

DÁIL ÉIREANN

AN COMHCHOISTE UM IOMPAR AGUS CUMARSÁID

JOINT COMMITTEE ON TRANSPORT AND COMMUNICATIONS

Dé Céadaoin, 10 Deireadh Fómhair 2012

Wednesday, 10 October 2012

The Joint Committee met at 09.30 a.m.

MEMBERS PRESENT:

Deputy Michael Colreavy,	Senator Eamonn Coghlan,
Deputy Timmy Dooley,	Senator Paschal Mooney.
Deputy Terence Flanagan,	
Deputy Tom Fleming,	
Deputy Noel Harrington,	
Deputy Colm Keaveney,	
Deputy Seán Kenny,	
Deputy Patrick O'Donovan,	
Deputy John O'Mahony,	
Deputy Ann Phelan,	

In attendance: Deputy Luke 'Ming' Flanagan.

DEPUTY TOM HAYES IN THE CHAIR.

BUSINESS OF JOINT COMMITTEE

The joint committee met in private session until 10.15 a.m.

Business of Joint Committee

Chairman: As COM (2012) 380 and COM (2012) 382 are being taken together and the proposals have implications for road users, it is proposed that they warrant scrutiny. Negotiations on the proposals are ongoing. Therefore, the joint committee can opt to scrutinise the proposals by requesting a written submission from the stakeholders or the Department.

Deputy Seán Kenny: As we are discussing motorcycles and mopeds, a submission has been received from the Irish Motorcyclists Action Group, MAG Ireland, in which it expresses its concerns about these proposals. MAG Ireland asserts that specialist equipment and operative training would be necessary before they could be implemented.

Chairman: The submission arrived at 10 p.m. yesterday.

Deputy Seán Kenny: It has a bearing on our discussion.

Chairman: Yes. For that reason, we will be updated by the Department.

Deputy Timmy Dooley: In addition to the other stakeholders we have identified, I suggest the farming, automobile and vintage vehicle associations be asked for their opinions. Myriad organisations would have an opinion on the matter and we should try to draft an exhaustive list as quickly as possible in order that we might circulate the proposals and seek written responses at the earliest opportunity.

Chairman: Is that agreed? Agreed. We will await the arrival of the officials from the Department of Communications, Energy and Natural Resources.

Deputy Michael Colreavy: Someone who will be present in the Visitors' Gallery is slightly hard of hearing. When he attended a previous meeting and members did not speak into their microphones, he missed 50% of what was stated.

Chairman: The Deputy is requesting that members speak into their microphones.

Deputy Michael Colreavy: For future meetings perhaps we might also consider using audio assistive technology for those who are hard of hearing.

Chairman: We have a new screen on which presentations can be shown. Is that what the Deputy means?

Deputy Michael Colreavy: No. I am referring to persons who are aurally challenged.

Senator Paschal Mooney: Although I understand the frustration experienced while at a meeting, the transcripts are available.

The joint committee went into private session at 10.15 a.m. and resumed in public session at 10.16 a.m.

Hydraulic Fracturing: Discussion

Chairman: I welcome Mr. Ciarán Ó hÓbáin, Ms Orla Ryan, Mr. Koen Verbruggen and Mr. Michael Hanrahan from the Department of Communications, Energy and Natural Resources. I draw their attention to the fact that, by virtue of section 17(2)(l) of the Defamation Act 2009, witnesses are protected by absolute privilege in respect of their evidence to the joint committee. However, if they are directed by it to cease giving evidence on a particular matter and continue to do so, they are entitled thereafter only to qualified privilege in respect of their evidence. They are directed that only evidence connected with the subject matter of these proceedings is to be given and asked to respect the parliamentary practice to the effect that, where possible, they should not criticise or make charges against a person, persons or an entity by name or in such a way as to make him, her or it identifiable. I also advise the officials that the opening statements they submitted to the committee will be published on the committee's website after the meeting. Members are reminded of the long-standing parliamentary practice to the effect that they should not comment on, criticise or make charges against a person outside the Houses or an official by name or in such a way as to make him or her identifiable.

I invite Mr. Ó hÓbáin to proceed with his presentation. For fear that the officials did not hear, I ask that they speak into the microphones. We have experienced an issue in this regard.

Mr. Ciarán Ó hÓbáin: We will make a short presentation based on a PowerPoint document that is displayed on screen. The recent focus throughout the world on the potential use of shale gas has been particularly driven by the experience in the United States. In Ireland and elsewhere concerns have been expressed at two levels. First, there is concern about the potential negative impact of utilising the technology of hydraulic fracturing. Second, there is concern about the scale of the infrastructure associated with a development project.

In this short presentation I propose to outline the onshore authorisations granted to date and the types of work activities covered; to inform the committee of the link between the Environmental Protection Agency research - I understand representatives of the EPA will present at this meeting also - and decision making in the Department; and to outline briefly the regulatory regime that would apply during an exploration phase and, if a project moved to development stage, the regulatory framework that would apply at two levels. We have a very short presentation relating to groundwater issues.

Members of the committee would be familiar at this stage with the licence options granted in February last year. There were three licensing options covering areas within Cavan, Clare, Leitrim, Roscommon and Sligo. They operate for a two-year period from 1 March last year to the end of February next year. The key point is these are licensing options and not exploration licences. The works to be carried and being carried out are primarily of a desk study nature and do not involve intrusive work, which one could have with an exploration licence. In advance of the licensing round that resulted in the licensing options being awarded, it was signalled that it is a condition of the licensing options that exploration drilling would be specifically prohibited during the licensing option phase.

People have a fair understanding of what is a licensing option. It is a form of contract with the Minister conferring a first right of refusal for an exploration licence. The purpose is simple; a company is not committing to the extensive type of programme that would come with an exploration licence but will invest both financial resources and time in considering data that is already there and potential. The company would be given a space to do this with the understanding that they would be the first party allowed to apply for an exploration licence at the end of that process. That is all a licensing option entails. By the end of February next year the holders must decide if they wish to apply for an exploration licence and if an application is to

be made, it must be supported by an environmental impact statement.

I will deal briefly with the Environmental Protection Agency, EPA, research and its importance in decision making from the Department's perspective. The committee knows that the EPA carried out preliminary research into the environment aspects of hydraulic fracturing and published a report earlier this year in May. The EPA is currently scoping a more comprehensive study, and the committee will hear more about that this morning. There is a key link between that research and decision making. The Minister in the House has made it very clear that no decision will be made to allow hydraulic fracturing until the results of this further EPA research has been considered.

The next issue is the regulatory framework that would apply at the exploration and possible production stage. Much of the discussion to date has been focused on the production stage, which would be a large-scale development with a significant number of paths and traffic movements. The initial stage of any project is an exploration stage, which would be of a much smaller scale. The Minister has confirmed that having regard to the nature of the proposed technology, even if the threshold provided by the relevant directive did not apply, he would apply the environmental impact assessment process to any application at the exploration phase.

That assessment would be informed by advice and submissions from a range of parties, including the EPA, the National Parks and Wildlife Service and a list of bodies with which the Department would have to consult. It is a long list of bodies, including non-governmental organisations and local authorities, and there would be a public consultation phase where the Department would seek submissions from the public at large. Additionally, a safety permit would be required at the exploration phase from the Commission for Energy Regulation and a planning consent would also be required. I drew distinction between the exploration and production phase in terms of scale. It is clear that at the exploration phase there is a detailed level of interrogation of an application and a number of required consents.

If a project goes through the exploration phase and demonstrates the possibility of a commercial development, it is possible to move to a development and production stage. At that time there would be a more significant number of consent processes that would apply, including a planning consent from An Bord Pleanála falling under the strategic infrastructure Act. A number of consents would also be required from the Minister, including a petroleum lease, a plan and development consent and a gas pipeline consent. A safety permit would be required from the Commission for Energy Regulation, as well as an integrated pollution prevention licence from the EPA. A Gas Act consent from the energy regulator would also be required to connect the gas to the national grid.

There is a broad range of relevant EU legislation and I touched on some of this earlier, particularly the EIA directive. There are other directives which may be of relevance, depending on the nature of the project. A part of our presentation will deal with groundwater, and I will finish our contribution after my colleague, Mr. Verbruggen, has dealt with that.

Mr. Koen Verbruggen: There are some slides relating to groundwater, as it is an area of concern. The Geological Survey of Ireland, as part of the larger Department, provides technical and independent geological advice, including in the groundwater area, where we also work with the EPA. The circulated document demonstrates the importance of groundwater as a drinking water resource, and it can constitute up to 80% of the water supply in some counties. Some 68% of group water schemes serving 20 or more people are supplied by groundwater boreholes or springs and we are aware that there are up to 200,000 private wells in rural areas not served

by public or group water schemes, and where groundwater is usually the only source of supply. We have a detailed map showing the level of information we have across all the country, and we can take the north west as an example. Groundwater resources or aquifers where there is a water supply can be categorised based on its importance and strategic value. Most of the rural houses and farms would have their own bore and spring, and not all boreholes are necessarily known or mapped. From the data we have, the deepest water supplies known in the area are approximately 140 metres.

As part of risk assessment we produce a groundwater protection or vulnerability map, showing the areas where groundwater is most at risk from surface contamination. By combining the importance of the aquifer with the thickness of cover and nature of geology, we can produce planning maps used by the local authorities and in development plans. With regard to contamination pathways, the highest threat is considered to be contamination from boreholes, and engineering solutions are considered to ensure that does not happen. Gas leakage from below the aquifer along fractures is also an issue, and it should be pointed out that from what we know of the geology, existing faults are relatively tight in the area. Seismics or acoustics are used to monitor and model the process. Gas exploration within or adjacent to the aquifer which could cause lateral migration would seem to be unlikely due to lack of permeability or large lateral distances. It is nonetheless considered a potential source of contamination.

Mr. Ciarán Ó hÓbáin: As outlined, the authorisations granted are licensing options and provide a first right to apply. No application has been made to date to drill an exploration well using hydraulic fracturing. As we have outlined, the EPA is currently scoping further research, which is important for the regulators and any company considering applying for an exploration licence. They will have to carry out their own environmental assessment but they would have to build into that the findings of the EPA research. As has been stated, the Minister has confirmed that no decisions will be made to allow hydraulic fracturing until the results of the further EPA research have been considered.

Senator Paschal Mooney: I am grateful to Mr. Ó hÓbáin and the officials of his Department. It is vital that the information provided for this committee is conveyed to the wider public because of the concerns expressed, particularly in the areas in which it is proposed to carry out hydraulic fracturing.

One of my questions relates to a comment made earlier about the licence application option, which is that at the end of February the existing licence holders must take a decision on whether to apply for an exploration licence. Tamboran Resources, representatives of which have chosen not to appear before the committee, indicated in a letter to it that the company was aware that a special study of shale gas had been initiated by the EPA which will report in about 12 months and until that time the company considered discussions would not be meaningful. It stated it did not believe it was productive to make detailed comment on project impacts until the requirements of the EPA and other regulatory agencies were defined. It stated its schedule was predicated on the EPA report and the strict regulatory and planning mechanisms that would be in place. It stated it expected the project would be allowed to advance at least to the test well stage once these regulatory and planning requirements were known, although it believed this was unlikely to be before 2015. In the light of that letter, does it mean its licence application will fall? It appears from the letter that Tamboran Resources will not be in a position by February to apply for an exploration licence because it is awaiting the outcome of further research. What are the implications of this for licence holders?

Also, Mr. Ó hÓbáin has pointed out that there are a number of EU regulatory regimes in

place that will have an impact and be relevant to the final decision on this issue. A question was put by two Green Party Members of the European Parliament to the Directorate-General for the Environment last July and the reply stated that as part of its ongoing effort to determine whether the level of human health and environmental protection provided by the existing EU legislation was appropriate, the Commission had initiated work in order to assess by the end of 2013 whether there was a need for a risk management framework for shale gas developments in Europe, both at the exploration and commercial production phases and, if necessary, the form that it would take. What input does the Department have into these discussions with the Directorate-General for the Environment? Is it actively engaging with it in terms of what appears to be ongoing research and analysis as to whether the existing legislative framework in Europe will be sufficient? As the officials will be aware, several European countries have suspended or introduced a moratorium on shale gas exploration; therefore, this is a Europe-wide issue, not exclusively an Irish one. What input will the Department have into it?

Chairman: We will take all the questions together and the officials can note them for reply.

Deputy Michael Colreavy: My family and I live five or six miles from what would be the centre of operations in this case. One hears people talk about conflicts of interest; I certainly have one in this instance.

It is a pity this meeting is not being held in north Leitrim instead of on Kildare Street. At some stage members of the committee will need to meet in north Leitrim to see the countryside and the community we are discussing. I formally propose that a meeting be held on a site in what would be the centre of fracking operations. Can such a meeting be arranged? I will facilitate by providing a nice conference room that would be capable of accommodating the meeting.

To put it mildly, it is disappointing that representatives of Tamboran Resources did not see fit to attend this meeting. The reason they have given is that it is difficult to engage in meaningful discussions at this stage, yet, according to them, they continue to work closely with the relevant Departments in establishing dialogue with all stakeholders. Therefore, they are saying they do not have enough information to talk to legislators, but they do have enough information to talk to the community. Is it any wonder that the community has concerns about the validity of the information being passed at those meetings? Had Tamboran Resources representatives been here, I would have asked them to explain something. There are recent credible reports which cast serious doubt on the company's projected figures for the estimates of gas available, average well performance and projected well life. They also call into serious question the projected development costs, income projections, job number projections and, critically, the State income projections.

I have a vested interest and my position is very clear. It would constitute the worst form of social and environmental vandalism to turn the beautiful landscape of north Leitrim and subsequently counties Fermanagh, Cavan, Sligo, Tyrone and Donegal into what would be an industrial wasteland and put at risk our vital agrifood and tourism industries for the potential financial gain of a small number of people.

Chairman: Will the Deputy put a question, please?

Deputy Michael Colreavy: I have a number of valid questions and must be given the time to ask them.

The first question has been answered in the introduction. I take it that there is a typographi-

cal error in the phrase: "Holders must decide by end February 2012". I presume it should read 2013.

Mr. Ciarán Ó hÓbáin: Yes.

Deputy Michael Colreavy: Who makes the decision to grant or refuse an exploration or production licence? What input, if any, will the committee have in reaching that decision? Is the committee a talking shop or will it have a real input in reaching that decision? Is there any provision in legislation for a Dáil vote on a decision of such crucial importance for the nation? My view is that little is known about the impact of fracking. People talk about experiments and work taking place in Poland and the United States, but north Leitrim is different. The ground and scenery are different and what is underground is totally different from what is in Poland or the United States. It will be at least ten or 20 years before we will have enough information to make a decision on this technology. Will the officials advise of their estimates of the likely timescale to reach a decision on the Lough Allen basin? I am referring to a timescale for exploration because that would be the beginning of the damaging of north Leitrim.

Are we, as a Parliament, doing enough to exploit wind, wave and tidal energy off our extensive Atlantic coast? Are all our eggs being put in the fracking basket? The Department has initiated work on energy conservation measures, but, given that domestic dwellings account for 40% of our energy use, surely we should do more on energy conservation measures for such dwellings.

I have serious concerns that a company in the initial stages of applying for an exploratory licence is offering so-called unconditional grants to community organisations. Such organisations are almost always strapped for cash and desperate and will take money from any source. It is, therefore, unethical for companies to offer so-called unconditional grants to community organisations which has the potential to cause serious rifts within the community. The last thing we want is another Rossport. Members, the Government, the Department and any company involved must be very careful about fomenting discontent in a community. Are payments allowable expenses against tax if a company is subsequently granted a licence? It would be the irony of ironies if the taxpayer was paying as dissent was fomented within a community by way of community organisations receiving a grant from a company.

I have three more questions.

Chairman: I have allowed the Deputy a lot of latitude.

Deputy Michael Colreavy: I appreciate that.

How can the Department independently evaluate the figures proposed by a company in support of its case for the receipt of an exploration licence, given the paucity of information available on geological data? Given the possibility that a company may sell on the permission or engage in a joint venture with another company, how will the Department enforce commitments made by it?

Two weeks ago the advice of the European Commissioner for Energy to member states, unofficially, seemed to be not to make a decision for three to five years because work was ongoing and data were still coming in. That provided some reassurance until I received a newsletter, *EU News Bulletin*, published by the Irish Regions Brussels office of September 2012, issue No. 94. Lo and behold, I note a budget of €200,000 has been set aside to cover five or six hearings and campaigns with a view to organising early stage dialogue with citizens and launch informa-

tion campaigns on shale gas as a basis for informing decision-making on its potential industrial exploitation. Many members of the community in north Leitrim will have heard the European Commissioner saying there was insufficient information available and telling people to wait and see what happened. At the same time, representatives of a company will not appear before the committee because it is too early to meet legislators, but it will talk to communities to split them. Members of the committee have insufficient information. What is the gap between what we need to know and what we know? People will think we are being led down a rosy path in the garden. They will think decisions have already been made and that the community is being channelled in a certain direction. The evidence seems to bear this out.

Deputy John O'Mahony: I will be brief.

Chairman: I ask committee members to stick specifically to the topic under discussion because we have other presentations to hear.

Deputy John O'Mahony: With regard to the licensing options which have been taken up, has Tamboran taken up all of the licences or are other companies involved? The officials have referred to the licensing options which will run out in February 2013. The company will have to apply for an exploration licence at that stage. Is there a possibility it will apply for a continuation or an extension of the licensing option in the light of its comments about not appearing before the committee without further progress being made on environmental reports and technology? If the company cannot have its options extended, will the interest in fracking in Ireland die in 2013 if no other companies are involved?

Deputy Luke 'Ming' Flanagan: As I am not a member of the committee, I cannot second the proposal of Deputy Michael Colreavy that the officials come to County Leitrim to see the situation on the ground. It is very important that they do because many decisions are made, including on bus routes, without talking to people and seeing what the situation is on the ground. One can do stuff on a desktop, but if one does not talk to people and see what the situation is on the ground, it is a waste of time. Can the departmental officials do as I ask? Deputy Michael Colreavy mentioned that we did not want another Rossport; we certainly do not. People need to be consulted and listened to. We do not need consultation involving the equivalent of an arrow being fired first and the target being drawn to it to make it look like there is consultation. If the people living in an area do not want something, it cannot happen. To what extent will the officials take into account the opinions of people living in an area? I have a vested interest in the matter because I live in Roscommon where groundwater accounts for some 70% of our drinking water. If it is contaminated, it is not as simple as decontaminating it. If ever caution was needed, it is in this case. We need energy, but we need water a lot more.

I am sure the officials are aware of the study issued by the European Parliament which specifically points to how one has to be careful in going down the road towards fracking in sensitive areas. I am interested to hear the comments of the Department. I will conclude by saying it is very worrying and very disappointing that Tamboran Resources would not attend today's meeting. It does not inspire confidence, and confidence in Tamboran is not particularly high as it stands. I think they have done themselves more damage here.

Senator Paschal Mooney: If there is a requirement to formally second Deputy Colreavy's proposal, I am very happy to do so.

Chairman: I think the committee members should visit the area as this would be quite acceptable, as suggested by Deputy Colreavy.

Deputy Michael Colreavy: I think it would be an efficient use of time to have a committee meeting in north Leitrim and I could arrange a suitable venue.

Chairman: We will probably decide on a visit.

Senator Paschal Mooney: I am not attempting to gainsay Deputy Colreavy but what I would like to think he has in mind is that we would inform ourselves on the ground and also take the opportunity to engage with some of the local opinion.

Chairman: On a point of clarification, which Department is responsible for the issuing of licences? When will such a licence be issued?

Mr. Ciarán Ó hÓbáin: I refer to the two themes which are common to many of the questions. Questions were asked as to the next step in the application process and the associated timeline. Questions were asked about a number of studies that have been completed or are ongoing and how they relate to the process. I will start with those two themes and I will answer the questions as best I can.

I refer to the application process. The companies have a licensing option which gives them a first right over others to apply for an exploration licence. If they wish to exercise that right, they must do so before the end of next February. In reply to Deputy O'Mahony, three companies in different parts of the country have those licensing options. They will make their decisions independently before the end of February as to whether they wish to apply for a licence. If they wish to stay involved in the process and they wish to exercise that right, they would need to apply. The key point is that any such application and process must be supported by an environmental impact statement. The Minister has said that this process and the evaluation of that application will be underpinned by a full environmental impact assessment. The Minister has also said that the assessment cannot conclude until the findings of the further EPA research are considered. That is the first stage on the timeline, for the information of the committee.

To be clear, there is nothing in the statutory process that indicates the timeline by which that environmental impact assessment must be concluded. This is important from the perspective that no company has a right to make an application and demand a response. The application process will take the length of time it takes and a key element in that process and in the evaluation will be the findings of the further EPA research. The committee may have to wait for the next presentation to understand the timeline element. I will not pre-empt the EPA findings because in the first instance it will be scientific research and it will make conclusions. If those conclusions leave it open to a project advancing to an exploration stage, then the full evaluation of the application and the environmental impact statement and assessment process will begin. One can anticipate that the process, if it runs well and if there were no need for additional information, would last for eight or nine months but it could be more than one year. Time would need to be allowed at the conclusion of the EPA research for the company and the regulatory bodies to consider that research and then a nine to 12-month period would need to be allowed for an assessment of an application. That is the timeline involved. As for the range of studies that have been completed and those which are ongoing, they will feed into the EPA project. The aim is to conclude with a scientific-based understanding of the potential impacts of hydraulic fracturing in Ireland and for that to inform future decision making.

I will deal with some of the other questions from members. The potential environmental and social impact will be addressed through those consent processes. Deputy Colreavy referred to the exploration stage in this regard. There will be an environmental impact assessment of

any application for an exploration licence and that environmental impact assessment has to take account of community issues and the environmental and social impacts. A number of consent bodies determine whether the exploration phase can go ahead. The exploration licence is a matter for the Minister, but as outlined in the presentation, a planning consent is required and also a safety permit from the Commission for Energy Regulation. As regards the role of the Oireachtas, the members will understand that role as well as anyone. In my view, the manner in which such applications must be considered is set down in the legislation by the Legislature. A point that is raised at times with regard to the discussion about unconventional gas is relevant to a point raised by Deputy Colreavy about the trade-off between the use of gas versus the use of renewable energy. It would relate to unconventional gas if unconventional gas was an acceptable way to proceed and it is also relevant to conventional offshore gas. The key point for Ireland is that there will be a continued high dependence on gas in our energy mix. There is a benefit for Ireland if that gas is indigenous gas and we can gain a financial return from it.

On the question about company figures, the Department does not comment on projections made by exploration companies involved at the early stages or in the exploration stage. The only time the company figures matter is at the point when it is making the case that it has a commercial discovery. There are often news reports, in advance of exploration drilling, of predictions by the company which are based on what might be the potential of an area. Exploration drilling is required for any confirmation and a significant level of appraisal drilling will be required before there can be a determination of the reserves with anything close to great certainty. As to the enforcement of commitments, the Department has a strong control in that any change in ownership of the authorisation-holder at an exploration phase or in a later development production phase requires the consent of the Minister. The obligations entered into by the initial party must be transferred in that process. On the question about the knowledge gap, the core aim of the EPA research is to identify the extent of that gap and to address it. I will leave that matter to be dealt with in the next presentation.

Senator Paschal Mooney: I ask Mr. Ó hÓbáin to elaborate on the issue of consent for any transfer. It is a matter of concern that this is a front organisation and that it would sell out to a larger multinational. What is the context in which that could happen?

Mr. Ciarán Ó hÓbáin: It is very common that the company that commences the exploration phase of a project with a full 100% interest would, at a minimum, dilute its interest as it advances through the stages of exploration towards development. That would be to do to share the risk before significant money was invested. In the event that a company was selling, or there was a change in control and it was withdrawing and selling its share to its partner, it would require the consent of the Minister. The key issue for the Minister in considering this would be whether the partnership had been strengthened by the change in control. The principal point is that it does not change the obligations that go with the authorisation; they continue.

Deputy Michael Colreavy: I am more concerned now than I was. We are speaking about the process the Department would use in granting an exploratory licence. Is it within the gift of the Minister and the Department or are there legal implications for the Minister to follow the advice of the Commissioner and say we do not wish to seek tenders for applications for exploratory licences? Can the Minister say we are not proceeding with a request for applications?

Mr. Ciaran Ó hÓbáin: I will not try to imagine what was in the Commissioner's mind when he addressed the committee, but it would be fair to see it as adopting a precautionary approach, which is consistent with Ireland's approach. If we do nothing for a period, we will potentially be in the same place we are in now. Ireland is doing something positive to address

the science needed to underpin a decision. We recognise that if an application is made for an exploration licence, it will have to be evaluated under the existing framework. There is a gap, however, in terms of the science and we want to address it.

I will leave it to the EPA to outline a timetable for research, but before a decision could be made by the Minister on an application for an exploration licence, there would have to be EPA research and time to consider the findings followed by an eight to 12 month process of evaluation under the EIA directive.

Chairman: The Commission cannot tell Ireland to do this; it is up to us. Is that correct?

Mr. Ciaran Ó hÓbáin: I read a transcript of the meeting and the Commissioner gave his view in response to a question. In the same meeting that point was clarified in response to a question from Deputy Michael Colreavy. Ireland can set its energy policy.

Senator Paschal Mooney: Within the last couple of days the British Chancellor of the Exchequer has announced that he is going to reduce the royalty tax rate for hydraulic fracturing operations in Britain. That is a sinister development because activity is already under way in County Fermanagh, directly across the Border. This is the same operational area from which shale gas could be extracted and it affects both sides of the Border. Is the Department aware of this initiative and what input can it have through Government access to bodies such as the British-Irish Ministerial Council, the North-South Inter-Parliamentary Association and others? This is a matter of great concern. It will spill over into the South if it provides a direct financial incentive for companies to engage in hydraulic fracturing.

Mr. Ciaran Ó hÓbáin: I will not enter a debate on British tax policy, but I am aware of the consultation that has started. The Senator is right in his point about geology not recognising borders. On either side of the Border, if there is an environmental impact assessment, it must take account of potential cross-Border impacts. Any project in Northern Ireland is subject to the same EU legislative framework that would apply in this jurisdiction.

Senator Paschal Mooney: There is a senior geologist present. Has the Department established any fact on the ground? The only facts and figures we are getting come from Tamboran Resources about what is to be found under the ground and what can be extracted. I know Mr. Ó hÓbáin touched briefly on this issue, but it is important to find out the Department's view because we have not heard anything from it. It must have carried out seismic studies. There is also a body of evidence dating back over 30 years which Tamboran Resources is using to establish its bona fides.

Mr. Michael Hanrahan: There is a body of evidence, but it is limited. There are five wells in the north west that were drilled for conventional gas exploration purposes. They were targeting thin sand intervals and vertical wells. The most recent work was done by Evergreen Resources in 2000. This is the first time work has been done to evaluate shale gas potential in the area. The seismic data are very old and their quality is questionable. The data need re-processing work and may even need a new acquisition to aid in the interpretation and help to evaluate the potential involved. As in the case of offshore exploration, the only time the Department would evaluate the size of a resource and the potential recoverable oil or gas is when the exploration and appraisal work has been done. To date no exploration work has been done to assess shale gas potential.

Senator Paschal Mooney: Therefore, the figures being given by the company are question-

able?

Mr. Michael Hanrahan: They are the company's figures and we have not evaluated them at this stage.

Deputy Michael Colreavy: Does an exploration licence permit hydraulic fracturing in north Leitrim?

Mr. Ciaran Ó hÓbáin: There is no exploration licence in north Leitrim.

Deputy Michael Colreavy: Would an exploration licence permit hydraulic fracturing in north Leitrim?

Mr. Ciaran Ó hÓbáin: That is the point of what we have outlined. There is a process in place to help to inform decision making when such an application is received. The EPA research and findings will inform the company's decision that it can carry out this work without significant adverse impacts on the environment and inform the regulator's assessment of the application through the environmental impact assessment process.

Senator Paschal Mooney: I asked that question because there are wide variations between what is proposed to be taken out, what is supposed to be there and what can be taken out. I presume this is all being watched in the Department.

Mr. Michael Hanrahan: Yes, the same goes for conventional offshore exploration activities. When companies take out a licence, they map a prospect and give a figure, but it remains unproved until the exploration and appraisal work has been carried out.

Chairman: I thank Ms Ryan, Mr. Ó hÓbáin, Mr. Brogan and Mr. Hanrahan for their presentation.

Sitting suspended at 11.10 a.m. and resumed at 11.12 a.m.

Chairman: Both groups invited to this meeting were present when I drew their attention to the fact, by virtue of section 17(2)(l) of the Defamation Act 2009, witnesses are protected by absolute privilege in respect of their evidence to the joint committee. Is it agreed that they understand the provisions related to privilege? Agreed.

I welcome Ms. Laura Burke, director general; Mr. Dara Lynott, deputy director general; Mr. Frank McGovern, climate change unit and Mr. Sean O'Donoghue, environmental licensing programme from the of the Environmental Protection Agency. I invite Ms Burke to make the presentation.

Ms Laura Burke: I thank the Chairman for inviting the Environmental Protection Agency to assist this committee in formulating its views on hydraulic fracturing. I hope my statement will assist the committee. As members are aware, the Environmental Protection Agency is an independent statutory body, established in 1993 under the Environmental Protection Agency Act 1992. We have a wide range of responsibilities in the environmental field. Today, we are discussing hydraulic fracturing.

The main role of the EPA with regard to projects involving hydraulic fracturing, or fracking as it is commonly termed, is its regulatory role through the IPPC licensing process as set out in the EPA Act, whereby an IPPC licence is required for onshore extraction of shale gas on a commercial scale. The EPA does not have a regulatory role at the exploration stage of these

projects, but will be a statutory consultee with respect to any environmental impact assessment conducted by the Department of Communications, Energy and Natural Resources, as indicated earlier. The Environmental Protection Agency is also involved in research into the environmental impacts of hydraulic fracturing.

The EPA has a number of roles. First I will discuss our research role. The EPA is responsible for the development, co-ordination and management of environmental research in Ireland and has provided funding for environmental research since 1994. The current research programme STRIVE has been running since 2007 and is focused on major environmental challenges and the provision of policy relevant analysis and research. The study Hydraulic Fracturing or 'Fracking': A Short Summary of Current Knowledge and Potential Environmental Impacts was published by the EPA in May 2012. This short desk study was conducted for the agency by the University of Aberdeen. It provides an introduction to the environmental aspects of fracking including a review of regulatory approaches used in other countries and areas for further investigation and research. In brief, some of the key findings of the study included the importance of well integrity for preventing groundwater contamination; the importance of knowledge of local geology regarding potential impacts on groundwater quality and the possibility of tremors; and the uncertainty regarding the carbon footprint of shale gas in comparison to conventional natural gas. This is an important climate change issue. There are a small number of published, peer reviewed, scientific studies in the area. This study also examined regulatory approaches in Europe, North America and elsewhere and identified areas where further research is required to determine best practice.

The information provided by this preliminary research project will now be used to inform a more comprehensive study to be commissioned by the EPA, in co-operation with the Department of Communications, Energy and Natural Resources. This project will be administered by the STRIVE programme, and steered by a committee with representatives from the Departments of Communications, Energy and Natural Resources, Environment, Community and Local Government, the Commission for Energy Regulation, An Bord Pleanála, the Geological Survey of Ireland and the Northern Ireland Environment Agency. The EPA expects to commission this study in 2012. The scope of the research, while not finalised, is expected to address, among others, the areas of environmental best practice; identification of potential environmental impacts, local and global, and associated mitigation measures; baseline studies to characterise the existing local environment; and an examination of regulatory frameworks in the Republic, Northern Ireland, and the EU. The study will take account of existing international research in the field, and a public consultation process is also planned. While elements of the research will relate to specific regions where options have been granted from the Department of Communications, Energy and Natural Resources, it is the intention that the study will generally be applicable to the island of Ireland.

With regard to international research on hydraulic fracturing, there is currently much research underway, particularly in the EU and US, on the environmental and human health aspects and impacts of fossil fuel activities involving fracking. As recently as September 2012 the EU Commission has published two studies in this area, on climate impact and the environment and human health. The EU Commission has also recently invited tenders for research aimed at supporting possible Commission initiatives on managing impacts and risks arising from unconventional gas developments, and assisting the Commission in developing best regulatory practices. In the US, the US EPA is currently conducting research on the potential impact of these projects on drinking water resources. This research is expected to be completed in 2014, and an interim report is expected in late 2012. The Environmental Protection Agency

will be keeping abreast of all such research with a view to being in the best possible position to perform its statutory duties.

The primary role of the EPA with regard to fracking is our licensing role. Any proposed project involving the commercial scale extraction of shale gas would therefore need to apply to the EPA for, and be granted, an IPPC licence in order to operate. Any licence issued for such an activity would also regulate the environmental aspects of any hydraulic fracturing operations taking place as part of the extraction activity. The IPPC licences aim to prevent or reduce emissions to air, water and land, reduce waste generation and use energy and resources efficiently. Applicants are required to demonstrate that they meet the criteria set out in the legislation to be considered as “fit and proper” persons to hold such a licence. They must also make adequate provision for closure and environmental liabilities.

The IPPC licence is a single integrated licence which covers all emissions from the facility and its environmental management. All related operations that the licence holder carries out in connection with the activity are controlled by this licence. In order to grant a licence, the EPA must be satisfied that emissions from the activity do not cause a significant environmental impact. Any application to the EPA must demonstrate the use of best environmental practice in order to minimise environmental impact. Applicants are also required to demonstrate that the proposed activity would not cause any breaches of national legislation or European directives. For example, with regard to protection of groundwater, an applicant would be required to show that no breaches of the EU Water Framework Directive or national water quality standards would occur.

No applications for IPPC licences for commercial extraction of shale gas have been received by the agency to date. Any applications received in the future will be assessed on a case-by-case basis, in accordance with the requirements of the EPA Acts. The key environmental issues to be addressed in any future application include the potential for groundwater contamination from methane migration, the impact of any chemical additives in the fracking fluid, the treatment and disposal of flowback fluid, greenhouse gas emissions and water usage.

I would like to speak about European work on this issue. The EPA, representing Ireland, participates in an EU technical working group on the environmental aspects of unconventional fossil fuels, in particular shale gas. The working group consists of representatives of member states, the European Environment Agency and the EU Commission. The purpose of this group is to assist in identifying and addressing knowledge gaps, potential key issues and priorities in relation to environmental protection, to act as a platform for information exchange on environmental aspects of and best practices for shale gas projects and to contribute to the Commission’s efforts to assess whether existing EU environmental legislation ensures there is an appropriate level of protection of the environment and human health.

Climate change needs to be considered as part of any discussion on fracking operations. The EPA plays a number of key roles as part of Ireland’s response to the challenges of climate change, for example by drawing up Ireland’s annual greenhouse gas inventory, which is reported to the EU and the UN Framework Convention on Climate Change and used to determine compliance with emissions targets under the Kyoto Protocol and the future EU climate and energy package. The EPA also provides official projections of future emissions of greenhouse gases in the context of projected policies and measures. EPA projections for the period from 2011 to 2020 show that Ireland can comply with its Kyoto obligations with regard to greenhouse gas emissions. Even in the best case scenario, however, Ireland is predicted to breach its annual obligations under the EU 2020 target from 2017 onwards. Our total emissions are pro-

jected to be above the EU 2020 target by between 4.1 million and 7.8 million tonnes of carbon dioxide equivalent.

Globally, carbon dioxide and methane are the two most important long-life greenhouse gases that are driving climate change. In this context, it is important to note that methane is the main constituent of natural gas. At the point of conversion to energy, fossil methane is less carbon-intensive than other fossil energy sources, such as coal, oil or peat. Fuel switching from coal, peat or oil to natural gas has a climate benefit at the point of use, in so far as the amount carbon dioxide emitted per equivalent amount of heating or electricity generation is reduced. The conversion of home heating from coal to gas in Dublin is a good example of this. That measure has had significant benefits for air quality and has contributed to lowering Ireland's emissions from this sector.

Fugitive greenhouse gas emissions from oil and gas exploration, production and processing are included in greenhouse gas inventories. For Ireland, such lifecycle emissions are currently low because most of our natural gas is imported. Approximately 93% of it was imported in 2011. Any methane emissions from fracking, or during exploration drilling, would be reported in Ireland's inventory. While uncertainties are significant, the use of locally produced shale gas to replace imported gas is likely to increase associated emissions for Ireland. While the level of such an increase is uncertain - it might not be large - it would add to our total emissions and have implications for other sectors, such as the agriculture sector. If such gas is used to replace coal or peat or certain oil-using systems, it may reduce the associated emissions. However, such a transition needs to be assessed in the context of overall climate policy.

As the committee will know, the National Economic and Social Council has been tasked to report on the development of climate policy in Ireland. The first part of its report, which relates to 2020 targets, was published earlier this month. The second part of it, which will consider Ireland's transition to a low-emission economy, is due to be completed by the end of the year. Natural gas will have an important role in such a transition. However, its use needs to be factored into a clear transition scenario. For example, relatively lower-emission methane systems could replace higher-emission coal, peat and oil systems, which would then be replaced by sustainable energy sources over a certain period of time.

Further research is required to fully understand the potential impact on the environment of the use of this technology. The key questions this research needs to answer are whether this technology can be used while fully protecting the environment and human health and, if so, what is the best environmental practice in using the technology. The question of whether the existing EU environmental regulatory framework is adequate for unconventional fossil fuels projects is also being addressed. The answers to these questions will assist the agency and other regulators in fulfilling their statutory roles with regard to these projects. I hope I have given the committee an overview of the possible environmental implications of hydraulic fracturing. Along with my colleagues, I will be happy to answer any questions the members of the committee may have.

Chairman: I thank Ms Burke sincerely. Can I take it that no licences will be issued without the approval of the EPA?

Ms Laura Burke: As I said in my opening statement, our role is in commercial extraction. A licence would be required from the EPA for commercial extraction. The EPA does not have a role with regard to exploration licences, other than as a statutory consultee with regard to the environmental impact assessments associated with such licences.

Senator Paschal Mooney: I thank Ms Burke. I appreciate the comprehensive nature of her presentation. Is there an understanding that the shale gas components would be made up in this country? Is there enough geological evidence to indicate that this country's geological composition could be different from that of other countries? Has the EPA received any indication of that? What sort of criteria will the EPA use when it compiles its report? Ms Burke mentioned various issues. It seems to me, from the little I know about this matter, that different procedures are used in different countries. Most of the information is coming out of America. For example, chemicals are currently being used. Tamboran, which is the leading company in this area, has repeatedly said it will not use chemicals but will use water only. The area where it is proposed to extract shale gas has a high water content in terms of lakes and rivers. That is unlike the American experience of locations like deserts that have a totally different topography. Will the EPA take that into account when it is setting the criteria? What will it be looking for? What can we expect to get at the end of this report? Ms Burke indicated that the EPA is tracking what is happening in other countries. She referred to the American report. It seems that the actual procedures continue to be the subject of a great deal of controversy. Will the EPA issue a report that focuses on how the gas is extracted? What sort of safeguards will be built into the procedures? I appreciate that it is difficult for the EPA, which is just starting to examine this matter, to answer these questions at this time. Based on the preliminary report that was issued by the University of Aberdeen, can Ms Burke give an indication of the conclusions the EPA has come to in its thinking at this stage? There may be other questions. I have asked about the generality. I know others wish to get involved.

Chairman: I remind members that we have regulations and rules.

Senator Paschal Mooney: My main point is that we are concerned about the possible contamination of groundwater. That is the main concern in all of this.

Chairman: I am reminding members that they are given two minutes in which to ask questions. I call Deputy Colreavy.

Deputy Michael Colreavy: Was the Chairman's reminder aimed at me?

Chairman: Not really. It was a hint.

Deputy Michael Colreavy: I thank Ms Burke for the presentation. I am still unclear. Does an exploratory licence permit hydraulic fracturing in north Leitrim? I received an answer to that question, but I did not understand it. It is not clear to me. This document points out that people have the right to make a submission. We are talking about the potential for environmental impacts such as the poisoning of groundwater. Nothing in the document relates to the impact that this development would have on the people who live in north Leitrim. From reading about experiences in other jurisdictions where hydraulic fracturing is practised, I have learned that nobody listened to the concerns raised elsewhere. In Ireland the concerns about fracking are not confined to the possible poisoning of groundwater or potential damage to the agrifood and tourism industries. People are concerned that a beautiful agricultural area with drumlin hills, lakes, rivers, mountains and valleys - I again suggest members visit north County Leitrim - will be turned into an industrial wasteland. Fracking will impact on local people. Prior to my election to the Dáil last year, I was a county councillor in County Leitrim where applications to build houses with a septic tank were rejected on the basis that a family home would be intrusive on the landscape. This is the same area where consideration is being given to allowing the construction of seven acre concrete pads. I cannot understand why we are even considering allowing exploratory hydraulic fracturing in this area. Will someone explain the reason, please?

Deputy Ann Phelan: I will make some comments rather than pose questions. The main concern about fracking relates to the possibility of groundwater being contaminated. Given our heavy dependence on groundwater, like Deputy Michael Colreavy, I wonder why the possibility of permitting hydraulic fracturing is even being considered. The evidence from other countries suggests different jurisdictions take different approaches. The United Kingdom appears to have an open mind on the process; France has closed down the process, while Germany and Poland are exploring the possibility of allowing fracking. The intelligence, as it were, from North America and Australia suggests the approach taken in these countries is different. Unlike Australia and the United States, however, Ireland's centres of population are close together and our dependency on groundwater is great. Fracking is much easier to carry out in the middle of Australia where the nearest centre of population may be five hours away by air than it would be in Ireland. Given that the process is in its infancy, we should consider permitting it and await information on the practice in other countries before allowing fracking to commence here.

Deputy Terence Flanagan: My questions are similar to those I asked the previous delegation. Will the Environmental Protection Agency comment on the report from the European Parliament which expressed serious concerns about hydraulic fracturing technology? Given that hydraulic fracturing is a new technology, what lessons have the Environmental Protection Agency learned from other countries and which of them will it consider when making a decision on the matter? When does it expect to make a decision on the issuing of a commercial licence? What links does it have with environmental agencies in other countries to ensure it is informed of developments elsewhere?

Chairman: Have representatives of the Environmental Protection Agency visited other countries to observe the impact of hydraulic fracturing?

Ms Laura Burke: With regard to geology, Ireland is different from Australia and the United States. This is a prime driver of the research. The role of the Environmental Protection Agency is to protect the environment and science is at the core of all our activities. I hope I was clear in my statement in noting that we did not have information available to us to make a decision on whether this technology could be operated without harming human health or the environment. This is the key purpose of the research, which is taking place at international and European level. A key part of the research we will carry out in conjunction with the other relevant bodies is to examine baseline studies to characterise the existing local environment in Ireland, in other words, to address the issue of local geology and other local issues. We do not want to duplicate research being carried out at European level or in other countries and will instead localise our research in order that we have data on which to make a decision.

The Deputies are correct that compliance with the water framework directive is a key criterion in respect of any of these activities. We cannot permit any activity to undermine Ireland's compliance with European Union obligations to have good water quality. Water is also a significant resource for the country and we cannot undermine it. The research is to obtain a large amount of baseline information on Irish circumstances.

With regard to the impact of the development in north County Leitrim, as I stated, the Environmental Protection Agency is not the only body progressing the relevant research. We have arranged that the steering committee has representatives of the Departments of Communications, Energy and Natural Resources and the Environment, Community and Local Government, the Commission for Energy Regulation, which will also have responsibility for regulation in this area, An Bord Pleanála, the Geological Survey of Ireland and the environment agency in Northern Ireland. All the regulators that would at some stage in the future have a role in regulat-

ing the activity in question are included in the steering committee in order that any issue raised, including by the relevant bodies in question, may be addressed. The purpose of the steering committee is to try to pull together all of the bodies which have a role in the context of the research required.

The report of the European Parliament will feed into the research we are conducting. We are very conscious of the findings of this and other reports. It is important to note in the context of the report that it found that thresholds of environmental impact assessment needed to be examined. In the Irish case, environmental impact assessment would be carried out for the exploratory phase. This has been stated by officials from the Department of Communications, Energy and Natural Resources. With regard to the regulatory framework, Ireland is slightly different from elsewhere in that under the Environmental Protection Agency Act and the integrated pollution prevention and control, IPPC, licensing regime, shale gas exploration is specifically included as an operation that would require a licence. That is not the case in other EU member states.

With regard to links with other environmental agencies, as I indicated, the Environmental Protection Agency is represented on the EU technical working group on shale gas. In addition, members of EPA senior management and I are part of a network of environmental protection agencies throughout Europe in which fracking is being discussed as a key upcoming issue. While we have not yet visited a fracking operation in another country, I am sure such a visit will take place before we make any decision on this activity.

Deputy Terence Flanagan: Will Ms Burke indicate when a decision will be made on a commercial licence?

Ms Laura Burke: There is a considerable process to be completed before we reach that point. In the first instance, the research must be completed, at which point an exploration licence would have to be approved. It would only be at the end of an exploration licence process that an application would come to the Environmental Protection Agency. For this reason, I cannot provide a timescale, although I will say a significant period will elapse before we even receive an application for commercial extraction. The reason the EPA is being proactive and doing the work now is to ensure we will have the relevant data available to us in advance of any licence application being submitted.

Deputy Luke ‘Ming’ Flanagan: An important question was asked on whether representatives of the Environmental Protection Agency had visited fracking sites elsewhere in the world. Obviously, they will do so in the future or I hope they will. If they do, could they bring someone from Fáilte Ireland to ascertain whether he or she thinks it is a lovely place to visit? If someone from Fáilte Ireland does not think it too lovely, it would be a good indicator that not many people will be visiting north Leitrim if fracking comes there. The man from Tamboran Resources was quite disparaging about how beautiful the place was and did not seem to think that there was much potential for tourism.

Ms Laura Burke: As I have family in Leitrim, I certainly appreciate its beauty. We need to ensure that any new activity that commences does not undermine what we currently have, which is a very good quality environment in Ireland. That has an intrinsic value in its own right, as I am sure this committee is aware, but it also has a very important value for tourism and agricultural industries. We have talked about water resources, which are predicted to assume increased strategic importance to Ireland, and we need to protect these resources. Any action that is taken into the future cannot undermine our water quality or other industries. Again, it

goes back to evidence-based decision making. We need to complete the research in order to help us base any decision into the future. Of course, we must take local factors into consideration. That is the reason why the EPA on the steering committee in respect of the research and organisations like the Commission for Energy Regulation and An Bord Pleanála are involved, all of which have their own distinct regulatory roles in this regard.

Deputy Michael Colreavy: I will again ask whether the exploration licence allows hydraulic fracking? Do we have to frack in order to get the information to see whether fracking is safe?

Ms Laura Burke: As I indicated earlier, the EPA does not have a role in respect of the exploration licence other than as a statutory consultee on the environmental impact assessment so, unfortunately, I cannot give the Deputy an answer with regard to that question. That would be a matter for the Department of Communication, Energy and Natural Resources

Deputy Michael Colreavy: Can hydraulic fracking be permitted under an exploration licence, notwithstanding the role of the EPA in approving or not approving the licence? Is it within the gift of the Minister or Department or whoever grants an exploration licence to say to companies they can carry out hydraulic fracking in order to test the safety of the process?

Ms Laura Burke: That is a question for the Department in the context of an exploration licence.

Deputy Michael Colreavy: I did ask the Department.

Ms Laura Burke: We do not issue the exploration licences. We are a consultee with regard to the licence, which is a function of the Department.

Deputy Michael Colreavy: I will table a Parliamentary Question on the matter and wait for an answer.

Senator Paschal Mooney: Ms Burke mentioned the EPA's bilateral international discussions. Is the EPA having these discussions with its opposite numbers in the UK. Is there an EPA-type agency in the UK?

Ms Laura Burke: There is.

Senator Paschal Mooney: Is the EPA dealing with this agency in respect of Northern Ireland because, as I said earlier, geology knows no borders. It is already evident that the activities they are proposing to undertake in County Fermanagh will have a direct impact across the Border in Leitrim because it contains part of the same north-western shale area. Where does that leave the EPA? What would happen if the EPA comes down against hydraulic fracking as having an adverse impact on the environment but Northern Ireland goes ahead with fracking? The British Government is now considering offering tax incentives to fracking companies. Where does that leave us because it will have a direct impact on our environment?

Deputy Luke 'Ming' Flanagan: It is a bit like having urinating and non-urinating sections in a swimming pool.

Ms Laura Burke: I am trying to put that image out of my mind for one moment. We are talking to our colleagues in the UK but, more importantly, the Northern Ireland Environment Agency is on the steering committee for the research as well. In the context of any activities happening in Northern Ireland, there would need to be trans-boundary and consultation ele-

HYDRAULIC FRACTURING: DISCUSSION

ments to the environmental impact assessment. We considered it very important to involve the Northern Ireland Environment Agency, which was very keen to be involved in the research, so that it could work with us to have the appropriate data with which to make decisions on fracking.

Senator Paschal Mooney: Through the Chair, can the Northern Ireland Environment Agency make unilateral decisions or will it have to rely on a British Government decision? Can the agency make its own autonomous decisions on the future of fracking?

Ms Laura Burke: With regard to a licence to operate, my understanding is that the agency has the independence to make decisions itself. However, I cannot claim to be an expert on what the Northern Ireland Environment Agency's role may or may not be so I cannot give a definitive statement with regard to that.

Chairman: I thank Ms Burke and her colleagues for being so informative and helpful in helping the committee with its deliberations.

Sitting suspended at 11.45 a.m and resumed at 11.50 a.m.

Chairman: I welcome representatives from the Good Energies Alliance (Ireland) who are here to brief the committee on fracking. I welcome Dr. Aedín McLoughlin, Mr. Liam Breslin, Mr. Eddie Mitchell and Ms Anais Gerbaud. I wish to draw attention to the fact that by virtue of section 17(2)(l) of the Defamation Act 2009, witnesses are protected by absolute privilege in respect of their evidence to this committee. However, if they are directed by it to cease giving evidence on a particular matter and continue to do so, they are entitled thereafter only to qualified privilege in respect of their evidence. They are directed that only evidence connected with the subject matter of these proceedings is to be given and are asked to respect the parliamentary practice to the effect that, where possible, they should not criticise or make charges against any person or persons or entity, by name or in such a way as to make him or her identifiable. The opening statements the witnesses have submitted to the committee will be published on the committee's website after the meeting. Members are reminded of the long-standing parliamentary practice to the effect that they should not comment on, criticise or make charges against a person or persons outside the Houses or an official, either by name or in such a way as to make him or her identifiable.

Dr. Aedín McLoughlin: A Chathaoirligh, a Theachtaí Dála, a Sheanadóirí agus a dhaoine uaisle, go raibh maith agaibh as an chuireadh a thug sibh dom bheith anseo inniu. Tá an-áthas orm a bheith in ann labhairt libh faoin tionscal seo atá ag iarraidh teacht go hÉirinn, an tionscal gáis a úsáidéann scoilteadh hiodrálach, fracáil talamh, chun an gás a bhrú ón doimhneas. Tá súil agam go mbeidh mé in ann pictiúr a thabhairt don choiste den dochar a dhéanfadh sé siúd don talamh, do shláinte dhaoine agus don tionscal talmhaíochta, atá chomh tábhachtach in Éirinn.

I will give the committee an overview of what is meant by fracking, a picture of the scale of the project proposed and its impacts on the land. I will also address the risk of groundwater contamination, which I know has been discussed previously but some of the slides might give a better view of the problem. I will also discuss the impacts on health, the promise of jobs and the social impacts of this boom and bust industry.

Onshore shale gas extraction is not the same as a North Sea oil or gas rig. In conventional shale gas extraction there is a reservoir of gases underneath and a few wells can extract vast volumes of gas. In the Corrib gas field five wells can extract 1 trillion cu. ft. In unconventional gas

extraction the target area is deeper, the gas must be released by high-volume hydraulic fracturing and thousands of wells may be needed to extract the same volume of gas. In the north west, the proposal is to take over 156 sq. m., industrialise it, build 120 pads and drill 3,000 wells. The scale of this project cannot be compared with a conventional proposal.

This slide shows a picture of what would come to Ireland. I am not speaking only about north Leitrim; I am also speaking about Fermanagh, Clare and other places where proposals may be made for shale gas extraction. The pads shown are seven acres each and it is proposed to place one in every square mile throughout the target area. A total of 24 wells are to be drilled from each pad, which is 3,000 in total. This is the Tamboran proposal for north Leitrim and Fermanagh. We do not know what proposal will be made for Clare.

The picture shows a pad in British Columbia. Soon after the picture was published a report showed that more than 40 seismic events were recorded where none had been recorded prior to 2009. We know earthquakes were caused by the first two wells drilled in the UK. The target area in Ireland has many geological faults so there is a high risk of the same thing happening.

I am not speaking about the exploratory stage; I am speaking about what would happen if the proposal reached the production stage. I see this as being like a juggernaut. If it reaches the exploratory stage and the results are good this slide shows what we can look forward to in rural areas of Ireland and, if the area is good, it will creep towards centres of population. This slide shows Dish in Texas. If one logs on to Google Earth and keys in Dimock in Pennsylvania or Alberta in Canada one will see the same thing. These places are not populated, but there are people the length and breadth of Ireland and the countryside is dotted with little villages and communities which have existed for generations.

This slide shows a map of north-west Ireland indicating where the proposal would be situated. The red circle is the first phase proposed by Tamboran where 3,000 wells are to be drilled. The blue circle shows where the company could go afterwards because the shale there is more than 700 metres thick. The company could go down around Lough Allen into the Shannon River area. Where the company is now is in the Shannon catchment area, which is also linked to the Erne catchment. Whatever is done in Fermanagh will affect the South. Similar areas are found in clear extending through Limerick into north Kerry and Cork. Many other counties need to be aware of this proposal.

This slide shows a bird's eye view of what the area proposed for fracking would look like with the pads. I will now show committee members some animations which will make a twinkly effect. The slide gives an idea of the density of the pads. It does not show the access roads, gas pipelines or huge machinery involved. It would have huge consequences for the land. These are areas of high visual amenity, vast underground water and cave systems and blanket bogs. There is no room in the proposal for the farms which exist. They may survive for a while but they will have contamination problems. If there is a rumour of contamination entering the food chain it could have a disastrous consequence for agriculture throughout Ireland and not only in this part of the country.

This is a diagram of under the ground. The lower line shows the depth of the Barnett Shale in the US. It is very deep and goes from 1,500 metres to 3,000 metres, which is one to two miles below the ground. Whatever happens at this distance is very far away from the surface of the water. The vertical lines show the depth of the fractures caused by hydraulic fracturing. They can be 580 metres long and at this depth one might suggest they do not do any harm. This slide shows the groundwater depth, which we know can go down to 150 metres below the ground

HYDRAULIC FRACTURING: DISCUSSION

and this shows where it is proposed to frack in Ireland. The shale is much shallower and goes from 500 metres to 1,250 metres. The same type and length of fracture will cause a high risk of contamination of the aquifers.

Any geologist will cringe at this slide, which shows a very simplified view of the various layers in the area we are discussing. We have shallow aquifers towards the top, layers of rock and the shale target area which is between 500 metres and 1,250 metres. The geology of north County Leitrim is unusual, in that there is another aquifer under the shale layer. It is called the Ballyshannon limestone because that is where it rises to the top. Where it approaches the top is also the source of the water supply of Ballyshannon and south County Donegal. People from the area need to be aware that the area goes deep into the ground under the shale layer. At that depth, the ground is dense and water does not flow. The next animation will show how the drill goes through the shale layer and then across. That is fine, but the layer subsequently fractures. If the fractures are of the same length as the fractures shown in the previous slide, it is not just a case of the aquifer underneath being fracked, but also the aquifer above. This will not necessarily be the consequence of shallow fracking in an area with aquifers above and below, but it certainly could be.

When the aquifer is fracked, it is shattered. That is what “fracking” means. It becomes more permeable and water can then flow. I have been given this advice by a hydrogeologist. A scale is described at the top of the slide. I have included a little drill, but drill derricks are approximately 100 ft. tall and extraordinarily powerful.

I have outlined some of the risks. There are risks to ground water from cement casing failures, which present significant problems. Wells are supposed to be protected from the land by cement, but it is difficult to form a bond between cement and the clay soil of the areas being drilled. The incidence of casing failure is higher the older a well grows. We do not know what this will mean for the transport of fluids or gases. Fluids and gases also move through fractures or faults and can reach ground water sources.

Accidents cause spillages and the contamination of lakes and streams. We cannot legislate for accidents, but we know from industry papers that the number of accidents causing pollution events is approximately 21% of the wells drilled. The industry actually congratulated itself on halving the number of accidents.

No one has explained how the large volumes of contaminated waste water will be treated. It will be difficult, as it will be high in salt, etc. Methane will leak into the air. Some 1,000 vehicles are required to build a pad with a well, but we are discussing approximately 60 pads and 3,000 wells. Dust and ozone pollution from traffic will be a major problem.

If this is not bad enough, we will need to consider the effects on health. Chemicals will go down in the fracking fluid and will be added to by a range of substances below. The nine most common chemicals found in fracking fluids have serious effects on human and animal health. The next slide was produced by a reputable organisation that researches the effect of chemicals. As members can see, the entire body is affected, including the nervous, endocrine, respiratory, gastrointestinal and reproductive systems, the kidneys, etc. The slide does not show the nine chemicals in detail, but they include biocides, petroleum products, breakers, gel makers, etc. Fracking without chemicals is impossible. From a chemist’s point of view, all substances are chemicals. Even if one is using sand and water, it counts as a mixture of chemicals. Modern technology does not allow the industry to function without the use of chemicals.

We do not know what the long-term effects will be. High-density, high-volume hydraulic fracturing is a new industry and has only been around for the past seven years or so. The studies of long-term effects have only just started. One must also examine the effects on communities, including stress, disruption and deterioration of quality of life.

It has been proposed that the industry will create many jobs. I wish to point out the pattern of jobs created in the US. Initially, many workers are involved. Establishing each well requires approximately 400 workers, but these jobs are not cumulative. The workers move from well to well. Although some jobs are created, the number is in the hundreds, not thousands. Those involved are normally migrant workers, teams brought in by the oil companies with no relationship to the land or the people living in the area. It is a boom and bust cycle. The company proposes a 15-year cycle in the development phase. The workers will come and go. There are fewer longer term jobs. The 60 pads in County Leitrim will probably create 180 jobs, given the intensity of the operation.

The populations in the target areas - Fermanagh, Leitrim, Clare and north Kerry - are significantly engaged in agriculture and tourism. The new jobs will cause a considerable displacement of jobs on the ground. If farming is disrupted, many more jobs will be lost than will be created.

Experience of the development phase in the US is for a sudden influx of new people to an area. This poses challenges in terms of housing, culture and public services. Some 400 does not sound like much in Dublin, but it is a large number in a rural area and will cause problems. Social problems will increase because of the divide between the haves and the have-nots, those who are making a great deal of money and those who are making none. These problems include crime, mental health issues, community dissatisfaction and conflict. It is well known and documented that wherever the industry sets up, it is followed by increased levels of alcoholism, drug taking and prostitution. This is the type of future that may wait for the areas in question. There are also the public health problems which I spoke of, including allergies, respiratory and immune issues. Another very reputable organisation has pointed these out.

All of this means we have a choice of whether to go down this path. Even talk of giving out exploratory licences has an implication for the granting of production licences. We need a clear commitment from the Government that it will not provide any licences for on-shore shale gas exploration or development. It must be adopted by the Government as policy that high-volume hydraulic fracturing will be prohibited in Ireland. We are not saying there can be no investigation of alternative technologies or energies but this technology should not be allowed in Ireland.

Chairman: That is a comprehensive overview. I have a simple question before I ask the committee members to begin with their questions. It is a powerful drill that would be used and the witness indicated that sand cannot be put in with it. Is there not already sand in the ground? I did not understand that point.

Dr. Aedín McLoughlin: I will deal with the vertical drilling. When a drill operates, it will of course go through sand. The operators put a "slick" fluid in with the drill to reduce friction and as the drill operates, the mud comes up. A steel tube would then be inserted, with concrete used to bond it to whatever rock is there. I mentioned there is a problem with the bond. The middle is clear, with no sand. The same applies to the horizontal drill process. When the operators begin fracturing, they push down water containing sand, and to keep the sand in the water they use a gelling substance. That is forced through the shale and keeps the fractures open.

Chairman: We will take all the questions together.

Senator Paschal Mooney: I thank Dr. McLoughlin for a very comprehensive presentation and for highlighting this issue over the past 18 months in the affected areas. Has the group been at all encouraged by what it heard this morning from the regulatory agencies, including the Department and the Environmental Protection Agency, EPA? The impression given is that nothing will happen in the short or medium term, with the Tamboran company now caught in the horns of a dilemma. It has been made clear that if it does not apply for a licence in February, the process will fall. The correspondence from the company to this committee has indicated that nothing will be done until all the EPA and technological reports are concluded. In that context, are the witnesses encouraged that an attempt is being made, particularly by the Department and to a lesser extent by the EPA, to tread cautiously? How would the witnesses respond to what they have heard?

Are the witnesses indicating they will not accept hydraulic fracturing under any circumstances with regard to current technology? Is it seen as being absolutely damaging to the environment, as it was made quite clear in the presentation's conclusion that high-volume fracking should be prohibited? Has the research provided any indication from across the world that there will be improvements in technology or we could arrive at a position where shale gas could be extracted without the use of horrendous infrastructure? It appears to be like a lunar landscape.

In the Irish context, are the witnesses encouraged by the fact it is perfectly clear that the geology of Ireland is totally different to that of the other relevant countries? That may be encouraging, as there is a high volume of water, including lakes and rivers, in the area where drilling is proposed; the chances are that the Government may decide it is not worth the candle.

Deputy Michael Colreavy: Listening to the events of this morning's meeting, I am not as comforted by the proceedings as Senator Mooney. I am probably more concerned now than I was before I walked in.

Senator Paschal Mooney: I was only asking if the witnesses were less concerned.

Deputy Michael Colreavy: I thank Dr. McLoughlin for her contribution. I have attended a number of meetings with her in attendance and I know that the organisation has had extensive communication with the local community in north Leitrim and beyond. Will she describe for the committee the concerns which exist and identify if even talk about hydraulic fracturing has had an impact on house values, investment decisions etc.? Will she describe the fears and concerns that local people have communicated to her during these meetings? Does Dr. McLoughlin detect the potential for conflict within the community of north Leitrim because of hydraulic fracturing? Will she describe an optimal outcome from these discussions?

Deputy John O'Mahony: Senator Mooney has, more or less, covered what I was going to ask. Could any guarantees be given by any regulatory authority to in any way influence the views put to us by the delegation? Is there any technology that could be used in future that would change the view on how gas could be extracted with no damage to the environment? I may play the devil's advocate but the views of communities should be uppermost in any decision taken. On the one hand the witnesses have given very definitive facts; if people had not heard of fracking until the presentation this morning, the immediate influence would be that we should not touch it. Nevertheless, it was indicated that it is too early to decide on this because the technology is only several years old and we are unsure of the effects. Is there a slight contradiction in the definitive facts given with regard to health issues and on the other hand the

contention that it is too early to know long-term effects?

Deputy Luke ‘Ming’ Flanagan: I thank the delegation for the excellent presentation. They have done the country a service and made my job much easier as they collated facts that I would not have been able to put together on my own. The witnesses have answered many of the questions I had. I suggest that people take up the invite to consider the case of Dimock, Pennsylvania, and view it with Google Earth, which I am doing now. Some people may say water could be poisoned and the issue can be debated. Nevertheless, it cannot be debated that I am looking at an horrific and ugly landscape, and if a similar process goes ahead in Ireland, there will be no tourism in that part of Leitrim. It is a fact. I would not bring my kids on holidays to look at lumps of concrete. I suggest that the witnesses look at that in Google Earth. If one views it in closely, one will see there is a lot in the area but if one widens the view, it just continues on and on. There is no debate that it is ugly and it will destroy tourism in north Leitrim. If there is any ambition to really develop a tourism industry there, we can forget about it if we do this. Perhaps in the future if somebody might be able to drill with one well, it would be perfect and we could consider it then. At present, however, this is not a runner.

Dr. Aedín McLoughlin: I will first deal with Senator Mooney’s question about whether I was encouraged by the Department and the EPA. I would not say I was encouraged. What I heard was what I expected, because we know that this is what is happening. There is a grey area emerging where the company is talking about one kind of timeline and the officials are talking about another. That is made even more complicated by the fact that it is over the Border as well, which is contiguous with ourselves.

With regard to not allowing anything to go forward, I am not sure that the licences will be rendered void by this. I can only assume that an extension will be required. We need more attention to be paid to policy in the entire area and to look at not only the technical aspects of it but also the human aspects.

When talking about hydraulic fracturing I specifically said that high volume hydraulic fracturing should be prohibited. The reason is that all the evidence coming from where this is taking place shows that it is not a safe technology. Personally, and not speaking on behalf of the campaign, I think that if there is a new technology that might examine the production of gas in a completely different way, perhaps for the good of the community and not to have it produced suddenly with huge industry and probably just going into the international store of gas rather than have it used by the people, we could be talking about a completely different scenario. That is why high volume hydraulic fracturing should be prohibited, but not the research into what could be the future development of gas production. There is no doubt we all need and use gas and know its benefits.

Being optimistic, I believe that the geology is different in Ireland and, as a result, it might well be found it is not worth it. I agree with the Senator in that regard.

Deputy Colreavy spoke about the community. There is an extraordinary situation in the local area wherever this fracking is proposed, that is, Clare, Leitrim and Fermanagh. The people on the ground are really united behind a call to stop this process and many of them are talking about banning fracking. The reason is that people are very afraid of what might happen to their land, communities and health. To refer back to the slide on health, somebody said that if we do not know what the long-term effects are, perhaps that was a contradiction of what I said. In fact, the short-term effects of what was in that slide are effects on people. This is happening now. People are going to the doctors and the hospitals with all of these illnesses. We know the

long-term effects of the chemicals but if one looks at the communities, it takes more than seven years for certain diseases to appear. We are now beginning to see the cancers emerging and the other longer-term effects on human health. We do not know the extent of those but we know how the beginning looks.

Another question was about if there were guarantees that the technology was okay. Unfortunately, at present there are more disasters than technology advances in this field. There is a great deal going on but given the technology as it is now, the proposal that is made is unacceptable in our view. I will ask Eddie Mitchell to add his comments.

Mr. Eddie Mitchell: Deputy O'Mahony spoke about future technology and asked whether we would accept this under any conditions. We would accept an industry if we could see a life cycle analysis of the industry. We will not see that with fracking. I am referring to future developments. The people in Leitrim and Fermanagh are pro-development. This is not an anti-development or anti-Government campaign. We are interested in farming, tourism and clean manufacturing, and we want our areas to develop in that way. If a policy was developed for an industry, we would like to get a strategic environmental assessment, health impact assessments and debates on the policy. We would like people to educate themselves about that and then to make decisions based on knowledge. That is the type of scenario in which we would like to see development progress. We do not wish to have it pushed in.

We are very concerned about the situation in Corrib and the way the community was dealt with there. That community does not feel it was dealt with properly and it is still in the same position as it was 12 years ago. We are facing a much bigger project on land in north Leitrim, Cavan and Fermanagh and eventually developing across to Monaghan if we follow the shale. In order to cater for our demand for energy we would have to exploit the shale. If we start to depend on unconventional gas as part of our energy mix, we will exploit the shale that is there. This will mean that over the next 30 years production will be moving across the Border counties towards Fermanagh. Therefore, we want to ensure that anything of that nature is debated in public and that people understand.

This will destroy agriculture in those areas. It will also do damage to our agriculture at international level. Given that we have a small population of 6.5 million people on the island of Ireland, we must consider whether the solutions people are looking to in countries such as Britain, Germany and America are suitable for Ireland. I do not believe they are. We depend on our green, clean image, so we should be very cautious. That is the reason we have been calling for a ban and for shale gas to be prohibited in Ireland.

Senator Paschal Mooney: In light of the responses, do the witnesses think that is feasible, bearing in mind their own recommendations? The State agencies are going about this process in a certain manner. The Department has made its position clear. It is relying on the EPA and the EPA has pointed out that it is not going to get involved in anything until the research is completed. The geology in Ireland is different, and the witnesses made the point that what is happening overseas does not necessarily apply to here. Therefore, is it not feasible for this country to compile every available piece of information on how this process would impact on the Irish environment and for the decision to be taken then at that point? The consultative process mentioned is built into the decision making process and is required before anything can go ahead. Notwithstanding the position taken, which I support, what other alternative is there? Good Energies Alliance asks that a decision be taken right now, but there seems in my view to be an absence of information specific to Irish geology. Does the alliance share that view? With the understanding that the process as we have seen it outlined is horrendous, would having a

definitive conclusion on what would affect and impact the Irish environment not strengthen everybody's case? In that case we would have our own conclusions, not those of America, Europe or anywhere else. Is there merit in that?

Chairman: Before we take a response on that, I call on Deputy Flanagan.

Deputy Luke 'Ming' Flanagan: Mr. Mitchell mentioned the effect hydraulic fracturing would have on farming. Was that in reference to pollution of the water supply, to the fact much of the land will end up under concrete or to the fact that farmers, instead of going about their daily work, will have to deal with trucks going up and down their roads and doing damage to them and making it more difficult to travel on them? Is much being said by farming organisations about this or what is their opinion?

Mr. Eddie Mitchell: I was at a meeting the other night with the IFA in Cavan at which I gave a presentation and at which we discussed hydraulic fracturing. Everyone in the room was stunned. People do not know yet about hydraulic fracturing. There is significant awareness in north Leitrim and west Fermanagh, but the national media has not created a debate yet.

Deputy Luke 'Ming' Flanagan: I have been at many a farming meeting where I have seen the crowd stunned, but I have not seen the top table do anything about it. Have any of the farming organisations taken a position on hydraulic fracturing? Ordinary farmers to whom I have spoken are terrified of it, but this message does not seem to be making its way to the top for an official position to issue. Is there any official position?

Mr. Eddie Mitchell: I think there is a process going on within the IFA, but I do not know what position it has got to. The statement made to me was that the IFA is looking at what the EPA is saying. However, I have told the IFA that it should look at it at a regional level, like we have done.

Deputy Luke 'Ming' Flanagan: It should listen to what its members are saying.

Mr. Eddie Mitchell: It should do its own research and encourage farmers to do theirs.

Dr. Aedín McLoughlin: I would like to answer Senator Mooney's question regarding the investigations taking place. I feel we are going down the same route taken before on other issues that turned out to be extraordinarily contentious and caused enormous division in the community. This is because no public consultation is being carried on currently. For example, when I heard the list of organisations represented on the steering group that is sitting to examine the terms of reference of the new research document, I noticed there is no community representation. In a situation where a policy decision will mean direct action in a community area, the community should be involved at every stage. We have reputable organisations and have experts involved in the campaign, so there is no reason the people of the area that will be affected cannot be involved.

Also, saying there "will" be public consultation at some stage is not in the spirit of the Aarhus Convention. I put it to the Government that it needs to take the aspect of public participation in decision-making far more seriously.

Deputy Michael Colreavy: I know from meetings at grassroots level that there is serious concern within the farming organisations. However, this does not seem to be expressed at national level. The Canadian farming organisation remained silent on the issue of fracking until fracking happened in Canada. However, the experience of the farmers there now has the

HYDRAULIC FRACTURING: DISCUSSION

organisation calling for a ban on any further fracking development in Canada. We must decide not to make a mistake, rather than have to clean up the consequences of a mistake.

Chairman: Overall today we have received a significant amount of information on this issue. Consultation is ongoing and the information provided will help educate the public. There is widespread concern regarding the need for education on this issue and this meeting will help in that. The committee clerk has told me the transcript of this meeting will be on the website later this afternoon.

Senator Paschal Mooney: In light of the response here, I propose the committee should send a recommendation to the EPA to include Good Energies Alliance (Ireland) in consultation as it seems to be the credible anti-fracking group representing widespread views of the people who will be impacted by fracking. All we can do is make a recommendation, but it may carry some weight. While I accept that all of those involved in the EPA research are qualified, surely there is need for community representation.

Chairman: We can write to the EPA and request it to consider that.

Deputy Michael Colreavy: It is wrong that a consultative committee like that does not have a representative of the community on it. That is wrong from the point of view of communications and creating awareness. The community representative could communicate both ways.

Chairman: Point taken.

Deputy Michael Colreavy: Will a meeting be arranged for north Leitrim so members see what is happening?

Chairman: I do not know about a meeting, but a visit will certainly be arranged.

Senator Paschal Mooney: I will go further and suggest the committee should give serious consideration to visiting one of the current sites for hydraulic fracturing. Some consideration should be given to that, wherever that would be.

Deputy Luke 'Ming' Flanagan: There are cheap flights to Poland.

Senator Paschal Mooney: Or to the UK.

Deputy Michael Colreavy: There is TV footage easily available on such sites. However, I still do not know what input this committee will have with regard to whether to grant an exploratory licence and I do not know whether such a licence will permit hydraulic fracturing in order to test whether hydraulic fracturing is safe or unsafe.

Chairman: The debate will continue.

Senator Paschal Mooney: Would the Chair not agree that as a committee we have started a process, which I initiated? I said it is important the committee, as a joint committee of the House, should be informed. All members should be informed. This exercise has achieved that.

Chairman: Yes, we have achieved that.

Senator Paschal Mooney: Yes, but I believe our mandate should be to continue to monitor this. It is not enough just to have this meeting and then leave it to the agencies to decide. We should continue to monitor the issue. I hope Dr. McLoughlin and her colleagues will continue

JOINT COMMITTEE ON TRANSPORT AND COMMUNICATIONS

to engage with the committee and hold us to our commitment to monitor the issue.

Chairman: I am sure Dr. McLoughlin will do so. I thank the members and other Members in attendance who stayed until now. This is the longest meeting we have had in a long time. I appreciate all their efforts and how well informed they have been. I also thank the delegates for their helpful contributions.

As there is no other business, the meeting is now adjourned.

The joint committee adjourned at 12.40 p.m. until 9.30 a.m. on Wednesday, 17 October 2012.