



# New nuclear power stations

Improving public involvement in  
reactor design assessments

Dialogue report  
August 2015

This report has been prepared by 3KQ on behalf of the partners who supported the project.



The dialogue was jointly supported by Sciencewise, the Environment Agency, Natural Resources Wales, and the Office for Nuclear Regulation.

Cover image: Pipes inside a power station.

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## Executive summary

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### Background *(see section 2 of this report)*

**This report.** This is a report of the [Environment Agency \(EA\)](#), [Office for Nuclear Regulation \(ONR\)](#) and [Natural Resources Wales \(NRW\)](#)<sup>1</sup> public dialogue project to review and improve public involvement in design assessments of nuclear reactors for potential new nuclear power stations (known as Generic Design Assessment, or GDA).

**Context.** The [Government](#) has outlined their commitment to a significant expansion in new nuclear in the UK stating that nuclear power, alongside renewable energy sources, will ensure UK has enough low-carbon electricity in the future.

In 2006 Government asked the nuclear regulators, ONR and EA, to consider 'pre-authorisation assessments' of new nuclear power stations.

The nuclear regulators developed their GDA process in response to this request. GDA enables the regulators to begin assessing the acceptability of safety, security and environmental aspects of a nuclear power station design, at a generic level, before site-specific applications are made. It provides the regulators with early influence on the design of new nuclear power stations when it is most effective and efficient. It also helps to reduce project cost and time risks for developers as it enables regulatory concerns to be identified and addressed early.

The EA, ONR, and now NRW, support their GDA process with dedicated communications and engagement staff. This support includes planning and project management, website development, developing communications materials for a range of stakeholders and communities, publishing documents and leaflets, events management, engagement with key stakeholders, graphic design, e-bulletins and advertising, and proactive / reactive media relations. The Environment Agency has consulted previously during GDA of the UK EPR and AP1000. The consultation arrangements included on-line e-consultation, advertising in local newspapers, posters in libraries around England and Wales and a stakeholder event in Birmingham. The regulators have used this Sciencewise project to explore how they might improve public engagement in GDA.

**Dialogue project.** The EA, ONR and NRW sought to engage members of the public in a dialogue<sup>2</sup> to identify their needs in relation to engagement, including the Environment Agency's and NRW's consultations, in the nuclear regulators' joint GDA of new nuclear reactor designs.

In the [Stakeholder Engagement Plan](#) (on the ONR website dated June 2014) the regulators have clearly set out their approach to engagement and this dialogue aims to further inform public engagement. The dialogue project is supported by Sciencewise.<sup>3</sup>

A process of public dialogue was used because it enables interactive conversations between decision makers and members of the public, enhancing two-way understanding and allowing issues to be explored with more depth than through a market research approach.

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<sup>1</sup> Natural Resources Wales was formed in 2013 when it took over the responsibilities of the Environment Agency in Wales.

<sup>2</sup> Public dialogue brings together members of the public, policy makers, scientists and other expert stakeholders to deliberate, reflect and come to conclusions on national public policy issues. The Sciencewise approach to public dialogue is described in The Government's Approach to Public Dialogue ([the Guiding Principles](#)).

<sup>3</sup> Sciencewise is funded by the Department for Business, Innovation and Skills (BIS). Sciencewise aims to improve policy making involving science and technology across Government by increasing the effectiveness with which public dialogue is used, and encouraging its wider use where appropriate to ensure public views are considered as part of the evidence base. [www.sciencewise-erc.org.uk](http://www.sciencewise-erc.org.uk)

## Dialogue objectives and process *(see section 2 of this report)*

The objectives for the public dialogue project were as follows:

1. Identify approaches that will address issues and barriers to sharing complex technical information on the GDA with members of the public
2. Inform the EA, ONR and NRW current and future public engagement, and EA and NRW's consultation approach on GDA
3. Develop and pilot materials on the GDA that are accessible to the public
4. Identify potential public engagement process options for the GDA
5. Help the nuclear regulators to pilot an effective public engagement and EA and NRW consultation approach, during the current assessment of Hitachi-GE's UK Advanced Boiling Water Reactor (UK ABWR).

3KQ were appointed to deliver the dialogue process,<sup>4</sup> which consisted of the delivery elements shown in the figure below.



### Dialogue process summary

Key points in the process were as follows (see sections 3, 4, 5, and 7 for more detail, including on participant recruitment):

- **Online survey of public attitudes.** The survey of 401 people in England and Wales was the first step of the overall dialogue process. Its aim was to inform the design of the local dialogue

<sup>4</sup> 3KQ acts as an independent third party, providing professional facilitation, public and stakeholder engagement services to organisations. For this process, 3KQ designed and ran the process (including the national survey and dialogue workshops), as well as writing this report. [www.3kq.co.uk](http://www.3kq.co.uk)

workshops, by building a picture of *national* attitudes to the regulation of nuclear power and the assessment of new reactor designs.

- **Round 1 dialogue workshops in two locations.** A total of 41 members of the public (unrelated to those taking part in the online survey) took part in the Round 1 workshops – 22 in Cheltenham on 17<sup>th</sup> January and 19 in Bangor on 31<sup>st</sup> January. These workshops were designed to be an introduction to the topic and context of GDA, including the role of the regulators.
- **Round 2 dialogue workshop, with participants from both locations.** 18 participants (9 from the Bangor workshop and 9 from the Cheltenham workshop) took part in the Round 2 workshop, held in Crewe on 21<sup>st</sup> March 2015. This workshop was designed to provide opportunities for deeper exploration of key issues, responses to a range of communication and consultation materials, and development of recommendations about future public engagement.
- **Meetings with independent Oversight Group and Project Management Team (PMT)** to discuss findings and implications.

## **Key points** *(see section 6 of this report)*

In order to meet the dialogue objectives, the process was centred on three key questions:

- How do members of the public want to be involved in the GDA process?
- What do people need to know (what are their concerns/interests?) and how can we (nuclear regulators) address their concerns/interests as part of the GDA process?
- What can we do to help improve people's trust in us and confidence in our decisions (as nuclear regulators)?

These questions are discussed in the form of the commentary in section 6 of the report. The key points from this commentary are as follows:

**Overarching comment – why involve?** A number of workshop participants indicated they would not want to be involved in GDA or that, based on what they had heard already, they didn't need to know any more. This raises a key overarching question: why engage? For example, is it to communicate enough information to the general public to enable people to understand the GDA process and to be able to get involved in the consultation if they want to; or to make people aware that a particular type of reactor may be used at a site near them in advance of site specific information being available and with a view to proactively engaging them in the conversation. Both are valid approaches, but the purpose of each communication activity should be clear upfront.

**Who to involve?** Survey and workshop participants highlighted the need to involve people closest to sites as a priority, but many also felt that other members of the public within England and Wales and members of the public outside England and Wales should have the opportunity to be involved. Workshop participants also suggested young people as a specific demographic they thought needed to be considered in future communications or consultation materials.

**How to involve people?** Survey respondents expressed a clear preference for communication mechanisms (47% preferred a website). There were also multiple comments from workshop participants about a range of possible mechanisms for future engagement, alongside specific principles applicable to all of these communication methods: simple language, consistent messaging, graphics and methods tailored to particular audiences. Face to face engagement was

favoured, although participants recognised the practical difficulties and resource constraints presented by this type of engagement.

**The language barrier.** The complexity of the often technical language around GDA (whether in English or Welsh) is a key issue for participants, including the phrase and acronym itself.

**Need for context.** There is an apparently low awareness of the topic of new nuclear power, alongside desire from workshop participants for more contextual information about GDA and nuclear power.

**Desire for detail.** People want more information on a range of topics such as safety. In addition, perceived personal relevance is a strong motivating factor for getting involved – participants wanted to know how it related to their everyday lives.

**GDA as part of a story, not an isolated chapter.** There is a dilemma surrounding the needs of people wanting more contextual information and those wanting more detail on local implications rather than generic concepts. Both of these things indicate the need to clearly show the pathway from decisions about new nuclear to the local implications of new reactors, with GDA as a pivotal point in that process. It also suggests the need to be very clear about what kind of input is being sought from members of the public, as well as what the scope of the topic covers and does not cover.

**Improving trust and confidence in the decisions of the regulators.** Initially relatively low levels of knowledge and trust (at the beginning of the workshops – also reflected in the national scoping survey) were noticeably increased by the end of the first workshop, highlighting the importance of familiarity – both in terms of knowledge and face-to-face contact – as a contributor to trust. For many participants, clarity over the roles and responsibilities of the regulators also seemed to contribute to their levels of understanding and trust.

**Reducing barriers to public engagement.** Participants made a range of suggestions for reducing barriers to public engagement, including: 1) keep it simple; 2) Innovate; 3) use a range of methods; 4) tap into local resources; 5) drip feed information; 6) ensure accessibility of online information; 7) be aware of context, history and preconceptions; 8) make it personal; 9) reconsider the use of language; 10) clarify what kind of input is being sought and listen to people's views; 11) make it personable; 12) raise the profile of the regulators and their role.

## **The way forward** *(see section 7 of this report)*

Following the production of the draft final report and an interim learning bulletin produced by Icarus, the Oversight Group and Project Management Team (PMT) both held meetings to discuss the implications of the dialogue findings.

At the time of publishing this report, work has begun on developing content to address some of the feedback and the project partners have arranged a full day workshop to consider the detailed findings from the public dialogue and decide what they could take forward.

## 1. This report

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This is a report of the [Environment Agency \(EA\)](#), [Office for Nuclear Regulation \(ONR\)](#) and [Natural Resources Wales \(NRW\)](#)<sup>5</sup> public dialogue project to review and improve public involvement in design assessments of nuclear reactors for potential new nuclear power stations (known as Generic Design Assessment, or GDA).

The report lays out the range of comments and views expressed by participants. It does not attribute significant weight to specific views, but rather reflects the full range of views and comments, including areas of commonality or disagreement.

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<sup>5</sup> Natural Resources Wales was formed in 2013 when it took over the responsibilities of the Environment Agency in Wales.



## 2. The dialogue project

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### 2.1. Background and context

#### Government policy

The [Government](#) has outlined their commitment to a significant expansion in new nuclear in the UK stating that nuclear power, alongside renewable energy sources, will ensure UK has enough low-carbon electricity in the future.

In 2006 Government asked the nuclear regulators, ONR and EA, to consider 'pre-authorisation assessments' of new nuclear power stations.

#### The role of the regulators

The nuclear regulators developed their GDA process in response to this request. GDA enables the regulators to begin assessing the acceptability of safety, security and environmental aspects of a nuclear power station design, at a generic level, before site-specific applications are made. It provides the regulators with early influence on the design of new nuclear power stations when it is most effective and efficient. It also helps to reduce project cost and time risks for developers as it enables regulatory concerns to be identified and addressed early.

The EA and ONR work closely together throughout GDA, and in the subsequent regulation of any new nuclear power stations. NRW is also working closely with the Environment Agency on GDA to ensure that the outcome of the GDA for each reactor design, including any Statement of Design Acceptability (SoDA) or interim Statement of Design Acceptability (iSoDA) that may be issued, is applicable in both England and Wales. NRW's role in GDA includes participating in its governance, oversight, and decision making processes, and it is responsible for carrying out stakeholder engagement in Wales.

[The GDA process](#) is not site specific and has a number of steps, with the assessment getting increasingly detailed. At the end of the process ONR, NRW and the Environment Agency will decide if the proposed designs are acceptable for use in the UK. NRW is a member of the Environment Agency GDA Programme Board and keeps stakeholders in Wales updated on the progress of the GDA for [Hitachi-GE's UK Advanced Boiling Water Reactor \(UK ABWR\)](#).

Conclusions from GDA work will be used to inform the decisions the regulators make about applications received for site specific environmental permits (EA and NRW) and nuclear site licences (ONR).

The nuclear regulators are currently assessing the UK ABWR and the Environment Agency and NRW are due to formally consult on their findings from detailed assessment in summer 2016.

[Horizon Nuclear Power Ltd](#) propose to build new nuclear power stations based on two UK ABWR reactors at their sites, Wylfa Newydd on Anglesey, and at Oldbury in South Gloucestershire.

Other developers could similarly propose to build a new nuclear power station based on the UK ABWR design at another site. The [Government's Nuclear National Policy Statement](#) (NNPS) identifies a number of sites that it considers are potentially suitable for new nuclear power stations. In addition to those mentioned previously, six other potentially suitable sites are listed in the NNPS: Hinkley Point C (Somerset) and Sizewell (Suffolk). Bradwell (Essex), Hartlepool (Durham), Heysham (Lancashire) and Sellafield – now Moorside (Cumbria). GDA of EDF Areva's UK EPR reactor has been completed. At the time of writing the regulators are undertaking the final assessment stage of Westinghouse' AP1000 reactor.

## Existing consultation and engagement work

The EA, ONR, and now NRW, support their GDA process with dedicated communications and engagement staff. This support includes planning and project management, website development, developing communications materials for a range of stakeholders and communities, publishing documents and leaflets, events management, engagement with key stakeholders, graphic design, e-bulletins and advertising, and proactive / reactive media relations. The Environment Agency has consulted previously during GDA of the UK EPR and AP1000. The consultation arrangements included on-line e-consultation, advertising in local newspapers, posters in libraries around England and Wales and a stakeholder event in Birmingham. The regulators have used this Sciencewise project to explore how they might improve public engagement in GDA.

## 2.2. Regulation of nuclear power stations

Any company that wants to operate a nuclear power station has to show that it can build, operate and decommission it safely and securely, protect the environment and manage radioactive waste.

It must obtain a number of site specific permissions from the independent regulators and from government. These include a nuclear site licence and relevant consents from ONR and environmental permits from the EA or NRW. The company will also have to obtain planning consent and other approvals from the Department of Energy & Climate Change's Secretary of State.

The regulators won't issue a site licence, relevant permissions or environmental permits unless they are satisfied that site specific proposals and the proposed operating company meet their high standards.

## 2.3. Inception of the GDA dialogue

The EA, ONR and NRW sought to engage members of the public in a dialogue<sup>6</sup> to identify their needs in relation to engagement, including the Environment Agency's and NRW's consultations, in the nuclear regulators' joint GDA of new nuclear reactor designs.

In the [Stakeholder Engagement Plan](#) (on the ONR website dated June 2014) the regulators have clearly set out their approach to engagement and this dialogue aims to further inform public engagement. The dialogue project is supported by Sciencewise.<sup>7</sup>

A process of public dialogue was used because it enables interactive conversations between decision makers and members of the public, enhancing two-way understanding and allowing issues to be explored with more depth than through a market research approach.

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<sup>6</sup> Public dialogue brings together members of the public, policy makers, scientists and other expert stakeholders to deliberate, reflect and come to conclusions on national public policy issues. The Sciencewise approach to public dialogue is described in The Government's Approach to Public Dialogue ([the Guiding Principles](#)).

<sup>7</sup> Sciencewise is funded by the Department for Business, Innovation and Skills (BIS). Sciencewise aims to improve policy making involving science and technology across Government by increasing the effectiveness with which public dialogue is used, and encouraging its wider use where appropriate to ensure public views are considered as part of the evidence base. [www.sciencewise-erc.org.uk](http://www.sciencewise-erc.org.uk)

## 2.4. Dialogue objectives and process

The objectives for the public dialogue project were as follows:

1. Identify approaches that will address issues and barriers to sharing complex technical information on the GDA with members of the public
2. Inform the EA, ONR and NRW current and future public engagement, and EA and NRW's consultation approach on GDA
3. Develop and pilot materials on the GDA that are accessible to the public
4. Identify potential public engagement process options for the GDA
5. Help the nuclear regulators to pilot an effective public engagement and EA and NRW consultation approach, during the current assessment of Hitachi-GE's UK Advanced Boiling Water Reactor (UK ABWR).



Figure 1: Dialogue process summary

3KQ were appointed to deliver the dialogue process.<sup>8</sup> The process consisted of four main delivery elements (see figure 1 above). See Appendix 2 for a summary of involvement in each dialogue element.

- **Online scoping survey of public attitudes** – see section 3 of this report for more detail on the process and findings
- **Round 1 dialogue workshops in two locations** – see section 4 of this report for more detail on the process and findings

<sup>8</sup> 3KQ acts as an independent third party, providing professional facilitation, public and stakeholder engagement services to organisations. For this process, 3KQ designed and ran the process (including the national survey and dialogue workshops), as well as writing this report. [www.3kq.co.uk](http://www.3kq.co.uk)

- **Round 2 dialogue workshop**, with participants from both locations – see section 5 of this report for more detail on the process and findings
- **Meetings with OG and PMT** to discuss findings and implications – see section 7 of this report for more detail.

In order to meet project objectives, the process was designed around the following questions – see section 6 of this report for further discussion of dialogue findings in relation to these questions:

- How do members of the public want to be involved in the GDA process?
- What do people need to know (what are their concerns/interests?) and how can we (nuclear regulators) address their concerns/interests as part of the GDA process?
- What can we do to help improve people’s trust in us and confidence in our decisions (as nuclear regulators)?

The dialogue has been independently evaluated by Icarus<sup>9</sup>, who will produce an evaluation report following the end of the project. Evaluation of public dialogue projects helps to improve the effectiveness of future practice and increase the transparency and accountability of the process – read more on the Sciencewise [website](#).

## 2.5. Roles and responsibilities

There were a range of different organisations and individuals involved in the public dialogue process, including:

- Independent Oversight Group – a group of stakeholders providing overall guidance and accountability to the project, ensuring the process is robust, transparent and open (NB Sciencewise and the Environment Agency representatives attended Oversight Group meetings as observers and to input where required).
- Project Management Team – staff from all three regulatory bodies (EA, NRW and ONR) and Sciencewise. Two University of Central Lancashire students whose PhDs relate to GDA and the nuclear decision making process were also invited to PMT meetings.
- Project delivery team (3KQ) – a dialogue and engagement organisation working together with the Project Management Team to deliver the project.
- Evaluator (Icarus) – to provide an independent evaluation of the overall project.
- Members of the public – participants in the dialogue project brought together in a range of locations to discuss the GDA engagement process.

See Appendix 1 for a list of Independent Oversight Group and Project Management Team members.

## 2.6. Dialogue materials

A range of existing and new materials were provided to participants throughout the dialogue workshops, including websites, printed documents and presentations. See Appendix 3 for a full list of materials, Appendix 7 for presentation slides and Appendix 8 for the Q&A document sent to participants between the Round 1 and 2 workshops.

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<sup>9</sup> Icarus is an independent provider of evaluation, facilitation, stakeholder engagement and research. [www.icarus.uk.net](http://www.icarus.uk.net)

## 3. Online scoping survey

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### 3.1. Aim

The survey was the first step of the overall dialogue process. Its aim was to inform the design of the local dialogue workshops, by building a picture of *national* attitudes to the regulation of nuclear power and the assessment of a new reactor design. Specific objectives included understanding:

- Level of awareness of the EA, ONR and NRW
- Attitudes to new nuclear power stations (as a baseline to other views below)
- Level of awareness about new build, and of regulation
- Level of trust in the regulators
- People's interests e.g. safety, environment etc.
- Level of interest in being involved in the GDA consultation process.

### 3.2. Methodology

This online scoping survey was designed to create a foundation upon which to build the rest of the public dialogue process. It allows the focussed public dialogue sessions around the two reactor sites (Round 1 in the diagram in section 2.3 above) to be placed within a national context of citizen views and their expectations of regulators.

The survey targeted the public nationally (residents in England and Wales) and was large enough to provide some statistical rigour whilst also being cost effective (circa 400 respondents). The sample of responses was generated to match as closely as possible the quotas within national census data from 2011 (available on the ONS website) regarding geography, age and gender. The one exception was Welsh respondents, which were purposefully over-sampled to ensure a good representation.<sup>10</sup> Inclusion of an additional criterion on socio-economic status had initially been anticipated, but the software used could not automatically code the 400 responses, making this not practicable within the budget scope.

The software used was Survey Gizmo, which is the Environment Agency's choice of online surveying software and used across its work. The sample of respondents was recruited from an online panel, with a minimal incentive to facilitate participation. The sample in the online panel was recruited via various sources – including using online advertising, social media and targeted online recruitment to top up specific demographics.

The sample screened out obvious stakeholder groups that already have stated positions on new nuclear power, such as nuclear industry/regulators/NGOs with a position on new build. This is because, for the purpose of this survey, these respondents were actually stakeholders rather than members of the general public. The generic design assessment (GDA) process accommodates these viewpoints already and mechanisms exist for these stakeholders to input views; this process was designed to capture the views of members of the public without significant existing knowledge of the nuclear industry or existing stated positions.

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<sup>10</sup> Welsh residents were over-sampled so that approximately twice as many Welsh residents were surveyed than implied by national census data. This makes the Welsh data more meaningful as a dataset, whilst simultaneously being small enough to not skew the overall results across England and Wales.

### 3.3. Limitations

The limitations we have identified with this methodology are listed below, with a response next to each:

Limitation	Response
Sample is only 400 people	This is a balance between cost and precision. In our view the survey would still be worth doing down to about 150 people given the function of the survey is to inform the design of the dialogue workshops (not a wider policy decision). The sample size could have been increased to give greater confidence, but would cost more for marginal extra gain. For example, taking the sample size up to 1000 would cost roughly another £2,500.
Excludes people without computer/online access (non-response bias)	Yes, it does exclude these people. This is not considered to be significant given the relatively limited level of precision required by this scoping survey. Also, non-response bias exists in all survey formats: face-to face (those people that don't want a surveyor in their home), telephone (people that don't have a landline). It is a proportionate limitation given the advantages of the online format.
Survey provided in English	The survey was available bilingually, so respondents could choose which language they responded in. The 'Welsh-spoken' data was then combined with the English survey to allow one set of data for analysis.
'Satisficing'	There is a risk of people rushing through surveys by not giving considered answers in order to simply receive their reward for less effort. This was minimised by offering a minimal incentive: it was purposefully small to avoid people doing it just for the money.
Too long/short	Given the purpose of the survey is only to inform the dialogue workshops, the survey was a good length. The temptation to lengthen it was avoided, in order to avoid reducing the response rate or have people skipping questions i.e. reducing the quality of data.

### 3.4. Participation

In order to reach the required 400 responses, 596 surveys were completed. The following types of responses were then screened out:

- Those respondents answering each question in less than three seconds, to further reduce the risk of 'satisficing' (see above)
- A handful of responses randomly selected to ensure the sample more closely matched the age and gender quotas of the 2011 census
- Partial / incomplete responses
- Any respondents not fulfilling the recruitment criteria (beyond census quotas – i.e. belonging to a stakeholder group as outlined above).

The 401 responses that remained are the basis for this report.

### 3.5. Key findings

The key findings from the scoping survey of 401 residents in England and Wales are shown below. See Appendix 4 for the detailed findings.

**Demographics.** The majority of respondents live in England – 87% compared to 13% from Wales. The male to female ratio of respondents is approximately 50:50. The age of respondents is fairly evenly distributed from 16 to 65+.

**Knowledge of EA, NRW and ONR.** The EA was the most familiar organisation to respondents, with 66.6% saying they knew at least a little about the organisation. NRW and the ONR were substantially less familiar to respondents, with 18% in each case saying they knew at least a little about these organisations – shifting to 39% for NRW when considering Welsh respondents only.

**Feelings about nuclear power in Britain today.** Around half of the respondents said they had a clear view on nuclear power, with 38% expressing overall support and 14% expressing overall opposition. Just 7% said they either didn't know or didn't care, with the slight majority of respondents (41%) saying they were not sure whether they supported or opposed nuclear power.

**Knowledge / feelings about new nuclear power.** The number of respondents who said they were aware some new nuclear power stations were planned before starting the survey, and those who said they were unaware was fairly even: 48% said they were aware, compared to 52% unaware. A total of 46% of respondents said they either tended to agree or strongly agree with the idea of new nuclear power stations being built in the UK, compared to 21% either tending to disagree or strongly disagree. Around a third – 34% – said they neither agreed nor disagreed, or didn't know.

**Knowledge / trust of nuclear power regulation.** Overall knowledge of nuclear power regulation among respondents was low, with 65% saying they knew virtually nothing or nothing at all, and 2% saying they didn't know. Just under a quarter – 23% – said they knew a little, with 8% saying they knew a fair amount, and 2% a lot. A total of 39% of respondents said they largely or completely trusted the EA. This was followed by 29% for the ONR, and 22% for NRW (23% of Welsh respondents). This broadly correlates with the overall level of familiarity respondents said they had with each organisation. Respondents saying they partly trusted each organisation, or that they didn't know, made up the largest proportion in each case: a total of 43.7% for the EA, 62.1% for NRW, and 54.2% for the ONR. This relatively high level of “undecided” respondents in each case implies that the nature of any future direct experience with each of these organisations has the potential to both positively and negatively impact the level of trust of a significant number of people.

**Public involvement.** Respondents felt that those members of the public living closest to a proposed nuclear reactor site were the most important to engage, with 79% saying it is very important (11% say it is quite important) that people who live within 25 miles of a proposed site have the opportunity to find out information and ask questions. This compares to 44% for people who live in England and Wales, further than 25 miles from a proposed site (though note that 43% of respondents still thought the involvement of these people was quite important). When considering people who live outside England and Wales, 47% of respondents still said they thought it was quite or very important these people had the opportunity to find out information and ask questions.

**What would you want to know more about?** The top three issues for respondents were safety (82%), radioactive waste management (78%), and the impact of radioactive discharges on people and the environment (76%). This was followed by security (64%), spent fuel management (59%)

and 'other environmental impacts' (50%). Management arrangements received the least attention, with 32% of respondents saying they would be interested in knowing about this topic – however, it is worth bearing in mind this question was asked without further explanation of what management arrangements actually means in practice (for example learning from experience, having safety procedure in place, etc).

**Future involvement.** The most popular choice for future involvement was the presence of a website that explains the assessment process, with 47% of respondents selecting this option. Receiving a quarterly newsletter and responding to a consultation online were also relatively popular, with 28% and 26% of respondents selecting these options respectively. Around a sixth of respondents – 17% – said they would attend meetings to hear more and ask questions, and 9% said they would respond to a consultation in writing (hard copy). Around a quarter – 25% – said they wouldn't really be interested in any further involvement.

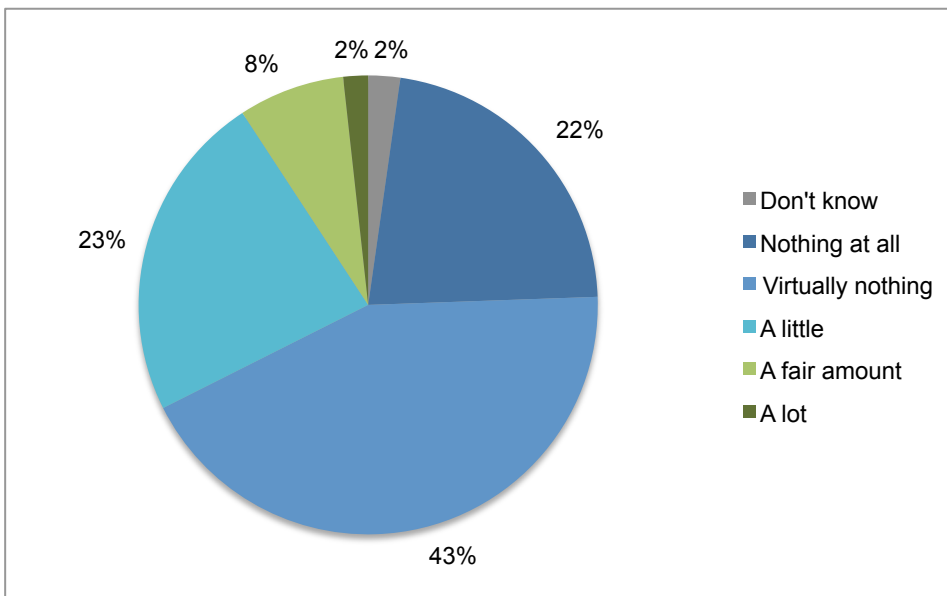


Figure 2: How much do you know about how nuclear power stations are regulated? National survey responses

### 3.2. Using the findings

The findings from the scoping survey were fed into the design of the public workshops. Specifically, they informed what questions should be asked in the workshops and with what emphasis, in order to ensure that the locally-based workshops were run in the context of the wider national picture. Appendix 4 (Round 1 workshop detailed findings) includes a summary of baselining questions asked of all workshop participants, with comparison to the relevant survey questions – a brief summary is also provided in section 4 of this report ('Changes in attitudes and understanding').



## 4. Round 1 workshops

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### 4.1. Objectives

The objectives of these workshops were to enable members of the public to:

1. Understand the process by which nuclear power stations in the UK can be developed (and where the GDA process fits in).
2. Understand the role and responsibilities of the regulators and how they work together.
3. Ensure basic understanding of the UK ABWR design and factors that differentiate it from other designs.
4. Consider the national public views emerging from the survey conducted.
5. Review hopes/fears/concerns/perceptions of nuclear power and the regulatory system and indicate what issues could be usefully explored in the second workshop.
6. Be clear about how they can get more information and ask questions about the GDA if they wish.

### 4.2. Methodology

The Round 1 workshops focused largely on introducing the topic of GDA and discussing initial responses around communicating this with the general public. The format included a mix of plenary discussion, presentations and group work at tables. Laptop notes were taken throughout, supported by some flipchart recording.

At both workshops, 3KQ facilitated and took notes, with simultaneous Welsh/English translation provided at the Bangor workshop.

### 4.3. Participation

A total of 41 members of the public took part in the Round 1 workshops – 22 in Cheltenham on 17<sup>th</sup> January and 19 in Bangor on 31<sup>st</sup> January (these were different members of the public to those taking part in the survey). Participant recruitment was undertaken by a specialist company working to pre-set specifications: a mix of gender, age and social grade, with exclusion of those who work or have family members working in the nuclear industry or anti or pro-nuclear campaign groups – this was to ensure participants were relatively fresh to the subject, without preconceived views

Both workshops were attended by independent Oversight Group members as observers, as well as representatives from the regulators, who contributed to conversations and gave various presentations throughout the day. Participants were paid some compensation for their time, as is usual practice for public dialogue.

### 4.4. Key points

Some of the key points arising from the Round 1 workshops of the Generic Design Assessment (GDA) public dialogue are as follows:

**1. Context matters.** Many of the dialogue participants wanted broader and deeper information than was necessarily contained within the formal scope of the GDA process and dialogue. This information was important to participants in order to understand the place of the process in a wider context, and to answer questions such as ‘why am I being asked now (and not before)’, ‘why does it matter to me’, and ‘will my views actually make a difference’. This has potential bearing for future public engagement on the topic, as it may be that more time and effort needs to be put into enabling members of the public to better understand topics such as energy policy, nuclear power, and the wider regulatory process before they feel equipped to answer questions specific to GDA.

**“When, where, what, why – I want all the facts about the GDA process. The timescale, why now.”** (Cheltenham participant)

**2. Make it relevant.** Throughout the workshops, participants tended to find it easier to talk about scenarios in which a specific location or proposed site was involved, rather than a generic approach. This is unsurprising given that it is much easier to engage in a topic that might have a direct impact on everyday life, rather than one that may or may not have a visible effect. The dilemma for future engagement is how to make the topic of GDA relevant to individuals and communities whilst also maintaining the focus on the wider process, and the degree to which resources should be used on raising general awareness about the GDA process and on more targeted engagement around potential sites.

**“What impact is it going to have on the environment and the local area or local people?”**  
(Bangor participant)

**3. Tailor messages for different groups.** Current GDA materials are written for a variety of audiences, but are not generally pitched at the general public. Therefore, these materials often seemed dense, technical, and unengaging to dialogue participants. They suggested a range of solutions for making future materials more appealing to the general public, with a particular focus on design, style, and visual imagery. Accessibility to younger people and to those without internet access were two common topics. Face-to-face presentation of information received the most positive response. Participants were fairly pragmatic about the resource constraints with respect to face to face engagement – in relation to this participants suggested online forums or videos might be a good compromise in lieu of widespread seminars or exhibitions.

**“You have to know your audience.”** (Bangor participant)

**“What about an interactive phone app? That would be great for younger people.”**  
(Cheltenham participant)

**4. Trust and independence.** The shift in attitudes (as measured by baseline questions) by the end of both workshops indicates that positive personal interaction (and perhaps a feeling of having been treated with respect) is a strong driver towards increased trust, balanced with past experience and overall level of familiarity. Again, this underlines the strength of face-to-face contact as a tool for future engagement. Although the overall level of trust varied slightly between the two workshops, generally participants seemed to understand and accept the independent nature of the regulators. When asked about the possibility of joint communications (for example with developers or designers), there was a mix of responses. Overall, positive aspects were seen as lack of duplication, a message of partnership working, increased likelihood of reaching target audience (for example not being overloaded with different bits of information) and saving

resources. However, this was balanced with comments that some people would find joint communications uncomfortable, and that care would have to be taken to ensure the different roles and views of the various organisations retained independence.

**“You can’t trust anyone without a face.”** (Bangor participant)

#### 4.5. Summary of the workshops

This is a summary of the key activities undertaken in the Round 1 workshops. See Appendix 5 for detailed findings.

**Questions about how the design of new nuclear power stations is assessed in the UK (GDA).** Following an introduction to the topic of Generic Design Assessment (GDA), participants spent some time in groups of two or three. They discussed questions they would like to ask about the topic or process of GDA. There were a number of questions about nuclear power more generally (especially potential impacts), as well as the GDA process. In Bangor, there tended to be a lot of focus on Wylfa power station, including jobs and local employment.

More specifically, lines of questioning included communication and information, design considerations, energy policy, the GDA process, local community, other impacts and concerns about nuclear power, waste and decommissioning, other nuclear power issues, other countries, other infrastructure and the regulators.

**Introducing the regulators and the GDA process.** The regulators present at each workshop gave two presentations: one outlining the roles of the three regulators (EA, NRW, ONR) and one outlining the GDA process.

**Communicating with members of the public about GDA.** Participants worked in smaller groups at tables, discussing a range of communications materials. They talked about what they liked or didn’t like about each communication material, and how they might be improved. Specific communication materials included:

- ‘Assessing new nuclear power station designs’ ONR/EA leaflet
- NRW website
- Hitachi-GE website
- ONR/EA joint website
- Quarterly update
- Consultation poster
- Consultation document
- Consultation document summary
- HSE EA (bilingual fold out document, old)

Comments on ‘Assessing new nuclear power station designs’ ONR/EA leaflet

**“Is this for everyone right across the board? Is this given to everyone, even if there is no proposal for a nuclear site in the area? This is too much information for most.”** (Bangor participant)

**“This [leaflet] in itself is not disastrous but it could be improved.”** (Cheltenham participant)

**“I tend to look at things that affect me, so if it explained that if you live in Gloucester and this is the impact on you then I’d read it.”** (Cheltenham participant)

Common messages across the various materials tended to focus on the need for clear signposting and clear messages, simple and familiar language, the need for strong visual content (e.g. realistic or real life pictures, eye catching imagery). Many participants wanted information about the context, including the roles of the regulators, and suggested readers would need to know why this topic mattered to them personally.

Comment on the ONR/EA joint website

**“Some of the phrases look as if it’s experts talking to experts – just that phrase there, assessment of new nuclear power stations – I’m not assessing anything.”** (Bangor participant)

Comment on the consultation document

**“If I was given a document like the consultation document my heart would sink, Joe Average just wants the potted version.”** (Cheltenham participant)

The figure displays two documents related to the Generic Design Assessment (GDA) process. The left document is a 'GENERIC DESIGN ASSESSMENT PROGRESS REPORT' for the period October-December 2014. It includes an 'INTRODUCTION AND BACKGROUND' section with six numbered points detailing the progress of the assessment, including meetings with Hitachi-GE and Horizon Nuclear Power, and the remobilisation review. The right document is a community information page titled 'Assessing new nuclear power station designs' from the Office for Nuclear Regulation (ONR) and Environment Agency. It explains why and how designs are assessed, mentions 'New nuclear power stations' and 'Regulating new power stations', and includes a 3D rendering of a reactor. It also states that the UK needs new energy infrastructure and that the GDA process involves public consultation and site-specific assessments.

Figure 3: GDA quarterly update and information for communities

Participants also discussed more general questions such as how they (and others in their communities) would prefer to receive information about GDA and to what extent they (and others in their communities) would wish to play a more active role in the GDA consultations.

Participants suggested a range of mechanisms, including online, postal and face to face interaction. There was particular discussion of the need to ensure specific groups were reached, including young people and those without internet access. There was an overall recognition that many people probably wouldn't get involved unless they felt they might be impacted directly.

**Explaining the technical and safety aspects of the design of the reactor.** The regulators present at each workshop gave a presentation introducing the UK Advanced Boiling Water Reactor (ABWR) design. This was followed by a more detailed discussion about the presentation and other related communication materials. Participants discussed what they liked or didn't like about the materials and what additional information they would want to receive. This led into further discussion about the role of the regulators, the potential for shared communications on GDA, communication methods, raising interest and the issue of trust.

Participants recognised various pros and cons relating to shared communications (e.g. from the regulators and designers) – for example saving resources on the one hand, versus risking perceived bias and clarity of roles on the other. Suggestions included separate bits of paper in one envelope or an event with different organisations on different stands in the same room – to demonstrate these organisations are working together but are also separate entities.

**Reviewing outstanding questions.** Towards the end of the workshops, participants were asked to reflect upon the questions they had asked at the beginning of the day, confirming which they felt had been answered and which they still wanted more information about. They were then asked about which topics they would want to discuss further, should they come back to a second workshop. The outputs of these discussions were fed into the design process for the Round 2 workshop, including production of a Q&A document sent to participants between workshops (see Appendix 8).

**Changes in attitudes and understanding.** On entering the workshop at the beginning of the day, participants were asked to mark their responses to four questions. These questions were then repeated at the end of the day, to see if people's attitudes or understanding had changed as a result of taking part in the workshop. By the end of the workshops, there had been a marked shift upwards in overall knowledge about nuclear power stations and their regulation, as well as increases in knowledge and trust of the regulators – although slightly less so with respect to knowledge of NRW at the Cheltenham workshop (maybe because NRW, as the environmental regulators in Wales, weren't seen as relevant to this location or because they weren't present in the room).

**Messages to the regulators.** Participants were asked to summarise – in a few words or a short sentence – any messages they would like to leave for the regulators about the GDA and how they communicate with members of the public in the future. These included a number of messages focused on the regulators providing more information in a clear and understandable way.

## 5. Round 2 workshop

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### 5.1. Objectives

This workshop was designed to provide opportunities for:

1. Deeper exploration of issues only touched on lightly in Round 1 e.g. waste management, security.
2. Discussion of responses to a range of communication and consultation materials to check they are accessible to the public.
3. Development of recommendations about public engagement for the PMT to consider further, including the opportunity to reflect on how relevant people feel it is to be consulted at the generic GDA stage.

### 5.2. Methodology

The Round 2 workshop was designed to enable participants to delve more deeply into some of the areas covered in workshop 1, particularly in relation to if, how, and who to communicate with, with respect to the GDA process.

The format included a mix of plenary discussion, presentations and group work at tables. Laptop notes were taken throughout, supported by some flipchart recording. 3KQ facilitated and took notes at the workshop.

### 5.3. Participation

At the end of each Round 1 workshop, participants were asked to sign up for a second workshop if they were interested in discussing the topic further. A total of 13 people at the Bangor workshop and 18 people at the Cheltenham workshop expressed an interest. 18 participants were selected to take part in the Round 2 workshop, to represent a mix of attendees (age, gender, etc) from Cheltenham and Bangor (9 from the Bangor workshop and 9 from the Cheltenham workshop). The workshop was held in Crewe on 21<sup>st</sup> March 2015.

Again, this workshop was attended by Oversight Group members as observers, as well as representatives from the regulators, who contributed to conversations and presentations throughout the day.

### 5.4. Key points

The key points arising from the Round 2 workshop of the Generic Design Assessment (GDA) public dialogue are best summarised in the form of the suggestions from participants for reducing barriers to engagement, based on the final discussion of the day. However, these are in the context of the point that a number of workshop participants indicated they would not want to be involved in GDA or that, based on what they had heard already, they didn't need to know any more.

Suggestions from participants for reducing the barriers to engagement on GDA:

**1. Keep it simple.** It doesn't have to be complicated – for example the pressure cooker analogy to help explain how a reactor works (used in the Round 1 workshops) was easy to understand. Come

up with every day analogies that people can relate to. Devise some simple ideas to attract young and old people.

**2. Innovate.** Make it engaging, humorous and interactive. Do it completely differently to how it has been done for the last few years by using a new fresh approach. For example, consider the use of popular TV programmes or even poetry.

**3. Use a range of methods.** Have a range of different communications, akin to a multi-media marketing campaign. Consider how to capture different demographics using different platforms.

**“Send out different forms of communication to aim at different demographics – not just email as not everybody uses that.”** (Participant)

**4. Tap into local resources.** Tap into local enthusiasm by utilising those people who are engaged to encourage others to get involved. Target local interest groups that you think would have members who are interested. Use local publications and social media. Get young people involved, for example through a school project. Bear in mind a lot of what you find out is through who you know and what they bother to let you know.

**5. Drip feed information.** Develop familiarity with the topic by drip feeding information and reusing common images or infographics. This will help people to be more aware and better able to respond.

**“It’s about repetition. Keep on doing it – drip-feed. If you’ve got once poster, image or infographic and you’re always using it that brings familiarity.”** (Participant)

**6. Ensure accessibility and visibility of online information.** Ensure online information is easy to find and navigate.

**7. Be aware of context, history, and preconceptions.** Some people have a fear of nuclear stations or radiation, and associate “nuclear” with weaponry. There could be a way of talking about this process as a positive way of safeguarding against the bad stuff happening – people should be told what went wrong in the past (e.g. at Chernobyl), and then informed about what is now being done to stop that happening again.

**8. Make it personal.** Find ways of letting people know why this matters to them or of grabbing their interest, in an objective factual way. For example: how much money the different organisations are going to make; impacts on the wider economy; the thoroughness of the regulatory process with respect to safety; how many lights that power plant can turn on in comparison to the old one; letters or flyers in electricity bills; future forecasting – projections about how much power is going to be needed; the amount of waste and where it would go; and so on.

**9. Reconsider the use of language.** The name (GDA), abbreviations and language are currently not helpful. Write in a language people can understand – this includes material in English and Welsh.

**“It’s this business of abbreviating all over the place – you need a dictionary next to you to understand!”** (Participant)

**10. Clarify what kind of input is being sought and listen to people’s views.** Let people know about the process as early as possible. Clarify what kind of input is being sought, what has already been decided and how GDA fits in to the wider context – perhaps using an infographic. Listen to people’s views.

**11. Make it personable.** Representatives from the regulators should be open, honest and engaging – get the right people involved. A friendly face makes a difference.

**12. Raise the profile of the regulators and their role.** Try to raise the profile of the regulators and clarify their role (particularly their independence) alongside that of other organisations such as NGOs and Government. For example, relevant corporate materials could reference the role of the regulators as standard (similar to banks).

## 5.5. Summary of the workshop

This is a summary of the key activities undertaken in the Round 2 workshop. See Appendix 5 for detailed findings.

**Recap of Round 1 workshops.** Participants spent some time in two groups discussing the previous workshops, specifically anything that had stuck in their minds, and whether they had tried to find out anything new or spoken to friends and family following the workshops. For many people, specific learning had stuck in their minds, as well as observations about the complexity of the process and language, and specific concerns about aspects such as safety. Several participants had not looked for further information as they felt the detail provided in the first workshop had been sufficient. Others tended to turn to the Internet for more information. Those who spoke to friends or family about the topic said that responses ranged from disinterest to surprise or strong interest.

**“I came away thinking I had learned a great deal, I probably already know a fair amount about nuclear reaction, but what struck me was that no one I spoke to since knew anything about nuclear reactors or anything about it.”** (Participant)

In relation to the language of GDA (whether in English or Welsh), participants focused on the need to make this simpler – both in terms of the phrase itself (“Generic Design Assessment”) and the surrounding contextual language.

**Where GDA fits with the bigger picture.** Based on feedback from the previous workshops, the regulators had produced a diagram in an attempt to better explain the bigger picture surrounding the GDA process. The group spent some time discussing this. Overall there was a feeling the diagram was a good start in explaining the context of GDA. Most comments related to specific suggestions for improvements or things participants particularly liked or didn't like with respect to the content or layout.

**Issues raised at Round 1 workshops.** The regulators spent some time responding to some of the questions raised by participants in the Round 1 workshops that were not answered in full at the time. Topics included nuclear waste, safety/health, waste disposal, long term impacts and security.

**Consulting with members of the public about GDA.** Participants were given a brief reminder of the consultation process for GDA and what was done last time, for example in terms of timing, publicity, and which organisations might be sent the consultation documents. Working in groups, participants discussed the previous consultation executive summary and consultation questions. They were initially asked to provide their overall first impressions, followed by more specific discussions around layout and language. Other topics for discussion included:

- What could be done differently to engage the public on GDA?
- How might lay members of the public wish to contribute?
- How can 'formal consultation' be combined with public engagement?
- What kind of response might be required to work with the public who wish to engage?
- What information, what methods and channels work best?

Participants discussed the consultation questions, language, length and level of detail. A small



number of people thought the language was straightforward, while many thought it was complex and dry. There were mixed views about the level of detail that should be in a summary document. These ranged from the need for the summary to contain all of the relevant information to enable readers to answer the questions to the suggestion that the summary document could contain cross references and lead people to read the full document.



Figure 4: UK EPR consultation document

**“This [holding up the document] doesn’t tell me that there is a questionnaire to fill in. It looks like a very technical document which I would ignore. You could have ‘we want to know your views’ on the front.”** (Participant)

**“The individual break down of facts and figures is good. The pictures set the scene and make it relevant.”** (Participant)

Some participants discussed the e-consultation, saying that it seemed quite text heavy and quite a lengthy process that could become quite time-consuming or frustrating. They suggested it should be quick and easy and that a comments box is crucial.

Participants also discussed options for more graphical content – for example infographics to get across key facts and figures. This was cited as a potential mechanism for increasing the level of interest among members of the public, alongside a range of other suggestions including TV programmes, targeting those living near to potential sites in a different way, and using informed members of the public to put across information from a layperson’s perspective.

**“Mostly people don’t go to meetings about certain things unless it’s windmills then they all come and object to them.”** (Participant)

**“We could go out and about to talk to people.”** (Participant)

Preferred communication methods were also discussed, eliciting a range of responses including discussion of the pros and cons of flyers, and some suggestions of a multi-format approach.

**“It has got to be multi-format – you have got to go for everything, go for the rounded thing, and you can’t afford to miss anything out. Cost shouldn’t be an issue, although I know it is. It could be as simple as one photo with three words on it to capture people’s interest.”** (Participant)

The suggestion of local engagement close to potential sites was received positively, with specific comments including the need to give the regulators a face and the potential to tap into existing community groups.

**Barriers to public engagement on GDA.** Participants split into small groups and discussed the kinds of barriers that they think stop people getting more engaged with the regulators about GDA. These are summarised below.

- Lack of interest / not a priority
- Lack of knowledge / awareness
- Complexity of subject
- Complexity of language
- Not seen as relevant to the individual or their demographic
- Poor presentation / not personable
- Seen as a foregone conclusion / lack of trust / lack of perceived influence
- Not enough information channels used / not the right ones
- Lack of trust, thinking they don't have any influence, foregone conclusion.

**Reducing the barriers.** During the final part of the workshop, participants discussed ideas and recommendations for reducing some of the barriers to engagement. This final discussion is summarised as a set of suggestions from participants and form the key points from this workshop – see 5.1. above.

## 6. Commentary against key questions

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In order to meet the dialogue objectives, the process was centred on three key questions:

- How do members of the public want to be involved in the Generic Design Assessment process?
- What do people need to know (what are their concerns/interests?) and how can we (nuclear regulators) address their concerns/interests as part of the GDA process?
- What can we do to help improve people's trust in us and confidence in our decisions (as nuclear regulators)?

3KQ's commentary against each of these questions is provided below, preceded by an overarching comment. The commentary is included here rather than scattered throughout the dialogue findings above, since much of it cuts across the various findings from different stages of the process.

### 6.1. Overarching comment – why involve?

A number of workshop participants indicated they would not want to be involved in GDA or that, based on what they had heard already, they didn't need to know any more. This raises a key overarching question: why engage? For example, is it to communicate enough information to the general public to enable people to understand the GDA process and to be able to get involved in the consultation if they want to; or to make people aware that a particular type of reactor may be used at a site near them in advance of site specific information being available and with a view to proactively engaging them in the conversation. Both are valid approaches, but the purpose of each communication activity should be clear upfront.

### 6.2. How do members of the public want to be involved in the Generic Design Assessment process?

**Two questions.** Assuming the question of "why engage" has already been discussed, this question can usefully be split into two distinct aspects: who should be involved, and using what kind of mechanisms.

**Who to involve?** With respect to who should be involved, findings from the national survey indicate that there is a strong feeling those closest to proposed new nuclear sites (within 25 miles) should have the opportunity to find out information and ask questions about the GDA process. Most respondents also felt it was quite or very important to involve other members of the public within England and Wales, while just under half said it was quite or very important for members of the public outside England and Wales to be involved.

The baselining exercise undertaken at the beginning and end of the Round 1 workshops broadly reflect the survey findings. By the end of the workshops there appeared to have been limited change with respect to all three categories, perhaps with the exception of a slight shift upwards (i.e. more important) with respect to public who live in England and Wales further than 25 miles from a proposed site.

This is perhaps not surprising: those closest to the site were felt to be most important, followed by those who live in England and Wales (i.e. the same country as a potential site), followed by those outside England and Wales. This also reflects the dilemma presented by the issue of local versus

national relevance (see 'what do people need to know' below). GDA is a national process, but participants in the dialogue workshops found it much easier to relate to local issues such as direct impacts and safety. The implication for the wider GDA process is that, although people living further away from the potential sites are still felt to be important to include, they are likely to be difficult to engage on generic issues and using generic language.

**How to involve them?** The mechanisms for future engagement were covered in one national survey question, and rather more extensively in the dialogue workshops. Survey respondents tended to favour a website that explains the assessment process (47%), followed by a quarterly newsletter (28%), online consultation (26%), face to face meetings (17%) and written consultation response (9%) – around a quarter said they would not really be interested in any further involvement.

Workshop participants discussed a range of possible mechanisms for future engagement, including websites, flyers, online videos, infographics and face-to-face interaction (including using representatives from the regulators and highly engaged members of the public). Face to face engagement was particularly favoured, although participants recognised the practical difficulties and resource constraints presented by this type of engagement. Beyond the pros and cons of specific methods, it became apparent (particularly in the Round 2 workshop) that there are certain principles applicable to all of these communication methods. For example, the use of simple language, consistent messaging, graphics and methods tailored to particular audiences were all considered to be important. This stresses the point that the focus for future communications should be as much on how and why (who is this for and how can we make it more likely to be effective) as on what (which mechanism should we use).

**The language barrier.** Language was a key issue for participants, particularly in the Round 2 workshop – many people felt the current language around GDA, including the acronym itself, was unhelpful and not designed for lay people. This presents a dilemma for future engagement activities: how to explain a highly technical topic in everyday language, and how to provide enough information to enable useful input without switching people off. Participants discussed solutions such as infographics, use of analogies and developing materials with the help of lay people.

**Participant suggestions.** Relevant suggestions from participants in the Round 2 workshop for reducing the barriers to future public engagement on GDA: 1 (keep it simple), 2 (innovate), 3 (use a range of methods), 4 (tap into local resources), 5 (drip feed information), 6 (ensure accessibility of online information).

### **6.3. What do people need to know (what are their concerns/interests?) and how can we (nuclear regulators) address their concerns/interests as part of the GDA process?**

**Broader awareness of the topic.** The national survey showed that just over half of respondents were not aware that new nuclear power stations were planned and around two thirds knew nothing or virtually nothing about how nuclear power stations are regulated – this was also reflected in the responses to the baselining questions in the Round 1 dialogue workshops. This in itself has implications for the provision of context as part of any future GDA engagement process – a theme that became increasingly apparent throughout the course of the workshops.

**Desire for context.** Many workshop participants wanted to know about the context of the GDA process, for example why is it important, why did their views matter, why now and how would their views make a difference? Although outside the direct scope of the GDA process, contextual topics such as the need for new nuclear power and the place of GDA in a wider picture were also

obviously important to participants. This raises questions over the degree to which increasing contextual knowledge would increase the motivation and ability of members of the public to contribute to a future consultation on GDA – and the findings from the dialogue workshops suggest it would.

**Desire for detail.** When asked about specific topics they would want to know more about as part of any future GDA engagement process, survey respondents highlighted safety first, followed by radioactive waste management, the impact of radioactive discharges on people and the environment, security, spent fuel management, and other environmental impacts. Management arrangements were of less interest, with around a third saying they would want to know more about this topic – however, it is worth bearing in mind this question was asked without further explanation of what management arrangements actually means in practice (for example learning from experience, having safety procedures in place, etc).

Within the dialogue workshops, participants were interested in very similar issues to those covered by the survey. In particular local community impacts (including environment, safety and security), radioactive waste and energy policy were common topics. For many participants, the potential for a site to be near them and all of the related implications for life and work appeared to be of much greater interest than the detail of the GDA process. The tendency for workshop participants to continually relate the GDA process to specific sites or impacts indicates the difficulty with the generic nature of the topic and the importance of finding hooks to hang the topic on that people find to be interesting and relevant to them.

**GDA as part of a story, not an isolated chapter.** On the one hand, participants wanted more contextual information; on the other they wanted to hear about local implications and to ground generic concepts in reality. Both of these things indicate the need to clearly show the pathway from decisions about new nuclear to the local implications of new reactors, with GDA as a pivotal point in that process. It also suggests the need to be very clear about what kind of input is being sought from members of the public, as well as what the scope of the topic covers and does not cover. This does not mean ignoring the context, but rather explaining it well, drawing a clear boundary around the GDA process within that and explaining what difference people's input can make.

**Participant suggestions.** Relevant suggestions from participants in the Round 2 workshop for reducing the barriers to future public engagement on GDA: 7 (be aware of context, history and preconceptions), 8 (make it personal), 9 (reconsider the use of language), 10 (clarify what kind of input is being sought and listen to people's views).

#### **6.4. What can we do to help improve people's trust in us and confidence in our decisions (as nuclear regulators)?**

**Knowledge and trust.** National survey respondents were asked about their knowledge of and trust in the three regulators: Environment Agency (EA), Natural Resources Wales (NRW) and Office for Nuclear Regulation (ONR). The EA was the most familiar, with NRW and ONR substantially less familiar (though when considering Welsh respondents only, NRW was better known. Overall levels of trust were relatively low, with 39% of respondents said they largely or completely trusted the EA, followed by 29% for the ONR, and 22% for NRW – broadly correlating with levels of familiarity. These levels of knowledge and trust were reflected in the initial baselining at the Round 1 workshops. However, by the end of the Round 1 workshops, knowledge and trust had made a marked shift upwards with respect to all three organisations, although slightly less so with respect to knowledge of NRW at the Cheltenham workshop (maybe because NRW, as the environmental regulators in Wales, weren't seen as relevant to this location or because they weren't present in the room).

**People power.** This increase in perceived knowledge and trust highlights the importance of familiarity – both in terms of knowledge and face-to-face contact. The importance of face-to-face interaction became increasingly apparent during the dialogue workshops in two ways: participants' own reactions to speaking with regulator representatives and engaging with them on a personal level, and comments made by participants about the need to increase familiarity with the regulators and their role, including by meeting them in person. For many participants, clarity over the roles and responsibilities of the regulators seemed to contribute to their levels of understanding and trust – this is another important point to bear in mind with respect to future engagement and contextual information.

**Participant suggestions.** Relevant suggestions from participants in the Round 2 workshop for reducing the barriers to future public engagement on GDA: 11 (make it personable), 12 (raise the profile of the regulators and their role).

## 7. The way forward

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Following the production of the draft final report and an interim learning bulletin produced by Icarus, the Oversight Group and Project Management Team (PMT) both held meetings to discuss the implications of the dialogue findings.

At the time of publishing this report:

- The project partners have arranged a full day workshop to consider the detailed findings from the public dialogue and decide what they could take forward.
- Work has begun on developing content to address some of the feedback (e.g. placing 'GDA' in the wider context of new nuclear power stations) and exploring the use of different approaches to engaging members of the public.
- The findings will inform the Environment Agency's and Natural Resources Wales' approach to consulting members of the public on Hitachi-GE's UK Advanced Boiling Water Reactor in 2016.
- Plans for sharing the project findings are also being developed. This includes arranging for the report to be sent to the workshop participants and sharing the findings with others who may be able to make use of them, for example Hitachi-GE and other organisations working in the nuclear sector.

# New nuclear power stations – improving public involvement in reactor design assessments

## Public Dialogue

Appendices to the dialogue report

August 2015

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## **Appendix 1. Independent Oversight Group, Project Management Team and key contributors**

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**Independent Oversight Group – a group of stakeholders providing overall guidance and accountability to the project, ensuring the process is robust, transparent and open (NB Sciencewise and the Environment Agency representatives attended Oversight Group meetings as observers and to input where required)**

Prof Andrew Blowers – Emeritus Professor of Social Sciences at the Open University, Chair of the Blackwater Against New Nuclear Group, Member Nuclear Waste Advisory Associates, Member of Committee on Radioactive Waste Management (CoRWM1). Co-Chair DECC/NGO Nuclear Forum.

Kirsty Gogan – founder of Energy for Humanity, independent consultant, energy and climate communications specialist, visiting researcher at University of Manchester - Dalton Nuclear Institute, member of Nuclear Industry Council Public Understanding of Nuclear Energy sub group.

Dr Colette Grundy – NNL Laboratory Fellow Nuclear Regulation, Business Manager, Safety (Licensing), Security and Safeguards, National Nuclear Laboratory. Dr Colette Grundy is the work based supervisor for the NNL - UCLan (University of Central Lancashire) Case Award PhD students. Dr Grundy comments: “I would like to thank all involved in this project for enabling my PhD students to become involved in this study.”

Alyn Jones – Officer Lead New Nuclear Local Authorities Group & Strategic Manager – Major Programmes, with Somerset County Council’s Economic & Community Infrastructure team

Dr John Idris Jones – Energy Island Programme Director and Head of Socio-Economic Development, Wylfa Magnox Ltd

Prof Lynda Warren – Emeritus Professor of Environmental Law at Aberystwyth University, member of Committee on Radioactive Waste Management, NRW Board member.

**Project Management Team – staff from all three regulatory bodies (EA, NRW and ONR) and Sciencewise. Two students whose PhDs relate to GDA and the nuclear decision making process were also invited to PMT meetings**

Environment Agency: Annabelle Lillycrop, Senior Stakeholder Engagement Adviser (Project Lead); Alan McGoff, New Nuclear Build Lead; Caroline Richards, Communications Specialist; Saffron Price-Walter, GDA Manager

Natural Resources Wales: Nia Jeffreys, Principal Officer - External Relations; Iwan Williams, Programme Manager

Office for Nuclear Regulation: Rebecca Kingston, GDA Communications & Stakeholder Engagement lead (for part of the project); Michael Williams, GDA Project Manager

Sciencewise: Steve Robinson, Dialogue and Engagement Specialist

### **Other key contributors**

Ioan Parry, PhD student

John Riley, PhD student

## Appendix 2. Recruitment and attendance

The number of attendees at each event is shown in the table below, alongside the key recruitment criteria for members of the public in each case.

Event	Number of members of the public involved	Key criteria	Number of specialists / Oversight Group members in attendance
Scoping survey (NB there was no connection between the survey participants and those taking part in the subsequent workshops)	401	Matching national census data for England and Wales as closely as possible, with the exception of a purposeful oversampling of Welsh residents to ensure a good representation from this group. Exclusion of obvious stakeholder groups that already have stated positions on new nuclear power, such as nuclear industry/regulators/NGOs.	N/A
Round 1 workshop – Cheltenham	22	Mix of gender, age and social grade, with exclusion of those who work or have family members working in the nuclear industry or anti- or pro-nuclear campaign groups.	5
Round 1 workshop – Bangor	19	Mix of gender, age and social grade, with exclusion of those who work or have family members working in the nuclear industry or anti- or pro-nuclear campaign groups.	9
Round 2 workshop – Crewe	18	Expressed an interest in attending. Selected to represent a mix of attendees (age, gender, etc) from Cheltenham and Bangor.	7

In addition to the Oversight Group members and specialists (see final column above), each workshop was attended by a team of four (two facilitators and two recorders) and a representative from Sciencewise. The independent evaluator attended the Bangor Round 1 workshop and the Round 2 workshop in Crewe.

## Appendix 3. Dialogue materials

Discussions at the Round 1 and 2 workshops were often based on participants looking at specific materials and feeding back their views or using them as a starting point for discussions. These materials were largely existing websites and printed documents related to overall GDA activities or the previous GDA consultation. Other materials included presentations and new ideas for communicating information on GDA, such as infographics. Below is a list of all materials shown to participants at each workshop, along with web links where appropriate.

<b>Round 1 workshops</b>
Consultation briefing note – assessing designs and how you can get involved
<a href="#">Initial assessment report (UK ABWR)</a>
<a href="#">Summary of initial assessment report (UK ABWR)</a>
<a href="#">Summary of GDA consultation document (UK EPR)</a>
<a href="#">Full consultation document (UK EPR)</a>
Technical assessment reports (UK EPR)
<a href="#">Consultation responses report (UK EPR)</a>
<a href="#">Decision document (UK EPR)</a>
Horizon Nuclear Power <a href="#">Wylfa</a> and <a href="#">Oldbury</a> community leaflets
Posters publicising the GDA consultation on (UK EPR)
<a href="#">Assessing new nuclear power station designs – information for communities leaflet</a>
<a href="#">Joint regulators’ GDA website</a>
<a href="#">Environment Agency GDA web pages on gov.uk</a>
<a href="#">Hitachi-GE website</a>
<a href="#">NRW website</a>
Presentation: Introducing the regulators (see Appendix 7)
Presentation: Introducing the GDA process (see Appendix 7)
Presentation: The UK ABWR design (see Appendix 7)
<b>Between workshops</b>
GDA e-bulletin
Q&A document based on questions asked in Round 1 (see Appendix 8)
<b>Additional materials for Round 2 workshop</b>
‘Bigger picture’ summary – an infographic developed specially for this workshop, in response to feedback from Round 1
Display board from consultation on GDA for (UK) EPR
Presentation: safety, security and waste issues (see Appendix 7)

## Appendix 4. National scoping survey – detailed findings

Respondents were provided with the following introductory text: “The Environment Agency, Natural Resources Wales and the Office for Nuclear Regulation want to find out what you think of their work on the regulation of nuclear power. The survey will take no more five minutes to complete and your views will remain anonymous. We will use the results to improve the way we communicate with you about our joint work.”

### Question 1: Where do you live?

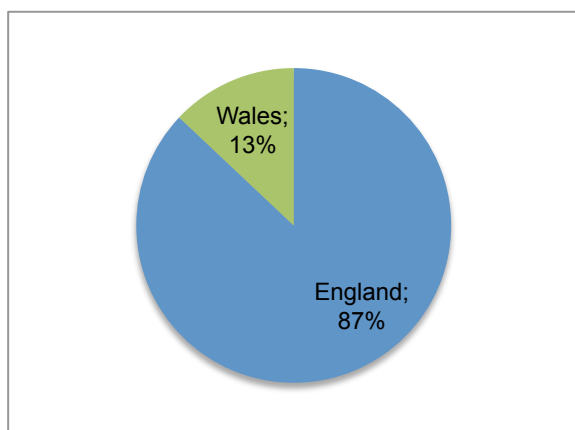


Figure 1: Where do you live?

England	87.0%	349
Wales	13.0%	52
Total		401

The majority of respondents said that they lived in England – 87% compared to 13% from Wales. Of those respondents living in Wales, two chose to answer the survey in Welsh. These responses have been translated and form part of the overall set of 401.

### Question 2: Are you male or female?

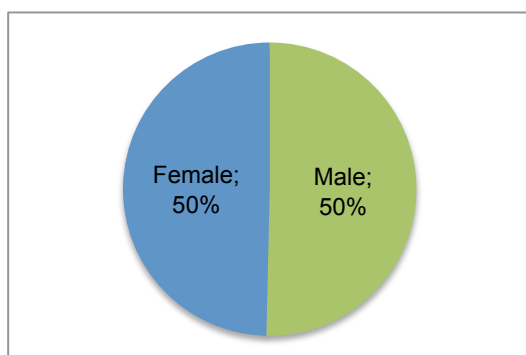
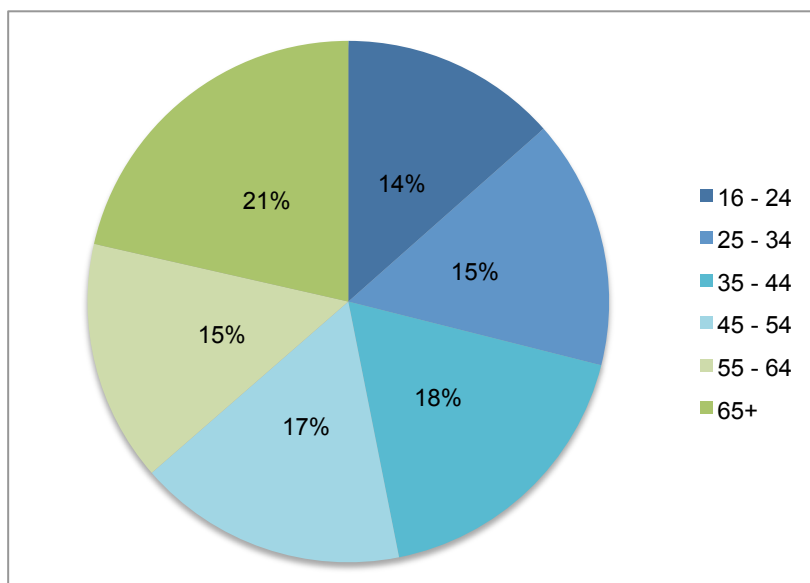


Figure 2: Are you male or female?

Male	50.4%	202
Female	49.6%	199
Total		401

The male to female ratio of respondents was approximately 50:50. This matches the 2011 census data.

**Question 3: Which age bracket are you in?**



**Figure 3: Which age bracket are you in?**

16 - 24	13.5%	54
25 - 34	15.5%	62
35 - 44	18.0%	72
45 - 54	16.7%	67
55 - 64	15.0%	60
65+	21.4%	86
Total		401

The age of respondents was fairly evenly distributed, which broadly matches the 2011 census data. There were slightly fewer 16-24 year olds surveyed than the census implies (54 people rather than 64 in the quota).

#### Question 4: How much do you know about these organisations?

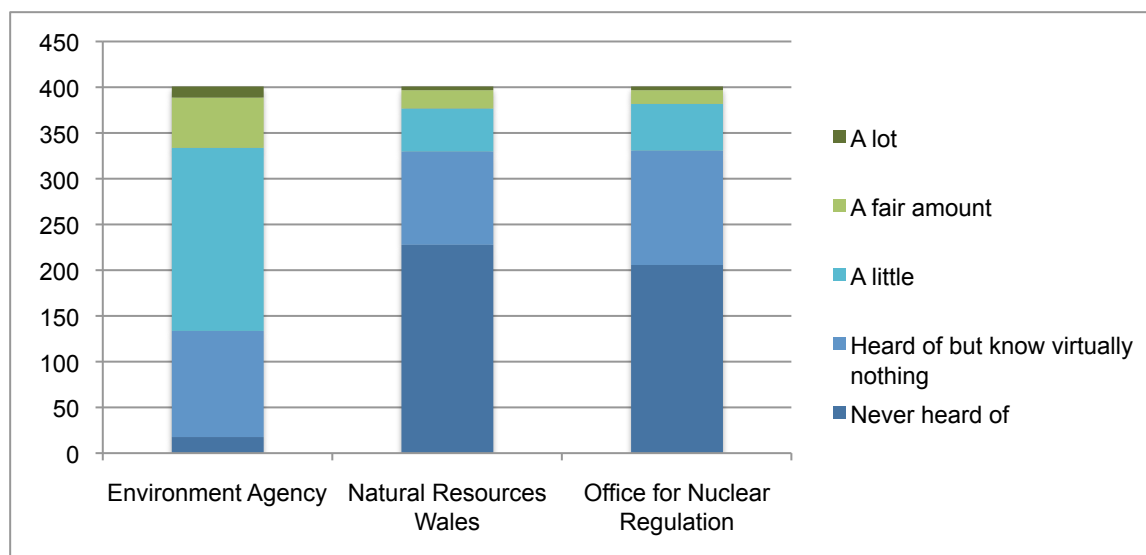


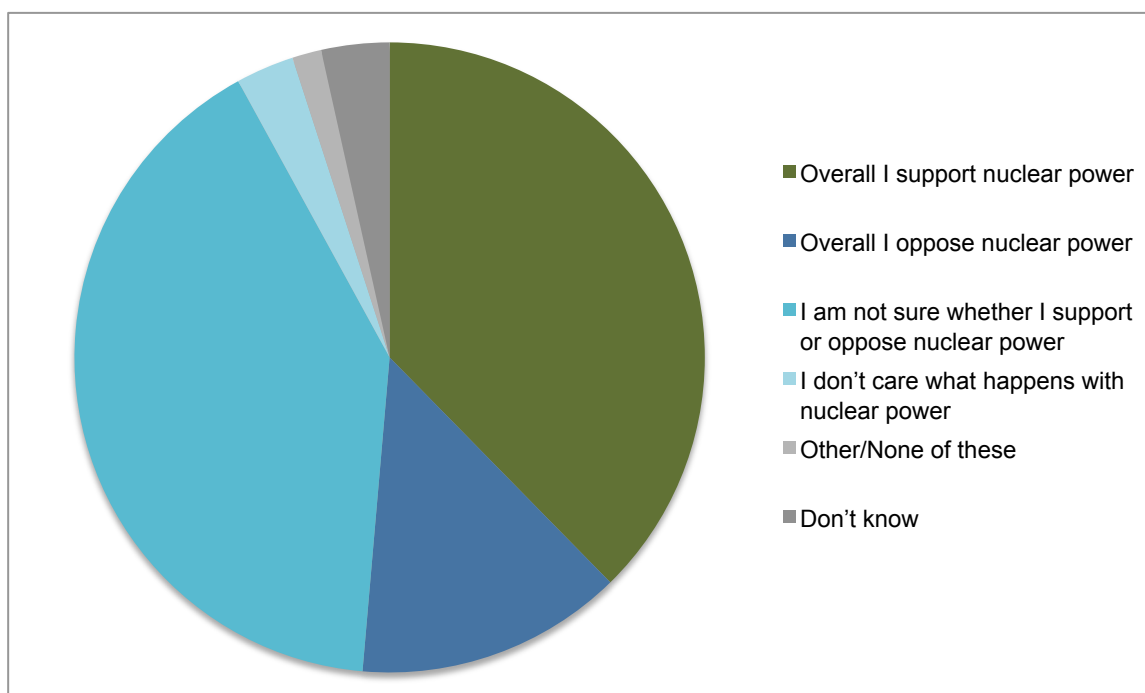
Figure 4: How much do you know about these organisations?

	Never heard of	Heard of but know virtually nothing about	A little	A fair amount	A lot	Total
Environment Agency	18 (4.5%)	116 (28.9%)	200 (49.9%)	55 (13.7%)	12 (3.0%)	401
Natural Resources Wales	228 (56.9%)	102 (25.4%)	47 (11.7%)	20 (5.0%)	4 (1.0%)	401
Office for Nuclear Regulation	206 (51.4%)	125 (31.2%)	51 (12.7%)	15 (3.7%)	4 (1.0%)	401

The Environment Agency (EA) was the most familiar organisation to respondents, with 66.6% saying they knew at least a little about the organisation. Natural Resources Wales (NRW) and the Office for Nuclear Regulation (ONR) were substantially less familiar to respondents, with 17.7% and 17.4% respectively saying they knew at least a little about these organisations.

Considering the Welsh respondents only, the figures for NRW changed, with 38.5% of these respondents saying they knew at least a little, and 34.6% saying they had heard of NRW but knew virtually nothing about them.

**Question 5: Which, if any of the following statements most closely describes your own opinion about nuclear power in Britain today?**



**Figure 5: Which, if any of the following statements most closely describes your own opinion about nuclear power in Britain today?**

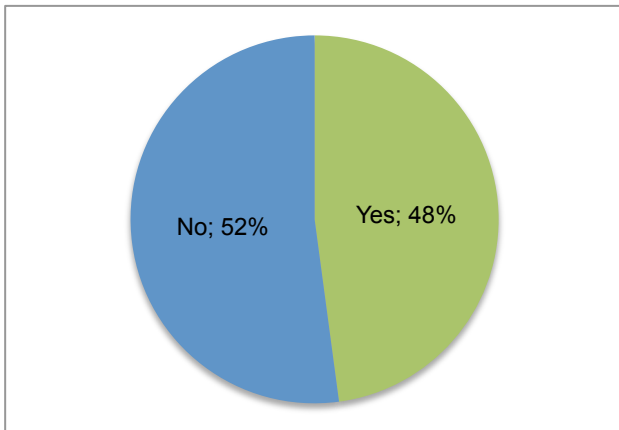
Don't know	3.5%	14
Other/None of these	1.5%	6
I don't care what happens with nuclear power	3.0%	12
I am not sure whether I support or oppose nuclear power	40.6%	163
Overall I oppose nuclear power	13.7%	55
Overall I support nuclear power	37.7%	151
<b>Total</b>		<b>401</b>

Around half of the respondents said they had a clear view on nuclear power, with 37.7% expressing overall support and 13.7% expressing overall opposition. Just 6.5% said they either didn't know or didn't care, with the slight majority of respondents (40.6%) saying they were not sure whether they supported or opposed nuclear power.

This was a slightly different outcome to that of a similar question asked in a 2013 survey of public attitudes to nuclear power and climate change in Britain after Fukushima.<sup>1</sup> The 2013 survey found that 32% of respondents expressed overall support for nuclear power and 29% expressed overall opposition, with 27% saying they were not sure, and 12% saying they didn't know or didn't care.

<sup>1</sup> *Public Attitudes to Nuclear Power and Climate Change in Britain Two Years after the Fukushima Accident*, Poortinga, Pidgeon, Capstick and Aoyagi, 19 September 2013. <http://www.ukerc.ac.uk/publications/public-attitudes-to-nuclear-power-and-climate-change-in-britain-two-years-after-the-fukushima-accident.html>

**Question 6: Before starting this survey, did you know that any new nuclear power stations were planned?**

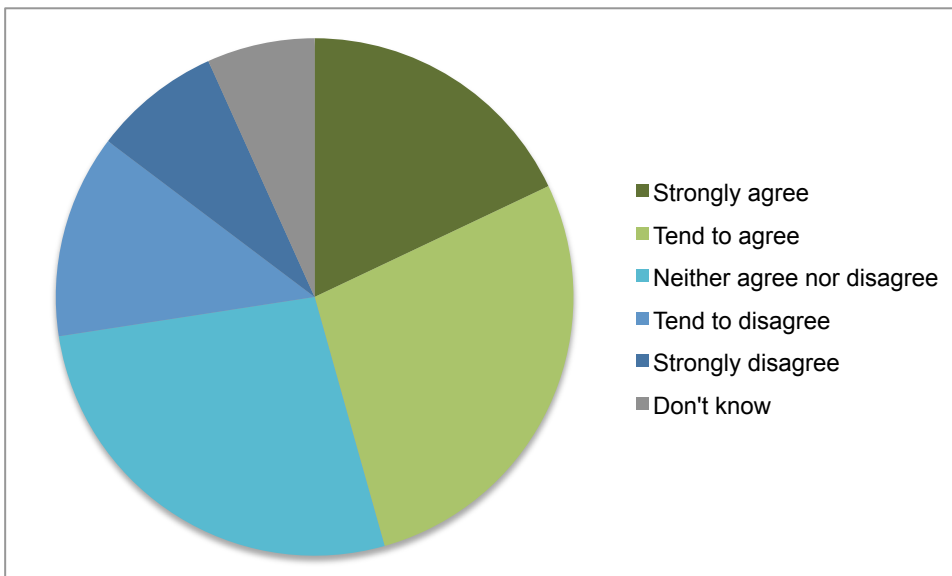


**Figure 6: Before starting this survey, did you know that any new nuclear power stations were planned?**

Yes	47.9%	192
No	52.1%	209
	Total	401

The number of respondents who said they were aware some new nuclear power stations were planned before starting the survey, and those who said they were unaware was fairly even: 47.9% said they were aware, compared to 52.1% unaware.

**Question 7: Overall, do you agree or disagree with new nuclear power stations being built in the UK?**



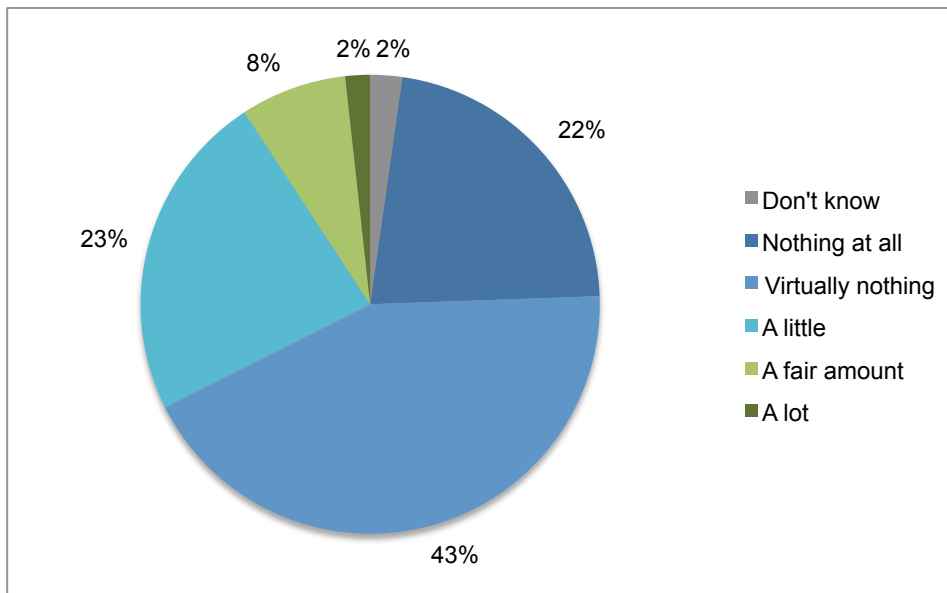
**Figure 7: Overall, do you agree or disagree with new nuclear power stations being built in the UK?**



Don't know	6.7%	27
Strongly disagree	8.0%	32
Tend to disagree	12.7%	51
Neither agree nor disagree	26.9%	108
Tend to agree	27.7%	111
Strongly agree	18.0%	72
Total		401

A total of 45.7% of respondents said they either tended to agree or strongly agree with the idea of new nuclear power stations being built in the UK, compared to 20.7% either tending to disagree or strongly disagreeing. Around a third – 33.6% – said they neither agreed nor disagreed, or didn't know. Comparing these figures to those for overall feelings about nuclear power in Britain today shows that respondents overall expressed slightly more preference one way or the other when asked specifically about new nuclear power stations than about nuclear power overall – i.e. there were slightly fewer respondent who were unsure of their feelings when asked specifically about new nuclear power stations.

**Question 8: How much do you know about how nuclear power stations are regulated?**

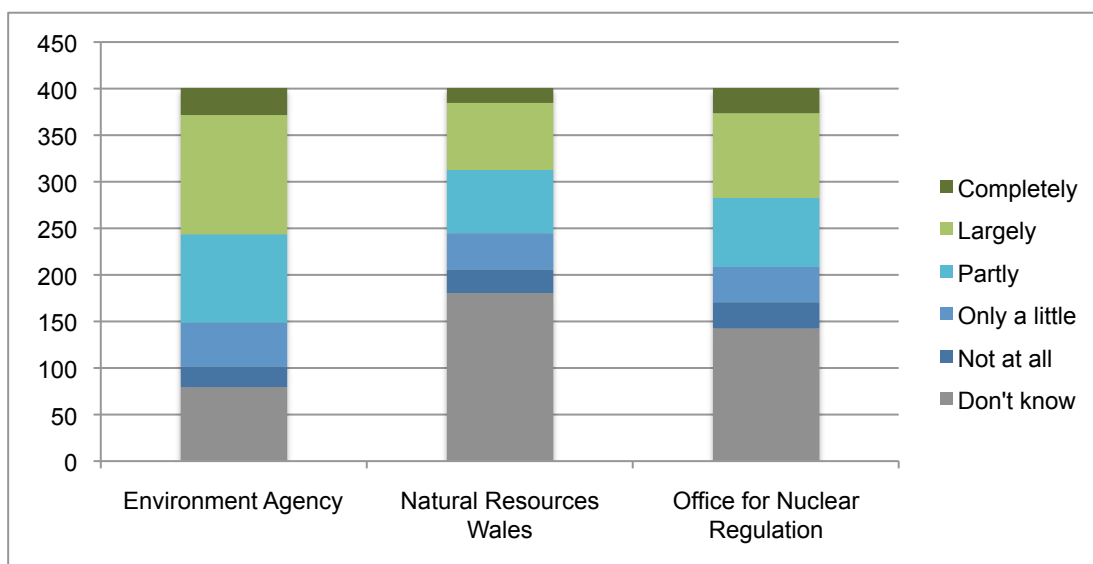


**Figure 8: How much do you know about how nuclear power stations are regulated?**

Don't know	2.2%	9
Nothing at all	22.2%	89
Virtually nothing	43.1%	173
A little	23.2%	93
A fair amount	7.5%	30
A lot	1.7%	7
Total		401

Overall knowledge of nuclear power regulation among respondents was low, with 65.3% saying they knew virtually nothing or nothing at all, and 2.2% saying they didn't know. Just under a quarter – 23.2% – said they knew a little, with 7.5% saying they knew a fair amount, and 1.7% a lot.

**Question 9: Overall, how much do you trust the three organisations responsible for nuclear regulation?**



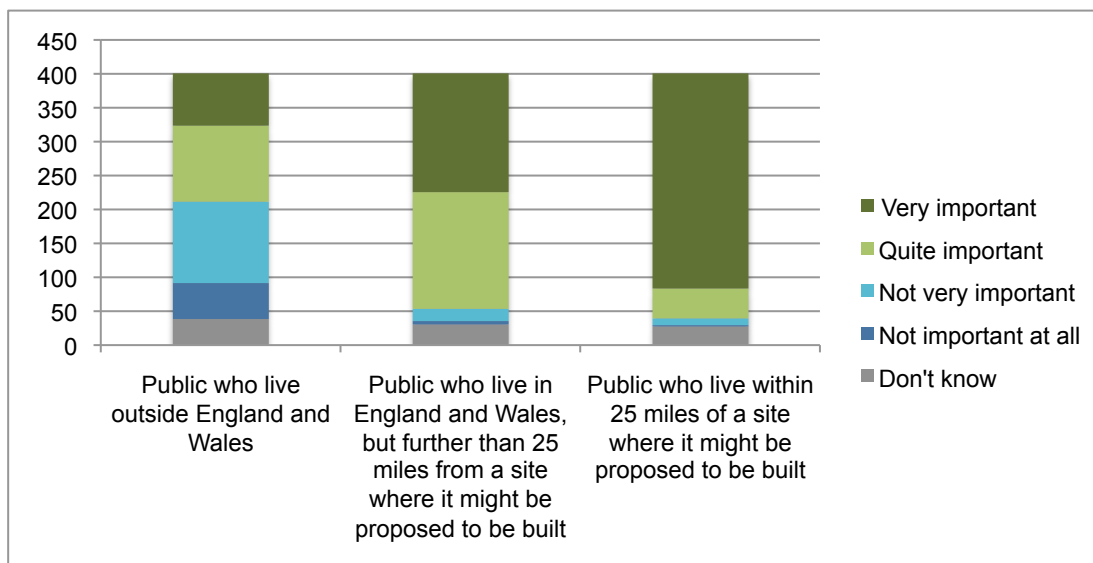
**Figure 9: Overall, how much do you trust the three organisations responsible for nuclear regulation?**

	Don't know	Not at all	Only a little	Partly	Largely	Completely	Total
Environment Agency	80 (20.0%)	22 (5.5%)	47 (11.7%)	95 (23.7%)	128 (31.9%)	29 (7.2%)	401
Natural Resources Wales	181 (45.1%)	25 (6.2%)	39 (9.7%)	68 (17.0%)	72 (18.0%)	16 (4.0%)	401
Office for Nuclear Regulation	143 (35.7%)	28 (7.0%)	38 (9.5%)	74 (18.5%)	91 (22.7%)	27 (6.7%)	401

A total of 39.1% of respondents said they largely or completely trusted the EA. This is followed by 29.4% for the ONR, and 22.0% for NRW. This broadly correlates with the overall level of familiarity respondents said they had with each organisation (see question 4 above). The slightly higher level for the ONR compared to NRW could be due to the fact that the ONR has the words “nuclear regulation” in its name, which relates directly to the question topic and implies relevant experience. Respondents saying they partly trusted each organisation, or that they didn't know, made up the largest proportion in each case: a total of 43.7% for the EA, 62.1% for NRW, and 54.2% for the ONR. This relatively high level of “undecided” respondents in each case implies that the nature of any future direct experience with each of these organisations has the potential to both positively and negatively impact the level of trust of a significant number of people.

The level of trust in NRW from only Welsh respondents was broadly reflective of the overall picture described above, with 23.1% of these respondents saying they largely or completely trusted the NRW, and 55.8% saying they partly trusted the NRW or didn't know.

**Question 10: How important is it that the following members of public have the opportunity to find out information and ask questions about the reactor design assessment process?**

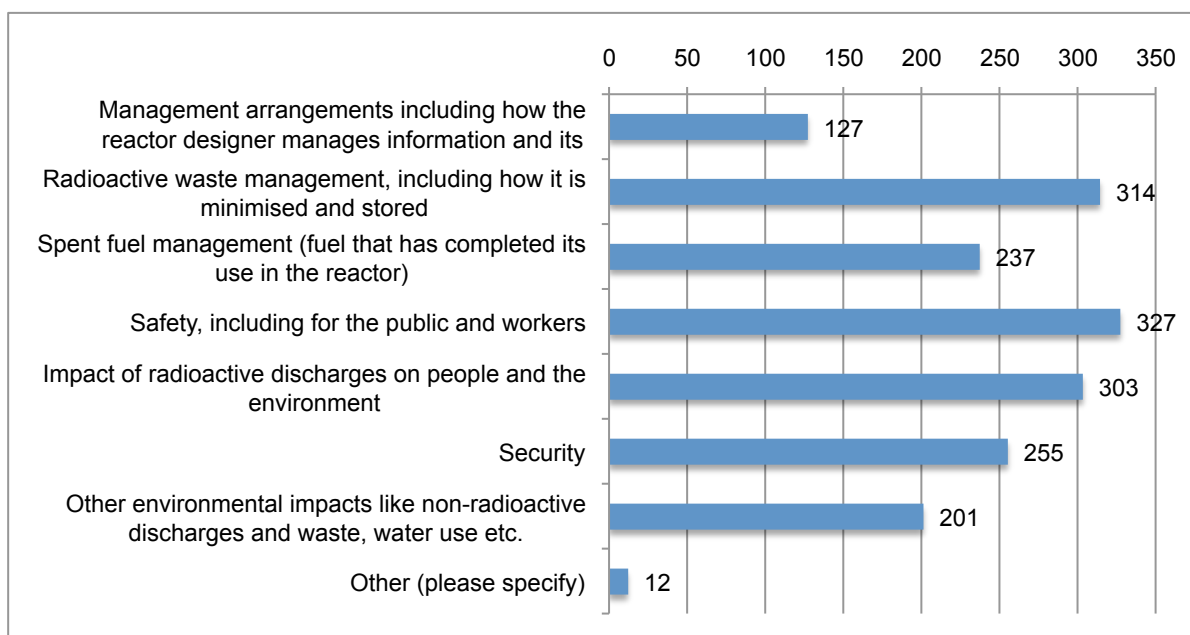


**Figure 10: How important is it that the following members of public have the opportunity to find out information and ask questions about the reactor design assessment process?**

	Don't know	Not important at all	Not very important	Quite important	Very important	Total
Public who live outside England and Wales	39 (9.7%)	53 (13.2%)	120 (29.9%)	112 (27.9%)	77 (19.2%)	401
Public who live in England and Wales, but further than 25 miles from a site where it might be proposed to be built	31 (7.7%)	5 (1.2%)	18 (4.5%)	172 (42.9%)	175 (43.6%)	401
Public who live within 25 miles of a site where it might be proposed to be built	28 (7.0%)	2 (0.5%)	10 (2.5%)	44 (11.0%)	317 (79.1%)	401

As might be expected, respondents felt that those members of the public living closest to a proposed nuclear reactor site were the most important to engage, with 79.1% saying it is very important (11.0% say it is quite important) that people who live within 25 miles of a proposed site have the opportunity to find out information and ask questions. This compares to 43.6% for people who live in England and Wales, further than 25 miles from a proposed site (though note that 42.9% of respondents still thought the involvement of these people was quite important). Interestingly, when considering people who live outside England and Wales, 47.1% of respondents still said they thought it was quite or very important these people had the opportunity to find out information and ask questions. An interesting line of enquiry would be to find out more about the reasoning behind these views – for example *why* people think it is important or not important to involve these specific groups.

**Question 11: If you imagine reading about the regulators' assessment of a new reactor design, are there topics you would be especially interested in knowing about?**



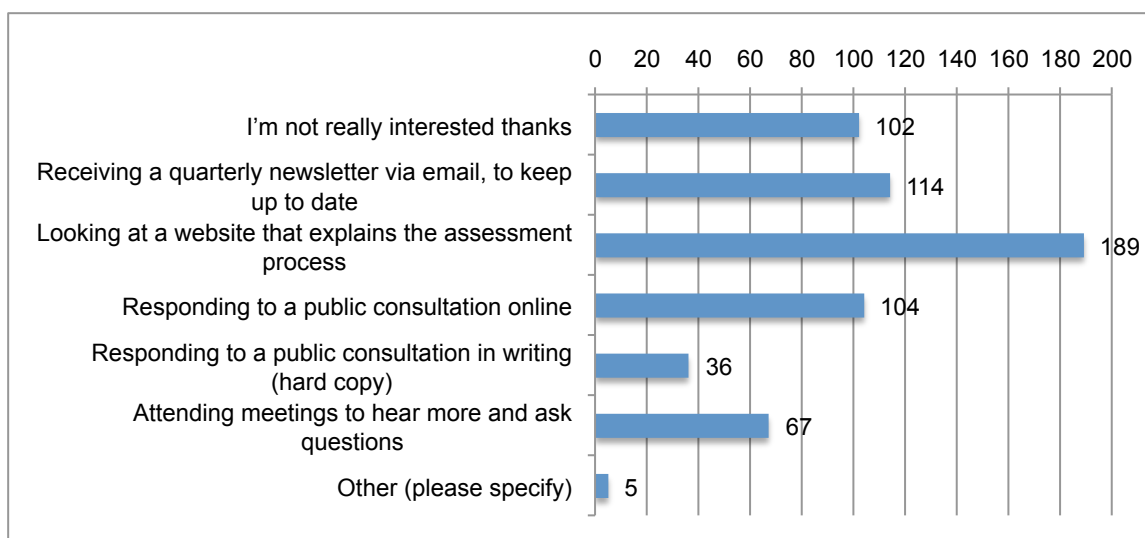
**Figure 11: If you imagine reading about the regulators' assessment of a new reactor design, are there topics you would be especially interested in knowing about?**

Management arrangements including how the reactor designer manages information and its records	31.7%	127
Radioactive waste management, including how it is minimised and stored	78.3%	314
Spent fuel management (fuel that has completed its use in the reactor)	59.1%	237
Safety, including for the public and workers	81.5%	327
Impact of radioactive discharges on people and the environment	75.6%	303
Security	63.6%	255
Other environmental impacts like non-radioactive discharges and waste, water use etc.	50.1%	201
Other (please specify)	3.0%	12

- True cost of power when disposal of waste takes centuries.
- Returns on investment.
- Vehicles to and from.
- Alternatives and costs.
- Benefits of the reactor, i.e. how much power produced per amount of nuclear waste etc.
- Cost and longevity of plant.
- Life span.
- They must be truly transparent.
- Can we have a vote.
- Terrorist threat assessments.
- No.
- None.

The top three issues for respondents were safety (81.5%), radioactive waste management (78.3%), and the impact of radioactive discharges on people and the environment (75.6%). This was followed by security (63.6%), spent fuel management (59.1%) and 'other environmental impacts' (50.1%). Management arrangements received the least attention, with 31.7% of respondents saying they would be interested in knowing about this topic. However, this was still almost a third of respondents, suggesting that all of these issues are important topics about which to provide information. In addition, it is worth bearing in mind this question was asked without further explanation of what management arrangements actually means in practice (for example learning from experience, having safety procedures in place, etc). A small number of respondents listed other topics, primarily focused on costs (and benefits), as well as life span, terrorist threat (a sub-set of security), and transport to and from the site (possibly a subset of other environmental impact).

**Question 12: How would you most like to be involved in the assessment of a new reactor design?**



**Figure 12: How would you most like to be involved in the assessment of a new reactor design?**

Involvement Option	Percentage	Number of Respondents
I'm not really interested thanks	25.4%	102
Receiving a quarterly newsletter via email, to keep up to date	28.4%	114
Looking at a website that explains the assessment process	47.1%	189
Responding to a public consultation online	25.9%	104
Responding to a public consultation in writing (hard copy)	9.0%	36
Attending meetings to hear more and ask questions	16.7%	67
Other (please specify)	1.2%	5

- Depends where the reactor is.
- In strongly protesting about dirty power that you are trying to pretend is green power.
- Opportunity to invest some savings money.
- I don't feel that I am qualified to discuss or judge the issue.
- I would want to see if it was in my area first.

The most popular choice for future involvement was the presence of a website that explains the assessment process, with 47.1% of respondents selecting this option. Receiving a quarterly newsletter and responding to a consultation online were also relatively popular, with 28.4% and 25.9% of respondents selecting these options respectively. Around a sixth of respondents – 16.7%

- said they would attend meetings to hear more and ask questions, and 9% said they would respond to a consultation in writing (hard copy). Around a quarter – 25.4% – said they wouldn't really be interested in any further involvement.

## Appendix 5. Round 1 workshops – detailed findings

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### 1. Questions about how the design of new nuclear power stations is assessed in the UK (GDA)

Following an introduction to the topic of Generic Design Assessment (GDA), participants spent some time in groups of two or three. They discussed questions they would like to ask about the topic or process of GDA. There were a number of questions about nuclear power more generally (especially potential impacts), as well as the GDA process. In Bangor, there tended to be a lot of focus on Wylfa power station, including jobs and local employment.

Questions are summarised by theme below, marked B for Bangor and C for Cheltenham. Towards the end of the workshops, participants were asked to reflect upon which of the questions they felt had been answered (marked as follows: /) and which they still wanted more information about (marked as follows: x). Some questions from the Bangor workshop are not marked as these were not discussed.

#### Communication and information

C: How do you get the balance between security and transparency? x

C: Education – you need to educate everybody whether they know or not. What are the plans for educating people about the designers, operators and others involved? /

#### Design considerations

C: Is the design like a very sophisticated kettle? /

C: I'd be interested in the track record for this particular type of reactor – ABWR (UK or abroad). x

C: Does the place where they are built / the site make a difference to how the reactor works, e.g. climate etc? /

C: Is it based on price / how much is cost affecting decisions about ABWR? /

B: How big will the power station be in terms of physical size and design/look? x

#### Energy policy

C: How is this all affected by money? E.g. are we choosing nuclear power because it is more cost effective than something that is safer? Why do we want new nuclear at all? Isn't it time we were guided towards reducing wastage instead? If we saved electricity we might we not need new nuclear? /

C: Should we be taking the German approach? All nuclear reactors in Germany have to be shut down by a certain date. /

B: Why nuclear? x

B: Anglesey is a tourism island, and things like Wylfa, pylons and wind farms all affect tourism on the island. There doesn't seem to be anybody looking at different ways of generating energy that

don't have such an impact on the look of the place. What Government agencies are looking at this? Always seems to be that they're looking at the cheapest options and the cheapest option seems to be running pylons across the island rather than burying them.

### **GDA process**

C: When, where, what, why – I want all the facts about the GDA process. The timescale, why now, etc /

C: Are they going to build one test reactor or start in a dozen different sites? What are the plans for building this? /

C: Do they have sites in mind for these reactors? /

C: Why did they choose Hitachi? And other foreign builders – why not a UK company? /

B: What's the significance of the word generic that keeps cropping up? /

### **Local community**

C: If your house is in a 25 mile or 10 mile radius, will that affect house prices? /

C: Do people who live in a certain radius get a chance to oppose – what about engagement of people within a certain radius? /

C: What is the objection process if you find you have a reactor being built nearby – how do you make your views known? / And how effective would an objection be/what is the public's influence?

x

C: Why is it a 25 mile radius in the question? /

B: Are there any contingency plans for businesses within 2 miles of the power station?

B: Because it's a long lead-in process, will local people be up-skilled to get quality jobs in the locality? Will contractors working there now and in the future be under obligation to use the local workforce as much as possible? Will there be employment during the transition from the existing station winding down and the new one starting up?

B: Will there be a discount on the electricity for the local community? And other local community benefits?

B: Will there be an impact on house prices?

B: Where is the workforce coming from, and where are they staying?

B: When will road construction start, where is the soil going, what are the routes and will there be consultation on this?

B: There's a lot of areas of outstanding natural beauty on the island, but there's a couple of power stations on the island and it seems that whatever they want to do to the island that seems to be all right without worrying about the local people. (Specific mention of NE corner of island.) x

### **Nuclear power – other impacts and concerns**

C: Security – how is it protected from terrorism? x

C: What is the impact on the environment – AONBs etc? x



C: Impacts on health – in the future, what sort of impact will there be on our children? **x**

C: What about the safety aspect? The general safety aspect of the nuclear power station when it's built and when it is in operation. What are the safety checks? **x**

B: What impact is it going to have on the environment and the local area/local people if there is another reactor? **x**

B: Does nuclear have any effect on people's health? **x**

B: Does the power station in Trawsfynydd have an effect on people's health there? **x**

B: Did any (radioactive) waste get into the waterways or lakes at Trawsfynydd? In Skelmersdale a few years ago they were finding that a lot of the fish in the Irish Sea/Morecambe Bay area were deformed – what assurance do we have that that won't happen here (off Wylfa)? **x**

B: Is there going to be a comparison between incinerators and nuclear power with respect to safety. E.g. there was a lot of concern about there being carcinogenic fumes coming off the incinerators – how does that compare with nuclear power? **/**

B: What happens if something goes wrong and how much of the area could it affect? **x**

### **Nuclear power – waste and decommissioning**

C: What do you do with the waste when it's decommissioned? **x**

B: Where's the waste going to go? How is it stored? How much waste generated by this station will be left for future generations to deal with i.e. how much and how long will it last? **x**

B: How long will it take to decommission (the old/existing) Wylfa? **/**

### **Nuclear power – other**

C: What is nuclear power? **/**

C: What kind of research do the nuclear power companies do into neutralising radiation, if it's possible? Is there every going to be a technology that can do this? **/**

B: What are the actual regulations governing the running of a nuclear power station? **x**

### **Other countries**

C: What about Scotland and Ireland – do they have similar plans. Are we going to be involved in ours and vice versa. **/**

C: What happens in other countries? **/**

### **Other infrastructure**

B: Are the pylons they're going to put on Anglesey going to be much bigger than the ones that are there now? Are they going to replace the pylons or will there be 2 sets? And why pylons?

B: Will there be a new bridge?

## Regulators

C: How do you feel you are perceived by the general public and how do you want to be perceived? (question for the regulators) **x**

C: How do you raise your profile? We hear about the EA all the time, but how do you raise the profile for the Welsh agency? How do the regulators plan on raising their profiles? We all know about EA but nothing about the rest /

B: Who exactly are the regulators? /

## 2. Introducing the regulators

The regulators present at each workshop gave a presentation outlining the roles of the three regulators (EA, NRW, ONR). See the Appendix 7 for the slides from this presentation, followed by questions and answers asked in response to the presentation.

## 3. Introducing the GDA process

The regulators present at each workshop gave a presentation outlining the GDA process. See Appendix 7 for the slides from this presentation, followed by questions and answers asked in response to the presentation – there were no questions at the Cheltenham workshop, so those in Appendix 7 are from Bangor only.

## 4. Communicating with members of the public about GDA

Participants worked in smaller groups at tables, discussing a range of communications materials. The key points in relation to each material are summarised below.

### **‘Assessing new nuclear power station designs – information for communities’- ONR/EA leaflet**

Several participants discussing this document said they thought it contained too much information, with too many acronyms and too little explanation (for example of the picture), and that they would be unlikely to pick it up (although a couple of participants disagreed with this). The point was made that this is a bit much as a first bit of information, especially for people who don't like reading, but that if a person was already interested in GDA it would work well and needed a certain amount of detail. A number of people made positive comments, saying they thought it was straightforward, succinct and simple, matched the EA brand (in terms of colours), was well laid out, or well structured around the titles. The option to sign up for regular communications was received positively.

**“Is this for everyone right across the board? Is this given to everyone, even if there is no proposal for a nuclear site in the area? This is too much information for most.”** (Bangor participant)

**“This [leaflet] in itself is not disastrous but it could be improved.”** (Cheltenham participant)

One participant said they thought there was an undercurrent in the text that says 'we're learning as we're going along', while another said that it sent a clear message 'we are in capable hands'. Those who commented on whether the leaflet was reassuring enough were mixed – for example some people liked the focus on safety, while others were concerned it wasn't specific enough about how members of the public could influence the process.

The difficulty in engaging people without saying where proposed sites are located was widely acknowledged, but for many the lack of specific proposals or locations made the leaflet more difficult to engage with. Some participants questioned why there wasn't more information directly about the benefits of new nuclear – the difference between policy and design was also noted (i.e. the regulators keeping independent from government and not having a role of selling the benefits of government policy).

**"I tend to look at things that affect me, so if it explained that if you live in Gloucester and this is the impact on you then I'd read it." (Cheltenham participant)**

Ideas for improving the leaflet included:

- Bullet point headlines or indexed
- Get to the point quicker
- Links to more information (if online)
- Include an actual photo of a real site or sketch of one, with an idea of scale – perhaps alongside another more technical picture of the inside, or a map
- Make it a call to action or something to drag people in, with a question to encourage people to read on – e.g. 'would you want to live next to this?'
- Simplify, and focus on the basics – although it was acknowledged that balancing detail with the basics is difficult, especially for such a technical topic
- Make it eye-catching
- Develop a couple of different pitch levels for interest and ability – for example one for people who are interested and want to know more, and one simplified, easy, brief version
- Keep acronyms to a minimum, or include a key
- Think about use of colour, for example on a computer screen – there is a need to balance branding with something that really stands out (though bearing in mind accessibility issues, e.g. for readers who are colour blind)
- Make it clearer what the pictures are illustrating
- Link to / reference social media channels
- More facts and figures
- Say something like 'a nuclear power station could be built in your area, and here is more information' – give a sense of local context or relevance
- Have an insert box, with a quick explanation of who the regulators are, also explaining roles and responsibilities for what aspects of the whole permitting, licensing, planning permission process from start to finish
- Link to quarterly reports
- Include the word 'you' to make it personal

Participants also discussed the format and distribution of this kind of information. Suggestions included local press and radio, QR (quick response) codes, social media channels (with reference to the 55-64 year old demographic being the fastest growing group on Twitter), parish councils,

libraries, doctor surgeries, village or parish notice boards. The need to bear in mind people without internet access was discussed, as well as people with difficulty seeing or hearing.

Meetings (bearing in mind the motivation required to attend) and leafleting were raised as a potential channels. It was pointed out that this might be more appropriate at the site specific permitting stage rather than for generic design, and that people would only be likely to attend a meeting or read a leaflet if they saw some direct personal relevance. One suggestion was to send leaflets out with utility bills or annual energy statements. Those participants commenting on the idea of posters said that this could be a useful mechanism for drawing people in but that there would have to be a pointer towards more detailed information.

Some participants went on to discuss the engagement of young people, e.g. through schools. It was generally felt that this was a good group to target, and that it could be relatively easy to engage children at an early age – for example by thinking about the number of light switches turned on, or by taking a creative approach (for example engaging an artist). However, younger participants at the Bangor workshop pointed out the difficulty in making topics like GDA interesting to young people.

### **NRW website**

One group (in Bangor) looked at the NRW website, which is still under development. They were asked about their initial impressions. Thoughts were that it was simple and easy to read, but that people still have to be motivated to visit the site in the first place. One suggestion was a Facebook page (e.g. 'nuclear power and how it might affect you') to draw people in to comment, and potentially sign up to the quarterly newsletter.

### **Hitachi-GE website**

Participants commenting on the Hitachi website said that this was more engaging (than, for example, the leaflet or ONR/EA joint website) with good images and colour. However, this was in the context of a number of other comments, including:

- Lack of or limited internet connection reduces accessibility to websites – what about people without internet access?
- In order to contribute a comment to the website you have to include personal information (there wasn't a direct comment on whether this was a good or a bad thing)
- Websites are only as good as the information on them, and they have to be kept updated
- Use websites in combination with social media, YouTube, etc.
- You would have to know that Hitachi was the designer in order to find this site (e.g. Google search on Wylfa doesn't take you directly)

One group was asked whether they would go to the regulators or the designers for information. The response was 'all of them' but with participants commenting they might start with GDA and go to (for example) Hitachi for specifics, or that they might go to the regulator for more environmentally focused information. In general, younger participants seemed less cynical about getting information from the design company, while older people tended to feel suspicious about being 'sold' the design.

### **ONR/EA joint website**

Participants commenting on the overall feel of the website said it looked official, like a government site, dull or flat, but easy to read. The question of intended audience was raised, with a general feeling that it didn't look like it was aimed at members of the public.

**“Some of the phrases look as if it's experts talking to experts – just that phrase there, assessment of new nuclear power stations – I'm not assessing anything.”** (Bangor participant)

It was noted that to find the leaflet (discussed earlier) takes a couple of clicks and this could be a link from the homepage. One participant commented that in hindsight the leaflet is about the right level of information given it is linked from this website. The autosize function was received positively.

Specific suggestions included:

- It needs something for people to focus in on quickly – for example headlines with links like Wikipedia
- Include links to social media channels
- Make a simple version – there is currently a lot of jargon
- Use a catchy headline or name of a Facebook page to encourage people to sign up
- Include captions to say what the picture is

With respect to a Google search, participants said they wouldn't type in GDA, but instead would search for something like 'nuclear plants' (in which Wikipedia came top). The issue of 'us coming to you' versus 'you coming to us' was noted as a dilemma – i.e. to what extent should information be simply provided ready for people to find, as opposed to actively pushing or advertising the information.

### **Quarterly update**

The first impressions from the group looking at this document were that it raised a lot of questions (What is ABWR? Is this the design proposed for Wylfa? What do the technical terms mean?) and didn't seem designed for members of the public. When asked what kind of communication they would prefer, participants mentioned public meetings, local media, social media and more generally providing a range of channels for different audiences (including young people). However, one participant commented that members of the public have to be interested in the first place in order to engage, and that many people probably wouldn't be.

More generally, there was a feeling that members of the public in the area around Wylfa didn't really know what was going on and that this uncertainty was affecting local businesses. One participant suggested the potential to generate interest by talking more about benefits for communities.

### **Poster**

There was a brief conversation about this at one of the workshops. Overall some people questioned the use of the diagram, saying it wasn't immediately obvious it was about nuclear power stations, and that it looked more like a factory or sugar refinery. The use of an image to get people's attention was discussed – for example a more traditional warning logo. Participants said this would create a negative impression, but also that it would draw attention. One participant said they thought the poster did its job well in terms of seeking people's views. Specific suggestions for

improvement included the use of a QR (quick response) code or other mechanism to trigger a website visit, and the use of real pictures and maps.

### **Consultation document**

Overall, participants commented on the need to let people know these consultation documents exist, for example through more outreach – one participant suggested it is difficult to trust anyone without a face.

Participants discussing the full consultation document commented that it looked like too much information for the average person and questioned who it was aimed at.

**“If I was given a document like the consultation document my heart would sink, Joe Average just wants the potted version.”** (Cheltenham participant)

Specific suggestions for improving accessibility included:

- Include a clearly marked freepost address to encourage response – currently the document looks like is it discouraging responses
- Make it clear how to request a consultation document and who from – e.g. with an awareness raising poster and social media (including use of Twitter tags)
- Correlate the colour / branding of the leaflet and the consultation document more clearly
- Give it a clearer heading that focuses on the topic (e.g. energy) – it currently doesn't look important
- Provide access points e.g. through local council websites
- Try to provide specifics – e.g. yes or no, when, where, why

### **Consultation document summary**

Participants commented that the start of the document is extremely wordy, and that it would be very hard to read online. Others said they thought it was very honest and were happy with the wording. With respect to length, one participant said that most people wouldn't have time to read through long documents, and another said they didn't see how it could be shorter without becoming meaningless, but overall clarity seemed to be the key point. Suggestions for improvements included:

- Provide more facts and figures
- Provide more basic detail with links to further information
- Clarify the acronym right away
- More headings and images would be useful
- Make it more like the leaflet in terms of layout
- Add a sense of prioritisation with respect to the list of issues (although it was acknowledged priority might vary from person to person)
- Provide a free phone number (even from mobiles)

### **HSE EA (bilingual fold out document, old)**

Participants liked the fact that this document asked 'What are you doing? How will you do this?'. They tended to agree this was much better and easier to read than other documents, for example

because they liked the bullet points and specific relevant content (rather than generalities). The gatefold format also received positive comments.

### **OVERARCHING TOPICS: How would you (and others you know in your communities) prefer to receive information about GDA?**

A range of mechanisms was suggested and discussed, including:

- More online information (e.g. on council websites, local BBC websites)
- More by post – particularly for those without internet
- More face to face interaction – e.g. door to door
- Meetings in town hall – surgeries (though risk that no one turns up)
- Information in doctor surgeries, tourist information centres, libraries
- Local media such as community news, newspapers, television and radio
- Facebook and other social media
- Online real time discussions – there was some discussion about who would be best placed to host this and whether or not it could be a joint exercise between regulators, designers and NGOs. There was no firm conclusion here – some were comfortable with the idea of a joint event, though participants noted the issue of bias and suggested it would have to be a recognisable name. The possibility of an open online question time was raised, with related comments that this would need to be moderated (perhaps by the three regulators)
- Online videos, e.g. of a seminar, of this sort of workshop – this might appeal to younger people
- School activities – only from the regulators to ensure independence
- A van in town, like a youth bus – and give this a name
- Use existing visitor centres such as the one at Wylfa, for example more open days
- A clear contact phone number and email address
- Sessions like this one, with a range of views included (e.g. opponents to nuclear), with an opportunity to ask difficult questions and challenge

The question was raised that even if you want to engage, how do you? Participants said that this came down to having engaging content that people felt was relevant to them. Although it was acknowledged that it is impossible to reach everyone, specific suggestions included:

- Getting people aware of as many issues as possible from an early age
- Bullet points – short sharp headlines
- Use as many different avenues as possible
- More examples of real life situations (e.g. where a regulator has stopped a process going ahead)
- Ensuring people know their views have an influence

One participant commented that as it gets closer to the first new nuclear reactor, people will get more interested, and that otherwise there were just too many other competing priorities.

There was some discussion of reading methods for websites. Responses varied, and included people saying they would prefer to save materials as a pdf, read them onscreen and scroll through the website, or print them off (particularly shorter documents). Other related comments included the difficulty with annotating documents online, and the need to be able to save online forms if you pause partway through filling them in.

### **OVERARCHING TOPICS: To what extent would you (and others you know in your communities) wish to play a more active role in the GDA consultations?**

One group specifically discussed this topic. Responses ranged from people questioning the influence of their input, to saying they would get involved if it affected them or their local area. When asked whether they would venture out on a cold evening to attend a local event on this topic, a few people said they would, but again only if they felt it impacted them directly. Some participants stressed the power of face-to-face interaction compared to, say, a leaflet. Overall, however, the message was that messages need to be made relevant.

Some participants in Bangor specifically discussed local representation – i.e. being represented by a local councillor or authority for the purposes of consultation. Feelings from this group were largely negative, with participants saying their local representatives were more interested in politics than people.

## **5. Explaining the technical and safety aspects of the design of the reactor**

The regulators present at each workshop gave a presentation introducing the UK Advanced Boiling Water Reactor (ABWR) design. See Appendix 7 for the slides from this presentation. Participants were given the opportunity to ask some questions following the presentation – these tended to cover specific technical aspects of reactor operation. They then spent some time in smaller groups, discussing the presentation and other communication materials (e.g. the Hitachi website and leaflets), as well as wider questions about how best to explain reactor design.

### **Comments on the presentation**

Participants' response to the presentation from the regulators was unanimously positive. For example, they said it was clear, simple, about the right pitch and contained good analogies that helped people to relate to the topic (such as the car radiator and pressure cooker). The sense of scale provided by the images was also welcomed, although a couple of participants said an animation would also have been useful. Compared to some of the other materials looked at earlier in the day, participants said the presentation was much easier to digest.

### **Additional information desired**

Participants were asked what additional information they would like to see, in order to better understand reactor design and related aspects. Suggestions included:

#### **TECHNICAL ASPECTS**

- Waste fuel rods – how long do they last / how often are they replaced?
- How many fuel rods are there?
- Where does the uranium come from and how infinite is the supply?
- How long does a nuclear power station last?
- How is the waste disposed of and who decides where it goes?
- What are the plans for the waste long term?
- How does the reactor size compare to other things such as Westminster Abbey?
- It would be good to see the different components and the whole thing.
- A Google Earth map might be useful – what is the size of the plot?



- How do older stations compare with newer ones – e.g. size, efficiency, regularity of fuel replacement etc? Does this design mean less waste? What are the advantages of this design?
- How do you stop the reactions or slow it down / how is it controlled?
- Do you pump in cold water? How does the cooling system work?
- What does the final building actually look like?

#### SAFETY AND ENVIRONMENTAL ASPECTS

- People are worried about safety – what went wrong with Chernobyl and Fukushima and how is this different?
- Will the existing good track record with current stations remain the same?
- Are there any contingency plans if something goes wrong with a reactor?
- Are there any discharges? What happens to the waste water?
- What are the safety aspects that are considered? What is the safety record and what are the safety mechanisms?
- What are the controls around refuelling and transporting uranium?
- At what point does uranium or uranium ore become dangerous / how is it dangerous?
- What are the effects on the local environment?
- Is there a timeframe for when the site can be returned to other uses after decommissioning? How long does the site stay radioactive for? What are the half-lives?

#### OTHER ASPECTS

- Tell people about the benefits of new nuclear.
- Will that have affect people's fuel bills?
- Is nuclear really the best possible option for us all in the future?

Overall, a number of people would like to know more, while others were happy with how much they'd heard. Some said that 'GDA' is not a clear term, and that perhaps something like 'Generic Design Assessment for Nuclear Power Station' would be better.

#### **Comments on Horizon community update (Oldbury)**

Participants who looked at this leaflet (in Cheltenham) generally liked it, saying for example that it was more personable than some of the other materials, feels more relevant to the local community, and would make you feel you want to read it. People particularly liked the visuals, saying that the writing and colours stood out, and that it was good to have pictures of real people.

#### **Comments on Horizon community update (Wylfa)**

Participants in Bangor discussed this material. It was delivered through doors local to Wylfa in September 2014 – some people remembered getting it, while others did not. One participant said they only skimmed it and another said they would probably only read the first paragraph. There were some comments on the overall look of the leaflet, for example that it didn't look that attractive, or that it looked like something you would get in a doctor's surgery.

Specific comments on the language included a sense of immediate scepticism over the phrase 'your views count!' and the suggestion that the word 'consultation' is a turn off. Other suggested phrases included:

- Make your views count.
- You can make a difference.
- What do you think?
- Will the nuclear power stations affect you? Make your views count.

Participants stressed the need to make it clear that plans had not been passed yet and that there was still opportunity to influence what happens next – for example advertise the website, how to contribute and any forthcoming exhibitions clearly on the front page. One participant noted the picture on the front page makes it look like it's already there.

The free phone number was thought to be useful, although one person suggested an 0300 number should also be included, as well as potentially a Braille version.

### **Comments on Hitachi website**

Some participants discussed the Hitachi website at this point in the day (see also earlier discussion in section 3.4.). These participants liked the simplicity of the website and the sidebar navigation, as well as the inclusion of topics such as waste management. Some felt the diagrams were too complex, though others said they were ok if they could be enlarged on a computer screen. The suggestion of adding a colour code to improve understanding was a popular one (e.g. blue water and orange safety).

### **Comments on roles and responsibilities (regulators / designers)**

With respect to having questions or concerns answered by the designer, respondents questioned whether the general public would know there is also an overseeing body (the regulator) and that this needed to be made really clear. There was a sense that some respondents would trust information from the designer (for example because they know the technical aspects best) more than others (for example because of historical mistakes and profit motivation).

Some participants wanted to hear about the benefits of this design compared to older generations, and felt this might be for designer to do rather than regulator. Others pointed out the impartiality and authority of the regulators, but commented they shouldn't be involved in getting buy-in.

Those participants discussing who should undertake public engagement tended to say that it should come from an organisation like the regulators, but suggested there should be a cost paid by the designers or operators to help fund consultation activities, similar to the decommissioning costs already pre-paid. These participants also stressed that any consultation should be independent and impartial, but that whoever is proposing a specific development should contribute to costs, and that lack of resource was not a valid argument for not fully engaging people.

### **Shared communications?**

Some participants were asked how they would feel about communications coming from the regulators and designers or developers at the same time (e.g. in the same envelope or in the same document). Many participants saw the advantages of this, saying that it made sense, would save resources or avoid duplication of effort and give the impression that they were working together. Some respondents said they would welcome inclusion from the regulators to know they had a role – for example commenting they would believe Hitachi a bit more if they saw a joint communication or even a statement saying 'we are regulated by...'.

Some people pointed out specific concerns or caveats with respect to this approach, including:

- It depends if the organisations want to be associated with each other
- Design and branding decisions would have to be made if contributions were part of the same document
- Careful thought would have to be given to editing – e.g. who edits? (Again primarily in relation to a shared document.)
- There might be bias from the designers as they are essentially trying to sell something
- A lot of people would have a problem with them all being in same room or on one bit of paper
- It would need to be clear what information was coming from which organisation – an explanation of the regulator, developer and designer roles might help, or even a photo of the people involved
- Caution would be required to ensure it didn't seem like a fait accompli

Some people said they would prefer separate bits of paper in one envelope, for example to make it clear these organisations were working together but had separate views. Others said they would prefer everything on one sheet. One participant suggested an event with different organisations on different stands in the same room would be good, so that people can see these organisations are working together but are also separate entities.

### **Communication methods**

One group had some further discussion of communication methods. Again, participants stressed they liked the presentation, for example because of the ability to ask questions, but recognised the difficulty in finding time and resources. Again, people cited a range of mechanisms they thought would be useful, including local seminars or meeting for potential sites, print and internet campaigns, an interactive phone app, diagrams, animations and local buildings such as libraries.

Participants stressed the importance of personal and local relevance, with clarity on different roles (regulator, council, developer etc).

### **How to get people interested**

Several participants talked about the need to think about different audiences and pitch materials or presentations accordingly. For example, analogies such as the kettle and fan are great for people who know very little and more complex diagrams are suitable for people such as engineers.

Accessibility (e.g. for those without internet) was another common theme. Simplified diagrams (with colour coding) and real life comparisons were thought to be good approaches.

Some participants talked about 'hooks' to get people engaged. Price (for example of the overall project / nuclear new build) was mentioned as a possible hook – including comparisons with NHS spend or other UK priorities, and comparisons between the costs and benefits of different types of energy. See also earlier comments about making information relevant to individuals and communities, as well as comments about simplifying messages.

### **Trust**

Those participants who discussed the issue of trust at this point in the day tended to say they would trust the regulators or some kind of similar independent body to provide impartial, factual

information. Some participants implied or stated they would trust regulators more than developers due to potential vested interest and profit motivation. Specific things participants said would help to build or maintain trust included:

- Face to face / personal interaction
- Knowledge – of regulators and their role, regulatory regime, current and future precautions, examples of safety measures
- Track record and precedence

## **6. Reviewing outstanding questions**

Towards the end of the workshops, participants were asked to reflect upon the questions they had asked at the beginning of the day, confirming which they felt had been answered and which they still wanted more information about (see 3.1. above). They were then asked about which topics they would want to discuss further, should they come back to a second workshop. Topics included:

- How energy production from new power stations is phased into the grid. (It was noted this might be outside of the scope of these workshops.)
- Whether people from the other meetings have different views.
- How does a company like Horizon give back to the local community? Couldn't it be part of the permit and license agreement that they give money to organisations like the EA to consult / inform?
- It would be good to know exactly how much they are putting into it and how long it is before they start to realise any profit.
- What will happen in the future – re future generations, and impacts in the future?
- The profitable phase for Horizon is during operation, but how do we ensure they pay the cost afterwards?
- What's in place to cover the safety and security issues – what the processes are etc.
- Quite a lot of interest in the decommissioning process, possibly more on waste?

Following the Round 1 workshops, the Project Management Team put together a Q&A sheet to answer questions that it was felt would not be covered in the Round 2 workshop. This was sent to all participants in both Round 1 workshops, along with a link to the regulators' GDA e-bulletin.

## **7. Changes in attitudes and understanding**

On entering the workshop at the beginning of the day, participants were asked to mark their responses to four questions. These questions were then repeated at the end of the day, to see if people's attitudes or understanding had changed as a result of taking part in the workshop. Examples of these completed questions are shown below:



Figure 2: Examples of completed questions, from the Cheltenham workshop

Responses to each question from both workshops are shown below, alongside any observations made by participants upon examining the changes.

**Question 1: How much do you know about new nuclear power stations and how they are regulated in England and Wales?**

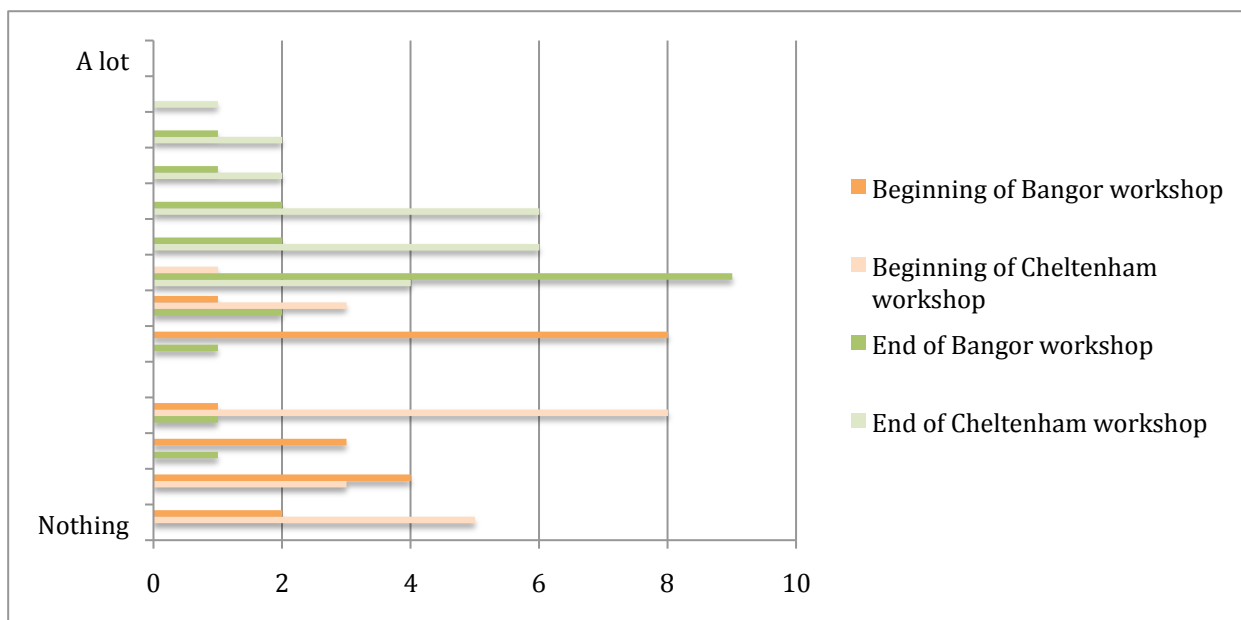


Figure 3: How much do you know about new nuclear power stations and how they are regulated in England and Wales?

Comments on any changes (B=Bangor; C=Cheltenham):

- C: Because of what we were told.
- B: I understand a bit more.

- B: Because of the information provided and the people here – crucially, there were various different people involved but at the start I had no idea there even were regulators, and not that there were different specialised regulators involved in just this part of the process.
- B: Could have covered more about what happens with the waste (and other questions not answered).

**Comparison with national survey results**

How much do you know about how nuclear power stations are regulated? 401 respondents

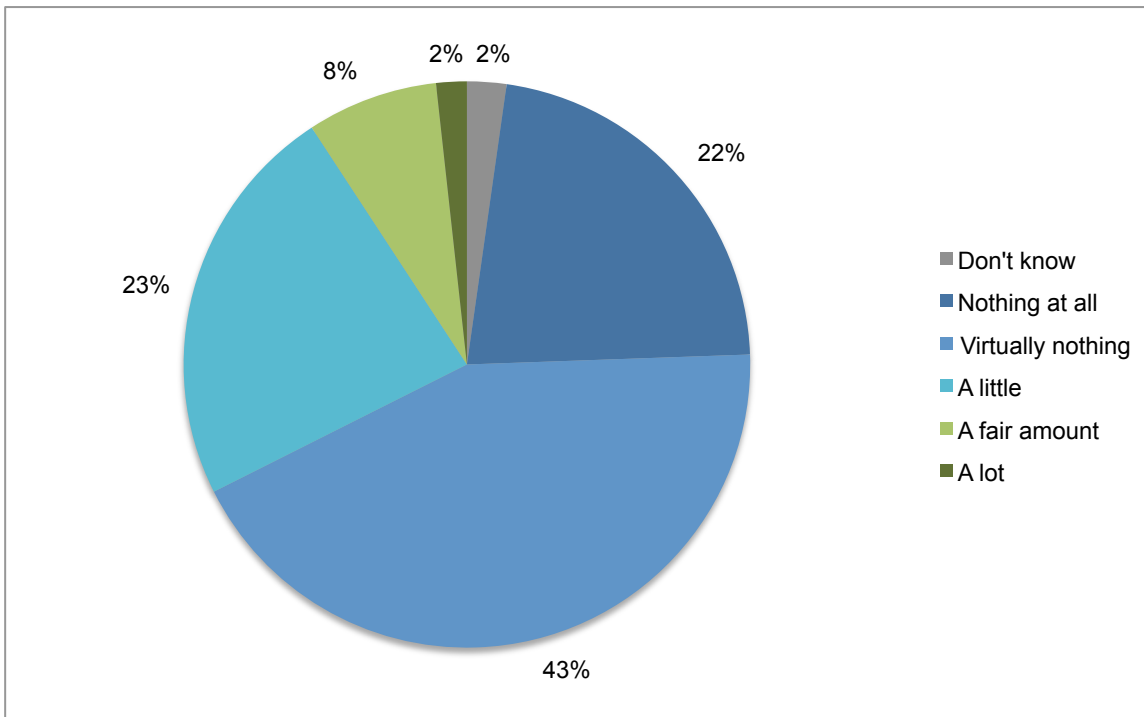
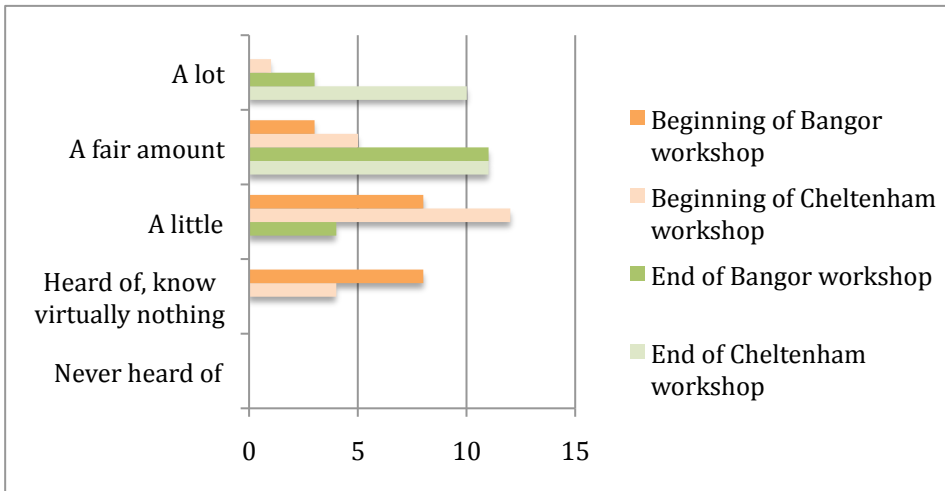


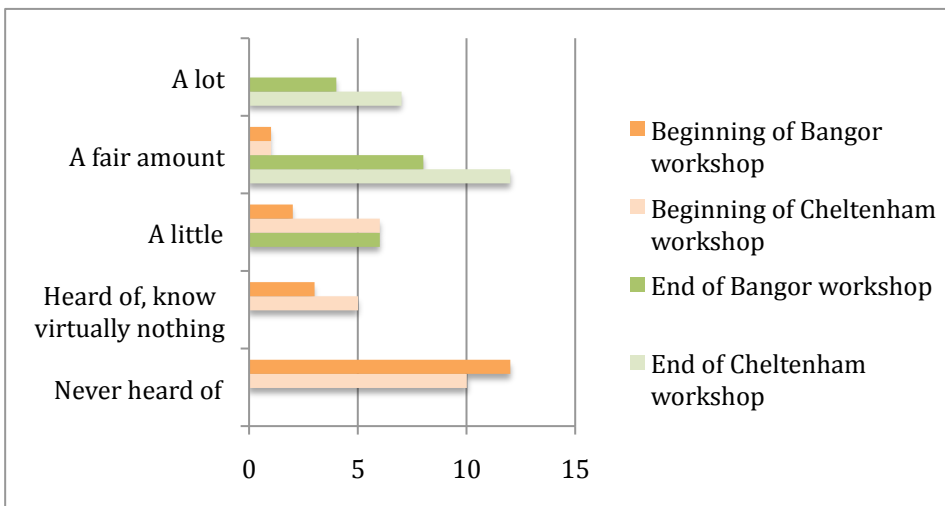
Figure 4: How much do you know about new nuclear power stations and how they are regulated in England and Wales? National survey results.

Results from the beginning of the workshops (the red marks above) appear to broadly reflect those from the national survey undertaken in late 2014, with the majority of respondents placing themselves toward the lower end of the scale (although workshop responses were based in a sliding scale rather than a tickbox selection). By the end of the workshops, a visible shift towards the top end of the scale had occurred.

**Question 2: How much do you know about these organisations?**



**Figure 5: How much do you know about these organisations? – ENVIRONMENT AGENCY**



**Figure 6: How much do you know about these organisations? – OFFICE FOR NUCLEAR REGULATION**



**Figure 7: How much do you know about these organisations? – NATURAL RESOURCES WALES**

Comments on any changes (B=Bangor; C=Cheltenham):

- B: Through association – we now know they are part of the regulatory system and therefore trust a little more.
- B: I didn't know about NRW and now I do.

### Comparison with national survey results

How much do you know about these organisations? 401 respondents

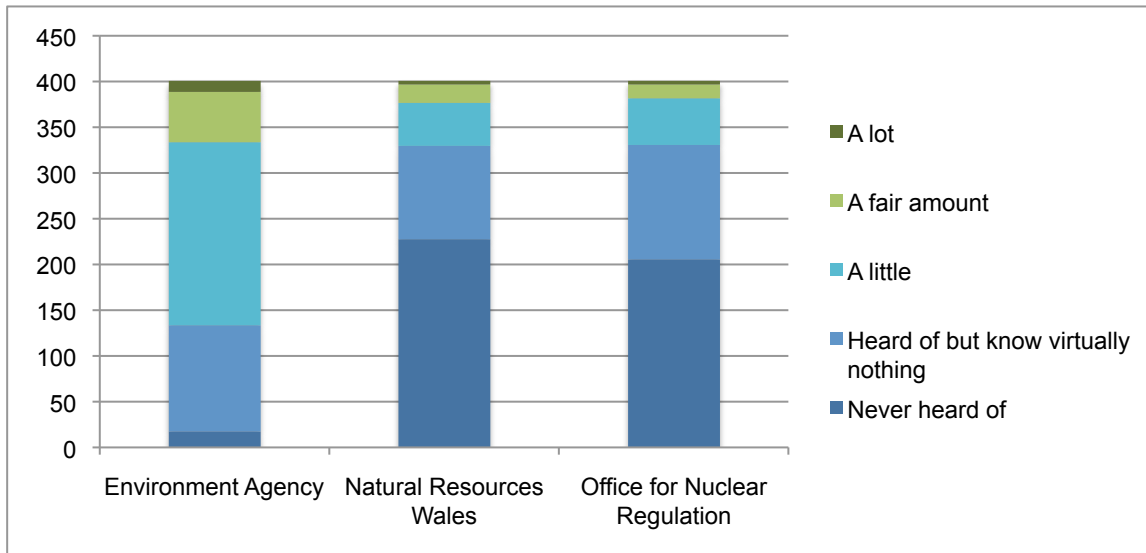
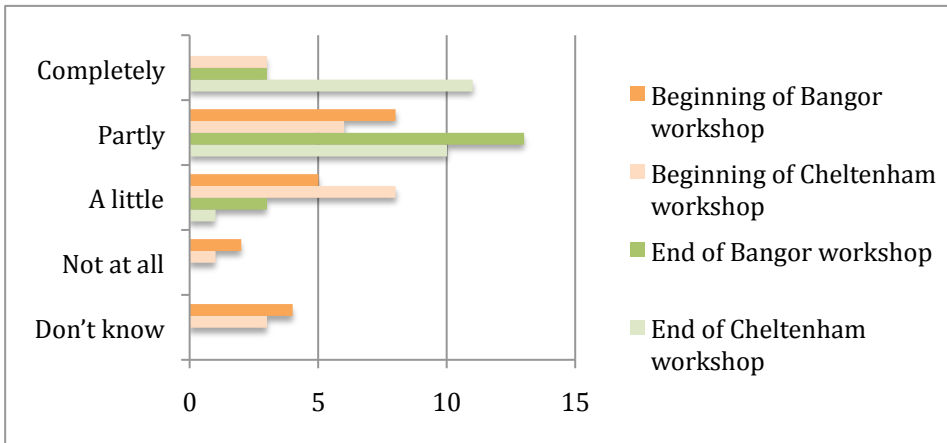


Figure 8: How much do you know about these organisations? – National survey results

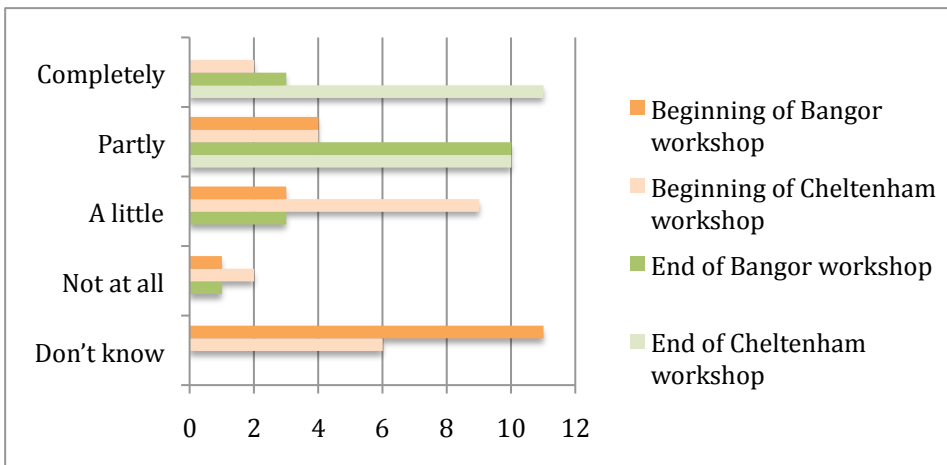
Results from the beginning of the workshops (the red marks above) appear to broadly reflect those from the national survey undertaken in late 2014 – i.e. more knowledge of EA and approximately equal knowledge of NRW and ONR. By the end of the workshops, knowledge had shifted upwards with respect to all three organisations, although slightly less so with respect to knowledge of NRW at the Cheltenham workshop (perhaps because NRW weren't seen as relevant to this location or because they weren't present in the room).



**Question 3: How would you rate your level of trust in the regulators?**



**Figure 9: How would you rate your level of trust in the regulators? – ENVIRONMENT AGENCY**



**Figure 10: How would you rate your level of trust in the regulators? – OFFICE FOR NUCLEAR REGULATION**



**Figure 11: How would you rate your level of trust in the regulators? – NATURAL RESOURCES WALES**

Comments on any changes (B=Bangor; C=Cheltenham):

- C: Because no one from NRW was here.
- C: Shows how important information and learning is.
- C: The presentation.
- C: Transparency.
- C: Actually meeting them.
- C: Knowing they are independent and they made that quite clear.
- C: And where their funds come from.
- C: It was very important that both turned up as they have different aspects of regulation.
- C: You can't figure out sincerity from reading a piece of paper – you need to meet the person.
- B: Because you don't have any contact with these people. [Towards the bottom of the scale]
- B: They're all bureaucrats! Information is the thing, the bureaucrat thing is a bit tongue in cheek but it is a bit us and them, they're on our side but... [Towards the bottom of the scale]
- B: The only time you have to find out about these organisations is if you have an issue, and it's only at that point that you find out anything about them. The average person off the street wouldn't have a reason to go to the ONR. [Towards the bottom of the scale]
- B: It's something about information. [Towards the middle of the scale]
- B: I think it definitely is a bit them and us – I do think they know a lot more than they let on, you're all very nice and everything but you only tell us what you want us to hear. It's all very nice here but they'll go back... [Towards the middle of the scale]
- B: Why can't they just answer questions, and if they don't know the answers just tell us, say that they don't know. I know they have today but just tell us. We just don't believe them.
- B: We will only trust them when we see that they've taken our issues on board and done something about them.
- B: It's not the people who are here today who are going to put the plant up, it's probably the people who are building it that need to be here to answer the questions. If they're not giving the regulators the information...
- B: If they would just say that they'll go and find out the answers to our questions – if they just said they'll do their best, and act like they're trying.
- B: It takes time – the more you can see what they're about, continuity, building relationships etc.
- B: We tend to judge on past performances.
- B: It's about seeing results.
- B: Part of the reason we can't trust you is that you're reporting to somebody else.

### Comparison with national survey results

Overall, how much do you trust the three organisations responsible for nuclear regulation? 401 respondents

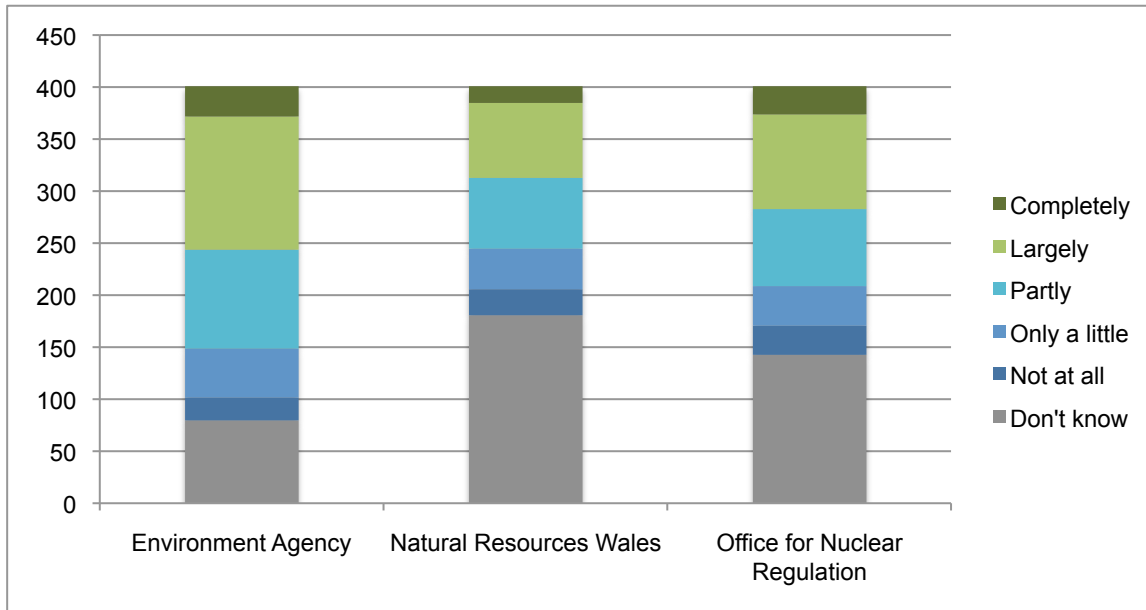
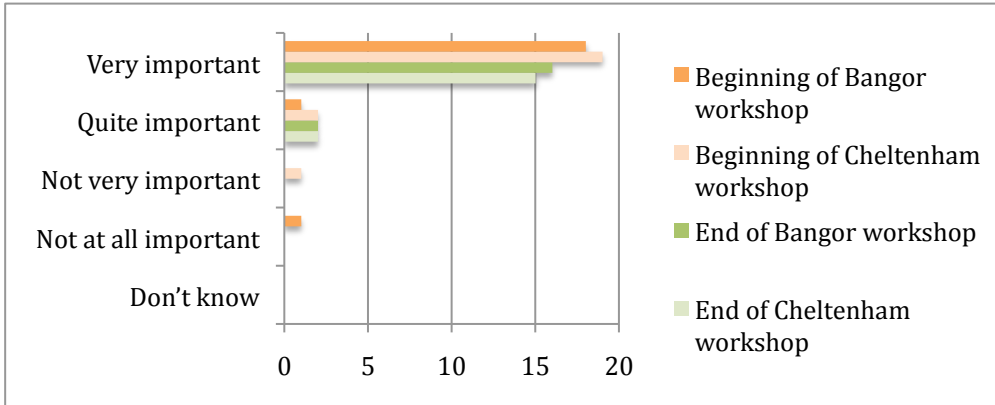


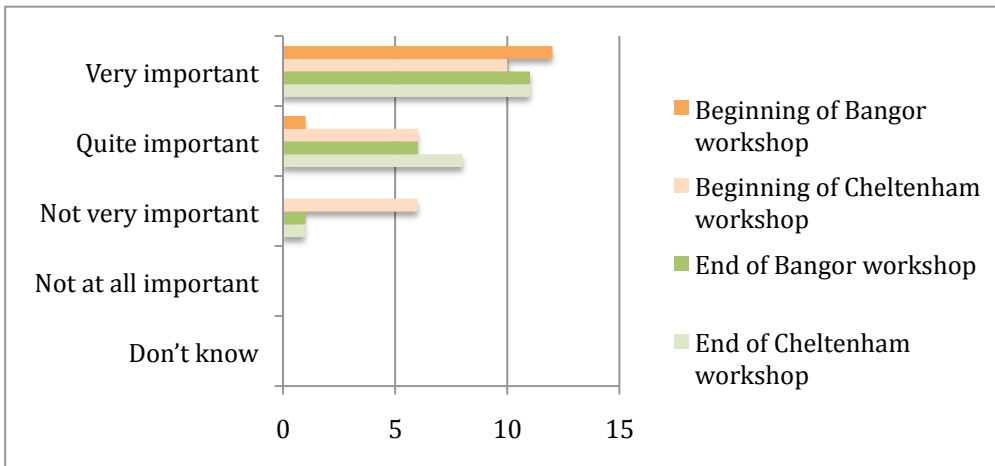
Figure 12: How would you rate your level of trust in the regulators? – National survey results

Results from the beginning of the workshops (the red marks above) appear to broadly reflect those from the national survey undertaken in late 2014. By the end of the workshops, levels of trust had shifted upwards with respect to all three organisations, although again slightly less so with respect to trust of NRW at the Cheltenham workshop (again, perhaps because NRW weren't seen as relevant to this location or because they weren't present in the room).

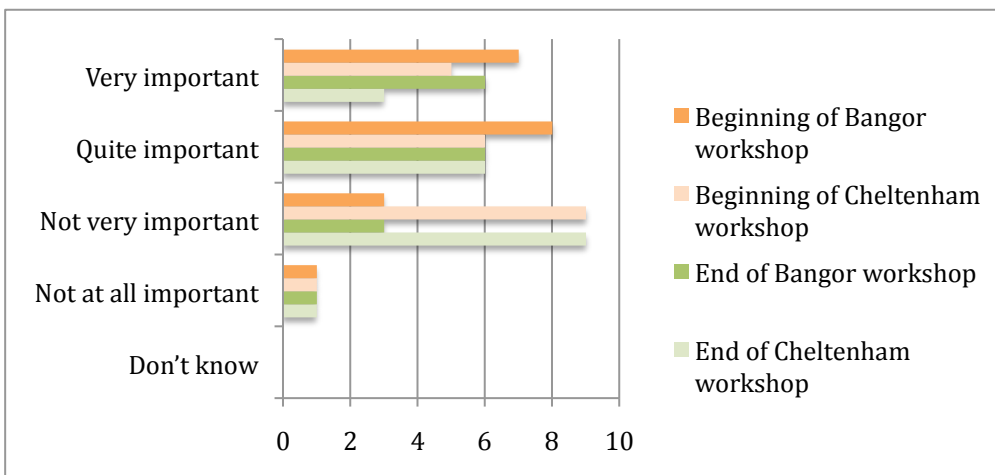
**Question 4: How important is it for people to be able to get information and ask questions about assessment of reactor designs?**



**Figure 13: How important is it for people to be able to get information and ask questions about assessment of reactor designs? – LIVE WITHIN 25 MILES OF A PROPOSED REACTOR**



**Figure 14: How important is it for people to be able to get information and ask questions about assessment of reactor designs? – LIVE IN ENGLAND AND WALES BUT FURTHER THAN 25 MILES**



**Figure 15: How important is it for people to be able to get information and ask questions about assessment of reactor designs? – LIVE OUTSIDE ENGLAND AND WALES**

Comments on any changes (B=Bangor; C=Cheltenham):

- C: Could be more directly impacted. [Referencing movement in the 'within 25 miles' group]
- C: I still think it's really important for everybody – energy is going to everybody and if one part of country is affected the whole country is. But I moved up as I thought about how people would think about it and I think people in general will think if doesn't directly affect them then it's not important.
- C: Some of it is to do with the waste – it impacts everyone potentially. [Referencing movement in the 'further than 25 miles' group]
- C: Unless you had any intention of going to England or Wales why would you care?
- C: It would be helpful next time to have a line roughly 25 miles so people can see how close they are.
- C: There is a great need for it [involving members of the public]. Everybody should be informed this is happening and whether they get more involved is up to them. If people who want to be involved like me didn't know about this...it's by luck I'm here today
- B: It has been affecting us [our business] for the last few years and hasn't got any better – it is getting worse.
- B: It is also important for the rest of England and Wales to know as e.g. are they going to come to Anglesey for holidays if there's another Wylfa?
- B: It is also important to be known about globally – learning lessons from other countries and vice versa.

### Comparison with national survey results

How important is it that the following members of public have the opportunity to find out information and ask questions about the reactor design assessment process? 401 respondents

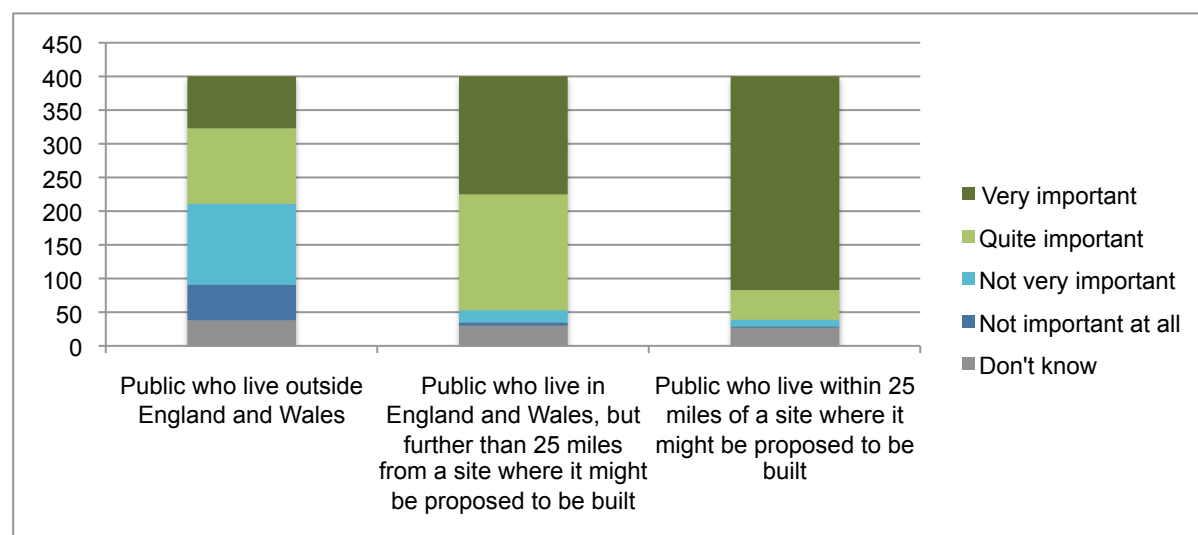


Figure 15: How important is it for people to be able to get information and ask questions about assessment of reactor designs? – National survey results

Results from the beginning of the workshops (the red marks above) appear to broadly reflect those from the national survey undertaken in late 2014. By the end of the workshops there appeared to have been limited change with respect to all three categories, perhaps with the exception of a slight shift upwards (i.e. more important) with respect to public who live in England and Wales further than 25 miles from a proposed site.

## 8. Messages for the regulators

Participants were asked to summarise – in a few words or a short sentence – any messages they would like to leave for the regulators about the GDA and how they communicate with members of the public in the future. These messages are shown below – NB messages from Bangor are slightly different in nature and tend to focus more on reflections on the workshop rather than forward looking messages to the regulators.

### Messages from Cheltenham

- Reach, explain, respond
- Raise local awareness!!
- Interesting
- Be thorough! Tenacious, honest
- Overview – on local BBC TV, local radio. Information can be located at...
- Excellent presentation. I now trust you!
- Very well delivered
- Understandable
- Become more obvious
- Effective clean up policy!
- Informative
- Keep locals informed
- Educate schools, communities
- Keep doing your job ☺
- Make it local
- How big are these sites?
- How often are these sites regulated?
- Reassuring, informative, safety
- Less jargon & TLAs
- Effect on grandchildren
- More information, more information, more information
- Long term waste disposal
- Information is key
- Providing information, independent body, safety measures

- Make it obvious
- Have more fun ☺
- Explain safety more
- Share the knowledge
- Well chaired Rowena
- Good job guys
- Please keep up the good work

### **Messages from Bangor**

- Very interesting and has built my knowledge on some aspects
- I know a bit more than I did this morning
- I enjoyed myself and now know a bit more
- Would you live here?
- Enjoyable, informative
- Interesting, informative, professional but relaxed
- Understand more about nuclear reactors
- Trust more now
- Very interesting day – still need some answers
- People answering questions helps
- Day flew by – interesting, constructive, educational, challenging
- Informative – answers leading to further questions – need for more ground level information from developers re community issues
- What's your wage?
- More informative and interesting than I imagined
- Very interesting and informative. Well worth attending. Thank you.
- Informative

## Appendix 6. Round 2 workshop – detailed findings

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### 1. Recap of the Round 1 workshops

Participants spent some time in two groups discussing the previous workshops, specifically anything that had stuck in their minds, and whether they had tried to find out anything new or spoken to friends and family following the workshops.

#### What stuck?

Particular memories that had stuck with people included:

- Learning, including general learning and specific aspects of the science (for example how a nuclear reactor works).
- Concerns about safety, either generally or specifically with respect to the next generation.
- The number of organisations and people involved in the process (with a related comment that this made it seem like a foregone conclusion).
- The potential to expand social media presence around GDA.
- Language – see discussion below.

#### The language of GDA

There was substantial discussion of the language of GDA in one of the subgroups. Several participants commented that generic design assessment as a name or as a general concept is difficult to understand and could be made clearer or written in plainer English. There were comments that an inability to quickly understand what the topic is about could contribute to public disinterest. Participants made several suggestions for solutions, including:

- Simplify the explanation of GDA, similar to the way in which the explanation of the nuclear reactor was simplified in the first workshop.
- Call it something else, for example something that specifies nuclear power, or consultation (although it was pointed out some people are sceptical about consultation). The word generic in itself might be difficult for people to understand.
- Try to cross the ‘them and us’ barrier by using ordinary language. For example, get members of the public to write it, or utilise the Plain English Campaign. *[NB this was discussed later and the group found out the Plain English Campaign had looked at the consultation document and questions but people still found the language inaccessible.]*
- Try to avoid using so many acronyms.
- Suggested alternatives included pre-license assessments, pre-nuclear design planning, and assessment of new nuclear reactors.

#### Looking for more information

Some participants said that, following the Round 1 workshops, they sought further information. For some this involved looking on the internet, for example at the Hitachi website – one participant said this site was quite complicated and that they haven’t been back to it, which another said it was better than the NRW website. One participant looked at a range of websites and said the information they saw was very good and detailed. Another did a Google search on Hinkley Point



and said that this led them to news stories rather than websites with more information. One participant said they had looked up definition of “generic”, which they found helpful.

Several of those who hadn’t looked up any additional information said this was because they felt the information they received at the workshop was enough, or because they knew they were coming back. Others said that they had enjoyed gaining new knowledge at the workshop, but felt the topic didn’t really affect them that much. One participant said they didn’t try to find out more because they do not have a computer at home.

### Talking to others

Some participants said they had spoken to friends or family about the workshop or the topics within it. In general, these participants said the people they spoke to did not know much about the topic and had a range of reactions including disinterest, strong interest (although one participant said they only talked to people they knew would be interested) and a degree of surprise at what they were told (specifically in relation to the amount of planning involved in the process of building a new reactor).

**“I came away thinking I had learned a great deal, I probably already know a fair amount about nuclear reaction, but what struck me was that no one I spoke to since knew anything about nuclear reactors or anything about it.”** (Participant)

### Advance reading

One subgroup spent some time discussing the e-bulletin and Q&A document they were sent prior to the meeting. There were a few technical issues for some participants, for example compatibility issues, not being able to open the document, links not working, or not receiving it at all. Those who were able to open the document had mixed reactions, ranging from satisfaction to not really taking in what it said.

## 2. Where GDA fits into the bigger picture

Based on feedback from the previous workshops, the regulators had produced a diagram in an attempt to better explain the bigger picture surrounding the GDA process. The group spent some time discussing this.

Overall there was a feeling the diagram was a good start in explaining the context of GDA. Most comments related to specific suggestions for improvements or things participants particularly liked or didn’t like, including:

- The family tree-style structure is good.
- There are still too many acronyms.
- The current layout is confusing. There should be a clearer beginning and end to help readers know where to start – like a decision tree and perhaps with arrows. Putting the diagram left to right would help, like a process diagram or timeline.
- The sheet needs a title and explanation.
- The writing is too small.
- It needs a tidy up.
- It is currently not very engaging (one participant called it boring).
- Some pictures would help (e.g. a small pylon for National Grid).

- Consider a key to explain the colours.
- Either give all the operator names or none of them (currently only EDF is mentioned).
- It is unclear where GDA is mentioned in the nuclear industry section.
- A couple of questions to break up the diagram might be useful (e.g. what is the origin of the document, and why nuclear).
- It would be useful to know who all the players are, including the decision makers (e.g. if you wish to express objection or support or find out more), although the need for this depends on who is reading the document.
- Clarify the difference between UK and international regulators.
- The lack of clarification or qualification for the 'stakeholders and communities' heading combined with the small text size of 'communities living near the sites' gave one participant the impression these groups were not seen as important. However, another participant disagreed with this.
- Perhaps make the reactor designers section bigger.
- It would be good to see where the decision points are, for example when are certain decisions made and at which points can people input.

### 3. Issues raised at the Round 1 workshops

The regulators spent some time responding to some of the questions raised by participants in the Round 1 workshops that were not answered in full at the time – see Appendix 7 for the full presentation. This included the following topics:

1. Nuclear waste – how much waste is produced and where does it go?
2. Safety/health issues of nearby people and long term impact on the environment.
3. Water disposal.
4. Long term impacts – what impact does this have in the future over, say 50,100, or 500 years?
5. Security – how much to tell the public and where to draw the line?

In addition, a Q&A document had been circulated to all participants in advance of the Round 2 workshop, covering additional topics – see Appendix 8 for this document.

Several participants asked supplementary questions related to these topics, summarised as follows:

- What are the consequences of safety being compromised or regulations not being met?
- Do the regulators oversee the whole life of the reactors?
- Is waste considered at the GDA stage? A range of other questions on waste, including how to deal with operating waste on a day-to-day basis, how long does waste have to be geologically safe, are there any uses for the waste, how long is it radioactive, how much waste is it necessary to / is actually being put in the ground, is geological disposal already happening, what about fracking, what if someone was to bomb a disposal facility, how long are operators responsible for waste, and why do different parts of the waste have different levels of radiation?
- How dangerous is the water going out to sea and how radioactive is it / for how long?
- Do the filters have a lifetime and are they replaced?
- Is there any detail on the timelines for reactors currently being proposed, e.g. when people can feed in to operators' proposals?
- Why don't you put the uranium/the ore back where it came from?
- What sort of heat is involved in the operation of the power station, and what is it used for? Can radioactivity transfer through heat?

- Should people be worried about the levels of radiation where they live, and is there a link with cancers for example in geological disposal areas?

#### **4. Consulting with members of the public about GDA**

Participants were given a brief reminder of the consultation process for GDA and what was done last time, for example in terms of timing, publicity, and which organisations might be sent the consultation documents. Working in groups, participants discussed the previous consultation executive summary and consultation questions. They were initially asked to provide their overall first impressions, followed by more specific discussions around layout and language. Other topics for discussion included:

- What could be done differently to engage the public on GDA?
- How might lay members of the public wish to contribute?
- How can 'formal consultation' be combined with public engagement?
- What kind of response might be required to work with the public who wish to engage?
- What information, what methods and channels work best?

The main topics covered by participants are summarised below.

#### **Guidance on consultation questions**

One participant suggested there should be a statement encouraging consultation respondents just to answer the questions they felt able to, and not feeling compelled to answer every question – perhaps in an upfront statement on the front cover or immediately in front of the questions.

#### **Language**

A small number of participants expressed positive views on the language of the document, for example saying that they thought the consultation questions were very straightforward and unambiguous, or that the summary document was readable.

However, many people were critical of the language. Some participants commented on the complexity of the language and lack of clarity over specific terms such as 'preliminary conclusions' and 'management systems'. Others said it was dry or not user friendly.

Overall, there was a feeling that the questions needed to be simplified and contain cross references to further explanation and information. Although it was clarified the document had been checked with the Plain English Campaign, participants felt the level of plain English in the document needed enhancing further.

#### **Length and level of detail**

There were mixed views about the level of detail that should be in a summary document. These ranged from the need for the summary to contain all of the relevant information to enable readers to answer the questions to the suggestion that the summary document could contain cross references and lead people to read the full document. Other comments included concern that even the summary document seemed too dense and should be in sections, and the suggestion that the front page could be more inviting of people's views.

**“This [holding up the document] doesn’t tell me that there is a questionnaire to fill in. It looks like a very technical document which I would ignore. You could have ‘we want to know your views’ on the front.”** (Participant)

### **Options for graphics**

Participants looked at some infographics as examples of a different way to get across relevant information. There were some concerns about not trying to put too much information into this kind of graphic, but the majority of comments were positive. Participants liked the idea of displaying information visually without too many words, as a way of setting the scene and getting across key facts and figures. Suggestions included a picture of a reactor in a landscape with explanations around it, and using graphics as a mechanism to link to further information.

**“The individual break down of facts and figures is good. The pictures set the scene and make it relevant.”** (Participant)

### **Audience, publicity and raising interest**

Some participants queried who would really want to read the document and answer the questions, suggesting that members of the public without prior knowledge would not know what it was about and therefore not feel inclined to engage. There was a strong sense of the need to find hooks to enable members of the public to see the relevance of GDA to them and their families. One participant pointed out the need to cater for short attention spans, and another said that there was a need for some kind of campaign to capture the interest of people who might not otherwise be interested. There was also acknowledgement that all publicity activities have to take cost into account.

When asked what kind of mechanisms might work for raising interest, suggestions included:

- Graphics are a better way of engaging people than just words.
- Utilise TV programmes.
- Hold seminar meetings or put regulator talks (e.g. from conferences) online.
- Send different forms of post aimed at different demographics, and don’t just rely on electronic communications and websites.
- Target those living near to potential sites in a different way.
- Potentially utilise parish magazines and e-bulletins.
- Try drip feeding information so that people get to know the topic without feeling overloaded.
- YouTube adverts on videos could be a way of reaching people (though bearing in mind the need to link to nuclear power and reach your target audience).
- Produce a simple non-technical video on YouTube about the consultation, where people could put comments on the bottom. This could be an A level project. (One participant later queried the use of YouTube comments as a channel for formal consultation responses.)
- Put into historical context – e.g. this is what has happened in the past (such as Fukushima) and this is what we are doing differently to make sure it doesn’t happen here.
- Use social media such as Facebook and Twitter.
- Use informed members of the public, such as those attending these workshops, for a layperson’s perspective – e.g. a video on YouTube encouraging other members of the public to get involved.

- Target schools – kids often talk to their parents about things they learn at school. Perhaps ask a group of 13 year olds to help write something.

**“Mostly people don’t go to meetings about certain things unless it’s windmills then they all come and object to them.”** (Participant)

**“We could go out and about to talk to people.”** (Participant)

### **Further discussion of preferred communication methods**

Participants were asked what they would prefer in terms of communication methods around the consultation. There was some discussion of flyers, with mixed views. On the one hand, these seem like a potentially high visual impact method, with the option for people to find out more if they want to. On the other hand, there are questions about how far readers would get, or whether they would even read it in the first place, before throwing it away. One participant commented that even if 75% of people threw the flyer in the bin, that’s still 25% that would be read.

Some participants commented on the need for other formats, for example saying they preferred to hear things on the radio or see it visually. The cost of a multi-format approach was recognised, although one participant said cost shouldn’t be an issue.

**“It has got to be multi-format – you have got to go for everything, go for the rounded thing, and you can’t afford to miss anything out. Cost shouldn’t be an issue, although I know it is. It could be as simple as one photo with three words on it to capture people’s interest.”**  
(Participant)

In response to the idea of text messages, e.g. announcing the consultation launch, the response was fairly muted, with those participants who did comment saying they would find it annoying or intrusive.

Display panels that had been in the room for the whole meeting received little positive attention. When asked about this, participants commented they hadn’t noticed it, or had not been drawn to look at it. There were comments that the man pictured on the display panel did not draw people in. One participant commented that a competition (for example for CAD design students) to design the best poster might be a good route. There was a general feeling that an infographic-type design would work better than the current display.

### **Local engagement**

When asked what expectation there is for the nuclear regulators when starting a consultation to go out into the local communities (close to the sites) themselves, participants tended to respond positively. People pointed out the importance of giving the regulators a face as a way of helping to reinforce their independent role, as well as the importance of personal contact, and even eye contact (whether face to face or on video) when presenting information.

Other suggestions for local engagement included door stepping, or producing a video to send it out to existing community groups. This led to other suggestions of tapping into local tourism, police or other community meetings, as well as local magazines. One participant commented they still preferred post, information in the library or inside newspapers. The idea of personalising post (e.g.

“to the lovely person at number 23” rather than “to the occupier”) received some positive comments based on existing experience.

Some participants suggested they could go out and talk to people in their communities in order to raise local awareness.

### **E-consultation**

Those participants discussing the e-consultation commented that it seemed quite text heavy and quite a lengthy process that could become quite time-consuming or frustrating. They suggested it should be quick and easy and that a comments box is crucial.

## **5. Barriers to public engagement on GDA**

Participants split into small groups and discussed the kinds of barriers that they think stop people getting more engaged with the regulators about GDA. This included writing key points on worksheets.

The range of points compiled from discussions and worksheets is as follows:

- Ignorance and ambivalence i.e. that they’re just not very interested.
- If they don’t know enough about it.
- Simple ideas so it will attract the young and old – nobody can find the happy medium.
- Appeal of what’s being shown – short and sweet, risk of both too much and not enough information.
- Complicated subject, management layers are complicated as well, therefore takes time for people to understand the whole picture.
- Complexity – takes time to get the whole picture across.
- The language – GDA I’m gone, I’ve already lost interest.
- People don’t know how to engage – they don’t know how to get the information and they don’t know how to get heard.
- Geographic location and NIMBYism – people aren’t going to take an interest if they think it doesn’t affect them.
- Boring speakers.
- Different platforms whether media, print, local magazines – different audiences might not read/access these different platforms.
- Suspension of belief due to political motivations etc. – some people think there’s no point as it’s already been decided. Cynicism and suspicion about political interests. Barrier is a belief that it’s all too late, ‘they’ve’ already decided, it’s all too late anyway.
- The proliferation of disinformation and invalid opinions e.g. from anti-nuclear groups – perception of it’s not going to change, we can’t change it, there’s no point getting involved.
- Fear e.g. of the danger of nuclear, of radioactivity. Is a barrier because it’s already a pre-conceived perception i.e. already made up my mind, I don’t want nuclear so why would I get involved in discussions about it.
- Conflict of interest e.g. people who are dead against nuclear because they’re very pro windfarms.
- Prioritisation – they see other things as more important.
- Presented by scientific elite so what part can I play (them and us).
- Don’t know enough about it

- Boring or too technical information
- Geographic location
- Ignorance/ambivalence
- Lack of trust, thinking they don't have any influence, foregone conclusion
- Indolence/lethargy
- Disinterest
- Terminology/language
- Acronyms
- Appeal of what's being shown – short and sweet – risk of too much information and not enough information
- Audience that you're trying to appeal to – captivating them, buy-in, age range
- Platform – media, spam?
- Understanding subject content
- How do you get the information out?

## 6. Reducing the barriers

During the final part of the workshop, participants discussed ideas and recommendations for reducing some of the barriers to engagement. This final discussion is summarised as a set of suggestions from participants.

Suggestions from participants for reducing the barriers to engagement on GDA:

- 1. Keep it simple.** It doesn't have to be complicated – for example the pressure cooker concept was easy to understand. Come up with every day analogies that people can relate to. Devise some simple ideas to attract young and old people.
- 2. Innovate.** Make it live, humorous and interactive. Do it completely differently to how it has been done for the last few years by using a new fresh approach. For example, consider the use of popular TV programmes or even poetry.
- 3. Use a range of methods.** Have a range of difference communication, akin to a multi-media marketing campaign. Consider how to capture different demographics using different platforms.
- 4. Tap into local resources.** Tap into local enthusiasm by utilising those people who are engaged to encourage others to get involved. Target local interest groups that you think would have members who are interested. Use local publications and social media. Get young people involved, for example through a school project. Bear in mind a lot of what you find out is through who you know and what they bother to let you know.
- 5. Drip feed information.** Develop familiarity with the topic by drip feeding information and reusing common images or infographics. This will help people to be more aware and better able to respond.
- 6. Be aware of historical context and preconceptions.** Some people have a fear of nuclear station or radiation, and associate “nuclear” with weaponry. There could be a way of talking about this process as a positive way of safeguarding against the bad stuff happening – people should be told what went wrong in the past (e.g at Chernobyl), and then informed about what is now being done to stop that happening again.
- 7. Make it personable.** Representatives from the regulators should be open, honest and engaging – get the right people involved. A friendly face makes a difference.

**8. Make it personal.** Find ways of letting people know why this matters to them or of grabbing their interest, in an objective factual way. For example: how much money the different organisations are going to make; impacts on the wider economy; the thoroughness of the regulatory process with respect to safety; how many lights that power plant can turn on in comparison to the old one; letters or flyers in electricity bills; future forecasting – projections about how much power is going to be needed; the amount of waste and where it would go, and so on.

**9. Reconsider the use of language.** The name (GDA), abbreviations and language are currently not helpful. Write in a language people can understand.

**10. Ensure accessibility and visibility of online information.** Ensure online information is easy to find and navigate.

**11. Raise the profile of the regulators and their role.** Try to raise the profile of the regulators and clarify their role (particularly their independence) alongside that of other organisations such as NGOs and Government.

**12. Clarify what's up for grabs and listen to people's views.** Let people know about the process as early as possible. Clarify what is up for grabs, what has already been decided and how GDA fits in to the wider context – perhaps using an infographic. Listen to people's views.



# Appendix 7. Presentation slides and Q&A

## Round 1 workshops presentation 1: Introducing the regulators



### A brief introduction to the regulators of new nuclear build



Alan McGoff  
Lead New Nuclear Build  
Environment Agency

### An introduction to the regulators

#### Who we'll talk about:

- Office for Nuclear Regulation
- Environment Agency
- Natural Resources Wales
- Some others



### Office for Nuclear Regulation (ONR)

- Established as an independent Public Corporation in April 2014 by the Energy Act 2013.
- Previously part of the Health and Safety Executive
- The ONR is responsible for regulating:
  - nuclear safety and security at nuclear licensed sites
  - design and construction of new nuclear facilities
  - transport and safeguarding of nuclear and radioactive materials
- The mission of the ONR is to provide efficient and effective regulation of the nuclear industry, holding it to account on behalf of the public.



Our purpose is to ensure that Wales's natural resources are sustainably maintained, used and enhanced - now and in the future.

- Main responsibilities for new nuclear reactors in Wales
- Generic Design Assessment
  - Environment Regulations
  - Marine Licensing
  - Planning Consultee
  - Provide advice and guidance to developer
  - Working with regulatory partners
  - Stakeholder engagement and consultations



### The Environment Agency

- Formed in 1996 by the Environment Act 1995 bringing together organisations with environmental responsibilities and roles. Now for England only.
- Non-departmental public body with around 10,000 staff
- Pollution control functions including **industry regulation**
- Others include Flood and coastal risk management, conservation and recreation, navigation, fisheries, water resources, and climate change
- Environment Agency's vision – a better place for people and wildlife



### As the Nuclear Regulators, we are

- Independent of Government and Industry
- Injecting robust, independent, technical expert scrutiny
- Acting in an open and transparent way
- Ensuring people, society and the environment are protected from the hazards of nuclear activity
- Enabling, BUT it must be safe, secure and environmentally acceptable



## Other regulators/decision makers

### Department of Energy and Climate Change (DECC):

- Energy policy
- Land use planning for national infrastructure (recommendations provided by Planning Inspectorate)
- Regulatory Justification
- Funded Decommissioning Programme

### Gas and Electricity Markets Authority (GEMA):

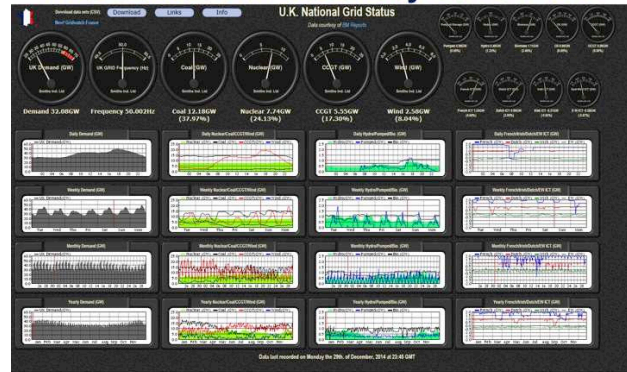
- Transmission and distribution networks
- Gas and electricity markets
- Environmental (energy) programmes

### Local Authorities

- Land use planning – (early works)



## Where does our electricity come from?



## Decision making powers

**Q:** Do you have any power of veto over decisions made by politicians?

**A:** As regulators we are independent of government – government doesn't tell us what to do and we don't tell it what to do either. But if there are safety or environmental concerns or issues etc we can step in and stop things happening and require the operator to fix them.

**Q:** How much do you compromise your ideals to comply with government policy?

**A:** No, we are independent regulators and we make our own decisions. .

**Q:** Does Government always take your advice?

**A:** Not necessarily.

**Q:** What teeth have you got? Talk with me and consult with me as much as you like but what actual power have you got over what actually happens?

**A:** As regulators we have a full suite of powers to deal with non-compliance with the requirements that we set. So if somebody has received permits, there are a number of conditions – failure to comply with those conditions is an offence. Quite simply it's about robust, independent regulation. ONR operates under different legal regimes – we put certain barriers in place and the operator has to demonstrate compliance before being allowed to proceed. They can't proceed past these barriers until they've proved that they have met all of the requirements and shown that everything is in place i.e. we check before they do something.

## Energy policy

**Q:** How independent can we be from foreign investors, to say we can own our own power?

**A:** It's a market. We have a market-based economy and if someone wants to come in and buy a company (for example Hitachi in this case buying Horizon) then they can... We have a market economy. Anybody can come in, but it has to be acceptable to government, and has to be safe, secure, and environmentally acceptable – always. (NB Horizon is a UK company, owned by Hitachi.)

**Q:** Do we have less nuclear power than France/Holland etc?

**A:** On average, production of electricity from nuclear in the UK is around 20%. In France it's closer to 80%, sometimes even more. There's a website called Gridwatch France – if you go on there France are sometimes producing up to, say, 120% of their internal demand as they are selling electricity abroad.

**Q:** So the UK in general, we can't produce our own, we're having to buy it in from other countries?

**A:** We could produce our own but we have a policy of a market, i.e. can we buy it cheaper elsewhere.

**Q:** Is there no way of storing electricity?

**A:** There isn't a way to store electricity but there are ways of producing electricity quickly e.g. pumped storage - a scheme with top and bottom reservoirs where water is pumped up to the top reservoir and then flows down generating electricity. It profits from price differentials day to night, plus coping with surges in demand (e.g. power stations tripping out so reserve stations are on standby, dealing with world cup half time etc.) - that's the way of providing power more or less instantly.

### **Funding**

**Q:** Who pays your wages?

**A:** It's a mixture – part grant in aid (tax payers), and part charges we make. In the nuclear area we recover our costs from the companies that we regulate – we charge by the hour for our regulation. It's the same principle for ONR.

**Q:** Is it part of the electricity bill?

**A:** As far as nuclear regulation is concerned, yes it is, in that the operators pay us for regulation and it's a cost to them.

### **Nuclear power and regulation**

**Q:** How is it transported (fuel)?

**A:** Various mechanisms, including rail.

**Q:** Does transport include waste materials going to Sellafield?

**A:** Yes

**Q:** Does it include foreign waste?

**A:** It would have to be safe, secure and properly managed, but that would be a commercial contract and we don't get involved in that.

**Q:** Will there be a difference between old and new nuclear stations?

**A:** They will be different.

**Q:** What type of security would you have against attack and is it possible to shut down a power station without being on site?

**A:** I don't think it is possible to shut it down from offsite [see reason below] but you can do it remotely from within the plant. There are a number of factors in relation to security including an armed police force, and key parts of the station being properly protected from a security point of view. Our philosophy is that it might be easier for somebody to take over the offsite controls so our approach is to fortify the site. They are heavily reinforced concrete structures. Security is something we look at very seriously. Also, regulation is not just about delivering the outcome, it's also about having the people with the right qualities, equipment and processes/procedures in place.

### **Other questions**

**Q:** How often is risk management updated?

**A:** I couldn't answer that, but they are kept under review. It might be every four years.

### **Scope of role**

**Q:** Are you the regulator for the energy savings opportunity scheme?

**A:** Yes, that is part of our (EA's) multiple role. We do deal with the emissions trading scheme. It is the Government's role to make policy and our role to regulate and enforce.

**Q:** Are you responsible for water use by nuclear power stations?

**A:** Yes.

**Q:** Are NRW responsible for the wind turbine in (can't remember the name)?

**A:** We won't be responsible for running it, but we may be for regulation. We regulate the people who operate. They need to demonstrate what they are doing is safe, secure and environmentally acceptable.

**Q:** You won't know how safe a building is until it's built though?

**A:** We would need to know it is going to be safe before they build it, through robust scrutiny. It's not just the buildings and what they contain, it's also the people who operate it. We look at how it is operated and the people who operate it. We undertake routine site inspections of all existing facilities.

**Q:** Are you regulators for decommissioning activities too?

**A:** Yes.

**Q:** So things like tanks in Sellafield?

**A:** Yes.

## Round 1 workshops presentation 2: Introducing the GDA process

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### A brief introduction to Generic Design Assessment

Alan McGoff  
Lead New Nuclear Build  
Environment Agency

## Government's 2008 White Paper - a role for new nuclear

### Facilitative actions include:

- Electricity market reform
- Planning reform
- Decommissioning and waste management programme and funding
- **A new regulatory approach – introduction of Generic Design Assessment**

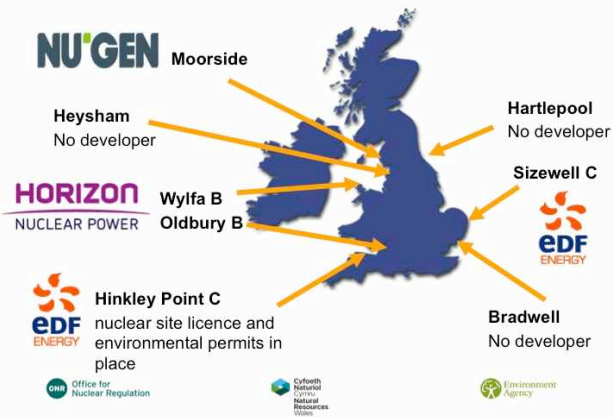


Office for Nuclear Regulation

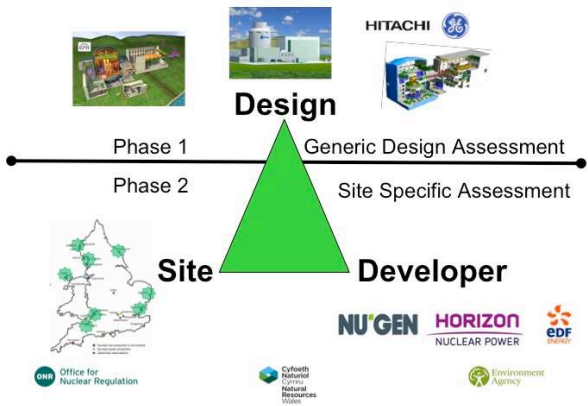
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### Proposed new nuclear power stations:



### What's required for new nuclear build?



### Regulatory approach for new build:



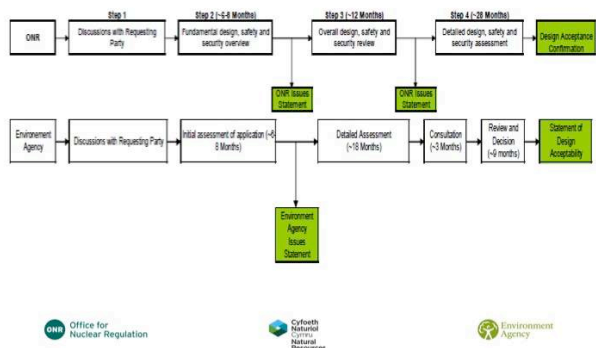
### GDA's objectives:

- Engaging early – maximising influence
- Identify and resolve key issues before build – reducing cost and time risks
- Integration of Safety, Security, Environment
- Enabling not blocking
- Regulators working together – clarifying expectations, providing consistency
- **Openness, transparency and public input – building public confidence**

### Ease of changing layout part-way through the design process ?



### Generic Design Assessment process



## UK ABWR: latest position

- Step 2 completed in August 2014
  - 17 technical assessments published
  - 2 summary reports published
- Step 3 commenced in September 2014
  - Technical assessment and engagement continues
  - Quarterly reports on progress published
  - EA / NRW consultation targeted for 2016.
- Targeting completion of step 4 - December 2017



**Q:** The operators don't do it for fun they do it for profit, so we know what the company is getting out of it. What does the local community get out of it? Does the operator suddenly say we want Anglesey, or does Anglesey come forward and say we want it building here?

**A:** The Government invited companies to nominate sites and to provide some basic data that would seek to substantiate that the site(s) would be available and suitable by 2025. The Government then went through a consultation process. More than 8 sites were put forward and some were rejected in narrowing down to eight. E.g. Dungeness was proposed by British Energy and the Government rejected it because of the nature of the Dungeness peninsula – with advice from Natural England the Government said it would be unacceptable to build there. Other sites were also rejected. The benefits to local people is part of the planning process, and as part of that when the developer comes forward with proposals, part of that is the community benefits package and that would be substantial.

**Q:** Isn't that dangerous that they might cut corners if they're not getting financial support from the Government?

**A:** The companies are all mature companies – some of the newer licensed companies are newer in name but the owners behind them are older in name and are well established. Companies are going to want to do things as cheaply as they can, but we are there to make sure they do things correctly.

**Q:** How long does the process take?

**A:** GDA is designed to be a four year process but this does vary – e.g. there might be a pause point if additional work is needed.

**Q:** Can the design become obsolete over those kinds of timescales? Surely safety and the way it generates can change over time?

**A:** Things do change, but it is an ongoing, continuous process of assessment and challenge. The process takes as long as it takes. Information has to be provided to the right standards and be of the right quality and if it isn't it will take longer. The targeted date for consultation and completion of the process is therefore only a target.

# Round 1 workshops presentation: Introducing the UK ABWR design

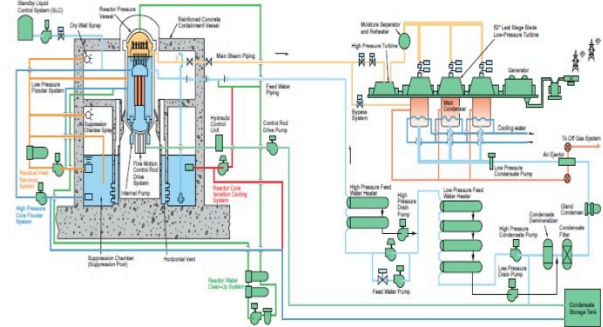


## A brief introduction to the UK ABWR

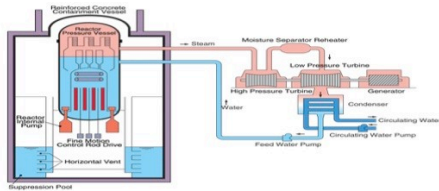
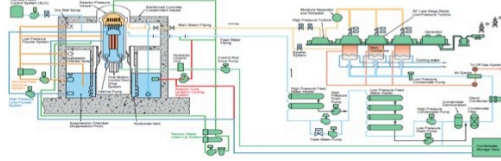
Alan McGoff  
Lead New Nuclear Build  
Environment Agency



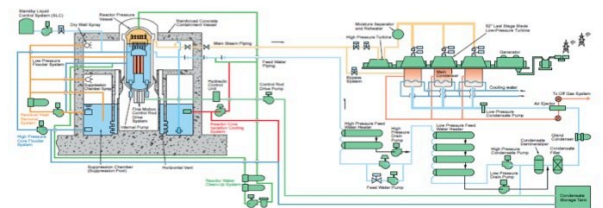
The UK ABWR (from Hitachi- GE website)



The UK ABWR (from Hitachi- GE website)



The UK ABWR (from Hitachi- GE website)



UK ABWR – the reactor



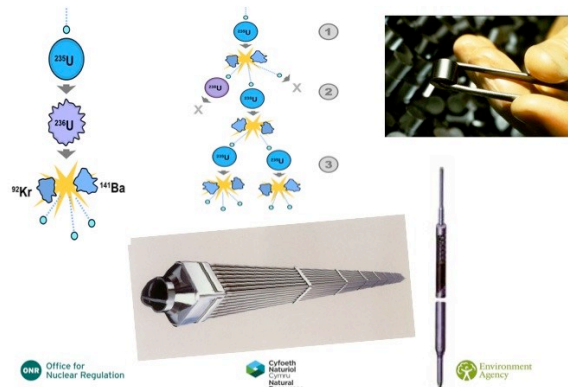
Steam Turbine



## Generator



## Energy source – nuclear fission & nuclear fuel



## Round 2 workshop presentation: Safety, security and waste issues

ONR Office for Nuclear Regulation

Cyfoeth Naturiol Cymru Natural Resources Wales

Environment Agency

### A brief introduction to radioactive waste, radiation and the UK ABWR



Alan McGoff  
Lead New Nuclear Build  
Environment Agency

### What is radioactive waste?

Anything that is a **waste**

*and*

is **radioactive**

*or*

is **contaminated by radioactivity**



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## Where does radioactive waste come from? UK ABWR – what will become radioactive waste?

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- Head vent & spray nozzle
- Main steam outlet nozzle (with flow limiter)
- Low pressure floodler nozzle
- Low pressure floodler sparger
- High-pressure core floodler nozzle
- High-pressure core floodler sparger
- Top guide
- Fuel assembly
- Internal pump
- Control rod drive mechanism housing
- Flanges
- Steam dryer
- Steam separator
- Feed water inlet nozzle
- Feed water sparger
- Core shroud
- Control rods
- Core plate
- Reactor pressure vessel support skirt
- In-core monitor housing

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### The UK ABWR (from Hitachi- GE website)

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Environment Agency

### Categories of solid radioactive waste

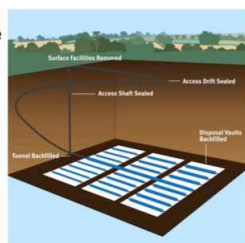
- High level waste**
  - Vitrified liquid waste from reprocessing spent nuclear fuel
  - Spent fuel
- Intermediate-level waste**
  - Operational and decommissioning waste, mainly from nuclear sites
- Low-level waste**
  - Low activity waste from nuclear sites, hospitals, universities and others

High activity  
High volume

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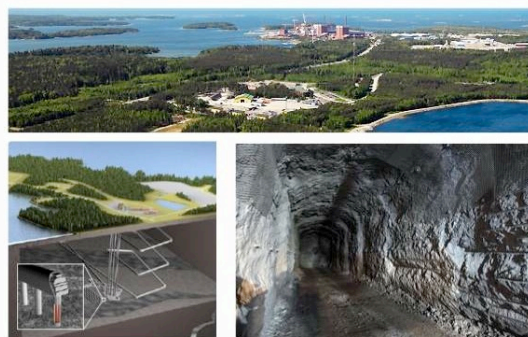
### Spent fuel and intermediate level waste - What is geological disposal?

- Geological disposal involves disposal of radioactive waste packages in an engineered underground facility
- Typically at a depth of 200m-1000m depending on host geology
- Host rock provides one of several barriers against escape of radioactivity



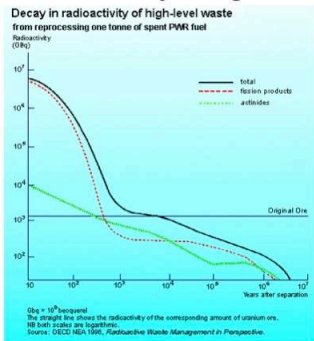
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### Finland: Olkiluoto – hard rock



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## Radioactive decay - high level waste



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## Interim storage – pre-geological facility



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## Disposing of low level waste

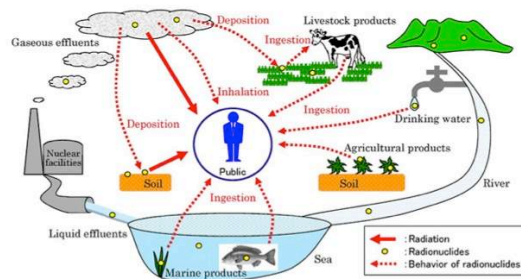


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Cyfoeth Naturiol Cymru Natural Resources Wales

Environment Agency

## Radioactive discharges – protecting people and the environment



Office for Nuclear Regulation

Cyfoeth Naturiol Cymru Natural Resources Wales

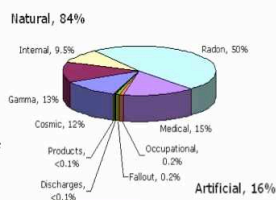
Environment Agency

## Radiation and people

Average dose to members of the public from background radiation = 2.7 mSv (millisievert)

Annual dose limit for members of the public = 1 mSv;

Assessed annual dose to most exposed members of the public in EA's GDA step 2 report for the UK ABWR = 0.04 mSv



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Environment Agency

## Radiation and people – dose comparison

Source of exposure	Dose
Dental x-ray	0.005 mSv
100g of Brazil nuts	0.01 mSv
Chest x-ray	0.014 mSv
Transatlantic flight	0.08 mSv
Nuclear power station worker average annual occupational exposure (2010)	0.18 mSv
UK average annual radon dose	1.3 mSv
CT scan of the head	1.4 mSv
UK average annual radiation dose	2.7 mSv
USA average annual radiation dose	6.2 mSv
CT scan of the chest	6.6 mSv
Average annual radon dose to people in Cornwall	7.8 mSv
CT scan of the whole spine	10 mSv
Annual exposure limit for nuclear industry employees	20 mSv
Level at which changes in blood cells can be readily observed	100 mSv



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Environment Agency

## Appendix 8. Q&A document circulated before Round 2 workshop

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### Questions unanswered at Round 1 workshops - grouped into themes

(C = Cheltenham, B = Bangor)

Topic
<p><b>Communication and information</b></p> <p>C: How do you get the balance between security and transparency?</p> <p><b>Balance between Security and Transparency</b></p> <p>ONR aims to be a transparent regulator and there is a presumption of openness unless there are defensible reasons against it. ONR inspectors and assessors weigh up the benefits of openness and transparency against the risk that disclosure of certain information may be of value to terrorists or others who wish to cause damage to facilities. Often the decision to publish or protect information is taken on a case by case basis. ONR has provided a guide to the risks and dangers associated with automatic disclosure, describing the types of information which could be useful to terrorists and others of malign intent.</p> <p>The guide can be found at: <a href="http://www.onr.org.uk/ocns/balance.pdf">http://www.onr.org.uk/ocns/balance.pdf</a>.</p>
<p><b>Design considerations</b></p> <p>C: I'd be interested in the track record for this particular type of reactor – ABWR (UK or abroad).</p> <p><b>We refer you to Hitachi-GE's website which addresses this and other related questions:</b> <a href="http://www.hitachi-hgne-uk-abwr.co.uk/faq.html">http://www.hitachi-hgne-uk-abwr.co.uk/faq.html</a></p> <p><b>Additionally, from the regulators' perspective, the following information may be helpful:</b></p> <p><b>What experience do the regulators have of the new design?</b></p> <p>The regulators are building their experience of the ABWR design but prior to GDA have not carried out any assessment of the Advanced Boiling Water Reactor (ABWR) design. However, we do recognise that it has been licensed, constructed and operated in Japan and certified in the US.</p> <p>Generic design assessment is based on a 'technology neutral' approach, meaning that we apply the same general safety and environmental principles to our assessment of each reactor design. That said, where specific Boiling Water Reactor (BWR) experience is needed, we will use appropriate contractors to assist in our assessment. The regulators also gained experience of BWR technology in the initial stages of the last round of GDA when another BWR design, the ESBWR reactor, was assessed up to step 2.</p> <p><b>Where else are these designs being built? Have they been approved in other countries?</b></p> <p>The Advanced Boiling Water Reactor (ABWR) is operational at four sites in Japan; Kashiwazaki-Kariwa (2), Hamaoka and Shika. It is also under construction at two further sites in Japan, Shimane and Ohma, as well as one in Taiwan. It has received regulatory approvals in three</p>

countries around the world.

Regulatory assessment is continuing in other countries (Japan). We are continuing to co-operate with overseas regulators as they progress their assessments and will increase this collaborative working over the next few years. We can't however, simply 'rubber stamp' other regulators' design assessments – nor would the public expect us to.

We also have an obligation under international guidance published by the International Atomic Energy Agency (IAEA) to perform our own regulatory review – even when a design has been authorised by another country.

**Are you aware of any potential problems with the UK ABWR, especially following the accident at Fukushima?**

From our general knowledge of the technology, we are not aware of any UK ABWR design feature that would mean, in principal, it could not be licensed in the UK. Before we would accept a design, we would need to be satisfied that it is safe and secure, that the environment would be properly protected and that it complies with UK-specific standards. We note that the UK ABWR is not a new design and our experience of the GDA process has indicated that it is likely some modifications to the UK ABWR plant may result from our assessment.

**B: How big will the power station be in terms of physical size and design/look?**

Horizon Nuclear Power is the developer proposing to build the UK ABWR at Wylfa. More information is available about their proposals here:

<http://www.horizonnuclearpower.com/wylfa-our-proposals>

Prior to construction of a new nuclear power station at Wylfa Newydd, Horizon will have to demonstrate to the regulators that its site specific proposals are acceptable with regard to safety, security and the environment and that it, as a company, has all the skills and competences it needs to build and operate it.

**Energy policy**

**B: Why nuclear?**

The Department for Energy and Climate Change is responsible for energy policy. More information is available at:

<https://www.gov.uk/government/policies/increasing-the-use-of-low-carbon-technologies/supporting-pages/new-nuclear-power-stations>

<https://www.gov.uk/government/publications/nuclear-industrial-strategy-the-uks-nuclear-future>

**B: Anglesey is a tourism island, and things like Wylfa, pylons and wind farms all affect tourism on the island. There doesn't seem to be anybody looking at different ways of generating energy that don't have such an impact on the look of the place. What Government agencies are looking at this? Always seems to be that they're looking at the cheapest options and the cheapest option**

seems to be running pylons across the island rather than burying them.

These are matters for the respective Government Departments and the Planning Authorities. The regulators' role is to ensure that any new nuclear power stations implemented as part of Government's energy policy are acceptable with regard to safety, security and the environment. Matters such as potential local impacts on tourism are generally for planning authorities. Please see links to the relevant organisations below:

- DECC – National Policy Statement - <https://www.gov.uk/government/policies/increasing-the-use-of-low-carbon-technologies/supporting-pages/new-nuclear-power-stations>
- Welsh Government - Energy Policy - <http://wales.gov.uk/topics/environmentcountryside/energy/?lang=en#>,
- Planning Inspectorate – Decision maker for Nationally Significant Infrastructure – <https://www.gov.uk/government/organisations/planning-inspectorate>
- Isle of Anglesey Council – Decision maker for local planning developments <http://www.anglesey.gov.uk/>
- Renewable UK - <http://www.renewableuk.com/en/events/events-search.cfm/renewable-wales-2015>
- Horizon Nuclear Power – developer - <http://www.horizonnuclearpower.com/>
- National Grid – developer - <http://www2.nationalgrid.com/UK/In-your-area/Projects/North-Wales/>
- OFGEM – electricity industry regulator

### Local community

C: How effective would an objection be/what is the public's influence?

B: Are there any contingency plans for businesses within 2 miles of the power station?

B: Because it's a long lead-in process, will local people be up-skilled to get quality jobs in the locality? Will contractors working there now and in the future be under obligation to use the local workforce as much as possible? Will there be employment during the transition from the existing station winding down and the new one starting up?

B: Will there be a discount on the electricity for the local community? And other local community benefits?

B: Will there be an impact on house prices?

B: What impact is it going to have on the environment and the local area/local people if there is another reactor?

B: Where is the workforce coming from, and where are they staying?

B: When will road construction start, where is the soil going, what are the routes and will there be consultation on this?

Many of these are questions for the developer, Horizon Nuclear Power - <http://www.horizonnuclearpower.com/> The company will be consulting on its proposals as part of its application to obtain planning permission for the site.

The regulators' role is to ensure that any new nuclear power stations are acceptable with regard to safety, security and the environment.

These links may be useful also:

- Isle of Anglesey Council – Decision maker for local planning developments  
<http://www.anglesey.gov.uk/>
- Planning Inspectorate – Decision maker for Nationally Significant Infrastructure –  
<http://infrastructure.planningportal.gov.uk/>

### **Other infrastructure**

**B: Are the pylons they're going to put on Anglesey going to be much bigger than the ones that are there now? Are they going to replace the pylons or will there be 2 sets? And why pylons?**

**B: Will there be a new bridge to Anglesey?**

These are matters for the Planning Authorities:

- Isle of Anglesey Council – Decision maker for local planning developments  
<http://www.anglesey.gov.uk/>
- Planning Inspectorate – Decision maker for Nationally Significant Infrastructure –  
<http://infrastructure.planningportal.gov.uk/>

### **Nuclear power – impacts and concerns**

**B: What are the actual regulations governing the running of a nuclear power station?**

As would be expected there are a large number of Acts, regulations and requirements that operators of nuclear power stations must comply with. These include for example the Nuclear Installations Act 1965, The Health and Safety at Work Act 1974, the Ionising Radiations Regulations 1999, The Environmental Permitting Regulations 2010, The Water Resources Act 1991, etc.

Regulators issue specific licenses or permits under some of the legislation above that include conditions that the operators must comply with. Of particular note are the Nuclear Site Licence issued by ONR and the Environmental Permits issued by the Environment Agencies.

**C: Security – how is it protected from terrorism?**

One of the aims of GDA is for ONR Security Inspectors to assess the adequacy of security aspects of the generic design of a reactor and make an informed judgement that supports the construction and subsequent operation of the technology in the UK. The assessment covers the identification of those areas requiring protection and the conceptual security arrangements which must detail the hardware (barriers, doors, alarms, CCTV etc), procedures and facility design that make up the physical security arrangements. Should the technology be deployed in the UK, ONR will continue to engage with the Licensee through construction to operation to ensure that site specific security arrangements are documented in an approved Nuclear Site Security Plan. Throughout operation robust inspection regime and observed exercises are conducted by ONR to

ensure that security arrangements continue to meet regulatory objectives.

### C: What is the impact on the environment – AONBs etc?

The Environment Agencies are responsible for regulating specific environmental matters at nuclear sites. These include for example discharges of cooling water and radioactive waste. Operators must apply for specific permits to carry these out and must comply with the conditions that the regulators set in these so as to ensure that the environment is properly protected and impact is minimised and accepted.

In addition to the regulators requiring operators to carry out routine monitoring of the environment, the regulators also carry out their own independent monitoring. This is published every year in the Radioactivity In Food and the Environment (RIFE) report:

[www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/387254/RIFE19\\_report.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/387254/RIFE19_report.pdf)

This report covers sampling and analysis carried out in 2013 for the UK-wide monitoring programmes of the environment agencies and the Food Standards Agency. The monitoring programmes conducted by these agencies are independent of, and also used as a check on, site operators' programmes. The report covers the following topics:

- Radiation exposures (doses) to people living around UK nuclear licensed sites
- Radioactivity concentrations in samples collected around UK nuclear licensed sites
- External dose rates as a result of exposure to radiation from sediments, etc.
- UK site incidents and non-routine surveys
- Radiation exposures and radioactivity concentrations at other locations remote from UK nuclear licensed sites

Continuation of the monitoring programmes conducted by the agencies helps to demonstrate that radioactivity in food is well within safe levels and that exposure to members of the public from authorised discharges and direct radiation around the 39 nuclear sites in the UK has remained well within relevant legal limits.

### **Environmental impact: how different will the new nuclear power stations be regarding consumption of natural resources, discharges, greenhouse gas emissions and waste compared to current nuclear power stations?**

One of the key reasons for Government's policy on new nuclear power stations is that nuclear is a low carbon source of electricity generation – comparable to wind generation. Both designs of nuclear power stations that we are assessed in the first GDA are based on the Pressurised Water Reactor – as is British Energy's existing station at Sizewell B. As would be expected for a more modern power station, Sizewell B has relatively low discharges of radioactive waste and a small impact. Any new nuclear power stations are expected to have similar impacts giving rise to wastes and discharges that are no greater than comparable power stations elsewhere in the world.

### C: Impacts on health – in the future, what sort of impact will there be on our children?

### B: Does nuclear have any effect on people's health?

**B: Does the power station in Trawsfydd have an effect on people's health there?**

The relationship between exposure to radiation dose and potential health impacts has been investigated internationally and nationally for many years. In the UK Public Health England is responsible for advising Government and public bodies on radiation risk. Through their work they ensure that dose limits and constraints are set that will protect members of the public and workers. The regulators' role is to ensure that any new nuclear power stations are acceptable with regard to safety, security and the environment – this includes ensuring that impacts are small and well within limits.

Further information from public health authorities:

<https://www.gov.uk/government/collections/radiation-risks-from-low-levels-of-ionising-radiation>

<http://www.wales.nhs.uk/sitesplus/888/home>

The Environment Agency's / Natural Resources Wales's consultation documents (both for GDA and site-specific permitting) set out the assessed doses to the public from the proposed discharges. They also compare these to the dose limits and constraints for members of the public. We will ensure that any new nuclear power stations will use the best available techniques to properly protect people and the environment.

**C: What about the safety aspect? The general safety aspect of the nuclear power station when it's built and when it is in operation. What are the safety checks?**

**Nuclear**

The operator is responsible for ensuring nuclear safety on site at all times for all operations and will be required to have in place suitable and sufficient arrangements to ensure nuclear safety including operating the plant in accordance with defined limits and conditions.

Throughout plant life ONR will undertake appropriate interventions including inspections of the adequacy of the operator's arrangements for ensuring nuclear safety.

**Non-nuclear health and safety**

A site licensee or other employers, or self-employed persons, carrying out work at a nuclear power station have the same legal responsibilities for health and safety as any other business. Health and safety laws are there to protect employees and the public from workplace dangers.

A nuclear power station is a place of work with conventional or non-nuclear health and safety hazards, for example falls from height, workplace transport, which require risk assessment and effective control measures, with appropriate management arrangements to oversee statutory compliance.

**B: Did any (radioactive) waste get into the waterways or lakes at Trawsfydd? In Skelmersdale a few years ago they were finding that a lot of the fish in the Irish Sea/Morecambe Bay area were**



deformed – what assurance do we have that that won't happen here (off Wylfa)?

Information about Trawsfynnd is included on page 135 in the Radioactivity In Food and the Environment (RIFE) report :

[www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/387254/RIFE19\\_report.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/387254/RIFE19_report.pdf)

In setting limits and restrictions on radioactive and non-radioactive discharges into the environment agencies will ensure that wildlife is also protected.

**B: What happens if something goes wrong and how much of the area could it affect?**

There are regulations in place that require operators and local authorities to be prepared and able to respond to any emergencies at UK nuclear sites. These arrangements are tested regularly through exercises involving operators and relevant public organisations. The regulators' underpinning role is to ensure that any new nuclear power stations are acceptable with regard to safety, security and the environment and so to ensure that such emergencies do not arise.

More information on arrangements can be found in the Department for Energy and Climate Change and ONR's web pages, below: <https://www.gov.uk/preparing-for-and-responding-to-energy-emergencies>

<http://www.onr.org.uk/emergency-arrangements.htm>

[http://webarchive.nationalarchives.gov.uk/20121217150421/www.decc.gov.uk/en/content/cms/meeting\\_energy/nuclear/safety\\_and\\_sec/emergency\\_plan/neplg/facts/facts.aspx](http://webarchive.nationalarchives.gov.uk/20121217150421/www.decc.gov.uk/en/content/cms/meeting_energy/nuclear/safety_and_sec/emergency_plan/neplg/facts/facts.aspx)

**B: There's a lot of areas of outstanding natural beauty on the island, but there's a couple of power stations on the island and it seems that whatever they want to do to the island that seems to be all right without worrying about the local people. (Specific mention of NE corner of island.)**

Visual impact on designated Area of Outstanding Natural Beauty is a matter for the respective Planning regulators, the Planning Inspector for the main Wylfa Newydd Development and Anglesey Council for enabling and associated development.

- Planning Inspectorate – Decision maker for Nationally Significant Infrastructure – <https://www.gov.uk/government/organisations/planning-inspectorate>
- Isle of Anglesey Council – Decision maker for local planning developments <http://www.anglesey.gov.uk/>

## **Nuclear power – waste and decommissioning**

**C: What do you do with the waste when it's decommissioned?**

**B: Where's the waste going to go? How is it stored? How much waste generated by this station will be left for future generations to deal with i.e. how much and how long will it last?**

Government's policy for higher activity radioactive wastes from new nuclear power stations is that it should be held in interim stores that are safe and protect the environment until it can be disposed of in a geological disposal facility. This includes spent fuel where much of the radioactivity is held. Government work is ongoing to secure a geological disposal facility.

The geological disposal facility is required for the higher activity radioactive wastes that we already hold and the Nuclear Decommissioning Authority is responsible for managing the

effective and efficient clean-up of the UK's nuclear legacy. Further information here:

<http://www.nda.gov.uk/what-we-do/>

The activity in the radioactive waste disposed of to a geological facility would reduce over time through radioactive decay. Much of the radioactivity will decay over say 100s of years but some radioactivity will persist for much longer as it arises from longer lived radionuclides.

This briefing note explains the Environment Agency's role in managing the disposal of radioactive waste:

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/297620/geho0409b\\_ppi-e-e.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/297620/geho0409b_ppi-e-e.pdf)

Radioactive Waste Management Ltd is responsible for delivering a geological disposal facility. (RWM is a wholly owned subsidiary of the Nuclear Decommissioning Authority, which is an Executive Non-Departmental Public Body of the Department of the Energy and Climate Change.)

<http://www.nda.gov.uk/rwm/>

## **Regulators**

**C: How do you feel you are perceived by the general public and how do you want to be perceived? (question for the regulators)**

We receive feedback through a variety of channels including customer surveys, social media and market research. In 2010 the Environment Agency and HSE's Nuclear Directorate (now ONR) commissioned a public attitudes survey. Please let us know if you would like a copy of the report to be sent to you.

Our aim is for members of the public to have trust and confidence in us (the nuclear regulators) and our decisions.