Volume 6

FOI Request Reference: Request ID: 2009/42 **Schedule of Records: Summary of Decision Making**

Requesting correspondence between the Department, Fermoy Town Council and Fermoy Rowing Club in relation to proposed works to the weir at Fermoy and any associated or relevant briefing or correspondence.

Record No.	Brief Description & Date of Record	File Ref.	No. of Pages	Relevant facts	Findings/ conclusions (Public Interest Considerations, (If applicable)	Grant/refuse/ part-grant	Basis of Refusal: Section of Act	Record edited/Identify deletions
1	Internal email dated 15 January on telephone conversation with Fermoy Town Council on the status of the appointment of consultants.	C17/3/53 Vol V1	1			**Grant**		
2	Letter from Fermoy Town Council to Department dated 19 January 2009 regarding the engagement of consultants.	C17/3/53 Vol VI	1			**Grant**		
3	Letter from Department to Fermoy Town Council dated 21 January 2009 concerning the provision of a contribution towards the consultants report.	C17/3/53 Vol VI	1			**Grant**		
4	Letter from Fermoy Town Council to Department dated 19 (sic) January 2009 (received 22 January by fax).	C17/3/53 Vol VI	1			**Grant**		
5	Letter from Department to Fermoy Town Council dated 22 January 2009 regarding the engagement of consultants.	C17/3/53 Vol VI	1			**Grant**		

6	Letter from Department to Fermoy Town Council dated 5 February 2009 outlining the Departments views on the submitted tender documents.	C17/3/53 Vol VI	3			**Grant**		
7	Letter from Department to Fermoy Town Council dated 9 February 2009 regarding appointment of consultants.	C17/3/53 Vol VI	1			**Grant**		
8	Letter from Fermoy Town Council to Department dated 12 February 2009 together with copy of letter from the Department of Environment, Heritage and Local Government concerning the status of the weir and the basis for designating it a National Monument.	C17/3/53 Vol VI	3			**Grant**		
9	Letter from Department to Fermoy Town Council dated 12 March 2009 seeking further clarification on the designation of the weir as a National Monument and Proposed Protected Structure and appointment of consultants.	C17/3/53 Vol VI	2			**Grant**		
10	Letter from Department to Fermoy Town Council dated 28 April 2009 regarding appointment of consultants and status of weir.	C17/3/53 Vol VI	1			**Grant**		
11	Covering letter and enclosed copy of WYG Consultants Report entitled "Fermoy Town Council Alteration to Fermoy Weir Technical Assessment Report" date of receipt 22 May 2009.	C17/3/53 Vol VI				**Grant**		
12	Letter from Department to Fermoy Town Council dated 28 May 2009.	C17/3/53 Vol VI	1			**Grant**		

(1)

Marion Foley

From: Marion Foley
Sent: 15 January 2009 15:23
To: Frank Sheridan; Barbara Leeson
Subject: Fermoy Weir
Importance: High

Tracking:

Recipient	Delivery	Read
Frank Sheridan	Delivered: 15/01/2009 15:23	
Barbara Leeson	Delivered: 15/01/2009 15:23	Read: 15/01/2009 15:27

Frank

I spoke to Ray Owens (Fermoy Town Council) this morning regarding update on the weir. He said that the Council would be seeking advice from a suitably qualified expert, this expert would be engaged following a procurement process (restricted to 3). I reminded him of the very tight time frame and he said that he was conscious of this he also said that he would be writing to us shortly setting out the position.

Marion

(2)

COMHAIRLE BAILE MHAÍNISTÍR FHEAR MAÍ

FERMOY TOWN COUNCIL

Mr Frank Sheridan
Department of Communications, Energy & Natural Resources
29-31 Adelaide Road
Dublin 2

Town Hall,
Fermoy, Co. Cork
Tel: 025-31155 / 31201
Fax: 025-82970
e-mail:
fermoytowncouncil@eircom.net

Re: Fermoy Weir

Dear Sir,

I refer to previous correspondence on the above meeting with your of 15th January to the Mayor, Cllr Tadgh O'Donovan.

The current position in relation to the Council formulating alternative proposals in that the Council have contacted a number of firms with expertise in this area and have invited them to tender for a contract which seeks an appraisal of the existing proposals and further seeks a preliminary report on alternative proposals.

The closing date for the receipt of such tenders is 5p.m. on Wednesday 21st January 2009. We propose to immediately evaluate the tenders received with a view to immediately appointing the most suitable applicant. We propose that the time scale for the completion of contract will be 4 weeks from signing of the contract.
The undertaking of this report will be a financial burden for the Council and I request that your Department give consideration to recouping the cost involved.

Yours Sincerely,

Ray Owens
Town Clerk
19th January 2009

(3)

An Roinn Cumarsáide,
Fuinnimh agus Acmhainni Nádúrtha
Baile Átha Cliath 2.

Department of Communications,
Energy and Natural Resources,
Dublin 2.

Ref: C17/3/53

21 January 2009.

Mr Ray Owens
Town Clerk
Fermoy Town Council
Town Hall
Fermoy
Co Cork

Dear Mr Owens,

I refer to your letter of 19 January 2009 outlining the current position in relation to the Council's efforts to engage in a firm to undertake an appraisal of the existing proposals and preliminary report on alternative proposals for Fermoy weir.

I note in particular the timeline for obtaining the evaluation required by the Council. To that end, the Department is prepared to facilitate the Council by providing a contribution of up to €7,000 or 50% of the cost of the report, whichever is the lesser.

As you will be aware there are very real time constraints surrounding this issue and I would urge you to adhere closely to the programme outlined in your letter. I would be grateful if you would keep me advised on the status of this exercise in order that the Minister of State can be kept fully informed of progress.

Yours sincerely

Frank Sheridan
Principal
Inland Fisheries Division

29-31 Adelaide Road, Dublin 2 Telephone:+ 353 1 6782000 Email: @ www.dcenr.gov.ie

(4)

COMHAIRLE BAILE MHAÍNISTÍR FHEAR MAÍ

FERMOY TOWN COUNCIL

Mr Frank Sheridan
Inland Fisheries Division
Department of Communications, [illegible] Resources
29-31 Adelaide Road
Dublin 2

Town Hall,
Fermoy, Co. Cork
Tel: 025-31155 / 31201
Fax: 025-82970
e-mail:
fermoytowncouncil@eircom.net

Your Ref: C17/3/53

Re: Fermoy Weir

Dear Mr Sheridan,

I refer to yours of 21st January on the above.

The Council welcomes the Departments offer to part fund the study being undertaken by the Council, however the amount offered is unrealistic in the context of the tenders received the lowest of which amounts to €37,600 and this may not necessarily be the accepted tender as they need to be examined by the County Engineer. I am requesting therefore that you reconsider the offer of funding to a level of say 50% of which ever tender is accepted
The Council are acutely aware of the time constraints involved and are moving to appoint the successful tender as quickly as possible.

Yours Sincerely,

Ray Owens
Town Clerk
19th January 2009

An Roinn Cumarsáide,
Fuinnimh agus Acmhainní Nádúrtha
Baile Átha Cliath 2.

Department of Communications,
Energy and Natural Resources,
Dublin 2.

(5)

Ref: C17/3/53

22 January 2009.

Mr Ray Owens
Town Clerk
Fermoy Town Council
Town Hall
Fermoy
Co Cork

Dear Mr Owens,

I refer to your letter dated 19 January 2009 (sic) received by fax today 22 January 2009, advising of the value of the lowest bid received on foot of the tender competition initiated by the Town Council.

Not having seen the specific terms of reference, we are the loss to understand how the cost is so significantly above our expectations.

It may be necessary to negotiate with the tenderer to ensure that they appreciate the undertaking by the Department that its engineering advisors will facilitate this exercise by making all information available that informed the design of the fish pass, including computer modeling. Given that the Council already has hydrographic survey information available, the exercise is largely a desktop one supported by a site visit.

In any event, given the serious financial constraints applying to the Department's vote for 2009, I regret the Department is not in a position to extend the facility offered to the Council beyond providing a contribution of up to €7,000 towards the cost of the report.

Yours sincerely

Frank Sheridan
Principal
Inland Fisheries Division

29-31 Adelaide Road, Dublin 2 Telephone:+ 353 1 6782000 Email: @ www.dcenr.gov.ie

An Roinn Cumarsáide,
Fuinnimh agus Acmhainni Nádúrtha
Baile Átha Cliath 2.

Department of Communications,
Energy and Natural Resources,
Dublin 2.

6

5 February 2009

Mr Ray Owens,
Town Clerk,
Fermoy Town Council,
Fermoy,
Co. Cork.

Re: Installation of a fish pass at Fermoy Weir

Dear Mr Owens,

Further to your recent telephone conversation with Deirdre deBrún of this office, I would thank you for forwarding the tender documents, which we have considered carefully especially in view of the request for funding from this Department for the project.

In the circumstances you will appreciate that the Department has responsibilities it must discharge in compliance with public financial procedures and also obligations to comply with the requirements of the Comptroller and Auditor General's Office. In addition, given the current financial constraints, you will be aware of the level of scrutiny attaching to the funding of consultancy projects. In the current economic climate, my understanding is that only expenditure that is absolutely necessary and is clearly justified by reference to the objective to be achieved will be supported.

In this context it is important to recognise that the State has already invested substantial resources in assessing the impact of the weir and developing the proposed fish pass as well as the extensive consultations with the Rowing Club and the Town Council.

The Minister's agreement with Fermoy Town Council obtaining independent advice to evaluate the current proposal and to identify any alternatives designed to achieve the agreed objectives is also a critical element to be considered when making our submission for support for this expenditure.

In terms of justifying the proposed expenditure, it is also important to consider that all the information necessary to evaluate the current proposal is already readily available for examination.

It should also be borne in mind that the Attorney General has advised that the weir is not a protected structure under the Planning and Development Acts 2000-2006, nor is it a monument under the National Monuments Acts 1930-2004.

29-31 Adelaide Road, Dublin 2
29-31 Bóthar Adelaide
Telephone: + 353 1 6732000
Email: @ www.dcenr.gov.ie

In view of the foregoing, you will appreciate our difficulty with certain elements of the proposed consultancy project, especially in terms of seeking approval for expenditure.

At the outset, it must be observed that the tender document contains a wide array of tasks to be undertaken by the consultant, which the Department had not anticipated would be necessary to complete the type of project discussed with the Minister in December last.

Our observations in relation to the individual elements of the proposed tender are as follows:

(1) Examination of current proposals. This is within the terms of the agreement with the Minister.
(2) Development of alternative proposals. This is within the terms of the agreement with the Minister and can therefore be justified in the event that the original proposals are found to be lacking, provided the alternative achieves all the agreed objectives.
(3) Environmental assessment. Such as assessment is not considered necessary nor is it a legal requirement under the European Communities (Environmental Impact Assessment) Regulations 1989 to 1999. Therefore it would be difficult to support expenditure under this heading since it does not appear to be necessary to fulfil the objectives of (1) and (2).
(4) Heritage and Conservation Assessment. The weir is not a protected structure nor is it a monument. The proposed installation of the fish pass affects only part of the weir. In these circumstances that we cannot support expenditure under this heading since it does not appear to be necessary to fulfil the objectives of (1) and (2).
(5) Ecological assessment. Our comments at (3) also apply here. It is our view that such an assessment should be undertaken by fisheries boards' scientists in consultation with the National Parks and Wildlife Service when the detailed construction proposals are available.
(6) Archaeological assessment. Our comments at (4) also apply to this element.
(7) Consultation with a range of bodies. Widespread consultations have already been held. There is no reason to suppose that views have changed since the various groups met the Minister in December or would influence a technical assessment from an engineering perspective of the proposed fish pass. We would have difficulty in demonstrating the necessity of providing funding for undertaking a further public consultation process.
(8) Insofar as the hydrological assessment included at paragraph 3.3 of the proposal, including an assessment of flooding implications, I should explain that the current design was developed in consultation with and to the satisfaction of OPW so that it would not impact on the flood relief programme and appropriate details can be provided to the consultant.
(9) Any other duties deemed necessary by the Council to be undertaken by the consultant would have to be funded by the Council.

It is considered that the optimum way to proceed is on a phased basis. In the first phase the consultant should complete the examination of the existing proposals, element (1) above. Then, and only if necessary, the consultant should proceed with the development of alternatives, element (2) above.

In the event that the Department's offer of part funding for the project is accepted, draft reports produced by the consultant should be copied to the Department so that the Department is kept fully informed of the progress of the consultancy. This is also necessary to comply with the requirements of the Department of Finance and C&AG's Office. We consider that a phased approach represents the best opportunity to secure approval for the Department to part-fund the project.

When the consultant's final report is available, we believe the Fermoy Town Council executives should meet with the Department to consider the report before it is put into the public domain as proposed at paragraph 3.6 of the tender proposal, to ensure that all fish passage issues are adequately addressed in any new proposal that may emerge from the consultancy.

Our offer of 22 January 2009 to contribute to the cost of the project still stands. If you succeed in negotiating a phased approach to the work and a reduction in the extent of the project there is a real prospect that you could significantly reduce the cost of the exercise to an affordable level.

Yours sincerely,

Frank Sheridan,
Principal,
Inland Fisheries Division.

An Roinn Cumarsáide,
Fuinnimh agus Acmhainni Nádúrtha
Baile Átha Cliath 2.

Department of Communications,
Energy and Natural Resources,
Dublin 2.

(7)

9 February 2009

Mr Ray Owens,
Town Clerk,
Fermoy Town Council,
Fermoy,
Co. Cork.

Re: Installation of a fish pass at Fermoy Weir

Dear Mr Owens,

I refer to previous correspondence concerning the above.

Thank you again for forwarding the tender documents, which we have considered most carefully especially in view of the Department's offer to provide a €7,000 contribution towards the cost of the project.

In so far as the submission from the White, Young and Green Group (WYG) is concerned we are aware that one of their team, namely, Dr Martin O'Farrell, is conflicted in an objective sense.

If this study is to be considered independent it is important that it is carried out by professionals and experts with no prior association with the case of either the Fermoy or Clondulane weirs. Dr O'Farrell has advised the Rowing Club in relation to the Fermoy weir and is also an advisor to the Lismore Estates concerning the Clondulane weir.

In these circumstances, WYG Ireland Ltd. should be advised to nominate an equivalent expert to replace Dr O'Farrell if that part of the tender proposal for which he would have responsibility should proceed. In this regard I refer to Mr Sheridan's letter of 5 February which addresses the Department's concerns about the scope of the tender.

Yours sincerely,

Deirdre de Brún

Deirdre de Brún,
Inland Fisheries Division.

COMHAIRLE BAILE MHAÍNISTÍR FHEAR MAÍ

FERMOY TOWN COUNCIL

(8)

Mr. Frank Sheridan,
Principal,
Inland Fisheries Division,
Department of Communication,
Energy & Natural Resources,
Dublin 2.

Town Hall,
Fermoy, Co. Cork
Tel: 025-31155 / 31201
Fax: 025-82970
e-mail:
fermoytowncouncil@eircom.net

Re: Installation of a Fish Pass at Fermoy Weir.

Dear Mr. Sheridan,

I refer to your letter of 5 February on the above. I confirm that the contents are being considered by the Council and a reply will issue as quickly as possible.

On the matter of the status of the weir as a National Monument, I enclose a copy of a letter received from the Department of the Environment, Heritage and Local Government setting out their view of the status of the Weir and I would be obliged for your observations thereon. It would also be helpful if you could let me have a copy of the Attorney General's advice on the status of the Weir as a Protected Structure and National Monument.

Please note that the Draft Town Development Plan 2010-2016 identifies the weir separately as a proposed Protected Structure so that the constraints that apply to a Protected Structure in the current will also apply to the Weir as a proposed Protected Structure.

Yours sincerely,

Ray Owens
Town Clerk

Thursday, 12 February 2009

Comhshaol, Oidhreacht agus Rialtas Áitiúil
Environment, Heritage and Local Government

9 February 2009

Our Ref: G2009/18

Mr Ray Owens,
Town Clerk,
Fermoy Town Council
Town Hall,
Fermoy,
Co. Cork.

Re: Proposed impact to the historic weir at Fermoy, Co. Cork due to its impediment to the passage of fish, in contravention of the Habitats Directive of the EU Commission

A Chara,

We refer to the above proposed development. This involves the lowering, by Fermoy Town Council, of the fishweir at Fermoy. This appears to follow a directive in July 2006 under the Fisheries (Consolidation) Act 1959 by the Minister for Agriculture to lower or remove weirs nationally. Outlined below are the underwater archaeological recommendations of the Department of the Environment, Heritage and Local Government.

Fishweirs have a long usage history in Ireland's rivers, which can date from the early medieval period right up to modern times. Their usage, to control both the direction of water and the fish within the water course, was important locally from a socio-economic point of view but equally so was the control of the weir use itself by landowners or landlords, with many having a politico-economic basis. Such control was often of strategic importance, with the command of watercourses being integral to the control of trade, transport and communication using the same watercourse. Such features therefore have the potential to be strategically located and have thus an important historical usage pattern and the potential to provide key archaeological information on its own and associated site formation.

The weir at Fermoy is directly associated with Fermoy Mill. This is a recorded Monument: RMP CO035-025 *Mill,* which is subject to statutory protection under section 12 of the National Monuments Amendment Act 1994. The weir is located in close proximity to another recorded monument – that of Fermoy Bridge: RMP CO035-073 *Bridge,* which is also subject to statutory protection under section 12 of the National Monuments Amendment Act 1994. With its location close to both protected monuments, the weir at Fermoy falls within the constraints area for the zone of archaeological protection for both monuments and shall thus be considered as lying within its own area of archaeological potential.

It shall be noted that under section 12 of the National Monuments Amendment Act 1994, it is a requirement to give two months written notice to the Minister for the Environment, Heritage and Local Government before commencing any work at or near a Recorded Monument.

It has also been brought to our attention that the bridge in Fermoy is in the ownership of the Local Authority. There is the potential therefore that this could be regarded as a National Monument. Under section 14 of the National Monuments Act 1930 as amended by section 5 of the National Monuments (Amendment) Act 2004, it is a requirement that any works to or near a National Monument, being a monument in State ownership or guardianship or that is subject to a Preservation Order, requires the consent of the Minister for the

Environment, Heritage and Local Government. The prior written consent of the Minister is required for any works at or in proximity to such a monument.

It is our recommendation that all proposed works for the reduction of the fish weir at Fermoy to go through due process. As statutory consultees, the National Monuments Service of the Department of Environment, Heritage and Local Government shall be given due notification of the proposed works so that an informed decision can be made in regard to the proposed impact on the weir and potential underwater archaeology in the immediate area. This is a requirement, as previously stated, under section 12 of the National Monument Amendment Act 1994.
The Council to engage the services of a suitably qualified archaeologist to carry out an assessment of the proposed works. This to include the following: a detailed desktop study, a field survey of the associated recorded monuments and an assessment of Fermoy weir (either as a wade survey or underwater archaeological dive survey).
The wade and/or dive survey to be accompanied by a hand-held metal detection survey.
All wade and/or dive and metal detection surveys shall be licensed to this Department under sections 2 and 3 of the National Monuments Amendment Act 1987 and the licence applications shall be accompanied by a detailed method statement.
The archaeologist shall advise their client as to whether consent is required under section 5 of the 2004 National Monuments Amendment Act.
The archaeologist shall compile a comprehensive Archaeological Assessment Report to be submitted to this Department for consideration in advance any works taking place.
The Assessment Report shall contain a detailed Impact Statement outlining the proposed impacts of the works and shall put forward relevant recommendations to mitigate for any impacts to known or potential archaeology.

Reason: To ensure the continued preservation (either *in situ* or by record) of places, caves, sites, features or other objects of archaeological interest.

In addition we would be grateful if all documentation regarding this proposed development could be forwarded to the address below as other sections in the Department may wish to comment on the proposed development.

The Manager
Development Applications Unit,
Department of the Environment, Heritage and Local Government,
Dún Scéine,
Harcourt Lane,
Dublin 2.

Mise le meas

Teresa Halloran

Teresa Halloran,
Development Applications

An Roinn Cumarsáide,
Fuinnimh agus Acmhainni Nádúrtha
Baile Átha Cliath 2.

Department of Communications,
Energy and Natural Resources,
Dublin 2.

(9)

Ref: C17/3/53
12 March 2009

Mr Ray Owens,
Town Clerk,
Fermoy Town Council,
Town Hall,
Fermoy,
Co. Cork.

Re: Installation of a fish pass at Fermoy Weir

Dear Mr Owens

I refer to your recent letter and enclosure from the Department of Environment, Heritage and Local Government (DEHLG) and wish to offer the following observations as requested.

In relation to the proximity of the weir to both of the protected monuments, the letter states that as it "falls within the constraints area for the zone of archaeological protection for both monuments and shall thus be considered as lying within its own area of archaeological potential". It is noted that there are no legislative basis for a structure to have "its own area of archaeological potential". Our understanding is therefore that the DEHLG requirements for a variety of studies to be undertaken without any legal basis that this Department is aware of.

It is also noted that as the Town Council's Draft Development Plan 2010-2016 identifies the weir as a proposed protected structure that the constraints that apply to a protected structure will also apply to the weir as a proposed protected structure. We would be grateful for information as to the basis on which the weir in Fermoy has been designated a proposed protected structure. We are aware that the DEHLG architectural heritage protection guidelines for Planning Authorities provide that a proposed protected structure must fall under at least one of a number of headings. I would be grateful if you could advise which heading(s) the weir is to be protected and the information warranting the designation of the weir as a proposed protected structure.

Notwithstanding the foregoing, the Planning and Development Acts 2000 – 2006 provide for specific provisions in relation to Local Authorities own development. In particular the Council may act under section 179(6) without having to go through any of the procedures set out in Part XI of the Act. Moreover, the fact that the weir is a proposed protected structure does not preclude the carrying out of works at the weir. For example, where the installation of fish passes by the Regional Fisheries Board is exempted development under the planning legislation, the new status of the weir merely requires an application to the Council for an appropriate declaration under section 52 of the Planning and Development Acts 2000-2006 that the proposed works do not materially affect the character of the structure.

You might advise, in those circumstances whether on the basis of the original decision to designate the structure, the Town Council would consider that the proposed fish pass would materially affect the character of the structure.

I regret that the Department is unable to accede to your request for a copy of the Attorney General's advice on the status of the weirs on the basis that it is not Departmental policy to furnish such legal advice to third parties. I understand the advice was, however, provided to DEHLG legal advisers recently.

Finally, I note from media reports the Town Council's decision to proceed with the engagement of White, Young and Green to evaluate the proposals and any alternatives at a cost of €23,750 to which this Department's contribution of €7,000 is acknowledged. I would refer you to my letter of 5 February 2009 and look forward to receiving details of the final agreed terms of reference, reporting programme timetable etc by return.

Yours sincerely,

Frank Sheridan,
Principal,
Inland Fisheries Division.

(10)

An Roinn Cumarsáide,
Fuinnimh agus Acmhainni Nádúrtha
Baile Átha Cliath 2.

Department of Communications,
Energy and Natural Resources,
Dublin 2.

Ref: C17/3/53

Sent Registered post 28/4/09

28 April 2009

Mr Ray Owens,
Town Clerk,
Fermoy Town Council,
Town Hall,
Fermoy,
Co. Cork.

Re: Installation of a fish pass at Fermoy Weir

Dear Mr Owens

I refer to my previous correspondence in relation to the above matter and in particular the Department's comments on the proposed tender documents and observations on the correspondence from the Department of the Environment, Heritage and Local Government dated the 5 February and 12 March respectively.

The Department is aware, through media reports and its fisheries and engineering advisors, that the Council has engaged the consultants White, Young and Green to evaluate the existing fish pass proposal. As you are aware the Department's financial contribution towards the cost of the consultancy is conditional on, among other things, the submission of copies of the draft reports so that the Department is kept fully informed of the progress of the consultancy. In this regard it is imperative that a copy of the revised terms of reference together with a copy of any draft reports, reporting programme and timetable for completion of the consultancy is submitted to the Department by return.

It would also be appreciated if a response to the queries raised in relation to the designation of the weir as a proposed protected structure under the Town Council Draft Development Plan 2010-2016 along with a copy of the plan could also be forwarded to the Department as previously requested.

Yours sincerely,

Frank Sheridan,
Inland Fisheries Division.

COMHAIRLE BAILE MHAÍNISTÍR FHEAR MAÍ

FERMOY TOWN COUNCIL

Deirdre de Brūn
Department of Communications
Energy & Natural Resources
29-31 Adelaide Road
Dublin 2.

Town Hall,
Fermoy, Co. Cork
Tel: 025-31155 / 31201
Fax: 025-82970
e-mail:
fermoytowncouncil@eircom.net

Re: Consultants Report on Fermoy Weir

Dear Ms de Brūn, ✓ D de Brún 25/5/09.

Enclosed please find report commissioned by the Council from White Young Green on the proposals for Fermoy Weir.

Yours sincerely,

Ray Owens
Town Clerk
22nd May, 2009.

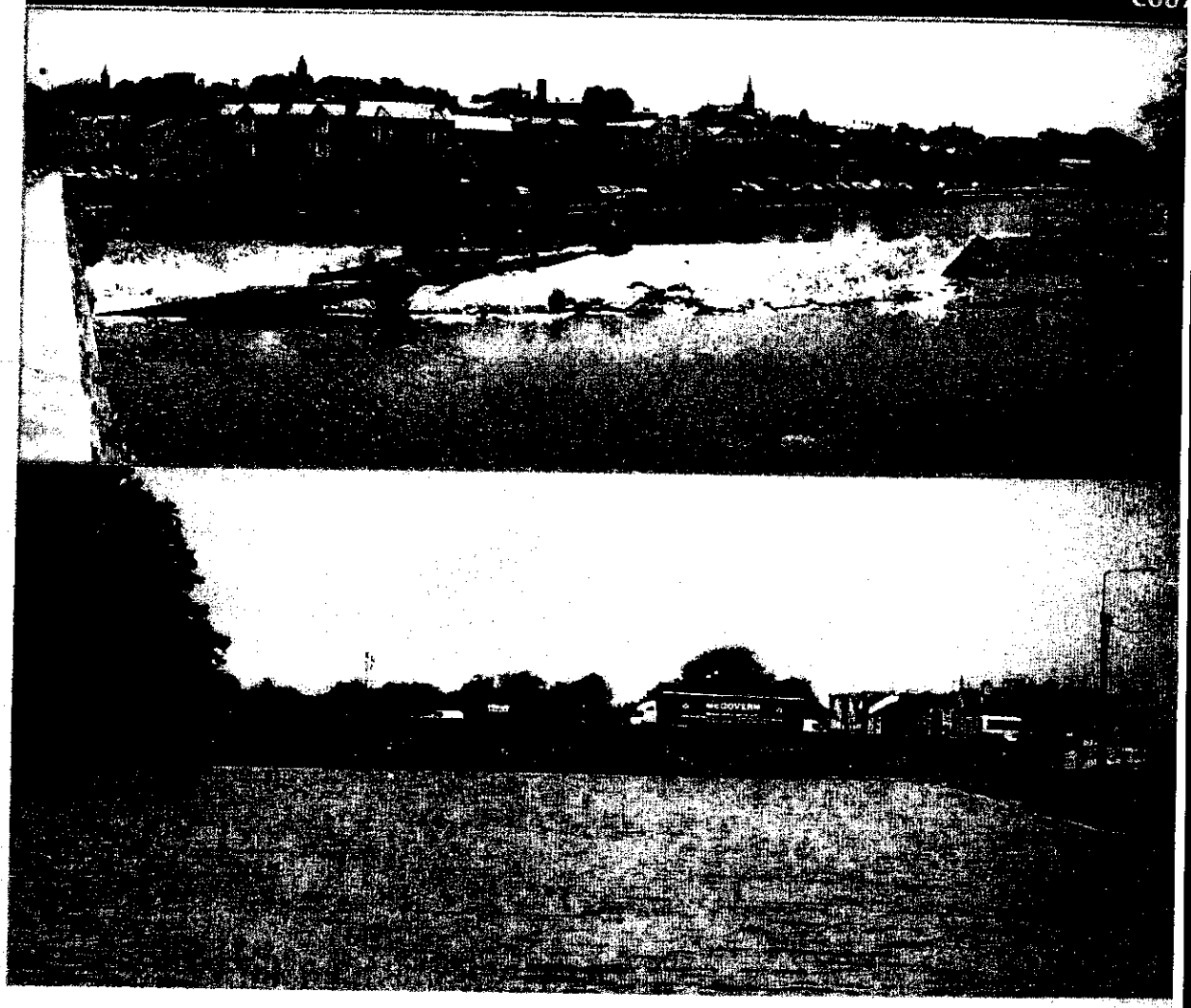
WYG Ireland

Part of the WYG group

Fermoy Town Council
Alterations to Fermoy Weir
Technical Assessment Report

May 2009

C007



creative minds safe hands

Technical Assessment Report

DOCUMENT CONTROL

Document:	Technical Assessment Report
Client:	Fermoy Town Council
Project Name:	Alterations to Fermoy Weir
Project Number:	C007446
File Origin:	G:\C00\C007446\P-03 Execution\02 WA\01 Reports\Weir Report_2009 05 16.doc
WYG Office:	WYG Engineering (Ireland) Limited, Unit 2 University Technology Centre, Curraheen Road, Cork Tel.: +353 (0)21 493 3200 Fax.: +353 (0)21 493 3250

Issue No.	Date	Prepared by:	Checked by:	Approved by:
1	15-05-2009	R. O'Shea / A. Cronin	A. Cronin / K. Thornton	K. Thornton

Technical Assessment Report

Table of Contents

List of Appendices

List of Figures

Technical Assessment Report

1.0 INTRODUCTION

1.1 BACKGROUND

Fermoy is located on the River Blackwater in County Cork. See Figure 1 in Appendix A. The River Blackwater flows through counties Kerry, Cork, and Waterford in Ireland. It rises in the Mullaghareirk Mountains in County Kerry and then flows in an easterly direction through Counties Cork and Waterford draining into the sea at Youghal Harbour. The river is 168 kilometres long. The river catchment to Fermoy is shown in Figure 2 in Appendix A. A layout of the River Blackwater upstream of Fermoy is shown in Figure 3 in Appendix A.

The Blackwater catchment is designated as a Special Area of Conservation as defined by the European Commission Habitats Directive (92/43/EEC) and is considered to be important on a European as well as Irish level. The river is important for the presence of several Habitats Directive Annex II animal species, including Sea Lamprey (*Petromyzon marinus*), Brook Lamprey (*Lampetra planeri*), River Lamprey (*L. fluviatilis*), Twaite Shad (*Alosa fallax fallax*), Freshwater Pearl-mussel (*Margaritifera margaritifera*), Otter (*Lutra lutra*), White-clawed Crayfish (*Austropotamobius pallipes*) and Salmon (*Salmo salar*).

The River Blackwater is known for being one of the best salmon fishing rivers in the country, though salmon stocks are reported to have declined sharply in recent years. This is considered to be due to oceanic change, interceptory fisheries, pollution, habitat degradation as well as barriers to passage. Other species found in the river include Sea Trout, Sea and River Lamprey, Allis Shad and Common Eels. The Blackwater is also designated as a salmonid river under the First Schedule of the EC (Quality of Salmonid Waters) Regulations, 1988.

The Department of Communications, Marine and Natural Resources (DCMNR) (responsibility has since moved to the Department of Agriculture, Food and Fisheries - DAFF) directed Fermoy Town Council in July 2006 to carry out alterations to the weir on the Blackwater in Fermoy following a complaint to the EU Commission claiming that the weir was acting as a barrier to migrating salmon and lamprey. A report was prepared by Mr. John O'Keefe of DAFF to assess the extent of the impact of the weir on fish migration and to develop proposals for the removal or alteration of the weir. According to this Report, the weir is causing the following impacts:

- The weir delays the free and uninterrupted migration of salmon and constitutes an effective barrier to the passage of lampreys and allis shad;
- The weir exposes the upstream migration of the common eel to predation risk;
- Weir impoundments, in general, have caused a decrease in fish potential productivity for many kilometres upstream;

- Weir impoundments, in general, have caused a reduction in juvenile and adult trout numbers due to the scarcity of food supply arising from the productive shallows again being inundated by the impoundment.

There has been significant public opposition to the alterations to the weir proposed in the Report with claims that the works will diminish the amenity value of the river for activities such as rowing and angling.

1.2 PROJECT BRIEF

WYG Engineering (Ireland) Ltd. (WYG) was appointed in March 2009 by Fermoy Town Council to:

- Examine the existing proposals for the construction of a rock ramp type fish pass;
- Develop alternative proposals;
- Consult with third parties;
- Prepare a Technical Assessment Report.

Adam Cronin of Cronin Millar Consulting Engineers was appointed by WYG as sub-consultant to provide engineering services with respect to fish passes, weirs and river hydrology.

1.3 DATA COLLECTION AND CONSULTATION

The information obtained by WYG in relation to the project is listed in Appendix B.

Meetings were held with the following interested parties in relation to the weir:

- Fermoy Rowing Club;
- Fermoy Town and District Anglers Club;
- Fermoy Game Anglers Club;
- Fermoy Coarse Angling Club;
- Ken McCarthy, owner of the Fermoy Mill;
- Fermoy Town Council Councillors;
- Cork County Council Councillors;
- Engineering Division of Department of Agriculture, Fisheries and Food (DAFF).

Other parties consulted as part of the study were:

- Southern Fisheries Board;
- Office of Public Works (Drainage Section);
- Office of Public Works (Hydrometric Section);
- TJ O'Connor & Co. Ltd., Consulting Engineers for Fermoy Flood Relief Scheme.

2.0 EXISTING WEIR AND FISH PASS

2.1 INFRASTRUCTURE

The existing weir on the River Blackwater in Fermoy is 202 m in length and its layout is shown in Figure 4 in Appendix A. It lies diagonally across the river and approximately 100 m is located upstream of the Road bridge. It is on average 2.5 m in height however, the weir crest level varies significantly between 21.1 mOD and 21.6 mOD, based on the survey carried out by Hydrographic Surveys Ltd. on behalf of Cork County Council. It is constructed of masonry with a concrete skin. It impounds water for a distance of approximately 3.5 km upstream. The weir has been repaired at a number of locations along its length in the past and is in poor condition overall. The weir is shown in plates 1 and 2 below.

Plate 1 – Weir Downstream of Fermoy Bridge

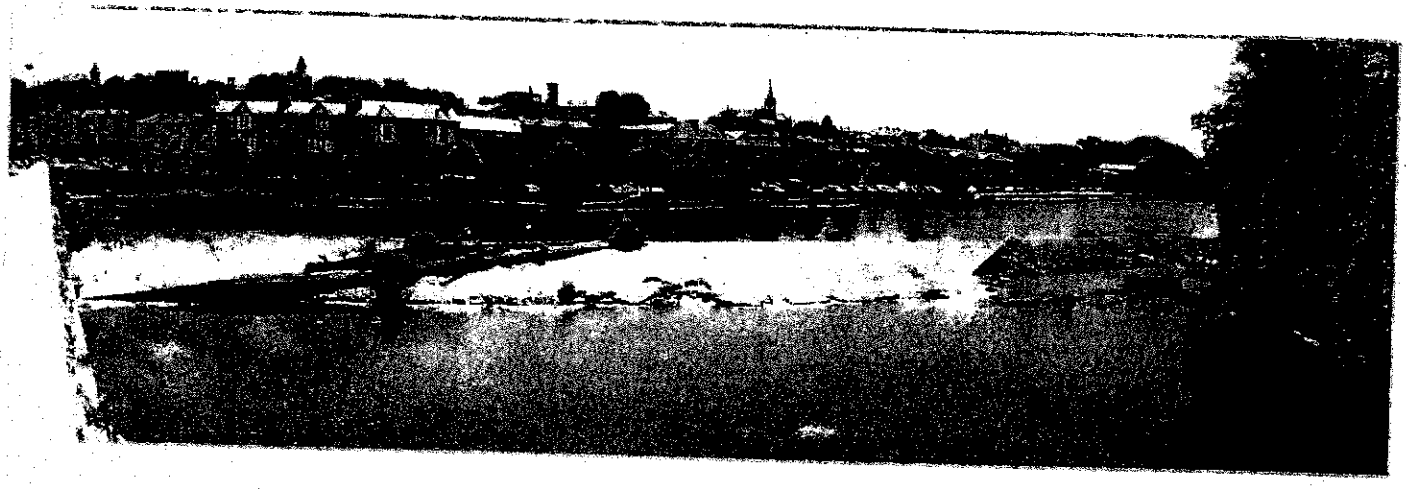
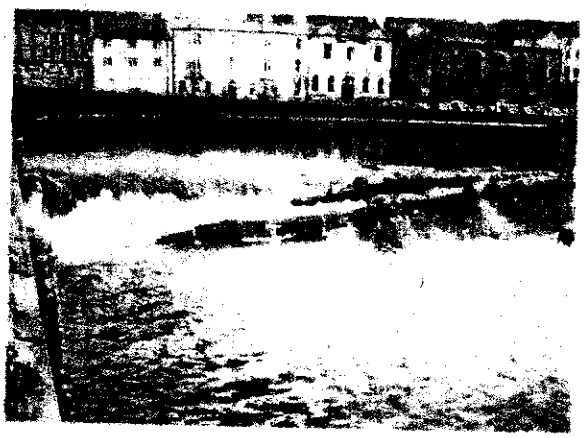


Plate 2 – Weir Upstream of Fermoy Bridge

There are two fish passes located in the upper section of the weir. Their locations are shown in Figure 4 in Appendix A.

The first structure which is located immediately upstream of the road bridge is a pool and traverse wall type structure, which is positioned diagonally from the main weir and consists of 6 pools. It is shown in plates 3 and 4 below. The cill level of the fish pass exit (upstream) is 21.0 mOD.



Plates 3 & 4 – Pool and Traverse Wall Fish Pass

The second fish pass structure is a groyne type pass which is located equidistant between the pool pass and the left hand river bank. This pass is sited on top of the main weir structure and its cill level is the same as the main weir. It is shown in Plate 5 below.

Plate 5 – Groyne Fish Pass

2.2 FISHERY ASPECTS

The existing weir structure presents a significant obstacle to fish species migrating upstream. The main weir structure (not including the existing fish passes) is largely impassable for all species for most flow conditions, due to its steep gradient, height and flow velocity. The weir spills at a number of locations along its length which results in confusion for fish as a dominant attractive flow at the fish pass location is not distinct. The lower section of the weir crest, which is located downstream of the bridge has increased discharge due to its lower level. This increased discharged acts as an attraction for fish, but the area is devoid of any pass, thus causing confusion and hindering the passage of fish.

It has been reported in the DAFF Report by John O'Keeffe, that many fish are held up at the weir and this was demonstrated in the November 2003 run, where the weir structure caused obvious hindrance to fish passage.

The pool and traverse wall fish pass, which is located immediately upstream of the road bridge contains six pools and the sidewall acts as a groyne type pass. The pool pass is in poor condition and is poorly designed. While the pass facilitates some fish passage when the flow conditions are suitable, it presents significant difficulties for the fish at other times. The orientation of the pass should preferably be perpendicular to the weir, to prevent fish being washed over the side of the pool walls. The pass is not located in the primary dominant flow area, making it difficult for fish to find the pass.

The groyne type pass which is located approximately 30m from the left hand river bank is not an ideal type of pass and is located away from the dominant flow. It is probable that some species can migrate through this pass but only during ideal flow conditions.

2.3 LEGISLATION

2.3.1 Fisheries Act 1959

The 1959 Fisheries (Consolidation) Act, Section 117 states that a redundant weir should be removed if it "directly or indirectly obstructs or contributes to the obstruction of the free passage and migration of fish or affords facilities for the unlawful destruction of fish" and if it "has been abandoned or disused for not less than five years or has not during that period effectively been used for the purpose for which it was constructed".

The existing weir acts as a physical barrier obstructing the migration of fish. The two fish passes located in the upper section of the weir are inadequate to allow for the migration of salmon and other species.

The Fermoy Weir was initially constructed to water power a corn mill. Although water still feed the headrace, it has not been used for power generation for many years and appears to be used only for amenity purposes.

Under the legislation described above the weir should be made redundant as it hinders the migration of fish and it is no longer used for its original purpose of milling. To comply fully with this legislation and allow the free and uninterrupted passage of all migratory fish, the weir should be completely removed.

2.3.2 Habitats Regulations (S.I. No. 94/1997) / EU Habitats Directive

The River Blackwater is a Special Area of Conservation (SAC). Under Article 6(3) of the Habitats Directive, implemented into national law under Regulation 31 of the Habitats Regulations SI 94/1997, any development which impacts directly on an SAC requires an Appropriate Assessment (AA) to be carried out. An AA is required to assess whether a proposed development will have any adverse effects on the integrity of SAC site and the qualifying interests for which the site has been designated as an SAC. The AA procedure is independent of the EC (Environmental Impact Assessment) Regulations 1989 to 1999. It is considered that the removal of the weir or any significant change to river levels or flows resulting from alterations to the weir would have an impact on the SAC.

2.4 HYDROLOGY

2.4.1 Hydrological Data

The hydrological flow data for the Blackwater was sourced from the OPW hydrometric gauging stations sited at various locations along the Blackwater and its tributaries as well as the Environmental Protection Agencies (EPA) Register of hydrometric stations. The gauging stations are shown on Figure 2 in Appendix A and listed in Table 2.1 below.

Table 2.1 – Gauging Stations

Station Name	Station No.	River	NGR	Period of Recording
Killavullen	18003	Blackwater	W 647 997	1955 to 2005
Ballynamona	18004	Awbeg	R 656 075	1972 to 2005
Ballyduff	18002	Blackwater	W 964 991	1955 to 2005
Downing Bridge	18005	Funshion	R 823 018	1972 to 2005

The Killavullen station is located on the Blackwater upstream of Fermoy town and the Ballymona station is located on the Awbeg, which joins the Blackwater before it reaches Fermoy. The Ballyduff station is located downstream from Fermoy and the Downing Bridge station is located on the Funshion. The Araglin River also feeds into the Blackwater downstream of Fermoy, but upstream of the Ballyduff station.

The river flows at Fermoy were estimated a number of ways based on the records and analysis of the flow data from the stations above, including estimation of flow data for the Araglin River. The various estimates of flow are shown in Table 2.2 below.

Table 2.2 – Flow Estimates from OPW and EPA

Agency	Dry Weather Flow (DWF)	95 Percentile Flow	Annual Average Daily Flow (AADF)
OPW (Addition of U/S Stations)	n/a	6.58 m^3/sec.	41.21 m^3/sec.
OPW (Ballyduff Station – subtraction of flow from Fermoy to Ballyduff)	n/a	7.76 m^3/sec.	46.10 m^3/sec.
EPA (Addition of U/S Stations)	2.82 m^3/sec.	6.0 m^3/sec.	n/a
EPA (Ballyduff Station – subtraction of flow from Fermoy to Ballyduff)	3.7 m^3/sec.	7.32 m^3/sec.	n/a

Due to the variation in the figures, the lower value for the 95 percentile flow, which is considered to be very conservative, was used. The average value for the AADF was used. The flow data used for the analysis of the scheme proposals is as follows:

DWF (Lowest Flow)	95 Percentile Flow	AADF
2.82 m^3/sec.	6.0 m^3/sec.	43.65 m^3/sec.

In comparison, the flow data used by DAFF in the Report by John O'Keeffe, was as follows:

DWF (Lowest Flow)	95 Percentile Flow	AADF
2.7 m^3/sec.	5.6 m^3/sec.	47.4 m^3/sec.

2.4.2 Hydrological Impacts of Existing Weir & Fish passes

The existing weir and fish passes alter the natural hydrological conditions of the river both upstream and downstream of the weir.

Impoundment

The weir, which was originally designed to impound water for the purposes of driving a mill via the headrace located at the downstream end of the weir, continues to impound water upstream. The estimated length of impoundment is 3,700m upstream of the existing weir.

Concentrated Flow

The pool type fish pass, which has the lowest cill level along the weir, concentrates flow during periods of low flow, thus making it the most dominant attraction for migrating fish at these times. The uneven crest level of the main weir results in localised concentrated/attractive flow, depending on flow conditions.

Upstream Water Level

The impoundment of the river, as detailed above, results in varying upstream water levels, depending on flow conditions.

The water level upstream of the weir was calculated for the Annual Average daily Flow (AADF) and the 95 percentile flow. While the river flow can drop below the 95 percentile flow, this would only occur during rare drought events. The 95 percentile flow is the flow that is exceeded for 95% of the time, on average and represents a realistic low flow figure.

The formula used to estimate flow over the weir is the Broad Crested Weir Discharge Formula, as shown below.

Weir Discharge Formula

Discharge Formula for Broad Crested Weir $Q = CLH^{1.5}$

Where: Q = Discharge (m^3/sec.)
C = Discharge Coefficient
L = Weir Crest Length (m)
H = Head of Water over Weir

The Discharge Coefficient "C" varies depending on upstream head level, width of weir, shape of the weir, etc. The value of "C" in this case could vary between 1.5 & 1.85. (Range determined from review of hydraulic design literature). In this case, a value of 1.6 is used as a Discharge Coefficient (C).

The crest level of the existing weir varies from 21.1mOD to 21.6mOD over its length (see Figure 4 in Appendix A). The estimated mean value for the crest level of the weir is 21.34m OD. This is based on the mean of the adopted average levels along four sections of the weir and the fish pass as set out below and as shown in Figure 5 in Appendix A.

Existing Weir Crest Levels

Section 1 (Mean Level):	21.25m OD	50m long
Section 2 (Mean Level):	21.4m OD	50m long
Section 3 (Mean Level):	21.3m OD	40m long
Section 4 (Mean Level):	21.4m OD	60m long
Fish pass:	Cill 21.0m OD	2m wide

Average Weir Crest Level: 21.34m OD

Based on the average weir crest levels shown above, the head of water (upstream water level) over the weir is calculated below.

Existing Weir Discharge/Head Results

95 Percentile Flow

Q = 6.0 m^3/sec.

Upstream water level = 21.41mOD

H = 70mm (over average weir crest level)

AADF

Q = 43.65 m^3/sec.

Upstream water level = 21.60mOD

H = 263mm (over average weir crest level)

It should be noted that no account has been taken of the flows through or beneath the weir as the condition of the weir is not known. The effect of these flows on the results is very unlikely to be significant.

Water Velocities

Water velocities will vary over the length of the weir depending on the actual level of the weir. Velocities will be greater where the weir is lower. Water velocities are estimated to be in the range of 0.45m/s to 0.6m/s for 95%ile flows and in the range of 0.7m/s to 1.0m/s for AADF. These figures do not include the flows through the fish pass.

3.0 CURRENT PROPOSAL – INSTALLATION OF ROCK RAMP

3.1 DESCRIPTION

The scheme proposed by DAFF includes the following elements:

- Constructing a 30m wide Rock Ramp type fish pass upstream of the road bridge.
- Increasing the height of the remaining existing weir to 21.5mOD downstream of the bridge and retention of the weir crest level of 21.35mOD between the rock ramp pass and the upstream face of the bridge.
- Dredging of approach channel below the bridge.

The layout of the proposed rock ramp fish pass is shown in Figure 6 in Appendix A. The adopted average levels along the proposed weir are shown below.

Proposed Weir Crest and Rock Ramp Levels

Section 1:	21.5m OD	50m long
Section 2:	21.5m OD	50m long
Section 3:	21.35m OD	40m long
Section 4:	21.5m OD	10m long
Rock Ramp Main	21.11	27.5m long
Rock Ramp Gaps	20.91	2.5m long
Average Rock Ramp Cill Level:	21.09m OD	

3.2 IMPACT ON HYDROLOGY

Concentrated Flow

The primary impact on the hydrology will be to concentrate the flow through the proposed rock ramp fish pass during low flow events. This is one of the main purposes of the fish pass. The dredging of the approach channel downstream of the proposed pass will also concentrate the dominant flow and provide attraction to the pass for migrating fish.

Upstream Water Level

The impact on upstream waters levels caused by the installation of the proposed rock ramp for the 95 percentile and AADF flows is shown over.

Proposed Rock Ramp Discharge Calculations (Low Flow)

Discharge Formula for Broad Crested Weir $Q = CLH^{1.5}$

Where: Q = Discharge (m^3/sec.)

C = Discharge Coefficient (1.6 average for head range)

L = Weir Crest Length (m)

H = Head of Water over Weir

95 Percentile Flow

Q = 6.0 m^3/sec.

Upstream water level = 21.34mOD

H = 250mm (over average rock ramp cill level)

DAFF Results (stated)

Q = 5.6 m^3/sec.

Upstream water level = 21.29mOD

H = n/a

AADF

Q = 43.65 m^3/sec.

Upstream water level = 21.66mOD

H = 570mm (over average rock ramp cill level)

DAFF Results (stated)

Q = 47.4 m^3/sec.

Upstream water level = n/a

H = n/a

Based on these results and assuming low flow (95 percentile) conditions, the upstream water level is estimated to be 21.34m OD. This is the same level as the existing average weir crest level.

The installation of the rock ramp, at low flow conditions, is estimated to result in a decrease in the upstream water level immediately upstream of the weir of 70mm. DAFF estimated that the upstream water level would drop by 147mm (pro rata drop for 36.5m wide rock ramp vs. 30m wide rock ramp). As stated in section 2.4.1, a very conservative value for the 95%ile flow was adopted. It should be noted that higher figures for the 95%ile flow would give lower reductions in river level between the existing situation and rock ramp.

The discrepancies between DAFF's and our results can be attributed to a number of factors, such as assumed/estimated existing weir crest level, low flow discharge estimation for site and weir discharge coefficient variation.

A sensitivity analysis, using the upper, lower and intermediate values for "C" and the range of 95 percentile flow values for the site was carried out. The results, shown in Appendix C, demonstrate that the range of calculated values for H, using the different C and Q inputs is quite small.

Water Velocities

Water velocities will vary over the length of the weir depending on the actual level of the weir. Velocities will be greater where the weir is lower. Water velocities are estimated to be in the range of 0.75m/s to 1.05m/s (fish pass) for 95%ile flows (no flow over the weir) and in the range of 0.65m/s to 0.90m/s for the weir and 1.15m/s to 1.40m/s for the fish pass at AADF.

Impoundment

The weir and combined rock ramp fish pass will continue to impound the river upstream. While there will be a slight lowering of the upstream water level, this will have little if any impact on the extent of the impoundment.

3.3 IMPACT ON FISHERIES

The primary purpose of the rock ramp fish pass is to aid the safe passage upstream and downstream of migrating fish. This longitudinal connectivity is important in ensuring the continued survival of many of the species in question.

The pass as designed, in conjunction with the other recommended alterations (raising weir crest level, dredging etc.) will result in a major improvement in fish passage for the range of flow conditions that the relevant species are likely to move in.

The proposed rock ramp is located in the optimum position, which is as far upstream along the existing weir as possible. Fish will migrate to the dominant attractive flow and the location of the proposed rock ramp in conjunction with the lowering of the cill level (to ensure adequate water flow through the pass) will allow excellent attraction for the fish. The downstream entrance to the rock ramp is suitable for all the relevant species to enter. In addition, the flow velocities within the pass as well as at the exit point are sufficiently low to allow the safe migration of all the species without undue effort.

The length and slope of the proposed pass appear to be suitable and the construction material (natural stone and boulders) will provide increased roughness, erosion protection and suitable substrate for eel and elver passage.

The provision of the pass will significantly improve the passage of fish through the weir and thus prevent delays in the migration and injury of fish. This will result in fewer fish residing in the pools below the weir, which will have an obvious impact for anglers.

3.4 THIRD PARTY CONCERNS

Rowing Club

Based on our consultations with the rowing club and a review of various documentation prepared by and on behalf of the rowing club, their main concerns in relation to the proposed Rock Ramp are as follows:

- The reduced water depth caused by lowering of river upstream of bridge will result in shallow parts of the river becoming too shallow to row.
- The narrowing of river caused by water level drop.
- The turning areas will be impacted by reduction in water depth.
- There will be increased weed growth due to light penetration caused by lowering of water levels.
- The inability to use slipways due to lower water levels.
- The reduction in "run out" length at the finish of races caused by location of rock ramp exit (upstream) when compared to the existing weir location.
- The potential safety concerns regarding possible drawing of boats into rock ramp.

Results show that for 95 percentile flows, the water level immediately upstream of the weir will be 70mm lower than the existing 95 percentile water level. The majority of the time (95% of the time), the flows and water levels in the river will be higher and the water level drop will be negligible. The river levels along various sections of the river are shown in Figure 7 in Appendix A.

This drop in water level will not result in any significant impact to the rowing club activities. While the river is shallow at some locations and vegetative growth impacts on available river width, a drop of 70mm (at the weir) is negligible. This drop in water level will decrease further upstream and the estimated decrease in water level for key locations are as follows:

Location/Site	**Water Level Drop (Low Flow)**
Fermoy Weir	70mm
Fermoy Rowing Club	66mm
The Strand	46mm
Glenabo Stream	31mm
Castlehyde House	8mm

The "run-out" area after the finish line of races on the river extends approximately 100m. from the finish line to the upstream end of the weir. The "run-out area" will be reduced by a width of approximately 30m at the upstream end of the weir tapering to zero 40m farther downriver. The location of the partition wall of the weir may cause an obstacle to boats at the end of the weir.

Plate 6 – Fermoy Rowing Club Regatta

Fishing Clubs

Fishing clubs are concerned generally about reduction in water levels upstream of the weir and the possible impact on fishing tourism. The fishing clubs are generally supportive of any proposals to help fish migration on the river. As stated above, the impact on water levels will be generally insignificant.

Heritage Unit of Cork County Council

The Heritage Unit of Cork County Council expressed concern over any proposed alterations to the weir. They stated that the weir at Fermoy is a Proposed Protected Structure (Ref No. 02) in Fermoy's Draft Development Plan 2010-2016. A proposed protected structure has the same legal status as a protected structure until the final decision is made on its status. Under article 57(1) of

the Planning and Development Act, 2000, proposals which involve any type of alteration to the protected structure would be subject to a planning application.

Ken McCarthy, Fermoy Mill Owner

During the consultation with third parties, it was learned that the viability of a hydro-electric plant at the Fermoy Mill by the owner, Ken McCarthy was being considered. Concerns were expressed that if the level of the river was lowered, the potential for the implementation of this renewable energy technology would be lost. According to Mr. McCarthy, however, there are no plans for these works to progress in the near future. In addition, the drop in water level would have very little impact on the potential for hydroelectric power generation.

Local Authority

Both the Fermoy Town Council and Cork County Council expressed the same concerns as expressed by the other parties. They also expressed concerns that the new rock ramp would diminish the amenity value of the area and that it would have negative effects on the visual aspect of the weir.

4.0 ALTERNATIVE PROPOSALS

4.1 GENERAL REQUIREMENTS

The scope of this report precludes full detailed design of alternative fish passage improvement options. The alternatives described in this section take account of the hydrological and topographic information made available, the fish species to be accommodated and the outcome of consultations which were carried out as part of this project.

The alternatives proposed are draft designs only and the dimensions, locations, water flows and water levels are all subject to confirmation pending detailed analysis and design.

The primary purpose of a fish pass is to provide safe, unhindered passage for fish moving upstream and downstream. The pass must be attractive to fish and facilitate fish to enter, pass through and exit the pass structure without causing delay, injury or stress. For fish moving upstream, the entrance to the pass must be as low as possible within the structure and must provide a flow of water sufficient to attract the fish into the pass. Best practice suggests that the entrance to the pass be located in an area where fish congregate naturally. For fish moving downstream, the location of the fish pass is also critical, especially for low flow events.

The location of the fish pass in relation to the weir is critical and the design must ensure that the location chosen suits the hydraulic regime of the site. The weir in Fermoy is very long (over 200m) and lies diagonally to the river flow. It is important that any alternative ensures that fish are attracted to the pass, and not distracted by other flows.

There are two primary categories of fish pass, those that emulate natural conditions, such as the rock ramp or a bypass channel and those that are more functional in nature, such as pool passes, slot passes, denil passes etc.

The preferred solution, from a fisheries perspective is to completely remove the obstacle to passage, in this case the weir. If this is not acceptable, then the preferred option is to construct a pass that is as close to nature as possible before considering a more functional type pass.

The possible options, not including the current DAFF proposal, are as follows:

- Option 1 - Do nothing (zero intervention);
- Option 2 - Remove weir (maximum intervention);
- Option 3 - Remodel the existing pool pass and construct additional new passes;
- Option 4 – Construct and off-line bypass channel;
- Option 5 – Redesign the DAFF proposed rock ramp.

4.2 OPTION 1 – DO NOTHING (ZERO INTERVENTION)

The Do Nothing option has been discounted due to the fact that the weir is causing an obvious impediment to migratory fish passage and under the 1959 Fisheries (Consolidation) Act, Section 117, action must be taken to facilitate the free passage and migration of fish.

4.3 OPTION 2 – REMOVE WEIR (MAXIMUM INTERVENTION)

The option of completely removing the weir has been discounted due to the impacts to other river users, (e.g. Fermoy Rowing Club) that would result from this option.

4.4 OPTION 3 - REMODEL EXISTING POOL PASS & CONSTRUCT NEW PASSES

4.4.1 Description

The existing passes, which are in poor condition, will not provide conditions suitable for passage for all the species required. It is possible that with repairs and modifications, the existing pool pass could be made viable for use by Salmon, Trout and possibly the Shad, but it is unlikely that it could be modified sufficiently to suit the Lampreys or the Eels.

Due to the unsuitability of the existing passes for some of the species, it will be necessary to construct additional passes. Based on the design and location of the existing passes and the need to accommodate the species as listed, under the varying flow conditions, the following infrastructure would be required:

1. Modification of existing pool pass.
2. Construction of an additional pool pass along the left hand bank.
3. Construction of a slot pass to suit slow swimming and small fish.
4. Construction of an eel/elver ladder adjacent to the left hand river bank and a second ladder adjacent to the right hand river bank.
5. Repair and heightening of weir structure where required.
6. Selective dredging and possible construction of river training structures to ensure sufficient attraction and channels to the various passes.

See Figure 8 in Appendix A for location of these structures.

Modification of Existing Pool Pass

The existing pool pass, which is a concrete and masonry structure, is in poor condition and repairs are required. Modifications to the entrance and approach will also be required.

New Pool Pass

The new pool pass would possibly be located along the left hand bank at the extreme upstream end of the existing weir. The pass will comprise of a series of pools and will be constructed from reinforced concrete. The approximate dimensions of the pools will be 3m long, 2m wide with a maximum water level rise of 0.45m per step. Typical flow through the pass will be 0.3 m^3/sec. Velocity through the pass will be in the order of 0.4 m/sec. to 2m/sec. See Figure 4.1 below.

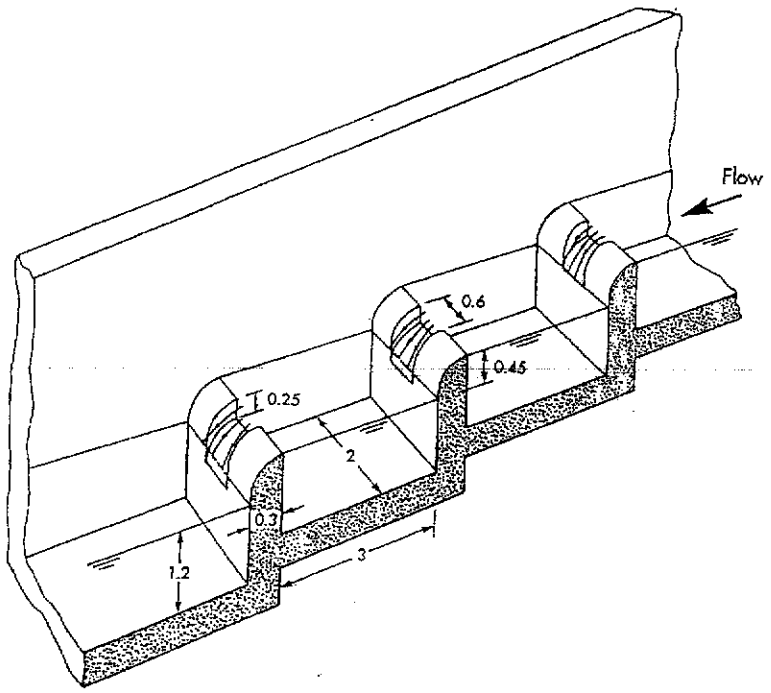


Figure 4.1: Typical Pool Pass – (Ref. 1)

New Slot Pass

The new slot pass will be located in the centre of the upstream section of the weir, between the existing and new pool passes. The slot pass will be constructed from reinforced concrete and will be comprised of a rectangular channel with a sloping bed divided into a series of pools. Single or double vertical slots will be provided to allow water and fish passage and to dissipate energy. The dimensions of the slots and the pools are subject to hydraulic analysis and design. The slot widths will be between 0.3m and 0.6m and the pool dimensions will be approximately 2.4m wide and 4.0m long. Typical velocities in the pass will range from 0.2m/sec. to 1.5m/sec. The slot pass will work well for a range of upstream water levels and provides passage for weaker species and lamprey who ascend through slot passes easily. See Figure 4.2 over.

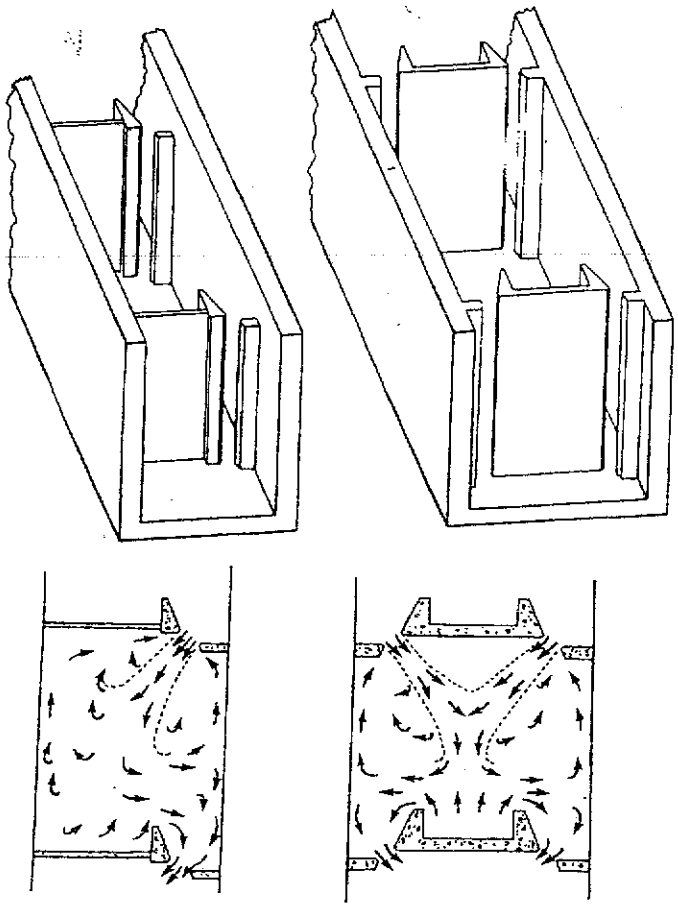
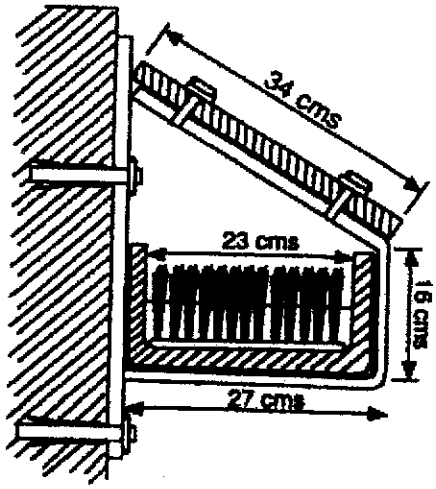


Figure 4.2: Typical Vertical Slot Pass – (Ref. 2)

Eel & Elver Passes (Ladders)

Elvers are very poor swimmers and are unable to pass through structures unless the water velocity is very low. Eel and elver ladders could be provided at two locations along the weir, probably adjacent to each of the river banks. The ladders will be flat open channels with coarse brush type material, such as "Enkamat" installed within the channel. This mat will allow water to percolate through it while reducing the water velocity and providing sufficient grip for elvers to advance. The eel/elver pass will be covered to prevent predation. See Figure 4.3 over.

Eel ascending through bristles



X-Section Through Fishway

Figure 4.3: Typical Eel/Elver Pass – (Ref. 3)

4.4.2 Advantages

The use of a number of passes will improve the chances of the fish finding an attractive pass entrance and ascending the weir safely.

The different passes will provide the full range of flow and substrate conditions to allow fish passage for all the relevant species.

This proposal will not result in the reduction in upstream river area thus not impacting on the rowing clubs race "run out" area.

The impact on the existing weir structure will be minimised, with only localised demolition at the site of each pass structure.

4.4.3 Disadvantages

The provision of a number of passes at various locations along the weir may cause confusion for fish as a number of attractive flows would be present.

The fish may become attracted to a pass that they could not ascend, i.e. the weaker swimmers could be attracted to the upstream pool pass which they would not be able to ascend and could become tired and stressed.

There may be an unacceptable level of visual impact caused by the array of concrete structures at various locations along the weir.

Not all of the passes operate for the full range of available flows; it is possible therefore that during low flow or high flow events some passes will become ineffective, without water level control devices being fitted.

The pool passes will be susceptible to becoming blocked due to debris, thus requiring monitoring and maintenance.

4.5 OPTION 4 – OFFLINE BYPASS CHANNEL

4.5.1 Description

As discussed earlier, the preferred option to improve fish passage is to remove the weir completely and the second preferred option is to construct a pass that is as close to nature as possible. A bypass channel, if designed and constructed properly will mimic the natural environment and minimise the visual impact of the development. The layout of the bypass channel is shown in Figure 9 in Appendix A.

The bypass channel could be constructed along the left hand bank of the river. The entrance to the channel would be as close to the left hand side of the weir as possible. The bypass would be designed to be as natural as possible, with a gentle bed slope, a meandering channel and a varying cross section. The length of the channel would be dictated by the designed bed slope. The installation of pools to dissipate energy may be required, subject to detailed analysis and design.

The river bank protection, which is essential to protect the banks from erosion and prevent the river from altering its course will be constructed from natural rock and laid as rip rap. A geotextile separation membrane will be laid behind the rip rap to prevent the migration of fines from behind the bank and to separate the stone from the natural ground thus stabilising the foundation of the rip rap bank. Where possible, block shaped stones will be used to create rock shelves projecting into the river channel which will provide shelter for fish.

In stream works such as pools, riffles and deflectors could be incorporated into the design to enhance the aquatic environment. Pools and riffles are very important for fisheries as they provide a range of natural conditions for breeding.

Deflectors will be installed, which will concentrate low flows and increase flow velocity at localised points to ensure that any pools remain evacuated. The deflectors will provide a hard substrate for the growth of algae and mosses and provide temporary shoal habitats for plants.

Boulders will be placed randomly in the river in various positions to provide refuge for fish, dissipate energy in flood flow and provide habitat for macro-invertebrates.

Some localised dredging works in the downstream river channel to aid attraction will be required. Repairs and raising of the weir will be required.

The proposed key design information for the bypass channel is as follows:

Proposed Bypass Channel Design Criteria

Width of Channel:	Varies between 4m and 10m.
Bed Slope:	Max Slope 1:80, ideally 1:100.
Length of Channel:	Dependent on slope. Likely to be 150m to 200m.
Plan Shape:	Sinuous and meandering.
Instream Works:	Pools to dissipate energy and reduce total length of channel. Boulders to increase roughness and provide habitat, deflectors and other instream structures.
Bed Substrate:	Gravel and boulders.

4.5.2 Advantages

- The channel would be as close to nature as possible, thus creating the ideal migration route.
- The channel will provide a single passage route thus avoiding attraction confusion.
- The channel will provide suitable safe passage for all listed species.

- New habitats are created allowing colonisation of aquatic flora and fauna.
- No hard structures required, thus ensuring that the channel has minimal visual impact.
- Creates opportunity for aquatic and terrestrial habitat creation.
- Minimal maintenance required.
- No interference with existing weir.

4.5.3 Disadvantages

- Length of channel results in exit to river being located a considerable distance upstream, possibly resulting in fish migrating downstream being blocked at the upstream side of the weir.
- Extensive excavation and construction works required along left hand river bank, resulting in disturbance and access issues. Deep excavations at the downstream end of the channel would be required.
- To ensure adequate water volume in the channel, higher flows of water may be required, thus resulting in a greater lowering of the upstream river level.
- High construction cost.
- Land ownership/acquisition issues.
- Possible impacts on flood relief scheme works.

4.6 OPTION 5 – REDESIGN OF THE DAFF PROPOSED ROCK RAMP

4.6.1 Relocation of Rock Ramp Downstream

The proposed rock ramp extends approximately 35m upstream of the existing weir at the right hand side. Fermoy Rowing Club have expressed concerns that the rock ramp structure as proposed extends too far upstream, resulting in a reduced "Run Out" area for their races.

The rock ramp cannot be relocated downstream of the road bridge, as it would have to be located on the right hand side of the river, at the downstream end of the weir. This location would not be considered to be the optimum location to attract upstream migrating fish.

The rock ramp cannot be moved any further downstream as the downstream end of the ramp structure will encroach on the bridge opes. The OPW have concerns that any encroachment on the existing bridge could reduce the hydraulic efficiency of the bridge and impact on flood levels within the river.

4.6.2 Reduced Width Rock Ramp

The original rock ramp proposed by DAFF was 36.5m wide. This was reduced to 30m. Based on the expected water levels and the design of the proposed rock ramp, the average and maximum water velocities are within the limits for the designated species.

If the rock ramp was reduced in width by 50% to 15m, and the full 95 percentile flow accommodated, the average water velocity would be too great for the weaker species such as lamprey. In order to reduce the velocity, the slope of the ramp would have to be reduced, resulting in the need to lengthen the ramp structure. Lengthening of the ramp would result in an encroachment downstream under the bridge, which is not acceptable to the OPW or upstream, which is not acceptable to Fermoy Rowing Club. A significant reduction in the width of the rock ramp would make the ramp less attractive for fish migrating upstream.

5.0 CONCLUSIONS

The Department of Agriculture, Food and Fisheries have directed Fermoy Town Council under the 1959 Fisheries (Consolidation) Act, Section 117, to carry out alterations to the Weir on the Blackwater due to the fact that the Weir was acting as a barrier to migrating fish.

The preferred solution, from a fisheries perspective is to completely remove the obstacle to passage, in this case the weir. As this is not acceptable to other interested parties, then the preferred option is to construct a fish pass that is as close to nature as possible and that has minimum impact on existing water levels.

The preferred options considered in this report are:

- Construction of a rock ramp fish pass as proposed by DAFF;
- Repair of the existing pool fish pass, construction of a new pool fish pass, construction of a slot fish pass and construction of two eel/elver passes (ladders) along the existing weir;
- Construction of a new offline bypass channel.

All of the above options will have similar and negligible effects on upstream river levels.

The rock ramp fish pass would be the preferred option for fish passage as it would provide a dominant and attractive flow at one location and at the preferred location at the upstream end of the weir. The rock ramp would also accommodate all fish species at the majority of flow events. However, account would have to be taken of racing events in the rowing club to ensure that the rock ramp does not impact adversely on the "run-out area" at the end of the race. This could include clearly marking the upstream face of the rock ramp and partition wall with buoys.

The repair of the existing fish pass and construction of new fish passes would probably have the lowest capital cost. However, it would be the least effective option for fish passage due to numerous attractive flows at low flows and no fish pass suiting all fish species. It would also require the most ongoing maintenance.

The offline bypass channel is attractive as it would have no impact on the existing weir. It would also suit all fish species. However, it would potentially have the greatest capital cost due to land acquisition and construction costs. It would also have a significant impact on the adjoining area to the north of the river with a requirement for a relatively wide and deep channel. The upstream mouth of the bypass channel could also be marked with buoys during rowing races on the river.

6.0 REFERENCES

(1) Fish Pass Design
Beach, M.H.
MAFF, 1984.

(2) The Use of Vertical Slot Fishways in British Columbia
Andrew, F.J.
Proc. Int. Symp. Fishways 1990.

(3) Design of Fishways and Other Fish Facilities
Clay, C.H.
CRC Press, 1995

Appendix A – Figures

Appendix B – Data Collection

Technical Assessment Report

Description	Date	Subject
Report by John O'Keefe for DCMNR	July 2006	Recommends lowering of the weir and construction of new fish pass.
Letter from DCMNR	July 2006	Directing start of works on weir as proposed by JOK report
Letter from CCC Heritage Unit	11 Dec 2008	Objecting to works on weir
Letter from DCMNR	8 Dec 2008	Works on Weir can be done under OPW Flood Relief Project Inviting FTC to consult further with DCMNR
Letter from DCMNR	18 Dec 2008	Inviting FTC to appoint expert to review proposals
Letter from DCMNR	10 Feb 2009	Advising of funding of reduced scope
Letter from DCMNR	11 Feb 2009	Appointment of impartial expert
Letter from CCC Heritage Unit	9 Feb 2009	Objecting to works on weir
Letter from Donal Murphy, Engineer		Alternative proposal
Letter from Fermoy Rowing Club	Sept 2008	Objecting to works on weir
Letter from Rowing Club to Dept Environment, Heritage & Local Government	Feb 2009	Objecting to works on weir

Appendix C – Sensitivity Calculations

Fermoy Weir Alterations – Proposed Rock Ramp
Weir Discharge Coefficient / Low Flow Calculations
Sensitivity Analysis

Head (mm) (Calculated)

			Discharge Coefficient C		
			1.5 (Low)	1.6 (Mean)	1.85 (High)
Flow (m^3/sec.)	95% (Low)	6.0	261	250	227
	95% (Mean Add.)	6.29	269	258	234
	95% (Mean Subt.)	7.37	299	287	260

Chosen data: Flow = 6.0 m^3/sec.
C = 1.6
Therefore: H = 250mm

Mean of Head Range: 260mm
95% Confidence of Mean: 246mm to 274mm

(12)

An Roinn Cumarsáide,
Fuinnimh agus Acmhainni Nádúrtha
Baile Átha Cliath 2.

Department of Communications,
Energy and Natural Resources,
Dublin 2.

Ref: C17/3/53

28 April 2009

Mr Ray Owens,
Town Clerk,
Fermoy Town Council,
Town Hall,
Fermoy,
Co. Cork.

Re: Consultants Report on Fermoy Weir.

Dear Mr Owens

I wish to acknowledge receipt of your letter dated 22 May and the accompanying Consultants Report on proposals for Fermoy Weir, the contents of which will be brought to the Ministers attention shortly.

Yours sincerely,

pp. Marina de Brún
Deirdre de Brún
Inland Fisheries Division.