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START OF TRANSCRIPT

Nick Gardham: Good afternoon and welcome to today's session, our first webinar that we're hosting as part of the Copeland Working Group. We'll start by just introducing myself, so you know a little bit about who I am. I'm Nick Gardham, I'm the Independent Facilitator of the Copeland GDF Working Group, and my role is to support the development of the working group, and the engagement of the community, to start to look at and identify some of the questions that the community may have.

This webinar is going to start this process. We're going to now by looking at what actually is the Copeland Working Group all about, and what is this process about? We've heard about this things before. We've heard about the development of geological disposal in Copeland, so we're going to start asking ourselves in this particular webinar, what's different this time? What is it that makes this different? We're going to hear from different speakers.

Before we do, I'm going to ask if we can have look at the housekeeping for today's session, just so that we can start to be clear with everyone what's happening. To be clear, this session is being recorded. We are recording this session, and that is, as it says, to produce a transcript. There will be a transcript shared with everybody at the end of this session so everyone knows what was said, and for those that can't join us, they could also receive a copy.

Questions will be submitted throughout it. They will be anonymised, and hopefully we'll be able to pick up on some of that. I also will be asking questions of the panellists, who we'll

introduce later, and I have some questions that I spoke to some people beforehand who wanted a conversation, I've spoken to a few people and got a few questions already for our panellists.

As this session is recorded, just to be very clear, you are granting RWM permission for your questions to be recorded, and that, as I say, is for the transcript that will be shared. If you chose to add your name to the questions or comments, it will also appear to everybody else who is here, and as I said, just to reiterate, the transcript will be available via the Copeland website, and that's just there at the bottom, as well as the privacy, and data protection and GDPR links. Hopefully that is all okay, and we're all fine with that.

Let's jump in. We are tight on time, we've only an hour for today's session, so we don't want to spend too long hearing from me, we want to hear from the people who are the panellists, and also get time for the question and answer. I'm doing the welcome and introduction session, and after that I will hand over the other speakers who will take us through the four presentations, as I say, the why, the what, and answering this question about the search area, which people may have seen some news going out on Friday of last week.

We're then going to move into a Q&A session where, as I say, we have some questions, and there's an opportunity as well, hopefully that we'll be able to engage further conversation around that, and then I will bring this to a close and share with people what's happening after this session, and hopefully for subsequent webinars as well. I'm on time, and hopefully I'm going to keep us moving along quite quickly. I'm going to move over first to Gillian. Gillian, are you with us?

Gillian Johnston: I am. Good afternoon. Good afternoon everybody. I'm Gillian Johnston, I'm the Community Engagement Manager for RWM and the Copeland Working Group. I'm also a lifelong Copeland resident, and I have an enormous sense of pride in the place I call home. Next slide please.

Before proceeding further, I'd like to introduce you to Mark Cullinan the Copeland Working Group Independent Chair. Mark will just say a few words about himself and his role as chair.

Mark Cullinan: Thanks Gillian. I'm independent as I have no links with the nuclear industry. I have a couple of other roles as well. My current roles are as the Chair of Impact Housing in Cumbria, and also as the Senior Independent Director at Blackpool Hospital Trust, which I think reinforces my independence credentials. In addition, as a former Lancaster Council Chief Executive, I do have many years' experience of dealing with economic, environmental and social policies, which I think is useful for the tasks undertaken by the working group. Thank you.

Gillian Johnston: Thanks Mark. Next slide please. Some of you may not know who the other Copeland Working Group members are, so I'd like to take you through this. We have our Independent Facilitator, who you've all just met as he's leading the session today. Nick supports the community engagement process, ensuring that discussions progress in an informative and a constructive manner. We then have our local authority member, Councillor David Moore. David is supported by two borough council officers, and the borough council is also an interested party in the working group.

An interested party is an organisation or an individual who raised an interest in the siting process with RWM. Our other interested parties are [Dave Faulkner], private resident, Gary Bullivant representing Irton Hall, and Andy Ross and Mark Walker, representing Genr8 North. We then also have Cumbria Association of Local Councils, or CALC, and they're represented by Andy Pratt and Chris Shaw, and they represent all parish and town councils across Copeland. We then have the support form RWM covering siting, communications and community engagement. Next slide please.

In this slide, I'd like to talk a little about the working with communities policy, and what the working group are doing that aligns to this. 6.18 is the early part of the process. It's about factfinding, gathering, and providing information the community.

Engaging during a global pandemic isn't easy. However, despite this, since formation in November, we've launched a virtual exhibition that's had over half a million views, we've launched the Copeland GDF Working Group Website, and on here you can access information and documents, such as the working group minutes and the initial evaluation reports.

We've issued five newsletters, and we've also launched three social medial channels. We've had a number of articles in the local press, including a series of print adverts.

Moving onto point 6.25 on the slide, as it identifies the search area, the working group will start to understand the local area and any issues or questions the community within it might have. What have we been doing in relation to this? The working group has three workstreams within the working group, looking at engaging with the community, identifying a search area or areas, and identifying members for a community partnership, which is a larger group of people, reflective of the community, that would take over from the working group and consider the possibilities of hosting a GDF in more detail.

As the search area or areas are defined, we will work to start to understand the local issues and questions, which will aid initial conversations to be explored by a community partnership. With this in mind, over the coming months we have a further three webinars planned, and hopefully in July, when COVID restrictions are lifted, a walk-through exhibition roadshow. The exhibition roadshow will be located a week at a time in north, mid and south Copeland.

Moving onto my last point in policy, which is 6.68, and this relates to community investment funding. If the working group progresses to a community partnership, this is where the funding of up to £1 million per year will become available. This is something that we can talk about in a bit more detail in a future webinar. I'd now like to hand over to my colleague Bruce Cairns.

Bruce Cairns: Great, thanks Gillian. I'll just make sure I'm unmuted there. I've got a lovely image up on the screen there of me before I had my

lockdown haircut, but I've got a little slot just to talk about some of the background, why is the UK pursuing geological disposal? Why is this something that we need, and then Cherry is going to come along behind me and talk a little bit about the what: what is it, how does it work? If we can have the first slide.

I'm going to stick to 10 minutes hopefully. I may even steal a little bit of time back, because I've got five slides and I'm going to keep it really high level, and we can get into more detail as we go on further through this.

This is probably not a huge surprise for people in this part of the country, but nuclear technology has been operating in the UK on an industrial scale for more than 60 years, in electricity generation, in medical applications, defence, and other research, development and industrial activities. What this means is, we've generated waste on an industrial scale as well, which has to be managed safely for now, and also for the longer the term. If we skip onto the next slide.

This is just making a really simple point that, in terms of the radioactive waste from these industries, about 90 per cent of it already has disposal routes available, so for the long term, there are disposal options that are there, they are functioning. Many people in Copeland in particular would be familiar with the low level waste depository in Drigg in West Cumbria, which is a major facility for low level waste, and there are other facilities available around the country, which also deal with those types of waste as well.

What we still have to deal with is the 10 per cent that's remaining which is the higher activity waste, which doesn't currently have a disposal route available in the UK. Can we skip on please? Thank you.

The UK is currently storing this material, what's called higher activity waste in temporary facilities around the country, and this map here is showing where these are. You can see, there's quite scatter there around England, Wales, and the defence sites in Scotland, which are also part of our program around geological

disposal. Now, this material is being kept safe in surface storage, but these are interim stores. They are temporary facilities, they're not a long term solution. Whilst these are really important and there's a lot of effort goes in to maintaining these and making sure they're safe, and that they continue to be safe, they're not a permanent solution; they're not for the long term.

We still need to put in place that long term route for disposal of these wastes as well. Sellafield, which is of course the nearest site to people in Copeland, is by far and away the biggest of these sites, which also means that it will have, by far and away, the largest volume of waste, but these wastes are in storage around all of these sites that are shown on the map. If we have the next slide up, please.

The question then is, we've got interim storage, we can keep this material safe for now, but what are we going to do with it in the long term? The UK has been looking at this for many years, and we can go back to the Royal Commission in the 1970s, which recommended that there needed to be a long term safe and sustainable solution in place if there was going to be any more nuclear development. There were earlier projects in the '80s and in the '90s, to look at particularly facilities for particular types of the waste, but these failed, and by the early 2000s, the government then had a consultation on how are we going to answer this question?

Not on where are we going to put waste, or even what type of facility, but there was a consultation on how shall we make a decision on what to do with this material for the long term, and that led to the establishment of an independent committee called CoRWM, Committee on Radioactive Waste Management. They spent three years engaging with the public and groups of experts, stakeholders in the UK, in industry, in NGOs, and academia, and internationally as well, and they considered every available option. They had a long list of options, which included everything from firring waste into space, to putting waste in the edge of tectonic

plates in subduction zones, and various combinations of storage and geological disposal.

The concluded by 2006 that the best available option for this waste was geological disposal, coupled with the continuing focus on safe interim storage in the meantime, and continuing R&D as well. This is in line with international bodies around the world. Bodies like the Nuclear Energy Agency, the International Atomic Energy Agency, the EU and others, and national programs in countries all around the world in countries where they have a major nuclear legacy as we do, so Canadians, the Americans, the Japanese, French, Finns, Swedes et cetera, they are all developing, and in some cases have already developed geological disposal facilities for this type of waste.

I think my final slide is going to segue into Cherry really, just a little bit about why: why have they selected geological disposal? What's the purpose in this. Cherry will say more about how it works, but the fundamentals and the conclusions that were reached by that committee, and by others, are about removing this waste from the surface environment, where over these timescales, over longer timescales, it will be vulnerable to environmental change, to climate change, to societal change as well. There was a perceived risk about being able to guarantee that there will always be people there to protect it in future, and make the same efforts that we make today to keep this material safe.

The geological option allows us to make use of the geological environment, where we can understand the processes that happen on a much, much longer timescale. We can use engineering to isolate and contain waste, but work with that natural geological environment to take advantage of the longer term protection that that can give us, to make sure the material is isolated from the surface for the time it takes for the radioactivity to decay naturally, which it will do. So, it's not there forever, it's not a hazard forever, but on human timescales it is quite a long time for some of this material to decay. We're talking tens of thousands, hundreds of

thousands of years. That's really why the geological element becomes important to us.

At that point, I'll hand over to Cherry.

Cherry Tweed: Thank you Bruce. Perhaps I can first introduce myself, I am Cherry Tweed, I am the Chief Scientific Advisor at RWM. What I am going to do this morning is just tell you a little bit more about what will a GDF look like. I'll just wait for a moment for the slides to catch up. There we are, how does geological disposal work? Bruce has already mentioned those key terms of isolating the waste from the surface environment, and containing it: keeping it there, whilst the process of natural radioactive decay will render it so it will no longer cause harm.

How do we do that? We do it with a series of protective barriers. The first barrier is the solid form of the waste itself. Any waste that isn't solid will be made solid, either by making it into a glass, and many of you may well have heard of the vitrification plant at Sellafield where that glass is made. Or perhaps, mixed with cement in a slurry to make a solid waste. That waste is then placed in a durable container, perhaps a long lasting metal, such as stainless stell or copper. Perhaps concrete.

That filled waste container itself is protected by a buffer or a backfill made of clay, or cement. Then finally, all of that engineering is placed deep underground, some hundreds of metre below the surface, and that hundreds of metres of solid rock provides the final barrier. The materials that we choose for the engineered barriers are tailored to compliment the properties of the waste on the inside and the rock on the outside.

If we move onto the next slide, then you'll see a schematic of a GDP, a geological disposal facility. As you can see in the image, it has two parts: a surface, and an underground part, and also a way to connect the two together, which may be in the form of a shaft, or a large lift, or an inclined, that we'll call a drift. In that diagram, you can see that the underground part lies immediately below the surface one. That doesn't need to be the case. The underground and the surface can be offset by several kilometres. The surface

part has to be on land, but if you're on a coastal location, there is the possibility that the underground part could be displaced slightly, just under the shore, nearshore.

As is clear from the picture, most of the GDF will be underground, deep underground, somewhere between 200 and 1000 metres. Just for reference, and I know it's quite a long time since many of us have left our homes, but the deepest part of the London Underground is only about 60 metres below the surface, so we are really talking about a long way down.

You can also see that the underground facility, which is the majority of the facility, is actually split itself into two main parts. On the right of the image, closest to you, you can see a series of vaults, where we'll stack the intermediate level waste, what we call low heat generating waste. The part on the left, which is the larger part of the underground footprint is a series of tunnels with deposition holes, where we will place the most radioactive waste. If we move onto the next slide, we can start to zoom in, first of all, on the surface facility.

The surface facility for a GDF is not very remarkable. It looks a bit like a secure industrial estate, or perhaps closest to something a bit like the Channel Tunnel. Its total surface area is something about a square kilometre, and the layout and the actual style of the buildings are tailored to fit the local environment. Essentially, it's main purpose is as a materials transfer facility: materials come in, are transferred to special vehicles, and are taken underground. Then, we've got all the associated facilities to do with making that happen, and you can see the rail sidings, the lorry trailer park, the maintenance facilities, the ventilation shafts, and some of the admin buildings.

The diagram that you can see here has the facility on a greenfield site, but it doesn’t need to be on a greenfield site. It could possibly be a repurposes industrial facility. For example, if you were to look on the website of our sister organisation in Switzerland, you can see their plans for the surface facilities, and there are buildings

right up to the perimeter fence. Now, let's move on to look at the underground.

This is the underground for the intermediate level waste, and if any of you have had the opportunity to visit the stores on the Sellafield site, you will see that when the facility is operational and receiving the waste, that the inside of these vaults looks very much like some of the newer stores at Sellafield. The main difference is that in a GDF, the surrounding walls are the solid rock. When all the waste has been put in place, then that space around the containers will be filled with a cement-type material, so that waste is locked away permanently.

If we move on to the next slide, then you get an image of how we plan to dispose of the most hazardous waste. This is the waste which is so radioactive that it generates significant heat, and that heat has to be managed by spreading the waste out in the underground environment. These wastes will be surrounded by containers which are extremely thick-walled. The walls will be several centimetres thick. We haven't chosen the actual material yet, because we haven't got the final environment.

Examples that have been used overseas are copper, like the browny coloured containers in the left hand side, or perhaps the cast iron, as you can see in the middle, depending on the environment. The containers may be placed vertically or horizontally, but in both cases, you can see that the containers will be protected in their disposal location by a type of clay; those browny coloured bricks. We move onto the final slide in my presentation.

I just wanted to make the point that the UK is not alone in implementing geological disposal for the waste of this type. Countries all around the world are planning similar disposal facilities, and the UK isn't even in the lead. Finland, Sweden, France, Switzerland and Canada are all ahead of us in their implementation plans, and we learn a lot from working collaboratively with our sister organisations to share experiences. If you want to find out more about geological disposal, or about the

progress that those countries are making, they all have excellent websites where you can find out more about their plans.

With that, I'll pass on again. Thank you.

Steve Reece: Thank you Cherry, if we could go to the next slide please. Good afternoon everybody, Steve Reece, I'm Head of Siting at RWM. I'm sure I've probably met a number of people who are on the webinar today, but those that don't know me, I'm a mining engineer by profession, I've spent most of my working life in mine operations as a mine manager, but I guess that's overlapped over the last 20 years or so with working in geological disposal, either directly with RWM, or on other geological disposal projects around the world. It's a please to be here this afternoon.

I'm going to talk to you specifically about an activity that the working group is going to be embarking upon in the not too distant future, that's identifying a search area. Just before I do that, I just wanted to dwell a little bit, and Nick, our facilitator was talking about things that may be different this time around. This image if from the working with communities policy, Gillian, in the earlier session was talking about some specific aspects, and quoted some of the paragraphs, it's actually very…

[Interruption]

Steve Reece: …follow a combination of engaging and technical work. We've referred earlier to the interested parties, we've now formed the working group in Copeland, and we're going to embark upon the search area. I think on the big reflections for me is that this process is very much designed to have a gradual progressions, and it's to allow us to move forward at a pace that people are comfortable, and to answer questions as we go, to make sure that the knowledge builds.

A couple of other things I would call out in terms of things that are different this time, you'll see in the sort of brown, earth coloured, geological coloured band at the bottom, something called the right of withdrawal and the test of public support. They are fundamentally different this time, in that nobody's asking anybody

to make a premature commitment to the process here, and there's this ultimate consent of a test of public support. I'm sure we'll go into those in more detail in future webinars. I'm going to go to my technical topic, which I've been asked to speak about today, which is the search area. If we could go to the next slide please.

Where are we starting? My two slides are really very much more focussed on the Copeland area, and a little bit of this is a bit technical, but it is important that everybody realises what's happening. We have something called an area for consideration, it's almost the starting point, and it arose from the discussions that we had with our interested parties prior to launching the working group. You will see from the map that on the onshore area is the whole of the borough of Copland, but another significant difference this time is that it excludes the Lake District National Park, so that is excluded from consideration from the get-go.

A subpoint to that is, that little yellow area to the south of Copeland recognising the discussions and considerations that are ongoing about extending the national park boundary. Clearly, if that is ultimately confirmed, that area of Copeland was also be excluded from any consideration.

The third point on the list is a very signification one, and when I talk to people, I think this is a significant point of difference from what's happened previously. I was involved in the MRWS process, the previous siting process, and one very, very significant thing, and I think the map makes this point very clearly, is that the area for consideration includes the inshore area, which is over 22 kilometres from the coastline, so you can see it's a very significant piece of, if I say geology, deep below the sea bed, which wasn't really in consideration last time. I would point that out as a significant difference.

In terms of the Copeland Working Group, one of the tasks for the working group is to identify a search area, or search areas, because there can certainly be more than one that will emerge from the conversation. What is a search area? Basically, it's the area that RWM, as the developer of the GDF has the remit to be

able to identify potentially suitable sites for a GDF. It becomes our starting point. Defining the boundaries of that search area is important, and I'll explain how it's defined in a second.

It's important because it allows us to move onto the next phase of that progression that we showed on the previous slide, which is about identifying membership of the community partnership. It's significant technically, but it's also significant in terms of engagement, and building that engagement with the community. If I go to the next slide please.

How are we going to do this? As I said on the previous slide, the search area or areas are going to be derived from that initial area for consideration. Now, the government policy requires that we define those search areas using the electoral ward boundary, so the Copeland borough electoral ward boundary. That's quite important, that's how the lines on the plan, or the lines on the map will be drawn. Basically, for the onshore area, it includes all of the electoral wards that RWM would be able to consider whether there may be potential sites.

For those area that are in the inshore, deep under the seabed, although that is in consideration for the belowground element of the GDF that Cherry talked about, the definition of the search area constrains it just to the area on land, so maybe more appropriate for the surface infrastructure, the transporting infrastructure, the connections from the surface to the belowground element. It's a little bit of a technicality, and worth thinking about that.

What is important also to say, is that although the working group will undertake its task and identify those search areas, they can be refined, and absolutely we expect them to be refined overtime. It's not just as if we're going to draw a line on the plan and that's it forever. These can be refined over time by working collaboratively with our community partnership and the communities.

What are we going to do to identify these search areas? We're going to use existing, readily available information. We're not going to go out and send great gangs of field workers to gather lots of new data at this stage. There's plenty of data around, and I think

one very, very important reference point for the belowground element is the work that was done for the national geological screening exercise that the British Geological Survey carried out. That will be a key input into search area identification, but also understanding surface constraints and opportunities, whether they be transport or environmental constraints, or other community constraints.

My final comment is, really the bottom bullet point is, the Copeland Working Group wants to receive feedback from the community, and feedback that you give us will help us, as a working group to identify the search area or search areas. That's important. There's an opportunity to provide feedback, on this and every topic. We welcome that. I hope that was a helpful run through. It is a little bit of a technical topic, but it's an important point to start the journey, and I emphasise that this is about starting the journey. This is not about trying to solve all of the problems, and all of the issues, and answer all of the questions now. It's the start of a journey.

With that, I will hand back to our facilitator, Nick.

Nick Gardham: Thanks Steve, and a thank you to all of our panellists, who kept their presentations on time, and indeed ahead of time, which is always great. It gives us more time for question. I just want to address what quickly came up there in the questions. Just to say, for those that couldn't hear Steve, I do apologise, and indeed, a full transcript will be made available of this, but also the presentations for those that can't see the images, or the images are too small, again, we apologise for that, it is dependent upon the size of screen you're using, so we will also be sending out the PowerPoint as well, so you won't have missed anything, and hopefully you can all hear me fine when it comes to the Q&A as well.

Thank you very much Steve. We're going to move now just to the Q&A panel. On the panel, here is a beautiful selection of our panellists. I won't introduce them all. I will just introduce those we have not heard from yet, and that is Candida Lean, a Nuclear Waste Assessor from the Environment Agency, Andy Parkes, who is the Head of Site Characterisation at RWM, and also Peter

Howden, who is the Principal Inspector at the ONR, Office for Nuclear Regulation.

Prior to this session, I had some fantastic conversations with people who were willing to do so, and I spoke to them about their aspirations for this session, what they hoped to get from it, and hopefully the panellists have started that now, started to address some of those early questions that people had, but we do have some more actually, I think, if it's okay, I'm going to start us off with Bruce. I'm going to move to Bruce to begin with, because it naturally transitions on from Steve's slide.

Bruce, how will a community partnership be formed? We've heard about it, and the challenge, of course, is how can a self-selected group of people who are perhaps involved in the working group, speak on behalf of the whole community?

Bruce Cairns: Great, thanks Nick. Just checking you can hear me. I think I've come off mute. It's a really good question, and it's an important point here, and it does pick up really nicely from what Steve was just saying actually, which is that neither of these groups, neither a working group, nor a community partnership, if and when it's established, are going to be making commitments on behalf of the community. They're not going to claim to be representative. A working group get a partnership up and running, it can set a starting point, it can propose a search area, but that's not going to be set in stone. That's going to continue to change, and the partnership can change that.

The working group can appoint some initial members to a partnership to get it started, and the policy sets out what the minimum requirements are for that, but it can also then recruit more people as it goes along. So the working group's really scoping this. It's creating the environment for a partnership to form. It's identifying the starting point, in terms of a search area, and the starting point in terms of the initial membership. That partnership is going to be something that evolves over time. It's going to add more people and organisations over time, and it might lose some as well.

What's really important there is that the relevant principal local authorities must be involved in that partnership. At least one, because some places have two, and if that's the case, at least one relevant principal local authority must be on that. The policy also gives them the decision on withdrawal of the community from the process. They're elected to represent the community in their geographical area, and they hold the power to completely withdraw their community from the process. Although, they don't have the power to commit the community at the end, because there has to be a test of public support, so the community in that area still has to give their direct support as well, at the end of the process.

Nick Gardham: Thank you Bruce. Thank you. I might come back to you on some of those points earlier, but I want to draw attention very quickly to some of the questions that are coming in at the same time as the questions previously submitted. I've got a questions here: last time, Friends of the Earth and Greenpeace activists were invited to join the process from the word go, and indeed, the independent evaluators also recommended this should happen. I think it talks for a little bit about what you were just saying, so why not now, is the question, why not now?

Bruce Cairns: Is that for me again?

Nick Gardham: That's for you again Bruce, just to follow on, yeah.

Bruce Cairns: Yeah. As Steve said, he was involved in MRWS, but I was involved in the MRWS as well, although that partnership that was formed there was formed by the local councils and really run by then, it had quite a broad membership actually, there were quite a lot of people were on that partnership. Certainly, NGOs were invited. I think Friends of the Earth and Greenpeace would have been there, they were invited to join, but they decided against joining that partnership, although, I do recall that they did come to lots of meetings and took part in discussions from the floor, because all of those meetings were open to the public as well.

If we form a partnership here, that's something that's going to be open to happen again. This group at the moment, its job is forming that partnership.

Nick Gardham: Thanks Bruce. As I say, I'll be bouncing between the questions that are preprepared, and the ones that are coming in at the same time. I'm going to move back to Steve, if that's okay, and just to say, Steve, you talked about the siting process, and there are going to be communities that are in the vicinity of Sellafield that are going to be impacted by the creation of a GDF, partly due to the transportation of waste. When we think about Cherry's slide and the image that she showed. Will they get the chance to have a say?

Steve Reece: Thanks Nick, Yeah, this is an interesting topic, and we talk to a lot of people about this, because I guess irrespective of whether a GDF is eventually sited in west Cumbria, which is the scenario that we're probably focussing a little bit on today, but it could equally be elsewhere in the country; this is a natural process. RWM has absolutely committed, and we've done this in published form, through our site evaluation document that went through a national consultation, to consider, in terms of transport, the safety, the security, and the wider implications of transport, irrespective of whether a GDF is local to the people at Sellafield, or elsewhere in the country. You've got to sort of look at it through those two lenses.

I think, certainly, if we are considering GDF in Copeland, as Bruce has talked about, and several of us have talked about, the community partnership is obviously the vehicle where we can use the partnership to help us scope those assessments. I think just one thing of quantum Nick, just [in terms of real quantity], just to close out this answer, people sometimes ask me about how many trains? What's the scale of this? Well, the GDF, on our current assumption, can only receive waste at a certain rate. When you actually calculate it out, just a good rule of thumb, is it works out at about four trains per week of waste moving to the GDF, from anywhere around the country, wherever it may be located.

It's a handy rule of thumb just at the moment. A lot depends on the individual circumstances of the site, but that's not a bad little rule of

thumb. Hopefully that answers both the questions a GDF is elsewhere, of if it's in Copeland.

Nick Gardham: Thanks Steve. Part of these conversations I had beforehand with people really did start to touch on the past experience, the prior experience, and certainly there's people quite knowledgeable, far more knowledgeable indeed than I was, than I am about nuclear disposal and nuclear waste. I'm going to move to Andy Parkes, because one of the thing that came up, I know we are going to schedule a webinar on this later on in about six to eight weeks' time, but Andy, people are saying to me that the geology of Copeland was deemed unsuitable last time around. Things haven't changed in the last 10 years, it takes thousands of years for things to change, so what makes it suitable to start the conversation again?

There's also a follow-up question which I'll ask you, which is coming though in the chat.

Andy Parkes: Sure. The key point here is, as you say, we're going to talk about this in a full, proper webinar, to give it it's proper place, but previous surveys haven't deemed the geology of the whole of Copeland to be unsuitable. The investigation was conducted by Nirex in the early 1990s focussed on one rock type in one specific location. In the managing radioactive waste process, the British Geological Survey applied high level initial screening criteria, which did exclude some part of Copland, due to, for instance presence of known resources such as coal, or also volumes or rocks which contained aquifers.

That process only considered the inshore, the bit that's been alluded to by others, up to five kilometres from the coast. So, as part of the national geological screening exercise, which has been undertaken by the British Geological Survey as part of this current siting process, they've also considered the adjacent inshore, out to the limit of the UK territorial waters, which I think, one of the previous presenters said is 10 nautical miles, or 22.2 kilometres form the coast. This exercise has identified potentially suitable host rocks under both Copeland and the adjacent inshore.

From that point of view, it is worth considering Copeland, because previous surveys didn't rule out the whole of Copeland, and also, we've look at very new areas that haven't been considered previously.

Nick Gardham: Thanks Andy. There is a question coming through, but you might want to defer this to the next session if it can't be given a quick answer. What is the preferred range band of acceptable geological conditions, i.e. rock type or structure? I don't know if that can be given a quick answer or not.

Andy Parkes: It can't really. Just a very brief answer to that is, work by us and a lot of those other countries that I think Bruce or Cherry referred to, there's something like 30 other countries around the world that have got major programs looking at this have identified three broad types of rock, mudstone type rocks, salt layers, and also higher strength rocks, and they can all provide that safety, that final layer to geological disposal that Cherry talked about. It isn't a unique type of geology, there are quite a lot of different rock types. Whatever rock type it is, we will need to do very, very detailed investigations to confirm that it's suitable in a particular area.

Nick Gardham: Thanks Andy. That actually does move me quite neatly onto the next questions. As I said, when I spoke to people, they were incredibly knowledgeable about nuclear waste disposal. Cherry, some of the things that came up in the conversation, and you touched on it in your presentation, you talked about both copper and stainless steel. What people were saying to me was that copper canisters used to store radioactive waste can degrade, so how does that impact on the storage of radioactive waste underground here in the UK?

Cherry Tweed: Yes, thanks Nick. I can hear that actually people have obviously been following the siting process in Sweden, which is one of the more advanced ones, so there, regulatory authorities have been looking at great detail at the evidence that our sister organisation has put forward about the performance of every barrier. The copper container is one of the important ones. We have not got as

far as selecting our container material. The behaviour of copper may in fact have nothing to do with our program at all.

I think what this question is actually pointing to is a question in general about how materials will change. Over the kind of long timescales that we're talking about here, then any material, be it an engineered one or be it a natural one will change. One of the things that we have to do as part of our safety case is actually to set out our understanding of how those materials will change, including processes such as anything that will cause a container to corrode, to make sure that we understand how that material will corrode, the rate at which that material will corrode, and that finally, when that container can no longer be relied upon to be intact, how do the other barriers in the system continue to provide protection.

What we need to show is that even when the containers have completely corroded away, and we're talking here about timescales hundreds of thousands of years into the future, probably beyond the next ice age that the other barriers in the multi-barrier system will continue to provide protection. We will set out all our evidence, and in time, the nuclear regulators, and for the long-term safety case, that will be our colleagues at the Environment Agency, they will carry out their own independent assessment of our evidence and say whether or not we can have the necessary licences and permits to go ahead and build the facility.

Nick Gardham: Thanks Cherry. I want to get through three more questions, if I can by close, so if our next speakers could try to answer as brief as they can. I'm going to now very quickly ask both Candi and Peter from the ONR the Environment Agency, Cherry's just touched on your role there, what is your role in relation to this, and what can be raised with the regulators?

Candida Lean: Thanks Nick. Shall I start with this? The Environment Agency is the environmental regulator for England. Together with the Office for Nuclear Regulation, we will jointly regulate any geological disposal facility for radioactive waste in England, and we're

working together to make sure that any geological disposal facility will meet our requirements for protecting people and the environment when it is being developed, while it is operating, and after it has closed.

We will only grant a permit or licence if the developer's proposals meet our high standards. We have offered to support Copeland GDF Working Group by explaining how our regulatory roles and process will help ensure protection of people and the environment, now and in the future. However, we do not regulate the site selection process. The regulators aren't member of the Copeland GDF Working Group, and we will not be involved in its decision making, or indeed in decisions to select sites for further consideration.

There are some links to further information on our regulatory roles which are included in the Copeland GDF Working Group newsletter of 18 March this year, and members of the public may raise any queries relating the regulation of geological disposal using the contact details provided in the newsletter. Thank you.

Nick Gardham: Thank you Candi, thank you for that. I want to move us onto just two last questions, hopefully we can fit these in. I'll move to Gillian. Gillian, you talked about engagement of people in the community, and we've had some conversations so far. There are a number of groups of people who need to be engaged in this process, certainly that's what we're hearing. How are we deciding who, and when to engage with people?

Gillian Johnston: Thanks Nick. Currently, our comms and engagement strategy covers the whole of Copeland. If we progress to a community partnership, then this will be a larger group of people, and the engagement will then move to be more specific.

Nick Gardham: Brilliant, thank you. I was just looking through a question there which follows up actually, on that point. Maybe it's a question for me actually, and a challenge that's been presented around social media. One of our people questioning have clocked that our Facebook page has a limited number of likes and followers, and is it a successful use of social media?

I think that's a challenge that we all should embrace on the working group. We do need to reach out, we do need to continue to reach out and actually engage more people. Hopefully, these webinars will be the start of that process, ensuring we can continue to build and develop the conversation with people.

I'm going to bring that point on, come back to Bruce very quickly. Bruce, one of the questions that came out of this, is does relate to the engagement of people: give the policy requirement for a willing community, if a parish, town, or other defined area can demonstrate via a parish poll, referendum or equivalent that they wish to exclude their area, will that exclusion be respected, and as a consequence, be removed from the search area process? I don't know if you can give a quick answer to that one, or a longer answer, but we are tight on time.

Bruce Cairns: Okay, I'll try and keep it short Nick, thanks. There are two elements to this. There's a hard, technical answer, and then there's the softer answer about how we're going to make these things work in practice. The policy, the process set out by government requires us to define areas using electoral ward boundaries, rather than parish boundaries, town boundaries or any other boundaries. We have to work with electoral ward boundaries and it also gives the decision on rights of withdrawal of the process explicitly to those principal local authorities, so that would be unitaries, or districts, or counties, in areas that I've got to. It doesn't give a particular explicit role to parishes or town councils, or use those boundaries. So that, we'd have to bear in mind.

The softer, kind of how do we make all this work in practice point is that, of course, there has to be a test of public support in any community that ultimately is around the facility in the end. There's not going to be much point in proceeding right to the very end knowing that there isn't' any community support, and a partnership is going absolutely to absolutely be engaging with the communities, and monitoring, and talking to people about support, and seeing how that's developing as the conversation goes. So there will be softer ways to take account of that types of sentiment.

We really want to encourage people to engage in the dialogue. There's nothing to lose by taking part in a conversation and finding out more, and then, by all means, making a decision once you've had a chance to engage and get questions answered.

Nick Gardham: Bruce, I think that's a great point to end on actually, and it ensure that actually, as a working group, we need to continue this engagement process. Thank you, apologies to you all for making you keep your answers short. For the benefit of everyone and what's happening next then. There are more questions that came in. It's great to see so much energy around this topic and people wanting to ask questions. We will take all of those questions, and we will look to send more detailed answered out at people. If any of our panellists feel that they didn't give a full answer to their question, then please expand on it in the question and answer that will be submitted to people.

I am going to ask now three closing questions, just to get a sense of how people felt throughout this process. I'm going to start by saying, the first one is: do you feel more informed about geological disposal and the Copeland Working Group after this webinar? I can't see, but hopefully a question is popping up on your screen to answer.

Great. Whilst you're answering that question, I'm just going to say as well that the second one will be: what would you like to see discussed in future webinars? We know that things like the geology of the Copeland are, safety and safeguards and the GDF environment are issues, but also what's coming through in the Q&A today, questions around the economic benefits, the impact on tourisms, other issues like that they're hot topics for conversation, so we'll look to pick up on those as well.

Finally, the final question is: please indicate if you wish to go on our mailing list, to receive the newsletter, to be kept informed. That would be great, of course, if you all can. I want to take this opportunity now to say a big thank you to everyone for participating, and also to say goodbye to you all, and what we'll do is, we'll leave the other questions there, for those that haven't

answered. A big thank you to everyone, thank you to our panellists, and I hope to see you at the next session.

END OF TRANSCRIPT