to 4 April 2021.

Purpose and scope of document

This document is a collation of responses received to our consultation via the routes we provided for them to be submitted, including:

– our online consultation tool, Citizen Space

– email

– post

– telephone

This consultation has been carried out in line with government consultation principles. The principles recommend that responses should be published within 12 weeks of the consultation or to provide an explanation of why this is not possible.

The program for this GDA means that the final decision document is not expected until at least 10 months after the end of consultation. Therefore, we are publishing all the responses we received to our consultation (unless the respondent requested that their response should not be published) to show all interested parties the range of matters raised during the consultation. These responses are published as received without editing.

All responses will be carefully considered prior to making our final conclusions in our decision document.

This document does not contain our response to the points raised by individuals or organisations. Our response to the matters raised will be included in our final decision document.

Our consultation

As part of this assessment we have consulted on our preliminary conclusions for 12 weeks, from 11 January to 4 April 2021.

Our consultation plan was published in advance of the consultation on GOV.UK.

This section describes aspects of our engagement and communications for consultation and includes information about:

– our consultation documents

– how we raised awareness of our consultation, kept people informed and our engagement

– the public comments process

– promoting our work about GDA to the public and interested groups

– future opportunities to get involved

Our consultation documents

We published the following documents on the GOV.UK and Citizen Space websites. We also printed copies and made them available to those who requested them.

– Technical assessment reports and an independent dose assessment (these are technical documents setting out the preliminary findings of our assessments and can need specialist knowledge for understanding)

– Consultation document (a compilation of technical information with summaries at the start of each chapter)

– Summary document (a short form, less technical version of the consultation document aimed at the public who have some interest in nuclear issues)

– Webpages and a leaflet (provided to assist public understanding)

– Infographics (provided to assist public understanding)

Promoting the consultation

We asked national and local stakeholders for their views on the consultation process before our consultation began. We informed them about our assessment work and asked them how they wanted to be involved in our consultation process. They provided feedback about their communities, the channels they use to read information and their preferred methods of engagement. We considered their responses and the extra challenges of consultation during coronavirus restrictions and published our consultation plan.

We set out our objectives for consultation in the plan. We wanted to make sure that stakeholders:

– understand how we assessed the reactor design

– understand the conclusions of our assessments and why we have made our decisions

– understand how they can provide their views, what they can and cannot comment on and how we'll use their input to inform our assessment

– have many opportunities to give us their views

– help make our final decision on the acceptability of the reactor design as robust as possible

– know more about how GDA fits into the bigger picture of nuclear power station development

– understand each regulator's role, specifically around GDA and regulation of nuclear new build – what we do and what we do not do

We believe that the level of local and national engagement was proportionate for this generic design assessment. We are confident that we did all we reasonably could to consult properly during the period of coronavirus restrictions and that this consultation was accessible to, and targeted at, the people and organisations it was intended for.

We are grateful to everyone who took the time to respond and to attend our online consultation events.

What we did to raise awareness and encourage participation:

– Emailed contacts on our stakeholder database. Our database includes national organisations and people who live near to the Bradwell site such as parish and local councils, non-government organisations (NGOs), environmental groups, professional institutions, nuclear and environmental academics, the nuclear industry and trade unions.

– Published information and documents on GOV.UK and added links from our regulators' joint website.

– Provided an accessible e-consultation tool which hosted our documents and enabled an on-line response.

– Provided a plain English, high-level summary on GOV.UK. In this we were clear about the consultation process, and the scope of consultation.

– Printed copies of the consultation document and summary and posted them to local and national stakeholders both on request and proactively.

– Updated local Members of Parliament through briefings.

- Advertised the consultation in local print and online newspapers (Maldon and Burnham Standard, Essex County Standard, Colchester Daily Gazette, East Anglian Daily Times, Regional Life – all editions), which could be read by people living near to the Bradwell site in Essex and nationally.

- Issued a press release to trade, national and local media. This resulted in some coverage in print and online media.

- Posted information on social media (Twitter, Linked-in) to promote links to our consultation pages and online meetings.

- Posted and shared a blog on GOV.UK.

- Sent posters and GDA information leaflets to parish councils near the Bradwell site with a request to post them on outside noticeboards and other locations that the public were able to use during coronavirus restrictions.

- Used infographics to explain our role and process.

- Worked with third parties and advocates such as local parish, town and county councils, NGOs and environmental groups, securing their support to raise awareness.

- Added information to Bradwell B Power Generation Company Limited's newsletters which are sent to all households in the area and an email subscriber list.

- Provided information about the consultation to GNSL and Bradwell B Power Generation Company Ltd for the companies to use in their communications to stakeholders and the public.

- Provided information to our staff closest to the site so they would be able to answer questions from the public in the area.

What we did to engage directly with stakeholders during consultation:

- Organised consultation events online using Zoom and Teams. We provided speakers from the Environment Agency and Office for Nuclear Regulation, and representatives from the company with expert technical knowledge of the assessment process and nuclear power stations.

- The sessions involved presentations and provided an opportunity for attendees to ask questions and discuss the issues raised.

- The events were advertised widely in posters, local print publications and online, and details were sent to our stakeholder database.

- Around 100 people attended the events, representing a wide range of organisations such as local and parish councils, local environment groups, industry, NGOs and some members of the public. Online engagement enabled a greater number of participants than have attended previous GDA events in person. The main events are listed below.

- 10 February 2021 – National stakeholders
- 11 February 2021 – Maldon District Council
- 17 February 2021 – Blackwater Against New Nuclear Group (BANNG) and Colchester Borough Council
- 23 and 25 February 2021 – Local public and interested groups
- 24 February – National nuclear NGOs
- 26 February – West Mersea Town Council
- 3 March – Bradwell Action Network (BAN)

– We attended meetings organised by others to provide briefings:

- 3 March - Bradwell site stakeholder group
- 3 February – Bradwell B Community Forum
- 9 March – BANNG open meeting

– We highlighted the consultation to members of the BEIS NGO forum.

– We informed attendees of our bi-annual nuclear regulator local engagement meetings which we hold with stakeholders in Essex and Suffolk.

– We offered telephone appointments to those who did not want to, or couldn't participate in online events.

– We provided a post address for those who did not want to, or couldn't use email or the e-consultation tool.

– We published notes from the engagement meetings on Citizen Space on 25 March to assist those in the final stages of completing their response.

To assist in promotion of the consultation GNSL and Bradwell B:

– Voluntarily participated in Environment Agency consultation events, providing speakers and responding to questions.

– Provided a slot and agenda item for the Environment Agency at the 3 February Community Forum.

– Issued a press release at the start of consultation on 11 January.

– Issued a press release at the end of the consultation on 7 April.

– Shared information in the community newsletter sent via post and as an email.

– Shared information in the company stakeholder e-shot in January, February and April.

– Shared information by email with people who have taken part in the GDA comments process.

– Shared information on the company's social media channels.

Public comments process

We ask all nuclear power station design companies who enter the GDA process to set up a website and publish information about its design, invite comments and questions about the design, and respond to those comments and questions.

This continuous 'comments process' is available to anyone throughout our assessment of the UK HPR1000 on the company's website. The company updates information on the website throughout GDA and it contains information submitted to the regulators. Information which is commercially confidential or subject to national security restrictions is not placed on the website.

The process opened in November 2017 and continues almost throughout GDA. To ensure that we can consider comments made as we complete our assessment of the reactor design, we need to receive any comments in sufficient time to reflect them in our decision document (and ONR's Step 4 reports). To enable this, the comments process will close on 17 September 2021, around 4 months before we are targeting to make our decision.

So far GNSL has received and responded to 71 comments. We see the questions and the company's responses and use them, where relevant, to help inform our assessments.

Where they relate to our areas of interest, our detailed assessment has taken account of comments received and GNSL's responses to those comments submitted so far.

Information about common themes from the comments has been provided by GNSL on the website.

Raising awareness of our work on GDA with the public and stakeholders

Following the end of consultation we are continuing to raise awareness of the GDA on the UK HPR1000 design and the opportunity to use the public comments process before its closure by:

– meeting with stakeholder groups, for example at Bradwell B community forum, and at regulator events

– sharing information by e-bulletin and at meetings with nuclear and environmental academics

– responding to enquiries from journalists for media articles

– explaining our work at national conferences and seminars

– providing accessible information on our websites

– publishing updates about our work and the status of Regulatory Observations (ROs) on the joint website

– sharing information with stakeholders through e-bulletins

– asking GNSL to share information on its website, through its community newsletter and social media channels

Future opportunities for engagement following GDA decision

If GDA is completed successfully it means that the regulators consider that a power station based on that design is capable of being built and operated at a site in England consistent with their safety, security, environment protection and waste management requirements and expectations. However, before that could happen any company that wants to build and operate a new nuclear power station at a site must apply for and obtain all relevant site-specific permissions from the nuclear regulators and other bodies. For a nuclear site this includes planning permission in the form of a Development Consent Order. When making decisions about site-specific applications the regulators will take account of all the work they have carried out during generic design assessment.

The Environment Agency is responsible for issuing a range of environmental permits for constructing and operating nuclear power stations, and for relevant 'associated developments' such as workers' accommodation. These permits cover activities such as disposal and discharges of radioactive waste, cooling and process water discharges, and operating back-up generators. The Environment Agency also issues relevant permits for site investigation and construction works such as drilling boreholes, abstracting groundwater, discharging treated effluents and the use of mobile diesel electricity generators. We will decide if the permits should be issued and, if so, what conditions should apply.

Our decision making process for operational permit applications includes two periods of consultation. Firstly, we ask for comments on the permit applications. Later we have a period of consultation when we provide a consultation document setting out our views and we ask for comments on our proposed decision. Only after we have carefully considered the comments we receive in that consultation we make our final decisions.

For site investigation and construction site permit applications we also have a period of consultation on the application. Once we have carefully considered the comments we receive in that consultation we make our decision. We are mindful that construction activities are not unique to nuclear developments and are time limited, so we are processing the permit applications as we would for any construction site. This is a proportionate approach that will help us exercise the best regulatory control on rapidly changing construction activities.

Other relevant applications that would be required include:

– Planning Inspectorate for planning permission – a Development Consent Order.

– Office for Nuclear Regulation for a nuclear site licence

The Bradwell Power Generation Company Limited is currently developing plans to build a new power station based on the UK HPR1000 at Bradwell B, adjacent to the existing nuclear power station on the site. There will be further opportunities for engagement and input into our decision making processes if we receive applications for environmental permits for operation of a new power station. Before we consult we will ask communities and local organisations how they would like to be involved in our decision making.

GNSL provides information about the wider context on its website.

Generic design assessment (GDA)

GDA means that we begin assessing if the environmental aspects of a design are acceptable before an application is made to build the power station. We can get involved with designers and potential operators at the earliest stage when issues can be best addressed effectively and efficiently before construction begins.

There are a number of stages:

1. Initial assessment: we may ask the Requesting Party for further information or for design changes to be made.

2. Detailed assessment: we form our preliminary views and prepare for consultation.

3. Consultation: we ask for views following detailed assessment.

4. Post consultation review: we consider all responses to the consultation and complete our assessments – this is the stage we are at now.

5. Decision and statement: we decide whether to issue a statement of design acceptability, an interim statement of design acceptability if there are any outstanding issues to be addressed, or no statement of design acceptability.

GDA is based on a generic site that is specified by the Requesting Party. We use these site characteristics when we make assessments. We encourage Requesting Parties to select characteristics for their generic sites that reflect those of potential new build sites in Great Britain.

When assessing applications for site-specific environmental permits we use the actual characteristics of the specific site where it is proposed to be built. The site-specific characteristics may be different from those of the generic site. More details of our GDA process can be found in our Process and Information Document (P&ID) (Environment Agency, 2016).

There are 3 possible outcomes for a GDA:

– we issue a Statement of Design Acceptability if we are satisfied with the design

– if, after we have completed our assessments, we are largely satisfied, we provide an Interim Statement of Design Acceptability that identifies the issues that must be addressed before we could consider issuing a full Statement of Design Acceptability

– if we are not satisfied, we do not issue a Statement of Design Acceptability or an Interim Statement of Design Acceptability

More information is available on the GDA page on the GOV.UK website and GDA pages on the new reactors website.

Scope of generic design assessment

The consultation was held to seek views on our preliminary conclusions following our detailed assessment of the environmental aspects of the UK HPR1000 new nuclear power station design.

While the regulators require a minimum level of detail to complete a GDA, we recognise that full details of the design may not be available at the GDA stage. It is normal to finalise these during a site's procurement and construction programme.

The scope of what is included within GDA depends on the information supplied by the Requesting Party (GDA is a voluntary process). However, the information provided for GDA needs to be sufficient in scope and detail to enable a meaningful assessment of the safety, security and environmental aspects of the design. We will not proceed with an assessment if essential information is left out. The scope of the UK HPR1000 GDA is defined by the Requesting Party (GNSL) and includes a single reactor unit situated in a generic site, based on site parameters applicable to the UK.

GNSL's scope for the UK HPR1000 GDA includes:

– buildings that are subject to safety classification (Class 1 & 2) or are important to nuclear safety, environmental protection or security

– all systems that perform or support the following functions:

  o reactivity control

  o containment of radioactive substances

  o heat transfer or removal

  o environmental protection

  o security

The scope of our assessment was to consider the environmental aspects of a single unit of the UK HPR1000 under normal operations and decommissioning at a generic site. The focus is predominantly on radioactive substances regulation (RSR), but other environmental regulations are considered at a strategic level.

Normal operations includes start-up, operation, shut-down, maintenance and testing phases of operation and also includes any impact from any foreseeable events that could reasonably be expected to occur during the life-time of a plant.

The following are the environmental assessment reports we published for consultation.

- **Management systems**

We check that the designer has the right management systems in place and enough resources to make sure the design will adequately protect people and the environment. We also check that all appropriate information can be transferred from the designer to a future operator.

- **Radioactive waste management arrangements**

We consider the integrated waste strategy for a generic site to check it is in line with UK policy and good practice.

- **Best available techniques**

We examine the claims made by the designer about minimising waste and the impact on the environment. We consider the evidence supporting these claims in relation to good practice in the UK.

- **Gaseous and aqueous waste**

We examine the amount of liquid and gaseous waste expected to be discharged into the environment and the proposed limits under which the power station could operate. We also consider the estimated discharges in relation to other comparable power plants across the world.

- **Solid waste, spent fuel and disposability**

We consider the amount and type of solid waste expected to be generated, looking for potential impacts on the disposability of the waste. We look to see that relevant opportunities have been taken to avoid or minimise the amount of waste generated. We also check that UK good practice in processing and packaging the waste has been followed so it can be disposed of in the most effective way possible.

- **Sampling and monitoring**

We identify if the design can monitor radioactive discharges to the standard needed to comply with a future permit.

– **The generic site and radiological impact on people and wildlife**

We review the designer's assessment of the impact of radioactivity on members of the public, plants and animals against our own independent assessment. We compare the results to the legal limit for exposure to radioactivity.

– **Other environmental regulations**

We consider how other environmental legislation would apply to the design at a generic site. Other environmental regulations we have considered during our assessment include those for combustion processes using diesel generators and those for storing and using hazardous chemicals.

– **Independent dose assessment**

We commissioned an independent assessment of the impact of radioactivity on members of the public, plants and animals using the designer's proposed discharge limits and generic UK data.

Other points on the scope of this consultation

This consultation was not about the need for nuclear power, UK energy policy, policy relating to the siting of nuclear power stations or the safety and security of the design.

Nuclear safety and security measures, the prevention and mitigation of accidents, accident scenarios and the associated emergency plans and impact assessment, lie outside the legal responsibility of the environmental regulators and these aspects are being assessed by the Office for Nuclear Regulation.

Next Steps

All responses will be considered in alignment with our regulatory responsibilities and our preliminary conclusions. As a result of the points raised here our preliminary conclusions may be amended and we will update our assessment reports.

Our consideration of each response received will be included in our final decision document. We are targeting for the final decision document and updated assessment reports to be published in early 2022, based on the current GDA programme.

Where points raised lie outside our responsibilities, we will pass a copy of the consultation response to the appropriate organisation for their consideration. Personal details will not be shared with external organisations.

The final decision document will be published on the GOV.UK website and Citizen Space.

Consultation responses

This section contains each response exactly as received. We have not changed any text, other than the removal of personal information. The views expressed in this section are those of the responding individual or organisation.

We have included the text of the specific questions asked where the responses were submitted through our e-consultation tool.

GDA-UKHPR1000-001

Consultation response	GDA-UKHPR1000-001
Response received via:	email
E-consultation tool unique identifier:	Not applicable
Response received from:	Organisation: Joint Nature Conservation Council (JNCC)

Response:

This respondent has not given permission to publish their response.

GDA-UKHPR1000-002

Consultation response	GDA-UKHPR1000-002
Response received via:	email
E-consultation tool unique identifier:	Not applicable
Response received from:	Organisation: Bradwell on Sea Parish Council

Response:

To whom it may concern,

Bradwell on Sea Parish Council note that your Consultation Plan on the generic design assessment of the UK HPR1000 has already started and is due to end in April 2021.

In response we would inform you that we have significant concerns that the majority of our residents will not be able to access this consultation or even to know that it is taking place. Do you have time restrictions or is it necessary to arrange this consultation at a time when the nation is in lockdown which is likely to last until March and very likely for much longer?

We note that your suggested methods of engagement and communication are mostly online. This excludes many of our residents who will not be in a position to give a

meaningful response. You also have suggested video and telephone links. Again, from past experience with BRB this method has not proved successful. Obviously at this time there cannot be face to face group and community meetings where the public can ask questions.

From your preliminary conclusions you say that you have found that the majority of the environmental aspects of the design would be acceptable but you have identified some areas where more work is required to resolve ongoing issues. You identify 6 potential GDA issues and 40 assessment findings that you would expect a future operator to address.

The design assessment of the reactor is obviously one that not many people can possibly understand but considering the huge impact that the development of Bradwell B nuclear power station will have on our village community, its heritage, and its environment it is essential that we are able to take part in some sort of dialogue.

We ask that you arrange a virtual meeting for the Parish Council and any interested residents so that we may better understand the issues that will affect our village.

Yours faithfully,

Chair of Bradwell on Sea Parish Council

GDA-UKHPR1000-003

Consultation response	GDA-UKHPR1000-003
Response received via:	email
E-consultation tool unique identifier:	Not applicable
Response received from:	An organisation: Water Management Alliance – a member internal drainage boards

Response:

RE: Consultation on generic design assessment of UK HPR1000 nuclear power station design

If a site is located within the Internal Drainage District (IDD) of any of our member Internal Drainage Boards (South Holland, King's Lynn, Norfolk Rivers, Broads (2006) or East Suffolk Internal Drainage Board) then the Board's Byelaws will apply. A copy of the Board's Byelaws can be accessed on our website (https://www.wlma.org.uk/uploads/NRIDB_Byelaws.pdf), along with maps of the IDD for each Internal Drainage Board. These maps also show which watercourses have been

designated as 'Adopted Watercourses' by the Board. The adoption of a watercourse is an acknowledgement by the Board that the watercourse is of arterial importance to the IDD and as such will normally receive maintenance from the IDB.

In order to avoid conflict between the planning process and the Board's regulatory regime and consenting process please be aware of the following:

- If a surface water discharge to a watercourse is intended, then the proposed development will require land drainage consent in line with the Board's byelaws (specifically byelaw 3). Any consent granted will likely be conditional, pending the payment of a Surface Water Development Contribution fee, calculated in line with the Board's charging policy. (https://www.wlma.org.uk/uploads/WMA_Table_of_Charges_and_Fees.pdf).
- If treated foul water is intended to discharge to a watercourse then the proposal will require land drainage consent in line with the Board's byelaws (specifically byelaw 3).
- If works are intended to take place within 9 m of a Board Adopted watercourse then consent is required to relax Byelaw 10 (no works within 9 metres of the edge of drainage or flood risk management infrastructure).
- If works are proposed to alter a Board Adopted watercourse then consent is required under Section 23 of the Land Drainage Act 1991 (and byelaw 4).
- If works are proposed to alter a riparian watercourse (a watercourse which has not been adopted by the Board) then consent is required under Section 23 of the Land Drainage Act 1991 (and byelaw 4).

Whilst the consenting process as set out under the Land Drainage Act 1991 and the aforementioned Byelaws are separate from planning, the ability to implement a planning permission may be dependent on the granting of these consents. As such I strongly recommend that the required consent is sought prior to determination of the planning application

GDA-UKHPR1000-004

Consultation response	GDA-UKHPR1000-004
Response received via:	email (via the GNSL comments process)
E-consultation tool unique identifier:	Not applicable
Response received from:	An individual

Response:

This respondent has not given permission to publish their response.

GDA-UKHPR1000-005

Consultation response	GDA-UKHPR1000-005
Response received via:	email (via the GNSL comments process)
E-consultation tool unique identifier:	Not applicable
Response received from:	An individual

Response:

This respondent has not given permission to publish their response.

GDA-UKHPR1000-006

Consultation response	GDA-UKHPR1000-006
Response received via:	email
E-consultation tool unique identifier:	Not applicable
Response received from:	An individual

Response:

This respondent has not given permission to publish their response.

GDA-UKHPR1000-007

Consultation response	GDA-UKHPR1000-007
Response received via:	email
E-consultation tool unique identifier:	Not applicable
Response received from:	An organisation: Low level radiation campaign (LLRC)

Response:

During the "HOLD GDA Event - National and NGOs" zoom call yesterday (24th February) I wrote some questions in the chat pane. The first was:

1) What is the annual total of alpha-emitting particulate matter expected to be discharged, or licensed for discharge? What is the expected size distribution of the particles? What elements and isotopes are involved?

EA addressed this by saying discharges of alpha-emitting particulate matter would be below the limit of detectability. Since I found this unsatisfactory, I posted "UNSCEAR has published data on particulates discharged from every NPP in the world up to 1997" and I

gave the URL http://www.unscear.org/docs/publications/2000/UNSCEAR_2000_Annex-C-CORR.pdf.

Table 34 of that report - "Particulates released from reactors in airborne effluents" - shows that operating NPPs emit particulates, and you may note that the amounts of such emissions are expressed in units of radioactivity. I did not ask the question in terms of what would be detectable; we already face a situation in the UK where CEFAS purports to determine the alpha activity of mud in the Severn Estuary using a test that cannot detect alpha-emitting particulates. I asked for GNSL's estimate of the alpha activity in airborne effluents. It is a simple enough question and I would expect you to be concerned about the answer as a matter of due diligence. Will you obtain one?

I look forward to responses to my other questions, which were:-

"… what proportion of total alpha-emitting particulate matter is expected to be discharged to the atmosphere and what proportion to water? "

and

"On 4th February PHE stated in a zoom meeting with NGOs that "not all organisations use 1 in a million health detriments as a regulatory criterion for assessing acceptable risk", and that "work is going on about tolerability". What criteria will be applied to the technology you are discussing here - i.e. UK HPR1000? How will any discrepancies in "health detriment" estimates be resolved? Can the Environment Agency brief NGOs on what this might mean?"

GDA-UKHPR1000-008

Consultation response	GDA-UKHPR1000-008
Response received via:	email
E-consultation tool unique identifier:	Not applicable
Response received from:	An organisation: Maldon Society

Response:

This respondent has not given permission to publish their response.

GDA-UKHPR1000-009

Consultation response	GDA-UKHPR1000-009
Response received via:	email
E-consultation tool unique identifier:	Not applicable

Consultation response	GDA-UKHPR1000-009
Response received from:	An organisation: Nuclear Free Local Authorities

Response:

I attach a Word and PDF version of the NFLA's response to your consultation on the GDA of the HPR1000 reactor design proposed for Bradwell B.

I would appreciate receipt of this email and that it can be fully considered in your consultation.

Yours sincerely,

Principal Policy Officer / UK & Ireland NFLA & Mayors for Peace Chapter Secretary

Due to being a large document, the attachment is published in full in Appendix 1.

GDA-UKHPR1000-010

Consultation response	GDA-UKHPR1000-010
Response received via:	email
E-consultation tool unique identifier:	Not applicable
Response received from:	An organisation: Chelmsford City Council

Response:

Please find attached the consultation response from Chelmsford City Council.

Kind regards

Planning Officer

Planning Policy Team - Spatial Planning Services

Directorate for Sustainable Communities

Chelmsford City Council

Chelmsford City Council’s response to EA’s public consultation on the GDA of the UKHPR 1000 nuclear reactor design

Thank you for consulting Chelmsford City Council (CCC) on the GDA of the UKHPR100 nuclear reactor design.

CCC recognise that the EA is the appropriate nuclear regulator to undertake the GDA of the environment aspects of the UK HPR1000 reactor design and have confidence in the technical appraisals undertaken. CCC are therefore broadly supportive of the EA's preliminary conclusions.

Maldon District Council and Essex County Council are proposing to do a joint response to this consultation which they have shared with CCC. CCC would like to echo the view of Maldon District Council and Essex County Council in that CCC is concerned about the interim storage of higher activity radioactive waste (HAW) on any site where the UK HPR1000 reactor design is developed, and the lack of contingency planning should the Geological Disposal Facility (GDF) not be delivered or able to accept HAW by 2031

GDA-UKHPR1000-011

Consultation response	GDA-UKHPR1000-011
Response received via:	email
E-consultation tool unique identifier:	Not applicable
Response received from:	An organisation: Joint response from Essex County Council and Maldon District Council

Response:

Generic design assessment (GDA) consultation

Please find below a summary of the joint response from Maldon District Council and Essex County Council (the Joint Councils) to the fourteen consultation questions from the EA relating to its preliminary conclusions of its detailed assessment of the UK HPR1000 reactor design. This summary should be read alongside the full detailed comments of the Joint Councils contained in the report and table sent with this letter.

The Joint Councils recognise that the EA is the appropriate nuclear regulator to undertake the GDA of the environment aspects of the UK HPR1000 reactor design and have confidence in the technical appraisals undertaken; therefore, are broadly supportive of the EA's preliminary conclusion that a Statement of Design Acceptability (SoDA) could be issued if all Potential GDA Issues are resolved and no new Potential GDA Issues arise before the end of the GDA process.

The Joint Councils request that the EA publishes any Resolution Plans for Potential GDA Issues prior to a SoDA being issued so that stakeholders can understand how they have been addressed.

Without sight of any Resolution Plans, the Joint Councils remain concerned about the interim storage of Higher Activity Radioactive Waste (HAW) and spent fuel on any site where the UK HPR1000 reactor design is developed, and the lack of contingency planning

should a Geological Disposal Facility (GDF) not be delivered or able to accept HAW within the Government's anticipated 2030 - 2040s timescales. The Joint Council's view is that the EA should consider as part of the GDA the need for contingency plans to be agreed. This would provide confidence to local communities that either on-site storage of HAW and spent fuel would be safe and secure until ultimate GDF delivery, or that feasible alternatives for centralised optimisation and storage of waste are practicable

Although not detailed as a potential GDA Issue, the Joint Councils are unclear how any potential SoDA would remain valid should the UK HPR1000 reactor design be developed contrary to the generic assumption of direct cooling as Best Available Technology (BAT). The Joint Councils view is that if the EA decide to issue a SoDA that any decision document should provide clarity on how the GDA has considered the acceptability of the UK HPR1000 reactor design for indirect and hybrid cooling.

The Joint Councils reserve the right to comment on matters in relation to the overall acceptability of the design of the UK HPR1000 reactor in its totality should it be developed at Bradwell-on-Sea.

Yours sincerely

Lead Specialist – Bradwell B

Head of Planning & Development, Essex County Council

Director of Strategy, Performance & Governance, Maldon District Council

Due to being a large document, the attachments (report and Table 1) are published in full in Appendix 2.

GDA-UKHPR1000-012

Consultation response	GDA-UKHPR1000-012
Response received via:	email
E-consultation tool unique identifier:	Not applicable
Response received from:	An individual

Response:

This is a feedback to GDA which was conducted on the proposal made for building Bradwell B HPR1000.

While six potential issues were identified as per your website, I view that the assessment is still very unsatisfactory. I doubt how such assessment is possible in the first place for a project which would run more than a century, even more so with the rapid change in climate, which will cause weather change as well as geographical change to the site and building. Your consultant answered to this that you take into the view on climate change

issued every 10 years. The risk assessment with the source which is updated on every 10 years is not through. You also stated your assessment is based on conceptual designed submitted by the applicant.

Advising the government recommendation based on such unthorough assessment is indeed insincere to future generation which would have to deal with the nuclear contaminated site and waste. There is no mention on your moral duty on your website.

Yours faithfully

GDA-UKHPR1000-013

Consultation response	GDA-UKHPR1000-013
Response received via:	email
E-consultation tool unique identifier:	Not applicable
Response received from:	An organisation: Low Level Radiation Campaign

Response:

I attach the Low Level Radiation Campaign's response to the consultation. I have yet to look at the online survey as domestic issues are taking precedence. I will do the survey if I can.

If I may, I draw your attention to the section titled "Failures of dialogue" and ask whether the Agency will consider a supplementary submission if we want to comment on any response the Agency might make to the CwCUK report and to the unanswered questions from 24th February.

Thanks

Low Level Radiation Campaign

Due to being a large document, the attachment is published in full in Appendix 3.

GDA-UKHPR1000-014

Consultation response	GDA-UKHPR1000-014
Response received via:	email
E-consultation tool unique identifier:	Not applicable
Response received from:	An organisation: Blackwater Against New Nuclear Group.

Response:

I am attaching the response to the consultation from the Blackwater Against New Nuclear Group.

I have sent in the response form separately.

Chair, BANNG

Due to being a large document, the attachment is published in full in Appendix 4.

GDA-UKHPR1000-015

Consultation response	GDA-UKHPR1000-015
Response received via:	email
E-consultation tool unique identifier:	Not applicable
Response received from:	An organisation: Together Against Sizewell C

Response:

Reference the HP 1000 GDA consultation response, please find the views of Together Against Sizewell C attached.

Sincerely,

Chairman, TASC

Due to being a large document, the attachment is published in full in Appendix 5.

GDA-UKHPR1000-016

Consultation response	GDA-UKHPR1000-016
Response received via:	email
E-consultation tool unique identifier:	Not applicable
Response received from:	An individual

Response:

I would like to register my objection to the development being considered at Bradwell Essex.

I live with my Family on Mersea Island, situated directly opposite the proposed site. I consider the planned development as both reckless and dangerous, to the local area,

Nuclear Power whist often seen as a safe solution is not the only alternative, the deployment of offshore wind has demonstrated the viability of this as an alternative, Some suggest the lack of predictability of wind however sees this as only a part solution, I would suggest with the deployment of on shore Battery storage, off shore wind can provide an effective solution to our increase in power requirements.

The provision of environmentally sensitive alternative needs to be considered.

The balance of the local eco system should be high on all agendas, with our salt marshes and fishing industry. The disruption caused by the building of Bradwell B can only endanger this fragile eco system.

As the representative of the people The Environment Agency needs to consider all aspects of the plan and not be forced by political pressure to accept and support what is both unproven and of Chineese origin !

Please put on record my objection.

GDA-UKHPR1000-017

Consultation response	GDA-UKHPR1000-017
Response received via:	email
E-consultation tool unique identifier:	Not applicable
Response received from:	An individual

Response:

I would like to begin with thanking the Environmental Agency for providing the online meetings although this has sadly excluded many of the Dengies community as a whole. It is a well known fact nationally that rural areas are often more deprived and therefore are more likely not to have facilities such as internet access or poor bandwidths. It has also excluded our deaf and hard of hearing residents who have raised this point several times with yourselves and requested a public meeting at a time safe to do so. Sadly these facts have been ignore and the process moved forwards regardless.

It was noted at the meetings and to my utter dismay, that the Environmental Agencies unusual approach to this process, specifically in its relationship with the applicants which appears at best lead by the applicant but also to be perceived at times collisional, references to “my Colleagues” (GNSL) is far from appropriate for an independent agency who are trusted with the regulation of such sensitive sites and waste.

The GDA is also stated as Generic but Bradwell is used as the baseline site/ geographically tied to the HPR1000 as the reactor was not to be built anywhere else in the UK, although at one of the meetings with GNSL they did contradict this. If this is the case why are the cooling systems not applicable to Bradwell and its marine and wetland

protections not considered in the environmental assessments? It appears that the applicant is using the Generic GDA as it is an “easier option” as it is clear that Bradwell is indeed an unsuitable site for this design due to the shallow estuary and protected species, unique biodiversity and extremely close proximity to residential buildings, historical assets and primary school. It appears to the public that the applicant is allowed to pick and choose the easiest route through the GDA with assistance and advice from regulators in achieving this.

The EA’s ambition statement reads “to protect and improve our natural resources” with its priorities stated as “protects and improves water, land and biodiversity, people and sustainable regrowth”

The above statements fall into direct conflict the approach taken by the EA when the applicant is given little guidance and regulation but is allowed to set its own parameters as long as it can prove they are achievable.

This is not regulation, it is facilitating a process.

A clear example from the information supplied to the public of the applicant leading the assessment is that of BAT.

It is clear from EA document that BAT “Best available technique” is the required standard to be met by GNSL but it is very apparent that there is no guidance available to the public of what the BAT is for each requirement actually is. Therefore we would like to know why the EA is not providing guidance from other instillations for BAT’s to GNSL and to the public to compare with especially when it comes to choosing equipment and methods of sampling and monitoring.

An example is page 10 where the EA state that is the best practice to return the sample downstream of the extraction point instead of upstream. If this is the case the EA existing BAT should be adopted by GNSL. The EA instead allows GNSL to prove that it is BAT.

If there is any risk at all, surely the known and current procedures should be followed instead of allowing an unproven and theoretical BAT to be put in place. The only drivers that would be behind this are that of cost savings for GNSL which would be completely inappropriate and not in the interest of the environment or public safety.

There are also operational procedure concerns, on page 12 there is a reference to continuous radiation monitoring in the lipid discharge line. If an elevated radiation level is detected an alarm is activated and an isolation valve is closed to stop the discharge to the environment.

What happens if this alarm fails and the isolation valve fails to operate? Sequential failures of operating systems are not unknown and should be required to be planned for.

The EA with it current procedures outlined in this document is essentially leaving everything to the operator to prove as BAT and as a result is providing the operator with a

license to create outcomes and to cut costs not in the environmental interest and long term is highly likely to result in operational non conformities.

Surely the EA with its mission statement to protect the environment should be taking far more vigorous steps to ensure that the environment is not exploited for financial gain with an overall loss of ecologically important areas.

The EA should request to be provided with firm proposals at this stage and not allow gaping holes in such important overall information to be missing from the public and other decision makers.

It also appears that the is no provision for an ongoing environmental monitoring programme as part of the GDA especially considering large sections of this project have been stated as unknown until it becomes operational, allowing GNSL to again side step future responsibilities.

Currently the EA assessment stands more as an insurance policy for blaming the operator for any problems or disasters than one of protecting the environment and public.

In regards to other areas of the assessment it is disturbing to see that the pattern of lack of current information continues with references to “unknown until a later stage in the process”, this prevents the accumulative impacts of the design from being accurately assessed and makes a mockery of the whole process.

If the SODA is to be granted the terms and requirements should be clear and for the applicant to meet, not to be produced at a later date and assessed separately on its own merits. The power station is installed as a unit, therefore the assessment and design should be approved on the power station in its operational entirety and this includes the waste facility and long term waste storage provisions for the UK.

It appears that the waste storage facility design is at best conceptual and that no real design of depth has been put forward and robustly assessed. Considering the storage of waste is in fact one the largest problems with nuclear in itself it should be essential that the waste facility in its entirety is acceptable to not only regulators but the populous of the Dengie and Essex.

I fear that many people in Essex are unaware that this area will become a permanent nuclear waste site not only for Bradwell A which is also storing waste for other sites for at least the next 60 years but compounded by the proposal of 600 cubic meters from Bradwell B for generations to come, this impact has not be highlighted.

It once again illustrates how the applicant has managed to breakdown the process to make it more palatable and acceptable to regulators. This is not a transparent process and a clear assessment of the HPR1000 reactor in its operational entirety. It is indeed a stilted and diluted attempt to appease the public that has resulted in nothing less than damaging public faith in the regulators as a whole.

GDA-UKHPR1000-018

Consultation response	GDA-UKHPR1000-018
Response received via:	email
E-consultation tool unique identifier:	Not applicable
Response received from:	An individual

Response:

Please find attached my personal response to the EA's public consultation.

I apologise for the response being late and hope that it will be taken into account.

Due to being a large document, the attachment is published in full in Appendix 6.

GDA-UKHPR1000-019

Consultation response	GDA-UKHPR1000-019
Response received via:	email
E-consultation tool unique identifier:	Not applicable
Response received from:	An individual

Response:

A remit too tight in a consultation 'Through the Looking Glass'.

You emphasise that this consultation is not about the need for nuclear power, UK energy policy, policy relating to the siting of nuclear power stations, or the safety and security of the design and you stress that this consultation is about GNSL's UK HPR1000 design and your assessment so far of its environmental acceptability.

So since your consultation does not relate to a specific site and it is not about the siting of nuclear power stations, why is it aimed at members of the public (amongst others) and specifically at communities where this reactor design has been proposed?

Your consultation then proceeds to question our views (ie the views of members of the public and communities where this reactor design has been proposed) on 14 specific preliminary technical conclusions you have reached, relating to a generic site. But we are all concerned about our specific environment rather more than that of a mythical generic site. And this, discomfortingly, is a generic site about which you still need more information from the RP, namely

– the assumed area/size of the site

– the nature and shape of the coast (estuary or open coastline)

– the assumed position of the site on the coast

– the type of terrestrial environment (land) around the site (urban, rural or agricultural)

– the assumed position where discharges to atmosphere occur on the site

– the assumed marine environment into which liquid discharges and cooling water discharges occur - enclosed estuary or open coastal environment

You state you have not yet reached any decisions but will complete your assessment including carefully considering all relevant comments made during consultation. However you are sufficiently confident that your 6 GDA Issues and 40 Assessment Findings will be adequately resolved by the RP or by a future operator at an appropriate stage in the future to issue a draft iSoDA at this 'early' stage. So you then placate us with future opportunities to have our say with further consultation on any environmental permit applications for the operation of this design on specific sites.

It seems to us that this GDA consultation process has been designed (on your own admission by ONR & EA) in an Alice in Wonderland world, to stifle meaningful dialogue and lead us down a tightly defined route of what is or is not up for investigation and deliberation. At each stage we are constrained and referred on to the next stage, or to another statutory body, until the end of GDA becomes a 'fait acompli' with the issue of an iSoDA or SoDA. And you will be able to claim you have fulfilled your statutory duties and have 'consulted widely'.

We are not interested in whether some air filters proposed to be used are of rectangular or cylindrical design, but we are hugely concerned about the devastation to be wrought on our environment and our lives, as should you be, the Environment Agency.

We are hugely concerned at the desecration and threat of inappropriate industrialisation to peaceful rural communities on the Dengie Peninsula and further, in and around the Blackwater Estuary.

We are hugely concerned at the cooling water requirements for these reactors and the effect it willl have on all life forms in and around our shallow, slowly refreshing estuary.

We are hugely concerned about the storage of nuclear waste on a fragile low lying eroding coast with rising sea levels, regardless of the nuclear industry's misleadingly optimistic Humpty Dumpty use of 'interim' storage. We all know we won't have a Geological Disposal Facility, or any satisfactory solution, in operation by 2040. But even if it were to materialise, the HAW and other radioactive waste from new build will have to remain on site until after the vast piles of currently existing nuclear wastes have been finally locked away. 'Interim' sounds reassuringly short term but it actually means just what the nuclear industry chooses it to mean - neither more nor less.

By the time we are permitted to address the real issues missing from your consultation - the devastation to the environment of the Dengie Peninsula and the Blackwater Estuary, the prevention of which should be in your jurisdiction, this project will have built up too

much inexorable momentum to halt the nuclear juggernaut. This is being insidiously enabled, regardless of the realities of specific unsuitability and unacceptability. We will no doubt be offered some farcical mitigation for a few of the detrimental operations deemed essential to the project, but for which nothing could compensate, as witness experiences thus far with Hinkley Point C and Sizewell C. (Cf. EdF premature and wanton destruction of Coronation Wood for Sizewell C long before DCO, and CGN/EdF groundwork damage already carried out at Bradwell.)

We want to trust that you and the ONR are carrying out the design assessment of this Chinese reactor with due diligence but we are unable to believe that you are in a position to protect our environment properly by concentrating on a generic site as defined thus far and limiting your consultees to the same.

We find this generic process too restrictive and seemingly designed mainly to facilitate nuclear industry ambitions. We fear that we and future generations will live to regret allowing this insidious development to progress in this way.

We are hugely disappointed by EA complicity in facilitating the potential wrecking of our environment by the all powerful nuclear industry and its lobbyists.

GDA-UKHPR1000-020

Consultation response	GDA-UKHPR1000-020
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZS4V-Q
Response received from:	An organisation: Leveller Publishing Group

Response:

Q1: Do you have any views or comments on our preliminary conclusions on management systems?

The integrity of management systems cannot be guaranteed when China is involved and the development of a civil nuclear programme has necessarily been a spin off from the nuclear programme developed by the Chinese military

Q14: Do you have any views or comments on our preliminary overall conclusion on the acceptability of the design?

Yes. it relates to other comments we have made. The integrity of the design cannot be guaranteed because of the potential for unauthorised access.

The Chinese government has been known to use cyber warfare targeted at infrastructure. If this government sanctions a Chinese design, it is simply not possible to know if and how

we can prevent targeted attacks on our critical infrastructure when we are in disagreement with China.

Q15: Do you have any overall views or comments to make on our assessment, not covered by the previous questions?

It seems to us to be a major strategic error to allow a Chinese company to build a UK nuclear power station.

Whilst we have little doubt the Chinese are technically able to build a modern nuclear power station, the question government should be asking is "is this wise?"

This is an age when cyber warfare is a constant issue, with attacks from certain state actors routinely targeting infrastructure.

Government simply cannot be 100% certain that the electronic systems involved are not compromised, and are not susceptible to misuse.

Government should question the integrity of Chinese endeavours here. China has breached its agreement with the UK government over Hong Kong. Anything to do with Hong Kong is now brushed off as an internal issue and none of our business.

Government should question whether it is credible that China has created a civil nuclear programme without the input of the Chinese military. And if the Chinese military have been involved, you cannot possibly guarantee, that the systems cannot be compromised.

A nuclear project is a very long term business with a lifespan of 25-50 years. Who can say what the state of our relationship with foreign governments may be over such a long period.

GDA-UKHPR1000-021

Consultation response	GDA-UKHPR1000-021
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZS4W-R
Response received from:	An individual

Response:

This respondent requested that their response should not be published.

GDA-UKHPR1000-022

Consultation response	GDA-UKHPR1000-022
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZS4M-E
Response received from:	An individual

Response:

This response contained no written information.

GDA-UKHPR1000-023

Consultation response	GDA-UKHPR1000-023
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZS4Z-U
Response received from:	An individual

Response:

Q1: Do you have any views or comments on our preliminary conclusions on management systems?

None

Q2: Do you have any views or comments on our preliminary conclusions on strategic considerations for radioactive waste management?

None

Q3: Do you have any views or comments on our preliminary conclusions on the process for identifying best available techniques or on the techniques used to minimise production and disposal of radioactive waste?

None

Q4: Do you have any views or comments on our preliminary conclusions on minimising the discharges and impact of gaseous and liquid waste, and our proposed limits and levels?

None

Q5: Do you have any views or comments on our preliminary conclusions on the management and disposal of solid radioactive waste and spent fuel?

None

Q6: Do you have any views or comments on our preliminary conclusions on monitoring discharges and disposals of radioactive waste?

None

Q7: Do you have any views or comments on our preliminary conclusions on the impact of discharges of radioactive waste?

None

Q8: Do you have any views or comments on our preliminary overall conclusion on radioactive substances permitting?

None

Q9: Do you have any views or comments on our preliminary conclusions on water abstraction?

None

Q10: Do you have any views or comments on our preliminary conclusions on discharges to surface waters and groundwater?

None

Q11: Do you have any views or comments on our preliminary conclusions on the operation of installations?

None

Q12: Do you have any views or comments on our preliminary conclusions on the control of major accident hazards?

None

Q13: Do you have any views or comments on our preliminary conclusions on the measures to prevent and minimise leakage of fluorinated greenhouse gases and ozone-depleting substances?

None

Q14: Do you have any views or comments on our preliminary overall conclusion on the acceptability of the design?

None

Q15: Do you have any overall views or comments to make on our assessment, not covered by the previous questions?

No

GDA-UKHPR1000-024

Consultation response	GDA-UKHPR1000-024
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZS4D-5
Response received from:	An individual

Response:

Q15: Do you have any overall views or comments to make on our assessment, not covered by the previous questions?

Chinese companies should not have any input to major infrastructure projects in the UK. A much better way to go would be more SMEs. They will be cheaper to build and are ready to go.

GDA-UKHPR1000-025

Consultation response	GDA-UKHPR1000-025
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZS4J-B
Response received from:	An individual

Response:

Q3: Do you have any views or comments on our preliminary conclusions on the process for identifying best available techniques or on the techniques used to minimise production and disposal of radioactive waste?

Concerned about the use of unsubstantiated control and instrumentation systems. Very considerable effort was put into legacy control and instrumentation substantiation via a process call EMPHASIS. Concerned this will be abandoned bus to political and cost pressures.

Q14: Do you have any views or comments on our preliminary overall conclusion on the acceptability of the design?

Concerned the control and instrumentation systems will be of lower quality than those of other UK stations.

GDA-UKHPR1000-026

Consultation response	GDA-UKHPR1000-026
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZS4F-7
Response received from:	An individual

Response:

This respondent requested that their response should not be published.

GDA-UKHPR1000-027

Consultation response	GDA-UKHPR1000-027
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZS8Y-X
Response received from:	An individual

Response:

Q1: Do you have any views or comments on our preliminary conclusions on management systems?

Why is the EA raising potential GDA issue 2?

This is the legal responsibility of the ONR. Is it just there to make it look like the EA assessment has provided more value?

Q2: Do you have any views or comments on our preliminary conclusions on strategic considerations for radioactive waste management?

If the only question that you can ask is about the shape of the HVAC filters then the requesting party and the country should ask what the value of EA GDA is.

Q3: Do you have any views or comments on our preliminary conclusions on the process for identifying best available techniques or on the techniques used to minimise production and disposal of radioactive waste?

Does the BAT analysis include the environmental benefits of not using fossil fuels to generate the electricity produced by the HPR1000? You talk of being resilient to climate change but not of the benefits of reducing climate change. This should get as much credit as a proposal to build a coal fired power station would get criticism.

Q4: Do you have any views or comments on our preliminary conclusions on minimising the discharges and impact of gaseous and liquid waste, and our proposed limits and levels?

If the only question that you can ask is about the shape of the HVAC filters then the requesting party and the country should ask what the value of EA GDA is.

Q5: Do you have any views or comments on our preliminary conclusions on the management and disposal of solid radioactive waste and spent fuel?

The potential issues you raise do more to highlight the failings of UK national policy with regard to radioactive waste disposal than anything to do with the HPR 1000 design.

Could any GDA requesting party have done anything to avoid potential GDA issues 4, 5 & 6?

Q6: Do you have any views or comments on our preliminary conclusions on monitoring discharges and disposals of radioactive waste?

Does the EA waste assessment include the waste not generated by reducing the fossil fuels burnt in the generation of the electricity?

Q7: Do you have any views or comments on our preliminary conclusions on the impact of discharges of radioactive waste?

Is it proportionate to threaten GDA acceptance with a worry about the disposal of the core instruments at the end of life? Do the EA expect all wastes generated in 2100 or beyond to be accounted for before construction begins for all industries?

Q9: Do you have any views or comments on our preliminary conclusions on water abstraction?

The UK potential sites have been identified, the EA should be limited to considering the difference between hpr1000 and other pwr technologies wrt water abstraction. Otherwise it is straying into national policy territories which are not an EA responsibility and outside GDA remit.

Q11: Do you have any views or comments on our preliminary conclusions on the operation of installations?

The overall environment impact should be considered, including offset co2 emissions.

Q12: Do you have any views or comments on our preliminary conclusions on the control of major accident hazards?

Under what powers do the EA consider the control of major accidents? Why does this not rest entirely with the ONR?

GDA-UKHPR1000-028

Consultation response	GDA-UKHPR1000-028
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZS84-S
Response received from:	An individual

Response:

Q1: Do you have any views or comments on our preliminary conclusions on management systems?

Having been watching the development of nuclear power technology that uses salts as heat transfer medium, I am impressed by the wide range of improvements being made, over the water based solid fuelled mechanism.

With MSR, it's already molten, so melt-down is no issue, thus avoiding Chernobyl.

No water means minimal hydrogen and no Fukoshima.

Plumbing being at essentially atmospheric pressure, containment can be much more lightweight. This makes for off site, factory shop manufacture and rail or road delivery of components ready for installation. High pressure hazards are substantially reduced.

High temparature salt can also feed thermal energy to other industrial uses and heat storage reservoires during low demand.

Q2: Do you have any views or comments on our preliminary conclusions on strategic considerations for radioactive waste management?

Compared to solid fuelled reactors, burn up efficieny is very much higher in all of the MSR designs seen, so far. Waste management is therefore a tiny problem, in comparison to solid pellet and rod fuelled designs.

Many MSRs also burn waste fuel to reduce the burden on long term storage.

In situ monitoring of fuel composition is not difficult; spectroscopy or LIDS for example. Solid fuel, on the other hand is indirect, age inferred assessment, with computation

Q3: Do you have any views or comments on our preliminary conclusions on the process for identifying best available techniques or on the techniques used to minimise production and disposal of radioactive waste?

Waste production by MSRs is tiny when compared to solid fuelled systems.

Disposal can be reduced to almost zero since all fuel and even spent fuel from storage can be neutron fissioned to lighter elements.

Q5: Do you have any views or comments on our preliminary conclusions on the management and disposal of solid radioactive waste and spent fuel?

Low burn up proportion of solid fuels is in stark contrast to nearly complete burn up for MSR designs. Waste disposal is transformed to waste consumption by MSRs.

GDA-UKHPR1000-029

Consultation response	GDA-UKHPR1000-029
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZS8D-9
Response received from:	An individual

Response:

Q1: Do you have any views or comments on our preliminary conclusions on management systems?

I see nothing about penatlties for failure to abide by the rules.

If the people involved are not subject to personal penalties for their failures, you can expect very serious problems when they make bad decisions about which they know they will not seriously be held to account.

You have already identified shortcomings, and already you have set a precedent.

Already, nobody has paid for them.

This isn't a fairground ride. Get tough.

GDA-UKHPR1000-030

Consultation response	GDA-UKHPR1000-030
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZS8A-6
Response received from:	An individual

Response:

Q2: Do you have any views or comments on our preliminary conclusions on strategic considerations for radioactive waste management?

There is no clear means of dealing with radioactive waste. This is a fatal flaw.

The cost of the electricity is double that of truly clean alternatives. This is without a properly costed means of dealing with the waste. This is a fatal flaw.

Q3: Do you have any views or comments on our preliminary conclusions on the process for identifying best available techniques or on the techniques used to minimise production and disposal of radioactive waste?

The best available techniques for dealing with waste are simply inadequate. This is a fatal flaw.

Q4: Do you have any views or comments on our preliminary conclusions on minimising the discharges and impact of gaseous and liquid waste, and our proposed limits and levels?

The best available techniques for dealing with waste are simply inadequate. This is a fatal flaw.

Q5: Do you have any views or comments on our preliminary conclusions on the management and disposal of solid radioactive waste and spent fuel?

The best available techniques for dealing with waste are simply inadequate. This is a fatal flaw.

Q6: Do you have any views or comments on our preliminary conclusions on monitoring discharges and disposals of radioactive waste?

The best available techniques for dealing with waste are simply inadequate. This is a fatal flaw.

Q7: Do you have any views or comments on our preliminary conclusions on the impact of discharges of radioactive waste?

The best available techniques for dealing with waste are simply inadequate. This is a fatal flaw.

Q8: Do you have any views or comments on our preliminary overall conclusion on radioactive substances permitting?

The best available techniques for dealing with waste are simply inadequate. This is a fatal flaw.

Q9: Do you have any views or comments on our preliminary conclusions on water abstraction?

The best available techniques for dealing with waste are simply inadequate. This is a fatal flaw.

Q10: Do you have any views or comments on our preliminary conclusions on discharges to surface waters and groundwater?

The best available techniques for dealing with waste are simply inadequate. This is a fatal flaw.

Q11: Do you have any views or comments on our preliminary conclusions on the operation of installations?

The best available techniques for dealing with waste are simply inadequate. This is a fatal flaw.

Q12: Do you have any views or comments on our preliminary conclusions on the control of major accident hazards?

The best available techniques for dealing with waste are simply inadequate. This is a fatal flaw.

Q13: Do you have any views or comments on our preliminary conclusions on the measures to prevent and minimise leakage of fluorinated greenhouse gases and ozone-depleting substances?

The best available techniques for dealing with waste are simply inadequate. This is a fatal flaw.

Q14: Do you have any views or comments on our preliminary overall conclusion on the acceptability of the design?

The best available techniques for dealing with waste are simply inadequate. This is a fatal flaw.

Q15: Do you have any overall views or comments to make on our assessment, not covered by the previous questions?

The case for nuclear power simply does not stack up on economic or environmental grounds. To represent that is does is simply wrong.

GDA-UKHPR1000-031

Consultation response	GDA-UKHPR1000-031
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZSNY-M
Response received from:	An individual

Response:

Q1: Do you have any views or comments on our preliminary conclusions on management systems?

Having had experience in both water-cooled and AGR power stations, I have been struck by how much safety can be built-in in the MAGNOX or AGR designs but needs to be by additional systems in water reactors such as Sizewell B.

Has inherent safety been fully explored?

Q2: Do you have any views or comments on our preliminary conclusions on strategic considerations for radioactive waste management?

No - RWM is mainly a political issue, I worked for NIREX for a few years and am satisfied that the technical aspects are fully addressed

Q3: Do you have any views or comments on our preliminary conclusions on the process for identifying best available techniques or on the techniques used to minimise production and disposal of radioactive waste?

Again both are more political than technical. The technical issues are well understood

Q4: Do you have any views or comments on our preliminary conclusions on minimising the discharges and impact of gaseous and liquid waste, and our proposed limits and levels?

I believe that discharges should be solid or solidified where possible but otherwises no comment

Q5: Do you have any views or comments on our preliminary conclusions on the management and disposal of solid radioactive waste and spent fuel?

No

Q6: Do you have any views or comments on our preliminary conclusions on monitoring discharges and disposals of radioactive waste?

No

Q7: Do you have any views or comments on our preliminary conclusions on the impact of discharges of radioactive waste?

None except keep the politicians at arm's length!

Q8: Do you have any views or comments on our preliminary overall conclusion on radioactive substances permitting?

No

Q9: Do you have any views or comments on our preliminary conclusions on water abstraction?

Not qualified to judge

Q10: Do you have any views or comments on our preliminary conclusions on discharges to surface waters and groundwater?

Seem OK but I'm not qualified to judge

Q11: Do you have any views or comments on our preliminary conclusions on the operation of installations?

No

Q12: Do you have any views or comments on our preliminary conclusions on the control of major accident hazards?

Seem to fit my understanding. I firmly believe that inherent safety is far superior to complicated control systems - after 50 years as a control engineer I still get surprises from computer controls!

Q13: Do you have any views or comments on our preliminary conclusions on the measures to prevent and minimise leakage of fluorinated greenhouse gases and ozone-depleting substances?

Not qualified to judge

Q14: Do you have any views or comments on our preliminary overall conclusion on the acceptability of the design?

No

Q15: Do you have any overall views or comments to make on our assessment, not covered by the previous questions?

I believe that the responses should be public, I don't trust complicated engineered solutions, the design should aim for inherent safety

GDA-UKHPR1000-032

Consultation response	GDA-UKHPR1000-032
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZSNP-B
Response received from:	An individual

Response:

Q1: Do you have any views or comments on our preliminary conclusions on management systems?

The conclusions are satisfactory given the limited scope of the document. What is not given is any help to the public in general and the local community in particular to understand the timescales involved and how the environmental risks are likely to change over that time. Site construction may last for between 5 and 10 years with light, sound and general air pollution. Operation could be for 40 years with less light, sound and general air pollution but the risk from radioactive discharges in to air and water and various solid radioactive wastes to be packaged stored on site and possibly be transported from site. Decommissioning may take between 10 and 50 years depending on the definition of completed decommissioning. Spent fuel will have to be stored on site for at least 40 +90=130 years and possibly indefinitely. The document does not make it clear how management systems will progress over these timescales.

Q2: Do you have any views or comments on our preliminary conclusions on strategic considerations for radioactive waste management?

In 2013 I commented on the draft of this document. my views have not changed. Geological disposal of HLW such as spent fuel is not going to happen in the UK for the foreseeable future. After a further 7 years we are no closer to identifying a site for geological disposal of HLW and spent fuel. The reality is that there will be no disposal of HLW and spent fuel in the lifetime of anyone involved in the construction of this new power station. It must be assumed that spent fuel will be stored on site indefinitely or that there are detailed plans in place to move spent fuel to a designated storage site after a given time from discharge from the reactor. The timescales involved are around 90 years from the end of reactor operation or much longer.

There was no discussion of the implications of very long storage of spent fuel on site at the Sizewell B Public Inquiry. This failure should not be repeated.

Q3: Do you have any views or comments on our preliminary conclusions on the process for identifying best available techniques or on the techniques used to minimise production and disposal of radioactive waste?

They are all based on a wealth of experience. What I would liked liked to see is a clear commitment to manage all radioactive waste through the whole process , not finish with 'removed from site'.

Q4: Do you have any views or comments on our preliminary conclusions on minimising the discharges and impact of gaseous and liquid waste, and our proposed limits and levels?

No

Q5: Do you have any views or comments on our preliminary conclusions on the management and disposal of solid radioactive waste and spent fuel?

Disposal of HLW and spent fuel will not happen in the foreseeable future. (see comment section 2. The management systems must assume that spent fuel will be stored on site indefinitely or that there are detailed plans in place to move spent fuel to a designated storage site after a given time from discharge from the reactor.

Q6: Do you have any views or comments on our preliminary conclusions on monitoring discharges and disposals of radioactive waste?

No

Q7: Do you have any views or comments on our preliminary conclusions on the impact of discharges of radioactive waste?

No

Q8: Do you have any views or comments on our preliminary overall conclusion on radioactive substances permitting?

It should be made clear how permitting may change over the lifetime of the site that is over several 100 years.

Q9: Do you have any views or comments on our preliminary conclusions on water abstraction?

No

Q10: Do you have any views or comments on our preliminary conclusions on discharges to surface waters and groundwater?

No

Q11: Do you have any views or comments on our preliminary conclusions on the operation of installations?

Only that this must include the operation of long term spent fuel storage on site.

Q12: Do you have any views or comments on our preliminary conclusions on the control of major accident hazards?

No

Q13: Do you have any views or comments on our preliminary conclusions on the measures to prevent and minimise leakage of fluorinated greenhouse gases and ozone-depleting substances?

No

Q14: Do you have any views or comments on our preliminary overall conclusion on the acceptability of the design?

No

Q15: Do you have any overall views or comments to make on our assessment, not covered by the previous questions?

No

GDA-UKHPR1000-033

Consultation response	GDA-UKHPR1000-033
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZSND-Y
Response received from:	An individual

Response:

Q3: Do you have any views or comments on our preliminary conclusions on the process for identifying best available techniques or on the techniques used to minimise production and disposal of radioactive waste?

The liquid Treatment processes shown are used since decades. To send e.g. process drains through mineralizers or floor drains through filters to discharge tanks in my opinion is not BAT.

Both liquids contain BOTH suspended and dissolved radioactivity which will pass through either the demineralizers or the filters. In both cases the total discharge to the environment is higher than needed and therefore not BAT.

Also it appears that in the diagram "liquid effluent streams and LRWMS" the Monitoring tanks and the liquid waste storage tanks are incorrectly placed.

GDA-UKHPR1000-034

Consultation response	GDA-UKHPR1000-034
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZSNG-2
Response received from:	An individual

Response:

Q1: Do you have any views or comments on our preliminary conclusions on management systems?

Yes the fact that this is very complicated to understand and read. Basically I live on this beautiful part of the peninsula and we don’t want the monstrosity of a nuclear power station affecting our views from our homes and everyday lives.

Q2: Do you have any views or comments on our preliminary conclusions on strategic considerations for radioactive waste management?

Why produce waste that takes years and years to dispose of. Build wind turbines. Make electric from tidal currents.

Q3: Do you have any views or comments on our preliminary conclusions on the process for identifying best available techniques or on the techniques used to minimise production and disposal of radioactive waste?

Yes don't make it on the first place.

Q5: Do you have any views or comments on our preliminary conclusions on the management and disposal of solid radioactive waste and spent fuel?

Why are you even considering building a nuclear reactor with a Chinese company!!!

Q14: Do you have any views or comments on our preliminary overall conclusion on the acceptability of the design?

Please come to Mersea and stand on our beaches and ask if this is the place to build a huge nuclear white elephant. It doesn't face the sea where no one looks at it. It looks across to a small fishing village which relies on tourism in the summer months. We're called the jewel in the crown of Essex. People come for miles to visit here and when they get here for the next 10/15 years all they'll see is cranes and building work , destroying the local environment and wildlife. It's devastating !!! Please don't allow it.

GDA-UKHPR1000-035

Consultation response	GDA-UKHPR1000-035
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZSSV-P
Response received from:	An individual

Response:

Q3: Do you have any views or comments on our preliminary conclusions on the process for identifying best available techniques or on the techniques used to minimise production and disposal of radioactive waste?

RE: Preliminary detailed assessment of best available techniques (BAT) for General Nuclear System Limited's UK HPR1000 design - AR03, dated 11 January 2021, and related public comments ANON-1XYX-8WSA-W, dated 27th May 2020, and ANON-1XYX-8WSD-Z, dated 18th July 2020.

These two comments identified the need for scrutiny of GNSL's UK HPR1000 steam generator tube material selection decision, in terms of the impact on radiation levels and radiological protection.

However, in summarising ANON-1XYX-8WSA-W, the EA report does not acknowledge the issue of nickel corrosion product activation, as a source term for cobalt radioisotopes.

The EA report also neglects to reference ANON-1XYX-8WSD-Z, which highlighted the relevance of quantitative radiological evidence from across industry OPEX in the determination of what constitutes BAT.

The EA report states: "GNSL responded [to ANON-1XYX-8WSA-W] by summarising the analysis of steam generator tube material and the material selection optioneering process, which we have included in our assessment and consider to be suitably demonstrated."

Yet, in point of fact, no comparative quantitative evidence, from predictive analysis or OPEX, was forthcoming in either reply received from GNSL.

Therefore, what quantitative radiological evidence did the EA consider in its preliminary detailed assessment to be able to conclude that the selection and operation with high nickel content Alloy 690 tubing constitutes best available technology, as compared to a low nickel content stainless steel?

There is no such evidence in Appendix 3, as part of the assessment of Claim 1 ('prevent and minimise the creation of radioactive waste and spent fuel') under Argument 1f ('minimise corrosion products generation and activation of structure and component through material selection').

The EA concludes that it... "will expect a future operator to demonstrate that it has selected and procured appropriate materials... at the detailed design stage."

This is a regulatory paradox, which 'salami slices' the product lifecycle: it 'kicks the can down the road' to a point when material change might be argued as economically impracticable for a future operator; while absolving the present designer of their responsibility to demonstrate, with evidence, that the impact on radioactivity levels during normal operations will be minimised 'So Far As Is Reasonably Practicable' (SFAIRP).

For these reasons, the EA stance is not defensible in the pre-construction assessment of a 'new' nuclear power station design.

GDA-UKHPR1000-036

Consultation response	GDA-UKHPR1000-036
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZSSY-S
Response received from:	An individual

Response:

Q1: Do you have any views or comments on our preliminary conclusions on management systems?

The Chinese have demonstrated repeatedly throughout the Covid crisis that they will only respond to enquiries in a manner which will suit their purposes, with the truth taking a secondary position. Examples would be the lack of transparency relating to the WHO review at Wutan, their response to the world relating to human rights abuse and persecution of minorities plus their suppression of democracy and free speech in Hong Kong, eg, banning the BBC. In short, they are not to be trusted and we cannot therefore rely upon their technical assurances about either the safety of their design or their ability to unilaterally control it once installed.

In my opinion a nuclear component to the UK energy portfolio is a necessary evil but given it's risks it should only be procured from long term allies or self designed and installed.

Q2: Do you have any views or comments on our preliminary conclusions on strategic considerations for radioactive waste management?

The Chinese have demonstrated repeatedly throughout the Covid crisis that they will only respond to enquiries in a manner which will suit their purposes, with the truth taking a secondary position. Examples would be the lack of transparency relating to the WHO review at Wutan, their response to the world relating to human rights abuse and persecution of minorities plus their suppression of democracy and free speech in Hong Kong, eg, banning the BBC. In short, they are not to be trusted and we cannot therefore rely upon their technical assurances about either the safety of their design including waste production and management or their ability to unilaterally control it once installed.

In my opinion a nuclear component to the UK energy portfolio is a necessary evil but given it's risks it should only be procured from long term allies or self designed and installed.

Q3: Do you have any views or comments on our preliminary conclusions on the process for identifying best available techniques or on the techniques used to minimise production and disposal of radioactive waste?

The Chinese have demonstrated repeatedly throughout the Covid crisis that they will only respond to enquiries in a manner which will suit their purposes, with the truth taking a secondary position. Examples would be the lack of transparency relating to the WHO review at Wutan, their response to the world relating to human rights abuse and persecution of minorities plus their suppression of democracy and free speech in Hong Kong, eg, banning the BBC. In short, they are not to be trusted and we cannot therefore rely upon their technical assurances about either the safety of their design including waste production and management or their ability to unilaterally control it once installed.

In my opinion a nuclear component to the UK energy portfolio is a necessary evil but given it's risks it should only be procured from long term allies or self designed and installed.

Q4: Do you have any views or comments on our preliminary conclusions on minimising the discharges and impact of gaseous and liquid waste, and our proposed limits and levels?

The Chinese have demonstrated repeatedly throughout the Covid crisis that they will only respond to enquiries in a manner which will suit their purposes, with the truth taking a secondary position. Examples would be the lack of transparency relating to the WHO review at Wutan, their response to the world relating to human rights abuse and persecution of minorities plus their suppression of democracy and free speech in Hong Kong, eg, banning the BBC. In short, they are not to be trusted and we cannot therefore rely upon their technical assurances about either the safety of their design including waste production and management or their ability to unilaterally control it once installed.

In my opinion a nuclear component to the UK energy portfolio is a necessary evil but given it's risks it should only be procured from long term allies or self designed and installed.

Q5: Do you have any views or comments on our preliminary conclusions on the management and disposal of solid radioactive waste and spent fuel?

The Chinese have demonstrated repeatedly throughout the Covid crisis that they will only respond to enquiries in a manner which will suit their purposes, with the truth taking a secondary position. Examples would be the lack of transparency relating to the WHO review at Wutan, their response to the world relating to human rights abuse and persecution of minorities plus their suppression of democracy and free speech in Hong Kong, eg, banning the BBC. In short, they are not to be trusted and we cannot therefore rely upon their technical assurances about either the safety of their design including waste production and management or their ability to unilaterally control it once installed.

In my opinion a nuclear component to the UK energy portfolio is a necessary evil but given it's risks it should only be procured from long term allies or self designed and installed.

Q6: Do you have any views or comments on our preliminary conclusions on monitoring discharges and disposals of radioactive waste?

The Chinese have demonstrated repeatedly throughout the Covid crisis that they will only respond to enquiries in a manner which will suit their purposes, with the truth taking a secondary position. Examples would be the lack of transparency relating to the WHO review at Wutan, their response to the world relating to human rights abuse and persecution of minorities plus their suppression of democracy and free speech in Hong Kong, eg, banning the BBC. In short, they are not to be trusted and we cannot therefore rely upon their technical assurances about either the safety of their design including waste production and management or their ability to unilaterally control it once installed.

In my opinion a nuclear component to the UK energy portfolio is a necessary evil but given it's risks it should only be procured from long term allies or self designed and installed.

Q7: Do you have any views or comments on our preliminary conclusions on the impact of discharges of radioactive waste?

The Chinese have demonstrated repeatedly throughout the Covid crisis that they will only respond to enquiries in a manner which will suit their purposes, with the truth taking a secondary position. Examples would be the lack of transparency relating to the WHO

review at Wutan, their response to the world relating to human rights abuse and persecution of minorities plus their suppression of democracy and free speech in Hong Kong, eg, banning the BBC. In short, they are not to be trusted and we cannot therefore rely upon their technical assurances about either the safety of their design including waste production and management or their ability to unilaterally control it once installed.

In my opinion a nuclear component to the UK energy portfolio is a necessary evil but given it's risks it should only be procured from long term allies or self designed and installed.

Q8: Do you have any views or comments on our preliminary overall conclusion on radioactive substances permitting?

The Chinese have demonstrated repeatedly throughout the Covid crisis that they will only respond to enquiries in a manner which will suit their purposes, with the truth taking a secondary position. Examples would be the lack of transparency relating to the WHO review at Wutan, their response to the world relating to human rights abuse and persecution of minorities plus their suppression of democracy and free speech in Hong Kong, eg, banning the BBC. In short, they are not to be trusted and we cannot therefore rely upon their technical assurances about either the safety of their design including waste production and management or their ability to unilaterally control it once installed.

In my opinion a nuclear component to the UK energy portfolio is a necessary evil but given it's risks it should only be procured from long term allies or self designed and installed.

Q9: Do you have any views or comments on our preliminary conclusions on water abstraction?

The Chinese have demonstrated repeatedly throughout the Covid crisis that they will only respond to enquiries in a manner which will suit their purposes, with the truth taking a secondary position. Examples would be the lack of transparency relating to the WHO review at Wutan, their response to the world relating to human rights abuse and persecution of minorities plus their suppression of democracy and free speech in Hong Kong, eg, banning the BBC. In short, they are not to be trusted and we cannot therefore rely upon their technical assurances about either the safety of their design including waste production and management or their ability to unilaterally control it once installed.

In my opinion a nuclear component to the UK energy portfolio is a necessary evil but given it's risks it should only be procured from long term allies or self designed and installed.

Q10: Do you have any views or comments on our preliminary conclusions on discharges to surface waters and groundwater?

The Chinese have demonstrated repeatedly throughout the Covid crisis that they will only respond to enquiries in a manner which will suit their purposes, with the truth taking a secondary position. Examples would be the lack of transparency relating to the WHO review at Wutan, their response to the world relating to human rights abuse and persecution of minorities plus their suppression of democracy and free speech in Hong Kong, eg, banning the BBC. In short, they are not to be trusted and we cannot therefore

rely upon their technical assurances about either the safety of their design including waste production and management or their ability to unilaterally control it once installed.

In my opinion a nuclear component to the UK energy portfolio is a necessary evil but given it's risks it should only be procured from long term allies or self designed and installed.

Q11: Do you have any views or comments on our preliminary conclusions on the operation of installations?

The Chinese have demonstrated repeatedly throughout the Covid crisis that they will only respond to enquiries in a manner which will suit their purposes, with the truth taking a secondary position. Examples would be the lack of transparency relating to the WHO review at Wutan, their response to the world relating to human rights abuse and persecution of minorities plus their suppression of democracy and free speech in Hong Kong, eg, banning the BBC. In short, they are not to be trusted and we cannot therefore rely upon their technical assurances about either the safety of their design including waste production and management or their ability to unilaterally control it once installed.

In my opinion a nuclear component to the UK energy portfolio is a necessary evil but given it's risks it should only be procured from long term allies or self designed and installed.

Q12: Do you have any views or comments on our preliminary conclusions on the control of major accident hazards?

Note that the Bradwell site is c50 miles from London and probably has c50% of the UK population within a 150 mile radius.

The Chinese have demonstrated repeatedly throughout the Covid crisis that they will only respond to enquiries in a manner which will suit their purposes, with the truth taking a secondary position. Examples would be the lack of transparency relating to the WHO review at Wutan, their response to the world relating to human rights abuse and persecution of minorities plus their suppression of democracy and free speech in Hong Kong, eg, banning the BBC. In short, they are not to be trusted and we cannot therefore rely upon their technical assurances about either the safety of their design including waste production and management or their ability to unilaterally control it once installed.

In my opinion a nuclear component to the UK energy portfolio is a necessary evil but given it's risks it should only be procured from long term allies or self designed and installed.

Q13: Do you have any views or comments on our preliminary conclusions on the measures to prevent and minimise leakage of fluorinated greenhouse gases and ozone-depleting substances?

Note that the Bradwell site is c50 miles from London and probably has c50% of the UK population within a 150 mile radius.

The Chinese have demonstrated repeatedly throughout the Covid crisis that they will only respond to enquiries in a manner which will suit their purposes, with the truth taking a

secondary position. Examples would be the lack of transparency relating to the WHO review at Wutan, their response to the world relating to human rights abuse and persecution of minorities plus their suppression of democracy and free speech in Hong Kong, eg, banning the BBC. In short, they are not to be trusted and we cannot therefore rely upon their technical assurances about either the safety of their design including waste production and management or their ability to unilaterally control it once installed.

In my opinion a nuclear component to the UK energy portfolio is a necessary evil but given it's risks it should only be procured from long term allies or self designed and installed.

Q14: Do you have any views or comments on our preliminary overall conclusion on the acceptability of the design?

Note that the Bradwell site is c50 miles from London and probably has c50% of the UK population within a 150 mile radius.

The Chinese have demonstrated repeatedly throughout the Covid crisis that they will only respond to enquiries in a manner which will suit their purposes, with the truth taking a secondary position. Examples would be the lack of transparency relating to the WHO review at Wutan, their response to the world relating to human rights abuse and persecution of minorities plus their suppression of democracy and free speech in Hong Kong, eg, banning the BBC. In short, they are not to be trusted and we cannot therefore rely upon their technical assurances about either the safety of their design including waste production and management or their ability to unilaterally control it once installed.

In my opinion a nuclear component to the UK energy portfolio is a necessary evil but given it's risks it should only be procured from long term allies or self designed and installed.

Q15: Do you have any overall views or comments to make on our assessment, not covered by the previous questions?

The sheer scale of the Bradwell proposal may not be entirely relevant to this enquiry but it makes the proposal entirely unsupportable on landscape, environmental and safety grounds. This is profoundly disappointing as a smaller scale reactor of similar size to the existing Magnox plant would in all probability have been acceptable to the majority living in it's vicinity, including myself.

Otherwise my general comment still stands; the Chinese have demonstrated that they are not to be trusted and therefore disqualify themselves from consideration on technical or any other ground from designing and building a nuclear power plant 50 miles from London. Please start again with a plant of similar scale to the existing either UK designed and built or provided in a consortium with one of our long term partners in the EU or USA.

The existing proposal is fundamentally flawed and should be immediately discounted from any further consideration.

GDA-UKHPR1000-037

Consultation response	GDA-UKHPR1000-037
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZSS6-P
Response received from:	An individual

Response:

This respondent requested that their response should not be published.

GDA-UKHPR1000-038

Consultation response	GDA-UKHPR1000-038
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZSSE-5
Response received from:	An individual

Response:

Q2: Do you have any views or comments on our preliminary conclusions on strategic considerations for radioactive waste management?

I do not believe the current management of radioactive waste is appropriate for the long half-life of the radioactive materials. The UK Government has still not aaranged a suitable long-term solution for the management of radioactive waste mterials from any nuclear power plants, let alone a new one. This should be resolved far more urgently and with commitments that the government will follow the advice of its GDF Working Group before any new nuclear plants are approved.

Q10: Do you have any views or comments on our preliminary conclusions on discharges to surface waters and groundwater?

Due to the coastal location of the Bradwell site, I expect measures to be taken to ensure that the power plant is resistant to the coastal flooding and sea levels predicated by current climate change models, especially in the wake of the 2011 Fukushima nuclear power plant disaster.

Q15: Do you have any overall views or comments to make on our assessment, not covered by the previous questions?

Overall, I support the power plant as a boost to the local economy and nuclear energy's essential role in meeting the UK's commitments to net-zero carbon emissions by 2050.

Nuclear energy's relative safeness compared to fossil fuel alternatives cannot be stressed enough, however ironic when compared to its public perception.

Nevertheless, any new nuclear plant should only be approved in a sustainale manner, with a focus on the viability of long-term radioactive waste management and long-term environmental hazards caused by climate change. Moreover, this design must only be implemented in a way that acheives net-zero carbon emissions during its construction, at the very least to legitimise its use over alternative renewable sources of energy.

GDA-UKHPR1000-039

Consultation response	GDA-UKHPR1000-039
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZSSD-4
Response received from:	An individual

Response:

Q1: Do you have any views or comments on our preliminary conclusions on management systems?

No

Q2: Do you have any views or comments on our preliminary conclusions on strategic considerations for radioactive waste management?

The waste is due to be stored in a building which is actually nearer the village than other less controversial buildings. This causes great concern.

Q3: Do you have any views or comments on our preliminary conclusions on the process for identifying best available techniques or on the techniques used to minimise production and disposal of radioactive waste?

No

Q4: Do you have any views or comments on our preliminary conclusions on minimising the discharges and impact of gaseous and liquid waste, and our proposed limits and levels?

The proximity to a VERY rural village means that any gaseous or liquid waste is a serious consideration. Recently, the whole village could not use sanitary facilities for 15 days due to high water levels and inadequate waste water/sewage pumping facilities.

The air in this area is very clean, shown by the amount of lichen on roof tiles hereabouts. Any gaseous wastes would be completely destructive to this clean air.

Q5: Do you have any views or comments on our preliminary conclusions on the management and disposal of solid radioactive waste and spent fuel?

The waste is due to be stored in a building which is actually nearer the village than other less controversial buildings. This causes great concern.

Q6: Do you have any views or comments on our preliminary conclusions on monitoring discharges and disposals of radioactive waste?

There should be no discharge or disposal of radioactive waste in this area. The high quality ecological status of the area would preclude this.

Q7: Do you have any views or comments on our preliminary conclusions on the impact of discharges of radioactive waste?

There should be no discharge or disposal of radioactive waste in this area. The high quality ecological status of the area would preclude this.

Q8: Do you have any views or comments on our preliminary overall conclusion on radioactive substances permitting?

No - I am not an expert and cannot comment.

Q9: Do you have any views or comments on our preliminary conclusions on water abstraction?

The only water you could abstract would be from the River Blackwater. This is a Marine Protected Zone and is not available to suck vast amounts of water (and marine life) for this purpose.

The area has only just begun to recover following the closure of Bradwell A.

Q10: Do you have any views or comments on our preliminary conclusions on discharges to surface waters and groundwater?

Should not be allowed. This is basically marshland we are talking about, and should not be disturbed with discharges of any sort from this proposed facility.

Q11: Do you have any views or comments on our preliminary conclusions on the operation of installations?

The developers are proposing to employ large numbers of staff (particularly at the construction stage). The local infrastructure would not be able to cope with this.

Q12: Do you have any views or comments on our preliminary conclusions on the control of major accident hazards?

The facility is a Chinese design reactor and facilities. Not one of these has been put into operation as yet, so it is difficult to comment on this. The main point I have on this is the

remoteness of the area, the narrow country lanes, the lack of emergency services in the area. Disaster waiting to happen is the phrase that springs to mind.

Q13: Do you have any views or comments on our preliminary conclusions on the measures to prevent and minimise leakage of fluorinated greenhouse gases and ozone-depleting substances?

I cannot comment in a professional way, but from a personal point of view, why would there be greenhouse gases and ozone-depleting substances ? After all, the developers keep telling us how "Green" it is going to be...

Q14: Do you have any views or comments on our preliminary overall conclusion on the acceptability of the design?

Such a massive, ugly, concrete industrial structure in a quiet, rural location. WHY ???

Q15: Do you have any overall views or comments to make on our assessment, not covered by the previous questions?

No - I am so angry at even the suggestion of siting this station in this location.

GDA-UKHPR1000-040

Consultation response	GDA-UKHPR1000-040
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZSSB-2
Response received from:	An individual

Response:

Q1: Do you have any views or comments on our preliminary conclusions on management systems?

Yes. To not do nuclear.

Q2: Do you have any views or comments on our preliminary conclusions on strategic considerations for radioactive waste management?

Yes, please do not do this. This is minimising a risk, but if you don't do nuclear, then there is no risk from the nuclear. Please invest in renewables instead

Q3: Do you have any views or comments on our preliminary conclusions on the process for identifying best available techniques or on the techniques used to minimise production and disposal of radioactive waste?

Yes, please do not do this. This is minimising a risk, but if you don't do nuclear, then there is no risk from the nuclear. Please invest in renewables instead

Q4: Do you have any views or comments on our preliminary conclusions on minimising the discharges and impact of gaseous and liquid waste, and our proposed limits and levels?

Yes, please do not do this. This is minimising a risk, but if you don't do nuclear, then there is no risk from the nuclear. Please invest in renewables instead

Q5: Do you have any views or comments on our preliminary conclusions on the management and disposal of solid radioactive waste and spent fuel?

Yes, please do not do this. This is minimising a risk, but if you don't do nuclear, then there is no risk from the nuclear. Please invest in renewables instead

Q6: Do you have any views or comments on our preliminary conclusions on monitoring discharges and disposals of radioactive waste?

No risk is better than less risk

Q7: Do you have any views or comments on our preliminary conclusions on the impact of discharges of radioactive waste?

Yes, lacking.

Q8: Do you have any views or comments on our preliminary overall conclusion on radioactive substances permitting?

Not enough

Q9: Do you have any views or comments on our preliminary conclusions on water abstraction?

It's not sufficient

Q10: Do you have any views or comments on our preliminary conclusions on discharges to surface waters and groundwater?

Not good enough

Q11: Do you have any views or comments on our preliminary conclusions on the operation of installations?

Yes, please do not do this. This is minimising a risk, but if you don't do nuclear, then there is no risk from the nuclear. Please invest in renewables instead

Q12: Do you have any views or comments on our preliminary conclusions on the control of major accident hazards?

It's great that you have thought of this, but it's still to high a risk, there are other answers.

Q13: Do you have any views or comments on our preliminary conclusions on the measures to prevent and minimise leakage of fluorinated greenhouse gases and ozone-depleting substances?

Just don't use them in the first place

Q14: Do you have any views or comments on our preliminary overall conclusion on the acceptability of the design?

Yes, it's unacceptable to put profit before people and the planet in this day and age. Stop the project/ I would love nuclear to be the answer but it is not

Q15: Do you have any overall views or comments to make on our assessment, not covered by the previous questions?

I object to the whole project

GDA-UKHPR1000-041

Consultation response	GDA-UKHPR1000-041
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZSSU-N
Response received from:	An individual

Response:

Q2: Do you have any views or comments on our preliminary conclusions on strategic considerations for radioactive waste management?

I believe the generation of nuclear waste is immoral as there is no safe proven technology for the long term disposal. This was pointed out by the Flowers report 1976.

The EPR high burn up spent fuel storage question is unresolved.

No GDF has been identified.

Q3: Do you have any views or comments on our preliminary conclusions on the process for identifying best available techniques or on the techniques used to minimise production and disposal of radioactive waste?

BAT should not include diesel generators due to emissions.

Q4: Do you have any views or comments on our preliminary conclusions on minimising the discharges and impact of gaseous and liquid waste, and our proposed limits and levels?

I do not believe there is any " justification under the ionising regulations" for nuclear when adequate and less harmful technologies exist.

Q5: Do you have any views or comments on our preliminary conclusions on the management and disposal of solid radioactive waste and spent fuel?

I do not believe there is any " justification under the ionising regulations" for nuclear when adequate and less harmful technologies exist.

Q6: Do you have any views or comments on our preliminary conclusions on monitoring discharges and disposals of radioactive waste?

No justification.

Q7: Do you have any views or comments on our preliminary conclusions on the impact of discharges of radioactive waste?

Not justified as potentially harmful to health and environment.

Q8: Do you have any views or comments on our preliminary overall conclusion on radioactive substances permitting?

Not justified as potentially harmful to health and environment.

Q9: Do you have any views or comments on our preliminary conclusions on water abstraction?

In areas of high water stress as EA is fully aware there is no justification for abstraction of water.

Q10: Do you have any views or comments on our preliminary conclusions on discharges to surface waters and groundwater?

Not justified.

Q11: Do you have any views or comments on our preliminary conclusions on the operation of installations?

The location at Bradwell in a high risk flood zone cannot be justified

Q12: Do you have any views or comments on our preliminary conclusions on the control of major accident hazards?

The control system if new to the UK should have a replica set up as done for Sizewell B in order to test all operations.

Emergency planning at this location is impossible up to 30kms OPZ.

Q13: Do you have any views or comments on our preliminary conclusions on the measures to prevent and minimise leakage of fluorinated greenhouse gases and ozone-depleting substances?

Unjustified.

Q14: Do you have any views or comments on our preliminary overall conclusion on the acceptability of the design?

Landscape and ecology impacts cannot be justified. Flood zone 3 location must be ruled out of the extant NPS EN6

GDA-UKHPR1000-042

Consultation response	GDA-UKHPR1000-042
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZSSH-8
Response received from:	An individual

Response:

Q15: Do you have any overall views or comments to make on our assessment, not covered by the previous questions?

Has a study been carried out to assess the whole life carbon issue compared with other sources of energy? Images and statistics from the Hinkley Point development show incredible amounts of concrete being used which must generate massive amounts of greenhouse gasses.

This is obviously a very big issue for our environment.

GDA-UKHPR1000-043

Consultation response	GDA-UKHPR1000-043
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZSSX-R
Response received from:	An organisation: West Mersea Town Council

Response:

Q1: Do you have any views or comments on our preliminary conclusions on management systems?

It is unclear if the organisational capacity and capability is considered ‘adequate’ after investigation by the EA / ONR or just a report from GNSL.

On the design management aspect this is an assurance given by GNSL and, as yet, unverified. This point is too substantial to assume it would be completed during the remainder of the GDA process.

The transfer information to future licensee arrangements are, again, assumed that they will be completed, ‘adequate progress’ is vague.

It is pleasing that the EA is pursuing Assessment Findings and Issues relating to the Safety case management.

Q2: Do you have any views or comments on our preliminary conclusions on strategic considerations for radioactive waste management?

There are too many unknowns here. As radioactive waste management is such an important consequence of nuclear power to use language such as ‘acceptable’ and that GNSL ‘will help to ensure proper protection of people and the environment’ does not engender confidence.

Q3: Do you have any views or comments on our preliminary conclusions on the process for identifying best available techniques or on the techniques used to minimise production and disposal of radioactive waste?

It is deeply concerning that this aspect has caused the EA as many as 2 GDA Issues and 10 Assessment Findings. The repeated use of ‘A future operator’ would mean that the Transfer information to future licensee arrangements referred to in Question 1 are inadequate.

Processing gaseous wastes - very concerning that the EA ‘agrees with GNSL’ that no abatement of tritium or C14 is practicable. With the history of unregulated emissions of tritium then abatement should be mandatory.

Processing liquid wastes - what guarantees are there that LRWMS will be held within limits?

Q4: Do you have any views or comments on our preliminary conclusions on minimising the discharges and impact of gaseous and liquid waste, and our proposed limits and levels?

Initial section - It is unsatisfactory that proposed annual radioactive gaseous discharge limits are not explained in understandable terms, only in Becquerel.

Comparison of UK HPR1000 discharges - use of the word ‘estimated’ when regulating gaseous and liquid radioactive waste is insufficiently robust. There is no UK HPR1000 to compare with and even the non-UK ones being developed will not provide figures yet and, even then, would be derived whilst under different regulatory standards and parameters.

Q5: Do you have any views or comments on our preliminary conclusions on the management and disposal of solid radioactive waste and spent fuel?

Initial section - some concerning language is used, for example: ‘appear to be disposable’. There are clearly still a number of unknowns and unfinished analysis of the waste streams. Additionally it is concerning that there are so many GDA Issues and Assessment findings that are still outstanding in this critical area.

Decommissioning wastes - the assertion that the Reactor pressure vessel decommissioning waste would only be classified as ILW is questionable. What other studies have been carried out to date? HAW is questioned later on the same page 61/169.

Management and disposal of lower level wastes - appalling that Table 9-3 suggests that LLW resins will be packaged and sent off-site for incineration. How can that possibly match the claim that the nuclear life-cycle is low carbon?

Conditioning and packaging - concerning that GNSL’s preferred 210L drum is ‘not an acceptable package for a UK based GDF…’. The following section tries to address that yet still adds in another ‘weak’ point that could allow unplanned escape of radioactivity. Logic dictates that BAT is not being followed whilst there is this incompatibility of storage of ILW between the ISF and GDF.

Interim storage of ILW - The notion that the GDF would either be available or ready introduces another factor of uncertainty. The ONR has predicted that the proposed development dates will simply not be met and likely to slip further.

Spent Fuel - The type of fuel assembly has only been used since 2012, therefore the confidence in the claims that GNSL makes are unverifiable. The claim that a future operator will start to move SFAs to a GDF in 2030 one assumes the reference to ‘GNSL, 2020d’ means a reactor start date of 2020 is not generic. It would be clearer to specify a time duration rather than an unachievable date.

In the document AR05 from p33 RO-UKHPR1000-0041 is requesting more information on disposability and delivery. This capability is not demonstrated in the consultation document.

Q6: Do you have any views or comments on our preliminary conclusions on monitoring discharges and disposals of radioactive waste?

Monitoring gaseous waste - From the documentation it is hard to decipher if the monitor data collected (inc. within the discharge stack) is collected by the EA or just figures supplied by the operator. If the latter then it makes a mockery of regulation. It is also unclear whether the analysis of the different radioactive isotopes will be provided or monitored by regulators.

Monitoring liquid waste - reassurance will be required to know that the EA will monitor discharge line outputs and vicinity.

Q7: Do you have any views or comments on our preliminary conclusions on the impact of discharges of radioactive waste?

Generic site description - Ironic that additional information concerning the Generic site that should have been specified from 2018 still not provided.

Dose assessments - it is concerning that GNSL are having to model better results?

Annual does to individuals - Ironic that in a Generic Design a specific site (ie Bradwell) is indicated.

Comparison with standards - no indication is given how the figures of 20 to 23uSv/y were derived. This section assumes either this would be an isolated, single reactor or sited next to one of an existing fleet. It does not include assessment of site dose from a closed station and associated reactors in Care & Maintenance.

Q8: Do you have any views or comments on our preliminary overall conclusion on radioactive substances permitting?

Due to the extent of unresolved issues and assessments the EA's conclusions are premature

Q9: Do you have any views or comments on our preliminary conclusions on water abstraction?

Cooling water requirements - The temperature difference of 9.7℃ is far higher than the maximum temperature indicated in the Bradwell B Stage One Consultation (BRBS1C) document for DIRECT Cooling. This would be catastrophic to a marine ecosystem in an estuary or shallow river.

The (direct) cooling water requirement (page 10+Z161/169) is quoted at ~198,000m3/hr, again this differs from the figure in the BRBS1C of direct cooling water requirement of ~234,000m3/hr (for a single reactor), an increase (or error) in excess of 18%.

Q10: Do you have any views or comments on our preliminary conclusions on discharges to surface waters and groundwater?

Use of Hydrazine whilst reducing potential discharge amounts also introduces an additional toxicity.

Not enough detail has been provided to assess the damage the radioactive and non-radioactive waste streams would cause referencing the list of substances on page 107/169.

There is insufficient evidence that discharges to groundwater would not be polluting.

Q11: Do you have any views or comments on our preliminary conclusions on the operation of installations?

It is an irony that a nuclear power station, supposedly low carbon, requires the back up of highly carbon intensive, GHG emitting, fossil-fuelled diesel generators. This presents a further risk of contamination both after operation and during decommissioning.

Combustion plant operations - concerning that the modelling for EDGs showed levels exceeding requirements

Q12: Do you have any views or comments on our preliminary conclusions on the control of major accident hazards?

Concerned that whilst the EA considers the UK HPR1000 will not be a COMAH establishment initially, the strategy to monitor a change of status is unclear.

Q13: Do you have any views or comments on our preliminary conclusions on the measures to prevent and minimise leakage of fluorinated greenhouse gases and ozone-depleting substances?

Fluorinated greenhouse gases should be independently monitored and catalogued.

Q14: Do you have any views or comments on our preliminary overall conclusion on the acceptability of the design?

If the iSODA or SODA are ‘valid only for a site meeting the identified generic site characteristics’ then it effectively cannot apply should Bradwell still be considered a ‘potentially suitable site’ when the new NPS finally becomes available.

Q15: Do you have any overall views or comments to make on our assessment, not covered by the previous questions?

Despite the duration of the consultation since January the reality is that the closing days are when consultees and respondents would be finalising their responses. It is therefore grossly unreasonable that it should be closing both during the Easter holiday weekend and at the close of the UK financial year (affecting at least local town and parish councils). It should be borne in mind that Easter is the fulcrum of the religious calendar for Christians.

GDA-UKHPR1000-044

Consultation response	GDA-UKHPR1000-044
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZS51-K
Response received from:	An organisation: Food Standards Agency

Response:

Q1: Do you have any views or comments on our preliminary conclusions on management systems?

We agree with the preliminary conclusions and have no further comments.

Q2: Do you have any views or comments on our preliminary conclusions on strategic considerations for radioactive waste management?

We agree with the preliminary conclusions and have no further comments.

Q3: Do you have any views or comments on our preliminary conclusions on the process for identifying best available techniques or on the techniques used to minimise production and disposal of radioactive waste?

We agree with the preliminary conclusions and have no further comments.

Q4: Do you have any views or comments on our preliminary conclusions on minimising the discharges and impact of gaseous and liquid waste, and our proposed limits and levels?

We agree with the preliminary conclusions and have no further comments.

Q5: Do you have any views or comments on our preliminary conclusions on the management and disposal of solid radioactive waste and spent fuel?

We agree with the preliminary conclusions and have no further comments.

Q6: Do you have any views or comments on our preliminary conclusions on monitoring discharges and disposals of radioactive waste?

We agree with the preliminary conclusions and have no further comments.

Q7: Do you have any views or comments on our preliminary conclusions on the impact of discharges of radioactive waste?

The FSA have reviewed the Pre-Construction Environmental Report and proposed radioactive discharge limits. We have undertaken our own preliminary dose assessments against the proposed radioactive discharge limits and considered the impact on the food chain to inform our response to this consultation. We agree with the EA's preliminary conclusion that the radiation dose to people will be below the UK constraint for any single new source of 300 micro Sieverts per year. As such, there will not be an unacceptable impact on the food chain for sites which meet the generic site characteristics. However, the FSA will consider this in more detail on a site-specific basis in our role of supporting the EA in permitting decisions under the Environmental Permitting Regulations.

Q8: Do you have any views or comments on our preliminary overall conclusion on radioactive substances permitting?

The FSA will support the EA in permitting decisions under the Environmental Permitting Regulations to carry out site specific dose assessments. However, we agree with the EA's preliminary overall conclusion on radioactive substances permitting.

Q9: Do you have any views or comments on our preliminary conclusions on water abstraction?

We agree with the preliminary conclusions and have no further comments.

Q10: Do you have any views or comments on our preliminary conclusions on discharges to surface waters and groundwater?

We agree with the preliminary conclusions and note that there should no intentional discharges to groundwater, and an environmental permit for a groundwater activity will not be required.

Q11: Do you have any views or comments on our preliminary conclusions on the operation of installations?

We agree with the preliminary conclusions and have no further comments.

Q12: Do you have any views or comments on our preliminary conclusions on the control of major accident hazards?

We agree with the preliminary conclusions and note that the UK HPR1000 will not be subject to the COMAH Regulations.

Q13: Do you have any views or comments on our preliminary conclusions on the measures to prevent and minimise leakage of fluorinated greenhouse gases and ozone-depleting substances?

We agree with the preliminary conclusions and have no further comments.

Q14: Do you have any views or comments on our preliminary overall conclusion on the acceptability of the design?

We agree with the preliminary conclusions that a SoDA could be issued if all potential GDA Issues are resolved and no new potential GDA issues arise before the end of detailed assessment.

Q15: Do you have any overall views or comments to make on our assessment, not covered by the previous questions?

We have no further comments.

GDA-UKHPR1000-045

Consultation response	GDA-UKHPR1000-045
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZS5R-M
Response received from:	An organisation: Colchester Borough Council

Response:

Q2: Do you have any views or comments on our preliminary conclusions on strategic considerations for radioactive waste management?

CBC welcomes the expectation that decommissioning of the plant is to be considered at the design stage. However, CBC considers that this should be a requirement rather than an expectation and that the impacts on people and the environment are minimised.

Q15: Do you have any overall views or comments to make on our assessment, not covered by the previous questions?

Thank you for consulting Colchester Borough Council (CBC) on the GDA HPR1000 consultation. CBC is a key stakeholder in proposals for Bradwell B. We are a neighbouring authority and Mersea Island, within the borough, is located across the water from Bradwell-on-Sea. Development of a new nuclear power station will affect the borough.

CBC has set a policy of objecting to new nuclear at Bradwell due to the local environmental impacts and prefers a focus on renewable energy alternatives.

CBC were disappointed that the consultation plan did not include specific details of consultation events, particularly as it was published just three weeks before the consultation commenced. It would have been useful to plan attendance and share information about consultation events with our residents.

CBC agrees with BANNG that very little is conveyed on what the consultation is about and its purpose. We agree with BANNG that indicating those areas where views would be especially helpful would be useful to those wanting to engage in the consultation. Whilst the consultation does include a summary document it is over 600 pages long and made up of numerous, complex and technical documents. CBC believes that local communities, both groups and individuals, would be more likely to respond to the consultation if they were directed to particular areas where their views would be especially helpful.

The views of experts in the field of nuclear energy will be important and should be fully taken into account by the Environment Agency.

CBC, would however like to make the following comments.

Whilst we are advised that this is a Generic Consultation, the consultation and targets refer to Bradwell. How will the Council be reassured that if approved, GDA HPR1000 at the generic site has the parameters suitable for specific sites i.e., Bradwell?

The GDA HPR1000 is not currently operating in the UK, and therefore the radioactive discharges predicted in the technical documentation, are based on other operating sites. We would like to see some more certainty in the figures provided including a reduction in headroom.

Nationally, the Environment Agency has responsible for flooding, however for Nuclear Power, this is considered by the ONR. We would like the changes associated with climate change, and the environmental risk associated with flooding to be fully considered throughout the process, to ensure that the site can be properly protected.

CBC believes that a Health Impact Assessment and Social Impact Assessment should be prepared to assess the impacts on communities and wellbeing.

GDA-UKHPR1000-046

Consultation response	GDA-UKHPR1000-046
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZS5Z-V
Response received from:	An organisation: Blackwater Against New Nuclear Group

Response:

Q1: Do you have any views or comments on our preliminary conclusions on management systems?

Please note I shall be sending in a full consultation response separately.

GDA-UKHPR1000-047

Consultation response	GDA-UKHPR1000-047
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZS5C-5
Response received from:	An organisation: Bradwell B Action Network (BAN)

Response:

Q1: Do you have any views or comments on our preliminary conclusions on management systems?

Without seen examples of the evidence collected or the number of documents and references to the same, it is somewhat difficult to ascertain exactly what you looked at and comment on it. That said, from the comments you do provide, a robust management system and understanding of what that looks like does not seem to be present. Particularly concerning is the design change management process, corrective actions (i.e. on assessment findings), closeouts etc, there is no mention of responsibilities in terms of

whether the system is robust in notifying responsible persons of action needed to be taken, on what and when, or any system for notifying of and escalating when actions are overdue. One would expect, on a project of this scale and cost to have some form of a robust electronic system for capturing the above and sending a notification, escalating when overdue, and providing both a top-level and detailed overview of the status of the overall management system and its various elements, however, there is no mention of such. There is also a lack of comment n respect to overall responsibilities, how these are documented and enforced. As a qualified lead auditor for both ISO9001 and ISO14001, I found the consultation documentation less than helpful in providing any evidence of robust systems or indeed any confidence that such is either in place or being worked upon. I am left feeling rather concerned that the management system is made up of add hock arrangements, is poorly thought out, is not clearly defined and fails to meet the standards one would expect for such a high-risk project.

I found the statement that the management systems are broadly equivalent to (ISO14000 and 14001 standards) rather ambiguous in light of the importance of excellent management systems that such a high-risk project should necessitate. Surely one would expect the management system to at least meet the exact requirements of these standards and anything less for such a potentially catastrophic has to be unacceptable within the UK framework. Of particular note is the lack of information in respect to management control (of which there seems to be very little on the evidence provided) and the effectiveness of the PDCA cycle, which is not specifically mentioned at all.

Q2: Do you have any views or comments on our preliminary conclusions on strategic considerations for radioactive waste management?

2.3. Assessment limitations and scope

Given that EDF/CGN have multiple Nuclear Site relationships then regardless of legal ownership technicalities in principal all such relationships should be accumulated to deem each party as having multiple sites

Higher activity solid radioactive waste will be stored on-site in dedicated buildings pending disposal at an appropriately permitted facility, which will be the geological disposal facility (GDF) once that is available. In the case of lower activity solid radioactive waste, the disposal will be to an appropriately permitted facility as soon as is practicable.

Where will these buildings be located, what are the design characteristics and what exactly does practicable mean 10,100,1000 years .... a definitive time should be allocated

2.5. Matters specific to decommissioning strategy

What level of design knowledge and intellectual property is required to safely decommission the Nuclear Reactor and how would this be achieved by a party other than GNSL/CGN?

2.6. Matters specific to spent fuel strategy

The spent fuel management strategy that has been adopted is not to reprocess, but to store, package and appropriately dispose of spent fuel when a disposal route becomes available

How much spent fuel is predicted to be produced and require storage. There should be definitive designed storage requirements rather than an open-ended non-specific solution.

2.7. Matters for a future operator

The RP will need to ensure that records related to the IWS created during GDA pass effectively to any future operator(s).

Given the now widely understood geopolitics, how can this be guaranteed with a 100% level of confidence to a party other than CGN?

Reading the strategy it is not clear exactly what volume of waste will be stored, where or for how long. If the impact on the environment is to be accurately assessed in terms of potential impacts of sea-level rise climate change you might well consider fundamental questions are posed and answered rather than deflected elsewhere?

Q3: Do you have any views or comments on our preliminary conclusions on the process for identifying best available techniques or on the techniques used to minimise production and disposal of radioactive waste?

BAT requirements are not a licence to use cost as an excuse to determine a less costly option, indeed one could argue that the precautionary principle, in terms of nuclear waste deems that the wastes and radioactive levels must be reduced as far as is reasonably practicable whatever the cost, due to the risk factors and impacts involved. Therefore, when one talks of a £22 billion nuclear project, it is rather difficult to see at what point economic factors would ever play a part - indeed, one could argue that they should not be given the risks radioactive waste presents. It is of our opinion that cost consideration does not apply in terms of nuclear wastes and that if they can be reduced, they should be.

Q4: Do you have any views or comments on our preliminary conclusions on minimising the discharges and impact of gaseous and liquid waste, and our proposed limits and levels?

Assessment Report 4 - Gaseous and Liquid discharge

We note that the main site stack (70m high) is the single emission point for gaseous radioactive waste. All of the liquid effluents described flow to the "seal pit" before being discharged through a single site outfall. Limits are given in Table 6 and 7 of Assessment Report 4

These tables provide proposed limits that GSNL has estimated, and that the EA are satisfied with. What are the ecological parameters, used in the GDA, to agree these estimated discharge figures are acceptable?

How are these limits defined, with respect to people and wildlife, in terms of distance to people and wildlife, and sensitivity of particular species/ habitats?

What level sensitivity and ecological protections are built into the GDA limits, due to the nature of some of the proposed UK sites.

We would like clarification on the generic ecological parameters set in the GDA and does this consider sensitive and highly protected terrestrial and marine ecological zones. We understand from the meeting with the EA and GNSL that the baseline generic site is based on the Bradwell site, which as you will be aware has highly valuable and protected ecological sites around it. To what level have GNSL taken into account the highly sensitive ecological designated sites in their baseline site?

Table 6 and 7 show results can you confirm that these limits are for 1 reactor, and would this effectively double for 2 reactors at a site?

Q5: Do you have any views or comments on our preliminary conclusions on the management and disposal of solid radioactive waste and spent fuel?

We note the report states that for HAW the current strategy is to safely interim store the wastes and spent fuel on-site. There currently is no Conceptual design for these stores provided by GNSL – what is the status of Potential GDA Issue 4?

(Potential GDA Issue 4: GNSL is required to provide information in relation to the long-term storage requirements for the spent fuel and to demonstrate that the conceptual design for spent fuel interim store (SFIS) will deliver these requirements?)

We were told by GNSL representative at our meeting with the EA and GNSL, that GNSL estimates 600 cubic meters of HAW waste is to be stored, and that their parameters allowed for storage facilities to be within 100m of residential properties.

We have grave concerns that this has not been considered adequately when a conceptual design is not even available. It forms no part of this consultation though being a long term site facility that with all probability will remain on a site even after the working life of the plant has ceased.

Has RQ-UKHPR1000-0992 been resolved, as, from our meeting, GNSL declared they would not incinerate LLW sludges and concentrate, even though the EA report notes that incineration could possibly be applied and would lead to a smaller volume of waste for disposal?

We are concerned about incineration on-site and the impact it would have.

Lastly, we note that GNSL has also developed a Preliminary Decommissioning Plan for the UK HPR1000.

What will be left behind in 60 years, as a legacy for future generations, as the example we have is the eyesore that is Bradwell A?

Q6: Do you have any views or comments on our preliminary conclusions on monitoring discharges and disposals of radioactive waste?

It is clear from EA document that BAT “Best available technique” is the required standard to be met by GNSL but it is very apparent that there is no guidance available to the public of what the BAT is for each requirement actually is. Therefore we would like to know why the EA is not providing guidance from other instillations for BAT’s to GNSL and to the public to compare with especially when it comes to choosing equipment and methods of sampling and monitoring.

An example is page 10 where the EA state that is the best practice to return the sample downstream of the extraction point instead of upstream. If this is the case the EA existing BAT should be adopted by GNSL. The EA instead allows GNSL to prove that it is BAT.

If there is any risk at all, surely the known and current procedures should be followed instead of allowing an unproven and theoretical BAT to be put in place. The only drivers that would be behind this is that of cost savings for GNSL which would be completely inappropriate and not in the interest of the environment or public safety.

There are also operational procedure concerns, on page 12 there is a reference to continuous radiation monitoring in the lipid discharge line. If an elevated radiation level is detected an alarm is activated and an isolation valve is closed to stop the discharge to the environment.

What happens if this alarm fails and the isolation valve fails to operate? Sequential failures of operating systems are not unknown and should be required to be planned for.

The EA with its current procedures outlined in this document is essentially leaving everything to the operator to prove as BAT and as a result, is providing the operator with a license to create outcomes and to cut costs, not in the environmental interest and long term is highly likely to result in operational non-conformities.

Surely the EA with its mission statement to protect the environment should be taking far more vigorous steps to ensure that the environment is not exploited for financial gain with an overall loss of ecologically important areas.

The EA should request to be provided with firm proposals at this stage and not allow gaping holes in such important overall information to be missing from the public and other decision-makers.

It also appears that the is no provision for an ongoing environmental monitoring programme as part of the GDA especially considering large sections of this project have been stated as unknown until it becomes operational, allowing GNSL to again sidestep future responsibilities.

Currently, the EA assessment stands more as an insurance policy for blaming the operator for any problems or disasters than one of protecting the environment and public.

Q7: Do you have any views or comments on our preliminary conclusions on the impact of discharges of radioactive waste?

Given that the current basis for determining impacts are flawed (measuring does not look at the different isotopes and their functions/risks but rather a single generic dose of radiation), it is difficult to comment on your findings. Our view is that a more robust system of measurement is required, that takes into account the different types of radioactive waste (in terms of its chemical makeup) and their known harmful effects on receptors at levels below the currently accepted levels of radioactive materials.

Q9: Do you have any views or comments on our preliminary conclusions on water abstraction?

Given that the generic site is based on Bradwell but the limitations of the estuary are not considered because it is based on a generic site rather than the specifics of Bradwell, it is difficult to make any useful comment other than the whole basis of the assessment is thus flawed.

Q10: Do you have any views or comments on our preliminary conclusions on discharges to surface waters and groundwater?

Given that the generic site is based on Bradwell but the limitations of the estuary are not considered because it is based on a generic site rather than the specifics of Bradwell, it is difficult to make any useful comment other than the whole basis of the assessment is thus flawed.

Q11: Do you have any views or comments on our preliminary conclusions on the operation of installations?

One would have thought that diesel generators would be replaced with generators run on an alternative cleaner fuel than diesel.

Q13: Do you have any views or comments on our preliminary conclusions on the measures to prevent and minimise leakage of fluorinated greenhouse gases and ozone-depleting substances?

The use of F gases, on a site that would potentially be operating for 60 years is not acceptable when alternatives are available. The EA has not recommended alternatives despite the fact that F gases need to be elemented.

Q14: Do you have any views or comments on our preliminary overall conclusion on the acceptability of the design?

Given that the RP are interested in a GDA SoDA for its status as a seal of approval by the UK's regulatory authority, it is particularly important that the EA and ONR ensure that the strictest of interpretations of our laws and norms are applied to this project.

Q15: Do you have any overall views or comments to make on our assessment, not covered by the previous questions?

From the consultation process so far, one cannot but help thinking that the relationship between the EA and GNSL/CGN is rather too cosy for comfort - they are not your "colleagues", you are the regulator responsible for ensuring strict compliance to the UK law and its protections.

GDA-UKHPR1000-048

Consultation response	GDA-UKHPR1000-048
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZS59-U
Response received from:	An individual

Response:

Q1: Do you have any views or comments on our preliminary conclusions on management systems?

The assessment is trusting of paperwork and processes being adhered to. This is a behaviour that is sadly lacking when it comes to any Chinese controlled entity.

From my personal experience:

If the drawing states a material shll be used, a China supplier will feel it is acceptable, even desirable to supply a 'Chinese equivalent'. There is no guarantee that it is an equivalent.

"A4 stainless steel" - that rusted. It was mild steel

"H3 machine aluminium" - so weak it was not fit for tin foil

"Virgin plastic" - that was a regrind and wet, so full of holes when moulded

"Exxon Thermoplastic elastomer traceable to source" - no longer rubbery or making a seal as it had been swapped for a 'China equivalent' and the invoices forged.

The GDA cannot rely on paperwork from China, 100% testing is needed on all parts

Q3: Do you have any views or comments on our preliminary conclusions on the process for identifying best available techniques or on the techniques used to minimise production and disposal of radioactive waste?

Applies to both

HPR1000 is large and clearly not mobile and therefore much will remain on site for the decay period.

A larger number of much smaller reactors (eg UK Modular from submarines) could be used and removed from the generating sites, so leaving all those sites radiation free when generation ended, and also allowing transport away to a suitable single recycling location.

As such HPR1000 may not be the best choice.

Q4: Do you have any views or comments on our preliminary conclusions on minimising the discharges and impact of gaseous and liquid waste, and our proposed limits and levels?

Any promises made to satisfy the GDA must be backed by 100% independent inspection and oversight. Sadly Chinese organisations will say anything to keep 'you too fussy westerners' happy and then do whatever they want to instead.

Q6: Do you have any views or comments on our preliminary conclusions on monitoring discharges and disposals of radioactive waste?

All monitoring must be through an independent party, not the operator. The operator should only have 'viewing' rights.

As such the prposed verification would become direct data collection rather than after the event and liable to deletion or forgery

Q7: Do you have any views or comments on our preliminary conclusions on the impact of discharges of radioactive waste?

All the figures depend upon the HPR1000 being built and operated as designed. This may sadly not be the case, so how does the GDA propose to deal with a 'shoddy' nuclear power station ?

Q9: Do you have any views or comments on our preliminary conclusions on water abstraction?

There is no adequate local water supply for several sites (eg Bradwell). Therefore the GDA cannot be based upon this false premise.

This is partly recognised by finding 32 but should have been made more forcibly

Q12: Do you have any views or comments on our preliminary conclusions on the control of major accident hazards?

What monitoring will be mandated to ensure that the promises on levels chemical inventories are being met ?

The GDA seems to have agreed that the regulations will not apply based solely on a document from GNSL, in whose interest it is to satisy the GDA regardless of ultimate intent.

Test don't trust.

Q14: Do you have any views or comments on our preliminary overall conclusion on the acceptability of the design?

What is the logic of issuing an 'iSoDA ' when GDA issues remain to be resolved ?

The design either passes or it fails

GDA-UKHPR1000-049

Consultation response	GDA-UKHPR1000-049
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZS5D-6
Response received from:	An organisation: Devon and Severn Inshore Fisheries and Conservation Authority

Response:

This respondent requested that their response should not be published.

GDA-UKHPR1000-050

Consultation response	GDA-UKHPR1000-050
Response received via:	e-consultation
E-consultation tool unique identifier:	ANON-43QH-ZS5Q-K
Response received from:	An individual

Response:

Q1: Do you have any views or comments on our preliminary conclusions on management systems?

The structure of this consultation is rather industry driven and a lot of unknown factors are not being considered and/or evaluated at this stage. The reviewing authorities keep saying that they tried their best to evaluate the issues but in fact that is not good enough to verify safety and security issues in many areas. It was discussed on the subject in the consultation meeting with a community group BANG UK in March. I am not convinced with the arguments by the two reviewing authorities.

Q2: Do you have any views or comments on our preliminary conclusions on strategic considerations for radioactive waste management?

I am not happy about it at all. Radioactive waste management is rather taken easy by the evaluating authorities, from my point of view. In the consultation meeting, they kept saying they will do their best to reduce it but that was not good enough. Please see below in the following sections.

Q3: Do you have any views or comments on our preliminary conclusions on the process for identifying best available techniques or on the techniques used to minimise production and disposal of radioactive waste?

The best available techniques should be researched and presented to public and neighbours prior to this stage to gain trust of the people. The approach here is the opposite, the authorities did not find the best approach yet, thus this is hardly acceptable. Radioactive waste disposal issue is the most difficult issue in many countries, thus it should be a foundation to the project where you built on the feasibility of the project, to convince the public to verify it. Here I do not see such. The whole approach on this subject in this consultation is not acceptable.

Q4: Do you have any views or comments on our preliminary conclusions on minimising the discharges and impact of gaseous and liquid waste, and our proposed limits and levels?

The reviewing authorities think discharges of certain quantities are acceptable from their point of views, however, that arguments from the industry point of view would not be acceptable as those discharges will be accumulating through years in the area (both land and sea). That word of "minimising" is rather relative terms and not absolute. It does not help building up trust in the project. Furthermore, this is the argument of the normal/regular operational period. The nuclear power station quite often have accidental extra discharges, based on maintenance failures, as well as unexpected accidents. The issue of gases and liquid waste discharges is very serious matter. Please pay attention to Fukushima accident.

Q5: Do you have any views or comments on our preliminary conclusions on the management and disposal of solid radioactive waste and spent fuel?

I am not happy about it at all. Solid waste management mandate is separated from this project and pass the back to another authority, therefore it is not comprehensive project. Thus, the total evaluation of this project is not complete. This is not acceptable.

Q6: Do you have any views or comments on our preliminary conclusions on monitoring discharges and disposals of radioactive waste?

It was not clear for me. It left to the future operator to monitor with the best available monitoring techniques, thus it is quite relative terms of the conditions, not giving specific conditions. This evaluation is poor.

Q7: Do you have any views or comments on our preliminary conclusions on the impact of discharges of radioactive waste?

Impact of discharges were very downplayed in the conclusion. It was not clear for me. It left to the future operator to monitor with the best available monitoring techniques, thus it is quite relative terms of the conditions, not giving specific conditions. This evaluation is poor.

Q8: Do you have any views or comments on our preliminary overall conclusion on radioactive substances permitting?

It is not acceptable from my point of view. It was not clear for me. It left to the future operator to monitor with the best available monitoring techniques, thus it is quite relative terms of the conditions, not giving specific conditions. This evaluation is poor.

Q9: Do you have any views or comments on our preliminary conclusions on water abstraction?

It is not acceptable from my point of view. It was not clear for me. It left to the future operator to monitor with the best available monitoring techniques, thus it is quite relative terms of the conditions, not giving specific conditions. This evaluation is poor.

Q10: Do you have any views or comments on our preliminary conclusions on discharges to surface waters and groundwater?

It left to the future operating company, thus not able to comment, thus the evaluation is not complete.

Q11: Do you have any views or comments on our preliminary conclusions on the operation of installations?

I cannot find any convincing information

Q12: Do you have any views or comments on our preliminary conclusions on the control of major accident hazards?

I cannot find any convincing information.

Q13: Do you have any views or comments on our preliminary conclusions on the measures to prevent and minimise leakage of fluorinated greenhouse gases and ozone-depleting substances?

The environmental issue should not bring into the justification for building a nuclear power plant. No co2 emission from nuclear power plant is one thing, but more serious hazards from nuclear power plant should be considered, such as radioactive waste issues, potential accidents, costs of building plants, and furthermore the miners of uranium materials are getting even sick, problems are much bigger than superficial benefits.

Q14: Do you have any views or comments on our preliminary overall conclusion on the acceptability of the design?

The design is still not very clear. it is only discussed in generic!

Q15: Do you have any overall views or comments to make on our assessment, not covered by the previous questions?

The approach is very industry driven and the documentation provided is too complex to confuse public. This is not best approach to gain trust among people. It rather create more suspicion and scepticism.

GDA-UKHPR1000-051

Consultation response	GDA-UKHPR1000-051
Response received via:	Post
E-consultation tool unique identifier:	Not Applicable
Response received from:	An individual

Response:

I am writing to you but I am not sure you are the right lady to write too but hopefully you are.

I am terrified at the thought of another nuclear site be prepared at Bradwell. Also a foreign power is building it. I feel we are being too trusting. If we trust people to do this if we had a problem with the country who is building this they only have to (make a mistake) and we could have another Chenoble or worse.

Can't happen! Nature has a way of proving us wrong.

I don't know how big the area is but it looks quite large. We could use the area for Solar-Turbines-Herat Pump and possibly Hydro-power I am sure we could have many of these smaller sites. I don't know much about sustainable energy. We have to work or it now. Large buildings Homes any large or small buildings could have Solar panels not only on roofs but on the sides of buildings. We have a small country. We can't have any big fields of solar panels. We need the farm land we have to keep us fed we can't import everything.

I am old now but still have grand children. Do you have people you care about I am sure we hope to leave this world better than it is now. I am afraid it is too late.

So in a nutshell I would like to say no to Bradwell. It is not safe. Everywhere should have other forms to make power.

Yours sincerely

GDA-UKHPR1000-052

Consultation response	GDA-UKHPR1000-052
Response received via:	email
E-consultation tool unique identifier:	Not applicable
Response received from:	An individual

Response:

This respondent has not given permission to publish their response.

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List of abbreviations

Abbreviation	Details
AGR	Advanced gas reactor
ALARA	As low as reasonably achievable
ALARP	As low as reasonably practicable
BAN	Bradwell Action Network
BANNG	Blackwater Against New Nuclear Group
BAT	Best available techniques
BRB	Bradwell B
BRBS1C	Bradwell B Stage One Consultation
CBC	Colchester Borough Council
CCC	Chelmsford City Council
CCC	Climate change committee
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CERRIE	Committee. Examining Radiation. Risks of Internal Emitters
CGN	China General Nuclear Power Corporation
COMAH	Control of Major Accident Hazards
COMARE	Committee on Medical Aspects of Radiation in the Environment
CwCUK	Children with cancer UK
DAC	Design Acceptance Confirmation
DCO	Development Consent Order
EA	Environment Agency
ECC	Essex County Council
EdF	Électricité de France
EDG	Emergency diesel generator
F-gases	Fluorinated gases
FID	Financial investment decision
FSA	Food Standards Agency
GDA	Generic design assessment
GDF	Geological disposal facility
GHG	Greenhouse gas

Abbreviation	Details
GNI	General Nuclear International Ltd
GNSL	General Nuclear System Limited
GW	Giga-Watt
HAW	Higher activity waste
HLW	High level waste
HVAC	Heating, ventilation and air conditioning
ICIA	In-core instrument assembly
ICRP	International commission on Radiological Protection
ILW	Intermediate level waste
ISF	Interim spent-fuel store
iSoDA	Interim statement of design acceptability
JNCC	Joint Nature Conservation Council
LLRC	Low Level Radiation Campaign
LLW	Low level waste
LRWMS	Liquid radioactive waste management system
MCZ	Marine conservation zone
MDC	Maldon District Council
MSQA	Management of safety and quality assurance
MSR	Molten salt reactor
NDA	Nuclear Decommissioning Authority
NFLA	Nuclear Free Local Authorities
NGO	Non-governmental organisation
NIREX	Nuclear Industry Radioactive Waste Executive
NPP	Nuclear power plant
NPS EN6	National policy statement – nuclear energy (see reference GB Parliament, 2009)
ODS	Ozone depleting substances
ONR	Office for Nuclear Regulation
OPEX	Operating Experience or Operational Experience
OPZ	Outline planning zone

Abbreviation	Details
PDCA	Plan, do, check, act
PDF	Portable document format
PHE	Public Health England
PWR	Pressurised water reactor
RBE	Relative biological effectiveness
RP	Requesting Party
RWM	Radioactive Waste Management Ltd
SFA	Spent fuel assembly
SFAIRP	So Far As Is Reasonably Practicable
SFIS	Spent fuel interim store
SoDA	Statement of design acceptability
SZC	Sizewell C
TASC	Together Against Sizewell C
UNSCEAR	United Nations Scientific Committee on the Effects of Atomic Radiation
WHO	World Health Organisation
wrt	with respect to

Appendix 1: Attachment to UKHPR1000-009

UK & Ireland NFLA Secretariat
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Chair: Councillor <name redacted>
Secretary: <name redacted>

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Environment Agency
Ghyll Mount, Gillan Way,
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Emailed to: nuclear@environment-agency.gov.uk 30th March 2021

NFLA response to Environment Agency consultation on the Generic Design Assessment for the GNSL HPR1000 reactor proposed for Bradwell

Dear Environment Agency GDA office staff,

I attach the response of the UK & Ireland Nuclear Free Local Authorities (NFLA) group to the Environment Agency public consultation on the Generic Design Assessment for the GSNL HPR100 reactor proposed for the Bradwell site in Essex. The closing date for the consultation is the 4th April.

For your information, the NFLA is a local authority group which is made up of Councils from across England, Scotland, Wales, Northern Ireland and the Republic of Ireland. Its Steering Committee and Secretariat are based in Manchester. NFLA raises legitimate concerns and issues over all aspects of nuclear policy and energy policy in order to assist local government in meeting its commitment to sustainable development, energy policy development, environmental protection and public safety.

Our response provides an overview of the issues as well as specific comments on the detail of the consultation.

1. Overview

The UK Government's Energy White Paper reiterates the plan to bring at least one further largescale nuclear project to the point of Final Investment Decision (FID) by the end of this

Parliament (i.e., 2024). But this is subject to clear value for money for both consumers and taxpayers and all relevant approvals. (1)

NFLA though note that in July 2018 the National Infrastructure Commission recommended that the Government should: “Not agree support for more than one nuclear power station beyond Hinkley Point C, before 2025”. (2)

The Climate Change Committee (CCC) argues that investment in renewable energy will save consumers money, whilst investment in nuclear power and carbon capture and storage will cost a lot more. (3) Three of the five CCC energy scenarios for 2050 in its 6th Carbon Budget report have only 5GW of nuclear power, including that with highest energy demand (with 90% renewables); that's less than Hinkley Point C and Sizewell C combined. The CCC also assumes nuclear will cost £85/MWh in 2050. (4)

Conventional wisdom used to be that supplying our electricity with 100% renewables was impossible. This is no longer the case. NFLA have noted in a detailed paper a large number of studies showing that a 100% renewables generation system is possible. (5) By 2019, for the Committee on Climate Change (CCC), the core factor in regard to such issues comes down to the question of cost. Relying on its own estimate of nuclear costs in 2050, which it believed would be 28% lower by then, it said with a high proportion of renewables costs would start to rise. (6)

The unifying thread that runs through the CCC’s 6th Carbon Budget Report is that the costs of decarbonisation have fallen far faster than even advocates of clean technologies expected. Renewables and energy storage costs have plummeted, there are very good reasons to think hydrogen, heat pumps, and electric vehicles can follow suit.

Any new nuclear stations after Hinkley Point C would be extremely unlikely to come on-stream before 2030, so would be in direct conflict with much cheaper renewables. They would crowd out new renewable energy, causing windfarms and solar farms to be turned off to give priority to nuclear power. The National Grid would be ordering the turning off of renewable energy facilities and paying the operators compensation for this whilst also subsidising the construction of new nuclear reactors. (7)

Sizewell C (SZC) cannot be completed until at least 2034. Yet carbon emissions generated during the construction phase - the carbon content of the materials and labour - will take six years to be paid off by the output of SZC. As new renewables come online replacing fossil fuels, the carbon emissions from UK electricity generation reduce. This means that SZC will effectively cease to contribute to emissions reductions well before 2050 and will, in fact, make a net addition. (8)

Clearly any new nuclear power station proposed after SZC would effectively increase carbon emissions by generating emissions during construction and then pushing renewables off the grid after opening. Professor Benjamin Sovacool’s meta-analysis of 103 lifecycle studies found that the mean value for emissions from the nuclear lifecycle is 66gCO2e/kWh. This compares to 9gCO2e/kWh for offshore wind and 32gCO2e/kWh for solar PV. (9)

Every pound invested in nuclear power would effectively make climate change worse. Not just because it is the most expensive form of electricity generation today, but also because it takes a long time to build reactors. Money invested in new nuclear cannot be used to invest

in efficient climate protection options, and it produces only more emissions during the long construction period. (10)

The Environment Agency says it "put[s] the climate emergency at the heart of everything it does." Clearly, nuclear power cannot contribute to tackling the climate emergency, and, in the view of the NFLA, it should be rejected by the Environment Agency.

A 'sustainable future' means moving towards a consistent resource-efficient circular economy, and by turning away from the predominantly linear economy which produces waste. According to figures from Radioactive Waste Management Ltd, the radioactivity from existing waste (i.e., not including new reactors) is expected to be 4,770,000 Terabecquerels (TBq) in the year 2200. The radioactivity of the spent fuel alone (not including other types of waste) generated by Hinkley Point C in the year 2200 would be 3,800,000TBq – or about 80% of the radioactivity in existing waste. (11) The Environment Agency's goal of minimising waste must surely demand that it prioritises renewable energy generation over an energy source which is going to seriously exacerbate the UK's nuclear waste problem.

2. The GDA Assessment

It is of real concern to the NFLA that the GNSL submission up to 2018 did not contain the level of information the Environment Agency needs in order to carry out a detailed assessment.

The EA says that, based on the information it was given, it is unlikely that radioactive discharges would exceed those of comparable power stations, but GNSL needs to demonstrate this for discharges and for quantities of solid waste.

The point, surely, from the public and the environment's perspective is that the UK HPR1000, whichever of the 7 sites designated for a potential new nuclear reactor it is proposed for, will not be replacing a comparable reactor or reactors. For instance, the two Bradwell reactors were only 129MW each whereas a single UKHPR1000 reactor (1,180MW) would be more than 4 times the capacity. Thus, if comparing the old with the new it would be producing 4 times the discharges and 4 times the solid waste.

Although the GDA relates to one reactor on a generic site, NFLA note that the GNSL proposal for Bradwell is for two reactors. This means that radioactive discharges and solid waste produced could be in the region of 8 times that produced by the Magnox reactors.

On Higher Activity Waste and Spent Fuel the document says:

"…disposals are unlikely to occur until late this century, this means that the strategy needs to consider on-site storage and management of both ILW and spent fuel for the lifetime of the power station, or an appropriate alternative."

For NFLA, this is potentially misleading. RWM says for planning purposes, it is assuming that a deep underground radioactive waste repository will be available to receive its first waste in the 2040s. Then it will take around 90 years to emplace all existing waste before we can entertain the idea of beginning to emplace any spent fuel from new reactors, taking the issues well into the next century. (12)

It is worth noting, for instance, that in order to ensure the performance of the bentonite buffer material, to be placed around canisters in a deep underground radioactive waste repository

(labelled by the nuclear industry as a Geological Disposal Facility or GDF), is not damaged by excessive temperatures, spent fuel from new reactors is likely to require cooling for around 140 years. (This number was revised upwards by 40 years following a correction to a thermal model used to estimate the cooling time required for spent fuel.) Given that new reactors are expected to have a life of 60 years, that means it will be 200 years before some of the spent fuel from new reactors can be disposed of in a GDF. (13)

According to Radioactive Waste Management Ltd, the radioactivity from existing waste (i.e. not including new reactors) is expected to be 4,770,000 Terabecquerels (TBq) in the year 2200. The radioactivity of the spent fuel alone (not including other types of waste) generated by a 16GW programme of new reactors is expected to be around 19,000,000TBq. The amount of radioactivity in the spent fuel from Hinkley Point C in the year 2200 would be 3,800,000TBq – or about 80% of the radioactivity in existing waste. (14) Clearly, the idea promoted by government policy that the UK is moving to solutions with existing waste that has to be dealt with, so there should be no problem generating more, is a nonsense.

3. Best available techniques for minimising production and disposal of radioactive waste

The role of the Environment Agency (EA) is to ensure the impact of radioactive wastes on the environment is minimised. Research from around the globe, for instance the KIKK Study from Germany, has shown that there is unquestionably a strong link between proximity to nuclear power stations and childhood cancer. (15) NFLA note that the independent consultant on radioactivity in the environment, Dr Ian Fairlie, says:

“I can think of no other area of toxicology (e.g. asbestos, lead, smoking) with so many studies, and with such clear associations as those between Nuclear Power Plants and child leukemias.”

This means that, ethically, if cleaner ways to generate electricity are available which do not discharge radioactive wastes into our atmosphere and seas these should be used in preference.

The evidence is stacking up that it is perfectly feasible to develop an all-renewable electricity supply which can provide energy security. (16) The best available techniques for minimising production and disposal of radioactive waste is to generate electricity from renewable sources. It is, therefore, unethical for the Environment Agency to continue to authorise discharges of radioactivity from new nuclear power stations into our environment. NFLA note with concern 2 potential GDA issues and 10 Assessment Findings in this section.

EA says “all exposures to ionising radiation of any member of the public and of the population as a whole resulting from the disposal of radioactive waste are kept as low as reasonably achievable (ALARA), taking into account economic and social factors. We do this by requiring designers and operators to use BAT.”

In our view it is entirely reasonable to expect electricity to be generated with zero exposure of the population to cancer-causing ionising radiation, and the Best Available Technique for doing just that is to use renewable energy sources in combination with energy efficiency.

Table 8-1. The proposed annual gaseous discharge limits (becquerel - Bq)

Radionuclide	Proposed annual limit (Bq)
Tritium (H-3)	5.23E+12
Carbon-14 (C-14)	1.69E+12
Noble gases	1.56E+13
Xennon-133 (Xe-133)	1.16E+13
Xennon-135 (Xe-135)	3.45E+12
Halogens	2.21E+08
Other radionuclides	1.12E+07

These figures compare badly with the proposed annual gaseous and liquid discharge limits for the AP1000 and EPR reactors.

	AP1000 (17)	**EPR (18)**
Tritium	3.0E+12	3.0E+12
Carbon-14	1.0E+12	0.7E+12
Noble gases	1.3E+13	2.25E+13

Table 8-2. The proposed annual liquid discharge limits (Bq)

Radionuclide	Proposed annual limit (Bq)
Tritium (H-3)	1.04E+14
Carbon-14 (C-14)	5.90E+10
Other radionuclides	1.04E+09

	AP1000 (19)	**EPR (20)**
Tritium	0.6E+14	0.75E+14
Carbon-14	0.7E+10	9.5E+10

The Committee on Medical Aspects of Radiation in the Environment (COMARE) recommended that as:

"…part of a new generation of plants, it might be expected that discharges would be lower than existing facilities, rather than 'within the range of historic discharges' which seems to be the criterion being applied by EA." (21)

4. Conclusions

Radionuclides or group of radionuclides	AP1000 predicted annual discharge	Range for 1000 MWe station
Tritium GBq	1800	100 - 3600
Carbon-14 GBq	606	40 - 530
Noble gases GBq	8047	100 - 10000
Iodine-131 MBq	210	<1 - 2000
Other radionuclides not specifically limited MBq	13.44	<1 - 1000

Table Two: Comparison of gaseous emissions from AP1000 reactors with those from other stations.

NFLA note that the AP1000 reactor has higher gaseous emissions - far more important than liquid emissions in terms of radiation doses to local people – than other similar reactors, yet it looks as though the UK HPR1000 could be even worse.

In our view, the requirement for 'Best Available Techniques' (and clean technology) for producing electricity should rule out building new electricity generating stations which produce such highly dangerous wastes. Especially as less expensive, quicker and safer alternatives are available which do not produce such wastes. As such, the EA should not be promoting the development of new nuclear reactors like the HPR1000.

If you have any queries with this response, please contact <name redacted> in the NFLA Secretariat on <email redacted> or via <telephone number redacted>.

Yours sincerely,

<name redacted>, NFLA Secretary
On behalf of the UK & Ireland NFLA Steering Committee with the approval of its Chairperson

5. References

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(2) National Infrastructure Assessment July 2008 https://nic.org.uk/studies-reports/national-infrastructure-assessment/

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Appendix 2: Attachment to UKHPR1000-011

REPORT FOR NOTING

From DIRECTOR OF STRATEGY, PERFORMANCE AND GOVERNANCE

To COUNCIL

18 MARCH 2021

MALDON DISTRICT COUNCIL AND ESSEX COUNTY COUNCIL'S JOINT RESPONSE TO THE PUBLIC CONSULTATION BY THE ENVIRONMENT AGENCY ON ITS PRELIMINARY CONCLUSIONS FOLLOWING ITS GENERIC DESIGN ASSESSMENT OF UK HPR1000 REACTOR DESIGN

1 PURPOSE OF THE REPORT

1.1 To provide for information only Maldon District Council's (MDC's) and Essex County Council's (ECC's) (the Joint Councils) shared response to consultation by the Environment Agency (EA) on its preliminary conclusions following its Generic Design Assessment (GDA) of the environmental aspects of General Nuclear System Limited's (GNSL) United Kingdom version of the Hualong Pressurised Reactor 1000 (UK HPR 1000) nuclear reactor design.

1.2 The EA's consultation period runs for 12 weeks from 11 January 2021 – 4 April 2021.

2 RECOMMENDATION

That the contents of this report be noted.

3 SUMMARY OF THE JOINT COUNCILS RESPONSE

3.1 The Joint Councils response to the preliminary conclusions of the EA's GDA of the environmental aspects of the UK HPR1000 reactor design is summarised below. The Joint Councils views and comments can be read in full alongside each 'Potential GDA issue'[1] in Table 1 of APPENDIX 1 to this report:

(i) The Joint Councils recognise that the EA is the appropriate nuclear regulator to undertake the GDA of the environment aspects of the UK HPR1000 reactor design

[1] A 'Potential GDA Issue' is an unresolved issue considered by the regulator (the EA or ONR) to be significant, but resolvable, and which needs resolving before nuclear island safety related construction of the UK HPR1000 reactor could be considered.

and have confidence in the technical appraisals undertaken; therefore, are broadly supportive of the EA's preliminary conclusion that a Statement of Design Acceptability (SoDA) could be issued if all Potential GDA Issues are resolved and no new Potential GDA Issues arise before the end of the GDA process.

(ii) The Joint Councils understand that the Potential GDA Issues do not include fundamental concerns about the environmental aspects of the UK HPR1000 reactor design but are based on the EA's requirement for a robust evidence-based approach.

(iii) The Joint Councils request that the EA publishes any resolution plans for Potential GDA Issues prior to a SoDA being issued, so that stakeholders can understand how they have been addressed.

(iv) Without sight of any resolution plans, the Joint Councils remain concerned about the interim storage of Higher Activity radioactive Waste (HAW), including spent fuel on any site where the UK HPR1000 reactor design is developed, and the lack of contingency planning should a Geological Disposal Facility (GDF) not be delivered or able to accept HAW within the Government's anticipated 2030 - 2040s timescales. The Joint Council's view is that the EA should consider as part of the GDA the need for contingency plans to be agreed, to provide confidence to local communities that either on-site storage of HAW and spent fuel would be safe and secure until ultimate GDF delivery, or that feasible alternatives for centralised optimisation and storage of waste may be practicable

(v) Although not detailed as a potential GDA Issue, the Joint Councils are unclear from the EA's preliminary conclusions and supported reasoning how any potential SoDA would remain valid should the UK HPR1000 reactor design be developed contrary to the generic assumption of direct cooling, as Best Available Technology (BAT). The Joint Councils view is that if the EA decide to issue a SoDA that any decision document should provide clarity on how the GDA has considered the acceptability of the UK HPR1000 reactor design for indirect and hybrid cooling.

(vi) The Joint Councils reserve the right to comment on matters in relation to the overall acceptability of the design of the UK HPR1000 reactor in its totality should it be developed at Bradwell-on-Sea.

4 SUMMARY OF KEY ISSUES

4.1 The Generic Design Assessment (GDA) process

4.1.1 As regulators of the nuclear industry, the EA and the Office for Nuclear Regulation (ONR) work together to make sure that any new nuclear power stations built in England and the UK meet high standards of safety, security, environmental protection and waste management. Both regulators are scrutinising GNSL's UK HPR1000 reactor design thoroughly, making sure people and the environment are properly protected if the reactor design were to be developed.

4.1.2 The Requesting Party (RP) for the GDA of the UK HPR1000 reactor design is a joint venture by the China General Nuclear Power Corporation (CGN), the Électricité de France S. A. (EDF) and the General Nuclear International Limited (GNI). GNSL has been appointed by the above shareholders to act on behalf of them as the RP.

4.1.3 The EA has regulatory responsibility in England to ensure that the generic UK HPR1000 reactor design will apply BAT and As Low as Reasonably Practicable (ALARP) principles to ensure that radioactive waste generation and disposal, and radioactive discharges will not exceed those levels from comparable nuclear power stations across the world.

4.1.4 On completion of the GDA process, the regulators will issue reports on their findings along with the supporting technical assessment reports. If the UK HPR1000 reactor design is judged to be satisfactory, the EA will issue a SoDA and the ONR will issue a Design Acceptance Confirmation (DAC). Where the regulators judge that there are significant, unacceptable shortfalls in the design or the RP submissions, then a DAC or SoDA will not be issued. It would be a matter for the RP to decide whether to propose additional work to address the shortfalls, which may allow the regulators to issue a SoDA or DAC at some future date.

4.2 The scope of the GDA

4.2.1 The EA is the pollution control authority for England only and therefore have a more limited geographical scope and jurisdiction than the ONR who regulate nuclear safety and security across the UK. Although the EA work closely with the ONR, this GDA consultation is about the EA's preliminary conclusions relating to the environmental acceptability of the UK HPR1000 reactor design only, and not the acceptability of its safety and security. The ONR does not undertake a similar consultation as part of its GDA.

4.2.2 In accordance with Section 37 of the Environment Act 1995 (GB Parliament, 1995), the EA provide a SoDA as advice to the RP, but it has no other formal legal status. However, the EA will take full account of the work it has done during GDA if it were to receive site-specific applications for environmental permits relating to a reactor design that has successfully been through GDA. The environmental aspects considered by the GDA do not extend beyond those covered by the environmental permitting regime.

4.2.3 The GDA does not relate to a specific site, even though UK HPR1000 reactor design technology is currently proposed for development at Bradwell-on-Sea. The scope of the GDA for the UK HPR1000 has been defined by the RP and includes a single reactor unit situated in a generic coastal or estuarine site, based on

parameters applicable to the UK[2]. The reason for this is that GDA should allow for the separation of design issues from specific site related issues, which is intended to be beneficial to the RP where the generic design is intended for construction on several different sites.

4.2.4 The EA has focused their consultation by asking for views and comments on a total of fourteen questions, each relating to an individual environmental aspect of its GDA. The consultation is supported by eight preliminary assessment reports, an independent radiological dose assessment, an overarching consultation document and a summary document, which have two purposes: the first to explain how the EA has undertaken its detailed assessment so far and the second to detail its preliminary conclusions on the design acceptability of the UK HPR1000 reactor. The EA is supporting their public consultation with virtual consultation events, one of which was provided for MDC Members on 11 February 2021.

4.3 The status and timescales of the GDA

4.3.1 The GDA process is lengthy and takes approximately 4 - 5 years to complete. GNSL requested GDA from the EA and ONR for the UK HPR1000 nuclear reactor in January 2017 and is currently at the final stage in the process. The EA has not concluded its GDA or reached any decision. The completion of the EA's detailed assessment will include careful consideration of all relevant views and comments made during consultation, prior to its decision on whether to issue a SoDA. The EA's consultation period runs for 12 weeks from 11 January 2021 – 4 April 2021 and it expects to publish a document containing all consultation responses in May 2021, followed by a decision document at the end of GDA in early 2022.

4.4 Preliminary conclusions of the GDA

4.4.1 Based on the EA's work so far, its preliminary conclusion is that a SoDA could be issued if all Potential GDA Issues are resolved and no new potential GDA issues arise before the end of its detailed assessment. If not resolved, the EA could only issue an interim SoDA (iSoDA) until all Potential GDA Issues were resolved. The issue of a SoDA would mean that the UK HP1000 reactor design is suitable for use in England, subject to any developer securing all relevant site-specific permits, licences and consents. The iSODA or SoDA would only be valid for a specific development site meeting the identified generic site characteristics.

[2] The main characteristics of the generic site for the UK HPR1000 GDA are detailed in this shared CGN and EDF document: http://www.ukhpr1000.co.uk/wp-content/uploads/2020/02/HPR-GDA-PCER-0002-Pre-Construction-Environmental-Report-Chapter-2-Generic-Site-Description-Rev-001.pdf

4.4.2 Successfully completing GDA does not mean that the RP could proceed to construction of the UK HPR1000 reactor design at any site, including Bradwell-on-Sea. There would still be a need to secure all relevant consents, licences and permits that unlike the GDA are required to be site-specific.

5 CONCLUSION

5.1 The Joint Councils have confidence in the technical appraisals undertaken by the EA as part of the detailed assessment of GNSL's UK HPR1000 reactor design therefore, are broadly supportive of the preliminary conclusion that a SoDA could be issued if all Potential GDA Issues are resolved and no new Potential GDA Issues arise before the end of the GDA process. The Joint Councils would request that all Resolution Plans for Potential GDA Issues are published prior to any SoDA being formally issued. Without sight of any Resolution Plans, the Joint Councils remain concerned about the lack of contingency planning should the GDF not be delivered or able to accept HAW within the Government's anticipated timescales. The longevity of HAW, including spent fuel storage at nuclear sites is of significant concern to most host communities.

5.2 Although not a Potential GDA Issue, the Joint Councils would query why GNSL would continue with the generic assumption of direct cooling when they have no programme to deliver the UK HPR1000 reactor design anywhere else in England than Bradwell-on-Sea? The Joint Councils view is that if the EA decide to issue a SoDA that any decision document should provide clarity on how the GDA has considered the acceptability of the UK HPR1000 reactor design for indirect and hybrid cooling. It remains unclear from the GDA if a SoDA for the UK HPR1000 reactor design would be valid for a site in England that did not meet the identified generic assumption of direct cooling.

6 IMPLICATIONS

(i) Impact on Customers – No direct impact.

(ii) Impact on Equalities – None.

(iii) Impact on Risk – None.

(iv) Impact on Resources (financial) – None.

(v) Impact on Resources (human) – Staff time.

(vi) Impact on the Environment – No direct impact.

Background Papers: None.

Enquiries to: <name redacted>, Director of Strategy, Performance and Governance.

APPENDIX 1

Table 1: The Joint Councils views and comments on the Environment Agency's preliminary conclusions on its Generic Design Assessment (GDA) of General Nuclear System Limited's (GNSL) UK HPR1000 reactor design.

GDA environmental aspect ***additional explanation provided where necessary***	**Potential GDA Issue – as detailed in the EA's consultation document**	**The Joint Councils views and comments**
Management systems ***The EA check that the Requesting Party (RP) has the right management systems in place and enough resources to make sure the design will adequately protect people and the environment. The EA also check that all appropriate information can be transferred from the designer to a future operator.***	The EA and ONR have identified shortfalls across UK HPR1000 safety case documentation in identifying and using Operating Experience (OPEX). We expect relevant OPEX to be identified and considered to support the development of environmental protection functionality in the design, consistent with applying Best Available Techniques (BAT).	The Joint Councils note Assessment Finding 1 and Potential GDA Issue 1. The Joint Council's welcome GNSL's commitment to resolving both by the end of the GDA process but would make a general enquiry about the publication of any resolution plan. The Joint Councils request that that all resolution plans are published so that stakeholders can see how Potential GDA Issues will be addressed, prior to any Statement of Design Acceptability (SoDA) being issued.
Strategic considerations for radioactive waste management		The Joint Councils note GDA Assessment Finding 2 and the EA's preliminary conclusion that GNSL has provided an acceptable waste strategy for all waste streams in scope of this GDA for the life cycle of the UK HPR1000 reactor design. Nevertheless, the

GDA environmental aspect **additional explanation provided where necessary*	Potential GDA Issue – as detailed in the EA's consultation document	The Joint Councils views and comments
The EA consider the integrated waste strategy for a generic site to check it is in line with UK policy and good practice.		Joint Councils remain concerned about the potential uncertainty around the availability and capacity of all radioactive waste disposal routes, which are dependent on a range or other national policies and strategies. The Joint Council's seek confirmation in any decision document should the EA issue a SoDA for the UK HPR1000 reactor design that the GDA has taken a robust approach to the management of uncertainties and risks associated with the implementation of national policies and strategies for radioactive waste management.
Best available techniques for minimising production and disposal of radioactive waste ***The EA examine the claims made by the designer about minimising waste and the impact on the environment. We consider the evidence supporting these claims in relation to good practice in the UK.***	GNSL has not yet provided a demonstration that selected options are optimised with respect to environmental protection and safety. We require GNSL to demonstrate that it has considered environmental aspects, alongside safety aspects, to achieve a design optimised for both. GNSL has provided environmental justification for the choice of high efficiency particulate air filter design. However, further justification must be provided to demonstrate how best available techniques is applied.	The Joint Councils note GDA Assessment Findings (3) – (12) and Potential GDA Issues (2) – (3). The Joint Councils welcome the EA's expectation that BAT is used to prevent and minimise the creation of radioactive waste and polluting discharges at source. The Joint Councils support the EA's preliminary conclusion that any design changes that may result from ongoing Office of Nuclear Regulation (ONR) As Low as Reasonable Possible (ALARP) considerations should be appropriately assessed to ensure BAT. The Joint Councils comment that it is not clear how the GDA has assessed the existence and capacity of the supply chain to further minimise the disposal of radioactive waste to the Low-Level Waste Repository or any future Geological Disposal Facility (GDF). The Joint Councils are concerned that the potential risks associated with the delayed delivery of the GDF have not been fully assessed in the GDA. Should the GDF programme be delayed beyond the anticipated Government timescale of 2030-

GDA environmental aspect **additional explanation provided where necessary*	Potential GDA Issue – as detailed in the EA's consultation document	The Joint Councils views and comments
		2040s this runs the risk of continued need for on-site Higher Activity radioactive Waste (HAW), including spent fuel stores until an ultimate disposal route is finally established. Annex II of the National Policy Statement for Nuclear Power Generation (2011) recognises that interim storage on site might be required beyond the 2030s, particularly if the GDF is not available to take HAW. More recent Government Guidance for Geological Disposal (3 November 2020) states that for planning purposes, it is assumed that a GDF will be available to receive the first waste in the 2040s. The Joint Councils view is that the EA should consider as part of the GDA the need for contingency plans to be agreed, to provide confidence to local communities that either on-site storage of HAW and spent fuel would be safe and secure until ultimate GDF delivery, or that feasible alternatives for centralised optimisation and storage of waste, may be practicable. The longevity of spent fuel storage at nuclear sites is of great concern to host communities.
Gaseous and liquid discharges of radioactive waste ***The EA examine the amount of liquid and gaseous waste expected to be discharged into the environment and the proposed limits under which the power station could***		The Joint Councils note GDA Assessment Finding 13 and accepts the EA's preliminary conclusion that there is no potential GDA Issue with GNSL demonstrating that UK HPR1000 reactor design discharges and limits are generally comparable with international OPEX and previous GDAs. The Joint Councils comment that any gaseous and aqueous discharges should be kept below agreed levels and any marine discharges should not exceed those of comparable nuclear power stations worldwide.

GDA environmental aspect **additional explanation provided where necessary*	Potential GDA Issue – as detailed in the EA's consultation document	The Joint Councils views and comments
operate. We also consider the estimated discharges in relation to other comparable power plants across the world.		
Solid radioactive waste and spend fuel ***The EA consider the amount and type of solid waste expected to be generated, looking for potential impacts on the disposability of the waste. We look to see that all opportunities have been taken to avoid or minimise the amount of waste generated. We also check that UK good practice in processing and packaging the waste has been followed so it can be disposed of in the most effective way possible.***	GNSL is required to provide information in relation to the long-term storage requirements for the spent fuel and to demonstrate that the conceptual design for Spent Fuel Interim Store (SFIS) will deliver these requirements. GNSL is required to provide further substantiation of the proposed strategy for the management of in-core instrument assemblies (ICIAs) and if any changes to the strategy is decided, to assess the impact on the disposal of ICIA wastes. GNSL is required to demonstrate that all higher activity waste (HAW) arisings from the UK HPR1000 will be disposable.	The Joint Councils note GDA Assessment Finding (14) – (27) and Potential GDA Issues (5) – (7). The Joint Councils support the EA in seeking to resolve with GNSL by the end of the GDA process the use of BAT for the management of all radioactive waste. The Joint Councils understand that there is ongoing assessment by Radioactive Waste Management (RWM) of the suitability for disposal in any future GDF of the HAW arising from the UK HPR1000 reactor design, but it is not clear when this assessment by RWM will conclude? The Joint Councils are concerned that the potential risks associated with the delay and delivery of the GDF have not been fully assessed in the GDA. The Joint Councils are concerned that the potential risks associated with the delayed delivery of the GDF have not been fully assessed in the GDA. Should the GDF programme be delayed beyond the anticipated Government timescale of 2030s-2040s this runs the risk of continued need for on-site higher activity radioactive waste (HAW), including spent fuel stores until an ultimate disposal route is finally established. Annex II of the National Policy Statement for Nuclear Power Generation (2011) recognises that interim storage on site might be required beyond the 2030s, particularly if

GDA environmental aspect **additional explanation provided where necessary*	Potential GDA Issue – as detailed in the EA's consultation document	The Joint Councils views and comments
		the GDF is not available to take HAW. More recent Government Guidance for Geological Disposal (3 November 2020) states that for planning purposes, it is assumed that a GDF will be available to receive the first waste in the 2040s. The Joint Councils view is that the EA should consider as part of the GDA the need for contingency plans to be agreed, to provide confidence to local communities that either on-site storage of HAW and spent fuel would be safe and secure until ultimate GDF delivery, or that feasible alternatives for centralised optimisation and storage of waste, may be practicable. The longevity of spent fuel storage at nuclear sites is of great concern to host communities.
Sampling and monitoring of discharges and disposals of radioactive waste ***The EA identify if the design can monitor radioactive discharges to the standard needed to comply with a future permit.***		The Joint Councils note GDA Assessment Findings (28) – (31) and accepts the EA's preliminary conclusion that there is no potential GDA Issue with GNSL demonstrating that BAT can be used to monitor discharges and disposals of radioactive waste from the UK HPR1000 reactor design.
The impact of radioactive discharges		The Joint Councils accept the EA's preliminary conclusion that there is no GDA Assessment Finding or Potential GDA Issue with GNSL demonstrating that the impact of radioactive discharges from the UK HPR1000 reactor design would ensure that:

GDA environmental aspect **additional explanation provided where necessary*	Potential GDA Issue – as detailed in the EA's consultation document	The Joint Councils views and comments
The EA review the designer's assessment of the impact of radioactivity on members of the public, plants and animals against our own independent assessment. We compare the results to the legal limit for exposure to radioactivity.		the radiation dose to people will be below the UK constraint for any single new source of 300 micro Sieverts per year (µSv/y). the radiation dose-rates to local plant and animal life will be below our screening level of 10 micro Grays per hour (µGy/h) and so there will not be any significant adverse impact on non-human species from radioactive discharges
Radioactive substances permitting ***The EA consider how other environmental legislation would apply to the design at a generic site. Other environmental regulations we have considered during our assessment include those for combustion processes using diesel generators and those for storing and using hazardous chemicals***		The Joint Councils note that the EA completed its initial assessment of the UKHPR1000 reactor design and published its report in November 2018. The Joint Councils understand that the EA have based the preliminary conclusions of their detailed assessment on information submitted up to July 2020 and accept that a SoDA could be issued if all Potential GDA Issues are resolved, and no new Potential GDA Issues arise before the end of detailed assessment. Although the Joint Councils understand that the GDA is not site specific, it is widely accepted that the only site proposed for its development is at Bradwell-on-Sea in Essex. The Joint Councils note that it is stated on page 8 of EA document AR09 that GNSL have derived a generic site for the GDA that has adopted some of the environmental characteristics of Bradwell-on-Sea. A key assumption of GNSL's UK HPR1000 reactor design is a direct cooling system, yet indirect cooling of the UK HPR1000 reactor design is being proposed at the Bradwell-on-Sea site. The Joint Councils accept that the EA have reached a preliminary

GDA environmental aspect **additional explanation provided where necessary*	Potential GDA Issue – as detailed in the EA's consultation document	The Joint Councils views and comments
		conclusion that other options for cooling, which it presumes include indirect and hybrid cooling, could be considered at the site-specific stage. Nevertheless, it is not clear from the GDA if direct cooling is a design or site-specific issue or what weight the generic assumption of direct cooling holds in the GDA process? The Joint Councils would also query why GNSL would continue with the generic assumption of direct cooling when they have no programme to deliver the UK HPR1000 reactor design anywhere else in England than Bradwell-on-Sea? The Joint Councils view is that if the EA decide to issue a SoDA that any decision document should provide clarity on how the GDA has considered the acceptability of the UK HPR1000 reactor design for indirect and hybrid cooling. It is not clear from the GDA if a SoDA for the UK HPR reactor design would be valid for a site in England that did not meet the identified generic assumption of direct cooling?
Water use and abstraction ***The EA consider the requirements of the nuclear power stations for fresh water to use in the steam-raising circuits, other processes and 'domestic' purposes (for example, showers, toilets, laundry). Nuclear power stations also need fresh or sea water for cooling the***		The Joint Councils note GDA Assessment Findings (32) – (33) and the EA's preliminary conclusion that there is no Potential GDA Issue with water use and abstraction for the UK HPR1000 reactor design. The Joint Councils would offer further comment on GDA Assessment Finding 33 and GNSL's conclusion that a direct 'once-through' cooling system is the most appropriate environmental option for the UK HPR1000 reactor design if developed at a generic coastal or estuarine site in England. The Joint Council remain unclear why GNSL continue with the generic assumption that the UK HPR1000 reactor design will be directly cooled when any potential SoDA issued by the EA will be valid in England only. It is understood that the GDA is not site specific,

GDA environmental aspect **additional explanation provided where necessary*	Potential GDA Issue – as detailed in the EA's consultation document	The Joint Councils views and comments
steam condensers and other plant. Where water supplies are abstracted directly from groundwater (for example, via boreholes) or inland waters (for example, lakes, rivers or estuaries), a water abstraction licence is required.		but it is widely accepted that the only site being proposed for developing the UK HPR1000 reactor design in England is at Bradwell-on-Sea where direct cooling is not viable. The Joint Councils view is that indirect cooling offers the least thermally efficient option and is therefore not BAT for the development of the UK HPR1000 reactor design. The Joint Councils request clarity on this matter in any decision document should the EA decide to issue a SoDA.
Discharges to surface waters and groundwater		The Joint Councils note GDA Assessment Findings (34) – (36) and accepts the EA's preliminary conclusion that there is no potential GDA Issue with discharges to surface waters and groundwaters from the UK HPR1000 reactor design. The Joint Councils understand that GNSL have assumed a direct 'once-through' cooling system for GDA. The Joint Councils are not clear if an alternative to direct cooling is chosen at the site-specific stage whether the GDA for the UK HPR1000 reactor design would remain valid? The Joint Councils comment that should the EA decide to issue a SoDA for the UK HPR1000 reactor design that any decision document should clarify how the GDA process applies to the departure from a key design assumption when concluding on design acceptability.
Operation of installations ***The EA consider any other installations that may be of enough capacity to requiring***		The Joint Councils note GDA Assessment Findings (37) – (38) and accepts the EA's preliminary conclusion that there is no potential GDA Issue with the operation of installations for the UK HPR1000 reactor design. The Joint Councils welcome the

GDA environmental aspect **additional explanation provided where necessary*	Potential GDA Issue – as detailed in the EA's consultation document	The Joint Councils views and comments
permitting. Most nuclear power station designs include conventional combustion plant for standby generation and/or use as auxiliary boilers.		commitment of GNSL and the EA to the use of BAT in reducing polluting emissions to air.
The control of major accident hazards		The Joint Councils note GDA Assessment Finding 39 and accepts and welcomes the EA's preliminary conclusion that there is no potential GDA Issue with the control of major accident hazards from the UK HPR1000 reactor design.
Fluorinated greenhouse gases and ozone-depleting substances		The Joint Councils note GDA Assessment Finding 40 and accepts the EA's preliminary conclusion that there is no potential GDA Issue with the use of fluorinated greenhouse gases within legal limits in the UK HPR1000 reactor design. The Joint Councils welcome no ozone depleting substances requiring use in the HPR1000 reactor design.
The overall acceptability of the design ***The EA commissioned an independent assessment of the impact of radioactivity on***		The Joint Councils comment that is not clear from the GDA what aspects of the design of the UK HPR1000 reactor will be fixed by the process and if there is scope at the site-specific stage for stakeholders to influence the height, mass and orientation of the reactor design? The Joint Councils reserve the right to comment on matters in relation to the overall acceptability of the design of

GDA environmental aspect **additional explanation provided where necessary*	Potential GDA Issue – as detailed in the EA's consultation document	The Joint Councils views and comments
members of the public, plants and animals using the designer's proposed discharge limits and generic UK data. Based on the EA's findings so far, its preliminary conclusion is that it considers many of the environmental aspects of the design would be acceptable. However, at this stage of its detailed assessment, there are six Potential GDA Issues to be addressed before it would consider issuing a full SoDA for the UK HPR1000 reactor design.		the UK HPR1000 reactor in its totality should it be developed at Bradwell-on-Sea.

Appendix 3: Attachment to UKHPR1000-013

Low Level Radiation Campaign response to Environment Agency consultation on Generic design assessment of General Nuclear System Limited UK Hualong pressurised water reactor (UK HPR1000)
3rd April 2021

A particular failure

This response addresses consultation question 7 concerning "*… preliminary conclusions on the impact of discharges of radioactive waste* ". In this context we draw attention to the fact that since the middle of 2020 the Agency has been in possession of a report on some limitations of the conventional ICRP model of radiation risk [1] without offering any response to the concerns it details.

The report, commissioned by the charity Children with Cancer UK, explains a failure in the ICRP's concept of dose as an average across substantial volumes of body tissue. It argues that averaging is invalid in the case of exposure to particles of alpha-emitting elements that might be inhaled or ingested. This assertion is illustrated with an image (reproduced below and discussed on p 33 of the CwCUK report) showing the impact of individual tracks from alpha decays striking a sheet of CR39, which is conventionally used to detect radon, another alpha emitter. We remind the Agency that a tissue cell hit by a single alpha decay receives a radiation dose of 500mSv.

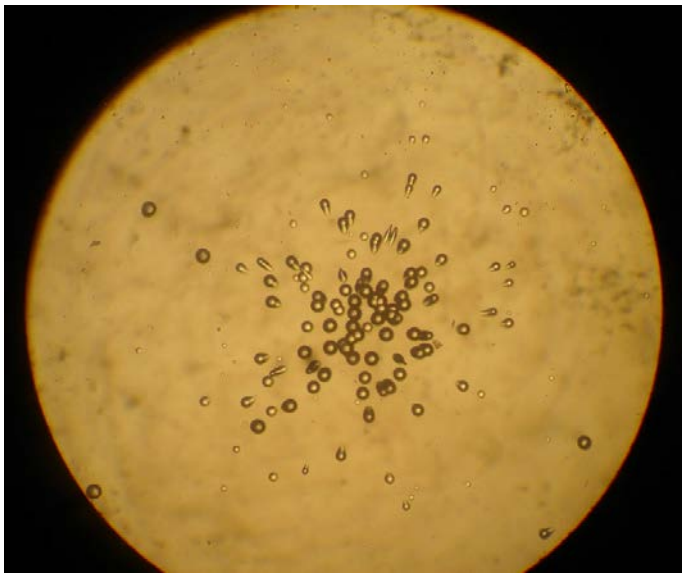
The CwCUK report suggests that this represents an anomaly in the concept of dose with the potential to explain the discrepancies between the frequency of health effects expected on the basis ICRP methodology and the incidence of cancer and congenital malformation that has been observed in association with the release of alpha-emitting particulates over many decades.

It may be thought that at doses as high as 500mSv the predominance of cell killing would negate any concern about health effects but we suggest that sublethal damage would also occur. During the CERRIE [2] process CoMARE's Chairman suggested that the Bragg effect would tend to create a zone of dead cells around a sublethally affected clone thus shielding that clone from the influence of protective signalling from healthy cells, leading to a deficit of apoptosis (programmed cell death).

[1] *Radiation and reason: The impact of science on a culture of confusion*
http://www.llrc.org/PreliminaryREPORTforCwCUK26062020.pdf

[2] Committee Examining Radiation Risks of Internal Emitters . This image shows radiation damage from the alpha decays of a particle a few microns across. The technique employs flat sheets of CR39 plastic and is conventionally used for detecting radon gas in buildings. Each of the circular marks shows the

impact of a single alpha ray striking the CR39 more or less at right angles. The elongated marks show the effect of an oblique impact. Alpha tracks that do not travel towards the plastic are not detected. The particle that is the radiation source is probably Uranium-238, though it could be an alloy of uranium, americium and plutonium. This particle was in a small randomly selected portion of the engine air filter from a vehicle that had been used exclusively in the vicinity of Hinkley Point nuclear power station. The filter dust contained many further particles. Methods such as the “groundhog” systems used by the environment agencies for detecting hot particles on beaches near Sellafield and Dounreay are incapable of detecting these respirable particles.



Failures of dialogue

On 24th February during the "HOLD GDA Event - National and NGOs" zoom call on the HPR1000 <name redacted> asked EA the following questions using the chat facility:-

"What proportion of total alpha-emitting particulate matter is expected to be discharged to the atmosphere and what proportion to water"

There was no answer to this question.

The others were:-

"What is the annual total of alpha-emitting particulate matter expected to be discharged, or licensed for discharge? What is the expected size distribution of the particles? What elements and isotopes are involved?"

<name redacted> gave a verbal answer during the meeting, saying discharges of alpha-emitting particulate matter would be below the limit of detectability. <name redacted> has observed that this reply is irrelevant since the questions were about design characteristics and could have been informed by experience of other reactor types.

On 25th February he asked the Environment Agency for written answers [3] but no response has been received (as at 3rd April).

[3] UK HPR1000 <name redacted>| <email redacted> (see email below)

In this context we note that Regulatory Orders and Questions that could have been relevant (RO-UKHPR1000-0012, RQ-UKHPR1000-0194, RO-UKHPR1000-0036) are in fact silent on the sizes and quantities of alpha-emitting particulates expected to be discharged. We request an early response. We also hope to receive a written response to the CwCUK report which we understand PHE has provided to the Agency. We hereby ask the Agency to accept a supplementary submission to the present consultation if one seems appropriate in light of any responses we receive on the matters discussed above.

Weighting factors

An "Assessment report" [4] states that "Default Radiation Weighting factors for alpha, beta/gamma and low beta emitters were assumed, i.e. 10, 1 and 3 respectively.

No analogous statement on human exposures can be found. We believe a Relative Biological Effectiveness (RBE) factor of 20 ought conventionally to apply for alphas but this is not mentioned; the term RBE is not found. In light of the findings summarised in the CwCUK report it will be apparent that an RBE 20 is inadequate, but nonetheless we ask for an explanation of the apparent omission.

[4] Assessment report – Independent dose assessment of General Nuclear System's UK HPR1000 Cavendish Report Number – SN-01262.002.01-REP-001 Version 1 January 2021" Appendix H: Radiation exposure of non-human species p 88 para H2.1 Atmospheric Discharges

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Thu, Feb 25, 6:46 PM

Hello,

During the "HOLD GDA Event - National and NGOs" zoom call yesterday (24th February) I wrote some questions in the chat pane. The first was:

1) What is the annual total of alpha-emitting particulate matter expected to be discharged, or licensed for discharge? What is the expected size distribution of the particles? What elements and isotopes are involved?

EA addressed this by saying discharges of alpha-emitting particulate matter would be below the limit of detectability. Since I found this unsatisfactory, I posted "UNSCEAR has published data on particulates discharged from every NPP in the world up to 1997" and I gave the URL http://www.unscear.org/docs/publications/2000/UNSCEAR_2000_Annex-C-CORR.pdf.

Table 34 of that report - "Particulates released from reactors in airborne effluents" – shows that operating NPPs emit particulates, and you may note that the amounts of such emissions are expressed in units of radioactivity. I did not ask the question in terms of what would be detectable; we already face a situation in the UK where CEFAS purports to determine the alpha activity of mud in the Severn Estuary using a test that cannot detect alpha-emitting particulates. I asked for GNSL's estimate of the alpha

activity in airborne effluents. It is a simple enough question and I would expect you to be concerned about the answer as a matter of due diligence. Will you obtain one?

I look forward to responses to my other questions, which were:-

"… what proportion of total alpha-emitting particulate matter is expected to be discharged to the atmosphere and what proportion to water? "

and

“On 4th February PHE stated in a zoom meeting with NGOs that "not all organisations use 1 in a million health detriments as a regulatory criterion for assessing acceptable risk", and that "work is going on about tolerability". What criteria will be applied to the technology you are discussing here - i.e. UK HPR1000? How will any discrepancies in "health detriment" estimates be resolved? Can the Environment Agency brief NGOs on what this might mean?"

Appendix 4: Attachment to UKHPR1000-014

Environment Agency Consultation

Assessing new nuclear power station designs

Generic design assessment of General Nuclear System Limited's UK HPR 1000

Response to the Consultation by Blackwater Against New Nuclear Group (BANNG)

BANNG Paper No. 49

Overview

The Blackwater Against New Nuclear Group (BANNG) welcomes this Consultation on the GDA for the UK Hualong 1 Reactor. We recognise the EA's willingness to be open and transparent and to engage with the public and stakeholders at this stage in the GDA process. From BANNG's perspective this consultation provides an opportunity to indicate why Hualong 1 reactors are unsuitable and unacceptable for the construction, operation, decommissioning and waste management at the specified generic site over the long term. We contend that the environmental damage and risk to safety cannot be justified. The impacts will be significant and irreversible.

BANNG commends the EA on the effort it has made to encourage responses from public and stakeholders. BANNG has had several opportunities for remote meetings with the EA and the EA also made a presentation to a public meeting hosted by BANNG. It may be noted that BANNG has responded to the two previous GDA consultations on the Westinghouse AP1000 Nuclear Power Plant and the UK EPR (now under construction at Hinkley Point and proposed at Sizewell, see BANNG Paper 6, 12 October 2010).

Engagement should be a two-way, interactive process. The EA's intentions are to make all responses publicly available 'during and after the consultation'. It is noted that under the Freedom of Information Act, the EA may be required to publish responses. However, it is intended to summarise responses and publish these on the website and to keep people informed of the outcomes of the consultation. There is concern that the process may, in the end, revert to a top-down approach whereby a summary of responses is put descriptively, rather than analytically.

- **Respondents have a right to know why arguments are accepted or rejected. Responses must not go into a black hole; rather the EA should defend conclusions based on careful consideration of evidence from responses. This need not be an exercise in seeking endorsement of predetermined conclusions. It must be an open process, open to challenge and change.**

Part 1 Nature and Purpose of the Consultation

Opportunities and Limitations

While the effort put into the consultation by the EA is commenable and its intention to seek a wide range of views is clear, the scope and reach of the exercise is limited in several respects.

1. *The consultation is too technical*. GDA is, obviously, a techical process but that does not require unnecessary complexity in consultation documents. The language is somewhat formal and uncompromising. A more user-friendly approach is needed, setting out the issues, clarifying arguments and indicating where issues are open or closed. There is a tendency, whether by accident or design, to present issues in a way that confirms a conclusion rather than provokes a discussion, shutting down rather than opening up. A more open-ended approach to issues that are unresolved would encourage an active response.
2. *It applies to a generic site*. The generic site further limits and confuses public responses. It is very clear that the Hualong 1 reactor is intended for deployment at a specific site, namely Bradwell. It is true that the specifications of the generic site approximate fairly closely to Bradwell. Nonetheless, key issues pertaining to the specific site such as cooling system, impacts of port facilities, impacts on ecology and environment in the specific conditions of the Dengie and Blackwater are excluded.
3. *Its scope is limited*. It is surprising how little scope there is for debate over some issues. The remit of the EA appears, from this consultation, to be limited and mainly confined to emissions, discharges and solid radioactive waste management during construction, operation and decommissioning. While these are very signficant issues, the EA's role is limited to impacts and strategic policy is outside its scope. It must be said the EA seems content with this role and unwilling to make any strategic declarations. This is very frustrating in that it inhibits public response.
4. *Its remit is limited*. The EA's authority is constrained by other bodies which exercise control over aspects and issues of decision making. For example, the Government sets strategic policy on site sutability; the Planning Inspectorate determines issues of land use and location; and various statutory bodies possess advisory or legal power over specific issues. In addition to its role in GDA, the EA separately grants permits and advises other bodies. Decision making is, therefore, fragmented and joined-up decision making is obstructed. This tends to support a process of incremental and progressive decision making foreclosing options and limiting strategic assessment.
5. *The EA is a joint, rather than single, regulator in the GDA.* The GDA is undertaken jointly by two regulators, the EA and the ONR (Office for Nuclear Regulation). It is regrettable that the ONR has not separately or jointly consulted on the safety and security aspects of the GDA, matters which fall within its remit. Consequently, this consultation is only partial; it does not reflect the whole regulatory process being undertaken at this time, focusing more upon impacts to environments from emissions, discharges and wastes (EA's function) than upon the risks to safety and security arising from the operation of reactors (which fall to the ONR). From a public perspective the risks and impacts are indissoluble and an integrated consultation from the two regulators would facilitate a more comprehensive response.

BANNG recognises the effort that the EA has made in undertaking this consultation. We also note that other authorities have failed to open up to consultation. This includes the ONR, the joint regulator in the GDA, and the

nuclear directorate in Government which has persistently failed either to review or consult upon the National Policy Statement for Nuclear Energy (EN-6, 2011) and its designation of potentially suitable sites. The failure is all the more deplorable in that it inhibits the opportunity for public consideration of the project for the deployment of the Hualong 1 reactor as a whole.

We are disappointed by the limiting features of this consultation, in terms of its remit, scope, presentation and substance. The fragmented process tends to close down rather than open up opportunities for purposeful engagement. The EA insists that certain issues are beyond its control, in another body's remit or matters of government policy. We consider its evasion of responsibility reflects a complacency and conformity which renders public response less effective. We would urge the EA, from its position as independent regulator, to be prepared to challenge policy or proposals which it considers unjustifiable and harmful to present and future generations.

EA's failure to consider the project as a whole

A consequence of this fragmented and limited approach to assessment is that the EA fails to consider the acceptability of the project as a whole. It states what is excluded at the outset: 'Our consultation does not relate to a specific site. It is not about the need for nuclear power, the siting of nuclear power stations, nor the safety and security of the design' (Consultation document, p.5). This statement sweeps away key and fundamental objections to the reactor. It precludes examination of the suitability of the generic site, accepts the need for nuclear power based on claims made in a NPS a decade ago and remits issues of safety and security to its colleague regulator the ONR which disdains from consulting on the matter. We would argue that the EA is being unduly restrictive and deferential presumably because it does not wish to rock the boat. We would encourage the EA to be much bolder and more presumptive in exercising its role, prepared to criticise government policy and comment on matters affecting its remit. At the very least we should expect the EA to challenge assumptions of policy where necessary, to evaluate the uncertainties and indeterminacies behind its claims and to state clearly where it believes policy implementation will prove uncertain or unsafe.

A more assertive role would be entirely consistent with the EA's proudly proclaimed independence of government and industry. Moreover, such a position would enable the EA properly to fulfil its broad remit, 'to protect and improve the environment'.

By taking a bold and independent approach the EA could consider whether the project as a whole can be said to protect and improve the environment. The EA notes that the applicant, GNSL, in defining its generic site, 'has adopted the characteristics of the Bradwell site'(p.91). That being so, it must be possible for the EA to consider the overall environmental impact of a large GW nuclear power station at a generic site like Bradwell. The generic assessment assumes only one reactor of 1.18GW, whereas the actual proposal for Bradwell B is of two reactors with a combined generating capacity of 2.36GWe. The EA will doubtless claim that the potential suitability of the Bradwell site is

a matter for the planning inspectorate at the DCO stage, at which the EA will have an advisory, not a regulatory role. We believe the EA can and should make observations on the impact of the total project at this GDA stage that can be followed up at the planning stage.

The Bradwell B plans revealed a year ago at the Pre-Application stage were greeted with dismay and alarm. The scale of the project is enormous and will have a transformative effect on the Dengie Peninsular, the Blackwater estuary and beyond. BANNG commented on the proposals as follows:

> *The power station, if built, will cover an area around 230 times Trafalgar Square. Foundations for the power station will extend down to 60 feet below the ground and the two reactors and turbines will be constructed on a "nuclear island" 7.5m. above sea level. Directly opposite Mersea Island will be cooling towers, each 50-60m. high (higher than the remaining buildings of Bradwell A) and 165m. wide. Highly radioactive spent fuel will be stored for upwards of 150 years in a building close to Bradwell village.*
>
> *The main development site covers 500 ha. and casts its footprint across the whole north eastern end of the Dengie Peninsula and beyond. The nuclear island occupies 100 ha. and will stand like a medieval castle fortified on its raised platform and surrounded by massive sea defences set to repel the invading seas during the decades of sea-level rise and battering by storms until the radioactive relic of the station with its spent fuel stores is immured as an island and possibly destroyed in the unforeseeable future. Beyond the island but within the development site, the existing landscape will be destroyed during construction by production and preparation areas, soil storage and redistribution. (Extract from BANNG Paper 44).*

Such a monstrous development in the context of the Blackwater environments would inflict immeasurable and irreversible harm and transform the local tranquil rural region into an urbanised, industrial complex. Despite the outrageous scale and destructiveness of the proposed reactors on a generic site approximating to the Bradwell site, the EA makes no comment. It may be regarded as a dereliction of responsibility to the public interest for the EA to remain silent on the impacts of the whole project.

The detrimental environmental impacts of Bradwell B are on such a scale that we believe the EA (and its co-regulator ONR) should either declare the proposals unacceptable on the generic site or convey to the Planning Inspector its view that the project should not proceed at the Bradwell site on grounds of its gross impact on environments.

The purpose of this consultation

Explicit. The ostensible and explicit purpose of the GDA Consultation is, as already noted, to fulfil EA's general remit, 'to protect and improve the environment'. Ignoring the obvious incompatibility of this general aim in the context of developing a massive piece of infrastructure like a giant (GW) nuclear power station on a fragile, low-lying coast, we recognise the intention 'to help people and wildlife adapt to climate change and reduce the impacts, including flooding, drought, sea-level rise and coastal erosion' (p.2). Within the very narrow terms of reference it has adopted we believe the EA has been well meaning in approaching this objective. However, this is only truly possible if the project is abandoned altogether and the environmental improvement is left to creative rather than destructive activities. To suggest that sustainable development can be supported by the intrusion of a mega nuclear power station is clearly delusional.

Implicit. The purpose of environmental improvement and protection cannot be fulfilled, partly because it is in conflict with another, more implicit, purpose. That is, the priority 'to work with business and other organisations to manage the use of resources'. An implicit purpose, therefore, is to help facilitate the development of nuclear resources through the GDA process. The EA is quite candid about this role indicating its influence on power station designs 'to help ensure that they meet our regulatory requirements and expectations'. The whole GDA process is one whereby developer and regulator work harmoniously to achieve reactor design that can be given approval.

In the case of the Hualong 1 reactor the intentions of the developer are quite explicit. A key feature of the 'golden relationship' forged between the Persident of the Chinese People's Republic and the UK Prime Minister in 2015 was to provide an opportunity for a Chinese developer to secure UK regulatory approval for the Hualong 1 reactor technology. This would be a 'gold standard' enabling the promotion of Chinese nuclear technology in Western countries. Bradwell was the site for the realisation of this plan, providing a suitable terminal to the ambitious Chinese Belt and Road (Beijing to Bradwell) strategy.

It may well be that GDA approval is the main driving force behind the Bradwell project. Relations between China and the UK have soured somewhat since 2015 and the Bradwell project has come up against serious obstacles. The current 'pause' in public engagement suggests that the Bradwell project may be slowing down. There is, as yet, no sign of a let up in the GDA process where approval by the regulators would give the developer a passport to propose development at other sites in England and, given the credibiliity of the UK regulatory process, elsewhere in the world. It would be little surprise if, once GDA approval is achieved, the developer GNSL looked elsewhere for development.

BANNG recognises that the EA is considering the environmental impacts and consequences arising from the development of a single 1.18GW Hualong 1 reactor at a generic site specifically akin to Bradwell. But, we believe the key purpose of the assessment by the UK regulators of this Chinese design is to provide acceptance of the reactor technology transferable to other sites. Nevertheless, we remain of the view that the reactor design and technology, and especially the deployment of two reactors, let alone for the Bradwell site itself.

Part 2 Issues of Concern

In this second part of our response we consider the individual chapters of the report, identifying issues of concern and responding to the broad questions set out in the Consultation Document. We have presented our views and comments, along with our recommendatios on a chapter by chapter basis. We wish our response to be published and, in due course, we anticipate your responses to the questions and criticisms we have made. In particular, we will welcome your consideration of where you agree or disagree.

Ch.2 Introduction

In Part 1 above we have covered most of the matters in this introductory chapter, notably, the role and regulatory function of the regulator, the purpose of the GDA, the scope of the GDA for the Hualong 1 reactor, the nature of the generic site and the consultation process. We note the following additional points:

Exclusion of flooding and sea defence.

A major issue with respect to a GW reactor at the generic site is the problem of flooding arising from climate change impacts, storm surges and sea-level rise (SLR). This issue is even more concerning in the case of two GW reactors at the specific Bradwell site. We note that the EA regards flooding and sea defences as a site-specific issue although the ONR is considering it as part of its GDA, on which it is not consulting. This is a prime example of the failure to consider the potential suitability of the site as a whole.

We consider exclusion of flooding and flood defence from this GDA consultation is irresponsible and denies public comment on what may be considered as the single most important reason for refusing development of GW reactors on vulnerable, low-lying sites threatened in the long run by the impacts of climate change. Lack of consideration of the issue vastly limits the scope of the GDA as a consultation exercise.

Clean Bill of Health

The consultation process is rendered even more impotent by the lack of any debate or encouragement to engage with issues. The document signifies its general contentment with the progress of the GDA. It does not find ‘any matters within the submission that were obviously unacceptable… any significant design modifications that are likely to be needed’. (p.20). It finds the management systems adequate, radiation impact within constraints, discharges comparable to other stations and the level of information mainly sufficient for detailed assessment. The process appears to be working smoothly towards its target date of 2022 by which date the relevant SoDA or iSoDA will be issued. This will enable the developer to claim UK regulatory acceptance for its reactor design thereby enhancing its commercial prospects. It may be noted that an iSoDA provides a provisional acceptance of outstanding issues which must be resolved for a full SoDA to be issued before nuclear island safety-related construction of the reactor

can be considered. This approach would appear to give premature credibility to a design, a further example of the GDA process as a facilitative function.

The EA both at meetings and in published statements has been at pains to stress that the process has run smoothly, that the regulatory issues are resolvable and that the four year timeline for completion will be met. This, along with the limited scope of the exercise, really provides little for respondents to do but admire. But, the consultation process does provide the EA and, through it, the developer with the legitimation that is the essence of the GDA process. From a public and stakeholder perspective responding is a largely unrewarding exercise undertaken mainly for the benefit of the developer and its regulators.

Ch. 3 The UK HPR1000 Design

No comment. But, we note that there are no units of this specific design currently operating. It is anticipated that the Fangchenggang reactor no. 3, the reference design for Bradwell, is expected to come on line in 2022.

Ch.4 Guide to Assessment

No comment except to note two requirements. One, that further information on long-term storage requirements is needed. Two, that HAW arisings will be disposable based on advice from RWM (Radiactive Waste Management Ltd.). It is expected that the EA will be rigorous in its scrutiny of the credibility of arrangements for long-term storage of HAW and other wastes. We return to this issue below.

Ch 5 Management Systems

Question 1. No comment.

Ch.6 Strategic considerations for radioactive waste management

BANNG agrees that the strategy needs to consider on-site storage and management of ILW and spent fuel for the lifetime of the power station. However, we have two observations:

1. There is uncertainty surrounding the GDF. The claim that disposals ‘are unlikely to occur until late this century’ suggests that a GDF, if operating, will take in new build wastes by that time. This presupposes that a GDF will be available and have sufficient capacity. At present the GDF is a virtual concept lacking both technological design, scientific safety case or acceptable site. It cannot, therefore, be assumed that a GDF will be available any time soon, if at all. Planning assumptions of availability by the 2040s are completely unrealistic. The latest informed estimates suggest a GDF will not be taking in wastes until around 2075. The GDF programme is presently in a state of uncertainty as to location, capacity, inventory, cost and time-scales.

2. The Hualong 1 reactor, if approved and permitted, would be unlikely to be operating until the mid 2030s. On-site storage will be required from the outset and spent fuel will continue to accumulate until operations cease towards the end of the century. Spent fuel will require time for cooling and is likely to remain on site until well into the next century. It is uncertain whether the GDF if available will have sufficient capacity for an unknowable quantity of new build wastes, in addition to legacy wastes which already exist. It is impossible to know what conditions will be like in the middle of the next century and beyond.

The strategy for managing HAW and spent fuel, therefore, faces key uncertainties:

1. Whether a GDF will be available and capable of receiving unknowable quantities of waste from new build in addition to the vast accumulation of legacy wastes;

2. Whether there will be resources, technology and controls necessary to maintain HAW and spent fuel safely in interim on-site storage until well into the next century;

3. What the conditions will be like on a low-lying site (generic or Bradwell) vulnerable to inundation, storm surges, SLR and coastal processes.

The EA claims that GNSL 'has provided an acceptable waste strategy for all waste streams within the scope of this GDA' (p.35). And that the strategy is consistent with guidance, policy and regulatory expectations. BANNG considers that it is impossible to state with any degree of certainty that the strategy is acceptable. We do not believe that regular reviews during operation are likely to reduce uncertainties to the degree necessary to provide assurance of long-term safety. At best this approach is a leap in the dark. Nor should the review process be used as a way of deferring decisions to a future operator.

The best the EA can realistically do is to acknowledge that it is impossible to state unequivocally that the strategy is acceptable; that any strategy for long-term management of wastes into the far future proposed at this time can only be based on probabilistic assessment; and, therefore, any GDA can only be provisional and a SoDA can only be issued on the understanding that the strategy may not be achievable.

BANNG would go further, arguing that a long-term strategy is presently more fantasy than fact and that, in conditions of uncertainy, such a strategy is unaccepable and, therefore, the project should not proceed.

Ch.9 Solid Rdioactive Wastes

Here we come to the very core of BANNG's concerns about this GDA. In our response to Qu. 5 (Ch.6) we argued that the uncertainties surrounding long-term radioactive waste management were so great as to preclude any definitive acceptance of the proposed strategy. In any event, the proposals are necessarily vague and incomplete and require further work.

It is stated that there are no disposal facilities for HAW and spent fuel but that, nonetheless, it is expected that these 'will be disposed of to a geological disposal facility that the government intends to construct' (p.55). The wastes must be managed until the GDF is available. We have already stated our concerns about this approach given that there is no certainty that it can be realised. We note that the EA's preliminary conclusions have few reservations in commending GNSL's approach and pronounce a confidence in its implementation that cannot be supported by evidence or realistic expectation. We regard the EA's preliminary assessment to be based on unrealistic assumptions and cavalier assertions emanating from what we can only conclude is a very superficial assessment. Although the findings are preliminary and there are potential GDA issues arising there is a lack of analysis, insight and wariness in the assessment in principle and in detail. There is an overeager readiness to accept Government policy without question or challenge and to defer to GNSL's apparently uninhibited interpretation.

We urge the EA to review this chapter and provide a much more considered appraisal which respects the uncertainties in assumptions and the presumptuous assertions of acceptability of the approach to long-term waste management. A more critical, provisional and analytical appraisal is required, spelling out the risks to present and future generations of an approach that relies entirely on the provision of a GDF which may not become available for wastes from new build.

It must be recognised that a robust and credible solution to the management of radioactive waste is a necessary condition for the development of new build. However, the claims of developers must be critically examined by regulators. We should expect our regulators to protect the environment and public health both now and in the future. As things stand it is not possible to guarantee the safe and secure management of highly active wastes indefinitely, certainly not beyond the end of the century, if then. That being so, the EA should assert its independence by spelling out the rather fragile basis on which claims for a permanent solution to the problem of radioactive waste are based.

Decommissioning. There is no relevant experience of decommissioning in China. Detailed proposals are to be left to the detailed design stage and so not considered in the GDA. The developer has opted for immediate rather than deferred decommissioning. The distinction is immaterial since decommissioning cannot begin until the end of the century at the earliest. Decommissioning is a complex and lengthy process and cannot be completed for site clearance until the HAW and spent fuel are removed, likely to be towards the end of the next century. There will also be HAW as well as substantial volumes of ILW present on site in the reactor core and associated infrastructures. This is unlikely to be movable until towards the end of decommissioning. There will be large volumes of ILW/LLW that might be moved off site as well as the vast amounts of non-radioactive materials, some of which can be recycled.

Decommissioning is a continuous set of processes and includes materials for which solutions have yet to be determined. This is clear from the NDA's strategy for the existing UK fleet where decommissioning is still being learned and experiments are being conducted. Although spent fuel has been removed from some sites, including Bradwell A, graphite reactor cores are left in passive store pending a solution yet to be found for their dismantling and disposal, in Bradwell's case by the curiously precise, if optimistic, date of 2092.

While it may, just, be conceivable that existing legacy reactors like Bradwell A can be fully dismantled and sites cleared by the end of this century, it stretches the bounds of credulity to envisage and programme a plan for decommissioning a complex power plant ten times as large with spent fuel stored on a site that will be under threat from the impacts of climate change increasing as the next century proceeds. The improbability of planning for decommissioning is hardly touched on in the document; like so many other issues it is left to another institution or to another stage in the decision process or, worse still, it is left to a process of review and to future generations to manage a problem which, at this juncture, would appear to be unmanageable. It is simply not good enough to 'acknowledge that the techniques for decontaminating and dismantling the UK HPR1000 reactor will improve'. Nor is reliance on international experience a necessary guarantee of improvement.

The treatment of decommissioning is inadequate, relying on as yet unknown future improvements, international experience and periodical reviews. The absence of any serious discussion of decommissioning is a major defect of this GDA. It has presumably been ignored because it is impossible for the developer to draw up credible plans and for the regulator to make any worthwhile assessment. The attitude seems to be to leave it to the future to decide how to proceed. Frankly, this is irresponsible, a dereliction of the regulator's duty to provide careful, evidence based evaluation. The omission of decommissioning from any worthwhile analysis and assessment provides an easy passage for the developer but, it is feared, at the expense of future generations who must find resources, skills and technology to deal with dangerous materials at a potentially unviable site. The EA should make a statement as to why it is not prepared to offer an overall assessment of decommissioning at this stage.

The sections on waste minimisation, characterisation, segregation, conditioning and packaging to reduce volumes and radioactivity are noted. Two observations here. One is that the emphasis is on volumes whereas it would also be useful to have estimates of radioactivity. This relates to the obvious point that large volumes equate to low radioactivity in materials which can be removed relatively easily and in a short timescale while small volumes (HAW) have high levels of radioactivity which must be managed for longer periods on site. The other point is that many of the processes are left for future operators to develop and manage. This may be unavoidable but it does demonstrate the inconclusive nature of the GDA and the transfer of implementation to the future.

BANNG considers that data on radioactive wastes should be expressed not only in terms of volume but also of radioactivity to give an overall view of risk.

It is noted that the timescale for managing spent fuel assemblies on site is multi-generational, estimated at 5-10 years pool storage and interim storage of at least 100 years. Assuming a 60 year period of generating electricity beginning, say, 2035, the final spent fuel assemblies will still be stored on site until beyond the end of the next century (that is, generation 60 years to 2095, spent fuel pool storage 10 years, 2105, on-site storage 100 years, 2205). It is anticipated that storage will be in two phases, the first of 30 years, allowing a future operator to take account of learning and technical developments to enable BAT to be applied for the lifetime of the stores. It is further anticipated that GNSL will be able to demonstrate that the design of the spent fuel interim Store (SFIS) will be capable of providing safe storage throughout the lifetime of the operation and decommissioning period. This is a requirement under GDA Issue 4 whereby GNSL is required to provide information that the conceptual design of the SFIS is able to meet these requirements. We consider this issue is among the most important in the whole GDA. Moreover, we also believe it is impossible to achieve.

It is clearly not credible that arrangements for managing spent fuel on site over such extensive time-spans can be demonstrated. The uncertainties and unknowns are formidable and the climatic, technological, social and economic factors contain a myriad of intervening variables such that it is impossible to provide conceptual, let alone empirical, support for a claim that a long-term management route is feasible, conceivable or manageable. Certainly, the Government's pronouncement that 'effective arrangements will exist to manage and dispose of the waste that will be produced from new nuclear power stations' (DECC, 2011, p.15) is little more than a pious hope with no firm foundation in realistic appraisal. Similarly, we do not consider a view from RWM on disposability of much use at this stage when, at the earliest, spent fuel from the reactor will not be available until around 2130, a time when the site may well be unmanageable. Potential GDA issue 6 requires that RWM will enable GNSL to demonstrate that all HAW arisings will be disposable. We do not consider this to be a feasible requirement.

As we have already observed neither the future of technological innovation, institutional continuity, nor yet the ability or willingness of future society to manage the burdens of risk bequeathed to them can be envisaged. There appears to us no plausible way in which a SoDA or even an iSoDA can be issued for the long-term management of spent fuel and HAW.

That being so, we consider the proposal for a new nuclear power station and associated radioactive waste management facilities must fail assessment on grounds that it is not possible to validate safety in the unknowable far future. It seems improbable that the picture will be any clearer after thirty years have elapsed at which point a review is envisaged. Further, on grounds of intergenerational equity, the project must fail and should be abandoned. At the very least the EA should indicate that any detailed assessment of radioactive waste management at the generic site is not possible at this stage and should not be left to a future review.

Ch. 11 Impact of radioactive discharges

It is noted that the generic site has characteristics approximating to those of the Bradwell site which is taken as the bounding case for the UK. This indicates that conservative estimates have been made in terms of volumetric exchange rates for marine modelling and the habit data of the local population. Further information was required on size of site, shape of coast and estuary and position of power station, the type of terrestrial environment and the assumed marine environment for liquid and cooling water discharges. Thus, although the assessment is based on a generic site, the site specifications are similar to those of the actual Bradwell site.

However, it would be misleading to assume that the generic site and Bradwell are roughly one and the same when assessing the impact of radioactive discharges.

In terms of Bradwell we have the following observations:

- The generic assessment is based on one reactor. The proposal for the Bradwell B power station is for two 1.18GW reactors. Thus the discharges will be double and dose rates presumably higher than for one reactor. We consider the EA must be clear about the distinction and make appropriate qualifications in its assessment.
- As we observed earlier, issues pertaining to Bradwell such as the location, and nature of the cooling system, impacts of port facilities and the impacts on the specific terrestrial and marine environments and ecology are not considered in this GDA. Again, we feel the EA should be explicit on this point.
- The generic site as specified does not refer to designated areas that must be preserved. It may be argued that a proviso should be entered that a development of this nature should not be in a coastal site in a Marine Conservation Zone. The need to protect and preserve sensitive marine environments from activities such as construction, dredging, discharges, dumping and anchoring by designating Highly Protected Marine Areas is the fundamental objective of the Benyon Report (Defra, 2020), now under consideration. A development, such as a new nuclear power station including the construction of port facilities, pipelines and intake and outflow cooling systems, should be excluded from the inner zones of a MCZ.

Therefore, we conclude that the specification of the generic site should make clear that the impact of radioactive discharges should be applied to two 1.18GW reactors, include discharges from a hybrid cooling system and preclude development that may impact on a Marine Conservation Zone.

A particular failure

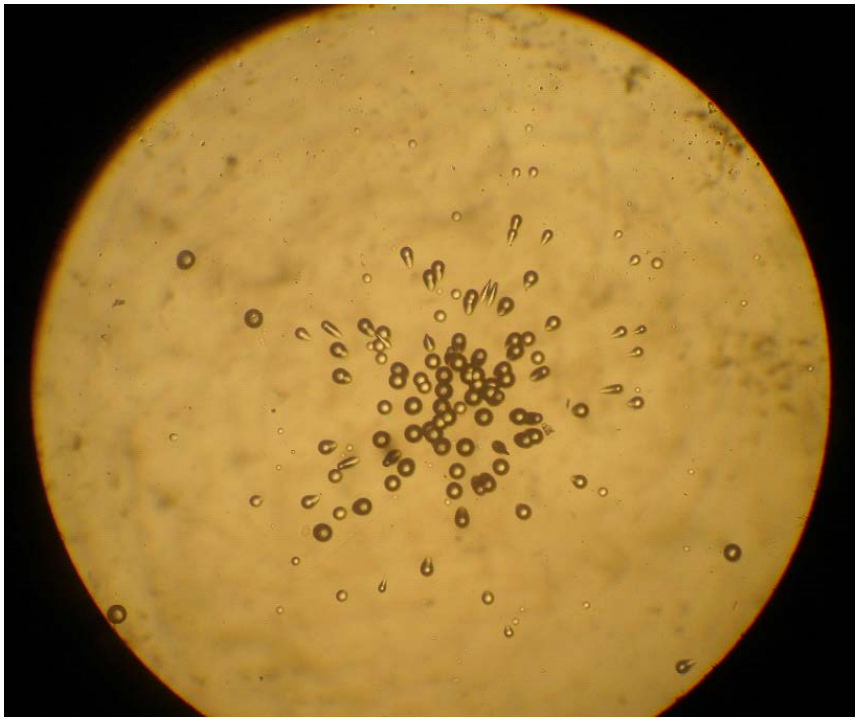
The following section relating to Ch.12 is specifically related to Consultation Question 7: *Do you have any views or comments on our preliminary conclusions on the impact of discharges of radioactive waste?*

The section is contributed by <name redacted> of the Low Level Radiation Campaign.

In this context we draw attention to the fact that since the middle of 2020 the Environment Agency has been in possession of a report on some limitations of the conventional ICRP model of radiation risk [3] without offering any response to the concerns it details.

The report, commissioned by the charity Children with Cancer UK, explains a failure in the ICRP's concept of dose as an average across substantial volumes of body tissue. It argues that averaging is invalid in the case of exposure to particles of alpha-emitting elements that might be inhaled or ingested. This assertion is illustrated with an image (reproduced below, Figure 1, and discussed on p 33 of the CWCUK report) showing the impact of individual tracks from alpha decays striking a sheet of CR39, which is conventionally used to detect radon, another alpha emitter. We remind EA that a tissue cell hit by a single alpha decay receives a radiation dose of 500mSv. The CWCUK report suggests that this represents an anomaly in the concept of dose with the potential to explain the discrepancies between the frequency of health effects expected on the basis of ICRP methodology and the incidence of cancer and congenital malformation that has been observed in association with the release of alpha-emitting particulates over many decades.

It may be thought that at doses as high as 500mSv the predominance of cell killing would negate any concern about health effects but we suggest that sublethal damage would also occur. During the CERRIE [4] process, CoMARE's Chairman suggested that the Bragg effect would tend to create a zone of dead cells around a sublethally affected clone thus shielding that clone from the influence of protective signalling from healthy cells, leading to a deficit of apoptosis (programmed cell death).



[3] *Radiation and reason: The impact of science on a culture of confusion*
http://www.llrc.org/PreliminaryREPORTforCwCUK26062020.pdf
[4] Committee Examining Radiation Risks of Internal Emitters

Figure 1. This image shows radiation damage from the alpha decays of a particle a few microns across. The technique employs flat sheets of CR39 plastic and is conventionally used for detecting radon gas in buildings. Each of the circular marks shows the impact of a single alpha ray striking the CR39 more or less at right angles. The elongated marks show the effect of an oblique impact. Alpha tracks that do not travel towards the plastic are not detected. The particle that is the radiation source is probably Uranium-238, though it could be an alloy of uranium, americium and plutonium. This particle was in a small randomly selected portion of the engine air filter from a vehicle that had been used exclusively in the vicinity of Hinkley Point nuclear power station. The filter dust contained many further particles. Methods such as the “groundhog” systems used by the environment agencies for detecting hot particles on beaches near Sellafield and Dounreay are incapable of detecting these respirable particles.

On 24th February during the "HOLD GDA Event - National and NGOs" zoom call on the HPR1000 <name redacted> asked EA the following questions using the chat facility:-

"What proportion of total alpha-emitting particulate matter is expected to be discharged to the atmosphere and what proportion to water."

There was no answer to this question.

The other questions were:-

"*What is the annual total of alpha-emitting particulate matter expected to be discharged, or licensed for discharge? What is the expected size distribution of the particles? What elements and isotopes are involved?"*

<name redacted> gave a verbal answer during the meeting, saying discharges of alpha-emitting particulate matter would be below the limit of detectability. <name redacted> has observed that this reply is irrelevant since the questions were about design characterisics and could have been informed by experience of other reactor types. On 25th February he asked the Environment Agency for written answers [5] but, as at 2nd

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[5] UK HPR1000
<name redacted>I <email redacted>
Thu, Feb 25, 6:46 PM
to <name redacted>, Nuclear
Hello <name redacted>and <name redacted>,
During the "HOLD GDA Event - National and NGOs" zoom call yesterday (24th February) I wrote some questions in the chat pane. The first was:
1) What is the annual total of alpha-emitting particulate matter expected to be discharged, or licensed for discharge? What is the expected size distribution of the particles? What elements and isotopes are involved*?*
EA addressed this by saying discharges of alpha-emitting particulate matter would be below the limit of detectability. Since I found this unsatisfactory, I posted "UNSCEAR has published data on particulates

April, no response has been received. In this context we note that Regulatory Orders and Questions that could have been relevant (RO-UKHPR1000-0012, RQ-UKHPR1000-0194, RO-UKHPR1000-0036) are in fact silent on the sizes and quantities of alpha-emitting particulates expected to be discharged. We request an early response. We also hope to receive from the EA a written response to the CWCUK report which we understand PHE has provided. We hope the EA will accept a supplementary submission to the present consultation if one seems appropriate in light of these responses.

Weighting factors

An "Assessment report" [6] states that "Default Radiation Weighting factors for alpha, beta/gamma and low beta emitters were assumed, i.e. 10, 1 and 3 respectively.

No analogous statement on human exposures can be found. We believe a Relative Biological Effectiveness (RBE) factor of 20 ought conventionally to apply for alphas but this is not mentioned; the term RBE is not found. It will be apparent that an RBE 20 is inadequate in light of the findings summarised in the CwCUK report, but nonetheless we ask for an explanation of the apparent omission.

BANNG is dismayed at the lack of useful and informative answers to the questions set out in italics in the analysis above. The impact of radioactive discharges and potential detrimental health effects is a matter of the highest importance and sensitivity. It appears that there are questions concerning volume, about volumes, radioactivity and detectability that need greater analysis. We consider that the EA must, as a matter of some urgency, seek answers from GNSL and, if necessary invite further submissions in a supplementary consultation.

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discharged from every NPP in the world up to 1997" and I gave the URL http://www.unscear.org/docs/publications/2000/UNSCEAR_2000_Annex-C-CORR.pdf.

Table 34 of that report - "Particulates released from reactors in airborne effluents" - shows that operating NPPs emit particulates, and you may note that the amounts of such emissions are expressed in units of radioactivity. I did not ask the question in terms of what would be detectable; we already face a situation in the UK where CEFAS purports to determine the alpha activity of mud in the Severn Estuary using a test that cannot detect alpha-emitting particulates. I asked for GNSL's estimate of the alpha activity in airborne effluents. It is a simple enough question and I would expect you to be concerned about the answer as a matter of due diligence. Will you obtain one?

I look forward to responses to my other questions, which were:-

"… what proportion of total alpha-emitting particulate matter is expected to be discharged to the atmosphere and what proportion to water? "

and

"On 4th February PHE stated in a zoom meeting with NGOs that "not all organisations use 1 in a million health detriments as a regulatory criterion for assessing acceptable risk", and that "work is going on about tolerability". What criteria will be applied to the technology you are discussing here - i.e. UK HPR1000? How will any discrepancies in "health detriment" estimates be resolved? Can the Environment Agency brief NGOs on what this might mean?"

<name redacted>

[6] Assessment report – Independent dose assessment of General Nuclear System's UK HPR1000 Cavendish Report Number – SN-01262.002.01-REP-001 Version 1 January 2021" Appendix H: Radiation exposure of non-human species p 88 para H2.1 Atmospheric Discharges

Ch. 12. Overall Preliminary Conclusions

We dispute the overall conclusion that a SoDA could be issued if all potential GDA issues are resolved. For reasons we have elaborated earlier we do not consider that GDA issues 4 and 6 are resolvable and that the EA should make this clear in its final recommendations.

13. Water Use

It is understood a water abstraction licence will be required if an estuary site is chosen, as appears to be the case with Bradwell. It is also noted that once-through cooling is assumed for the purposes of the GDA. Other options can be considered at the site-specific stage where ecology and biodiversity of the site can be factored in. At the site-specific stage an operator will have to justify the chosen cooling system in terms of BAT.

The BRB Pre-Application makes clear that a hybrid cooling system involving indirect cooling from the estuary via cooling towers is the preferred method. BANNG is most disappointed that the impacts, visual and in terms of emissions to air and discharges to sea, are not being examined in this GDA and that the safety and security of a hybrid cooling system is not under examination by the Office for Nuclear Regulation. We consider that an indirect cooling system should be examined in the context of an estuarial generic site.

In BANNG's judgement the proposed cooling system is a substantive issue that could make the whole project unviable We therefore urge the EA, in conjunction with the ONR, to consider and consult on the impacts of the Requesting Party's (RP) proposed hybrid cooling system, as applied to the conditions of an estuarial generic site.

It is envisaged that the volume of cooling water required would be around 198,000m3/hr. (for one 1.18GW reactor) and that the cooling process will elevate temperature of the water by 9.7^0C. We are concerned that modelling of the impacts on the marine environment apparently does not consider the implications for an estuarial generic site. The comment by the EA is bland: 'The quantity and temperature rise figures presented by GNSL are similar to other reactor designs that have been subject to the GDA process and to existing operational nuclear power stations in the UK' (p.101). This is not good enough and suggests the EA have simply not considered the issue in any depth.

The generic site selected a 'conservative volumetric exchange rate for marine modelling which represents a low dispersion environment' (p.91). The intention is to model the generic site closely to the specific Bradwell site. The Bradwell site is shallow and has a refresh rate of 10 days, therefore a very slow dispersion rate. It also has a rich and diverse marine ecology, including the Colchester Native Oyster that is unlikely to survive

a rise in temperature. None of this is taken into account in the EA's assessment which, once again, can avoid addressing key issues with respect to GNSL's application by diverting them further down the decision making line to site specific permitting and permission.

The potential impact on fish and invertebrates from screening and pollutants is a matter of considerable concern at comparable sites, notably Hinkley Point. The chapter merely notes the issue and the need for screening, fish deterrent and return systems. Clearly this is another matter left for other stages in decision making.

The environmental impacts through emissions, discharges and intrusion of potential piers, pipelines, cooling towers and the transport of materials is altogether omitted from the assessment.

BANNG finds responding to the water use and abstraction issues frustrating and dispiriting. The EA seems to rely entirely on the generic model of a single reactor with open sea once-through cooling to reach vague, uncontentious and insubstantive conclusions. Substantive matters of concern on impacts on marine ecology are relegated to later stages in decision making.

BANNG urges the EA to revisit this section and consider impacts on marine ecology, fishing and invertebrates from the operation of reactors using hybrid cooling systems on a shallow estuary with low refresh rates (a generic site derived from the Bradwell site's characteristics).

Ch. 14. Discharges to surface waters and groundwater

Similar concerns apply as those above. We note that the thermal impact of the cooling water is reserved to the site-specific stage. The RP considers that the choice of biocide to prevent biofouling should be a site-specific matter. It is also noted that the assessment is based on once-through cooling and that the alternative system proposed by the RP is a matter for site-specific decision and, therefore, placed out of scope for this GDA.

We note that the EA asked that the RP consider the environmental impact of water discharges and chemicals used at the GDA stage. Unfortunately, there are impacts that cannot be known at the generic stage and must be left to more detailed specific modelling. However, we consider the EA should press the RP to provide more information on the potential acceptability of emissions and discharges using the estuarial generic site as the basis for assessment. Furthermore, we consider that it should be indicated that discharges should not be allowable into a MCZ (see comment above on Ch.11).

On the issue of discharges, the Consultation concludes that the risk-assessment work carried out for the GDA must be revised with greater detail at the site-specific permitting stage to reduce the uncertainty that exists in the work carried out so far. We regard this

as a pusillanimous response, providing the RP with a relatively light touch at the GDA stage and passing responsibility forward to the permitting stage.

Discharges to the waters of the open sea or estuarial generic site are a matter of immense importance for the potential impacts on the marine environment. The EA has failed to engage in any depth on the key issues, including: thermal impact of cooling water; biofouling; designated areas such as MCZ. The assessment relates only to a once-through cooling system postponing consideration of alternative systems, such as the hybrid system proposed by GNSL discharging into an estuarial generic site, to the site-specific analysis. We consider the EA should revisit and review its preliminary conclusions with a view to ensuring more detailed information on the impacts into the specified estuarial site. The overall assessment for this issue is inadequate and it is hard to see how a SoDA could be issued without deeper analysis.

Ch.15 Operation of Installations

The incompleteness and inadequacy of the assessment of the operation of installations is recognised. The requirements are provisional and mostly, and understandably, reserved to the site-specific stage where detailed information on site, setting and dispersion points can be assessed. However, a sensitivity analysis was carried out and modelling demonstrated that stack height had to be increased to 40m. to achieve acceptable ground level emissions. Overall, there is no GDA assessment of this issue and matters are left for future operators with detailed information about the nature of combustion plant and environmental setting for discharges to air.

Ch.16. Control of major accident hazards

The EA's remit on major accidents covers impacts on environments. Prevention of accidents is a matter for ONR. In the event of a catastrophic release of radioactivity the environment would be contaminated and potentially uninhabitable over a wide area. BANNG has calculated that a major release at the Bradwell site could affect an area within 30km. and a population of around half a million people.

The high consequence risk from a major accident is a major reason for not building a major new nuclear power station at the Bradwell site. It is an issue of the gravest public significance. The ONR, as part of its GDA and in conjunction with relevant authorities should undertake a public consultation on the risks, consequences, preventative measures and emergency planning procedures arising from a major release of radioactivity at the generic site. The problem should be consulted upon now rather than later in the decision making process.

Ch. 17

No comment.

Ch.18 Preliminary conclusion

For reasons set out at various points in our response, BANNG does not concur with the preliminary conclusion that, ‘a SoDA could be issued if all potential GDA issues are resolved’.

Written on behalf of the Blackwater Against New Nuclear Group (BANNG) by <name redacted>**, Chair of BANNG, March 30, 2021.**

(with contributions from <name redacted>,<name redacted>, <name redacted>, <name redacted>, <name redacted>)

References

BANNG (2010) Environment Agency (EA) Generic Design Assessment (GDA) AP1000 Nuclear Power Plant by Westinghouse Electric Company LLC – UKEPR Nuclear Power Plant design by Areva NPSAS Electricité de France SA consultation document

DECC (2011) National Policy Statement for Nuclear Power Generation (EN-6), Vol. II of II – Annexes, June, p.15

DEFRA (2020) Benyon Review Into Highly Protected Marine Areas: Final Report, June

Appendix 5: Attachment to UKHPR1000-015

Together Against Sizewell C

GDA of GNSL UK HPR1000

Introduction

This is a response to the Generic Design Assessment of the GNSL UK HPR1000 document published by the Environment Agency at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/951128/210111_GDA_of_GNSL_s_UK_HPR1000_consultation_document.pdf prepared by Together Against Sizewell C (TASC).

The consultation process - Opportunities and Limitations

TASC faces the prospect of significant environmental damage and dislocation of existing ecosystems as the result of another development on the East Coast – Sizewell C. Together with the prospect of a similar development at Bradwell, the collective environmental impact on land, to the atmosphere and to the marine environment will be great and leads one to question the EA's claim that it exists to protect and enhance the environment.

Both the EPR and the Hualong 1 reactors are of unproven design, but even without this huge disadvantage, any reactor design will create environmental footprints which are far greater than their putative benefits warrant. While accepting that the EA does not set government policy, it is responsible for protecting the environment as it claims in its publicity material: the proposed development at Bradwell runs entirely counter to this stated purpose.

The Hualong 1 reactor will require the storage of radioactive waste and spent nuclear fuel on site over many decades. To store spent nuclear fuel in the vicinity of communities is an act which borders on the irresponsible and cannot be justified by the existence of myopic government policy which is driven more by the need to maintain the knowledge base, the supply chain and the infrastructure needed to ensure the renewal of the Trident nuclear weapons programme than it has to do with providing electricity. Electricity demand continues to fall. Renewables continue to fall in price while nuclear costs escalate. A 100% renewables electricity sector is entirely possible, preferable and within our grasp. It can be implemented quickly and cheaply. The nuclear contribution to halting climate change will be uncertain given the uranium fuel cycle, construction and decommissioning carbon footprints and slow to deploy whereas a programme of

efficiency, decentralisation and renewables can represent a much speedier response to what is now recognised as a climate crisis.

The consultation process itself is weak in that, to be effective and thorough, it should involve engagement with stakeholders. Instead, it resorts to asking questions which is the most elementary level of consultation, not even engagement.

The language used in technical and leads people to agree rather than to question and level criticism.

It is limited in its scope and uses a generic site to assess its findings. Yet there is no reason why, for instance, the cooling system and the impact of the development on the local ecology, particularly in the Dengie and the Blackwater, cannot be identified for review.

The referral of key issues to other bodies and processes is galling insofar as it is impossible to use the EA process to comment. Many relevant areas of concern are not considered in the EA consultation. Referring to other agencies or processes to consider issues such as habitat impact – marine and terrestrial – cooling issues, health risks, policy matters, siting and emergency planning devalues the consultation the EA is carrying out and renders a lot of the effort put into the response from stakeholders incomplete.

Purpose of consultation

As mentioned above, it is the EA's stated objective to protect and enhance the environment. In fact, its passive observance of the degrading of the environment causes many observers to question the accuracy of that statement. Even if its powers are limited, it has the obligation to take a pro-environment stance in behalf of the public which meets the considerable cost of maintaining the Agency. As with many other agencies and bodies, regulatory and advisory, it appears too often that the EA is acting not as a regulator, defender or enhancer of the environment but providing an enabling service, regardless of the effect of that enabling role. This presents the EA as acting in contradiction to its stated aims and creates a negative image of its work and a reduction in the confidence people have n its motivation, its abilities and the outcomes of its work.

The EA should examine its role in this nuclear 'renaissance' which is politically rather than environmentally driven and ask itself if it should reassess its apparent uncritical support of a government policy which can have nothing but an overall and considerable net negative impact on the environment. A government-driven agenda to woo Chinese investment should not stand in the way of the role and responsibility the EA has to protect the environment. If the EA plays a role in allowing the Chinese to licence its design in the UK, NCG could abandon Bradwell and build anywhere in the UK as it is clearly its intention to secure an F-DAC for its design through the GDA process.

Issues of Concern

Disposability of High Level Waste/spent nuclear fuel:

Radioactive Waste Management (RWM) and the Office of Nuclear Regulation (ONR) are of the view that disposability of the spent nuclear fuel arising from new build reactors depends on the resolution of several important safety and technical issues. The fuel from Hualong 1 will be hotter and more radioactive than even the PWR fuel from Sizewell B, giving rise to issues which have not been encountered before.

RWM holds a raft of issues which relate to the availability of a deep geological disposal facility in that the process it is committed to conduct in order to secure the approval of a 'willing or volunteer' host community is long and complicated and the outcome of the process is far from certain. Like the ONR, it sits on a long list of as-yet unresolved issues which contains several potential 'show stoppers'.

ONR likewise faces significant issues in respect of not only the technical operational performance of the Hualong design but also in aspects of the disposability of the spent fuel in that the additional heat and radioactivity generated by high burn-up fuel on exiting the core presents its own technical and engineering complications which affect safety. In short, the 'back end' of the nuclear fuel cycle remains, as it has done for decades, an intractable and potentially insoluble problem and one which the EA should at least acknowledge in its documentation or, at best, volunteer its own view of given its remit of environmental protection.

The EA should volunteer a view on the impossibility of long-range forecasting in terms of predicting climatic conditions into the far future and the implications for nuclear waste management. Bradwell is a low-lying coastal site and is highly vulnerable to the impact of climate change. Spent nuclear fuel is likely to be stored on the site for at least 160 years, possibly for 200 years and possibly forever, given the uncertainties around the GDF. 'Arrangements are in place' may be a convenient response for ill-informed politicians, but the EA should show more integrity and respect for the truth than to accept such vacuous, trite and misleading utterances without comment. It should admit that neither it nor politicians of any stripe are capable of the sorts of predictions required to guarantee the long term safety of spent nuclear fuel. Sadly, courage to speak up in the face of government hegemony has become the norm.

Best Available Techniques (BAT) contains the caveat that, 'the economic feasibility of such techniques' will be taken into account. In other words, the operator can argue that the costs of installing pollution reduction technology outweigh the perceived benefits in terms of environmental contamination and the health impacts in which that contamination may or may not result. Given that exposure to radiation, no matter how small, is known to carry a risk, BAT is a convenient but imprecise tool with which to control environmental degradation, as is the 'principle' ALARA – as low as reasonably achievable. This constraint is effectively a charter for the operator to allow financial considerations to trump those which protect the environment.

Gaseous and Liquid discharges

TASC endorses the comments of <name redacted> of the Low Level Radiation Campaign in respect of gaseous and liquid discharges and refers the EA, once again, to

the report funded by the charity Children with Cancer UK to be found at http://www.llrc.org/PreliminaryREPORTforCwCUK10032020.pdf. It is noticeable that the GDA process does not cover events which would be seen as beyond normal operating experience. Emergency planning in the event of an unforeseen incident which results in the off-site release of radioactivity is of particular concern to the people of Mersea Island which is accessed by only one road across the causeway which floods twice a day and which is impassable at those times.

TASC would also draw the EA's attention to the potential impact of discharges into the estuary and express its concern that the EA apparently sees fit to allow discharges from a notional Bradwell B into a shallow waterway which supports a successful oyster industry. The discharges from any nuclear plant will inevitably contain traces of a range of radionuclides, the long term health impact of which is unknown. It is unacceptable for such contamination to be allowed to continue in the absence of a resolution of the 'low level radiation' ingestion or inhalation controversy and the EA should insist that government engages with its critics to allow an informed, expert debate around these matters.

Issuing of a SODA

Given the many uncertainties yet to be resolved, TASC objects to the assumption that a SODA could be issued, regardless of the mention of an iSODA pending the resolution of the Assessment Findings. The outstanding issues are not trivial but relate to fundamental concerns around a lack of information, some of which will remain lacking due to the unknown nature of the long term environmental conditions which may prevail in centuries to come, the refusal of agencies and government departments to engage with issues of radiological impact on health and the acceptance that nuclear power should be part of an energy policy.

Conclusion

TASC believes that the GDA consultation is little more than a tick-box exercise leaving precious little scope for any sort of in-depth critique or any debate around the central issues of:

Lack of a universally accepted radioactive waste management process which is demonstrably safe and secure for the long term future;

The level of risk associated with the inevitable environmental pollution which will occur as a result of the development being approved;

The absence of debate with critics of nuclear power over a non-nuclear energy policy for the UK;

and therefore concludes that the GDA process which is the subject of this consultation is inadequate, irrelevant and not fit for purpose.

TASC March 2021

Appendix 6: Attachment to UKHPR1000-018

ASSESSING NEW NUCLEAR POWER STATION DESIGNS

GENERIC DESIGN ASSESSMENT OF GENERAL NUCLEAR SYSTEM LIMITED'S UKHPR1000

(i) Introduction

I am concerned that members of the public will find this a very difficult public consultation to which to reply. It has been acknowledged by the Environment Agency (EA) to be technical and complex. It is also extremely long and requires time and commitment.

I fear, too, that members of the public are likely to be confused by the consultation, more on this below.

I was glad to learn from the EA at the Public Meeting held via Zoom by the Blackwater Against New Nuclear Group (BANNG) on 9 March, that the Agency will not take into account the number of responses received but the content of those that it does.

Fulfilment of the EA's Mission Statement

The documentation certainly shows that the EA has been carrying out a great deal of work in its attempt to convince that it is working 'to create better places for people and wildlife and support sustainable development'. The Agency sadly seems unaware that the construction of a massive new nuclear power station at Bradwell will inevitably create a much worse environment for people and wildlife. The Agency is, in fact, being asked by the Government to allow the destruction of the current environment by assessing favourably this gigantic piece of infrastructure. Should Bradwell B be constructed, the Agency's job would then be to protect what is left of the environment from the very means of its destruction.

Independence of the EA

I believe that it must be obvious to the EA that a low-lying estuarine site is unsuitable for any new nuclear development. The Agency must know that it is vulnerable to flooding, storm surges and other coastal processes as a result of climate change.

As an independent agency, I believe that the EA should be willing to raise these insurmountable problems with Government.

Please see further comments below.

(ii) The GDA seems to be out of step with the actual proposals for Bradwell B

I believe that the GDA currently being undertaken is out of step with the actual proposals for Bradwell B:

- I note that the Generic Design Assessment (GDA) is being undertaken on one HPR 1000 reactor.

  But I know that General Nuclear Systems Ltd.'s (GNSL) actual proposal is for two HPR 1000 reactors;

- I note that the GDA is being undertaken on a direct cooling system to the sea.

  But I know that GNSL's actual proposal is for a hybrid cooling system.

- BRB carried out the Pre-Application Stage One Public Consultation on its proposals a year ago and these were not generic but related specifically to the Bradwell site.

Both the EA GDA and its Public Consultation, therefore, seem out of step with what is actually being proposed.

I believe that this is confusing for members of the public. Confusion arises from the fact that BRB's consultation was specific and related to the Bradwell site whereas the EA's consultation is generic. I wonder, therefore what the purpose of the GDA is.

(iii) Impacts of the project being assessed and the project that is actually being proposed

There seems to be little acknowledgement in the consultation document of the actual project proposals for two 1.18 GW nuclear reactors. That it is proposed to build two reactors is clear from BRB's 2020 public consultation.

Why then does the GDA not assess the impacts of two huge nuclear reactors? There must be significant differences in the impacts of two reactors compared to one.

For example, it must surely be that two reactors would create twice the volume of radioactive waste and twice the amount of radioactivity. It seems likely that they would also produce twice the amount of discharges into an estuary and the atmosphere, causing twice the health hazards to the nearby communities and twice the problems for the environment, including the marine environment.

Nor is the cooling system being assessed by the GDA the one that BRB hopes to use.

Since it is already known that it is proposed that Bradwell B will have two 1.18 GW reactors and that BRB wishes to use a hybrid cooling system, it would be more relevant and honest if the GDA were based on these actual facts.

To consult on a GDA for a project that is not being proposed is confusing and runs the danger of pulling the wool over the public's eyes.

(iv) Management Systems (Ch. 5)

I note that on p .31 it is stated that the EA considers that overall the management arrangements 'appear' to be 'adequate'.

Apart from the use of ‘appear’ implying provisionality, I am surprised that the EA is happy to accept only adequacy in management systems for such a major and potentially dangerous infrastructure.

The public and the EA may have different interpretations of ‘adequate’.

(v) Strategic Considerations for Radioactive Waste Management (Ch. 6)

On p. 33, the eighth point omits to say that it is more than likely that managing spent fuel and other radioactive wastes on-site will extend well beyond decommissioning.

Taking the example of decommissioning at Bradwell A is instructive. The former power station is said to have been ‘decommissioned’ and has entered Care and Maintenance (2015) but the graphite cores will remain on-site until at least the end of the century, when it is hoped that a method will have been found for their safe removal. The ILW in the ILW store will also remain on the site until at least the end of the century. Since the radioactive wastes from Bradwell A are unlikely to be near the head of the queue for storage in a GDF, they are more likely to remain on the site indefinitely.

I note that GNSL ‘has identified immediate decommissioning as the preferred option for the UK HPR 1000’. This is an immaterial fact at present and I am surprised that the EA seems to be taking it seriously. When it comes to decommissioning, the experience so far is that ‘there’s many a slip ‘twixt the cup and the lip’.

I am concerned that there is already a build up of radioactivity in the environment and in the Marine Conservation Zone from the operations of Bradwell A, including from the fuel element debris (FED) dissolution process, and that this would be made infinitely worse by radioactivity from Bradwell B.

On the subject of the FED dissolution process, the public (via the Local Community Liaison Committee) was informed that the discharges arising from this into the Blackwater estuary would be of ‘a salt water solution’. No mention was made of the radionuclides and heavy metals that would also be discharged.

Higher activity waste and spent fuel

It is stated on p. 34 in the first paragraph of this section that both ILW and spent fuel will be stored and managed on-site for the *lifetime* of the power station.

If it is the operating lifetime of the station that is being discussed, then this information is incorrect: spent fuel at least will remain on the site until the middle of the 22nd century, if not longer, well beyond the operating lifetime of the station.

Operations at Bradwell B would be scheduled to end in, say, 2095. Spent fuel would require to be stored in ponds for c.10 years (2095 + 10 = 2105). The spent fuel would require at least 50 years from the end of the operating life of the station to cool down before removal from the site (2105 + 50 = 2155). Its removal depends on the spent fuel

being suitable for storage in a GDF (over which I believe there are questions) and on a facility being available.

If it is not the *operating lifetime* of the station that is under discussion, this needs to be clarified.

(vi) Decommissioning - Funding

Although the Government may wish 'to ensure operators of new nuclear power stations set aside funds to cover the costs of decommissioning and long-term waste management disposal' (p.17), this can only be regarded as sheer fantasy.

As yet, no-one knows the cost to the taxpayer of the current decommissioning programme, and it is impossible, therefore, to know the amount of funding that must be set aside for the costs of decommissioning in the far future.

It is misleading – and perhaps the EA is being misled – to tell the public that funds will be set aside by the operator to cover decommissioning of a nuclear power station that is yet to be built. It may be that some funding will be set aside. Nor can anyone assume what the social and environmental circumstances will be by the time Bradwell B is decommissioned.

(vii) Best Available Techniques for Minimising Production and Disposal of Radioactive Waste (Ch. 7)

There is only one way to achieve BAT and it is not mentioned and that is not to produce radioactive waste in the first place!

As a member of the public who would be in close proximity to Bradwell B, I am alarmed on two grounds by the idea that 'all exposures to ionising radiation of any member of the public and of the population as a whole resulting from the disposal of radioactive waste are kept as low as reasonably achievable (ALARA)'.

The first is that I am being told that I will be exposed to ionising radiation. The second is that ALARA seems to me to be too wide in scope.

Someone who receives a dose of radiation from eating Brazil Nuts is at liberty to change their eating habits. As a member of a community that would be in close proximity to Bradwell B, I would have exposure to radiation forced upon me, sadly with the connivance of an agency that claims to have the public's protection at the heart of its mission. Emissions would be into the estuary and into the atmosphere.

GNSL's choice of high efficiency particulate air filter design seems a minor detail.

Containment of radioactive substances

Throughout the consultation, reference is often made to volume of wastes produced with little mention of the radioactivity they contain. A small amount of waste might

contain a large amount of radioactivity. Both volume and radioactivity would have an impact on storage.

(viii) Gaseous and Liquid Discharges of Radioactive Waste (Ch. 8)

I am concerned to know what the effects of these (which might include particulates) would be on an estuary with e.g. a slow refresh rate of, say, 10 days.

(ix) Solid Radioactive Waste (Ch. 9)

The penultimate point on p. 55 says that the EA is confident 'that the packages will be maintained in an environment that will ensure that they will be disposable'. This is a big claim to make given how far off disposal would be.

I am pleased to note that 'Potential GDA issue 4 (p. 56) acknowledges that storage of radioactive wastes will be 'long-term'.

(x) Impact of Radioactive Discharges (Ch. 11)

Short-term doses to individuals

There is no mention of the doses to the public that can be expected from 'spikes' in radioactive discharges, especially to communities that would be downwind of tritium emissions to the atmosphere.

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