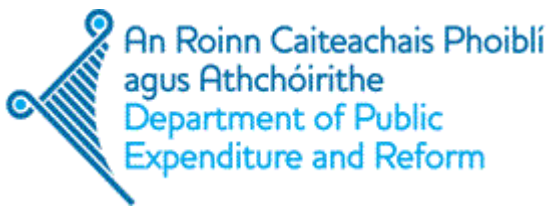


**Review of Environmental Impact  
Statement of the Bandon River (Bandon)  
Drainage Scheme  
- including recommendations -**

by  
**CAAS Ltd**

for the  
**Department of Public Expenditure and  
Reform**



**22 March 2016**

## QA

<b>PRELIMINARY EIS COMPLIANCE ASSESSMENT</b>		
<b>PROJECT</b>	Bandon River (Bandon) Drainage Scheme	
<b>REFERENCE DOCUMENT [S]</b>	As listed on final page of this report	
<b>CLIENT</b>	Expenditure Policy, Evaluation and Management Division The Department of Public Expenditure and Reform	
<b>ASSESSMENT</b>	P Fingleton & A Doyle	
<b>DATE</b>	22/03/2016	
<b>CHECKING</b>	C Skehan	
<b>DATE</b>	22/03/2016	
<b>ISSUE TO CLIENT</b>	22/02/2016	
<b>REVISION NUMBER</b>	3	

## Contents

<b>INTRODUCTION .....</b>	<b>1</b>
<b>INFORMATION MADE AVAILABLE TO CAAS FOR REVIEW.....</b>	<b>1</b>
<b>SCHEME OVERVIEW .....</b>	<b>2</b>
<b>REVIEW OF THE ENVIRONMENTAL IMPACT STATEMENT AND ASSOCIATED DOCUMENTATION .....</b>	<b>3</b>
PRELIMINARIES .....	3
EIS COMPLIANCE ASSESSMENT .....	4
<i>Review against Requirements of the Regulations.....</i>	<i>4</i>
<i>General Comments .....</i>	<i>11</i>
<i>Alternatives (ref 1(d) above).....</i>	<i>12</i>
<i>Detailed comments on physical characteristics (ref 2(a)(i)).....</i>	<i>12</i>
<i>Detailed comments on the individual environmental factors (ref 2(c) above).....</i>	<i>12</i>
<b>RECOMMENDATIONS .....</b>	<b>15</b>
<b>CONCLUSIONS .....</b>	<b>18</b>

## Introduction

CAAS Ltd have been commissioned by the Department of Public Expenditure and Reform to carry out a review of the Environmental Impact Statement (EIS) and associated documentation on the proposed Flood Relief Scheme for the Bandon River at Bandon, County Cork.

This review is to inform the Minister for Public Expenditure and Reform in carrying out an Environmental Impact Assessment (EIA) of the scheme in accordance with S.I. 469 of 2012, European Union (Environmental Impact Assessment) (Arterial Drainage) Regulations 2012.

This report sets out, in the following sequence:

- the scope of this review
- the information reviewed
- an overview of the proposed scheme
- a review of the EIS and associated documentation
  - This is done by reference to the specific requirements of the relevant Regulations (Schedule 6 of S.I. No. 600/2001 - Planning and Development Regulations, 2001). The parts of the EIS and other documents that address each requirement are identified and comments are provided on the adequacy of the information in terms of compliance with the statutory requirements.
  - Where it is considered that proposed mitigation or monitoring proposals in the documents should be altered or augmented in order to ensure a compliant EIA process, the reasons for this are discussed in a series of detailed comments related to specific individual requirements of the Regulations.
- Recommendations to the Minister
  - These are presented as clear measures which the Minister may include as conditions to a Confirmation Order for the proposed Scheme.
  - Each recommended condition is accompanied by a reason.
- Conclusions
  - Compliance of the EIS
  - Acceptability of predicted impacts
  - Adequacy of mitigation

## Information made available to CAAS for review

This information comprised the EIS and associated documents per the list of reference documents at the end of this report.

## Scheme overview

The key elements of the proposed works involve:

- Deepening of the main Bandon River channel in and downstream of Bandon. This will be done by dredging to reduce the level of the riverbed to 1.8m to 1.9 m lower than at present at the upstream end of the works and by a gradually decreasing depth for 3.6km downstream.
- Several flood defence walls, the longest being some 443m in length. The heights of these will range from 0.53m to 3.9m. Improvements to existing flood defence walls are also proposed.
- Several new flood defence embankments. The longest of these is approximately 220m in length and they are 1m to 2.33m high. Improvements are proposed to existing embankments also.
- Underpinning of the piers of Bandon Bridge.
- Replacement of the pedestrian bridge in Bandon with a new pedestrian bridge.
- Works on tributary streams involving culverts, stream bed lowering and localised drainage improvements. New culverts will be up to 157m in length and 2.4 x 1.5m in section. Drainage improvements will include new rising pumped storm drains.
- A new rock ramp fish pass at Bandon Weir – 12.6m wide and approximately 137m long.

It is proposed to construct the principal elements of the scheme over a period of approximately two years with river and stream works being carried out during the months of May to September. Implementation of fisheries mitigation measures will generally be carried out during the season following dredging works. The programme is subject to time of year of award of contract and contractor's proposals and methods.

# Review of the Environmental Impact Statement and associated documentation

## Preliminaries

EIA related processes	Key documentation	Comment
Screening	<ul style="list-style-type: none"> <li>📄 AA screening doc complete</li> <li>📄 Appendix 5A AA Screening Report</li> </ul>	<p><b>Appropriate Assessment Screening</b></p> <p>This material shows that the scheme has been screened for AA requirement.</p> <p>It is noted the review documents show that the Department of Arts, Heritage and the Gaeltacht, whose responsibilities include implementation of the Habitats Directive, made observations regarding archaeology<sup>1</sup> but no observations regarding the AA Screening are referred to. This is taken to indicate that the Department was satisfied with the compliance of the AA screening reports and their findings.</p> <p><b>EIS Screening</b></p> <p>The process of screening for EIS requirement is not described in the EIS. Inclusion of same is not a statutory requirement so this omission does not compromise the compliance of the EIS.</p>
Scoping	<ul style="list-style-type: none"> <li>📄 EIS Sections 1.3, 1.4 and 2.6.4</li> <li>📄 Appendix 2G EIA Scoping Pack</li> <li>📄 Appendix 2H Scoping Replies</li> </ul>	<p>The main EIS document contains a summary of the inter-related scoping and consultation processes carried out during preparation of the EIS. The appendices contain a copy of a scoping pack that was circulated to consultees, along with copies of responses.</p> <p>There is a reference in Section 2.6.5 to meetings with IFI in Oct 2011 and Feb 2012 but discussions at these meetings are not specifically reported on. However this does not compromise the compliance of the EIS. The scoping summary presented in Section 2.6.4 summarises the consultees' recommendations.</p>
Consultation	<ul style="list-style-type: none"> <li>📄 EIS Section 2.6.5</li> <li>📄 Appendices 2A - 2F Constraints Study</li> <li>📄 Report on Observations on Public Exhibition</li> <li>📄 Appendix B Written Observations</li> </ul>	<p>The scoping and consultation sections do not clearly explain: (a) the identification of issues to be assessed in the EIS; or (b) the appropriate level of detail for assessment of these issues. It is noted that a proposed table of contents for the EIS is included in the scoping pack<sup>2</sup> that was circulated to consultees and that many of the items presented as constraints in Section 2.5.1 of the EIS correspond to scoping notes. Both of these include information on the proposed scope of the EIS as envisaged at that stage. While it would be considered good practice to have covered these items more clearly, including a description of the scope that emerged following consultation (covering (a) and (b) above), these omissions do not compromise the compliance of the EIS.</p>

<sup>1</sup> Ref Section 2.11 of *Report on Observations on Public Exhibition*, OPW/Byrne Looby Partners, November 2012

<sup>2</sup> Ref Section 5.3 of Appendix 2G – Scoping Pack

## EIS compliance assessment

### Review against Requirements of the Regulations

Requirements of the Regulations <sup>3</sup>		Requirements met by the applicant, primarily in the following -		Comments	
		Sections of the main EIS document	Appendices / other Reports		
1	(a)	A description of the proposed development comprising information on the site, design and size of the proposed development.	<ul style="list-style-type: none"> <li>☞ Sections 2, 3 and descriptions of specific elements where relevant in the specialist sections 4 to 11</li> </ul>	<ul style="list-style-type: none"> <li>☞ Appendix 2A Report on Flood Risk Management Options</li> <li>☞ Appendix 3A Scheme Drawings</li> <li>☞ Appendix 11A Material Assets and Traffic Drawings</li> <li>☞ EIS Addendum Report Rev 1</li> <li>☞ EIS Addendum Appendices Rev 1</li> </ul>	This material is considered to be generally compliant.
	(b)	A description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects.	<ul style="list-style-type: none"> <li>☞ Sections 4.4, 5.6, 8.5, 8.7, 9.3, 10.5, 11.3</li> </ul>		This material is considered to be generally compliant. Specific additional mitigation measures are recommended by this review as conditions where considered necessary.

<sup>3</sup> Schedule 6 of S.I. No. 600/2001 - Planning and Development Regulations, 2001

Requirements of the Regulations <sup>3</sup>		Requirements met by the applicant, primarily in the following -		Comments
		Sections of the main EIS document	Appendices / other Reports	
(c)	The data required to identify and assess the main effects which the proposed development is likely to have on the environment.	<ul style="list-style-type: none"> <li>☰ Sections 2, 3, 4.3, 5.3 – 5.5, 6.2, 6.3, 7.1 – 7.5, 8.2, 9.2, 10.3, 11.1, 22.2.</li> </ul>	<ul style="list-style-type: none"> <li>☰ Appendix 5 A Screening Report</li> <li>☰ Appendix 5B Site Synopsis</li> <li>☰ Appendix 5 C River Descriptions</li> <li>☰ Appendix 5D Fish Stock Assessment</li> <li>☰ Appendix 5 E Macroinvertebrate Results</li> <li>☰ Appendix 6A Bedrock &amp; Quarry Drawings</li> <li>☰ Appendix 7A Aquifer Locations</li> <li>☰ Appendix 7B Aquifer Vulnerability</li> <li>☰ Appendix 7C Hydrology Report</li> <li>☰ Appendix 7D Hydraulics Report</li> <li>☰ Appendix 8A Tables and Air Quality Standards</li> <li>☰ Appendix 10A Photographs</li> <li>☰ Appendix 10B Catalogue of Underwater Sites</li> <li>☰ Appendix 10C database of Irish Excavation Reports</li> <li>☰ Appendix 10D Underwater Archaeology Survey</li> <li>☰ Appendix 11A Material Assets and Traffic Drawings</li> </ul>	This material is considered to be generally compliant.



Requirements of the Regulations <sup>3</sup>		Requirements met by the applicant, primarily in the following -		Comments
		Sections of the main EIS document	Appendices / other Reports	
(d)	An outline of the main alternatives studied by the developer and an indication of the main reasons for his or her choice, taking into account the effects on the environment.	☰ Section 2.5.2	<ul style="list-style-type: none"> <li>☰ Appendices 2A Report on Flood Risk Management Options</li> <li>☰ Appendix 2B Constraints Study Cover Ltr &amp; Scoping Pack</li> <li>☰ Appendix 2C Constraints Study &amp; Scoping Responses</li> <li>☰ Appendix 2D PID 1 Posters</li> <li>☰ Appendix 2E Public Consultation Questionnaire</li> <li>☰ Appendix 2F PID 2 Information</li> </ul>	See comments below under heading <i>Alternatives (1(d))</i> .
2	Further information, by way of explanation or amplification of the information referred to in paragraph 1, on the following matters:-	-	-	see sub-headings below
(a)(i)	a description of the physical characteristics of the whole proposed development and the land-use requirements during the construction and operational phases;	☰ Section 3	☰ Appendix 3A Scheme Drawings	See comments below under <i>Detailed comments on physical characteristics (2(a)(i))</i> .
(ii)	a description of the main characteristics of the production processes, for instance, nature and quantity of the materials used;	☰ Section 3		This material is considered to be generally compliant.

Requirements of the Regulations <sup>3</sup>		Requirements met by the applicant, primarily in the following -		Comments
		Sections of the main EIS document	Appendices / other Reports	
(iii)	an estimate, by type and quantity, of expected residues and emissions (including water, air and soil pollution, noise, vibration, light, heat and radiation) resulting from the operation of the proposed development	Sections 4.4, 5.6, 6.2 – 6.4, 7, 8.4, 8.6, 9.3, 10.4, 11.2 – 11.4.	EIS Addendum Report Rev 1	Some aspects of the construction stage with potentially significant environmental effects, such as details of rock breaking or sheet piling are not included. However for a scheme of this nature this is reasonable and does not compromise the compliance of the EIS. It is appropriate to address construction management as mitigation. The EIS does this and conditions are recommended to ensure that this approach is adequate.
(b)	a description of the aspects of the environment likely to be significantly affected by the proposed development, including in particular:	-	-	see sub-headings below
	human beings	Section 4		See comments below under 2(c) Detailed comments on the individual environmental factors.
	fauna and flora	Section 5	Appendix 5 A Screening Report Appendix 5B Site Synopsis Appendix 5 C River Descriptions Appendix 5D Fish Stock Assessment Appendix 5 E Macroinvertebrate Results EIS Addendum Report Rev 1	See comments below under 2(c) Detailed comments on the individual environmental factors.

Requirements of the Regulations <sup>3</sup>		Requirements met by the applicant, primarily in the following -		Comments
		Sections of the main EIS document	Appendices / other Reports	
	soil	<ul style="list-style-type: none"> <li>☞ Section 6</li> </ul>	<ul style="list-style-type: none"> <li>☞ Appendix 6A Bedrock &amp; Quarry Drawings</li> <li>☞ Appendix 6B GSI Extract showing Subsoils</li> <li>☞ Appendix 6C Preliminary Site Investigation Report</li> <li>☞ EIS Addendum Report Rev 1</li> <li>☞ EIS Addendum Appendices Rev 1</li> </ul>	See comments below under 2(c) Detailed comments on the individual environmental factors.
	Water	<ul style="list-style-type: none"> <li>☞ Section 7</li> </ul>	<ul style="list-style-type: none"> <li>☞ Appendix 7A Aquifer Locations</li> <li>☞ Appendix 7B Aquifer Vulnerability</li> <li>☞ Appendix 7C Hydrology Report</li> <li>☞ Appendix 7D Hydraulics Report</li> </ul>	See comments below under 2(c) Detailed comments on the individual environmental factors.
	Air Climatic factors	<ul style="list-style-type: none"> <li>☞ Section 8. this section also includes considerations of noise and vibration</li> </ul>	<ul style="list-style-type: none"> <li>☞ Appendix 8A Tables and Air Quality Standards</li> </ul>	See comments below under 2(c) Detailed comments on the individual environmental factors.
	Landscape	<ul style="list-style-type: none"> <li>☞ Section 9</li> </ul>		See comments below under 2(c) Detailed comments on the individual environmental factors.

Requirements of the Regulations <sup>3</sup>		Requirements met by the applicant, primarily in the following -		Comments
		Sections of the main EIS document	Appendices / other Reports	
	Material assets, including the architectural and archaeological heritage, and the cultural heritage	<ul style="list-style-type: none"> <li>☰ Section 10 Cultural Heritage</li> <li>☰ Section 11 Material Assets</li> </ul>	<ul style="list-style-type: none"> <li>☰ Appendix 10A Photographs</li> <li>☰ Appendix 10B Catalogue of Underwater Sites</li> <li>☰ Appendix 10C Database of Irish Excavation Reports</li> <li>☰ Appendix 10D Underwater Archaeology Survey</li> <li>☰ Appendix 11A Material Assets and Traffic Drawings</li> <li>☰ EIS Addendum Report Rev 1</li> <li>☰ EIS Addendum Appendices Rev 1</li> </ul>	See comments below under 2(c) <i>Detailed comments on the individual environmental factors.</i>
	the inter-relationship between the above factors	☰ Section 12		See comments below under 2(c) <i>Detailed comments on the individual environmental factors.</i>
(c)	a description of the likely significant effects (including direct, indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative) of the proposed development on the environment resulting from:	-	-	see below
	the existence of the proposed development,	☰ Sections 4 to 12	<ul style="list-style-type: none"> <li>☰ Appendix 5 A Screening Report</li> <li>☰ Appendix 5B Site Synopsis</li> <li>☰ Appendix 5 C River Descriptions</li> <li>☰ Appendix 5D Fish Stock Assessment</li> <li>☰ Appendix 5 E</li> </ul>	This material is considered to be generally compliant. See separate section below entitled 2(c) <i>Detailed comments on the individual environmental factors.</i>
	the use of natural resources,			
	the emission of pollutants, the creation of nuisances and the elimination of waste,			

Requirements of the Regulations <sup>3</sup>		Requirements met by the applicant, primarily in the following -		Comments
		Sections of the main EIS document	Appendices / other Reports	
	a description of the forecasting methods used to assess the effects on the environment;		<ul style="list-style-type: none"> <li>Macroinvertebrate Results</li> <li>Appendix 6A Bedrock &amp; Quarry Drawings</li> <li>Appendix 6B GSI Extract showing Subsoils</li> <li>Appendix 6C Preliminary Site Investigation Report</li> <li>Appendix 7A Aquifer Locations</li> <li>Appendix 7B Aquifer Vulnerability</li> <li>Appendix 7C Hydrology Report</li> <li>Appendix 7D Hydraulics Report</li> <li>Appendix 8A Tables and Air Quality Standards</li> <li>Appendix 10A Photographs</li> <li>Appendix 10B Catalogue of Underwater Sites</li> <li>Appendix 10C Database of Irish Excavation Reports</li> <li>Appendix 10D Underwater Archaeology Survey</li> <li>Appendix 11A Material Assets and Traffic Drawings</li> <li>EIS Addendum Report Rev 1</li> <li>EIS Addendum Appendices Rev 1</li> </ul>	

Requirements of the Regulations <sup>3</sup>		Requirements met by the applicant, primarily in the following -		Comments
		Sections of the main EIS document	Appendices / other Reports	
(d)	an indication of any difficulties (technical deficiencies or lack of know-how) encountered by the developer in compiling the required information.	☰ Section 12		Difficulties are generally identified as relevant through the various sections of the EIS and Appendices. The implications of difficulties are addressed in the assessment as appropriate. The EIS is considered to be generally compliant in this regard.
Art 94 (c)	a summary in non-technical language	☰ Non Technical Summary		This part of the EIS is considered to be generally compliant.

### General Comments

Underwater and Underground Works are a special class of topics in EIA. In such circumstances the investigations required to ensure perfect certainty can cause as much environmental impact as the proposed works themselves. For this reason impacts and mitigation measures will often entail provisions to confirm details of construction and mitigation measures after detailed site investigations have been concluded and as the further proposed works commence during the project itself.

This is consistent with the requirements of Regulations provided that:

1. The likely range of baseline (existing) conditions can be reasonably foreseen – having regard to partial evidence such as data gathered from borehole samples.
2. An ‘envelope of likely effects’ has been identified that includes a ‘not to exceed’ level of predicted effect – this is the *predicted effect* or *worst case effect* for the purpose of assessment. Actual effects can be less – but never more than this predicted effect.
3. The mitigation measures required to deal with the predicted or worst case effect are both sufficient to ensure an effect that conforms with requirements and enforceable.

In these circumstances the EIS can be used as a basis for making a decision. Where a decision to grant is proposed, then it can include conditions to:

- (a) require confirmation that the findings/results of detailed site investigations or initial works stages show that the baseline conditions are within the predicted range; and
- (b) confirm that the mitigation measures proposed will address the issues confirmed by investigation and that these mitigation measures will result in effects that are within the range of predicted effects by the EIS.

### **Alternatives (ref 1(d) above)**

In Appendix 2A the options of Upstream Flood Water Storage and Restriction are shown to meet the selected criteria yet both are ruled out because:

‘an examination of the catchment upstream of Bandon did not locate any suitable storage areas to provide the required volume of storage. The level of protection is also dependent on the duration of the flood event. For longer flood events, the storage could be fully utilised before the flood has passed thereby increasing the flood risk.’

The same Appendix further states:

‘Overall, this option is not considered acceptable due to the very significant technical difficulties of providing the required storage and because of the residual risk.’

No details of the examination of the catchment upstream, the residual risk or of associated technical difficulties are included in EIS or other review documents. There is also a lack of analysis of the option of relocation of properties. As significant environmental impacts arise from the selected scheme, more details of these options, or combinations of these with other options, would have provided a clearer understanding of the reasons for the choice of the selected scheme, taking into account the environmental effects.

The consideration of alternatives is otherwise comprehensive and can be considered to be generally compliant with the requirements of the Regulations.

### **Detailed comments on physical characteristics (ref 2(a)(i))**

Construction hours of 8:00 - 18:00 Monday to Friday are referred to and used to inform the assessment of impacts under a number of environmental topics in the EIS. The EIS Addendum states that these hours are likely to be extended to 7:00-21:00 during the Summer period. The specific impact of these extended hours is not clearly assessed however this is addressed by recommended conditions arising from this review, particularly regarding a Construction Environmental Management Plan (CEMP) to ensure that effects are within the envelope of effects predicted in the EIS.

Other characteristics and land-use requirements are mainly well described and the EIS can be considered to be generally compliant in this regard.

### **Detailed comments on the individual environmental factors (ref 2(c) above)**

#### ***Human Beings***

This section partly relies on assessments of impacts on environmental factors under other topics such as noise which are partly dealt with through construction stage mitigation.

Impacts on amenity and access are identified and assessed and the reader of the EIS is referred to the section on flora & fauna for mitigation of effects. This mitigation does not take account of effects for example on access to riverside walks or on water level access for angling or other purposes during or post-construction.

Conditions are recommended by this review to ensure that impacts on human beings through these factors are within appropriate limits.

This part of the EIS is considered to be generally compliant.

### *Flora and Fauna*

A comprehensive description of the ecological baseline is provided.

Assessment of impacts is generally thorough and compliant. Due to the nature of the proposals it is reasonable that some aspects of mitigation are to be worked out at time of the proposed works as full details of riverbed conditions, for example, will be known.

Some relevant issues such as timing of works in relation to bat activity patterns are not fully considered however mitigation measures generally encompass these by reference to a Construction Management Plan and to Guidelines for works with potential to affect bats.

Significant potential impacts on salmon and lampreys (both listed in Annex II of the Habitats Directive) are identified. Numerous mitigation measures are proposed to avoid or prevent impacts to these species and the full detail of many of these measures are to be devised during the works. This is appropriate as the riverbed conditions will have a large bearing on deciding some of the optimal mitigation measures for these species.

This part of the EIS is considered to be generally compliant.

### *Soil*

There is no assessment of extensive site investigations data that is contained in Appendix 6A to the EIS Addendum. Analyses of these data as part of this review indicate that there are small (expected) detections of various metals, and indications of low levels of hydrocarbons in the samples. While this issue is not considered to be significant the possible presence of contaminated ground remains a small risk which is addressed in recommended conditions.

This part of the EIS is considered to be generally compliant.

### *Water*

The water quality baseline data used in the EIS has not been augmented by additional baseline for the Addendum to address impacts of the additional works. This baseline would not be likely to significantly change the findings of the assessment and the gap in the baseline is addressed in recommended conditions.

The potential for the scheme to affect the River Bandon's status under the Water framework Directive is not specifically addressed. This is dealt in this review by a recommended condition.

Negative impacts are predicted on water quality during the works and it is proposed that a suitable range of mitigation or monitoring measures to address these impacts will be included in the CEMP. The recommendations of this review include specific items to ensure that these aspects are fully addressed so that impacts will be within the envelope of effects predicted by the EIS.



This part of the EIS is considered to be generally compliant.

### ***Air, Climatic Factors***

Specific details are left to be addressed by the CEMP. This is reasonable for a scheme of this nature where specific details of the works which will create effects cannot reasonably be set out at this stage. Recommendations of this review include measures to ensure that the CEMP takes includes adequate mitigation of air, climatic and noise impacts.

This part of the EIS is considered to be generally compliant.

### ***Landscape***

It is recommended by this review that mitigation measures seeking to address the impact on the character of the built environment should be augmented by additional mitigation to ensure adequate consideration of landscape impacts and the inter-relationship between impacts on the landscape and impacts on cultural / architectural heritage.

This part of the EIS is considered to be generally compliant.

### ***Material Assets***

The assessment of Cultural Heritage covers archaeology, architectural heritage and historical/folklore aspects. It presents a comprehensive baseline of cultural heritage features. The assessment of impacts and mitigation measures to ameliorate adverse impacts are dependent on the need for pre-construction investigations and construction stage monitoring. This is a reasonable and appropriate approach for a scheme of this nature. The mitigation measures include detailed archaeological surveys, allowance for lead-in times for licencing, archaeological testing and consultation with the Department of Arts, Heritage and the Gaeltacht and are generally considered to be sufficiently comprehensive.

The mitigation measures in this section are presented as recommendations rather than commitments because they are subject to approval of the Department of Arts, Heritage and the Gaeltacht. This is generally in compliance with recommendations made by the Department during the preparation of the EIS, as recorded in the Report on Written Observations on Public Exhibition v2. The conditions recommended by this review reinforce commitment to the proposed measures.

Conditions are recommended by this review to ensure that impacts on Architectural and Cultural Heritage due to changes to appearance and character of features such as river walls and bridge piers are adequately mitigated so that they are within the envelope of environmental effects predicted by the EIS. (Also ref. *Landscape* (above) and *Inter-relationship between factors* (below).)

This part of the EIS is considered to be generally compliant.

### *The inter-relationship between the above factors*

As noted above, the detailed effects of construction stage works on amenity due to factors such as noise and access restrictions are not fully described at this stage as many details of the construction phase are unknown. This restricts the detail of the assessment of inter-relationships between these factors and other environmental factors (particularly human beings and landscape). Conditions recommended by this review – particularly in relation to the CEMP – address these aspects.

As stated above, other recommended conditions arising from this review address the inter-relationship between landscape and cultural heritage.

The inter-relationship between the effects on salmon stocks and angling during and after construction are not clear however mitigation proposed in the EIS and augmented by recommended conditions arising from this review will mitigate such effects.

This part of the EIS is considered to be generally compliant.

## **Recommendations**

The following conditions are recommended for consideration by the Minister to augment any conditions which may be imposed in the event that it is decided to issue a Commencement Order for the scheme.

1. The scheme shall be carried out in its entirety in accordance with all the plans, particulars, specifications and undertakings included in the Environmental Impact Statement and the Environmental Impact Statement Addendum, save as may be required by other conditions attached hereto.

Reason: To ensure that the development shall be carried out in accordance with the Confirmation Order and that effective control can be maintained.

2. A Schedule of Environmental Commitments containing all proposed mitigation and monitoring measures contained in the EIS and associated documents, as modified by the conditions attached hereto, shall be prepared. All contractors shall be made aware of this Schedule prior to preparation of detailed work method statements.

Reason: In the interests of clarity and the amelioration of environmental impacts.

3. A Monitoring Group shall be established prior to commencement of the works and shall be in place for the implementation of the full scheme including mitigation measures. This Group shall include representatives of the Office of Public Works and Cork County Council.

Reason: In the interests of clarity and the amelioration of environmental impacts.

4. A Construction Environmental Management Plan (CEMP) shall be prepared prior to commencement of each stage of the works. The CEMP shall describe the construction sequence with emphasis on individual work elements with potential to cause significant environmental effects. It shall clearly describe specific measures to ensure that detailed

plans and working methods for implementation of mitigation and monitoring measures conform with the proposals assessed in the Environmental Impact Statement and associated documents, as modified by the conditions attached hereto.

Reason: In the interests of clarity and amelioration of environmental impacts.

5. The periods covered by, and the organisation of work elements into, each stage of the works referred to in condition 4 shall be devised prior to commencement of the initial stage of the works and shall be set out in the initial version of the CEMP. The initial version of the CEMP shall be prepared prior to the initial works, i.e. the detailed site investigation works. Each revision of the CEMP will take account of available monitoring results.

Reason: In the interests of clarity and amelioration of environmental impacts.

6. The OPW shall consult with all relevant statutory authorities regarding the final interpretation of all aspects of the CEMP affecting specific environmental factors, as relevant to each authority. These authorities shall include the Environment, Heritage and Planning sections of Cork County Council, Inland Fisheries Ireland (IFI), and the Built Heritage & Architectural Policy, National Monuments Service and the National Parks and Wildlife Service (NPWS) sections of the Department of Arts, Heritage and the Gaeltacht. Prior to commencement of each stage of the works the OPW shall confirm, in writing, with these authorities that CEMP correctly describes and gives effect to the mitigation measures required by the EIA of the project.

Reason: In the interests of clarity and amelioration of environmental impacts.

7. The CEMP shall include detailed measures to confirm how the water quality monitoring and control measures set out in the EIS and associated documents will be implemented. These measures will be devised in consultation with Inland Fisheries Ireland to demonstrate how each element of the works will be mitigated to comply with statutory water quality requirements. IFI, Cork County Council and Irish Water and the NPWS shall be informed about the planned parameters and frequency of monitoring to confirm that the details conform with the expectations of these agencies as expressed during consultation. The CEMP will be revised to take due account of any feedback from these agencies.

Reason: In the interests of ensuring the amelioration of environmental impacts and protection of drinking water supply to the Inishannon Regional Water Supply Scheme (RWSS).

8. Baseline water quality data shall be collected for the Kilbrittain Stream, Moanarone Stream and the Mill River. This shall be sufficient to enable monitoring of water changes using the parameters agreed at 7 above.

Reason: In the interests of environmental protection.

9. The CEMP shall describe and confirm provisions for ensuring that personnel with suitable training and equipment are available to effectively deal with any occurrences with potential to affect water quality, including malfunction of any environmental protection system or mitigation measure or any occurrence or emergency which could reasonably be anticipated to give rise to pollution.

Reason: In the interests of environmental protection.

10. The CEMP shall describe and confirm how all relevant requirements arising from the Water Framework Directive are addressed. This shall ensure compliance with the South Western River Basin District Management Plan.

Reason: In the interests of environmental protection and compliance.

11. The CEMP shall describe and confirm how an environmental testing and monitoring schedule for earthworks material to be removed from or reused within the scheme shall be implemented. The CEMP shall describe and confirm the procedure for taking at least one soil sample and laboratory analysis of material (soil/subsoils and/or bedrock) per 1,000 tonnes of material excavated.

Reason: In the interests of environmental protection.

12. The CEMP shall describe and confirm how hot spots of soil/subsoil contamination encountered will be recorded (by visual or olfactory evidence), and how sampling and testing will be increased to an appropriate frequency depending on the environment risks posed. The CEMP shall describe and confirm how suitably designed quarantine area for suspected contaminated soils will be established within the works area.

Reason: In the interests of environmental protection.

13. An Environmental Officer shall be appointed for the duration of the works. This shall include the final stage of works to implement fisheries mitigation measures. The Environmental Officer shall liaise with contractors, the Monitoring Committee and statutory authorities as relevant regarding the detailed implementation of all mitigation and monitoring measures contained in the Schedule of Commitments.

Reason: In the interests of clarity, the amelioration of environmental impacts and ongoing implementation of effective controls.

14. The Environmental Officer shall prepare Environmental Compliance Reports throughout the works that summarise compliance with the Schedule of Environmental Commitments. These reports shall include available monitoring results and refer to sequencing and work elements set out in the CEMP. They shall be made available to the relevant statutory authorities. The frequency of these reports should be at least once per month while works are ongoing. A final Environmental Compliance Audit Summary shall also be provided.

Reason: To ensure that baseline conditions are within the range anticipated in the EIS and associated documents. To also ensure that environmental effects are within the envelope of likely effects predicted in the EIS and associated documents.

15. A Communication Plan shall be prepared, agreed with Cork County Council and implemented. This plan shall provide for the presentation of clear information on scheduled works along with corresponding obligations set out in the Schedule of Commitments and proposals in the CEMP. It shall also provide for access to the full Schedule of Commitments, CEMP, Environmental Compliance Reports and final Environmental Compliance Audit Summary. This information shall be made publicly available online as well as by any other means agreed with Cork Co Co, such as newsletters for public distribution.

Reason: In the interests of making information on upcoming and ongoing works, and on environmental compliance, freely available to interested parties.

16. The CEMP shall describe and confirm how safe access to water level from selected points on the river banks shall be incorporated into the scheme as part of the detailed design of mitigation measures. The designs and locations of access points shall facilitate access to the water for amenity purposes including angling. The locations, designs and number of these access points shall be agreed with Cork County Council and be subject to consultation with Inland Fisheries Ireland.

Reason: To ensure safe continuation of amenity uses.

17. The OPW shall describe and confirm final finishes and landscaping details for all new structures, improved structures and built elements, including underpinned sections of river walls and bridge piers design for the Built Heritage & Architectural Policy section of the Department of Arts, Heritage and the Gaeltacht and with Cork County Council. These details will be agreed in writing with Cork County Council prior to construction.

Reason: In the interests of visual amenity and of proper planning and sustainable development of the area.

18. Following completion of the scheme all maintenance works shall be subject to further environmental assessment and compliance requirements as applicable.

Reason: To ensure continued assessment of environmental effects in compliance with relevant legislation.

## Conclusions

The EIS is generally compliant and comprehensive.

The impacts that are predicted appear to generally be within parameters that are normally acceptable for such developments

The mitigation measures that are proposed appear to be generally appropriate. This review recommends augmentation and clarification of aspects of some of these undertakings as conditions to ensure that they are adequate and enforceable. It also proposes a number of other conditions to ensure that other effects are appropriately mitigated and monitored.

## REFERENCE DOCUMENTS

 AA screening doc complete	14/10/2014 11:32	Adobe Acrobat D...	1,574 KB
 App 2A Bandon EIA - Report on Flood Ris...	07/04/2012 14:33	Adobe Acrobat D...	6,833 KB
 App 2B Bandon EIA - Constraints Study C...	08/06/2012 15:07	Adobe Acrobat D...	411 KB
 App 2C Bandon EIA - Constraints Study S...	06/06/2012 16:16	Adobe Acrobat D...	4,694 KB
 App 2D Bandon EIA - PID 1 Posters	08/06/2012 15:16	Adobe Acrobat D...	3,893 KB
 App 2E Bandon EIA - Public Consultation...	08/06/2012 10:45	Adobe Acrobat D...	129 KB
 App 2F Bandon EIA - PID 2 Information	08/06/2012 15:24	Adobe Acrobat D...	25,498 KB
 App 2G Bandon EIA - EIA Scoping Pack	08/06/2012 15:21	Adobe Acrobat D...	9,467 KB
 App 2H Bandon EIA - EIA Scoping Replies	06/06/2012 15:19	Adobe Acrobat D...	3,384 KB
 App 3A Bandon EIA - Scheme Drawings	08/06/2012 18:50	Adobe Acrobat D...	59,762 KB
 App 5A Bandon EIA - AA Screening Report	07/06/2012 16:39	Adobe Acrobat D...	1,321 KB
 App 5B Bandon EIA - Site Synopsis	07/06/2012 14:30	Adobe Acrobat D...	21 KB
 App 5C Bandon EIA - River Descriptions ...	08/06/2012 15:12	Adobe Acrobat D...	11,185 KB
 App 5D Bandon EIA - Fish Stock Assessm...	15/02/2012 10:00	Adobe Acrobat D...	9,177 KB
 App 5E Bandon EIA - Bandon MacroInver...	15/02/2012 10:55	Adobe Acrobat D...	17 KB
 App 6A Bandon EIA - Bedrock & Quarry ...	15/03/2012 15:13	Adobe Acrobat D...	554 KB
 App 6B Bandon EIA - GSI Extract showing...	06/06/2012 12:49	Adobe Acrobat D...	194 KB
 App 6C Bandon EIA - Preliminary Site Inv...	30/01/2012 10:31	Adobe Acrobat D...	7,742 KB
 App 7A Bandon EIA - Aquifer Locations.p...	06/06/2012 12:51	Adobe Acrobat D...	266 KB
 App 7B Bandon EIA - Aquifer Vulnerabilit...	06/06/2012 12:52	Adobe Acrobat D...	324 KB
 App 7C Bandon EIA - Hydrology Report....	24/05/2012 15:55	Adobe Acrobat D...	3,262 KB
 App 7D Bandon EIA - Hydraulics Report....	24/05/2012 15:51	Adobe Acrobat D...	8,174 KB
 App 8A Bandon EIA - Tables and Air Qual...	08/06/2012 10:44	Adobe Acrobat D...	294 KB
 App 10A Bandon EIA - Photographs.pdf	08/06/2012 14:27	Adobe Acrobat D...	4,669 KB
 App 10B Bandon EIA - Catalogue of Und...	08/06/2012 14:29	Adobe Acrobat D...	907 KB
 App 10C Bandon EIA - Database of Irish E...	08/06/2012 14:29	Adobe Acrobat D...	79 KB
 App 10D Bandon EIA - Underwater Arch...	07/06/2012 16:13	Adobe Acrobat D...	26,649 KB
 App 11A Bandon EIA - Material Assets an...	08/06/2012 12:45	Adobe Acrobat D...	18,205 KB
 App 11A Bandon EIA - Material Assets an...	08/06/2012 12:45	Adobe Acrobat D...	18,205 KB
 Appendix B - Written Observations	15/01/2013 08:49	Adobe Acrobat D...	6,302 KB
 Bandon EIA - Non Technical Summary	08/06/2012 18:24	Adobe Acrobat D...	394 KB
 Bandon EIS Addendum Appendices Rev 1	18/12/2015 09:15	Adobe Acrobat D...	238,928 KB
 Bandon EIS Addendum Report Rev 1	18/12/2015 09:15	Adobe Acrobat D...	8,712 KB
 Ch1 Bandon EIA - Introduction	08/06/2012 15:00	Adobe Acrobat D...	49 KB
 Ch2 Bandon EIA - Background Information	08/06/2012 17:55	Adobe Acrobat D...	860 KB
 Ch3 Bandon EIA - Description of the Pro...	08/06/2012 16:45	Adobe Acrobat D...	121 KB
 Ch4 Bandon EIA - Human Beings	08/06/2012 17:43	Adobe Acrobat D...	868 KB
 Ch5 Bandon EIA - Flora and Fauna	08/06/2012 15:50	Adobe Acrobat D...	2,613 KB
 Ch6 Bandon EIA - Geology and Soils.pdf	08/06/2012 16:23	Adobe Acrobat D...	188 KB
 Ch7 Bandon EIA - Water - Hydrology and...	08/06/2012 16:26	Adobe Acrobat D...	246 KB
 Ch8 Bandon EIA - Air, Climate and Noise	08/06/2012 16:29	Adobe Acrobat D...	10,644 KB
 Ch9 Bandon EIA - Landscape	08/06/2012 16:42	Adobe Acrobat D...	5,796 KB
 Ch10 Bandon EIA - Cultural Heritage	08/06/2012 16:30	Adobe Acrobat D...	828 KB
 Ch11 Bandon EIA - Material Assets	08/06/2012 16:31	Adobe Acrobat D...	217 KB
 Ch12 Bandon EIA - Interaction	08/06/2012 17:27	Adobe Acrobat D...	21 KB
 Figures 5.1 - 5.3 Bandon EIA - Flora and F...	08/06/2012 16:34	Adobe Acrobat D...	3,298 KB
 Figures 5.5 - 5.8 Bandon EIA - Flora and F...	08/06/2012 15:32	Adobe Acrobat D...	6,833 KB
 Figures 9.1 - 9.4 Bandon EIA - Landscape	08/06/2012 16:24	Adobe Acrobat D...	2,510 KB
 References Bandon EIA	08/06/2012 17:27	Adobe Acrobat D...	78 KB
 Report on Observations on Public Exhibit...	13/12/2012 17:22	Adobe Acrobat D...	719 KB
 RFT letter	13/01/2016 10:17	Adobe Acrobat D...	775 KB
 Table of Contents	25/01/2016 12:07	Adobe Acrobat D...	1,050 KB