



**An Roinn Cumarsáide, Fuinnimh agus Acmhainní Nádirtha.
Department of Communications, Energy and Natural Resources.**

24 July 2008.

Mr. Tom Philbin
Rossport
Ballina
Co Mayo


Re : Freedom of Information Request Reference: FOI/2008/41.

Dear Mr. Philbin,

I refer to your FOI request under Section 7 of the Freedom of Information Acts 1997 and 2003. I have decided to part grant your request for a copy of a report by Mr. David Fox title "Corrib Optimum Development Method". A schedule is attached to this letter and outlines the relevant sections of the Freedom of Information Act which apply to prevent full release of the document.

You may appeal this decision by writing to the Freedom of Information Unit, Department of Communications, Energy and Natural Resources, Elm House, Earlsvale Road, Cavan. Please note that a fee of €75 applies for an appeal. You should make your appeal within 4 weeks from the date of this notification, however, the making of an late appeal may be permitted in appropriate circumstances. The appeal will involve a complete reconsideration of the matter by a more senior member of the staff of this Department.

Yours sincerely



Roisin Garland
Petroleum Affairs Division

FOI Request Reference: FOI/2008/41

Schedule of Records: Summary of Decision Making

c. d	Brief description and date of record	File Ref	No. of Pages	Decision: Grant/Part Grant/Refuse	Reason for Decision	Record Edited/ Identify Deletions
1	Report of Mr David Fox dated 5 February 2001 titled "Corrib Optimum Development Method"	A05/05	7	Part Grant	Deleted sections contain commercially sensitive information. Section 27 (1) (b) of the FOI Act refers.	Deletions made in respect of Costs, Economics. Partial deletion on Conclusions and Recommendation Table 1 – Reserves and Production Table 2 – Base Case Economics Table 3 – Economics Comparison

Memorandum

To: Keith Robinson
Michael Daly

From: David Fox

Date: 5 February 2001

Subject: Corrib Optimum Development Method

The Corrib Plan of Development includes considerable detail on the proposed development scheme, but has very little discussion of the other options considered by the Enterprise Oil group. Consequently, the suitability of the proposed scheme has not yet been justified in terms of its ability to:

- (i) maximise economic gas recovery from the field,
- (ii) maximise development flexibility or
- (iii) share facilities with other potential fields in the area.

As requested, I have compared the proposed Corrib development scheme on this basis with other potential alternatives.

Development Options Considered

On 22 December 2000, PAD asked Enterprise Oil to provide results of its development concept studies and, on 12 January 2001, extracts of the studies were received. The information provided indicates that Enterprise considered a total of 10 alternative development schemes, which were grouped into 3 categories:

1. Subsea Options

- a) Integrated Services Umbilical (ISU)
- b) Control umbilical with separate chemical supply line
- c) Control/chemical injection buoy
- d) Control buoy with separate chemical supply line

2. Offshore Processing Options

- a) Tension Leg Platform (TLP)
- b) Spar buoy
- c) Semi-submersible
- d) Fixed steel platform

3. Partial Processing Options

- a) Mini-TLP
- b) Wellhead/drilling TLP

For the purposes of this study, the most promising scheme from each category was selected for further analysis; those selected are underlined in the above list.

From the Subsea options, the Integrated Services Umbilical (ISU) option was selected. The ISU option is the development scheme proposed in the PoD and there is no clear benefit in terms of either cost or risk from using a separate chemical supply line (option b). The other two options both use a normally unmanned buoy with well control and chemical injection facilities; for option c), chemicals would be delivered by boat and stored in tanks on the buoy, for option d) chemicals would be supplied through a line from shore. These can both be eliminated because initial analysis has shown that:

- (i) there would be design problems with stability for a buoy in the prevailing water depth and wave conditions,
- (ii) there would be additional risk to personnel servicing the buoy,
- (iii) it would be difficult to establish a radio control and telemetry link so far offshore,
- (iv) both capital and operating costs would be higher than for the ISU option proposed in the PoD and
- (v) there would be no significant benefits to gas recovery, development flexibility or the ability to share facilities with other fields.

From the Offshore Processing options, the Tension Leg Platform (TLP) was chosen. The Spar buoy option has slightly higher capital costs and a fixed steel platform would have significantly higher cost. Although the Enterprise Oil study shows that a semi-submersible would cost slightly less than a TLP, it was felt that this was probably due to the lack of maturity of the concept for use in Corrib environmental conditions.

The Mini-TLP was selected from the Partial Processing options, since the alternative (with a drilling rig installed) would add significantly to the cost with little additional benefit now that only a few more development wells (in addition to the existing appraisal wells) are planned to be drilled.

Analysis

Reserves and Production

In evaluating the Subsea option, the P₉₀, P₅₀ and P₁₀ reserves and production profiles from the PoD were used.

To evaluate the TLP option, these PoD profiles were modified to account for:

- the longer lead time to the start of production,
- the separation of water and condensate from the gas offshore,
- additional wells,
- offshore compression and
- for the P₅₀ and P₁₀ cases, additional compression added in 2010.

The result was an increase in reserves of 4.5-6.5% above the equivalent PoD cases.

For the Mini-TLP option, the profiles from the PoD were modified to account for:

- the separation of water and condensate offshore and

- for the P₅₀ and P₁₀ cases, the addition of onshore compression in 2010 and 2013 respectively.

As a result, reserves were increased by 2.0-2.5% over the equivalent PoD cases.

Production profiles and reserves for all cases evaluated are shown in Table 1.

A large, solid black rectangular redaction covers the majority of the page, obscuring all text and data that would otherwise be present in Table 1. The redaction starts below the text 'Production profiles and reserves for all cases evaluated are shown in Table 1.' and extends to the bottom of the page, just above the footer.

Development Flexibility

The greatest development flexibility is offered by the TLP option; when compared to the other two, it enables:

- drilling additional production wells at around half the cost of subsea wells,
- well workovers, to optimise productivity and repair damage, at significantly lower cost,
- production logging to monitor production between reservoir layers and to diagnose well problems and
- the addition of further compression offshore when it is needed.

There is little difference between the Subsea and Mini-TLP options in terms of development flexibility, although the Mini-TLP option may offer the potential to add offshore compression.

Sharing Facilities with Other Fields

Assuming there is spare capacity, it is possible to share the pipeline and terminal with other fields for all three options.

In other respects however, the position is mixed. While the TLP and Mini-TLP options have the ability to add compression to maintain a low wellhead pressure at Corrib and, depending on the spare capacity at the time of the tie-in, may have processing capacity available for the new field, if there is not spare processing capacity or available topsides weight and space to add capacity, the new field would either be required to have its own offshore processing or install sufficient onshore processing capacity to process the combined stream from both Corrib and the new field.

The Subsea option allows a relatively simple tie-in for a new field and, if needed, the cost of adding additional onshore processing would be lower than for the other two options. However, because it is not possible to add offshore compression, Corrib reserves would almost certainly be reduced or the field life extended due to the increased wellhead pressure resulting from the tie-in. Also, if the new field's gas contained much more condensate than at Corrib, it would probably need to have its own offshore processing facilities to reduce the liquid content before commingling the two gas streams.

Conclusions and Recommendations

The results of economics evaluation of the three options considered are summarised in Table 3.

It is clear that the TLP option would be very risky and is not economically viable, since:

- [REDACTED]
- [REDACTED]
- [REDACTED]

The economics from the Subsea and Mini-TLP options are very similar in most respects. The NPV from the Mini-TLP is around 5-10% lower than that from the Subsea option, the DCF Rates of Return are virtually identical for the two options and the Minimum Economic Reserve for the Mini-TLP is slightly higher than for the Subsea option, showing that the Mini-TLP has a slightly greater development risk. However, as noted earlier, the Mini-TLP is estimated to result in reserves some 2-2.5% higher than from the Subsea option.

While development flexibility is best for the TLP, this is of little importance as a development using this option is not viable. As noted above, there is little to choose between the development flexibility of the Subsea and Mini-TLP options. Similarly, neither of these two options offers significant advantages over the other with respect to their ability to accept production from a nearby field.

Although the Mini-TLP option appears to have the potential for slightly higher economic gas recovery than the Subsea option in the PoD, it is *not* recommended that the Enterprise Oil group should be required to change or consider changing the Corrib development scheme. This is because:

- (i) Floating production systems, such as the Mini-TLP, are not ideally suited to gas production in the relatively harsh environmental conditions at Corrib; specifically, large-bore gas export risers and gas compressors would be an issue.
- (ii) Manned facilities (even if only occasionally manned) have increased safety risk, particularly with offshore transfer of personnel.
- (iii) The simpler offshore facilities mean that the potential for environmental impact, such as through accidental release of chemicals, is reduced for the Subsea option.
- (iv) With no offshore facilities exposed to the weather, the Subsea option would result in lower weather downtime compared to a Mini-TLP.
- (v) The Mini-TLP option is far less mature than that proposed in the PoD and there is significant risk that the difference in economic gas recovery would be reversed once the necessary work on the Mini-TLP concept was completed.
- (vi) The lack of permanent offshore facilities at the surface means that the Subsea option results in the least disturbance and interaction with other marine users (such as shipping and fishing).
- (vii) A change in the development concept now would delay the start of production by at least 6 months.

Nevertheless, it *is* recommended that Enterprise Oil be encouraged to keep PAD fully informed of their work on development concepts prior to proposing any future field developments. If our evaluations of development options had resulted in one of them showing the potential for a significant increase in economic recovery compared to the PoD proposals, there may have been little choice but to require them to postpone development until the alternative concept had been progressed to a similar stage of maturity.

Table 1

Corrib Optimum Development Method

Reserves and Production

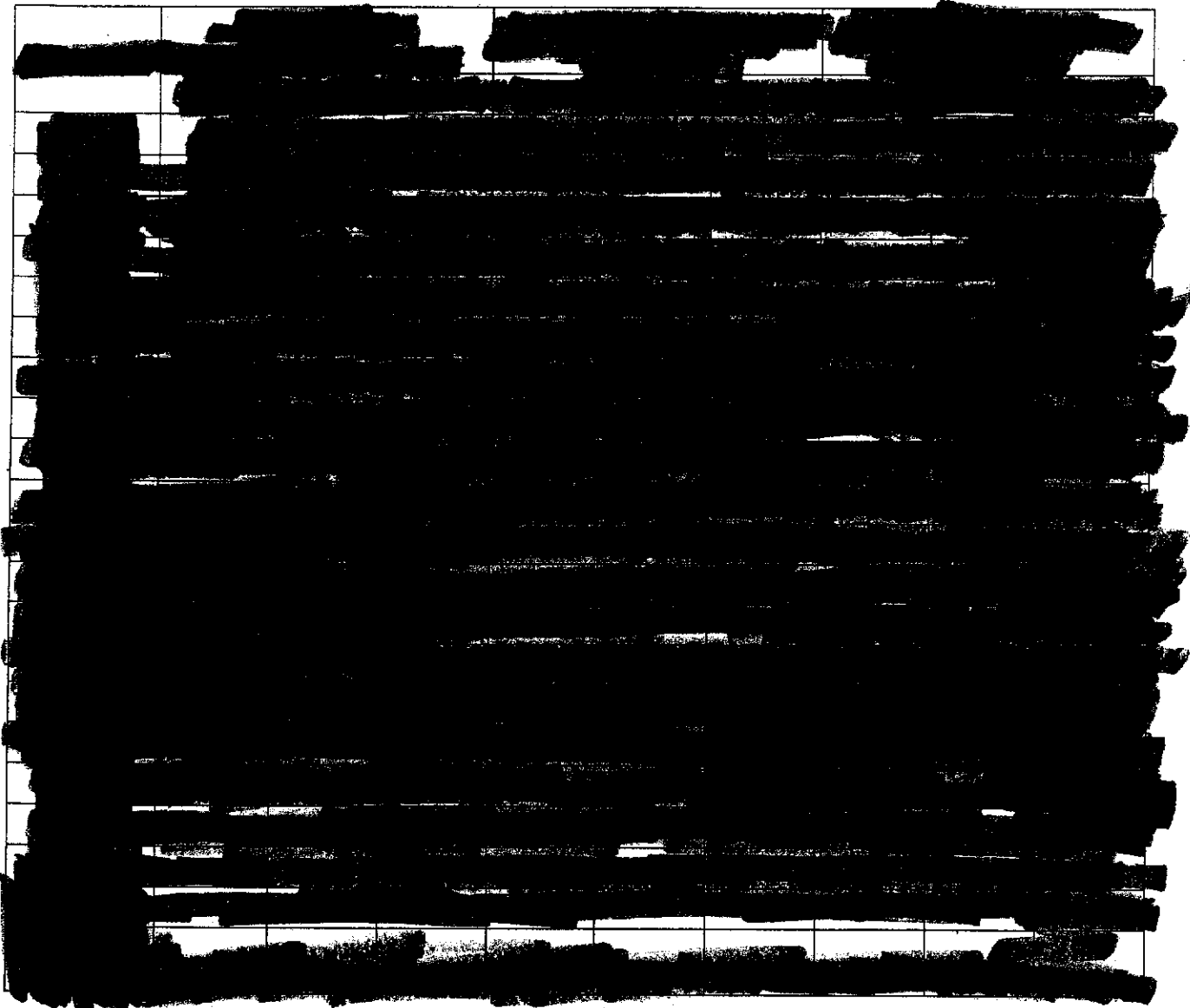


Table 2

Corrib Optimum Development Method.

Base Case Economics

The table content is almost entirely obscured by heavy black redaction marks. Only a few small rectangular sections of text are visible on the left side of the table, which appear to be column headers or labels. The rest of the table is completely blank due to the redaction.

Roisin Garland

From: David Fox [david.fox@dfass.demon.co.uk]
Sent: 17 July 2008 13:38
To: Roisin Garland
Cc: Noel Murphy
Subject: RE:
Attachments: Optimum Development Method.doc

Roisin

I have attached a copy of my 2001 memo entitled Corrib Optimum Development Method. For reasons of commercial sensitivity, I believe the sections headed 'Costs' and 'Economics', the 3 bullet points in the 'Conclusions and Recommendations' section and Tables 1, 2 and 3 should all not be released under FOI.

Incidentally, I think the report has already been released in part under FOI a few years ago, but I do not know which sections were removed at that time.

Best regards

David Fox

David Fox Associates Ltd
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-----Original Message-----

From: Roisin Garland
Sent: Thu 17/07/2008 10:06
To: David Fox
Cc: Noel Murphy
Subject:

David,

Please see the attached FOI request which has been assigned to me for decision. Could you forward me a copy of the report and if you could indicate what sections of the report you deem should not be released under the FOI Act for reasons of commercial sensitivity, etc.

Many thanks

Roisin

Roisin Garland

From: Noel Murphy
Sent: 23 July 2008 14:54
To: Roisin Garland
Subject: FW: Response to Corrib FOI Request
Attachments: Corrib FOI May 2005 v1.doc; Corrib - Optimum Development Method.doc

From: Noel Murphy
Sent: 11 May 2005 17:12
To: Des Byrne
Subject: Response to Corrib FOI Request

Des

TechSec's response to Mr Philbin's request dated 15/04/2005 is attached. Also attached is a memo on alternative development options by David Fox, dated 5 February 2001. He suggests that this could be used as a response to items 15 and 26. It includes economics evaluations but they are out of date now so it may not do too much harm to release them.

Noel

Des Byrne

From: Des Byrne
Sent: 12 May 2005 11:30
To: Marian Salmon
Subject: FW: Response to Corrib FOI Request
Attachments: Corrib FOI May 2005 v1.doc; Corrib - Optimum Development Method.doc

Regards

Des Byrne
Petroleum Affairs Division
Phone +353 1 678 2693

-----Original Message-----

From: Noel Murphy
Sent: 11 May 2005 17:12
To: Des Byrne
Subject: Response to Corrib FOI Request

Des

TechSec's response to Mr Philbin's request dated 15/04/2005 is attached. Also attached is a memo on alternative development options by David Fox, dated 5 February 2001. He suggests that this could be used as a response to items 15 and 26. It includes economics evaluations but they are out of date now so it may not do too much harm to release them.

Noel

FOI 22/2005

17 May 2005

Mr Thomas Philbin
Rossport

Dear Mr Philbin and Ms Philbin

I refer to your letter dated 15 April 2005 under the Freedom of Information request access to information in relation to the Corrib Gas Field Project.

In the matter of your opening paragraph I am to inform you that the request is extremely broad in its scope and in accordance with Section 7(1) of the FOI Act the requester must provide sufficient particulars to enable this body to identify which of the records are of specific interest to you. I would be obliged therefore if you could identify the information to which you are seeking access to. In accordance with the FOI Act I wish to offer further assistance to you with your request. Below I have detailed beneath Petroleum Affairs Section File pertinent to your opening paragraph request.

Title	Ref No
1. Petroleum Lease – Corrib Development	B18/1 Vol 1-X
2. Plan of Development – Corrib Field	A05/01 Vol 1-8
3. Development of the Corrib Field Environmental Aspects	AO5/02 Vol 1-3
4. Corrib Project Environmental Impact Assessment (EIA) Group	A05/03 Vol 1
5. Information Seminar Regulatory Regime and EIA Process for the Corrib Development	A05/04
6. Requirements for pipeline approval under the Gas Act as amended	A05/05 Vol1- 5
7. Compulsory Acquisition Order	AO5/06 Vol 1 – 3
8. Corrib Annual Lease Return	AO5/08
9. Corrib Progress Meetings	AO5/09
10. Corrib Pipeline Phases	AO5/10
11. Adjournment Debate – Corrib	AO5/11
12. Corrib Monthly Reports	AO5/12
13. Corrib Correspondence	AO5/13
14. Review of Onshore Section of Export Pipeline	AO5/14
15. Design Verification for Onshore Section of Export Pipeline	AO5/15
16. Legal Challenge to Corrib Development	A07/02
17. Corrib Verification Process	AO8/01
18. Well Management Audit Scheme	AO8/02
19. Verification Audit Services	AO8/03
20. PAD Steering Group on Corrib Gas Field Dev	A09/01
21. Environmental Monitoring Group	A10/01

22	Environmental Monitoring Programmes	A10/02
23	Environmental Management Plan	A12/01

I would add that in addition to the files listed above there are a number of folders containing supplementary information such as individual Compulsory Acquisition Orders for some 35 landowners.

In relation to the files listed above I have the following comments to make:

Item 1. Petroleum Lease – Corrib Development file ref No B18/1 Vol 1 – X . The ten volumes on the Petroleum Lease consist mainly of correspondence between Department, the Developers and legal advisors in the matter together with a final lease document and other associated documents.

Item 5 Information Seminar Regulatory and EIA process for the Corrib Development AO5/04. Information contained in the 'Seminar File' has been in the public arena and therefore does not come under the FOI Act see Section 46(2) of the said Act. You are invited to inspect this file on application in writing to the undersigned.

Item 16 Legal Challenge to Corrib Field Development A07/02. This file contains mainly legal advice, which the Department received and is confidential to the Department.

Other records in PAD include data submitted to Petroleum Affairs Division Technical Section (PAD Tech) which relates to the subsurface; specifically geology, geophysics and reservoir engineering of the Corrib Gas Field.

Under the Department's Licensing Terms (Section 46) for Offshore Oil and Gas Exploration and Development 1992 relating to confidentiality all data must be kept confidential for up to 5½ years. However outside this period it becomes available for release, to bona fide exploration companies, contractors and researchers by making application to the Department's data release Agents. With this release mechanism in place I am to advise you that access to records relating to the Corrib Gas field subsurface does not fall within the ambit of the FOI Act.

Having regard to the foregoing I would ask you to consider revising the wording of your opening paragraph in order to identify more specifically the records to which you seek access. When I receive your request I will be in a position to discuss with you an extended timetable for handling your request and the form in which access would be most efficiently offered. I should point out to you that there will be a substantial fee involved for search and retrieval of requested material and the amount will be determined by the time taken for this. In addition a fee of 4 cent per page will be charged for photocopying the documentation. Until I know exactly what you require I cannot determine the cost.

A response to the 30 questions presented by you is hereunder