

Response to Consultation paper CER/11/137

Format of Response= Location within paper Original text: comment
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Executive summary

Page iv

Protect life: life is not enough for safety; people must be feeling safe.

3)

Protecting the public: protecting extends beyond making sure they do not become multiple mortal casualties; their property and their health and their environment must also be protected in order that they also feel safe

Page v

Societal concerns-, commensurate with the complexity and level of risk, ensure that it measured against the unknown and difficult experiences of some approaches.

the paper seeks reviews on the risk criteria and how the limits are set

page vi

Ongoing compliance

Incident investigation: incidents: it must be recognised that if a process for procedure is risky, the entire process must be monitored, not just an incident.

For instance if a toxic substance is continuously released as part of a process, then this release is not an incident, what would need is continuous monitoring in place.

Page vii

Radiological protection authority is missed

Enforcement: fines should be of such a level as to be actually punitive relative to the extent of the investment

Page 2

for the avoidance of doubt:

Far from avoiding doubt, this raises concern as to whether the injection of fluids is covered by this paper. It would appear that unconventional extraction (UE) has not been considered at all by the Commissioner in this paper.

Where no consideration has been given to unconventional extraction, it may be that those who inject or retrieve the fluids other than petroleum are in no way affected by the doings of the Commissioner, in particular with relation to safety.

Page 3

Developed in line with the best international practice: this phrase starts a theme that runs through the entire document. It suggests that typical processes are well-known and are reasonably longstanding and that best international practice has been developed. By doing so, it acknowledges that unconventional extraction has been completely ignored; specifically, there is no international best practice for such unconventional extraction; the process is generally very little understood and in particular regulators internationally are very unaware and very un-informed and very under-involved

in unconventional extraction. Consequently, the various ideas and concepts within this paper resting on this idea that everything is well understood (at least internationally, if not locally) is resting on a very unsound base.

Page 4
1.3.2

This paper has been issued to Authorities and Ministers in accordance with the Act. Because the document ignores in word and in spirit the impact of unconventional extraction and bases its methodologies on concepts that are well-known, is inadvertently very seriously misleads those Authorities and Ministers to whom is by law directed. Those Ministers and Authorities will be unable to correctly assess the threats to their own area that may be possible due to unconventional extraction, as all your indications are that no such thing exists and no consequences flow from it. This is very clearly evidenced by the omission of the Radiological Protection Authority from any of your lists (obviously not the Act), the Commissioner being unaware of the possibility of natural radioactive materials being brought to the surface by unconventional extraction.

1.3.3

Eamon Murtagh,
Project Manager Commission For Energy Regulation is hereby notified that Liam Breslin would like to meet with C. E. R. between Monday 3rd and Friday, October 14, excluding October 7 to October 12.

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2.1.2

Exploration: this would need to be amended to include unconventional extraction, as it merely covers conventional recovery.

Infrastructure development: safety and economic considerations: safety, particularly in the context of unconventional extraction, must include the protection of the environment and of long-term health, without which a citizen would not feel safe (whether he or she is alive or dead).

Exploitation

Check and document that the installed plant is fully functional and fit for purpose: in the event of unconventional extraction, it will also be necessary to ensure that the geology is such that the health of people, animals and the environment is not threatened. Without these assurances, people in the vicinity or in distant parts will not feel safe irrespective of the lack of an immediate threat of death by explosion. People whose water depends on an area targeted for unconventional extraction and people whose livelihood depends on the reputation of the products of tourism, meat and milk will feel extremely unsafe irrespective of the legal definition of 'safe'

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2.1.3

Environmental regulation: it is useful that that this has been explicitly included; it is a regrettable that those concerned with environmental regulation may be misled by the absence of any reference or understanding of unconventional extraction in the current paper.

"Major accident hazards-occupational safety-public safe safety ": this safety regulation seems to infer that as long as you die quickly, you are a matter of concern. However, if you choose to die or merely become ill as a result of exposure to toxic or radioactive substances, then that is a personal matter for you to feel unsafe about. Moreover, if your land is contaminated by the substances, or your animals die from the substances, or your air or water or lakes and rivers become unhealthy or toxic, then that is a matter for you to pursue independently against your neighbour or against a multinational corporation, and is not something that any regulator should be concerned to prevent since you haven't actually died in an "incident"

Page 10
2.2

Onshore, three licensing options were granted: this is the reference which destroys the integrity of the current paper. It is intended that these three options will be exploited by unconventional extraction. The absence of any reference or understanding of unconventional extraction in the rest of the paper results in a very flawed document. The issues arising from unconventional extraction are so distinct

and numerous and so different from the "well understood" conventional processes so as to make many of the statements and concepts expressed in the paper either partial or irrelevant, but definitely incomplete. The absence of any reference to radioactivity is a clear example and evidence of this absence of understanding.

Page 11

3.1

Authorities etc: it is highly likely that the Commissioner would be much more informed on matters of practical detail concerning (conventional) petroleum extraction than most of the authorities mentioned. It is only natural that to some extent agencies which cooperate and consult may to some extent lean on the Commissioner for this practical detail. In the case of unconventional extraction, they would be badly misled on the basis of the current paper.

Page 12

3.2.1

"exercise its powers and perform its functions in the public interest": the obligation of the Commissioner cannot be restricted to a narrow definition of "safety", if the public interest is clearly concerned with coincidental damage to long-term health, to essential industries such as tourism, agriculture and milk production, damage to the environment including the water table and the atmosphere, damage to the ozone layer, damage to livestock and wildlife, flora and fauna. The damage of public interest could even include literally the bedrock of the country, as there is concern that earthquakes have been instigated in other countries, some countries quite close, through unconventional extraction.

Monitor: this word "monitor" appears many times throughout the paper. There is an assumption underlying much of the paper that any damage to the public interest or to safety will only occur through "accidents". To do this, it is necessary to ignore the documented incidents where damage to the public interest and safety can be quite deliberately caused in the interests of reduction of costs. For instance, the spraying of noxious volatile materials into the air to reduce the cleansing load; or the removal of radioactive water to a different State for disposal to avoid the monitoring procedures of the first State. This is particularly the case where the process itself is inherently noxious, where the process essentially involves uncontrolled distribution of dangerous substances into an uncontrollable environment, the return of a cocktail of substances that need to be separated into commercial and problem containment areas, the release of a percentage of this mixture in an uncontrollable fashion into the air and into the water table, the collection and transfer of the product from a large number of raw production points to a centralised transportation area. This is typically the case in unconventional extraction.

It is therefore suggested that continual monitoring may actually be necessary in the public interest. Rather than checking systems and safety, it may be necessary to have instruments and technicians actually measuring independently what is happening during processes, as distinct from "incidents". Therefore "monitoring" may have a much heavier meaning than is supposed in the merely conventional extraction that this paper approaches.

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"Risk-based petroleum safety framework": as suggested above, the processes themselves can inherently risky, as distinct from specific failures leading to specific incidents. Full attention needs to be paid to the process.

Page 14

3.2.2.1

Definition of petroleum

"in the normal process of extraction": clearly the word "normal" excludes the concept "abnormal". As unconventional extraction is in definition and in fact "abnormal" and certainly not the 'normal' process considered by this paper (as evidenced above) this paragraph inadvertently excludes all substances contained in the oil and natural gas brought to the surface by unconventional extraction. This has very serious implications for the agencies related to health, safety, etc etc. Unconventional extraction is not covered by the original mining Act, not covered by successive Acts, not covered by the current paper. By the definition in this paragraph unconventional extraction is unregulated. This is not in the public interest quoted earlier.

The next paragraph hopelessly underplays the hazards that can occur from unconventional extraction, showing that this is not addressed in this Paper. Hydrogen sulphide is mentioned, which

you might well get from rotten eggs, but not heavy metals or returned biocides.

"The hazards and safety measures required for such activities differ significantly from those covered by the act": it would seem reasonable to say that unconventional extraction is so significantly different in terms of the hazards and safety measures from conventional petroleum extraction that the Act allowing the extraction of petroleum on a conventional basis does not give the Minister authority to licence such processes.

3.2.2.2

This paragraph fails to provide a useful reference for the positioning of the "pad" as used in unconventional extraction.

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3.2.2.3 Safety

A state of absence of danger:

:Designated petroleum activities of petroleum undertakings: as has been indicated elsewhere, unconventional extraction has not been covered as a designated petroleum activity within this paper or within other relevant Acts.

The man in the street feels safe when there is an absence of danger. This danger is not just the possibility of being incinerated by inflammable liquids; you do not feel safe if his farm is threatened with pollution on the ground, in the air or in the water. You do not feel safe if your industry is threatened with the loss of reputation through accidental pollution. You do not feel safe if you are not assured that your long-term health will not be affected by noxious emissions or radioactive substances. You will not feel safe if your property values are threatened and the local tourism potential can be destroyed by activities outside the "normal process of extraction." It is attention to these fears, to these realistic fears, that the public expects from its authorities including the Commissioner. It is not satisfactory to the public or the public interest that only the incineration option is selected by the Commissioner or any other Authority for their exclusive regulation.

"Appropriate monitoring": see comments above on monitoring

"Major accident hazards" "serious damage to people or property": this needs to be extended to the environment and also extended in time to cover long-term effects and also extended to include processes which are potentially damaging (and possibly deliberately so) rather than just hazards of major accidents. In the case of unconventional extraction, the hazards arise not from accidents, but from the very process itself. This needs to be recognised by the Commissioner and treated in a much more appropriate manner.

The same comment applies to giving confidence that major accident hazards are appropriately controlled. The perception of unconventional extraction is that the actual hazards do not relate to 'accidents' but to the unconventional routine itself. The perception is that damage can occur without any specified "accident". The occurrence of an earthquake, the release of substances through a fissure into our water table, the daily "fugitive emissions" from a well site do not come within the common idea of "accidents"; however it these are the very things that threaten damage and reduce the safety and perception of safety of the public.

Nor should it be considered that 'the public' is represented by those in the immediate localities of a particular activity. Damage to the source water table of the Shannon would affect a very large area of Ireland. Damage to the international reputation of Irish food production would be felt by a very large portion of the population, as demonstrated recently with relation to Spanish produce.

While the Commissioner's focus in particular on major accident hazards is fundamental, it must indeed be complemented by attention to more general hazards to the public and this must be particularly vigorous in the case of unconventional extraction, should that ever be explicitly permitted by law.

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3.3.1 Overview

What activities: what is the situation if an activity is not included in the framework described by the safety case regime?

Adequate arrangements for monitoring: see above comments

Page 18

3.3 . 2.2

Generally on major accident hazards: fundamentally hazardous processes must also be addressed. The distinction is that some processes may provide a continuous level of damage, or a long-term damage that is outside the definition of a 'major accident'.

3.4.1

A list of designated petroleum activities, discretion to enclose include any other matter it considers necessary within the framework: the Commission shall give considerable thought to unconventional extraction in this connection.

Page 20

4.2

Again, the 'major accidental hazards' exclude the possibility is of an enterprise deliberately performing a damaging process and also excludes the process which causes continual deterioration (of say the environment) which detracts from the safety of the citizen.

Question 1

It must be made clearer by the commissioner that unconventional extraction is excluded from the skull scope which solely covers "normal process of extraction".

Enterprises our excluded from using unconventional extraction because it cannot be permitted within the framework outlined here. Nor are can they extract petroleum without a permit under the Act. Unconventional extraction is therefore legally unsupported and offensive to the Act

Question 2

the major accident hazards is an essential focus, but must not cause the exclusion of the focus on inherently hazardous processes or on deliver it but harmful practices such as placing waste matter in inappropriate places.

Question 3

The word 'environment' needs to be added to the definition. The paper mentions the Gulf of Mexico; thousands lost their livelihood though perhaps a few lost their lives. Damage to the environment causes damage to people's lives in a very serious way; even if they do not die instantly. People who worked with asbestos in previous years do not die suddenly and simultaneously in such a way as to constitute an accident; they die slowly and painfully and at different times. No accident caused their condition, it was the result of processes and materials that seemed okay at the time but were later found to be "dangerous". It is the duty of the Commissioner to avoid future occurrences of this sort as well as avoiding major accident hazards.

Page 22

4.3

E.

Periodic inspections: paying attention to processes rather than accidents means that in the case of inherently damaging processes, there should be continuous monitoring rather than periodic inspections

Question five

The components of incident investigation and enforcement systems should be expanded to include continual monitoring of inherently hazardous processes. Specifically, each and every singular occurrence of high-pressure injection and return flow should be monitored as such operations stand independently and separate conditions and do not constitute a continuous or flowing process. They cannot be monitored on the same basis as a steady state system.

Question six

Yes. The commission should include specific components addressing inherently unsafe or damaging procedures such as those found in unconventional extraction.

Question seven

No. Their vision should read "a clean and safe Irish petroleum exploration and extraction industry"

Question eight

No

This mission statement would be adequate for normal processes of extraction. It is hopelessly inadequate in the realm of unconventional extraction. In the latter case it would need to read "... to protect life, health, property and the environment"

The ordinary citizens day-to-day life, and feeling of well-being and safety depends on these four items being protected to his satisfaction.

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5.1.3

4a

Paragraph 4 is missing a European dimension. The Commissioner is aware of the European Union, which has offices both in the Commission and the Parliament and which is resourced to investigate and consider matters of widespread interest. The Commissioner should confer with appropriate offices on topics of mutual concern. In particular the Commissioner should seek a European wide moratorium on the unconventional extraction until such time as European norms have been adopted for the protection and safety of its citizens.

Question nine

Line 4, work with other authorities, is missing a European dimension.

Question 10

Yes

The Commissioner should have a strategic intent of minimising collateral damage to long-term health, property and the environment as part of his very special and intimate role in regulating the petroleum industry in the interests of the general safety of the public as distinct from and in addition to the major accident hazard/incineration scenario.

Page 31

5.1.4

two

The best internationally: unfortunately, not all extraction is of the kind that has been repeated internationally for a long enough of the time to develop best international practice. Unconventional extraction has not yet achieved even good practice is alone best practice. It would ever be necessary for the Commission to examine changes in technology that will bring about future changes and be ready to deal with them, rather than relying on the mistakes of the past. It would be foolish to rely on something that does not exist, i.e. best practice, in the case of unconventional extraction

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Strive to be as clear as possible in communication with the both public and industry: the word 'authorities' should be added to this bullet point.

Question 11

Regulatory goal 2

It is impossible for a petroleum undertaking to achieve performance commensurate with the best internationally when there is no "best international practice". This does not matter provided no permits are offered for unconventional extraction, which is not permitted under the present paper which covers only normal extraction. If unconventional extraction were to be permitted under a new law, it would require more far more of an effort on the part of the regulator owing to the inherently hazardous nature of the processes and of the threats it implies to the health, wealth, property and environment of the citizen. Every aspect would have to be examined, as there is no such thing as best international practice)"

Regulatory goal3

Confidence that the regulatory framework is protecting the public will not be obtained if the impression is given that the public is being protected only from a mass incineration caused by an 'accident'; and that the Regulator is not concerned with damage to the environment that supports the tourism industry, that supports the agriculture and food industries; is not concerned with long-term damage to underground water resources, to the carbon emissions; is not concerned with longer term damage to health through the release of toxic and radioactive elements into the environment. It will therefore be a goal of the Regulator to ensure that his actions protect all aspects of the safety and well-being and feeling of security of the citizens. This is particularly the case of citizens who are remotely located from the hazard and are completely unaware that some distant incident of pollution could destroy their drinking water or their livelihood. The citizens will, after some catastrophe incident, ask questions of the responsibility of the Regulator.

Regulatory goal 1

The concept of ALARP needs to be tested hypothetically. Suppose, for instance, a particular enterprise declares that there is a 1% chance of polluting the River Shannon in its entirety. They declare that this 1% cannot be reduced any further without changing some of the laws of nature. In other words, at 1%, the risk is as low as is reasonably practicable. Hypothetically, the risk is as low as possible. Is the enterprise permitted to proceed?

Question 11

Item 1

Safety: safety of persons, property and the environment to be added

Page 35

6.1.3

Property: add environment, add threats to health, both short and long-term

Page 36

6.1.4

6.1.5.2

Hazards are limited in these paragraphs covering fatalities and simple releases of petroleum

Page 40

6.2.3.1

Such a number of upper limit ensures that operations do not generate risks that would not normally be acceptable to society: it is essential to the concept of acceptable to society that society is aware of the risks. This awareness is highly unlikely to proceed from the petroleum enterprise. In the absence of a conspiracy between the Regulator and the enterprise, it would be essential that Society is fully aware of the risks and potential damages often involved in the more novel and more risky technologies. As the Commissioner is driving this principle, it would fall to the Commissioner to ensure that Society is fully and completely aware of the potential damages and risks, particularly in such abnormal processes as unconventional extraction. There would not appear to be any other source of information for the public and for society. It is therefore particularly regrettable that this Paper has been written without any understanding of, or reference to, unconventional extraction.

Society in general, various Authorities and the public should be made aware that technologies are being considered that are very high on the scale of Societal concerns. It is up to the Regulator to ensure that the public is informed so that they can decide whether or not a particular abnormal process is in the unacceptable region. It is further up to the Regulator to ensure that no abnormal practices take place (and indeed they cannot be dispensed under the present paper) until such time as Society has become fully aware of the appropriate concerns and has been able to express their views to the regulation. Clearly if society is kept unaware of certain risks, it would be in no position to make a judgment or to have a real concern. Equally clearly, this is a position of complete irresponsibility with relation to society, and no position whatsoever for a public body to stand on

Page 41

6.3.1

That the Commissioner is sympathetic is illustrated in figure 7. The basis of assessment is based more so on Societal values as there is increasing novelty, complexity and uncertainty. Again, the Commissioner does not make a reference to the unconventional extraction which is completely novel in its latest forms, is highly complex, is highly noxious in many aspects and is characterised by complete uncertainty as to the nature of underground faults and their relationship to the extraction and

to the health and well-being of the people, animals and the environment above. There is evident uncertainty as to the disposal of large quantities of fluids containing many different noxious elements. One has to agree completely with the Commissioners diagram in stating that the basis of assessment would be firmly based on societal values where such a tendentious process is involved.

Page 42

6.3.2

Unless it can be demonstrated that the task in hand somehow differs from the norm: as discussed, the norm or normal extraction process is exclusively referred to in this Paper. If, due to a change in law, the Regulator were to permit unconventional extraction, it is clear that there would be a grave onus on the undertaking to demonstrate that the proposed approach would provide a level of risk in all areas that is lower than that acceptable in conventional processes, or equivalent to it.

Again it is noted that due to the novelty and uncertainty of unconventional extraction, there are no guidelines for good practice or recognised codes of practice available to either the Regulator or to the public. It therefore falls on the regulator to ensure that no such unconventional extraction takes place until such time as approved codes of practice for the procedures are in place and confirmed by International and European standards bodies such as those listed.

"Thus they contain inherent hazards and risk assessment, since the hazards have already been identified and the standard methods for their control and mitigation defined"

The standard methods for their control and mitigation defined: this is purely wishful thinking in the case of unconventional extraction, which is not covered by this paper or by the documents mentioned.

Best practice is an approach which improves on good practice: again, this statement is irrelevant with regards to unconventional extraction, which is not covered in this paper. Good practice and best practice may well apply to the normal extraction, covered by this paper. However, unconventional extraction for from even achieving a "good practice" standard, has been banned or stopped in many States and Countries on account of bad practice. In other places, major investigations are going on to determine the relationship between these poor practices and actual or potential deterioration of health, safety, water supplies and other problems, not excluding earthquakes.

Clearly, 'good practice' cannot be quoted in relation to unconventional extraction; 'best practice' would be to put a ban or a moratorium on all such unconventional extraction until such time as these major investigations in other countries have concluded and the appropriate proper well-defined and established standards have been created, accepted, tried and tested. It is the duty of the Regulator to enforce this suggested "best practice" in relation to unconventional extraction

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6.3.3

approach is not covered by the standard codes are addressed in this paragraph, where it is suggested that "engineering judgment" might be enough to suggest if a measure would be suitable are not. Obviously, this could apply to normal extraction in particular instances. Equally obviously, it would be complete nonsense to apply "engineering judgment" to the question of unconventional extraction which which fulfils the Commissioner's criteria of increasing novelty, complexity and uncertainty, leading away from engineering judgment and towards societal concerns and judgment.

In order to have a comprehensive case for unconventional extraction, a conservative line would invoke a ban or moratorium on all such extraction until such time as a genuinely comprehensive, authoritative and tested case was proffered and supported by international bodies as described in paragraph 6 .3 .2

Any less conservative a line would be highly irresponsible, particularly on the part of one charged as the Regulator.

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6.3.4.2

Statistical fatality: where within this expression does long-term effects, illnesses and disabilities arising from processes or incidents or accidents fit? Is it to be taken that these are of no concern, or can this be modified to ensure that the Regulator is in a position to prevent long-term deterioration

due to abnormal processes?

6.3.5

Societal values

"Where an approach is very novel and there is significant uncertainty regarding the risk it imposes, consideration needs to be given to the view of society when assessing whether the risk is acceptable or not"

This is certainly a description of any future consideration of unconventional extraction. As described before, it is impossible to consider the view of society, if society is completely unaware of the conditions giving rise to potential concern. This is even more so if the relevant agencies HSE, EPA, etc have not been informed, have been misled, or are completely unaware of these conditions. It falls most heavily on the Regulator most closely involved with the industry to bring to the attention of those agencies and of the public and society in general the risk associated with any novel or uncertain methodology. If this were not done, future commentators and citizens could be regretfully questioning why this was not done, as they are currently questioning the role of bank regulators during the years of the Celtic Tiger.

Precautionary principle

The precautionary principle is very well explained in this paragraph. It goes on to say that it is rarely applied to petroleum activities given the level of understanding both of the possible consequences and the frequencies of events arising from petroleum incidents.

This clearly relates only and solely to normal extraction processes. As regards the unconventional extraction, which is not addressed in this paper, there is currently a 1500 page draft report issued by an investigation into unconventional extraction in one American state. The full report is not expected on to 2014. This shows the level of understanding of the environmental and health effects of unconventional extraction. It shows that were unconventional extraction processes to be considered for legislation, it would clearly come under the precautionary principle identified by the Heads Of Government and would lean towards a rather safe than sorry in order to avoid potential highly uncertain risk. It would be incumbent on the Government, in following the Nice decision to apply the precautionary principle and ascertain views of society which had been fully informed of the relative risks and uncertainties.

Not to do so would be to betray not only the heads of government, but also the Irish people.

The paragraph goes on to explain that this principle is applied where understanding is minimal and opinions can vary within the scientific community. The suggestion would be that this does not apply to petroleum extraction, and indeed it does not, to normal extraction. Any suggestion, even by omission, that this is also the case in unconventional extraction would be a serious and misleading misstatement.

It would be highly desirable that the continuation of this paragraph make it very clear that the thrust of the comments about genetic modification and climate change in relation to uncertainty in petroleum activities applies only to conventional extraction. In the case of unconventional extraction, the minimum understanding and a variation of scientific community and the ignorance of regulators would place the topic firmly in the 'GM/societal' values sphere.

Question 13

Figure 7 in itself is adequate, but it is betrayed by the subsequent insouciance on societal values. It needs to be made extremely clear that this applies solely to Normal extraction; it needs to be clear, indeed, it is stated by the Paper itself that a minimum understanding and scientific uncertainty would bring about a call to Society for a well-informed view on the matter such as unconventional extraction. With this understanding, figure 7 is an excellent approach for assessment of risk. However, it could literally be fatal if this approach was confined to paper and a reference to Societal values was completely avoided in the interests of commercial greed or strategic gas.

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6.4.1

Risks that would not normally be acceptable to society: the question of illnesses, disabilities and other dysfunctions brought about over a period of time due to petroleum activities are not adequately

addressed. Nobody ever fell over dead from breathing asbestos dust; nevertheless, society has decided that the long-term deterioration and death are not acceptable. Society needs to be given the opportunity to decide that fugitive emissions of either noxious substances or global warming materials are not acceptable, and ideally the opportunity to refute the desirability of earthquakes and gaseous aquifers.

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Question 14

The individual risk to members of the general public seems to be limited to immediate death. There should also be limitations on long-term risks to health, risks to property, particularly land and capital and risks to the environment, particularly air quality and water systems. If any of these suffer or are likely to suffer, a citizen will not feel safe. A citizen will understand that in normal extraction these risks are understood and controlled; a citizen will further understand that in unconventional extraction, these risks are neither understood nor controlled. It is necessary for the regulator to take these aspects into account in case that at any future time unconventional extraction is to be considered, when it has been completely understood and remedied.

Question 15

Yes

Society risk must be treated explicitly, owing to the reference within the paper to licences which require unconventional extraction, even though this is not encompassed by the paper's treatment of permissions. The nature of unconventional extraction is such that by the guidelines of this consultation paper it must be subject to Society risk assessment. In other words, it is not a possibility, but the actuality of societal risk be considered and the view of well-informed society be canvassed.

Because this case is on the doorstep of the regulator, it requires to be explicitly included.

Question 16

Risk metrics should be sought for illnesses and long-term deterioration subsequent to petroleum activities.

It is noted that an unhealthy environment will lead to poor health and subsequently to life deterioration. Because of this causal chain, it could be considered highly desirable that risks to the environment are monitored as a long-term risk to safety/health of individuals. In any event, society will typically be at a loss for environmental damage that surfaces later, especially if the enterprise responsible the damage has left the area. It is the job of the regulator to minimise this risk to society, which can be done by placing metrics on the environmental effects of petroleum endeavours.

Question 17

No

It is not reasonable to align the risks with one agency. Recently, the economy of Cyprus was blighted by the confinement of a ship loaded with explosives into a naval Harbour. The hot weather caused an explosion which, apart from the normal damage, destroyed the main power generator of the island. The effect on the economy is estimated to cost 20% GDP. It is clear that a health executive would not be aware of the kind of issues, threats and problems that an environmental agency would be cognisant of. The Minister for Tourism and the Minister of Agriculture would be aware of commercial threats not related to human health. The Radiological Authority will be aware of the potential damage being caused by fugitive radioactive particles.

There is more work to be done in consulting these agencies and others with relation to risk criteria. In the past, with normal extraction, it would have been reasonable to proceed as in the Paper at present. But with the introduction of licence options requiring unconventional extraction, it is incumbent on the Regulator to advise, as fully as possible, the different agencies of the technologies and threats involved in those particular licence areas and to get their advice on the appropriate metrics and appropriate risk criteria to be considered by the Regulator. The omission, for instance of the Radioactivity Protection Authority indicates that it is considered that the HSE is fully aware of those related issues; in which case the Radiological Protection Authority is redundant; or that there is no risk

whatsoever of the production of radioactive material through petroleum processes, in which case unconventional extraction is excluded; or Regulator wishes to exclude consideration of radioactivity risks.

Question 18

If the regulator was aware of the implications and risks of unconventional extraction, great attention would be paid to the lower limit. Under no circumstances would it be left to the petroleum undertaking, particularly in a branch of the industry which is notorious worldwide for damaging public health and the environment. This section needs to be explored further. Given the reputation of those carrying out unconventional extraction it should be advisory.

Question 19

Upper limits should be mandatory. In particular in the case of unconventional extraction where there is no best practice, no good practice and plenty of examples of bad practice, there should be a new level of intensive examinations of the limits to the individual and society risks to include damage to property long-term damage to health, etc., and damaged environment and taking account of the damage that can be inflicted through reputational deterioration of industries such as food and tourism.

Page 52

7.1.2.2

Again, the paper gives the impression that the regulator is only concerned where a good few people lose their lives, where there is a risk of accident hazard. Whereas this is a reasonable approach in terms of normal extraction, it has clearly been shown in many other parts of the globe that this is completely inadequate as regards unconventional extraction..

Question 20

ii

Major accident hazards: this is adequate for conventional extraction where the engineering and the risks and the processes are quite well-known. It is hopelessly inadequate in the case of unconventional extraction where the effects on the environment and on local health as globally demonstrated to be ill understood and ill-controlled. It is unacceptable for the regulator to be unaware of the consternation caused worldwide by the effects of unconventional extraction and still to restrict his purview to "Major accident hazards;" it would be abdication of his intrinsic responsibility to do so.

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7.1.3.1

On page 55, second last paragraph, fourth last line, third last word there is a typographical error. 'where' is printed instead of 'were'

Question 21

The construction and installation of petroleum infrastructure could be somewhat ambiguous. While it is reasonably understandable into normal extraction, in the case of unconventional extract it should be made clear that any drilling is part of the life cycle of the infrastructure.

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7.1.3.2

Table 1

Activity description that might be relevant to on conventional extraction is completely absent from this table. Any ministers or agencies depending on this table to understand the extraction of onshore gas in the areas of options licence would be seriously misled.

Question 22

The proposed designation criteria of exploration activities does not include any aspect of unconventional extraction. This implies that the areas licenced would be refused permission for petroleum exploration using unconventional extraction.

The further more it is impossible for the regulator to get a reasoned reply to this question 22, given that the information in table 1 is inadequate with relation to the onshore licences.

Question 23

The table to equally gives no indication of the unconventional activities associated with extraction of gas from shale rock holdings. The so-called activity description is totally misleading in that it gives no indication whatsoever of the totally abnormal approach taken in the case of a shale well. Because it is so misleading it will be impossible to get a sensible answer from any agency or Minister to consultation question number 23

Question 24

The table 3 refers briefly to storage onshore. It gives no indication that in the case of unconventional extraction, there will be either a multiplicity of storage tanks or a network of pipes spread around large areas of the countryside. Given the large numbers of these that will be required and the low amount protection that may well be provided, special attention would be required. The table continues with a blank against 'road tankers'. This assumes that in the normal situation there will be a single depot deploying tankers on regular routes from that depots. However, in the case of unconventional extraction, there will be road haulage from a multiplicity of small units travelling over very minor roads not suited for heavy goods. It is not appropriate that the implications not be considered by the regulator. It would be even less appropriate for the regulator to suggest that because each petroleum load was small, it could not present a major accident hazard.

Question 25

The appropriate consideration of unconventional extraction and decommissioning is not included. Whereas such decommissioning would not perhaps present a major accident risk, it is known from other parts of the world that damage to the environment can continue for many years after decommissioning of unconventional extraction. Perhaps the Regulator could ensure that this would not be the case in Ireland.

Question 26

It may be that in a normal extraction there is typically just one well in one position. In the case of unconventional extraction there may be up to 16 wells in one small location. It needs to be made clear that these are considered connected activities. A very large number of specialised vehicles may be used. All of these should be included in the appropriate safety case rather than in a separate designation.

Question 27

The 6 proposed principles are adequate as regards normal extraction.

7.2.2.4 (C)

This is adequate in the case of the normal operations. However in the case of unconventional extraction the risks would have to be as low as reasonably practicable and also socially acceptable.

Question 28

7.3.2

It is extremely important that routine operations for the purposes of wear and maintenance are monitoring of production of pressures does not include the process of hydraulic fracturing. This is a repeated performance which should have a Well Work Permit for each distinct occasion on which it is attempted.

7.3.2.3

The well-designed safety case should not only provide the design details such as the total depth of the well, it should also provide detail is of the depth to be affected by hydraulic fracturing and the depth and extend of the layer within which the hydraulic fracturing is to occur. In the case of unconventional extraction, there are many aspects which can cause harm and should be included in the well design safety case. Are there are faults within the rock which could allow petroleum material to migrate upwards to the water carry layer? Are there minerals which are toxic or radioactive in quantities in the area?

A much deeper consideration would need to be made of this approach in the case of unconventional extraction.

Question 29

In the case of unconventional extraction, the question of when does "production" occur arises. It is hard to answer in the context of a paper which does not describe the process of unconventional extraction. There will be drilling, followed by perforated, followed by pressurising, followed by blowback, followed by harvesting; the whole process will be repeated. At which point does "production" begin?

Question 30

The production safety permit is reasonably adequate for normal production. However it is not clear in the case of unconventional extraction whether a separate safety case is required for each occasion of hydraulic fracturing. In particular, it will have the very least be a case that in each drill well will be covered by its own safety design case. The pipeline management needs to be considered and also the tankers to be used among the variety of pads that may be involved.

There is the mention of a five yearly review which would be adequate for normal processes, but is hopelessly long in the case of a damaging process such as unconventional extraction. Reviews would have to be done much more often in such a risky and ill-understood case.

Question 31

The expression intervention/where test vessels would also require a permit to work should logically apply to any trucks or mobile units providing services to an unconventional extraction location (e.g. pumps etc)

Question 32

There should be a decommissioning safety permit per well in the case of unconventional extraction

Question 33

The regulator must have in-house the highest level of expertise to undertake the assessments, but not necessarily the quantity of expertise. Without having the critical level of expertise in-house, it will not be possible to get value and effectiveness from outside third parties.

The list of expertise required omits a geologist/morphologist which would be essential for estimating the possible effects of unconventional extraction.

Question 34

Prefer options three and four.

The five-year safety Case review process is likely to be hopelessly inadequate in the case of unconventional extraction which is currently the subject of urgent study in many parts of the world. Any positions taken within the next few years would likely need to be modified in much less than five years. It is for this reason that a moratorium on unconventional extraction is required from the Regulator.

Question 35

In any case where an Agency is not involved in a petroleum venture in its own field of expertise, full responsibility for that portion will fall on the Regulator.

It is clearly very important that the other statutory processes are given the fullest of information and understanding of any petroleum based venture by the Regulator. There would be a lack of coordination and cooperation if they each had to explore the implications of a particular venture from the ground up. They will naturally depend to a great extent on the information and explanations they are given by the regulator.

Question 36

The regulator should be permitted and responsible for inspecting testing and examining the environment in which the petroleum activities taking place. This is to ensure that the land around the site has not been interfered with, that no nuisance is in evidence and that waste products of any kind, etc., are not escaping from the site.

Audits and inspections should be carried out on every occasion of hydraulic fracturing.

The scope of audits and inspections should concentrate on revised procedures also with knowledge

of public interest matters which have arisen.

There is a kind of an assumption that only "accidents" occur there is no deliberate harm. However it is clear from commonplace reports that the unconventional extraction industry has in many places and many occasions deliberately provoked harm (for instance by dumping radioactive water in a jurisdiction wherever there is no monitoring of radioactivity the activity of waste water, or spraying water into a pond to get rid of volatile substances). Such mischief could be initiated by management as in those cases, or by workers who might for own reasons allow material to flow on to someone else's property or environment.

Question 37

This seems reasonable

Question 38 Also

Question 39

A general answer that would cover both conventional and unconventional extraction would not be possible to this question.

Risk based certainly, visits per year or prescriptive frequency could be debated with regards to normal processes.

However with regard to unconventional extraction which is not covered by this report and which utilises highly toxic chemicals, induces more heavy metals and radioactive substances, involves enormous pressures, is regularly known for fugitive emissions and faulty ceilings of wells, there would need to have almost continuous monitoring of the effects. The regulator should have the possibility of having his own monitoring equipment installed and operational to make possible continuous monitoring of sensitive items.

This question would need to be completely reconsidered in the light of unconventional extraction and this would need to be discussed the various other agencies

Question 40

It needs to be recognised that unconventional extraction will involve operations that are actually 'undesignable'. It will not be possible to predict the exact effects of hydraulic fracturing on the fissures and faults spread in the many layers affected by the fracturing. This needs to be examined.

Question 44

a fourth party should all that the verification scheme

Question 47

There needs to be a distinction between exploration and production in paragraph 8.2 .3 to correspond with the licences to be issued

Question 48

Again in the case of unconventional extraction, not covered in the present paper; there would be such a large number of wells that it would be inefficient to use a third-party. Automated and continuous monitoring equipment should be installed for the exclusive use of the regulator at the expense of the petroleum concern.

Question 49

Yes, but it should include " acceptable it to the public interest" as an additional guideline

Question 51

The leading and lagging indicators are rather interesting. There are should also be an input based on international experience and a further input based on analysis of changes within the technology leading to anticipation of risks.

Question 52

In the nature of normal extraction, there are certain risks which are understood by the control petroleum concerns and taken care of to the limits of accidental occurrences.

In contrast, unconventional extraction relies on processes characterised by unknown geology, by toxins and by vast amounts of contaminated waste water. It is appropriate and essential for the regulator to ensure that the general duty of care is far more stringently tended to by the petroleum undertakings when they are involved in this kind of abnormal procedures.

Question 53

There is an absence in the list of references to damage to plant, to land, to the environment and the Heritage, it is requested that incidents be notified to the regulator.

Damage to property of which the ownership is held by a person other than the petroleum undertaking concerned: this would appear to exclude damage to either the environment or to Heritage. Both of these should be covered particularly in the case of unconventional extraction where they are most at risk.

Personal injuries arising from a major accident hazard: exposure to radon or uranium will take years to show as a 'personal injury'. Is this to be excluded if from consideration in the interests of profits?

To correct this, the expression 'those events occurrences which result in personal injury which relate to major accident hazard' you could say 'might result in personal injury or releases that could affect the environment or the health should be reported.'

Question 55

The Radiological Protection Authority shall be added to this list

Question 56

Yes

Yes the radiological protection authority should be included in the list.

In particular, all those agencies should be given the full list of information on unconventional extraction so that they can make a reasonable decision as to how it affects their areas of concern.

Question 57

The agency should be provided with prior information on matters of serious concern to other agencies

Question 58

If these other agencies are not actively involved, then the definition of "safety" acquires a much broader interpretation for the regulator and for his responsibilities under that heading.

Question 59

it would likely be necessary to expand the inspection potential of the areas of environment, agriculture, tourism, Heritage to cover the addition concerns posed by unconventional extraction

Question 60

It will be necessary for petroleum and safety officer to examine the land and localities adjoining the petroleum site to ensure that no damage has been done; (for instance, workers could have laid a pipe to an adjacent field, forestry or stream, discharged petroleum, and retrieve the pipe. It would be necessary for the safety officer to have power to examine the immediate vicinity.

Question 64

The Regulator would need to take into account technical changes in technology.

The Regulator would need to avoid waiting for an actual catastrophe. He must not wait until an irreversible catastrophe (for instance, the River Shannon being destroyed) to occur before putting the appropriate safety regulations in place.

ENDS

no	Question/ Proposal	agree	No	
1				It must be made clearer by the commissioner that unconventional extraction is excluded from the skull scope which solely covers "normal process of extraction". Enterprises our excluded from using unconventional extraction because it cannot be permitted within the framework outlined here. Nor are can they extract petroleum without a permit under the Act. Unconventional extraction is therefore legally unsupported and offensive to the Act
2				the major accident hazards is an essential focus, but must not cause the exclusion of the focus on inherently hazardous processes or on deliver it but harmful practices such as placing waste matter in inappropriate places.
3				The word 'environment' needs to be added to the definition. The paper mentions the Gulf of Mexico; thousands lost their livelihood though perhaps a few lost their lives. Damage to the environment causes damage to people's lives in a very serious way; even if they do not die instantly. People who worked with asbestos in previous years do not die suddenly and simultaneously in such a way as to constitute an accident; they die slowly and painfully and at different times. No accident caused their condition, it was the result of processes and materials that seemed okay at the time but were later found to be "dangerous". It is the duty of the Commissioner to avoid future occurrences of this sort as well as avoiding major accident hazards.
4				
5				The components of incident investigation and enforcement systems should be expanded to include continual monitoring of inherently hazardous processes. Specifically, each and every singular occurrence of high-pressure injection and return flow should be monitored as such operations stand independently and separate conditions and do not constitute a continuous or flowing process. They cannot be monitored on the same basis as a steady state system.
6		yes		Yes. The commission should include specific components addressing inherently unsafe or damaging procedures such as those found in unconventional extraction.
7			no	No. Their vision should read "a clean and safe Irish petroleum exploration and extraction industry"
8			no	No This mission statement would be adequate for normal processes of extraction. It is hopelessly inadequate in the realm of unconventional extraction. In the latter case it would need to read ".... to protect life, health, property and the environment" The ordinary citizens day-to-day life, and feeling of well-being and safety depends on these four items being protected to his satisfaction.
9				Line 4, work with other authorities, is missing a European dimension.

10		yes	<p>Yes</p> <p>The Commissioner should have a strategic intent of minimising collateral damage to long-term health, property and the environment as part of his very special and intimate role in regulating the petroleum industry in the interests of the general safety of the public as distinct from and in addition to the major accident hazard/incineration scenario.</p>
11			<p>Regulatory goal 1</p> <p>The concept of ALARP needs to be tested hypothetically. Suppose, for instance, a particular enterprise declares that there is a 1% chance of polluting the River Shannon in its entirety. They declare that this 1% cannot be reduced any further without changing some of the laws of nature. In other words, at 1%, the risk is as low as is reasonably practicable. Hypothetically, the risk is as low as possible. Is the enterprise permitted to proceed?</p> <p>Item 1 Safety: safety of persons, property and the environment to be added</p> <p>Regulatory goal 2 It is impossible for a petroleum undertaking to achieve performance commensurate with the best internationally when there is no "best international practice". This does not matter provided no permits are offered for unconventional extraction, which is not permitted under the present paper which covers only normal extraction. If unconventional extraction were to be permitted under a new law, it would require more far more of an effort on the part of the regulator owing to the inherently hazardous nature of the processes and of the threats it implies to the health, wealth, property and environment of the citizen. Every aspect would have to be examined, as there is no such thing as best international practice)"</p> <p>Regulatory goal3 Confidence that the regulatory framework is protecting the public will not be obtained if the impression is given that the public is being protected only from a mass incineration caused by an 'accident'; and that the Regulator is not concerned with damage to the environment that supports the tourism industry, that supports the agriculture and food industries; is not concerned with long-term damage to underground water resources, to the carbon emissions; is not concerned with longer term damage to health through the release of toxic and radioactive elements into the environment. It will therefore be a goal of the Regulator to ensure that his actions protect all aspects of the safety and well-being and feeling of security of the citizens. This is particularly the case of citizens who are remotely located from the hazard and are completely unaware that some distant incident of pollution could destroy their drinking water or their livelihood. The citizens will, after some catastrophe incident, ask questions of the responsibility of the Regulator.</p>
12			
13			Figure 7 in itself is adequate, but it is betrayed by the

				<p>subsequent insouciance on societal values. It needs to be made extremely clear that this applies solely to Normal extraction; it needs to be clear, indeed, it is stated by the Paper itself that a minimum understanding and scientific uncertainty would bring about a call to Society for a well-informed view on the matter such as unconventional extraction.</p> <p>With this understanding, figure 7 is an excellent approach for assessment of risk. However, it could literally be fatal if this approach was confined to paper and a reference to Societal values was completely avoided in the interests of commercial greed or strategic gas.</p>
14				<p>The individual risk to members of the general public seems to be limited to immediate death. There should also be limitations on long-term risks to health, risks to property, particularly land and capital and risks to the environment, particularly air quality and water systems. If any of these suffer or are likely to suffer, a citizen will not feel safe. A citizen will understand that in normal extraction these risks are understood and controlled; a citizen will further understand that in unconventional extraction, these risks are neither understood nor controlled. It is necessary for the regulator to take these aspects into account in case that at any future time unconventional extraction is to be considered, when it has been completely understood and remedied.</p>
15		yes		<p>Yes</p> <p>Society risk must be treated explicitly, owing to the reference within the paper to licences which require unconventional extraction, even though this is not encompassed by the paper's treatment of permissions. The nature of unconventional extraction is such that by the guidelines of this consultation paper it must be subject to Society risk assessment. In other words, it is not a possibility, but the actuality of societal risk be considered and the view of well-informed society be canvassed.</p> <p>Because this case is on the doorstep of the regulator, it requires to be explicitly included</p>
16				<p>Risk metrics should be sought for illnesses and long-term deterioration subsequent to petroleum activities.</p> <p>It is noted that an unhealthy environment will lead to poor health and subsequently to life deterioration. Because of this causal chain, it could be considered highly desirable that risks to the environment are monitored as a long-term risk to safety/health of individuals. In any event, society will typically be at a loss for environmental damage that surfaces later, especially if the enterprise responsible the damage has left the area. It is the job of the regulator to minimise this risk to society, which can be done by placing metrics on the environmental effects of petroleum endeavours.</p>
17			no	<p>No</p> <p>It is not reasonable to align the risks with one agency. Recently, the economy of Cyprus was blighted by the confinement of a ship loaded with explosives into a naval Harbour. The hot weather caused an explosion which, apart from the normal damage, destroyed the main power generator of the island. The effect on the economy is estimated to cost 20% GDP. It is clear that a health executive would not be aware of the kind of issues, threats and problems that an environmental agency would be cognisant of. The Minister for</p>

			<p>Tourism and the Minister of Agriculture would be aware of commercial threats not related to human health. The Radiological Authority will be aware of the potential damage being caused by fugitive radioactive particles.</p> <p>There is more work to be done in consulting these agencies and others with relation to risk criteria. In the past, with normal extraction, it would have been reasonable to proceed as in the Paper at present. But with the introduction of licence options requiring unconventional extraction, it is incumbent on the Regulator to advise, as fully as possible, the different agencies of the technologies and threats involved in those particular licence areas and to get their advice on the appropriate metrics and appropriate risk criteria to be considered by the Regulator. The omission, for instance of the Radioactivity Protection Authority indicates that it is considered that the HSE is fully aware of those related issues; in which case the Radiological Protection Authority is redundant; or that there is no risk whatsoever of the production of radioactive material through petroleum processes, in which case unconventional extraction is excluded; or Regulator wishes to exclude consideration of radioactivity risks.</p>
18			<p>If the regulator was aware of the implications and risks of unconventional extraction, great attention would be paid to the lower limit. Under no circumstances would it be left to the petroleum undertaking, particularly in a branch of the industry which is notorious worldwide for damaging public health and the environment. This section needs to be explored further. Given the reputation of those carrying out unconventional extraction it should be advisory.</p>
19			<p>Upper limits should be mandatory. In particular in the case of unconventional extraction where there is no best practice, no good practice and plenty of examples of bad practice, there should be a new level of intensive examinations of the limits to the individual and society risks to include damage to property long-term damage to health, etc., and damaged environment and taking account of the damage that can be inflicted through reputational deterioration of industries such as food and tourism.</p>
20			<p>ii Major accident hazards: this is adequate for conventional extraction where the engineering and the risks and the processes are quite well-known. It is hopelessly inadequate in the case of unconventional extraction where the effects on the environment and on local health as globally demonstrated to be ill understood and ill-controlled. It is unacceptable for the regulator to be unaware of the consternation caused worldwide by the effects of unconventional extraction and still to restrict his purview to "Major accident hazards;" it would be abdication of his intrinsic responsibility to do so.</p>
21			<p>The construction and installation of petroleum infrastructure could be somewhat ambiguous. While it is reasonably understandable into normal extraction, in the case of unconventional extract it should be made clear that any drilling is part of the life cycle of the infrastructure.</p>

22			<p>The proposed designation criteria of exploration activities does not include any aspect of unconventional extraction. This implies that the areas licenced would be refused permission for petroleum exploration using unconventional extraction. The further more it is impossible for the regulator to get a reasoned reply to this question 22, given that the information in table 1 is inadequate with relation to the onshore licences.</p>
23			<p>The table to equally gives no indication of the unconventional activities associated with extraction of gas from shale rock holdings. The so-called activity description is totally misleading in that it gives no indication whatsoever of the totally abnormal approach taken in the case of a shale well. Because it is so misleading it will be impossible to get a sensible answer from any agency or Minister to consultation question number 23</p>
24			<p>The table 3 refers briefly to storage onshore. It gives no indication that in the case of unconventional extraction, there will be either a multiplicity of storage tanks or a network of pipes spread around large areas of the countryside. Given the large numbers of these that will be required and the low amount protection that may well be provided, special attention would be required.</p> <p>The table continues with a blank against 'road tankers'. This assumes that in the normal situation there will be a single depot deploying tankers on regular routes from that depots. However, in the case of unconventional extraction, there will be road haulage from a multiplicity of small units travelling over very minor roads not suited for heavy goods. It is not appropriate that the implications not be considered by the regulator. It would be even less appropriate for the regulator to suggest that because each petroleum load was small, it could not present a major accident hazard.</p>
25			<p>The appropriate consideration of unconventional extraction and decommissioning is not included. Whereas such decommissioning would not perhaps present a major accident risk, it is known from other parts of the world that damage to the environment can continue for many years after decommissioning of unconventional extraction. Perhaps the Regulator could ensure that this would not be the case in Ireland.</p>
26			<p>It may be that in a normal extraction there is typically just one well in one position. In the case of unconventional extraction there may be up to 16 wells in one small location. It needs to be made clear that these are considered connected activities. A very large number of specialised vehicles may be used. All of these should be included in the appropriate safety case rather than in a separate designation.</p>
27			<p>The 6 proposed principles are adequate as regards normal extraction. 7.2.2.4 (C) This is adequate in the case of the normal operations. However in the case of unconventional extraction the risks would have to be as low as reasonably practicable and also socially acceptable.</p>
28			<p>7.3.2 It is extremely important that routine operations for the purposes</p>

			<p>of wear and maintenance are monitoring of production of pressures does not include the process of hydraulic fracturing. This is a repeated performance which should have a Well Work Permit for each distinct occasion on which it is attempted.</p> <p>7.3.2.3 The well-designed safety case should not only provide the design details such as the total depth of the well, it should also provide detail is of the depth to be affected by hydraulic fracturing and the depth and extend of the layer within which the hydraulic fracturing is to occur. In the case of unconventional extraction, there are many aspects which can cause harm and should be included in the well design safety case. Are there are faults within the rock which could allow petroleum material to migrate upwards to the water carry layer? Are there minerals which are toxic or radioactive in quantities in the area? A much deeper consideration would need to be made of this approach in the case of unconventional extraction.</p>
29			<p>In the case of unconventional extraction, the question of when does "production" occur arises. It is hard to answer in the context of a paper which does not describe the process of unconventional extraction. There will be drilling, followed by perforated, followed by pressurising, followed by blowback, followed by harvesting; the whole process will be repeated. At which point does "production" begin?</p>
30			<p>The production safety permit is reasonably adequate for normal production. However it is not clear in the case of unconventional extraction whether a separate safety case is required for each occasion of hydraulic fracturing. In particular, it will have the very least be a case that in each drill well will be covered by its own safety design case. The pipeline management needs to be considered and also the tankers to be used among the variety of pads that may be involved.</p> <p>There is the mention of a five yearly review which would be adequate for normal processes, but is hopelessly long in the case of a damaging process such as unconventional extraction. Reviews would have to be done much more often in such a risky and ill-understood case.</p>
31			<p>The expression intervention/where test vessels would also require a permit to work should logically apply to any trucks or mobile units providing services to an unconventional extraction location (e.g. pumps etc)</p>
32			<p>There should be a decommissioning safety permit per well in the case of unconventional extraction</p>
33			<p>The regulator must have in-house the highest level of expertise to undertake the assessments, but not necessarily the quantity of expertise. Without having the critical level of expertise in-house, it will not be possible to get value and effectiveness from outside third parties.</p> <p>The list of expertise required omits a geologist/morphologist which would be essential for estimating the possible effects of unconventional extraction.</p>
34			<p>Prefer options three and four. The five-year safety Case review process is likely to be</p>

			<p>hopelessly inadequate in the case of unconventional extraction which is currently the subject of urgent study in many parts of the world. Any positions taken within the next few years would likely need to be modified in much less than five years. It is for this reason that a moratorium on unconventional extraction is required from the Regulator.</p>
35			<p>In any case where an Agency is not involved in a petroleum venture in its own field of expertise expertise, full responsibility for that portion will fall on the Regulator.</p> <p>It is clearly very important that the other statutory processes are given the fullest of information and understanding of any petroleum based venture by the Regulator. There would be a lack of coordination and cooperation if they each had to explore the implications of a particular venture from the ground up. They will naturally depend to a great extent on the information and explanations they are given by the regulator.</p>
36			<p>The regulator should be permitted and responsible for inspecting testing and examining the environment in which the petroleum activities taking place. This is to ensure that the land around the site has not been interfered with, that no nuisance is in evidence and that waste products of any kind, etc., are not escaping from the site.</p> <p>Audits and inspections should be carried out on every occasion of hydraulic fracturing.</p> <p>The scope of audits and inspections should concentrate on revised procedures also with knowledge of public interest matters which have arisen.</p> <p>There is a kind of an assumption that only "accidents" occur there is no deliberate harm. However it is clear from commonplace reports that the unconventional extraction industry has in many places and many occasions deliberately provoked harm (for instance by dumping radioactive water in a jurisdiction wherever there is no monitoring of radioactivity the activity of waste water, or spraying water into a pond to get rid of volatile substances). Such mischief could be initiated by management as in those cases, or by workers who might for own reasons allow material to flow on to someone else's property or environment.</p>
37			This seems reasonable
38			
39			<p>A general answer that would cover both conventional and unconventional extraction would not be possible to this question.</p> <p>Risk based certainly, visits per year or prescriptive frequency could be debated with regards to normal processes.</p> <p>However with regard to unconventional extraction which is not covered by this report and which utilises highly toxic chemicals, induces more heavy metals and radioactive substances, involves enormous pressures, is regularly known for fugitive emissions and faulty ceilings of wells, there would need to have</p>

			<p>almost continuous monitoring of the effects. The regulator should have the possibility of having his own monitoring equipment installed and operational to make possible continuous monitoring of sensitive items.</p> <p>This question would need to be completely reconsidered in the light of unconventional extraction and this would need to be discussed the various other agencies</p>
40			<p>It needs to be recognised that unconventional extraction will involve operations that are actually 'undesignable'. It will not be possible to predict the exact effects of hydraulic fracturing on the fissures and faults spread in the many layers affected by the fracturing. This needs to be examined.</p>
41			
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44			<p>a fourth party should all that the verification scheme</p>
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46			
47			<p>There needs to be a distinction between exploration and production in paragraph 8.2 .3 to correspond with the licences to be issued</p>
48			<p>Again in the case of unconventional extraction, not covered in the present paper; there would be such a large number of wells that it would be inefficient to use a third-party. Automated and continuous monitoring equipment should be installed for the exclusive use of the regulator at the expense of the petroleum concern.</p>
49		yes	<p>Yes, but it should include " acceptable it to the public interest" as an additional guideline</p>
50			
51			<p>The leading and lagging indicators are rather interesting. There are should also be an input based on international experience and a further input based on analysis of changes within the technology leading to anticipation of risks.</p>
52			<p>In the nature of normal extraction, there are certain risks which are understood by the control petroleum concerns and taken care of to the limits of accidental occurrences.</p> <p>In contrast, unconventional extraction relies on processes characterised by unknown geology, by toxins and by vast amounts of contaminated waste water. It is appropriate and essential for the regulator to ensure that the general duty of care is far more stringently tended to by the petroleum undertakings when they are involved in this kind of abnormal procedures.</p>

53			<p>There is an absence in the list of references to damage to plant, to land, to the environment and the Heritage, it is requested that incidents be notified to the regulator.</p> <p>Damage to property of which the ownership is held by a person other than the petroleum undertaking concerned: this would appear to exclude damage to either the environment or to Heritage. Both of these should be covered particularly in the case of unconventional extraction where they are most at risk.</p> <p>Personal injuries arising from a major accident hazard: exposure to radon or uranium will take years to show as a 'personal injury'. Is this to be excluded if from consideration in the interests of profits?</p> <p>To correct this, the expression 'those events occurrences which result in personal injury which relate to major accident hazard' you could say 'might result in personal injury or releases that could affect the environment or the health should be reported.'</p>
55			The Radiological Protection Authority shall be added to this list
56		yes	<p>Yes Yes the radiological protection authority should be included in the list. In particular, all those agencies should be given the full list of information on unconventional extraction so that they can make a reasonable decision as to how it affects their areas of concern.</p>
57			The agency should be provided with prior information on matters of serious concern to other agencies
58			If these other agencies are not actively involved, then the definition of "safety" acquires a much broader interpretation for the regulator and for his responsibilities under that heading.
59			it would likely be necessary to expand the inspection potential of the areas of environment, agriculture, tourism, Heritage to cover the addition concerns posed by unconventional extraction
60			It will be necessary for petroleum and safety officer to examine the land and localities adjoining the petroleum site to ensure that no damage has been done; (for instance, workers could have laid a pipe to an adjacent field, forestry or stream, discharged petroleum, and retrieve the pipe. It would be necessary for the safety officer to have power to examine the immediate vicinity.
64			<p>The Regulator would need to take into account technical changes in technology.</p> <p>The Regulator would need to avoid waiting for an actual catastrophe. He must not wait until an irreversible catastrophe (for instance, the River Shannon being destroyed) to occur before putting the appropriate safety regulations in place.</p>