



**Cynulliad Cenedlaethol Cymru  
Y Pwyllgor Menter, Arloesi a Rhwydweithiau**

**The National Assembly for Wales  
The Enterprise, Innovation and Networks Committee**

**Dydd Iau, 8 Mawrth 2007  
Thursday, 8 March 2007**

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Cofnodir y trafodion hyn yn yr iaith y llefarwyd hwy ynnddi yn y pwyllgor. Yn ogystal, cynhwysir cyfieithiad Saesneg o gyfraniadau yn y Gymraeg.

These proceedings are reported in the language in which they were spoken in the committee.  
In addition, an English translation of Welsh speeches is included.

**Aelodau Cynulliad yn bresennol**  
**Assembly Members in attendance**

Leighton Andrews	Llafur Labour
Lorraine Barrett	Llafur Labour
Mick Bates	Democratiaid Rhyddfrydol Cymru Welsh Liberal Democrats
Alun Cairns	Ceidwadwyr Cymru Welsh Conservatives
Janet Davies	Plaid Cymru The Party of Wales
Jocelyn Davies	Plaid Cymru The Party of Wales
Christine Gwyther	Llafur (Cadeirydd y Pwyllgor) Labour (Committee Chair)
Alun Ffred Jones	Plaid Cymru The Party of Wales
Carl Sargeant	Llafur Labour
Brynle Williams	Ceidwadwyr Cymru Welsh Conservatives
Kirsty Williams	Democratiaid Rhyddfrydol Cymru Welsh Liberal Democrats

**Swyddogion yn bresennol**  
**Officials in attendance**

Gareth Hall	Cyfarwyddwr, yr Adran Menter, Arloesi a Rhwydweithiau Director, Department for Enterprise, Innovation and Networks
Lynn Griffiths	Pennaeth Cangen, Tîm Cynhyrchu Ynni Glân a Dur, Ynni Cymru Head of Branch, Clean Energy Production and Steel Team, Energy Wales
Paul Harrington	Uwch-reolwr, Tîm Cynhyrchu Ynni Glân a Dur, Ynni Cymru Senior Manager, Clean Energy Production and Steel Team, Energy Wales
Katharine Winnard	Marine Bill Co-ordinator, Marine Policy, Environment— Conservation and Management Division Cydlynnydd y Mesur Morol, Polisi Morol, Is-adran yr Amgylchedd—Cadwraeth a Rheoli
Graham Winter	Gwasanaeth Ymchwil yr Aelodau Members' Research Service

**Eraill yn bresennol**  
**Others in attendance**

John Anthony	Cyfarwyddwr, Unity Power ccc Director, Unity Power plc
Frederico Ferreira	Tasglu Polisi Morol, Y Gyfarwyddiaeth Gyffredinol dros Bysgodfeydd a Materion Morol Maritime Policy Task Force, Directorate-General for Fisheries and Maritime Affairs

Dr Madeleine Havard	Cadeirydd, Partneriaeth Arfordir a Môr Cymru Chair, Wales Coastal and Maritime Partnership
Lia Moutselou	Swyddog Polisi, Partneriaeth Arfordir a Môr Cymru Policy Officer, Wales Coastal and Maritime Partnership
John B. Richardson	Pennaeth, Tasglu Polisi Morol, Y Gyfarwyddiaeth Gyffredinol dros Bysgodfeydd a Materion Morol Head, Maritime Policy Task Force, Directorate-General for Fisheries and Maritime Affairs
Professor Nick Syred	Canolfan Ymchwil Ynni Cymru Welsh Energy Research Centre
Gerwyn Williams	Cadeirydd, Unity Power ccc Chairman, Unity Power plc

**Gwasanaeth y Pwyllgor  
Committee Service**

Claire Morris	Clerc Clerk
Sarah Bartlett	Dirprwy Glerc Deputy Clerk

*Dechreuodd y cyfarfod am 9.03 a.m.  
The meeting began at 9.03 a.m.*

**Cyflwyniad, Ymddiheuriadau, Dirprwyon a Datgan Buddiannau  
Introduction, Apologies, Substitutions and Declarations of Interest**

[1] **Christine Gwyther:** Welcome to this meeting of the Enterprise, Innovations and Networks Committee. We have quite a full agenda this morning; our first item is on maritime policy in Europe, for which I welcome members of the Environment, Planning and Countryside Committee. I ask Brynle Williams, as its acting chair today, if there is anything he would like to say before we start that discussion.

[2] **Brynle Williams:** I thank Christine and the committee for the opportunity to contribute this morning on behalf of the EPC committee. I also thank Mr Richardson for his forthcoming contribution. Glyn assures me that he and Lorraine Barrett met Mr Richardson on a recent visit to Brussels.

[3] **Mick Bates:** Another jolly, Lorraine? [*Laughter.*]

[4] **Brynle Williams:** You can hear the banter that is going on.

[5] Again, I am grateful to Christine and the EIN committee for giving us this opportunity and allowing my colleagues and I to sit in on your meeting. With that, I will hand back to you, Christine.

[6] **Christine Gwyther:** I have a few housekeeping rules to go through. I ask everyone to please ensure that all mobile phones, BlackBerrys and pagers are switched off because they can interfere with the sound. If we need to evacuate the building, the ushers will show us to the nearest exit, so please do not panic.

[7] The only apology from a member of the EIN committee has come from the Minister, Andrew Davies.

9.04 a.m.

**Sesiwn ar y cyd gyda Phwyllgor yr Amgylchedd, Cynllunio a Chefn Gwlad:  
Papwr Gwyrdd y Comisiwn Ewropeaidd—‘Towards a Future Maritime Policy  
for the Union’**

**Joint Session with the Environment, Planning and Countryside Committee:  
The European Commission’s Green Paper—‘Towards a Future Maritime Policy  
for the Union’**

[8] **Christine Gwyther:** I am pleased to welcome John Richardson, via video link, who is head of the maritime policy taskforce from the Directorate-General of Fisheries and Maritime Affairs. He is joined by his colleague, Frederico Ferreira. I would also like to welcome Madeleine Havard to the meeting, and Lia Moutselou, both from the Wales Coastal and Maritime Partnership; it is good to see you both. The first item will be the video link with Brussels, so I would like to ask John to start the item off, and then, if he could take questions from our Members, I would be very grateful.

[9] **Mr Richardson:** Thank you, Christine. It is a pleasure to be with you in spirit. I regret that I am not able to be in Cardiff today. I got to know your city two years ago—for the first time, believe it or not—and so I have some idea of the building that you are sitting in. I must say that I was impressed by the air of self-confident independence that I experienced when I was in Cardiff two years ago, so I am really sorry not to be with you. The reason is that I had a conflict with another commitment, with another of the regions of the Celtic community—Brittany—and I could not combine the two because, as you will know all too well, communications between the various nations of the Gaelic community, if you will, are not terribly good.

[10] So that could not work out, but I am very glad to be with you now, and I am particularly glad because I know that what I will hear from you today, and the questions to which I will happily reply, are based on an extensive consultation process of your own. We have been looking at all the papers on your website, which I must say is nice and easy to navigate around, and we are very impressed by the ripples that have spread out so far from the stone that we threw when we published the Green Paper. This is now turning out to be the case throughout most of the European Union; we did not realise to what extent we would produce a whole series of consultations within consultations, like boxes within boxes.

[11] The UK will, of course, be making its own contribution to our process, and we will be interested to see the extent to which the views of the British regions are integrated into that, or indeed, are sent to us separately. It is one of the things that has astonished me—the extent to which we seem to have struck a chord with the Green Paper, and the way in which the maritime community has manifested itself over the last eight months or so, and we certainly see that in the contributions that you have received from your stakeholders in Wales. So I am very happy about at least one thing: whatever else we may achieve with this process of consultations under the Green Paper, from what I hear all over the union, we have achieved something already, which is to raise the visibility of the maritime sectors economically, of the need to protect our coastal waters and the oceans more generally, and of the needs and future prospects of coastal regions. I think that Wales would regard itself as a coastal region of Europe. We are pleased with the way that things have gone, and I do not want now to attempt to explain the Green Paper again—you have obviously all digested it completely, otherwise we would not have had that depth of knowledge and expertise in your contributions.

[12] So, I am here with Frederico this morning to be at your service and to listen to you. We are trying very hard indeed to make this whole consultation process a genuine one, and as far as I am concerned, it is not a smokescreen. We are here to pick up your ideas, but we can

only promise to reflect them, of course, if they coincide with the ideas of others. However, there is indeed a large commonality of view in what we have been told around the union, and we are particularly interested in new ideas that come up that we had not thought of, which we can then take on board. For us, we are constructing a new policy together, and together means with stakeholders throughout the European Union. It is not a simple exercise, but we really are here to listen to you and to pick up your ideas, and we are at your service for as long as you need us this morning.

9.10 a.m.

[13] **Christine Gwyther:** Thank you. Some of the discussions that we have had prior to this meeting have revolved around the difficulty of balancing industry and the environment; that is a common theme when we are talking about coastal development in Wales. However, it is important to us as a country, and we want to do our best to ensure that our development is sympathetic to the environment.

[14] I will throw it open now for questions from Members to John, and we will then go into a discussion on some of the themes that we might want to press as part of our response to your consultation.

[15] **Janet Davies:** I have a question about fishing policy. In Wales, we have a minimal-sized fishing economy by now; it is very small—just coastal stuff. However, it always seems that there is great concern about what is happening to fish stocks, and I notice that different parts of the Atlantic have different levels of threat, if I can put it like that. I realise that this is a sensitive issue in the European Union, but is there any progress towards trying to get agreement on policies and on delivering those policies, and monitoring how they are delivered?

[16] **Christine Gwyther:** Would you like to take that question, John?

[17] **Mr Richardson:** Yes, I will try to answer. This is an existing sectoral policy. Fisheries Ministers make decisions all the time about levels of catches, particularly for certain fisheries. I believe that it is fair to say—and we all know this—that, if you take the last 20 or 30 years of the common fisheries policy, its result has not been sustainable fisheries. Its result, overall, has been a reduction in the level of fisheries in European Union member state waters. Therefore, I do not think that any of us would believe that it has been, in that sense, a success. Many believe that we are in the business of managing a declining industry, which we would like to see reversed, of course.

[18] However, the difficulty is how one goes about reversing it in a situation where, in many areas, we are told by scientists that we need to restrict catches, so that fish stocks can recover. Restricting catches means reducing the livelihood of those engaged in fisheries, and they are, obviously, against that. There has not been, as far as I can see, success in having fishermen understand and accept that a reduced level of catch is necessary. Without understanding and acceptance, you get great pressure from fisheries interests on fisheries Ministers to accept higher levels of catches than would be biologically appropriate. In addition, you have the temptation for fishermen to exceed the catch levels that they are supposed to be keeping to, which creates the problem of control, and control means monitoring, and so on. It is fair to say that there are very few member states for whom fisheries is high enough on the priorities list for the finance Minister—in your case, the Chancellor—to happily attribute more resources to fisheries control, for example. Therefore, the situation is something of a vicious circle; Ministers from all the member states are involved, along with fisheries experts, and the result has not been as good as one would have wished.

[19] The question then arises of what our ideas for maritime policy can do to help the situation; we are not rewriting fisheries policy—we are, if you will, looking at fisheries policy from a different angle. The ideas that we can offer are to change the equation somewhat. First, we have ideas in the Green Paper relating to a much more comprehensive system of surveillance of the waters around our coasts. We believe that if the data on what fishermen are doing is better and if fishermen realise that others who operate on the seas are being as closely scrutinised as they are and are also subject to controls, their willingness to stick to their obligations will rise. That is the first contribution that we believe that we can make.

[20] Secondly, we believe that if we can move towards systems of spatial planning on the seas, with the necessary data in terms of the mapping of physical and biological resources, these can help us to identify where the best fishing grounds are so that fishermen can fish them at a lower cost by not wasting their money, fuel and time fishing where they need not be fishing—where they are not going to catch anything. So, some of our proposals in terms of spatial planning and so on could help fisheries too.

[21] Finally, if we can make a better fist of sustainable economic development in the regions where you have fishing ports, it ought to provide the alternative opportunities for the future for those who, in the past, have been engaged in fisheries. So, we can add these things to what exists, but the basic conundrum of fisheries policy may well remain and I do not think that there are any silver bullets to deal with it.

[22] **Janet Davies:** I realise that this is probably the most difficult issue to resolve and that was a helpful answer.

[23] **Christine Gwyther:** I want to bring Mick Bates in, but before I do, I will just say that, obviously, reduced catches is a difficult concept to sell to fishermen, as is the concept of no-take zones. We have had issues recently in the area that I represent, where fishermen have just not seen the relevance of no-take zones. Is there a European view on that?

[24] **Mr Richardson:** No-take zones are, as I understand it, an instrument to allow stocks to regenerate, so they are designed to achieve sustainable fisheries for the future. On fishermen not seeing the point of no-take zones, that is an illustration of what I said, namely that there seems to be no meeting of minds between the scientific community, the environmentalists if you will, and the fishermen. I do not know why that is. My commissioner, Joe Borg, who is also responsible for fisheries, as you know, spent a lot of his first two years in office working with fishermen with precisely the intent of bringing together the views of fishermen with the views of those who make the policies. It is a hard task and as long as fishermen do not understand that protecting stocks is in their interests, it will be difficult to make progress.

[25] One point in some of the contributions that you have received is relevant. I remember reading that it is difficult, if all stocks are common stocks, to get the individual fishermen to feel a sense of ownership in the restrictions. That is a very interesting point. Another point was made that there is a case for giving the rights to fish in inshore zones to those who live on the coast of the inshore zones and to subtract them, if you will, from the area of common policy under the common fisheries policy. That is partially true already. That is an idea that is worth bringing up in our consultations, because one of the things that we are trying to grapple with is how we get the operators on the seas to take ownership of the restrictions that they have to accept on their operations. So, it is a valid comment and it is worth raising in our discussion, as a contribution, in terms of fisheries policy going off in a slightly different direction in future.

9.20 a.m.

[26] **Mick Bates:** I note your opening remarks that you regret not being here. However, your carbon footprint is much smaller this morning by using this innovative video link, so I welcome that.

[27] The background to this is that everybody welcomes a cross-border approach and accepts that there is a need for consistent policy across Europe. So, we all agree on the general strategic direction, which is demonstrated by the fact that we will shortly have a Marine Bill. Spatial planning is one of the big issues, and the management of those zones will become an issue that we can see more clearly, next week, when the Bill is published.

[28] However, I wish to question you on two main issues this morning. Both concern the potential for development in Wales. I noted a new term in the document: 'blue technology'. I am sure that you will be able to give us a concise definition of that. How would you use a concept such as blue technology? We have centres of excellence in Wales. Could we consider bidding for a blue technology centre here in Wales, because it is about the exploitation of biodiversity in the sea, where we already have considerable expertise? However, one of the things we need to develop in Wales is a stronger economy, and research and development would certainly be a base for that. What help can you be to us in developing such a centre?

[29] My other point concerns the development of renewable energy in the maritime environment. You must be aware that we have the first offshore windfarm, off the Rhyl coast in north Wales. What part would that play in a European policy? Would a European policy look at meeting targets embodied in European regulations on replacing fossil fuels with renewable energy sources? How much work has been done with other departments, particularly on energy, to establish what targets you may embed within such a policy to state that we should be looking at using the oceans to develop a certain amount of renewable energy?

[30] **Mr Richardson:** I do not think that we used the term 'blue technology' in the Green Paper. We used the term 'blue biotechnology' as a specific example, where we believe, from having talked to people around the European Union, that there are new possibilities for developing profitable technologies, which are linked with the oceans, and in particular with respect to the biodiversity, the biomass, in the oceans. That is where the term comes from. We used it as an example of an area where we can innovate, based on research. The reason for that is that the overall economic thesis of the Green Paper is that we will only remain ahead in a competitive world and maritime sectors if we do so on the basis of innovation and producing new products that continue to give us a competitive edge. If we stick with old products, we will gradually lose out to the competition from emerging nations, particularly in the far east. Therefore, we need to innovate.

[31] Our thesis is that, if we need to innovate, we need to extract the maximum potential from the knowledge that we have in the research that we do. That is knowledge that we have from throughout the European Union, and research that we do within European Union budgets—the framework programmes—but also the research that member states do. If we are going to extract the most that we can from that, it seems to us that what we should be particularly interested in is ensuring the exchange of best practice between all those involved, and ensuring that the networks function as efficiently as they can.

[32] I use the term 'networks' advisedly. We do not propose a new European institution for blue biotechnology—which could be located in Wales. You know as well as I do that if such an institution were set up there would be a major battle for years about where it should be situated, and we would not actually get anything happening for God knows how long. You have seen that a little with the commission's recent proposals for a European institute of technology, along the lines of the Massachusetts Institute of Technology in the United States. In that case, we have finished up with a virtual institute idea, using a network of many



institutions in the European Union. That is also what we have in mind in the blue biotech area, so we are looking at these things rather more modestly than in terms of setting up new institutions—for which, by the way, there would not be funding. The funding decisions have been taken for the next six years, from 2007. Talking of funding for maritime questions, we have to look for it within a whole series of other budget areas. I am under no illusions as to how much extra money for maritime we will find.

[33] On the second question on renewables, you will need to buy a quality newspaper on Saturday to read what the European Council has decided. One of the big topics on the agenda of the European Council is what we will do about climate change. As I understand it, one of the open questions going into that council is whether we should adopt a target for all member states of achieving 20 per cent of renewables in their sources of energy by a certain date in the future. There is a big battle about whether that should be for the European Union as a whole or for each member state. If the target is for the European Union as a whole, if I may say so off the record, as a citizen, that would be a cop-out, because it would mean that no individual member state had any obligations. That debate is very important and is ongoing. Everyone is conscious of the need to increase the proportion of renewables, and seems to be agreed that one way of doing it is by setting mandatory targets. We will see what happens at the end of this week in Brussels at the European Council, and the results of that. I am as interested in that as I know you are.

[34] **Mick Bates:** It was blue biotechnology, so I stand corrected on that. You mentioned funding and investment, and you said that all the funding has been spoken for from 2007. I was a bit surprised by that, because, if we are to put forward policies—and there is a green investment fund—to what extent is there flexibility and investment to further some of the aims that will come out of this consultation?

[35] **Mr Richardson:** You may remember the discussions during the British presidency on what we call the financial perspectives—in other words, how we will spend our money between 2007 and 2013. At the time, the British Government pushed for less money to be used for what you might call objectives to deal with the problems of the past, and more money to be used for the innovative areas of the future. The final decision was less money for innovation for the future and more for the policies of the past. Perhaps I should not give agricultural policy as an example of a policy of the past, because it is very much a policy of the present, but there was a big discussion about whether the amount of money devoted to the common agriculture policy should be reduced. These decisions have now been taken, so we must operate within the framework that we have been given by the European Council, which does not contain anything called maritime policy.

[36] So, our idea with respect to funding for maritime questions is very much based on the idea that we want to provide transparency as to just what exactly is spent on maritime-related affairs at the moment, and from which budget lines. That is one of the things that we hope to announce in our action plan in October. Once we have that transparency and know what is going on, we will be in a better position to sit around the table and ask, ‘Does this make sense from the overall point of view of developing sustainable maritime sectors in the future?’. If it does not, where are the gaps and where could money be taken from within the existing regulations?

[37] Your stakeholders have rightly pointed out that you are still in what used to be called category 1—and I forget the new designation for that—but you are still receiving money from the structural funds in Wales, and that can be used for maritime projects. My understanding is that it depends on the pressure that you put on the United Kingdom to put forward projects in Wales that have more of an emphasis on maritime aspects, as a result of the maritime vision that you have developed for the region. That is quite possible, but it is more complicated than having a new budget line devoted to maritime issues, which I do not think we will have.

9.30 a.m.

[38] In addition, it is not our idea; our idea is cross-cutting, after all. We do not want to separate out maritime and say that we have a budget for it. That would mean that if there were an energy project, it would have to be paid for out of an energy package, and if there were a maritime project, it would have to be paid for out of a maritime budget. You would then have endless discussions over how to finance offshore windfarms, for example, as they concern maritime and energy matters. I think that we are probably okay with having no particular maritime budget, but that simply means that we have to create our overall view of everything connected to maritime issues, and we will try to provide, from Brussels, the initial building blocks, which will set out what exactly maritime-connected finance is under the many different budgets. That is what we will try to do.

[39] **Christine Gwyther:** Does anybody else want to come in on this?

[40] **Carl Sargeant:** Yes, please. Good morning, both. Mick covered much of the ground that I was seeking some clarification on, but blue biotechnology is quite an exciting concept, really. However, I was probably as disappointed as Mick was about the finance aspect of it. Where are we placed globally with regard to blue biotechnology within the EU? It says that 80 per cent of the world's living organisms are found in the aquatic ecosystem, so how well placed in the EU member states are we globally?

[41] With regard to windfarms, I welcome the EU's challenge to drive down carbon emissions, particularly with the setting of delivery targets for member states. However, there are huge differences across member states regarding wind technology, although our Government is committed to renewable energy. What are the next stages for you within that process of issuing targets, and how long will that process take of giving specific direction to member states?

[42] **Mr Richardson:** I am not really sure what I can add. It is not for us to direct member states on how to run their renewables policies; it is up to the member states collectively in the European Council to decide what they want to do, and that is what will happen at the end of this week.

[43] I agree with you completely that the foundations in different member states are very different, particularly with respect to the development of offshore wind technology. Several factors need to be reunited before you can do that successfully. First, you need the right sort of winds, which I suppose we can describe as being enough, but not too much. That is probably true of much of the United Kingdom. It is also far easier and more economic if you have shallow coastal waters, as they make it a great deal easier to install your windfarms and to connect them to the grid. You also need available space that can be used for windfarms, and is therefore not available to other uses. The expansion of wind technology in our offshore waters is, for us, one of the major reasons why we think we need spatial planning in our waters.

[44] With you, in a sense, it is easier, because, for the Irish sea, it is really just a matter of two member states of the union agreeing with each other on usage. The North sea is a lot more complicated, as you are probably aware, although that is not your problem. However, what we have to do is develop ideas for spatial planning, for example. Guidelines for how it will operate will be just as valid for the Irish sea as they are for the North sea and the Mediterranean, and that is not simple. One thing that we have to look at very carefully is just what we need in terms of rules and guidelines and common principles from Brussels for something like spatial planning, and how much should be left to local decision-making—we believe that it should be a lot. So, it is very complicated, but the decisions taken this weekend

in the European Council are crucial to the future of renewables, particularly to offshore renewables.

[45] **Carl Sargeant:** On your comment about local decision-making, and the balance between the spatial planning element, windfarm technology and on ocean traffic, what would the conflict be for issues around the UK coast—in the English channel or the Irish sea, for instance? What would the balance be on whether we proceed with reducing climate change by building windfarms or other marine technologies, or whether we balance that against shipping, and so on? Could local decision-making make that quite difficult? Therefore, guidance specifically designed for member states must override in such situations, by having a local decision-making get-out clause, by which they do not have to do it because they have busy shipping lanes. Do you have any thoughts on that?

[46] **Mr Richardson:** My immediate thought is that I can imagine the stink that would be created if the commission tried to tell you what to do with Cardiff bay. I honestly do not think that you can expect, nor should you want, decision-makers in Brussels to overrule the representatives of local citizens in that sort of decision. That is what we always talk about when we talk about the licensing of windfarms, the use of tidal energy, or about what we will do in the future to protect our coast. First, the conditions vary greatly from one spot around our coasts to another, and, secondly, the priorities of our citizens vary. We are pretty convinced that a one-size-fits-all policy would not go down well locally, and would probably not go down well anywhere at all throughout our regions. So, I do not see us moving in that direction; what I see us doing is setting up principles by which the member states would commit themselves to carrying out spatial planning, involving all stakeholders in the development of its rules and decisions, and having the obligation to base it on an eco-system-based approach. That would mean that economic development takes place at the same time as the environment is restored to its rightful quality. These are all principles that we can have written into law throughout the European Union, but the decisions to which they actually lead—as to exactly where you put windfarms in the Severn estuary, let us say—seem to us should be left to local participation and local decision-making, rather than to Brussels.

[47] **Christine Gwyther:** That is quite encouraging and good to hear. I will ask a follow-up question to that, John, about ports. I have a port in my constituency, and I know that Lorraine Barrett also has a port in hers. There is a debate about whether we should have more ports of a smaller size or fewer larger ports, and there are all sorts of issues with international security and so on. How do you think the debate on that sort of issue is going in Europe?

9.40 a.m.

[48] **Mr Richardson:** In parallel with our process of consultation on the maritime policy, there is another consultation process going on, run by Vice-President Barrot, who is responsible for transport. That involves a series of workshops that provides a consultation process for a new ports policy. That process runs until the end of June when Vice-President Barrot will start to develop proposals for a new ports policy on the basis of those consultations. We will have an input into that. Our view, from the maritime policy point of view, is that a ports policy needs to be developed in the consciousness of all its different ramifications. That means, for us, that a ports policy is not just about making shipping or transport more efficient, because, to a large extent, ports are a link between sea-borne and land-borne transport. That is only one function—a logistics function. However, we see ports as having another function, in contributing positively or negatively to the quality of life and the attractiveness of the city in which they are located. That is important to the quality of life of its citizens and also important if, for example, the city is a tourist destination—a port can be an asset or a disadvantage, depending on how it is managed and so on.

[49] We believe that ports are linked in the public perception with shipping. It is fairly

common that the sector linked to shipping does not have the high profile and positive image that those who work in it think that it ought to have. We also believe that a ports policy needs to consider exactly how ports can operate in order that the perception of their operations is a positive one. Why are we worried about perceptions? I will give you one example: we are all worried about the decline in the number of Europeans who work in the maritime sector—who go to sea first and then take shore-based jobs—and that decline may well be partly due to what they see as the bad image of the sector. If we can change the image of the sector, we can change the attractiveness of the profession and attract good young people into it, who will become the assets on which the future industry will be based. We believe that all these interconnections can be the contribution that we will make to a future ports policy.

[50] To come back to the question about which ports should do what, there is clearly a debate in the sector on whether development should concentrate on fewer large ports or should be spread out between many smaller ports. That is something on which we do not have a clear view, except to say that the answer must be different for different ports. If you want an efficient transport system throughout Europe, the decision has been taken that that will be based on trans-European networks. If you have a major network and you are putting a lot of money into it, it can only end at one point on the coast, not at several, and you therefore have to decide where you are going to build your railway line, extend your canals or finish off your motorway network. They have to finish at one place rather than at multiple places. My feeling is that the concentration of the logistics function within a few ports will probably continue; however, that raises a question of what other functions there are for ports, and there are many. One thing that you have been told by your stakeholders is that there is considerable potential for maritime tourism in Wales. One of the things that I have noticed, while travelling around the European Union, is the extent to which some cities have managed to transform their ports into major tourist attractions. I think that that is easier to do if some of the more obvious and less attractive activities in ports are not present, and are concentrated in only a few ports where they can be successfully handled.

[51] **Christine Gwyther:** I am sure that Lorraine Barrett has a few words to say on that, as we are sitting in her constituency, next to her port.

[52] **Lorraine Barrett:** Thank you for your contribution, Mr Richardson. We are sitting here in Cardiff bay, which is a prime example of what you were just talking about. We have an active port just across the way, but we also have the regeneration of what was the biggest coal-exporting port in the world 100-odd years ago. We have a thriving European maritime bay in Cardiff, which is the youngest and, I would argue, the best.

[53] You touched on a couple of areas that I wanted to cover, namely the areas of skills and employment, and developing coastal tourism. I would argue that there is a balance between the protection of our coastlines and developing that coastal tourism. How do we balance that need for living in, visiting, and working in our coastal areas with the need to protect biodiversity or the cliffs that are crumbling in many areas? We had a recent cliff fall in Penarth. That is linked to skills and employment. The Green Paper states that jobs in the maritime sector are not secure and that working conditions are poor and so on, and yet there is a growing maritime leisure industry—there has been a growth in marinas, and cruise-ship holidays seem to be evermore popular. So, while I would not want to see employment opportunities in, for example, the fishing industry and other manufacturing areas of the oceans, I would argue that there is an opportunity for growth in employment levels within the leisure sector. Is that something that you can see developing across Europe? The image of working at sea could change from that old-fashioned image—you say in your paper that it has a poor image—to a vibrant and exciting opportunity, particularly for younger people coming into the sector.

[54] **Mr Richardson:** I think that we agree with all of that, which is very much in line

with our own thinking. Our problem is to know what implications that has and what we ought to do to help at European level. I was at a conference, two or three months ago, of the European Federation of Marinas and Yachting Harbours. One of the things that its representatives said to us was that it finds itself the object of all sorts of different regulations from different sectoral policies. It finds it difficult to cope with the sheer volume. It has never previously known who in Brussels would be looking after it. It complained that it did not have an interlocutor. It may be that one of the functions of future maritime policy in the commission ought to be to provide an interlocutor to all of those many niche industries and sectors related to the sea that do not have a major interlocutor in Brussels and to try to be an entry point for them. It is, in a sense, a very modest function, but I think that it could be quite an important one.

[55] I do not know what else we should do to help the sustainable development of the maritime leisure industry. One of the problems is that, for developing the sort of maritime leisure that you talked about, particularly pleasure boats, you need more berths—more marinas. Every new berth uses part of the coast. You will be faced with exactly that in Wales. You have a wonderful coastline that you want to protect in what would normally be described, in glowing terms, as all of its pristine beauty. You cannot have pristine beauty and a marina; the two are completely exclusive. A marina may be beautiful to some, but it is no longer pristine. So, there is bound to be conflict. We do not know how to resolve that conflict, although I think that it has to be resolved locally.

9.50 a.m.

[56] However, one thing that we can do centrally is to look at the regulations that apply to leisure ports. For example, I learned at that conference that there are rules for water quality in ports, and that there are rules for water quality for bathing beaches, but that there is nothing in between—there are no rules for water quality in a leisure marina. The question of which rules should apply there is an interesting one. What are we aiming for? I would have thought that we would be aiming for a higher standard of water quality in a marina than in a purely working port, but that is the sort of thing that we may have to look at to see whether we can provide some central guidance on it.

[57] I return to something very basic, which is that I also found out at that conference that we simply do not even have statistics on the number of berths for all our coastal member states. We do not have statistics on turnover; we are only beginning to get that for the cruise industry, for example, which is something that, as we said, is growing, and which brings in a lot of money, particularly to the ports of call around our coastlines. One thing that we believe will help most is if we can get much better socio-economic statistics on all the maritime sectors and coastal regions, so that those who are doing the local planning have better statistics on which to base their decisions. So, we can help there by providing better data for decision-makers. Our overall approach is to look for better tools that we can provide, so that those who are currently taking decisions can take better decisions. We are not looking to take those decisions in Brussels. That is a thread that, I hope, runs through everything that is in the Green Paper.

[58] **Brynle Williams:** Briefly, how will we balance the ecological aspect of the need for smaller ports, which sustain communities, with the need for ports that bigger boats can enter? Dredging is obviously contentious in many areas. How do you see us balancing the sustainability of jobs, transport and the ecosystem, side by side?

[59] **Mr Richardson:** If you take the example of dredging for the maintenance of ports, it certainly seems to me that you would not want to go in the direction of dredging every port to make it suitable for every type of activity. That makes no sense at all. From that point of view, I would argue in favour of concentrating the traffic that needed extensive dredging in

fewer ports. That seems to me to be the direction in which to go. So, you would not want general rules on dredging; you would want dredging to be related to the particular functions that have been designated for a port. That is the sort of principle that you could agree centrally. It would mean deciding locally on the activities associated with specific ports. That has to be a local decision.

[60] I would like to say a word on something that I have wanted to come back to since the beginning of the meeting, which is the balance between economic development and the environment. I noticed one comment in one of the stakeholder contributions, saying that we need to have the environment fully integrated into our sustainable development, but not just to have the marine strategy as its environmental pillar. You have no idea of how long we agonised inside the commission about the language that we used there. What we were trying to express was that, whatever else you have in your sustainable development policy—and we want more development, more income and more jobs; that is what the Lisbon agenda is about— we cannot do it without restoring the environment to the health that it should be in, which is the aim of the marine strategy. So, I do not care whether you call it the pillar, the foundation or the structure, for us, there cannot be a contradiction. We say all the time that we are looking for ways to ensure that we can have positive economic development and a better environment at the same time. It is what we have to do; it is the only way forward and the only meaning of sustainable development that makes sense.

[61] We believe that the only way to do that is by the injection of better thinking, knowledge, skills and technology. That is what we have to work on, otherwise we will not succeed in that overall aim. For us, it is not a balance; it is an integration of two things that we have to make compatible. It is not a concept of balance. I think that that is important for all of us, because we will not have political consensus on spatial planning, for example, unless those who are concerned about the environment have confidence that it will lead to a better environment and those who are concerned about jobs have confidence that it will lead to economic development. We need both of those things, and that is the way forward for us. It is not a question of balance; it is a question of integrating two goals and making them compatible by being innovative.

[62] **Alun Ffred Jones:** I welcome the document, but the devil is always in the detail. I wish to make three points. I am not sure whether the first is addressed in the document, but should carbon dioxide emissions from shipping be included in international measurements? Do you have a view on that? Secondly, I welcome the point that you made about spatial planning, but, again, the devil will be in the detail on that and we await the publication of the White Paper on the Marine Bill, and the Welsh Assembly Government's response to that, because I think that it will be very interesting and probably quite contentious. Thirdly, I wish to return to the point that you made about fishing. I like the point that you made about trying to get fishermen or the people who are involved in the industry to take ownership of fishing. Inshore fishing off the Welsh coast is small beer in many ways, but it is very important to many communities; it is a way of life in many areas. If you also include the shellfish industry, it is quite significant. However, the problem in Wales is that we do not do any processing; everything is taken out of the country, so we do not get the full maximum benefit from the industry. I think that some more control would be generally welcomed, as would the extension of the fishing limits. However, I think that this brings us into conflict with people's needs. Supermarkets and people in general want cheap food, which leads to bigger and bigger ships being used, which seems to me to be in direct opposition to the direction that you take in the document if we are to have sustainable fishing for the future. I do not know whether you have any comments to make on that.

[63] **Christine Gwyther:** I wish to point out that our cockle processors would be distraught if they thought that they were being ignored.

[64] **Mr Richardson:** There are ongoing discussions about extending the emissions trading system for greenhouse gases, including carbon dioxide, from the industrial installations to which it currently applies to transport. You will know from newspaper stories in the UK that there are discussions about how aeroplanes taking people on expensive Caribbean holidays produce carbon dioxide emissions. The same issues arise with respect to shipping. One of our arguments is that shipping should be developed further because it is better for the environment than land-based transport. That is inherently correct.

10.00 a.m.

[65] However, the problem with adding in carbon dioxide emissions from ships is that ships, as you know, are not located on our land. We can have a system in the UK that affects the carbon dioxide emissions from all UK land-based sources and those that are there cannot get around it. If you try to apply that rule to a ship in a UK port, which is under the British flag, you can do so. However, the owner then has the option of transferring to the flags of Liberia or Panama, which do not apply carbon dioxide emissions standards. So, the question of bringing shipping into world emissions trading systems almost certainly has to find an international answer rather than a European one.

[66] I accept your point on spatial planning. We agree that the devil lies in the detail. We await, with as much interest as you, to see which direction the UK Government will take in the Marine Bill. I think that that will be crucial. It may well be that the solutions found will inform our debate in a very large measure. We are not even sure about the timing on that, by the way. However, the good thing, in our view, is that several of our member states, in this case the UK, are already going in this direction, which is a good thing, whatever the details happen to be.

[67] On fish and shellfish, I could not agree more. A large part of our population wants cheap food and you get cheaper fish by fishing with large vessels rather than with smaller ones; I agree with that point completely. However, the question is whether we can have both in parallel and whether we can develop a system whereby we operate the big commercial fishing for one type of fishery stock and have inshore fisheries alongside it; we can then make the two compatible. It is not easy to do, but there are clearly arguments in both directions. I think that there is a paragraph in the Green Paper that addresses the value of fish caught.

[68] On the income and jobs generated, fish caught by an angler who is taken out on boats to fish three miles offshore, while he is on holiday in Wales, certainly generates far more income and jobs in Wales than the fish taken by a commercial fishing vessel that is then landed and never seen again in Wales. Why is that the case? It is because the fish caught by an angler generates income for the boatmen who take the angler out to fish, and for the hotel that he stays in and the restaurant where he eats. If that restaurant serves local fish, freshly caught that day, it will then be able, as you well know, to ask for a higher price because it is the day's catch and that is what attracts customers. So, we believe that we must look at the overall income and jobs generated by fishing in terms of the different ways in which fish are taken out of the sea. An interesting idea in the contributions to your consultation was that you should distinguish in some way between inshore fishing and offshore commercial fishing. That point is worth making and you will not be the only ones making it.

[69] **Christine Gwyther:** There are no further questions, so I thank John and Frederico for taking part in our discussion this morning. We will now move on to the second part of this item. You are very welcome to stay and listen, but, of course, you may have other things to do. Thank you for your contribution this morning.

[70] **Mr Richardson:** If you do not mind, we will say goodbye because we do have other things to do. However, it has been a pleasure being with you and thank you for the thoughtful

questions. We look forward to receiving your contribution in the not-too-distant future.

[71] **Christine Gwyther:** Maybe in the next few weeks—thank you very much indeed.

[72] We will continue with this item, and to lead us in the second part of our discussion we have Madeleine Havard and Lia Moutselou, both from the Wales maritime coastal partnership. Madeleine, would you like to give us a brief overview of where you are on this issue and then take questions?

[73] **Dr Havard:** I thank you for inviting us to committee. We have spoken to the Environment, Planning and Countryside Committee previously, and indeed we come under its umbrella, but we are an organisation that was set up by the Welsh Assembly Government in order to advise it, and we certainly feel that this committee covers an area that we should be much more engaged with—as indeed is the case for all of the committees of the Assembly. Our 28 members represent all of the interests involved in the marine and coastal environment in Wales, so we hope that we can bring information and support to your deliberations in many aspects of your work.

[74] I would just like to remind committee members of our shared vision for the marine environment in Wales. It came from the partnership and is reiterated in the environment strategy for Wales, stating that:

‘It will be valued by all, understood and respected for what it contains and provides. Our seas will be clean, support vibrant economies and healthy and functioning ecosystems that are biologically diverse, productive and resilient, while being sensitively used and responsibly managed’.

[75] This debate is timely and we have already had mention of the Marine Bill White Paper, which is coming out a week today, on 15 March, and I think that that will enable Wales—in response to that White Paper and, indeed, to the Act when it finally arrives—to be a leader in Europe, and particularly to help Europe in its visualisation of how the regions deliver EU policy. All our members are pleased at the debate that is taking place, as well as the wide consultation undertaken by the EU, which echoes the way that the National Assembly for Wales acts in its wide consultations, and we are pleased to take part in it.

[76] We are very clear that, in Wales and, indeed, the UK more widely, the tools that we currently have available to plan and manage human activities in the marine environment are inadequate, so we must do something now and take all of these opportunities for clarification. We feel that there needs to be a coherent, integrated and effective framework for managing the marine environment—as we have already heard today—based on marine spatial planning with sustainable development at its core, and we are particularly keen that this spatial planning is done on a regional seas basis. John was very positive that we had less of a difficulty than the North sea, where there are eight or nine member states; I still think that the Irish sea is a big enough challenge, but we need in Wales to be looking outside the territorial waters, although the practicalities are such that perhaps planning for territorial waters is the obvious and simple way to go ahead. We need to be looking at this at a regional seas level, particularly based on the ecosystem approach. I was particularly pleased to have that clarification from John about the environmental pillar being the foundation, and the importance of development and environmental health going hand in hand. It is certainly something that the partnership is very clear on, particularly because of the importance to Wales of tourism and the visitor pound, and the importance of our natural environment to that. John also clearly highlighted recreational activities and their importance in the fishing industry. The statistics that we provided in our response, which are very detailed in several of the other responses, show how important the coast and maritime sector is to our economy, particularly in tourism.



10.10 a.m.

[77] One of our members, the Welsh Local Government Association, has already helped the coastal partnership to identify funding that may be available for coastal and maritime issues in the next six years or so. That paper is available on the partnership website and, as John identified, it involves structural funds, convergence funding, regional competitiveness and employment funding, territorial co-operation funding, the rural development fund, the European fisheries fund, environment funding through LIFE and transport funding through Marco Polo. Those all have clearly identified areas where maritime and coastal initiatives can be funded, and so we are very keen that that funding is used to help us to implement much of the work that we are talking about.

[78] The framework is really important and that is what we have heard is the aim of the Green Paper. However, we need to see implementation on the ground and, again, in Wales we have some very fine examples of activities, partnerships and close co-operation that are delivering on issues of local importance, the needs of the local people, and we need to ensure that our experience is put forward into these areas that are currently being discussed.

[79] I will just highlight four main areas from our response. We have mentioned the value of the maritime and coastal environment to Wales. On tourism and recreation, the industry is important and it is not just about ports, shipping and fishing. There is a wide range of industries. There is particular potential for these innovative industries that are based around renewable energies and the blue biotechnology that are being talked about. There is a lot of potential in Wales to exploit that. From a cultural and biodiversity point of view, the value of the marine environment is huge to Wales.

[80] We are keen that, whatever comes in the maritime Green Paper and the Marine Bill, there is close integration between the land and sea continuum. We need to get those links in terms of the integrated coastal zone management strategy, which is being delivered to us next week at the launch on 16 March in Wales. We need to ensure that the links between ICZM and marine spatial planning are very clear and that we do not continue with this edge-of-land-start-of-sea idea. There is no such thing; it is a continuum and we need to ensure that those links are made.

[81] On the challenges of climate change, you have already questioned John on carbon issues and emissions and so on. Lorraine mentioned coastal erosion and coastal defence. There are huge areas of spend in Wales that are taken up in these areas. We need to look at risk assessment and particularly, as I said, to investigate renewables, and that is not just about wind energy; I think that there is huge potential for other sorts of renewable technologies in the marine environment. They need investment now and they could benefit us hugely in the future.

[82] Another area that John picked out is the need for good information, knowledge and data, not only in the development of research programmes but in the sharing of information and data that is already there. If the Green Paper can do something in setting up frameworks to enable that to happen more easily, it will certainly benefit us in Wales and everybody across the EU.

[83] The members are particularly keen to stress that we need to be able to use local knowledge and experience and translate that into data collection and sharing, because it is very simple to say that it is all based on science; it is not. It is based on the experience of people who know the marine environment well. We would stress the importance of that point. Finally, if the Green Paper can help with some standardisation, and with ensuring that parity and competitiveness are maintained across Europe, it will be a positive move. The

opportunity that we have with the Marine Bill coming on the statute book in the next couple of years and our ability to shape that now will help us to deliver many of the actions that Europe is hoping other countries may be able to follow us on.

[84] **Christine Gwyther:** There are many consultations happening at the moment; they are coming thick and fast. You mentioned the Welsh Assembly Government's coastal tourism consultation. We have Gareth Hall and Katherine Winnard from the Government side to help us out. Gareth, what is that consultation hoping to achieve?

[85] **Mr Hall:** We are trying to embrace a great deal of what Madeleine has just said. John mentioned a shortage of statistics. We do have some statistics, and I think that they are very interesting. In the 'Valuing our Marine Environment' report, which was launched earlier this year, there was an estimate that the marine and coastal areas of Wales support more than 92,000 jobs. That puts this into perspective. The strategy for coastal tourism is that tourism should be part of economic development, but that economic development must be sustainable. Therefore, we are also investing in quite a few facilities to improve coastal tourism. Quality is an important factor. A good example of that is the support that we have given to St Brides Hotel in Saundersfoot. We have also offered support to a new hotel refurbishment in Abersoch. That quality, and the integration of that facility and the wider environment, will be very important.

[86] Madeleine mentioned delivery; we are delivering quite a lot through the Catching the Wave initiative. In this financial year, we are spending £2 million. To give you an idea of the sort of projects that we are spending money on, we are developing berths and moorings in Holyhead marina; we are refurbishing the harbour walls in Foryd harbour in Rhyl, which is very important; and we are carrying out environmental works. Another good example is SA1 in Swansea, which is the integrated development of what was a dilapidated site. It was an old port that was redundant. We now have technical facilities and leisure facilities there. We are developing berthing facilities there, and we also have commercial activities. We are creating an environment—with integrated transport, including park-and-ride facilities—that is a good example of spatial planning in an integrated and increasingly sustainable way.

[87] We have very up-to-date statistics on the number of moorings in Wales. John mentioned the fact that they do not have that at EU level. There is a trade association that we work with very closely, and we have specific data on the existing and planned berths. We are trying to create a necklace of berthing facilities around the coast of Wales, so that there are safe havens for yachts as they travel around. John also mentioned cruise liners, which bring 10,000 passengers into Welsh ports annually. This is happening in Holyhead and Cardiff, which has a great opportunity coming up with the Ryder Cup to lay on facilities in the port. Cruise liners have also brought passengers into Mostyn, and there is a very ambitious plan to treble the number of cruise liner passengers that come into Wales over the next four years. Next week, we will take a stand at the trade annual conference and sales exhibition in Miami and we will promote Wales as the drop-off point for visitors for the Celtic resorts. It is a very competitive market, but we are making a substantial sales pitch in that regard.

10.20 a.m.

[88] **Kirsty Williams:** Given the fact that the maritime sector accounts for 6 per cent of Welsh GDP, which is higher than the EU average, we have huge potential in terms of economic development around our coast. The comments from Swansea university to the consultation stated that much of Wales's coast sets it apart from England because it is in Objective 1 areas and will be included in convergence programmes, and that that should carry proportionate weight in structural fund policy. Does Dr Havard have a view on whether or not our experience of Objective 1 gives due weight to maritime and coastal issues in the old programme, and whether or not you feel that the preparations for the new programme gives

sufficient weight and attention to structural funds to help this sector? I know that Gareth had a long list of things on which they have spent their money in this sector, but, as a proportion of the overall spend, how much spend from the existing programme has gone into maritime and coastal projects as opposed to other projects?

[89] **Dr Havard:** I will leave the latter question to Gareth. We were slow to get off the ground because of the complexities of where money could be accessed for specific projects. There were some outstanding and innovative projects, not just using Objective 1 structural funds, but using INTERREG, and so on, to help increase knowledge and research. The partnership was aware of the need to raise people's awareness of funding very early, which is why we produced the paper that we have. We are encouraging all of our members, as is the Welsh Assembly Government, to look at ways in which we can maximise the Objective 1 and convergence funding.

[90] The benefits that we have are particularly the fact that, unlike much of Europe, we have done much of the work on the statistics in terms of finding out where things are and where the gaps are, which is very helpful. The work that the environment partnership did on the marine environment in particular was aimed at doing exactly that. If we can put a value on it, it is much more helpful to be able to plan where we should go for the future.

[91] **Mr Hall:** Chair, you mentioned this—

[92] **Christine Gwyther:** Do not read your list. [*Laughter.*]

[93] **Mr Hall:** It is a long list, and I have read out most of it. I will look at the issue from the other way around. You said that there is a plethora of strategies, Chair, and we need to overlay those strategies, as Madeleine said, on the spatial plan in an integrated way to translate the strategies and join them up as a set of actions. Those actions should then go to the funds that you listed from the WLGA, and that should be made available, rather than the other way around. We want to deliver a set of outcomes to which we can sign up and then maximise the necessary resources, rather than go chasing money and finding projects to spend the money on. That is more strategic and outcome oriented.

[94] **Janet Davies:** I want to ask a few factual questions arising from Gareth's presentation, and I also have a separate question. Gareth, you said that there were 92,000 jobs in the coastal areas, but does that include the steel works in Port Talbot?

[95] **Mr Hall:** Yes.

[96] **Janet Davies:** It does. That is a significant part of that.

[97] I also want to know how many cruise liners have called at Cardiff over the past five years. Most importantly, I am concerned that, as you attract tourism to coastal areas, there is a huge danger of their being destroyed. We have seen it in other countries: there is a certain amount of what I would call low-quality development around our coast. I am not talking about the steel works, but about residential developments, caravan parks and so on.

[98] It is good to know that you have put money into two quality hotels, but how do you see there being control of what I would call rather degrading development around the coast? We want to preserve the wildness of certain parts of the coast; everyone on these two committees very much appreciates having a very wild coastline, in parts, to visit. How do you control the development of tourism there?

[99] Shall I come back afterwards to ask my other question, or do you want to hear it now?

[100] **Christine Gwyther:** Are they all for Gareth?

[101] **Janet Davies:** No, the other one is more for Madeleine.

[102] **Christine Gwyther:** In that case, no. Gareth can answer your first question briefly.

[103] **Mr Hall:** The number of cruise liners to have come to Cardiff is in single figures, but that has given Associated British Ports the confidence to invest in proper berthing facilities. In Holyhead, however, liners have to drop anchor offshore, and then they get pulled in by tender, which is dependent on weather conditions. We are therefore encouraging ABP, provided that we can create the demand, to provide a similar facility in Holyhead.

[104] On quality, that goes back to the point that you will get real quality only when you take an integrated approach. John, in the videolink, highlighted Brittany, which has approached this in an integrated way but also very locally. It has really engaged with the local people and the fishermen. Brittany is a good example of the maritime environment being the driver in the local economy, and it is a benchmark that Wales has been using a lot. I also want to mention the investment in the St Brides Hotel in Saundersfoot. The same operator has bought the old chip shop in the middle of Saundersfoot, and that has also now been upgraded. So, if you set the standard and quality, that drags the rest up by the bootstraps, and success then breeds further success. However, you have to have this around particular themes, which I think this integrated spatial planning approach could do. The whole coastal tourism strategy will be based around quality as well.

[105] **Janet Davies:** What about the preservation of the wilderness in parts?

[106] **Mr Hall:** Sorry, I forgot. You should not destroy what is one of your unique selling points.

[107] **Janet Davies:** My other question is about the Severn barrage. Could you give me your views, or those of the partnership, on the development of a Severn barrage, as compared with the more gradual development of tidal islands?

[108] **Dr Havard:** We have not had a debate about this, Janet, but a number of Members have been involved in the meetings and discussions being held. I believe that I am speaking for the majority when I say that building a barrage is perhaps not seen as the way forward considering the environmental issues, particularly given that we are talking about European protected sites in the Severn. Our emphasis as a partnership on the development of appropriate renewable technologies for the appropriate site is key, and it may well be that tidal islands or tidal streaming turbines would make far better use of what is, without a doubt, a fantastic resource.

[109] **Janet Davies:** I am relieved to hear that. Thank you.

[110] **Christine Gwyther:** The running order is Carl, Alun and then Jocelyn.

10.30 a.m.

[111] **Carl Sargeant:** I was interested in Mr Richardson's comments about approaching economic development versus the environment in more of an integrated way as opposed to having a balancing element. A business in my constituency, probably 18 months to two years ago, nearly lost 1 per cent of the UK's gross domestic product; we had an imbalance in the transfer of wings from Airbus through the port of Mostyn, as a dredging issue was delaying the process. That was very serious and caused extreme pressure at the time, and it could have

removed the company from Wales and the UK.

[112] On your earlier comments about local knowledge and how that is fed into the process, it is not always scientific; it is also about local knowledge, which was evident in that specific case. In a UK context, particularly given that Mostyn port is in Flintshire and we have the port of Liverpool almost opposite, just over the water in England, how should we interact spatially with Liverpool? Mr Richardson also said that it is not about dredging every port so that it is fit for purpose for everything. However, regarding the ecological footprint of Wales, trying to do our bit, and the port of Mostyn delivering wind turbines and economic development from its port, how do we balance that in a UK and a Welsh context? The figures are very important for the tourism sector, but it is also important for the heavy industry side. How do you look at that?

[113] **Dr Havard:** I think that this will be one challenge in responding to the Marine Bill. In our response, we will be talking about marine spatial planning and the management of the marine environment, and how Wales responds to that will be crucial. The partnership has developed over the past few months, which, I have to say, is a very short time, Kath. In response to a request from the Welsh Assembly Government, we have developed our thoughts on some of the options for marine spatial planning in Wales, and we highlighted a few of our areas of thought in the response to this committee's request for feedback. It is crucial that we look at it on a regional sea basis; we must consider the ecosystems. So, we should be looking at what is happening in the whole area, rather than looking just in our territorial seas and at lines on maps, because the marine environment does not work like that. Equally, the trans-boundary nature of pollutants and particularly the global issue of climate change do not look at lines on maps either. It will of course come down to decisions, which will not be easy to make. What we have asked of and suggested to the Welsh Assembly Government will help with the way forward, but there must be a decision-making process involving local people, and national and international interests must be taken into account. We will not come up with the answers, but we will come up with suggestions. It will be down to you guys to make the decisions.

[114] **Alun Cairns:** My point extends directly to that. Dr Havard's report talked about having cleaner waters, which promote greater biodiversity, sea life, wildlife, and so on. However, that leads to the potential of having more protected species, which then leads to potential difficulties in planning and development terms. For example, protected species off the coast of Porthcawl are causing a huge problem with the granting of a licence under the Food and Environment Protection Act 1985 to the developers of the offshore windfarm—which I would argue is of great benefit to the local community. Do you see that there is a conflict over these issues? How can we ensure that we get a framework that is fair to all, in terms of the spatial planning and specific planning policies that work in tandem with other policies? I have no doubt that we would all wish to encourage greater biodiversity, and so on.

[115] Tied to that is a request from a host of communities around the coast for marinas. That has the potential to have a huge impact on sand erosion and the changing of currents, which can also lead to sand erosion around the coast. How should we best manage that and manage the interests of economic development while bearing in mind that, in the presentation that we had using the videoconferencing link, there was an argument that tourism spend is worth far more than what fishermen catch in a trawler?

[116] I have questions on a second, completely different, topic. Do you want me to ask them now?

[117] **Christine Gwyther:** No.

[118] **Dr Havard:** May I just pick up on the point about improving environmental quality?

We would hope that that would up the ante of improving biodiversity around our coast, and it might, with luck, reduce the need to place species onto protected lists, because they will all be doing well and will be healthy. I realise that that is utopia—

[119] **Alun Cairns:** It will take a long time, as well.

[120] **Dr Havard:** Indeed, and the need to have protected species is a signal of our failure in environmental policy rather than our success. However, the fact that we have these things indicates that we need to integrate the policies clearly. Finally, difficult decisions will have to be made, and that is exactly the same with coastal erosion and coastal defence.

[121] We will have to get to the stage at which we balance the economics of protecting areas of land—it is a question of undertaking a cost-benefit analysis, basically—and say, ‘No, we cannot afford to do this any more’. You would obviously not choose to do that in Cardiff, but you may choose to do it in other parts of Wales where there will inevitably be landowners who will be affected. It may not affect people’s houses, but it will certainly affect people’s land. Those decisions will have to be made, and that is where we need an overall view.

[122] This was the idea behind the Wales spatial plan. We are talking about having an overall view of the priorities and what needs to be done where. In the marine environment, that is what we do not have, and that is what we are hoping to get some indication on. Members of the Environment, Planning and Countryside Committee may remember a diagram that was produced about activities in the Irish sea. You would think that the Irish sea was a quiet and grey place, but, in fact, it is very busy, with all sorts of things going on that you hardly think about, such as munitions dumps and cross-channel cables, on top of the fishing and wildlife sites. It is only after you have found out what is there that you can say, ‘These activities, we can manage’.

[123] That leads me on to your point about marinas and coastal movements. We are hopeless at managing coastal processes and the marine environment. We try to do it on land, and that is what agriculture and a lot of nature conservation works are: fiddling at the edges and trying to manage natural processes that want to be doing something else, but we are intervening. In the marine environment, that is almost impossible. We do it at the coast, and it is almost inevitable that, after you put up coastal protective structures somewhere, a bit further down the coast, you see that you have just deflected the problem further away. That has happened very locally here, with the undercutting of cliffs and so on. We need to look at the work that has been done already—and a huge amount has been done on coastal cells, and sediment and water movements—and make sensible decisions that will need to be based on economics, but also on social and environmental aspects. Fortunately, it is not my job to make decisions. We can advise and bring forward advice from all those undertaking activities—all the players—in the marine environment; however, it requires decisions from bodies such as this one.

10.40 a.m.

[124] **Brynle Williams:** Leading on from that, I was not sure whether I should bring this up, but you have now opened the subject up. On the protection of species, our current problem in the uplands is that of spawning fish not getting back. Is the problem one of illegal netting in the mouth of estuaries or does the problem start further back with commercial fishing hoovering up fish, taking out young salmonoids, and so on, before they get into the estuaries? We have this problem in the uplands, but that ecological problem is tied in with the economical values of inland rod fishing. Is there any evidence on whether this can be addressed five or six miles further out?

[125] **Dr Havard:** I think that this needs to be done at all levels. An interesting aspect of

the EU maritime policy is that we have highlighted that it needs to take into account all other EU directives and activities that are going on. If you look at the water framework directive, which we are looking at in terms of catchment management, we must consider what we are doing in the uplands as well as what is going out to sea. Again, it sounds utopian, but it probably will not happen in the next 20 years, let alone 10 years. However, the more that we can look at how systems are integrated—and the future has to be based on sustainable development—then the greater the opportunity to enable us to manage our systems locally and to know that the work is being done beyond our administrative boundaries. So, that will add to the work that we are doing rather than detract from it. That has been felt by many fishermen for many years—that all the work that they do to try to improve the inland waterways is totally defeated, because foreign fleets, six miles offshore, are hoovering up the fish before they come back.

[126] **Christine Gwyther:** Do you mean smaller fisheries with local ownership?

[127] **Dr Havard:** That would help, because there is this need to know that you are doing something for your own stocks as well as for your future. There is also the knowledge that we have a proper fisheries policy on the wider seas that supports conservation of stocks rather than enabling people to get around the technical measures that are in place.

[128] **Christine Gwyther:** Alun, you have a question.

[129] **Alun Cairns:** I have forgotten the question that I was going to ask.

[130] **Christine Gwyther:** You had two questions.

[131] **Alun Cairns:** Yes, I remember. On development, it is always the case that the polluter pays in terms of the environmental impact assessments and so on. Particularly in relation to sand erosion or sand dredging—and I am talking about specifics—do you think that there is potential for conflict? Does this review offer us the opportunity to charge a licence fee, for example, so that the Assembly Government or the governing body commissions independent research, rather than have the developers choose their researchers?

[132] **Dr Havard:** The licensing and consent issue will be addressed in the Marine Bill. We need to look at this sensibly. First, there is the simplification of the regulation, which everyone would be keen on, but the other point is the importance of ensuring that simplifying it does not only mean that we are opening the doors for unregulated development. There is much potential there for us to look at proper management.

[133] **Alun Cairns:** Thank you. I have another question for Mr Hall. We talked about cruise liners, and first impressions count when the cruise ship pulls up. What plans are there for investment around the sites that want to exploit the opportunities, and what sort of package is being presented on the tourism potential of those day-visits? Do not forget, they are very short-term visitors, who want to see as much as they can in a very short time.

[134] **Mr Hall:** In terms of direct experience, there is Holyhead where visitors are dropped off. I think the first time a cruise liner went into Holyhead, it was met with local schoolchildren singing Welsh songs. The visitors were then put on a coach and taken around Snowdonia. They were then dropped off en route at the shop in Llanfair PG. Visitor spend, per head, by tourists from cruise liners is top of the scale. If these people, who are very high-net-worth individuals, get a good visitor experience, then they will spend very good money. However, if the impressions are not right, literally as soon as they walk down the gangplank, then they will not, so we have invested quite a lot of money in Holyhead to get those good impressions and to get the whole visitor experience right.

[135] **Jocelyn Davies:** I should declare an interest as the owner of a caravan at Cardigan, which Janet Davies says is dragging down the coastline, although the carbon footprint of my family is much better than people who jet off abroad. So, I have got that off my chest, Chair.

[136] Many of our seaside and coastal towns are not at all vibrant—not just across Wales, but across the UK—and we must acknowledge that there is very significant deprivation along the coast; it will take an awful lot of work to turn that around. I take the point about high quality fish stocks playing a part in that, but it will take an awful lot more than that to put it right. I agree with a few things that Alun said about the conflicts—only one or two points, Alun—but we heard earlier that you cannot have your fish and eat it; that was quite clear from the presentations that we had earlier on.

[137] My question is on sea defences, which you mentioned, saying that an attempt to defend one part of the coast can have a detrimental effect on another part. There has been a lot of talk now about using the sea for renewables, which means putting an awful lot of kit into the water, and on the sea bed. Do we have the technology to predict the long-term effect on the coastline of putting large amounts of concrete into the sea bed?

[138] **Dr Havard:** The modelling is improving hugely; a lot of the technologies that we are talking about, certainly the new ones that are being developed, are moored rather than being hard structures. However, it is a very important point, Jocelyn, because the wonderful thing about the marine environment is that you can model to the nth degree, but then nature will do something different. So, we need to be aware of that. From an investment point of view, if you are talking about huge investment, which we are, because it is a difficult environment to work in, that is where the research and development aspects are so important—we must ensure that we have the best information, and improving information, to enable us to do this. It is much better than it was, but we need to continue that progress, and one thing that the partnership was keen to get from Europe was guidance on what to do when you do not have that information, because we are constantly having to make decisions about siting things without having the full data that we would like. Therefore, guidance on the process is important, and it should be risk-based—we advise taking a precautionary approach. Again, it will come down, finally, to decisions by local politicians.

[139] **Jocelyn Davies:** This comes back to the other point that I agreed with Alun about, which is that everybody needs to have full confidence that the modelling is accurate, and the inference was that the advice you get depends upon where you buy it. Of course, that is not acceptable in situations like this.

[140] **Carl Sargeant:** On that point, how do you measure the benefits? There must be benefits, when there are changes to the environment, so how do we measure them, and how do they feed into the process? We have talked a lot about the disadvantages of development, and changes to the environmental structure, and we accept that nature will take its own course, and we can model all day long without being able to guarantee what nature will do, but what do you do about measuring the benefit analysis of change?

[141] **Christine Gwyther:** Are you thinking of warmer seas?

[142] **Carl Sargeant:** Not in particular, but if there are changes, whether it is dredging or the building of coastal walls, there will be benefits for some areas. What do you do in that respect, and how do you measure it against the disadvantages somewhere else?

10.50 a.m.

[143] **Dr Havard:** How do decisions get made? You monitor, and you ensure that information is available, but many of these decisions are just not black and white—they have



to be done on a cost-benefit analysis, which finally comes down to what the long-term solution is. That is the area that we need to think about—moving away from short-term solutions, and thinking about long-term solutions.

[144] One area that monitoring highlights, which perhaps Janet alluded to as well, is that we have a huge skills shortage in all sorts of areas of the marine environment, whether it be in the tourism sector, where we know that the high quality that we are aiming for in Wales needs a huge boost in training and support, right down to the high-tech stuff, where there are a few centres of excellence. We are lucky in Wales in that we have higher education institutions that focus on the marine environment, and they are developing all sorts of technologies. However, these skills need to be rolled out across Wales, so that they will, hopefully, support those communities that, as Janet said, are still deprived in many cases and are on the lower levels of the economic scales.

[145] **Christine Gwyther:** I will wrap this up now. Claire has the wonderful job of poring over the transcript, and putting together some sort of paper to go into the commission. Thank you for your input this morning—it has been good to have such a frank discussion, and it is important that we continue to do that. We will send you a copy of the paper that we produce.

[146] We will break now for 10 minutes or so.

*Gohiriwyd y cyfarfod rhwng 10.52 a.m. ac 11.11 a.m.  
The meeting adjourned between 10.52 a.m. and 11.11 a.m.*

### **Technoleg Glo Glân Clean Coal Technology**

[147] **Christine Gwyther:** Welcome to the second half of this Enterprise, Innovation and Networks Committee meeting. I particularly welcome our visitors. I am sorry to have kept you waiting while we had our quick break. Joining us are Professor Nick Syred from the Welsh Energy Research Centre, Gerwyn Williams, who is the chair of Unity Power plc, and John Anthony, who is the director of Unity Power plc. Professor Syred, I invite you to make your presentation first, and then we will have the presentation from Unity Power afterwards.

[148] **Professor Syred:** I try to take a broad-brush approach, which is probably a bit different to the approach that my colleagues here will take. Clean coal has been around for 300 years. It started in 1712 with Newcomen and it has slowly evolved. We do not need to go over the detail but there are several common themes that have been with us for 300 years, and I think that they will be with us for a lot longer in the usage of coal. They are simple: reduced use of coal through higher efficiency, higher power outputs for a given size of system, substantially reduced emissions—now carbon dioxide—and reduced capital and running costs per megawatt of power generated. Those are simple measures, but they have been around ever since people have been using coal and steam, whether that is for a locomotive or a power station, as it is now.

[149] I will review the technological options before we start talking about sequestration. Sequestration will alter the technological options and will also cause an enormous number of problems for Government, which people have not really thought about. It is very easy for people to say glibly, ‘We will sequester’, but the long-term ramifications are enormous and, in some ways, they take the focus away from technological development. I blame the City of London, to be honest. What you need is slow, steady engineering improvements each year to make these systems better. Some of these big-bang things take the focus away from what you should really be doing. There is no quick fix; it has to be slow and steady.

[150] There are two technologies for advanced clean coal. There is the conventional system, which is very much like that at Aberthaw: very big, cathedral-like structures, operated at atmospheric pressure. With the latest designs in Scandinavia, and now China, where a lot of technological development has gone on—these are big stations with 1,000 MW of power output—you have thermal efficiencies of up to about 45 per cent. The capital cost is dear, depending on who you talk to, but these systems are well established. Emissions are low, but you need extensive and expensive flue gas treatments. You need to take out nitrogen oxide, sulphur oxide and particulates and, particularly with the large plant directive, it is going to get worse. Operators will have to install, on the back end of these systems, so-called catalytic systems for reducing nitrogen oxide and getting the emissions right. In relative terms, that will make them more expensive, but we shall return to that later.

[151] Physically, the developments are very large indeed. You have to admire people who put up the billions of pounds required to build these developments. However, the nice thing is that the risk is fairly low, because it is coming on to be near-proven technology, particularly given the number of units that are being built in places such as China. There is talk of one being built every week, although I do not think that the rate is quite that high. What is being built in China is not quite the highest technology, but it is very close to it indeed. You will hear that the Chinese are now bidding for steam turbine contracts in Europe; they feel that they are becoming competitive enough. In five or 10 years, I think that China will be tendering for complete advanced-technology conventional power stations. That will not be long in coming, given the number of them that it is building. When China builds something, it makes sure that there is technology transfer from the companies that are installing the systems.

[152] The integrated gasification coal cycle, the IGCC, has been around for a long time. That arises from the work on combined cycle gas turbines, the development of which started about 20 years ago using natural gas. If you combine a gas turbine and a steam boiler, you can get very high efficiencies. The General Electric unit at Baglan Bay is claiming an efficiency rate of about 60 per cent. That is very good when you consider that a coal fire-powered station has a rate of about 45 per cent. You can see the difference in the area that it covers and the manpower that you need to run it. In part, that explains the runaway success of these units—power generators love them. They can be installed within a couple of years, or maybe a little longer. Accountants love them because they are completely predictable. The timeframe is much shorter, and you can predict your returns. Let us be frank: when the price of gas goes up as it has done in the past year or so, the cost is passed on to the consumer.

[153] Those of us, including me, who are much more concerned about the long-term cost and security of supply want to see clean coal go forward, particularly in Wales. The IGCC takes a different route; it takes the combined cycle gas turbine and turns coal—or biomass, because it does not have to be coal—into a fuel gas. There are many different technologies around to do that. You take that gas, fire it into the gas turbine, generate power, which goes into the steam turbine, which generates more power. In that way, you can achieve an efficient cycle. Depending on which manufacturer you talk to, there are slightly higher and lower thermal efficiency rates. Capital costs also depend on which manufacturer you talk to, but they are generally higher than the cost per megawatt for installation of conventional systems. However, that may be due to the fact that there are very few of these around; with the big build conventional power stations, people know how to keep the costs low.

[154] Emissions are very low indeed. In fact, there is a panel in Brussels looking at zero-emissions power generation. With the IGCC and various technological fixes, you can achieve that; you can certainly achieve lower emissions more economically. That is what I think will probably eventually tilt the technology that way. Another huge advantage is the physical size; they are much more compact. You can manufacture many of the components offsite in a factory and bring them in, which makes it a much more attractive package to companies in

terms of investment returns and predictability.

[155] There are still uncertainties associated with this technology. Utilities consider there to be more risk, and when a company is investing billions of pounds, euros or dollars it is risk averse. Therefore, companies tend to stick to conventional technologies. Having set the scene on the existing technology, we need to think about sequestration. That will drive the design and what will happen in the future. I do various work for the Department of Trade and Industry and there is talk that everything built after 2020 that will run on coal will have to have sequestration. However, the noises and the vibes that emerge from those discussions vary over time.

11.20 a.m.

[156] It also depends on the energy mix and how big a proportion renewables would take. I do not think that it will get as large as many people would like to dream; we will still need natural gas and coal, and, as an engineer, I think that we will also need nuclear power, and I will tell you why in a minute. We need a balance of energies—no one source will solve all our problems.

[157] **Christine Gwyther:** We are discussing coal energy this morning.

[158] **Professor Syred:** I know, but you have to put it in the context of what will happen.

[159] **Christine Gwyther:** Well, please be brief on that, because we also want to talk to the people that are doing the job.

[160] **Professor Syred:** Okay. You have the Aeon proposal in Kent, which has sequestration incorporated, but if you look at the ramifications of sequestration for coal technology, it may be a little obtuse but sequestration raises many problems for Governments such as yours because of the 3:1 ratio of the carbon dioxide produced by burning coal. In other words, for every tonne of coal that you burn, you produce three tonnes of carbon dioxide. One of the problems with sequestration is how many places there are to geologically bury this carbon dioxide. There are many other associated problems that I have addressed in the paper.

[161] In summary, in terms of clean coal technology, there is a balance between existing conventional designs and IGCC. I think that it will eventually tilt in the direction of IGCC, because of the capability for zero emissions. I list in my paper a number of things that are going on in Wales that we perhaps should look at. An important one is that if you have sequestration of carbon dioxide, you do not necessarily need biomass in a coal-fired power station, and that can drastically alter how you operate and your strategy for what you do in Wales, and that is extremely important. It is quite obtuse, but many side issues arise from the direction that you take.

[162] I have listed some of what we are doing, but the conclusion is that sequestration will alter how we look at coal and it will raise many ramifications for you as a Government in many areas, and that will direct your technology. I think that the technology will eventually tilt towards IGCC.

[163] **Christine Gwyther:** Thank you very much. Gerwyn, I imagine that you will want to start for Unity Power plc.

[164] **Mr Williams:** First of all, I agree wholeheartedly with Professor Syred—his summary on burning coal as a fuel is absolutely correct. Our company, Unity Power plc, has been set up to utilise the coal resource in Wales mainly. We have a huge coal resource in

Wales; many people do not realise how much coal is left. There were hundreds of coal mines prior to nationalisation in 1947 right through the National Coal Board and the British Coal days, until we were left with only Tower Colliery as a deep mine. British Coal classified coal, or workable reserves of coal, as being seams generally over 1.2m thick.

[165] We believe that some 85 per cent of coal reserves in south Wales are viable. The south Wales coalfield is about 70 miles across by approximately 25 miles north to south. On average, if all the seams and sequences are in being, which, because of faulting, is often not the case, there are 137 coal seams. The total thickness of coal is often between 20m and 30m thick, and the coal's average specific gravity is 1.35. So, for every square metre of surface land, we have something like 40 tonnes of coal under the ground throughout south Wales. All that coal contains energy, even the thinner seams. The sandstones associated with the coal seams contain energy in the form of methane and ethane given off by the coal. There is, therefore, a number of ways in which we can exploit that coal. We can do it by opencast mining, but neither we nor most of the people of south Wales are in favour of that. We could open new deep-mine shafts; we could, as we do at the Unity mine in the Neath valley, mine by accessing the coal using tunnels or declines; or we could use more innovative techniques, such as those being used in Australia, where the mines are accessed by a spiral tunnel that allows vehicles to drive down. New conveyance systems are now available that will wrap around the spiral.

[166] As well as mining the coal, we can get gas out of the coal. Another of our companies, Coastal Oil and Gas, is currently drilling three coal-bed methane wells with a view to analysing the coal. Historically, going back to the 1965 British Coal records, we have found that there is about eight to 10 cu m of methane in every tonne of coal. If you look back to the earlier fact that I stated, that there is perhaps 40 tonnes of coal for every square metre of surface ground, there are 400 cu m of methane, potentially, under every square metre of land. This is a vast reserve.

[167] Some of the closed mines that we have drilled into have produced methane at 85 per cent and 86 per cent purity. From a gas point of view, we can get coal-bed methane, which is gas from virgin coal seams that have not been worked at all. We can get abandoned-mine methane from those mines that are not flooded, and we can get what is called 'de-stress gas', and that is basically a mixture of the two. Other techniques are being experimented with, in Australia in particular, including underground coal-seam gasification, in which two surface wells are drilled, they are joined by a borehole in-seam, an additive is pumped down through one well, and the coal is then, effectively, set on fire, which creates a synthetic gas. The DTI has done quite a lot of work on the possibility of underground coal-seam gasification, and although there are some areas of south Wales where that could be applied, there are certainly offshore areas, as there is a huge resource of coal offshore in Carmarthen bay, between Wales and Ireland, which is basically being ignored at the moment. That is a massive energy source that is available to Wales. In our view, we ought to be utilising the energy that we have in south Wales, rather than importing gas from Iran, Algeria or Russia, or importing coal from Russia, South Africa, Canada and Australia. We should be utilising our own energy sources.

[168] As Professor Syred mentioned, coal has other uses, one of which, if it cannot be mined, is to sequester carbon dioxide produced by burning coal in coal-fired power stations. When carbon dioxide is added to the coal matrix, for some reason that I do not understand, it helps the methane molecules to detach from the coal. So, instead of CBM, coal-bed methane becomes ECBM, or enhanced coal-bed methane, and it produces more gas.

[169] Of the two groups of companies that we have, one is a mining company and the other is a coal-bed methane company, and the latter requires what is called petroleum exploration and development licences to operate. We have overlapping interests, and the theory—which is not our theory; it is proven in America—is that the two companies work in harmony,

because when the gas company drills the coal seams, the drilling proves up the geology for mining work later. Producing coal-bed methane degasses the area, which makes mining safer. It does not detract energy from the coal seams, and when the coal seam is mined, the void creates permeability in the remaining seams, which helps to produce more gas. So, they are both complementary businesses.

11.30 a.m.

[170] Due to the economic growth in China and India, there is a demand for Welsh coal, which is a low-volatile coal, not only for use in the power generation business, but for pulverised coal injection, that is, injecting coal into blast furnaces. A certain area of coal in the centre of the coalfield is very well suited to that because it is low in sulphur. There is also a huge reserve of coking coal still available in south Wales.

[171] Mixed technologies were mentioned earlier, and we certainly believe in that, but we do not think that there is an easy fix. We also wholeheartedly believe that very high technology does not need to be applied to coal-fired stations to make them clean. The RWE Group is spending in excess of £200 million on Aberthaw power station, and it will meet all the necessary emission standards for years to come. We have spoken to Alstom, which is a French power station manufacturer, and to Siemens, a German manufacturer. Any station that we would plan to build would meet all the necessary emission standards, and the cost and the construction time of those stations is not prohibitive.

[172] I know that we do not have clean coal technology, but one big talking point is the RTZ Aluminium works on Anglesey. There is a lot of talk about a biomass station going there, but we believe that it is possible to build a clean coal station on Anglesey. We have a rail link at the surface of an old mine that is connected to Swansea container terminal, which has a terminal wharf that can take 32,000-tonne vessels. It is feasible for us to produce coal, take it to Swansea port, and to put it on a ship to Anglesey. I think that there is a case there to be considered.

[173] There are numbers of areas in south Wales where we believe that there are mineable reserves, but, before we can mine those reserves, we have to carry out a great deal of exploration work. We are currently carrying out 2D seismic work and drilling three boreholes over our existing mine, which costs a lot of money. We hope that, as part of trying to keep and use our intrinsic resource, someone will make some money available to help exploration, because trying to raise money to open a coal mine and to build a power station is hard and, in current stock-market conditions, trying to raise money purely for exploration is extremely difficult.

[174] I should add that when coal-bed methane is produced, it is a very pure form of methane; it is probably 96 per cent to 97 per cent methane. Methane has four hydrogen atoms and, if we split the gas atoms, we can use methane to manufacture hydrogen, using hydrogen reformers, and this is already being done in Wales. The company that we are in partnership with, Eden Energy Ltd, which is an Australian company, has patented technology that came from NASA that allows hydrogen to be stored in a supercritical state, which is somewhere between a gaseous form and a liquid form. It is more stable in that form. By adding 6 per cent or 7 per cent hydrogen back into methane, they can create a gas called hythane. Hythane can be used as a very cheap road vehicle fuel; lower on cost and on emissions. We are sitting on that in Wales and I think that we should be looking at it seriously and putting some money towards research in that field.

[175] The other area where we feel money should be spent is transport systems. We have lost a lot of our railways and a lot of our port facilities for coal. If we are going to use coal, we need to be able to transport it around south Wales. To generate on site, if we go anywhere

west of, I would say, Pencoed, we are struggling to get electricity export capacity on the Western Power Distribution system; even on the National Grid, where we need usually to be over 100 MW, we are getting tight. So, the electrical infrastructure in Wales needs serious consideration as well.

[176] That is really all I have to say on the matter. The summary is that I think we should be looking at our own resources very seriously and utilising them.

[177] **Christine Gwyther:** I think that we would all agree on that and that is one reason why the committee asked for this item to be considered at this time. We are grateful that you have come to the meeting and we would be even more grateful if you would submit yourself to questioning as well. If the three of you are happy to take questions, I will throw it open to Members. Leighton?

[178] **Leighton Andrews:** I have quite a few questions. As I represent the Rhondda, I do not need to be persuaded of the case for clean coal technology. We do not have any working mines, but we still have some working miners, who work in Tower Colliery. The difficulty in all the discussions that I have had about clean coal technology over the past year or so has been about trying to get hold of the right kind of analytical data as to what we can do in Wales. That comes down to a number of different elements. We know that there are millions of tonnes of workable coal. However, it seems to me that the phrase ‘workable coal’ raises lots of subsidiary questions: it is a question of what is suitable for specific kinds of exploitation through specific forms of clean coal technology; how you can extract it sustainably and in a way that communities will tolerate; and what is economic to do in terms of the market, which will of course be variable because coal is now more economic as a fuel than it was 10 years ago. All those questions are out there, yet it is difficult to get an answer to them.

[179] If you were to say, as one source that I have seen has said, that there are 250 million tonnes of useable coal—I have seen other figures that double that—how much of it is really workable and can really be used in terms of the different technologies that you have for clean coal, be they utilising underground coal gasification or other routes? What level of capital will be required to exploit it? What kind of market are we potentially talking about? What is the best use of public investment and support for this? I know that Professor Syred’s organisation is doing a study of underground coal gasification at the moment, for example. However, frankly, it seems to me that we do not have sufficient data on what is viable in Wales. Is that a fair assessment?

[180] **Mr Williams:** We need to spend money on exploration, on finding out exactly what we have in terms of quality and mapping out the geology in the best manner that we can. We have spent 10 to 11 years digitising every old mine-working plan that we could use and we have overlaid all of those in CAD. We have all of the geographical structures in CAD, we have all the underground contoured and we have the surface contours on it. We also have aerial photographs, gas distribution systems and Ordnance Survey maps. So, we have a fairly good picture, but there is only one way to be absolutely certain, and that would be to drill down and carry out 3D seismic work, preferably. That would cost an awful lot of money and it is very difficult for us to raise that sort of money purely on an exploration basis.

[181] **Leighton Andrews:** I am slightly surprised by what you said about the difficulty of raising funds from the market to do that, given that coal has more recently come back into favour—I suppose that that would be the way to put it. You would have thought, therefore, that there would be investors who would be prepared to subsidise that kind of exploration.

11.40 a.m.

[182] **Mr Anthony:** That is true, but do remember that the market takes a fairly short-term view and it expects a return. I can tell you with some authority that the market is not in favour of exploration. It will fund mine development and mine production, because you will get a return, but if you are looking at a national asset and trying to analyse and work out exactly what we have in Wales, you will find that that is much more difficult.

[183] **Leighton Andrews:** What is your estimate of the overall cost of exploration that you would need to determine whether we have a viable industry in Wales?

[184] **Mr Williams:** We are currently making three boreholes to a depth of between 550m and 800m at an existing mine. For provable reserves, under the Joint Ore Reserves Committee code, which is the code usually used by the London Stock Exchange, you are allowed to classify a 400m radius around that borehole as proven reserves. Those holes will cost us around £80,000 to £90,000 each to drill and core. We are spending on three coal-bed methane coring holes. We have to go to great lengths to do that. The process involves an Irish drilling company, Priority Drilling, a driller from Mexico, Tecora from the USA, which is coming to test the coal and is the world expert in coal testing, and a coal-bed methane expert from Australia. It will cost us around £1 million to drill three holes and test them for coal-bed methane.

[185] We are currently carrying out 2D seismic surveys over our mine. It will cost around £150,000 to £170,000 to cover 10km. Given the terrain in south Wales, which, as you know, is generally hilly, it is difficult to activate 2D seismics. We are lucky where we are, as we have the forestry road network above us. What is really needed for coal mining are 3D seismic surveys, which are expensive, because you need to cover 2km on the surface to get one useful square kilometre underground. If we were to do 3D seismic surveys over our mine now, we would be looking at a cost of £5 million just to cover the mine and get a 3D picture of our licence. The competent person's report says that 89 million tonnes are recoverable from the mine.

[186] **Mr Anthony:** That is just one mine. So, if we were looking at the south Wales coalfields, we would be talking about fairly large sums of money.

[187] **Leighton Andrews:** You are, but there seems to be a stage before that. I do not know how much coal is left underground in the Rhondda, but I suspect that there is a fair bit in different places. However, there is a question of what communities now feel about that. No-one is expecting us to go back to the days of traditional deep mining all over Wales, and certainly not all over the Valleys. This is where I come back to the analysis, which I think is the most serious gap that we have at the moment. The analysis also needs to incorporate some view of what might be a sustainable approach to this and, using the planning guidelines that have already been drawn up, it also needs to incorporate what you would immediately have to rule out because of new housing, industrial developments, and so on.

[188] **Mr Williams:** Our existing mine, which you are welcome to visit any time, was developed in the mid 1990s by Ryan Mining. It is less than a mile from the village of Cwmgwrach. We have a strong relationship with the village. The name of our company, Unity Power plc, has two meanings: the first is that generating electricity at Unity Power is the most efficient state—there is no capacitive or reactive effect; secondly, it is about the unity of the community, bringing people together and turning mining back to how it used to be. I started working underground when I was 15, in 1965, at St John's Colliery with British Coal. The villagers depended on the mine. In the Llynfi valley, we had St John's, Coegnant, and Caerau, and most people worked at any one of the three. We sponsor the local rugby club, we look after the local school, and we have regular meetings with the local community council. We are there, and the community benefits from our presence. If we receive complaints, we deal with them.

[189] **Leighton Andrews:** I was not making that kind of comment. I am sure that you are well integrated into your local community, but what I was getting at was more that mining communities are not necessarily looking to go back; not only that, I suspect that we have lost many of the skills that we need, which may be another issue that is on your agenda anyway.

[190] **Mr Williams:** With respect, mines do not need to be in communities any more; they can be some distance away. As I said earlier, there are new conveyer systems that can travel 30km or 40km. We could put a spiral shaft down on top of Margam mountain and, quite honestly, no-one would know that we were there. You have to load the coal somewhere and it must go by rail somewhere. If it is going to go to Aberthaw, you will do what we are planning to do, which follows the South African model. We look at our area of coal. A coal station with average efficiency would take something like 300,000 tonnes a year for a 100MW station. We are looking at that model of stations, where we can export electricity and where there is coal to mine. So, we do not need to take coal anywhere.

[191] We need to deal with the waste, because you will always have a waste product. We have been speaking to Alstom, the French company, and it says that we can blend the coal and put a high ash coal into the station, and so we can get a waste product that is a saleable aggregate. There are all sorts of ways of looking at it. Deep mines as there were in the Rhondda have gone and will never come back, but there are other ways to mine coal in south Wales; it is not opencast mining, but deep mining by new methods.

[192] **Leighton Andrews:** I have two final questions. First, simply, where would your priority be for public investment in terms of clean coal technology? Secondly, could Professor Syred please comment on both that and the underground coal gasification aspect?

[193] **Professor Syred:** I will go slightly backward to take some of the issues that Unity Power plc raised. The real problem, which is why the British coal industry virtually collapsed 15 years ago, is very simple: the world price of coal was relatively going down and transportation costs were getting low. The cost of transporting coal by ship is incredibly low, and the big cost is in moving it from the terminal to your power station. That is really what helped to kill off the coal industry, not only in Wales but in the whole of the UK. Coal prices are somewhat volatile and the problem—unless you have protected markets—is that you can build a new coal-fired power station, but an operator is there to make a profit and so, if he can buy cheaper fuel on the global market, he will. In many ways, fuel is still too cheap. That is the real problem, let us be frank. Coal is mined in countries where—I will be kind—the cost of labour and the cost of lives is significantly lower than in western Europe, North America or Australia.

[194] Coming back to where you should invest, my colleague from Unity is exactly right. If you want to start extracting energy from Welsh coal, whether it is coal-bed methane, actual mining, or underground gasification, there is probably room for it all. You have to find out what you have got first. Unless you know what you have got, what you can exploit at a sensible price and get to the market as something that is reasonably competitive, you will get absolutely nowhere. Coal-bed methane is obviously sensible, because it is a resource that is there, and you have the infrastructure to use it in our natural gas pipeline.

[195] If you look at vehicles, I agree that, instead of making hydrogen, some of the European projects have shown that it is often far better to burn the natural gas directly in buses and cars, rather than have an additional energy-loss system to make hydrogen. I have some figures that I could let you have, if you want, to show that you waste 50 per cent of your energy by converting it to hydrogen, from wheel to usage.

11.50 a.m.



[196] One of the most efficient things that you can do is burn methane in vehicles. On the continent, there are schemes to recover methane from rubbish tips to run vehicles, and there has been talk of that in the UK. Underground gasification is emotive. I think that there are possibilities, more so when you have offshore coal. It will be difficult to gasify coal beneath densely populated areas, unless you are really desperate for fuel. I follow the work of the Department of Trade and Industry and I know the people involved, so if you talk to them, they will say that you need to do it at least 600m underground when, in Australia, it is 200m for underground and offshore gasification. This applies to the north of England and Scotland, but I am sure that the same things will apply down here. We have someone who has started to look at this and we have a Welsh Energy Research Centre contract. Certainly, there is a big gap in what we know about off north Wales—we know that there should be reserves there and, as you say, in Carmarthen bay. So, I would agree. You can argue about the priorities, but if you do not know what you have, it is difficult. However, having done it and started to produce it, you have to find a subtle way—the French way, shall we say—of protecting your indigenous industry from the vagaries of the world market. One of your problems is the city of London. As soon as a business experiences a trough, there will be pressures to do something about it. Long-term continuity is a huge problem.

[197] **Alun Cairns:** I want to focus on issues that we can possibly directly influence, certainly in the short and medium term. I accept some of what Professor Syred has said, but I want to focus on clean coal. The First Minister, to his credit, has talked about the benefits of clean coal in the past. At meetings of the Business Partnership Council, he has talked about developing the technology and even gifting it to China because of worries over the scale and the number of coal-fired power stations being built there. Obviously, any Government of any colour will see that we have a huge resource here and will want to use it to benefit the Welsh economy. Leighton Andrews has talked about what we have and how we bring it together. That is the first issue. I think that Mr Anthony talked about having 3D vision across the whole of south Wales. In fact, we probably need to take it in bite-sized chunks; let us explore it on a smaller scale—on a mine-by-mine basis, or whatever it might be—to begin with, rather than looking at it on a south-Wales basis. In order to give the city the information that it needs in order to invest, what do we need to do, and what scale of sums does the Assembly Government need to be aware of to be able to consider whether or not it can support this and take the idea forward?

[198] Secondly, what are the practicalities thereafter? For example, you talked about an Australian, a Mexican, and someone from another nation—I forget which nation it was—in terms of your current exploration. We could argue that we have a lot of experience here in coal mining, but that was 20 years ago, so are our skill levels where they need to be for the exploration? Even if we get the green light, do we have the skill levels to take it forward? What about the knowledge and support of the Governments in the Assembly and at Westminster? Do we have the capacity to support you and your investment to deliver this? I may have some supplementary questions, but I want to try to take the debate forward, to know what we need to do and where we go from here.

[199] **Mr Williams:** On your first question, I do not know how much it is going to cost because we do not know how much we will do. However, we could certainly go away and come back and say, 'If we explored this area, it would cost this amount of money'.

[200] The practicality of it is not an issue. We have had practically unique permission to drill for exploration purposes for gas, because you are generally governed by the Petroleum Act 1934; you have to comply with that Act. We need planning permission and Department of Trade and Industry permission and so on, but we get all of those. We have had 28 out of 29 planning permissions approved. Only one was turned down, which was in the Rhondda as it happens, but generally people are in favour of exploration.

[201] It is practical. Believe it or not, we have been waiting around seven months for a suitable drill rig. Again, because of the emerging Chinese and Indian markets, every drill rig in the world is being used. We have to buy a new rig—and there is a waiting list for the new rig—to drill the exploration holes for us for the mine and for the coal-bed methane.

[202] The company, Composite Energy, is a joint venture with British Gas in Scotland. They are doing the same as we are doing down here and they are very successful. They produce coal-bed methane. Around 30 per cent of the gas in Queensland, Australia now is coal-bed methane. Around 9 per cent of all the gas used in the USA is coal-bed methane and we have a great deal of it in south Wales. So, the practicality of it all is easily governed—we can do it.

[203] **Alun Cairns:** How about skills?

[204] **Mr Williams:** Shortage of skills is a major problem. We bring in people from Mexico and Australia because, with due respect, everyone in the UK knows everything there is to know about coal-bed methane, but no-one had ever extracted it until Composite Energy did it. So, we are bringing over the people who have done it successfully. People in Australia have drilled for coal-bed methane and produced it successfully. The driller that we have brought over from Mexico is probably the world's best coal-bed methane driller. It is an art; it is not something that you can teach someone by sending them to college and giving them six months' experience of using a drill. This man probably has 15 to 20 years' experience, and that is not something that can be developed overnight.

[205] So, we do not have the exploration skills and neither do we have the underground mining skills. I was in British Coal for 22 years and when it finally reduced manpower, it set a retirement age of 50. So, you could finish at 50 on voluntary redundancy. Many left the industry. However, prior to that, it stopped taking apprentices on. I worked underground for a year before I started my craft apprenticeship. The year I started at Bridgend technical college, there were around 120 apprentices. They have all gone. We are in a situation of a skills gap. We have to start a training programme, but to fill the gap do not be surprised if we have 20 or 30 Polish contractors working underground for a period.

[206] **Christine Gwyther:** What is the Government's view on the skills gap?

[207] **Mr Hall:** It is almost a chicken and egg situation. We are looking at an old industry that is applying new technologies and applications. Much of this is translating theory into practice and we are drawing on global expertise. We need to respond to those skills demands, because, at the end of the day, we can only get people trained up if there is opportunity at the end of the training. At the moment, that is hypothetical. Market forces quickly come into force—when an industry goes up, the skills follow behind it. However, that is not to say that we cannot start to think about the core competencies and perhaps adapt some of the generic engineering and other skills that could be applied to the new technologies that would be applied if this proves valuable.

[208] **Alun Cairns:** May I suggest, as a practical way forward—I do not know if there is a cross-party view on this—that, if I were in Mr Williams's shoes, I would have a hit list, noting what needed to be done and how much money was needed; if that worked out well, these skills would be needed, this sort of support, both financial and in terms of expertise, resources and facilities or whatever. Hopefully, the Assembly Government would be able to respond positively to some of those requests. If it did not, I am sure that we would want to find out why, but that is the way forward from here, otherwise I feel that there are a lot of things in the air, and you cannot expect the Assembly Government to invest in skills training unless a project is developed for this work. I am sure that that is the way forward, and I would

certainly be sympathetic and support it.

12.00 p.m.

[209] **Alun Ffred Jones:** Methane-gas technology seems exciting and full of potential, and can of course be used with combined-heating-power fuel cells. However, to go back to the issue of burning coal, and the Stern report and all the business about climate change, and the impact of carbon dioxide emissions, one fact that was new to me was that one tone of coal produces three tonnes of carbon dioxide—

[210] **Professor Syred:** Yes, approximately—it is very simple chemistry assuming 80 per cent—

[211] **Alun Ffred Jones:** I am sure that you are absolutely correct—I am not disputing that for one minute. It just seems a lot of carbon dioxide. Carbon sequestration, then, is obviously an important issue, but you seem sceptical about it in your report. *[Interruption]* I will let you come back in a moment, I just want to finish the question. Are you sceptical? Is there any room for the old deep coalmines of south Wales to be used in capturing the carbon dioxide, or is that either too difficult, or impractical, or whatever?

[212] **Professor Syred:** I am no geologist. You say that I approach sequestration with a bit of, shall we say, trepidation. I do so because I think that it is like a lot of new technologies, in that people think that it is the answer to their prayers. However, in my view there are just as many difficulties with sequestration as there are with nuclear waste. They are different, and nuclear waste is very active, nasty stuff, but there is not that much of it, and so it is easier to guard. With sequestration, you are talking about billions of tonnes of carbon dioxide, which you would have to guard for a long time, and you would not really know if it was staying down there, because you would be using, to put it crudely, every available hole there is.

[213] If you attempt sequestration on a large scale, you cannot guarantee that the carbon dioxide will stay down there. We are not talking about 10 or 15 years; we are talking about 1,000 or 10,000, and you only need 0.1 per cent leakage to cause problems. Sequestration will happen, and I support it—I think that we have to start doing it—but there is a difference between the demonstration projects that are being proposed and large-scale implementation, because, if you look at the geological structures that are proposed, a lot of them have been used for oil exploration, for instance, or gas exploration, and may be hydrofractured, because you have been taking a lot of material out. To give an example, in the North sea the bed has dropped by 2m in the Forties oilfield, and that is just one example. The oil companies are talking about initially using the storage fields that have had high carbon-dioxide content, so you should be able to store it there.

[214] I suspect that we will we have quite a lot of demonstration. I support this, and I think we have to go down this route, but what I am saying is that there will be all sorts of difficulties and costs for the Government as well, because I do not think that you can expect the utilities to want to look after it. Those costs will fall on Government and the taxpayer, to guard it, and even just to validate it, finding out the leakage rate and whether the carbon dioxide is staying down there. What happens if you get a serious leak? Who is responsible? There is a whole raft of different problems associated with this, and they stem from the sheer physical quantities that you have to store to make a difference. Sequestration is not difficult—it was mentioned in a newspaper the other day that there were going to be 12 demonstration units in Europe, and yes, you can monitor those and look after them. The Norwegians have a field where they are pumping carbon dioxide and undoubtedly they are monitoring that very well. However, imagine multiplying that by 1,000 geological structures; how are you going to monitor it? You talk about three dimensional seismic work, and certainly it is a good career to go into if Government ends up supporting sequestration. However, I am not putting a

dampener on it, and I think that it is a road that we should go down.

[215] **Janet Davies:** Briefly, Chair, because a lot of things that I wanted to say have been covered, I would certainly agree that the Government, particularly, will need to have figures and comparisons and be able to choose the best way forward, and it should probably be a mixed way. It struck me some time ago that deep mining will not be acceptable to the communities of south Wales any more. I was at a meeting in the autumn where a geological engineer talked about the difficulties of carbon sequestration. I also understand that, to get the hythane, you need seams that are least 2m thick—preferably more. However, a relatively low proportion of the south Wales seams are that thick, whereas, in Leicestershire and Yorkshire, there is more potential for it. Therefore, the methane extraction would seem to be the best way forward, along with the integrated gasification combined cycle plants, certainly for the next 10, 15 or 20 years.

[216] However, what we need to know—or you will all need to know when I am not here any longer—are facts, figures, statistics, the best way forward, and what the blockages are, so that the Government can act on that. I first met Gerwyn about five years ago to discuss methane extraction, and not much seems to have been able to happen. Therefore, there are clearly obstructions stopping all this happening, and we need to have something clear on which to move on.

[217] **Christine Gwyther:** Thanks for that, Janet. I do not believe that there was a specific question there, was there?

[218] **Janet Davies:** No.

[219] **Christine Gwyther:** However, there were some useful points there. Thank you to the three of you for your contribution this morning. We will probably include this in our legacy paper for whatever committee comes after us after May, because we will have to return to this issue, and we should not let it fall off the agenda. So, thank you for presentations this morning.

[220] **Mr Williams:** May I make one brief point, Chair?

[221] **Christine Gwyther:** Yes, of course.

[222] **Mr Williams:** The mining industry in south Wales cannot work without the Mines Rescue Service Ltd. Currently, that service gets paid 16p a tonne on coal that is produced. It created about £80,000 in the last year, and it takes £1 million a year to keep the rescue station going. It needs support. It brings in third-party income by training fire brigades, rescue services, and so on. It is on standby for the Big Pit Museum—if anything happened there, it would be expected to go underground—if trains crashed in the Severn tunnel, it would be expected to go into the tunnel, and, probably, if there was a terrorist attack, and people were trapped in buildings, it would be called on. Therefore, some Government support should be made available to the Mines Rescue Service, as is made available to the fire service, the ambulance service, and the police.

[223] **Leighton Andrews:** The Mines Rescue Service is based in my constituency; I visited it last week. I endorse everything that Gerwyn has just said. What we need to look at—and this goes across Government department briefs; it is not just this committee, because the training of the fire service is also included in that—is utilisation by Welsh-based organisations, including the fire service, and the level of contribution that is paid to that service for its work. Extraordinarily, it trains fire brigades to the standards required by people having to react to 9/11 in the United States, and it is one of the few organisations in the UK that could do that.

[224] **Christine Gwyther:** That point is well made, Gerwyn—thank you for bringing it up. As well as going out live on television, it is now on public record, and the Government is here to listen to that. Therefore, thank you for your contribution this morning.

12.08 p.m.

**Adroddiad i’w Drosglwyddo i’r Pwyllgor a Fydd yn Olynu yn y Trydydd  
Cynulliad  
Legacy Report to the Successor Committee in the Third Assembly**

[225] **Christine Gwyther:** Is the legacy report agreed? I see that it is. That includes coal and the Marine Bill, which I believe we will have to return to again.

12.09 p.m.

**Cofnodion y Cyfarfod Blaenorol a’r Materion sy’n Codi  
Minutes of the Previous Meeting and Matters Arising**

[226] **Christine Gwyther:** Are the minutes agreed? I see that they are. Thank you.

*Cadarnhawyd cofnodion y cyfarfod blaenorol.  
The minutes of the previous meeting were ratified.*

*Daeth y cyfarfod i ben am 12.09 p.m.  
The meeting ended at 12.09 p.m.*