

COMMISSIONER: Good morning. It's 7 o'clock, and we'll continue topic 16, the high level waste storage and disposal, and we welcome from the UK Mr Alun Ellis. Counsel.

5 MR JACOBI: RWM Limited is a wholly subsidiary of the Nuclear Decommissioning Authority of the United Kingdom, which is a public body responsible for addressing nuclear legacy issues and implementing government policy concerning fire activity, radioactive waste. Within that framework, RWM is tasked with undertaking the process to establish a deep geological
10 facility for the disposal of higher activity waste. Mr Alun Ellis has been the science and technology director to RWM since 2008. He leads the teams responsible for the maintenance and development of specifications, design safety cases, and supporting research activities for a deep geological facility in line with UK government policy.

15 Prior to joining RWM, Mr Alun Ellis held a number of positions with British Nuclear Fuels and gained significant experience in managing the decommissioning of nuclear facilities. Mr Ellis is a fellow of the Institute of Mechanical Engineers and a member of the Institute of Engineering and
20 Technology and the Nuclear Institute, and the Commission calls Mr Alun Ellis.

COMMISSIONER: Mr Ellis, we might start, before we move on to the current plans, can you give us a short précis of the processes, which I understand were called Nirex, and the first of the volunteer programs? Just
25 give us a précis of what happened and why they weren't successful.

MR ELLIS: Okay. If we take the first process, which is the so-called Nirex process, which ended effectively in 97, Nirex at the time had been set up in the 1980s by the nuclear industry actually as an acronym, stood at one stage for
30 Nuclear Industry Radioactive Waste Executive, and then its name got turned into just Nirex Limited and it became a limited liability company at the end (indistinct) was to deal with what we call intermediate level waste under the United Kingdom. So vitrified high level waste as a product of reprocessing was excluded at the time from the remit, and at the time in the UK, the
35 expectation was that we wouldn't be disposing of any spent fuel, that that would all be reprocessed.

So Nirex we set up in the 80s, had a couple of goes at coming up with solutions. In the 1980s it proposed a number of sites for near-surface disposal
40 of at least part of the intermediate level waste inventory and got as far as identifying four sites either at the surface or comparatively near to the surface formations. That failed. The formal applications were made primarily because there was a lot of political opposition and government asked Nirex to go back and think again. Nirex did that and concluded that because of the nature of the
45 inventory, it would actually be better to seek a site for a deep geological

disposal facility and a near-surface facility.

5 So Nirex set about seeking to identify potential sites in the UK. One of the key features of that siting process was completely done behind closed doors, no openness no transparency. Retrospectively, in about 2003, 2004, Nirex did publish some document about the process, but certainly up until that time how they'd identified the sites was completely obscure. Nirex ended up identifying two potential sites, one near Dounreay, which is a nuclear research facility on the north coast of Scotland, and one near to Sellafield.

10 The reason those two sites came out is, I think, if you look at the Nirex siting process and the - and I've obviously spoken to some of the people involved - two of the key criteria in identifying sites were land ownership, on the basis that if the land was in government ownership land access and land procurement would be less of a problem - so land ownership was a key criteria, and so was transport, and that identified, not surprisingly, sites near existing nuclear facilities. We carried out (indistinct) investigation programs at both the Dounreay site and the site near Sellafield called Longlands Farm. That's the name of a farm that occupies a large part of the site, and (indistinct) either borehole program, decided that the Nirex showed considerable promise and that they would proceed with that.

25 So the Dounreay site was parked or abandoned and Nirex decided to proceed with the Sellafield site, Longlands Farm, and they decided that the next stage in the process wouldn't be to seek to develop a disposal facility, but it would seek to develop what it calls a rock characterisation facility or an underground rock laboratory, which was basically to go down into the volume of rock that they'd identified was potentially suitable, construct a laboratory to further characterise the potential host rock from underground, and then if that was favourable, they would then proceed to consent to develop a disposal facility.

30 So their plans for development consent under the process we were talking about, and I go through it again, at the time the only way of getting development consent in the UK (indistinct) act of parliament was due to the Town and Country Planning Act and apply to the local planning authority for development consent for a rock characterisation facility. That was turned down by the local planning authority, Cumbria Council. Nirex appealed. The appeal goes to government. The process is government doesn't have to, but nearly always does, sets up a public inquiry to hear evidence and it appoints an independent inspector to make a recommendation.

45 That process took place during, I think, 1995 and 96. The inspector recommended that the application be turned down, but critically, determined during the inquiry that the scope should be broadened and that it wasn't legitimate just to consider the narrow scope of a rock characterisation facility.

His view was that if he recommended granting development consent for a rock characterisation facility Nirex would then seek to confirm that the site was suitable for geological disposal, therefore he ought to, as part of his deliberations, consider whether the site at least showed reasonable potential as a geological disposal facility, and he actually concluded that it didn't show much potential.

Part of the reason for that is that Nirex didn't expect to present evidence justifying the site for a geological disposal facility. Nirex hadn't fully complained its borehole investigation program and certainly hadn't completed the analysis. So it was caught a little bit on the hop trying to justify the site for geological disposal, and that was part of the reason it failed. But if you look at the - well, read the inspector's report, which is available, and actually the determination from the Secretary of State, to a large extent, the planning application was turned down on what you might call conventional planning grounds, local environmental impacts, which, in my view, was, you know, sort of detailed considerations that Nirex had been a little bit careless about.

So that's the process. I can then express more - shall I stop there?

COMMISSIONER: No. We would like you to go onto the next process.

MR ELLIS: Okay. Let me just give a personal view. This is a personal view. A major factor in that Nirex process failing was a lack of openness and transparency as to why Nirex had gone to that site, and also a lack of effort by Nirex to seek to influence the local community and the local planning authority. I think Nirex thought it was going to win the argument simply based on technical arguments, and that it didn't need to do anything regarding influencing broad social support. So if we then go forward to - a lot of learning from that resulted in the publication of a new white paper in 2008, a new process significantly different from the process that Nirex had followed, and the key difference was so-called volunteerism, which turned the whole thing on its head. Volunteerism goes beyond (indistinct) at the end to host a facility when we've gone through all the siting, it's actually about volunteering to participate in a siting process that may involving a site being selected for geological disposal, so it involves communities volunteering to engage with government and with the developer, which at the time Nirex had been absorbed into NDA to form the core of the Radioactive Waste Management Directorate which has now evolved into Radioactive Waste Management Ltd as a wholly owned subsidiary of the NDA, but the core of the competence and capability and the mission has endured through that.

It's was a different process and it was all very much community led and seeking to go to a place that communities wanted, but, in particular, seeking to get communities to volunteer right from the beginning. The process was set up

to try and make it as easy as possible for communities to come into the process and then actually make a series of small decisions on paper comparatively small implications, small commitments so that they could progressively engage with the process. It's one large community, there was three expressions of
5 interest, but it was effectively for one area, two (indistinct) councils (indistinct) which are adjacent (indistinct) councils on the west coast of (indistinct) County Council, which is an overarching county council, the same (indistinct) County Council that turned down the 1997, or the plain application that led to the 1997 inquiry, so it was still the same (indistinct) we have two chairs of local
10 authority in (indistinct) that's not universal south of the UK, but they collectively made an expression of interest.

That process went on until 2013 trying to follow this process, and there's a number of things that we've learned from that, that have been reflected in the
15 2014 paper, one of which is that actually getting anybody who is not familiar with geological disposal and things nuclear even to take the first step and talk to us if they've got to volunteer to do that rather than us approaching them, it's very difficult. The experience was only one community went into the process. Another community down in Kent, which is also an existing nuclear
20 community where there's two existing power stations, one of which is shut, and one where it was (indistinct) shut certainly within the next 10 years, so they didn't see a nuclear future.

Well, didn't see a power generation future and were keen to talk to us about
25 what a geological disposal facility might offer, but the local district council there couldn't get enough local support to actually even take the first step into the process. I think one of the learning points is for bodies such as local authorities there isn't really such a thing as a small decision. If they have to make a formal decision, they have to make it in a structured way, they have
30 procedures, there are corporate bodies, you know, they're constrained by effectively the legislation that set them up, and if they're not going to get challenged for not behaving properly they've got to go through due process to make decisions, and that is, in my view, right and proper, but it does mean, then, there is no such thing as a small decision.

35 There's a decision or no decision. That, in the end, proved to be a bit of a barrier, and the process failed, effectively. They had taken the first decision to engage in the process, but at the next stage where a formal decision was taken, even although it was only to proceed to what was called test based studies, so
40 there had been no site activities, no boots on the ground, it would have been entirely a paper exercise. Cumbria Council decided that it wanted to withdraw at that stage, and the arrangements that had been put in place were that they effectively had a right of veto.

45 That's one of the things that's been learned from that process, that in an effort

to give the process legitimacy, if you then end up giving some bodies a right of veto there's a real risk that they will exercise it and you put yourself at risk, and it's getting the balance right between having a legitimate process that is taking all of the relevant decision makers and stakeholders along with you without at the same time putting yourself so much at risk, because any one of those bodies can effectively veto it by saying, "We're not going to participate, therefore, it's not a legitimate process, therefore, it stops."

We still haven't got a solution to that. Under the 2014 white paper, the government set up a group called the Community Representation Working Group to advise it on issues about community representation, and that is a question that is still being deliberated by that group. If I can just quickly run through, some of these, again, are more personal views about some of the learning from the 2008 process. One key issue that came out fairly clearly in talking to people and engaging with communities was we need to provide as much information as we can, particularly around geology and safety, up front.

The 2008 process didn't allow for that. It came out during the process, particularly during the case studies phase. That has been taken onboard and we, RWM, are now engaging in a national geological screening exercise to effectively distill down all of the available information on the geology of the UK, excluding Scotland, because Scotland has now decided not to participate in the geological disposal facility sighting process, so we will have that information ready to talk to communities.

We will be able to go along with quality assured, if you like, information that says, "This is what we know about the geology in your area, this is what it means to safety, long-term safety, primarily," and one big advantage of that, I think, is that in terms of the political risk that local politicians will need to take even if they start talking to us we can at least give them some confidence. Although there's quite a long and detailed process to go through, so there's no guarantees, at least there's a fighting chance, or we can talk to them about how likely it is that there actually will be some suitable rocks, suitable geological setting in their area, so that's a key bit of learning that we've taken onboard.

Being clear about roles and responsibilities is clear. There's the whole issue about community representation, who can engage with us, which tier of local authority or tiers have to be involved, which ones should be involved, but also should it be led by us, the sighting process of the developer, or should it be led by national government. The 2008 process, which was very much led by the national government with us providing support, again, subject to confirmation certainly the intent in the 2014 white paper is much more toward the developing process, so there will be effectively a single point of contact and we as the developer can actually start negotiating, discussing and making a deal with communities about what they're actually going to get both in terms of the

facility itself and some of the additional funding that we will be providing.

5 There's a recognition, and there has been since 2008, that some sort of additional funding will be needed to make this project attractive to communities. The 2014 white paper goes further than the 2008 white paper in terms of what sort of funding might be available and when. Some of the feedback we're getting is that it's still not firm enough, or still not generous enough is probably a better way of putting it, so, again, the Community Representation Working Group may well do some more work on that, but also
10 the constraints on spending this money.

15 This is potentially quite a tricky issue. It is public money, it's the tax payer's money, that's the only person who are going to fund this, so you've probably heard the chancellor who is to announce tomorrow the results of the public spending review that he's been conducting. We're expecting - all government departments are expecting their budgets to be fairly significantly challenged. Public funds in the UK are tight, so there certainly will be a challenge on how much money is available to support this process.

20 COMMISSIONER: Mr Ellis - - -

25 MR ELLIS: And that was a (indistinct) issue, I think it's fairly easy to set down a compelling argument for why a community that eventually holds - hosts this facility, a 12 billion pounds development, if you take the headline figure, that employing hundreds of people for up to 100 years, that is going to have a significant impact on economic developments of a community.

COMMISSIONER: Mr Ellis - - -

30 MR ELLIS: That isn't going to happen - yes - - -

MR JACOBI: Can I take - at this point, I wonder whether it might be convenient to go to the slide contained in the "white paper" - - -

35 MR ELLIS: Yes.

40 MR JACOBI: - - - which is an info graphic which I think lays out the process and I was hoping to pick up very quickly, a number of the aspects of that process that is shown in that slide.

MR ELLIS: Certainly.

45 MR JACOBI: I am just first of all interested - we already discussed the national geological screening and the preparing to work with community, so I am just interested that a timeframe has been fixed for around two years to

undertake that process and I am just interested to understand what the logic is for the idea of fixing a time period described in, I guess – couched in somewhat broad terms, in terms of – well, a time target of around two years.

5 MR ELLIS: Well, I think that at the time the “white paper” was published, the view was that doing those activities would take around two years, so it was an estimate of – so the scope of work required, under those three bubbles, balloons whatever you would like to call them, was reasonably well understood at the time of the “white paper”, and the “white paper” describes in a
10 reasonable amount of detail the scope of all of them. And the view was that the screening exercise that the RWM were going to lead on and the other two aspects that Department of Expenditure (indistinct) change it and lead on would take around two years.

15 MR JACOBI: Right. What is the expected - - -

MR ELLIS: But it is already fair to say that is – that was a bit optimistic. The “white paper” was published in June or July 2014. I think our current
20 expectation is July 2014. That we will be doing well to have finished all of those initial actions as they are called, by the end of 2016, so it is nearer to two and a half years.

MR JACOBI: Coming back to the “white paper” refers to the fact, and I think this is at page 42, that during that period of time, the developer would be
25 undertaking activities to explain the science and engineering of geological disposal. I am just interested to understand what it is that RWM has been doing now and in to the future, to explain that science and engineering to communities?

30 MR ELLIS: Okay. Well, because of one of the constraints in the “white paper”, which is actually – comes to an end after the two-year initial action period, is that we are not supposed to be engaging with any particular communities. So what we do have is a programme of the more general
35 awareness raising at a national level and again, when the “white paper” was written it wasn’t very clear what we planned to do and what we are doing is seeking opportunities and actually the national geological screening exercise has provided us with a very good opportunity of getting out there and explaining – sounds a bit grand – to the nation rather than to communities what
40 – the fact that we have got the radioactive waste, what geological disposal is all about, what the process is. But in a way that is trying to raise national level awareness not targeted as specific communities. Now we haven’t embarked on adverts in the national media, whether that is television or print media; we can’t afford it and we didn’t think that was appropriate anyway. It has been much more low key than that and to a large extent it has been focussed on
45 almost briefing potential advocates.

5 So we have been working with local authorities in the background, through the local government association for example, to brief them. We have been working with professional bodies and academic bodies to brief them but we have also been using some public events as (indistinct) geological screening; so explain what we are all about.

10 MR JACOBI: You have spoken previously of the barrier to local communities or local community organisations which have processes being able to interact with RWM in the process and I am just interested, have you begun to work to overcome those, or is that something that cannot be done given the pre-emption rules in the “white paper”?

15 MR ELLIS: Well, we can’t do it – we can’t overcome those barriers with specific communities but we can – and the local government association provides a very good medium for doing that. They actually have a special interest group as part of it called NEWLI Nuclear Waste – it’s not just nuclear waste, I can’t remember what it’s called now but it’s effectively an advisory forum within the local government association that advises local authorities on all things nuclear, so it deals with nuclear new builds, nuclear waste and we found that a very – by talking to them, and they have a – it is only one or two people but they have a core staff, that is a useful conduit for us to get our messages in to local government at the officer level. It tends to be officers more than councillors, although councillors do get involved. To try and, if you like, get to a position where at the end of this two years, where we then do move in to a siting process that is us as the developer seeking local authorities to engage with us, but it won’t come as a complete surprise. And in particular, it won’t come as a complete surprise to those non-nuclear communities that don’t really know what is happening in the nuclear area.

30 MR JACOBI: In comparison to what occurred under the 2008 process, is it proposed that there will be – after this two-year period – a much more active process of seeking volunteers?

35 MR ELLIS: Well, that is an interesting question. The government policy is still volunteerism, which is communities that volunteer to engage with us. What we have said we are going to do and we have actually built it in to the objectives of the national geological screening, is to conduct the screening exercise in a way that the outputs will enable us to, what we say, call, prioritise our activities. So it will actually give us an opportunity to actually say, look – to an area and there is still some considerations as to how we do it, not we’ve done this screening and that is really showing that your area, Mr X, Mrs X, shows a lot of potential. So it has given us, if you like, a sort of way in. So it is almost we have done this screening exercise, it is showing us a really good geology in your area, is this something that you would like to talk to us about?

5 So I think we are seeing, particularly the screening as a tool, that will help us, based on the background work we are doing now in raising awareness, in being able to initiate those discussions and at least take the first small step ourselves, rather than just under the old process it was very clear, the first step had to be taken by communities. It was actually - - -

10 MR JACOBI: Is that the – coming to the question of the community working group that is referred to in the “white paper”, is it expected to be an output of that process that there will be some assistance offered to RWM as to what the community is that will need to define consent or veto for the purpose of a project?

15 MR ELLIS: Yes. That is one of their work (indistinct) is the tricky question which never really got satisfactorily answered in West Cumbria is what – very easy to talk about community led process and you bandy the word community about, what do we actually mean by community? If we are engaging with a community, what makes that engagement legitimate? Who is entitled to speak on behalf of the community? If anyone has a right of veto on behalf of the community, who is that? And how should that be done? It is, yes. I think we have a number of views on how that might work but that is something that the community representation working group is considering. I think it is a very tricky question. As part of their process, they are now planning on publishing some proposals including proposed answers to that very question in probably late spring or early summer next year and their current intention is to consult on some sort of initial views. But you put your finger on a really tricky question and I think if you are going to have a process, as part of the process rather than a decision at the end, that is only legitimate if communities are involved. How you actually define community and how you define legitimacy are really tricky questions.

30 MR JACOBI: Is there a possibility that different parts of the United Kingdom might give rise to different definitions of community for the purposes of the process?

35 MR ELLIS: Well, I guess there is. It depends on how prescriptive the community representation working group in its advice to government is going to be. But yes, different bodies in different communities could, at least at the early stages, could come forward. I think a key question is before the process gets too far, it's a bit difficult to see it proceeding without some involvement from the local planning authority. We have talked about the need for development consent eventually and again, slightly interesting thing is in West Cumbria which has got two tiers of local authority, the local planning authority for most planning issues, if I want an extension on the back of my house it is the district council but waste management, including nuclear waste management, the planning authority is the county council; so all things to do

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with nuclear waste is dealt with by Cumbria. Other areas have only one tier of local authority so that issue goes away.

5 There was a big debate last time in West Cumbria about the role of parish
councils or town councils, which are a lower tier, which actually have very
little formal powers but are supposed to be consulted and involved. They
wanted a right of veto; they weren't given it last time. I think they will be
lobbying for it again. But it is not impossible that certainly at the early stages,
10 different groups come forward. Most of the UK now, if not all of it, is covered
by groups called Local Enterprise Partnerships, which are effectively
partnerships between local authorities and local businesses that are charged
with socio-economic developments. So we do anticipate that in some areas,
the initial running might be taken by local enterprise partnership rather than the
15 local authority but there is significant local authority input and activity in that
anyway.

MR JACOBI: The slides make reference to certain funding being made
available to communities. I am just interested to understand what the bounds
are that are likely to be placed around the provision of public monies for the
20 purposes of community engagement? That is really, what is that money going
to the community to be used for?

MR ELLIS: Okay. There is two types of funding, there is funding to support
community engagements and then there is community investment, or additional
25 funding. We got as far in West Cumbria as providing engagement from them
and that was fairly tightly defined, as it is effectively covering the costs of
people in engaging with us. So for example, the cost of local authority officers
in attending meetings was legitimate. If the local authority wanted to have a
meeting in public, so to consult with its constituents then the costs of holding
30 that meeting both in terms of the hiring of venues and providing teas and
coffees, even providing facilitators and again, the time of officers and
reimbursing the expenses of councillors and their fees. So all of that, but it was
all very much on a sort of almost – you have got to incur legitimate costs and at
the time it was government under the new process, it would be us, we will
35 reimburse you for that cost, so you are not out of pocket for engaging with us
but you are not going to make any money either. Those are basically the rules.

There is then the additional investment - - -

40 MR JACOBI: Sorry, is that expected to change in the new process, or is there
going to be a – or is there likely to be different arrangement whereby we have
heard for example of options of having community partnerships where the
partnership can define the sorts of activities that the partnership might want to
engage in.

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MR ELLIS: Yes, that – not for the engagement funding because I think that is to facilitate engagement but there is then the additional investment funding and that is the area where the 2014 “white paper” Department of Energy and Climate Change, did a sterling job in prising these commitments out of treasury
5 that they allowed us to make and again, the intention is that we as the developer will manage this. The constraints on this are not defined and again, it is one of the topics for the community representation working group. But the intention is that once communities start – and I can’t – a serious commitment, so it is – you can sort of – it is tempting to sort of make analogies with personal
10 relationships but when you are sort of – you are going steady sort of thing. You are courting – you are walking out together, whatever the terminology. Not as far as getting engaged yet but you are moving towards it. But about up to a million pounds a year will be available. There is some experience of this type of funding in West Cumbria, for low level waste depository which
15 disposes of low-level waste has set up a thing called the Cumbria Community Fund and I think it puts in about a million pounds a year. I can’t quite remember what the funding structure – well, there was enough funds up front investment of five million and then it is one million a year after that for as long as the facility is operating.

20 So that, if it happens, is fairly tightly constrained because it is done under the auspices of the Nuclear Decommissioning Authority’s socio-economic obligation which is one of the obligations put on the NDA under the Act that set it up. So NDA has a socio-economic policy and under that policy it can
25 spend a certain amount of money but that is fairly tightly constrained and that has been one of the issues with the Cumbrian Community Fund is that the constraints have meant that it hasn’t been as flexible as the local community would want. So I think some of the lessons for that, that is being fed in to the community representation working group is how can we have flexibility to
30 have this additional funding that is not just covering the costs of the community engaging with us; so it’s if you like, cost neutral, but it’s actually making it worth their while. We are spending money in the community on things that is already giving them benefit and if you like, for the local politicians, helping to deal with the negatives. For them, the risk to them as
35 politicians of even talking about these type of toxic product, that they can actually say well even by talking we have got a million pounds that we wouldn’t otherwise have got, so I don’t know, that community centre that would otherwise have had to close, has stayed open.

40 Again, there is a real problem around it not being displacing other things that local authorities are supposed to do with their funds. They are getting their funding very significantly challenged as well, so a lot of their discretionary spending is being challenged. So there is potentially a window opening up of
45 spending that historically local authorities would have done. So within their (indistinct) they are entitled to do it but they don’t have to do it, so it’s

discretionary. But effectively they have just not been given enough money now to do hardly any discretionary spending. So giving them some money under these arrangements where they can start doing some discretionary funding, again may well be a way forward.

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MR JACOBI: Yes.

MR ELLIS: And then the intention is that the one million pound initially and then when we move forward and start doing more serious investigations in an area, that can go up to two and a half million.

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MR JACOBI: Okay. Can I pick up the "white paper" makes reference to their being provision for access to independent expert reviews or independent scientific advice. I am just interested to understand the extent to which that was a feature in 2008?

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MR ELLIS: It was. It was part of the learning in 2008 that we got on occasions to sort of impasses where we as the developer would say - and it was often around safety and long-term safety - you know, "The position is this," and we'd explain it and we'd produce all the evidence and we'd produce our experts, but other people would come up with their evidence and their experts (indistinct) we just ended up sort of locking heads on it. So the intention was, in the white papers, that government will set up and facilitate this group that the academic societies, through one of their umbrella organisations, has agreed to facilitate and make happen.

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Hopefully they will be seen as genuinely independent, disinterested, I think - if that's the right word - in having no interest in the outcome, just being interested in the truth of the advice, where either us or the community can go along and say, Well, look, there's group A saying this, there's group B saying this. What is the truth of the matter as best you can" - or if actually both sides are right and it's just that, you know, there's so much uncertainty that you're sort of overlapping now in certain - what is the position?

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MR JACOBI: Is there any provision in the funding that's been made available for the community to itself go and engage its own scientific or technical advisor to, in essence, help it through the process of thinking about the expert information that's being provided and to allow it to formulate its own questions at a scientific or technical level?

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MR ELLIS: I think we would expect that the community would want that. I have to say, I was always slightly surprised that West Cumbria didn't come forward and say it wanted it, and we would see that as being part of their legitimate engagement expenses. So that would be part of the engagement funding. So personally, I was always slightly surprised that West Cambria

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5 didn't say we - and I say they didn't. They did in one narrow area. They actually said, "We need some independent advice on geology," and they did appoint an independent consultant, who was very good and very effective actually in explaining local geology, and his costs were paid for as part of the engagement funding.

10 There's some very good experience from, you know, the - I'm not sure if they disbanded it now, but the Waste Isolation Pilot Plant project in Carlsbad in the United States, certainly for a long time had an independent site pick panel. I think the University of New Mexico was involved in it. And that was certainly very effective in signing up and sticking with both the WIPP people and the local community representation in providing the local community with confidence. So personally, I think we will be encouraging local communities to have that, and that is different from this independent - you know, which is 15 there almost to arbitrate, and it may be that, you know, if the community's independent panel says one thing and we end up saying another, this sort of national independent group may be there to provide some sort of arbitration in the middle.

20 MR JACOBI: Can I come to - and there's specific reference in the white paper to there being limits around the inventory that will be disposed of within the GDF, and I think we've got a slide that might pick up what I understood was the inventory for disposal information. I'm wondering whether, first of all, whether you could take us through, in very broad terms, the classes of waste 25 that are proposed to be addressed.

MR ELLIS: Yes, and this actually did end up being a bit of an issue in West Cumbria, so I'll explain that sort of issue first. The Sellafield site is very much based on reprocessing spent fuel. That is their core business. So there was a 30 strong (indistinct) particularly from the trade unions in the area, which had a strong influence on the local authority, particularly in Copeland, that, "Yes, we're very happy to talk about the geological disposal facility for dealing with the waste produced, but we are never going to see spent fuel as a waste. It's a raw material that actually feeds into our factory."

35 So one of the issues in West Cambria was who controls the inventory, and government were fairly firm that it was never fully resolved, that, you know, the inventory isn't for negotiation, and again, that's been sort of carried forward into the 2014 white paper where government has attempted to be fairly firm 40 about the inventory, but also to recognise the uncertainties. So I'll just run quickly through the sort of classes of waste that are within the inventory, and there is a distinction made between what is already declared waste, on the basis that everyone is agreed there's no further use for it, and materials for which there may be a future use, but equally, may be declared waste. So on a prudent 45 basis, we ought to be planning on disposing of it as waste.

So the first part of waste is vitrified high level waste, which is the process of the processing, basically the fission product extracted from the fuel during reprocessing, and Sellafield has been reprocessing for a long time, has
5 accumulated quite a lot of high level waste, certainly in terms of activity, not a huge volume of it, and that's been vitrified now. It has been for a number of years, turned into these solid glass rocks, and that's one of the waste streams.

Then there's broad category that we call intermediate level waste, which is
10 effectively stuff that - all radioactive material generates heat, but the heat generating rate into medium level waste is such - it's not a big consideration either during storage or disposal, because the radioactivity just isn't that concentrated. So there's a significant volume of intermediate level waste in the
15 existing nuclear sites, including Sellafield, but not only Sellafield, some from the defence industry, some from medical activities, and comparatively small amounts, but we include them for completeness, from sort of industrial activity, mainly (indistinct) and educational activities.

MR JACOBI: Mr Ellis, I was hoping to take you from the waste to deal with
20 some of the disposal concepts that are linked to those wastes. That was the reason I wanted to pick up the wastes. I'm looking at the next slide.

MR ELLIS: Okay. Before (indistinct) we do split our waste into two broad
25 categories: those that generate significant amounts of heat, and therefore, that needs to be taken into account in planning their disposal; and effectively, those that don't, which is the intermediate level waste and the low level waste, sort of got three different host rocks and those two waste categories sort of in a matrix. So what we've done, because we haven't got a site, and as part of our generic, in other words, non-site-specific, work aimed at, well, a number of
30 objectives, but two key objectives are to provide information to communities, but also to other stakeholders, about what a geological disposal facility might look like for the range of UK waste in the range of geological settings that are encountered in the UK and could be successfully developed in the UK.

35 So we split the geological settings into three broad classes: high strength rock to the lower sedimentary rocks or clays and evaporites, which effectively is halite salt in practice, and then we've taken the two categories of waste and then what we've done is selected concepts which are sort of a combination of the waste and the geology and the outline designs that would be suitable for
40 that category of waste in that type of rock in the UK, and what try to do is select concepts that have been developed by other people, so that we're not doing all this work ourselves, and sought to select concepts that are reasonably well advanced, because that gives them credibility, but actually one of the selection criteria is how much information is readily available, and by readily,
45 that actually includes available in English, and really that clicks in most, rather

5 interestingly, in the spent fuel concept in clay where we've chosen the Swiss concept. A lot of people ask us why we haven't chosen the French concept, which isn't anything further advanced, and the real answer is the French publish very little in English and the Swiss do, so we actually find it easier to use the Swiss information, and it's similar.

10 They're both perfectly good concepts and actually they're very similar steel canisters, horizontal displacement with bentonite back fill, so there's isn't a huge amount between them anyway. Then, as you can see, we've chosen different concepts, and based on those we can then develop UK specific designs tailored to our inventory and then present information about the likely footprint, which is a key issue that people are interested in, how big is this thing going to be underground.

15 We also produce cost information which actually feeds into the NDA because most of it, certainly, for the legacy waste, the costs of this falls to the public purse, as we discussed earlier, and the NDA has to account for that as part of its nuclear liabilities. We've actually provided a lot of information about the cost of disposing of new build waste, because there's been discussions between
20 potential new build developers and government about how that waste is going to be managed, and effectively a deal has been done between governments and the new build operators.

25 There's two aspects of the deal. First of all, the government is insisting that new build operators set aside adequate funds during operations to deal with their waste, both spent fuel and decommissioning waste, but also part of the deal, because the government is developing the geological disposal facility, is that government will take title to the waste at an appropriate time and effectively pick up the waste and the funding that goes with it, so they're both
30 interested in not only the costs of geological disposal for the new build waste but the risks and uncertainties with it.

35 The government's priority has been to make absolutely certain that it doesn't carry any of the financial risks associated with new build waste, so it has successfully passed on all of those risks to the potential developers.

40 MR JACOBI: We've talked about two processes that weren't successful in sighting a facility and the commencement referred, and I'm just interested to understand what you think the key lessons are that have emerged from perhaps the two failed processes and the process that's been running today.

45 MR ELLIS: I think the key lessons are that we need community support, and this is not just our experience but it's also international experience, and the real reason for the way I rationalise that is the nature of this project is that it is vulnerable to political derailment for quite a long time. A lot of infrastructure

projects, when you think about them, they go through a period when they're vulnerable, but it's comparatively short (indistinct) and electoral cycles, so, you know (indistinct) up to five years.

5 Once you're through that, you're really committed, but it doesn't mean you can't stop them. Once you've actually placed all your contacts and you've got 1000 people working on site on your new nuclear power station, stopping it is actually quite a big deal. Getting it started is still a big deal, but the period when you're at risk, political risk, is comparatively short. These projects, 10 because you've got to go through quite a long period of actually investigating sites, actually satisfying yourself that you do understand enough about the geology, you're at risk for a very long time.

15 Even when the initial underground works, it's not a dead certainty that the job is going to be suitable when you get there, so, in my view, one of the reasons why these things only work in the end is when you've got community support. If you haven't got that local political support effectively underpinned by the community support, one way or the other it will be disrupted and it will get stopped, so the real challenge is how you get that. I think that is achievable, 20 but the other challenge is the words "nuclear" and "waste" both have negative connotations.

25 When you put the two together, everyone's initial reaction is to run a mile, and actually getting people to understand, "Okay, we are dealing with nuclear waste, but it is deep underground, they're highly engineered facilities, it really is going to be safe," those are messages we can get across, but it takes time to get them across. Just to give a bit of personal experience from one of the few meetings I went to in Cumbria when the 2008 process was disintegrating, there was sort of a flurry of local community meetings all organised by the groups of 30 the lobbying, the decision makers and county council to vote against.

35 There was a number of public meetings, and, to be fair to them, they did invite me as a representative of the developer to go along and gave me a speaking slot. They were being balanced, from that point of view, but the focus was that they wanted to demonstrate the communities were against this thing. I just ended up chatting to a lady who actually was a lawyer, didn't live in Cumbria, had a second home there and she was interested in the impacts on the property values and all the rest of it, and she said, "Surely, this is a bad thing, we should run a mile, everyone should be against it." 40

45 In the period of talking to her just for a about 20 minutes, I got her to a position where she could say, "Actually, okay, you haven't convinced me this is a good thing, but you've actually shown me that it's worth talking about." Now, that's only a small example, and that's only one individual, but you can, I think, get people over time to a position where they think it's worth talking about and

then moving forward, but you've got to overcome the sort of initial negative. It's not even irrational, if someone says, "I want to talk to you about the hosting of a geological disposal facility for nuclear waste in your area." What is your initial reaction?

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To be blunt, the only sensible initial reaction is, "I don't want to talk to you about it." I think we can overcome that, but actually overcoming it is quite difficult, and we need a process that is non-threatening and lets us engage with people and lets people get used to the idea. I'm hopeful that with the output from the national geological screening, and enough flexibility in the process form the output from the Community Representation Working Group, that we will be in a position where we can start talking to potential communities in a non-threatening way, but also without actually saying, "You've got to make a commitment to talk to us otherwise the process fails."

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I think if we start asking for that commitment too early we're going to get a negative response, even as West Cumbria shown, from a nuclear savvy community, but for other communities I think it's just almost an impossible ask.

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COMMISSIONER: Mr Ellis, thank you very much for joining us today and thank you for your very clear evidence.

MR ELLIS: It's my pleasure. Obviously, if any queries arising during your further considerations I would be very happy to respond to any emails or requests for further information.

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COMMISSIONER: We appreciate that, thank you. We will adjourn, now, until Wednesday 900.

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**MATTER ADJOURNED AT 7.59 AM UNTIL
WEDNESDAY, 25 NOVEMBER 2015**