



# **Cynulliad Cenedlaethol Cymru The National Assembly for Wales**

## **Y Pwyllgor Amgylchedd a Chynaliadwyedd The Environment and Sustainability Committee**

**Dydd Mercher, 20 Tachwedd 2013  
Wednesday, 20 November 2013**

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Motion under Standing Order 17.42 to Resolve to Exclude the Public from the Meeting

Cofnodir y trafodion hyn yn yr iaith y llefarwyd hwy ynndi yn y pwyllgor. Yn ogystal,  
cynhwysir trawsgrifiad o'r cyfieithu ar y pryd.

These proceedings are reported in the language in which they were spoken in the committee.  
In addition, a transcription of the simultaneous interpretation is included.

**Aelodau'r pwyllgor yn bresennol  
Committee members in attendance**

Mick Antoniw	Llafur Labour
Russell George	Ceidwadwyr Cymreig Welsh Conservatives
Llyr Gruffydd	Plaid Cymru The Party of Wales
Julie James	Llafur Labour
Julie Morgan	Llafur Labour
William Powell	Democratiaid Rhyddfrydol Cymru (Cadeirydd Dros Dro) Welsh Liberal Democrats (Temporary Chair)
Joyce Watson	Llafur Labour

**Eraill yn bresennol  
Others in attendance**

Gideon Carpenter	Hydrolegydd, Cyfoeth Naturiol Cymru Hydrologist, Natural Resources Wales
Ceri Davies	Cyfarwyddwr Gweithredol Gwybodaeth, Strategaeth a Chynllunio, Cyfoeth Naturiol Cymru Executive Director for Knowledge, Strategy and Planning, Natural Resources Wales
Natalie Hall	Rheolwr Strategaeth, Cyfoeth Naturiol Cymru Strategy Manager, Natural Resources Wales

**Swyddogion Cynulliad Cenedlaethol Cymru yn bresennol  
National Assembly for Wales officials in attendance**

Chloe Corbyn	Y Gwasanaeth Ymchwil Research Service
Alun Davidson	Clerc Clerk
Elfyn Henderson	Y Gwasanaeth Ymchwil Research Service
Catherine Hunt	Dirprwy Glerc Deputy Clerk
Lisa Salkeld	Cynghorydd Cyfreithiol Legal Adviser

*Dechreuodd y cyfarfod am 09:37.  
The meeting began at 09:37.*

**Ethol Cadeirydd dros Dro  
Election of Temporary Chair**

[1] **Mr Davidson:** Good morning. The first item of business today is the election of a temporary Chair. Unfortunately, Dafydd Elis-Thomas has been taken ill and is unable to be with us this morning. I have had a nomination for William Powell to act as temporary Chair. Are there any objections to that? I see that there are none. Therefore, William Powell is elected temporary Chair.

## **Cyflwyniad, Ymddiheuriadau a Dirprwyon Introduction, Apologies and Substitutions**

[2] **William Powell:** Diolch yn fawr, **William Powell:** Thank you very much, Alun. Bore da, bawb, a chroeso cynnes i Alun. Good morning, everyone, and a warm sesiwn nesaf y pwyllgor heddiw. welcome to the next session of the committee today.

[3] A special welcome to Gideon Carpenter, Ceri Davies and Natalie Hall, who are here for the important session that we will be dealing with. We have apologies, as has been noted, from Dafydd Elis-Thomas, and also from Antoinette Sandbach. I am not quite certain whether we will be joined in a little while by our colleague Julie James. There are no fire alarms due this morning, so if you hear anything, it is the real thing, and we will be in the hands of the ushers. The normal housekeeping arrangements apply. Translation is available for those who require it and everyone can speak in Welsh or English as they wish and are able this morning.

09:38

## **Safonau Llif Ynni Dŵr—Tystiolaeth gan Cyfoeth Naturiol Cymru Hydropower Flow Standards—Evidence from Natural Resources Wales**

[4] **William Powell:** So, again, welcome to all of you. We have a particularly important session this morning, and we have a team from Natural Resources Wales to present its case. I know that Members around the table have a number of questions. So, I ask you, please, to introduce yourselves briefly to check the sound levels and to make any introductory statement that you would like to, and then we will get under way.

[5] **Ms Davies:** Okay. Good morning, I am Ceri Davies from Natural Resources Wales. I am executive director for knowledge, strategy and planning.

[6] **Mr Carpenter:** I am Gideon Carpenter. I am a technical specialist in Natural Resources Wales's hydrology and water resources management team.

[7] **Ms Hall:** I am Natalie Hall. I am a strategy manager, leading on hydropower within knowledge, strategy and planning.

[8] **William Powell:** Excellent. Ceri, if I could ask you to kick off.

[9] **Ms Davies:** Yes, I will do, thank you very much. We approved a new approach to setting flow standards in September. Our board supported the recommendation that we made. You have asked us here today to discuss that decision and, in particular, the scientific basis on which the decision was reached. It is quite complex, so what we have done is circulated a presentation, and the plan is that we take you through that at a fairly high level, but leave plenty of time for you to ask us any questions that you want around the principles there.

[10] However, before we start that, I guess that I would first like to say that we recognise the economic importance of hydropower to communities. We also recognise the contribution that it could make to energy supply from renewable sources. In undertaking our role we have to ensure that the natural resources of Wales are sustainably maintained, enhanced and used, and therefore finding the balance between promoting hydropower and protecting the environment is absolutely key in our decision making. We have recognised the importance of catchment-scale assessment, but we have also looked at local effects, and we have used the views and information from the stakeholders and the latest scientific knowledge in reaching

our decision. We believe that our approach does find that balance between economic development and environmental protection, and the new approach, when it comes into place, will also bring consistency across Wales.

[11] What I suggest we do now is ask Gideon to take us through the presentation and then, in the question and answer session, perhaps we can draw out some of the other things that we are doing to try to improve the whole process about applying for permits for developers in terms of hydropower.

[12] **William Powell:** Thank you very much for setting the context. We look forward to the presentation.

[13] **Mr Carpenter:** Good morning. Bore da. What I would like to do is work very briefly through the presentation that we have here. There is a small number of slides that I would like to talk through. First, I will briefly describe the layout and operation of hydropower schemes, just to set the scene for the science behind our approach. The majority of schemes in Wales are what are known as run-of-river types, so they are structures that do not involve any large-scale storage of water. Generally an impounding weir is constructed, and that allows water to be taken from the river via an intake into a penstock pipe. That will run down to a turbine house with subsequent discharge of flow back into the same water course, generally. Although there is no consumptive use of water from this type of hydropower scheme, or overall loss of the catchment, it does result in a depleted reach of river that ranges from, usually, around 600m up to a 1 km or, sometimes, in excess of 1 km of river.

[14] **Mick Antoniw:** Sorry, just to understand that last point, what does that mean?

[15] **Mr Carpenter:** If you look at the picture on the screen there, you will see a silver section of the structure. The river flow comes over the top of the weir and an amount of that river flow drops into that stream—this is fairly typical of the smaller, farm-scale schemes that we see in Wales—and that water is then diverted away from the river and runs along a separate pipeline. Obviously, that results in a loss of water in the river between the point of abstraction and the point of discharge back into the river further downstream. As I say, the length varies between 600m to 1 km.

[16] If you do take water out of a river system with a depleted reach like that, it will have some effect on the habitat state, either in the specific depleted reach or in the wider river catchment. We cannot really say that hydropower is wholly environmentally benign, but our challenge, as I think Ceri has already said, is to try to balance abstraction demand for hydropower while leaving enough water for the in-stream ecology that we have a statutory duty to protect.

[17] There has been quite a considerable amount of research into the hydro-ecological requirements of riverine flora and fauna, but there is still quite a lot of uncertainty in trying to quantify specific river flow ecology relationships. It is a very complex science. Questions are often asked as to how much water you actually need. Given these complexities of the various relationships and interactions between catchment variables, it is very difficult to decide with precision how much water is really necessary for site-specific protection or species-specific protection. So, the approach that we have adopted within Natural Resources Wales is to try to turn that around a bit, with the principle that ecosystems—and that is the whole range of bugs and beasties within the river reach—are adapted to the habitat, which is being maintained by the natural flow regime. So, our start point is the natural flow regime. It is widely recognised that flow is the master variable, and the more water that you take from a river, and the more the pattern of flow is altered from the natural state, the higher the risk of having an impact on the structure and function of river ecosystems.

[18] So, I have just set out very briefly the process; that is what I have spoken through there. That brings us on to a framework called the ecological limits to hydrological alteration, or ELOHA—which has nothing to do with pineapples and pizzas. This is very much consistent with the ecosystems approach that we have in Wales, and it provides us with a framework for managing abstractions, in this case for hydropower. It has been drawn up by a number of international scientists and it is recognised internationally as a process to develop environmentally and socially acceptable flow standards.

09:45

[19] Within our approach, we need to be able to measure how flows have been changed as a result of abstraction, and we need to have standards that set out how much water can be abstracted within these environmental limits. If you look at the hydrograph that we have on the screen, you can see that it shows the natural flow regimes—that is, the day-to-day variation of flow that is recorded at given points. This is taken from one of our upland flow gauging stations in Wales. You can see the rises and recessions of the river flow in response to rainfall events and to dry weather. There is a very clear scientific consensus based on—

[20] **Mick Antoniw:** What does this chart actually tell us?

[21] **Mr Carpenter:** This chart is a measured flow at one of our flow gauging stations. We have a wide network of hydrometric stations across Wales. The chart shows a single location on a river and the variation in flow recorded over time at that particular point. This is an annual hydrograph, so it shows the changes in flow over a 12-month period.

[22] **Julie Morgan:** May I just ask something, Chair? There is no abstraction going on here, is there? This is completely natural.

[23] **Mr Carpenter:** That is correct. That is just to illustrate the natural flow regime.

[24] **William Powell:** Mick, you have one further question.

[25] **Mick Antoniw:** Yes. So, what do the peaks mean, and what do the troughs mean, and what are we talking about in terms of variation and percentage variation and the amounts? Is this a big river, a small river—what is the difference from top to bottom?

[26] **Mr Carpenter:** I think that it varies quite considerably in terms of the station that you have in Wales. We can see there that we have very high peaks, which can be 10, 20 or 30 times the size of our very low flows. There is a huge variation in flow rates. That is for one particular year, but, obviously, the inter-annual change or variation in rainfall and climate results in a slightly different pattern each year. What we do have, however, is consistent catchment response to rainfall. So, we tend to see what we call a ‘flashy’ hydrological regime. We have rapidly rising spate flows—rapidly rising high flows—which then recede very quickly. So, that is a characteristic of our hard-geology upland catchments in Wales. If we were to look at a permeable lowland catchment with chalk-type geology, as we probably see in England somewhere, we would see quite a different pattern of flow; it would not be quite as spiky, and we would see far less of a difference between the heights of the peaks and the troughs of the lows.

[27] **William Powell:** Joyce, you wanted some clarification.

[28] **Joyce Watson:** Yes, but that is because it would be going underground, if you were on chalk.

[29] **Mr Carpenter:** It is more to do with the actual contribution and seeping out of flow

from groundwater into the river. So, we have a higher support of flows from groundwater slowly percolating in, whereas we tend to see less of that in Wales, where we have a hard geology. So, it is more rainfall responsive.

[30] **Joyce Watson:** I am trying to get my head around this. In terms of this pattern, it seems to be saying when it rained and when it did not. If we are going to look at water abstraction, the river would have been examined to see what was in it and how it sustains the life of that particular river. From that—this is my understanding; I might be talking rubbish—I assume that you would be thinking about how any interference in that water flow might damage what was in the river. Is that the reason that you are doing it? I know that this is very simplistic, but I am not a scientist.

[31] So, if it was the case—you talk about a hard geography and climate change—having done that baseline, could it not in some cases be advantageous to have a hydro scheme to save from flooding and the washing away of all of those things that existed before, when we had a standard rainfall and a standard impact on that river? The question I suppose I am trying to get to is this: in some cases, when we see the river banks bursting because there has been a flood, does that not wash away everything that you might have liked to keep there?

[32] **Mr Carpenter:** It does not. In fact, that washing away and the periods of high flow that you can see on the hydrograph are very important for the geomorphological process in relation to erosion and deposition. They are very important to maintaining the sediments and the structure of the river habitat that many of the bugs and beasties depend on, such as fine gravels for salmon spawning. So, in particular, protecting the spate flows is very important for all rivers.

[33] For flood protection, if you were to have a hydropower scheme that had a large dam and reservoir, that does have a role in attenuating flood flows, so it can store and slow down the rate of flood flow from the catchment and it can reduce the peak of that flow further downstream. So, there is a role for dams to play in terms of flood storage, but for run-of-river schemes here that have no storage, there is not a role. However, the whole range of flows within the hydrological regime that we see on the screen is still important for all of the geomorphological processes and the various life stages of the bugs and beasties that we have. So, we can identify on the hydrograph on the screen the peak flows and we can see the periods of low flow, but the flow variability in between those ranges is equally important. It is widely accepted in the scientific community that that flow-variability element is equally important for maintaining the habitat state for the bugs and beasties in river ecosystems.

[34] **William Powell:** Russell, you have a question.

[35] **Russell George:** My question has probably been answered. I was going to ask about the correlation on the graph with a dam, in relation to the source of the release. Clearly, there is a correlation: if you have a release dam at the start, this graph will not necessarily reach a peak when it rains and so forth. However, I believe that you have answered that point in your answer.

[36] **Mr Carpenter:** Yes, in part; if you were to take a hydrograph measure downstream of a dam and a reservoir, you would see a substantially different flow pattern and you would see long periods of fairly static rates of flow, because the release—whether for hydropower or public water supply—would result in a far more managed residual flow hydrograph.

[37] **Russell George:** Presumably, it would not be up and down, but it would be static.

[38] **Mr Carpenter:** It would be a lot flatter for longer periods of time.

[39] The purpose of this particular hydrograph was to illustrate the type of regime that we get and the way in which the flows run off our catchments. It is fairly typical of the type of physical catchments that we have in Wales.

[40] **William Powell:** Thank you very much for adding clarity to this particular slide. Those of us who dropped physics in year 9, or the third form in old money, will be particularly grateful to you. Would you like to pick up from where you were?

[41] **Mr Carpenter:** As I said, the various components of the hydrograph here, particularly the high flows, the mid-flow variability and the low flows are very important for ecological processes. We have been able to quantify those components of the hydrograph using a set of indices that have been developed by the scientific community, which are known as indicators of hydrological alteration. They have been used to quantify the timing, frequency, duration and magnitude of flows.

[42] Coming back to our approach, there is an organisation called the UK Technical Advisory Group for the Water Framework Directive, or UKTAG. That is a partnership of experts from all of the UK environmental regulators. Its role is to develop and provide guidance that enables regulators like us to meet water framework directive obligations. This includes a programme of research to develop environmental standards on river flows and water quality.

[43] Those standards have been developed by leading experts and professionals in academia, other research bodies such as the Centre for Ecology and Hydrology, the Scotland and Northern Ireland forum for environmental research, well-respected UK organisations, and experts from the private sector. Those standards provided in national guidance include thresholds that provide us with an idea of how much it is possible to deviate from the natural state, and the associated level of risk of being able to meet our water framework directive obligations or standards. So, we have a measure of how far we can deviate from the natural state. The thresholds advised by UKTAG are, in effect, the environmental limits of how far it is expected that abstraction can occur before there is a risk to ecosystem integrity.

[44] We subsequently took some hydrological modelling of a range of hydropower abstractions of the operational regimes of hydropower, and tested them against these UKTAG standards. This has allowed us to establish the various environmental limits that we have included in our approach and which can be described practically as mitigation standards for operational hydropower regimes.

[45] On this particular slide, you can see the standards that have been set out. We have a range of standards—I was not going to go into the detail of those at the moment; that is just to give an indication of the levels of risk associated with a variation from a natural flow state.

[46] **Mick Antoniw:** Can you tell— [*Inaudible.*]

[47] **Mr Carpenter:** Within the water framework directive, we have ecological status for water bodies, so the river catchments have been subdivided into a water body, which is a part of a catchment, or a sub-catchment. We have ecological statuses associated with those. We have HES, which is high ecological status, and GES, which is good ecological status and—

[48] **Mick Antoniw:** What is the ‘G’ bit?

[49] **Mr Carpenter:** It is good ecological status. We then move to moderate, poor and bad, so it is a scoring system for the health of the ecological status.

[50] **Mick Antoniw:** It goes from HES to GES and less and less.

[51] **Mr Carpenter:** Yes, something like that.

[52] **Mick Antoniw:** Okay, thank you.

[53] **Mr Carpenter:** So, we have been able to set some practical environmental limits based on sound scientific evidence. To be consistent with the ecosystems approach that we are required to apply in Wales, we also need to consider the spatial context of abstractions for hydropower and how that can affect in-stream ecology.

[54] At the highest level—at a Wales level—we have a legal duty to protect sites and species that are designated for conservation. If we move down a level, as you can see, we have a catchment-scale spatial element. We know that schemes in lower catchments potentially have a greater spatial impact, because of abstractions caused by hydropower, than just the immediate depleted reach of that particular scheme, and there is a risk of disrupting wider connectivity along a river system. So, if you can envisage a river system being one big long path, and if you were to have a break in that path lower down in the catchment, you are potentially fragmenting the river ecosystem. That can be achieved through introducing hydrological barriers or physical barriers that are associated with hydropower schemes. With a hydrological barrier, if we have a natural flow pattern coming along our system and there is a sudden change in that flow pattern with a reduced volume and reduced pattern of flow, and then it returns to normal once the water is put back in again, we have a hydrological barrier or break in the system—or a physical barrier being the type of structure that we saw earlier. In particular, this is relevant in Wales because we need to ensure, for example, free passage of migratory salmonids—salmon and sea trout—through our river systems. We have a legal duty to protect that.

[55] Schemes in smaller upland catchments, which we see a lot more of in Wales, will, by their very location, have a restricted spatial impact. If you have a smaller headwater catchment, there is less catchment upstream and, subsequently, you are going to have a reduced risk of that fragmentation interrupting that connectivity.

10:00

[56] What our hydrological modelling has also shown is that, in these upland catchments, where we have a rapid response to rainfall—we term this as a ‘flashy’ catchment, so the characteristics were what we call ‘flashy’—the schemes or the abstractions tend to have a proportionately reduced impact on flow variability downstream, because of the nature of the scheme operation. Again, there is slightly less risk associated with the schemes in the smaller headwater catchments.

[57] To apply these factors, we have developed three zones that, in effect, reflect the degree of environmental risk associated with licensing hydropower schemes. Zone 1—I am not sure whether you can see that in that much detail on the far left—is associated with schemes that have the potential to affect our sites that are protected for nature conservation. Outside protected sites, we have established two other zones. These have been classified according to channel-bed gradient, which we have used as a proxy—a simple measure—to try to represent the combined geomorphological characteristics and hydrological characteristics of a site, and also its spatial position within the catchment. So, we are combining a number of elements in one measure.

[58] The slope threshold that we have used is based on an international geomorphological classification to identify the physical characteristics of catchments. We have used the United Kingdom technical advisory group limits that I spoke about earlier to set how much water we think is appropriate to be abstracted within environmental limits. We have taken a risk-based



approach. Where we consider there to be less environmental risk, as in the upland catchments that have a reduced spatial impact, we have set flow standards that go beyond the UKTAG-advised limits. We have done that because we consider there to be less environmental risk in those catchments. Finally, the zoning approach also gives us a practical framework that we can use in the future to support, potentially, a more risk-based permitting process. That is a fairly rapid speed-through the work that we have done. I am sure that there will be some questions about that.

[59] **William Powell:** Thank you. Mick Antoniw has the first questions.

[60] **Mick Antoniw:** I would just like to clarify what you were saying in your very first remarks about the state of the scientific and empirical evidence behind all of this. It seemed to me that you were suggesting earlier on that it was quite a confusing situation, and there are a lot of unknowns and uncertainties about what we know about flows and impacts on the ecology and so on. Can you just clarify that a little bit for me, please?

[61] **Mr Carpenter:** Yes; I can. First, there has been a lot of research on hydro ecology, so there is a good understanding, based on data collected from various projects in the UK and internationally, whereby the experts have been able to understand the relationships between changes in flows and particular life stages for various species and communities. There is not a wealth of empirical data specifically related to the impact of hydropower schemes in Wales or Scotland. So, the scientific community has drawn on wider scientific data to inform its understanding of how changes in flow affect ecology. There is a wide scientific consensus on the general understanding of the associations between what a change in flow might mean for changes in ecology.

[62] However, the challenge is that every site is slightly different, with different variables affecting a catchment, and it could extend to water quality, land management—there is a whole range of elements, not simply flow. So, it is very challenging to try, with any certainty, to be specific about flow needs, or target species' flow needs, for a given point. However, there is a higher degree of certainty in the wider understanding of how changes in flow affect ecology. That is what we have had to draw on to inform our approach.

[63] **Mick Antoniw:** I am sure that there will be other questions around this, because it is an area of concern, but is the approach that is adopted in Wales exactly the same as the approach that is adopted in Scotland, England and Northern Ireland?

[64] **Mr Carpenter:** There are a lot of similarities between what we have done in Wales and the Scottish and Northern Ireland approaches. The flow standards that we are applying are the same flow standards that are advised by UKTAG. They have been adopted specifically in Scotland and Northern Ireland as standards to assess the ecological status of water bodies—basically, how healthy the ecosystems are. So, yes, we do have a lot of similarities in those particular standards. There is a slightly different approach to how they have been applied from a regulatory perspective, but the flow standards that are required for specific species—for example, the protection of salmon—are the same.

[65] **Mick Antoniw:** That only partly answers what I really wanted to get at. What, specifically, are the dissimilarities? What are the differences between what we do and what Northern Ireland, Scotland and England do?

[66] **Mr Carpenter:** The starting point for the Scottish approach, for example, is to test the potential impact of a scheme against exactly the same standards that we apply in Wales—the UKTAG standards that I have described. There are physical differences in catchments in Wales and Scotland. The hydropower industry looks slightly different, in my view, in Scotland and England. We have larger catchments with more water at a higher level in

Scotland; we have slightly smaller catchments, slightly lower down in Wales. So, the industry looks a little bit different. In Scotland, there is seen to be a wider, overriding socioeconomic benefit for larger schemes. Under the terms of the water framework directive, Scottish Environment Protection Agency colleagues apply a derogation, where they assess the overriding socioeconomic benefit of a scheme. That is really for schemes over about 100 kw of installed capacity. We infrequently—or less frequently—see schemes of that size. The schemes that we see in Wales tend to be more on a farm scale. My view is that we do not have the same level of resource as Scotland, so it would potentially be challenging for us to apply the same tests.

[67] **Mick Antoniw:** I have to say that I barely understood a word of that. What I am trying to get at is this: if you put it in lay terms, what are the essential differences between what we do in Wales and what is done in Scotland, Northern Ireland and England? What would you summarise as the key differences? Is that possible? I appreciate that these are very technical matters and I might be asking for something that is very difficult to do.

[68] **William Powell:** You are not alone. [*Laughter.*]

[69] **Ms Davies:** It is the differences between the rivers that we are talking about. It is about applying the same standards, which are agreed with the experts at the UKTAG level, but we have different types of rivers. They tend to be smaller with less water than some of the ones that we are comparing them with, or that you were trying to compare them with, in Scotland.

[70] **Mick Antoniw:** Would that not mean that we have the same regulatory regime, and that you just feed in different data? What we heard in evidence a while back was that the amount that you can abstract from rivers and so on is quite different. That impacted on the value of hydropower schemes, for example. Therefore, we were at a considerable disadvantage in being able to promote that. What we could not understand early on was why there are those variations in abstraction. What is the science behind it? You are suggesting that we all do the same thing, but we clearly are not doing the same thing, because there are clear regulatory differences. We are trying to understand why they are doing certain things. Are they just applying a lower standard? Are we applying a higher standard? What is the basis for that? That is what we are trying to get at.

[71] **Ms Hall:** Perhaps I could start. As Gideon said, there is an enormous amount of commonality. Like us, Scotland seeks to protect low flows, flow variability and high flows, and to encourage developments in less sensitive locations, where they do not affect fish migration and that sort of thing. I think that there have been statements before about SEPA giving 100% of the water. When we spoke to the agency, it said that it never does that. So, there is some misunderstanding about what it does. In some circumstances, it may give more water than the 70% that is in our zone 3, but as Gideon says, one of the reasons for that is that it has very large schemes in different types of catchments where, in some circumstances, it uses that derogation in the water framework directive, which is allowed only in circumstances of overriding public interest for a scheme. That is much easier to demonstrate when you have a very big scheme. We do not see many schemes of that size in Wales. Also, where it allows more water, it requires a higher hands-off flow. So, it requires more water to remain in the environment before it says, 'You can take 80% of it above that'. So, it is very difficult to compare the two.

[72] **Mick Antoniw:** Chair, I will allow other people to come in.

[73] **William Powell:** Excellent; we have several indications. Before I open up the discussion further, I would like to ask Ceri to explain why the approach that NRW appears to have adopted varies from the four options that appeared in the consultation that took place

recently.

[74] **Ms Davies:** When we went out for consultation—and the responses that we received were very different, depending on the approach—we set out that we would also look at whether or not there were elements of the schemes that we would bring together to produce another. So, it was not the case that it would either be one or the other, but that we would look across the schemes, taking into account the views of the stakeholders and the scientific evidence and information to see whether we could come up with the best scheme, if you like, that would allow us to look at both allowing hydropower to move forward and providing that protection for the environment. That is, effectively, what we have done. We did set out in the consultation that that was an option for us—to pull elements from the various options that were identified.

[75] **William Powell:** Could you take us through how NRW then followed this through, particularly after the letter of September from Community Energy Wales in terms of expressing concerns as to the approach adopted? How have we gone from that letter to where we are today? There have been a number of questions in Plenary, raised by Russell George, Leighton Andrews—who is not a member of this committee—and by a number of us, and we have had a degree of reassurance from the Minister. It would be useful to have a sense as to how things have developed from that exchange of correspondence in September to where we are now.

[76] **Ms Davies:** We took the decision based on the evidence and the feedback from the responses of consultation at the board in early September. One of the commitments that we have made in taking this whole programme of work forward was that we needed to work with the sector to develop the approach going forward, rather than us work on it alone and then sort of present it or unveil it. Following that meeting, we set up the Wales hydropower stakeholder group. The plan was, and is, to work with that group to develop the guidance. We had our first meeting towards the end of September—three weeks after the board decision. At that meeting, we discussed with the group whether or not we worked on the guidance from the information that we had at the time of the board's decision, or whether it would be better to work with the group and some of the specific concerns that it had from its experience of hydropower development to work on the guidance further so that we could nail down some of the concerns that it had with the wider guidance. The decision that we took at that meeting, towards the end of September, with the stakeholder group, was that, rather than implement straight away just on the basis of the decision that we had taken on the flow standards, we would incorporate that with changes that the group wanted us to make to the guidance. So, when we did implement it, it would be much clearer for our staff and for developers to know exactly what they needed to do, and they would get a better sense of what the likely outcome would be from the schemes that they were looking at.

10:15

[77] So, at the September meeting, we agreed that, as I mentioned earlier, one of the key points that we are trying to achieve is a consistent approach across Wales. One of the things that all of the developers have asked us to try to get to is this consistent approach. So, there is a fine balance between working on the guidance and nailing down the various elements that they were concerned about, but also having a consistent approach in place to which everybody is working. So, the agreement that we reached with the stakeholder group was that, if we issued the guidance in January and allowed for this three-month period for it to be brought into operation once the guidance was there, that seemed to be a sensible compromise in terms of having a clear steer for a decision on the flow standards but then also, around that, the way that we actually implement it being nailed down, so that the decision-making process was clearer for the developer and our staff. So, in actual fact, the date when it will become effective is three months after the guidance is issued in January.

[78] **William Powell:** So, around Easter time, we should be in a situation where we see this starting to bear down, because I think there has been a degree of tension between the reassurances that we have had in the Chamber from the Minister that all is well, and a conversation that I was party to just last week between senior figures in Community Energy Wales. Professor Matthews talked about this specific problem of inconsistent approach, particularly in mid and north Wales, which has been detrimental to confidence levels in terms of taking schemes forward.

[79] **Ms Davies:** Absolutely. So, that timescale is there and that is the one that we are all working to. Just last week, we sent out to all the members of the stakeholder group, asking them, for the meeting at the end of December, if they had not done so already, to send us details of the particular elements of the guidance that they were concerned about, so that we could work on those specifically. We have done some work on those now, and we have sent them back out to the group and asked it to come back and tell us whether they are meeting its requirements and giving the certainty and level of specificity that it wants, and, if not, to come back to us with suggestions of what we can say and include in the guidance that will help that process. That was a unanimous decision, not only from the micro hydro sector, which Community Energy Wales is concerned about, but also from the larger scheme developers, which want to see more clarity in the guidance. They felt that it was worth that slight delay between the September decision by the board and a January implementation to allow for that to happen. However, we are doing it with them, rather than interpreting it ourselves and just presenting it.

[80] **William Powell:** That is helpful. For clarity, could you tell us when the next meeting of that stakeholder group is due to be held?

[81] **Ms Hall:** On 12 December.

[82] **Ms Davies:** Yes. On 12 December, we have the next meeting with the group, but, as I said, last week, we sent out information and, prior to the 12 December meeting, we have also put in place options for the members to have discussions with us in early December, so that we can talk through what we have developed so far, and what their suggestions might be. So, we are very much asking them to work with us and we have set in place a whole range of telephone conference facilities on 4 December for them to book a slot and have that discussion with us if they still have residual concerns.

[83] **William Powell:** That is helpful. Llyr Gruffydd is next.

[84] **Llyr Gruffydd:** Diolch yn fawr, Gadeirydd. Diolch am eich tystiolaeth hyd yn hyn. Mae'n sicr wedi bod o gymorth i fi ddeall rhywfaint o'r rhesymeg y tu ôl i'r penderfyniadau sydd wedi cael eu gwneud. Rwyf eisiau mynd â hyn i lefel uwch o safbwynt polisi yn ymwneud â datblygu cynaliadwy. Rydych chi wedi cyffwrdd ar rai ystyriaethau a ffactorau *socioeconomic* sy'n dod i mewn i'r ystyriaeth o gwmpas rhai o'r penderfyniadau hyn. Hoffwn holi a oes gan Gyfoeth Naturiol Cymru rhyw fath o broses lled ffurfiol, neu ryw fath o fecanwaith, sy'n cynorthwyo yn y broses o asesu a phwyso a mesur cyfraniad ac impact unrhyw gynlluniau arfaethedig i'r tri philer

**Llyr Gruffydd:** Thank you very much, Chair. Thank you for your evidence this morning. It has certainly been of assistance in understanding some of the rationale behind the decisions that have been taken. I want to take this to a higher level in terms of policy related to sustainable development. You have touched upon some considerations and socioeconomic factors that come into consideration when taking some of these decisions. I would like to ask whether NRW has some sort of semi-formal process, or some sort of mechanism, in place that would assist in the process of assessing and analysing the contribution and impact of any proposed developments to the three pillars—

cymdeithasol, economaidd ac amgylcheddol. A oes rhyw fath o arweiniad yn bodoli, neu a yw'r Llywodraeth wedi rhoi rhyw fath o arweiniad ar y mater?

the social, economic and environmental pillars. Is there some sort of guidance available, or has the Government given you some guidance on that issue?

[85] **Ms Davies:** What we have in place is, as I think I mentioned earlier, our overriding purpose as Natural Resources Wales, which is around sustainably maintaining, enhancing and using natural resources. However, within the legislation that brought Natural Resources Wales into being, we also brought with us the elements of the more specific requirements and legal requirements that we have to weigh when making decisions and, essentially, we start with the most specific. So, if we have, as in this case, particular responsibilities under legislation for protecting water resources, making sure that there is sustainable use and supply for other users, but also for the future, then we have to start from that basis of the most specific duties first and then work up to the less specific duties around having regard to society and the economy. So, that is the way that we do it. We start from the most specific elements of the legislation and, as Gideon mentioned, there are water framework directive requirements in terms of not allowing a detriment to the river system. So, we have the water resources legislation that protects the resource, then we have the water framework directive legislation that tries to prevent deterioration, and then we have specific habitats requirements in terms of enhancing conservation and biodiversity. We then take into account our more general 'have regard to' duties, which are around looking at the economics and the societal aspects. So, I guess that, if we had a decision that was very clear-cut in terms of it being not particularly risky to the environment, it would be more likely to go ahead and we can have more consideration of the societal and economic impacts. If it is very clear that its impact would be detrimental, then, clearly, we have to have regard to those specific requirements in the legislation, and we would have to then either not allow it at the level that it was sought, or not allow it at all, if it was going to breach that legislation that we have in place.

[86] In terms of what we have been provided, every year we have from the Minister a remit letter that sets out in general the guidance on how he wants us to be and, within that, there are things, for example, like us adopting the ecosystems approach that Gideon mentioned earlier to ensure that we are looking at the whole ecosystem, not favouring one element over another, and allowing for the ecosystem to provide all those services in future. We have that in place from the Minister for the current year.

[87] **Llyr Gruffydd:** Diolch yn fawr. Mae hynny'n help mawr achos mae rhwystredigaeth weithiau neu ryw fath o ganfyddiad bod anghysondebau'n codi pan fo rhai penderfyniadau mewn rhai ardaloedd yn cael eu gwneud ar sail economaidd ac wedyn penderfyniadau eraill nad ydynt yn cael eu gwneud, neu sydd yn cael eu gwneud ar seiliau eraill. Felly, mae hynny yn help mawr. I ffocysu ar yr elfen economaidd yn y cyd-destun hwn am funud, dywedochn yn y papur a aeth i fwrdd Cyfoeth Naturiol Cymru iddo gymeradwyo'r argymhelliad ym mis Medi, fod potensial i gyfanswm incwm y sector gynyddu. Eto i gyd, mae Ynni Cymunedol Cymru wedi ei gwneud yn gwbl glir ei fod yn teimlo bod yr argymhellion yn golygu bod incwm y sector yn mynd i ddisgyn yn sylweddol. Byddwn yn falch o glywed rhai o'ch sylwadau chi ynglŷn â sut ydych chi'n

**Llyr Gruffydd:** Thank you. That is of great assistance because there is some frustration or some kind of perception that inconsistencies arise when some decisions are taken in certain areas on the basis of economic considerations and others are not made, or are made on different bases. So, that is of great assistance. To focus on the economic element in this context for a moment, you stated in your paper, which went to the Natural Resources Wales board for it to commend the recommendation in September, that there is potential for the total income in the sector to increase. Yet, Community Energy Wales has said very clearly that it feels that the recommendations will lead to a substantial decline in the income of the sector. I would like to hear some comments from you about how you anticipate that the income of the sector could

rhagweld y gallai incwm y sector gynyddu a increase and how both bodies could come to  
sut y byddai'r ddau gorff yn gallu dod i such different conclusions on the same issue.  
gasgliadau mor wahanol.

[88] **Ms Davies:** Okay, I will start and perhaps Natalie can come in with some more detail. Essentially, I think that what we looked at to try to make our assessment of impact was our experience of the applications that we had and of the applications that we had in pre-application discussion, because, often, organisations will come forward and spend time talking to us to get an understanding of what the likely outcome is going to be in the location of their choice in order for them to determine whether they move through to an application or not. So, we looked at what we had in pre-application and we looked at the inconsistent arrangement that we had in place whereby particular standards were being applied in north and south-west Wales, and a different approach in south-east Wales. That was the inconsistent approach that the sector was asking us to address and which we are aiming to address with this new all-Wales approach.

[89] What we found from that was, for the steeper catchments that Gideon talked about earlier, most of the pre-applications were actually for those sorts of locations. With the new approach and the 70% level, they were likely to benefit more than they would under the current regime. From the information that we had from the applications on the stocks, if you like, we estimated that more would benefit than not, but we did recognise from the outset, and have recognised for some time, that, because quite a different approach was applied in south-east Wales, there were likely to be schemes in south-east Wales that would have less water in future than they have enjoyed up until now. What we have encouraged Community Energy Wales and others in that situation to do is to move through the process from pre-application into application while we are in the current regime, because we accept that a lot of effort and work has gone into developing the applications through the pre-application stage, and we are moving those through the system now before the new approach comes in, when there will be, for people treated under the new approach, less water in those situations.

[90] **William Powell:** Diolch. That is helpful. I have one point for clarification on the pre-application process that you described: is that a free process or a chargeable service? Increasingly, planning authorities are levying a charge for that kind of advice, and it would be helpful for colleagues to understand that.

[91] **Ms Hall:** No, we do not charge for that. We give 45 days of pre-application advice.

[92] **Mick Antoniwi:** Do you charge for the abstraction of water, or—

[93] **Ms Hall:** There is a one-off application fee—I think it is about £130—and there is no annual charge.

[94] **Julie Morgan:** I am a bit clearer about this after the presentation, but not completely there. I wonder whether you could say a bit more about the fish standards. I know that there is to be free flow for salmon and trout. Does it extend beyond that, and does it apply everywhere? How does it affect the decisions that are made?

[95] **Mr Carpenter:** This is where the benefit of having the spatial approach and the ecosystems approach comes in. We see salmon and sea trout moving in the lower and mid catchments, and they are considerably less frequent in the very steep upland catchments. Physically, there start to be challenges to them actually being able to get up there. So, the threshold between the two zones based on a gradient also corresponds fairly well with the division between more resident populations of brown trout, which do not move too far, compared with the salmon and sea trout that require the free access up and down the river. So, in terms of managing the spatial element, having more constrained or perhaps slightly stricter

mitigation standards for the lower catchments means that we are looking to avoid the hydrological barriers and the physical barriers in the lower catchments where we require free passage for migratory salmonids. However, the impact is less in the upland catchments, where we are happy for more water to be taken, and the risk is lower, because we do not tend to see or have the need for that free passage in those catchments. Does that answer your question?

[96] **Julie Morgan:** So, they are covered, but in different ways in the different parts.

[97] **Mr Carpenter:** Yes. Where we have more resident populations, we are satisfied that the flow standards that we are applying for those upland catchments should be adequate, or there is less risk of affecting the resident populations in those areas with the flow standards that we have set according to the UKTAG.

[98] **Julie Morgan:** That is helpful, thank you. I have just one other quick question. How many of these small farm schemes are we talking about? Do you have an estimate?

10:30

[99] **Ms Hall:** I do not have the breakdown in terms of which ones are farms and which are not. I can give you a feel for the number of applications that we have had this year. In the first six months of this year, from April to October, we received 137 formal applications, and that compares with 102 in the whole of the last financial year.

[100] **Julie Morgan:** Do you have an idea as to why there has been such an increase?

[101] **Ms Hall:** Yes, there is a feed-in tariff scheme deadline of 21 December this year. So, we saw a huge increase in applications in August this year, so that they could get in before this FITS deadline.

[102] **Julie Morgan:** Thank you very much.

[103] **Russell George:** You were talking about having a consistent approach by the offices and officers of Natural Resources Wales. I want to understand how you go about getting that consistent approach. Clearly, you will have a set procedure, but there will always be—or perhaps not—an element of personal discretion. So, how do you get that consistent approach within the personal discretion of officers?

[104] **Ms Davies:** While we have guidance and standards, as Gideon set out, we have to take into account the site-specific circumstances, so that is where we have to try to weigh, if you like, what is there and the general and generic guidance that we are providing. In terms of applying that consistent approach, we are training our staff in the new approach to ensure that they understand it and understand the difference in this approach from what they previously practised. So, there is a clear element of training, and we have already started that process in anticipation of the guidance being available and having the new system up and running from April.

[105] We have also put in place a group that will look at all applications in Wales, to ensure that we do not see a different approach in one part of Wales from another. So, there will be a central team that will be charged with looking at the decision making in all parts of Wales to ensure that we are being consistent in our approach and are not taking a more risk-averse approach from one place to another. Also, with the stakeholder group, we have already started to seek their experience and feedback. We have encouraged them to send to us examples of experiences that they have had or are having, so that we can see, right from the ground, what advice is being given to the stakeholders out there and the developers, so that we can then deal with specific issues, because they might point to a need for further training or

interventions, if people do not understand or if our staff do not understand.

[106] Part of the work is to ensure that while we provide generic guidance, we provide it with a level of specificity that will allow a clear understanding. So, they are the sort of mechanisms that we have put in place to ensure that we are getting a consistent approach and getting very quick feedback if the experience on the ground does not mirror what we are saying to the stakeholder group. We have asked the stakeholder group to invest the time in meeting more frequently in the early days of this changed approach than would perhaps be necessary in the future, while we develop the guidance, the standards, the training and the feedback to ensure that we are as responsive as we can be on those aspects.

[107] **Russell George:** That is a welcome answer. Thinking this through, if an officer is out considering an application, or an application is submitted and an officer makes a decision, at what point does it go to that central core for checks and balances against other applications that are going through elsewhere in Wales? For example, in a case where an officer gives advice, is it the applicant who would then challenge that and trigger the central team to take a look at it, or would it be done as a matter of course?

[108] **Ms Hall:** I think that, initially, we will do it as a matter of course. I suppose that, in 12 months' time, we may move to a position where we would do it on a sample basis, or where there was a particularly contentious site. However, initially, to help the understanding and the embedding of the new approach, we would need to do it everywhere.

[109] **Ms Davies:** The other thing that I should have mentioned in terms of that process is that we have put in place account managers to work with the sector developers throughout the application process. We have had a way of operating where there were account managers who were working through the pre-application phase discussion and then we encouraged the developers to put in their application and go through the process, and the account manager would move on to another pre-application. However, now, we are putting those in place to see it through from end to end. So, once again, the account manager will be looking for signals where there is inconsistency, a lack of understanding or inconsistency in the application of the approach, and flagging that early so that we can make that intervention.

[110] **Ms Hall:** We have agreed to share the terms of reference of the panel with the stakeholder group as well, to get its view on whether it thinks that it is what is required.

[111] **Russell George:** This is all developing work, is it not? So, in the meantime, are you satisfied that, although this is developing work that has not yet been achieved, you have a mechanism in place?

[112] **Ms Davies:** Yes. Some of these mechanisms we have put in place now, such as the account manager, for example. We have very close liaison between my team, which is developing the guidance and the policy, if you like, and the permitting team, which is doing the permitting, and the account managers, who are currently managing the process of pre-applications. So, we have started to put elements of that into place now. We have started to train those people up now, as we need to get those ways of working embedded.

[113] **Ms Hall:** Ceri and I are meeting the operations directors in a couple of weeks' time about these very issues.

[114] **Ms Davies:** Yes, it is in order to make sure that it is followed through the organisation, that this is the way that we work, and that there are no questions about working in different ways in different parts of the business.

[115] **William Powell:** The kind of checks-and-balances approach that you have talked



about and the continuity from the initial discussions through to the development phase will be helpful. There have certainly been indications to me and other Members that, across Wales, there are some members of the team who have what is almost a theological objection to some of these schemes. Therefore, it is really important that there is an opportunity for that to be spotted and eliminated to the appropriate degree.

[116] **Ms Davies:** Yes, absolutely. The only thing that I would add to that is that, in the first instance, we have made the stakeholder group a very wide group, so it does have a lot of representatives on it in order, once again, for us to gain that feedback from the widest group.

[117] **Julie James:** You have talked quite a lot about the decision tree that you go through and the hierarchy of legislation and so on. Natalie mentioned something about an overriding public interest test; I think that you did it in the context of big schemes in Scotland. Could you just explain a little more about how that fits in to the decision-making process?

[118] **Ms Hall:** I am not aware that we have ever used the article 4(7) provision in the water framework directive for any type of activity in Wales, because it is reserved really for situations where you can demonstrate that there was no other way, or that this was the best way, of generating renewable energy, and that you had explored every other option, and that the socioeconomic benefits completely outweighed the concerns regarding the environment. Due to the nature of our schemes, we have never been faced with that kind of situation. However, that provision is there within the water framework directive.

[119] **Julie James:** So, you do not automatically consider it, in other words.

[120] **Ms Hall:** No.

[121] **Julie James:** Do you think that it would be triggered by an applicant asking you to consider it, or would you start to consider it if you thought that it applied in a particular area? We are just thinking about the pattern of renewables across Wales and what that looks like from a public interest point of view, and what other alternatives there are. Are you looking at that test in that light, or are you doing it on each individual application?

[122] **Ms Hall:** We are not looking at it in that way. We would have to talk further with Government to see whether it sees that as a mechanism that it would want to explore for hydropower.

[123] **Ms Davies:** We would need to have that direction, if you like, from Government that that was the appropriate way to proceed. As Natalie said, you would have to be sure that there was no other way of achieving the outcome before you would want to use that overriding public interest test.

[124] **William Powell:** Mae'r cwestiwn **William Powell:** Joyce Watson has the final olaf gan Joyce Watson. question.

[125] **Joyce Watson:** No, they have all been asked, thanks.

[126] **William Powell:** Excellent.

[127] Diolch yn fawr am y sesiwn Thank you very much for the interesting ddiddorol y bore yma. session this morning.

[128] It has been really useful to all of us, particularly having the patient responses to questions on the opening presentation, which certainly means a lot more to me now than it did when I first read my papers a day or so ago. Thank you very much indeed. I have the sense

that we will remain in touch as this process goes on.

[129] **Ms Davies:** Absolutely. Thank you.

[130] **William Powell:** I propose that we take a 10-minute break and then return to the remainder of the items on the agenda.

*Gohiriwyd y cyfarfod rhwng 10:40 a 10:52.  
The meeting adjourned between 10:40 and 10:52.*

**Paurau i'w Nodi  
Papers to Note**

[131] **William Powell:** We have a number of important papers to note. We have a full response from the Minister for Natural Resources and Food following correspondence received from this committee. Are Members content to note that at this stage? I see that you are. Excellent.

[132] We also have correspondence from James Byrne with regard to clarification of something that he said during the evidence session on the M4. Are Members happy to note that? I see that you are.

**Cynnig o dan Reol Sefydlog 17.42 i Benderfynu Gwahardd y Cyhoedd o'r  
Cyfarfod  
Motion under Standing Order 17.42 to Resolve to Exclude the Public from the  
Meeting**

[133] **William Powell:** I move that

*the committee resolves to exclude the public from the remainder of the meeting, in accordance with Standing Order 17.42(vi).*

[134] Are there any objections? I see that there are none.

*Derbyniwyd y cynnig.  
Motion agreed.*

*Daeth rhan gyhoeddus y cyfarfod i ben am 10:53.  
The public part of the meeting ended at 10:53.*