

(4)

THERE ARE A COUPLE OF JUNCTIONS WHERE DRAIN WATER WILL BE LET IN FROM THE TOP OF THE PIPELINE. THIS IS AT THREE MILES, QUALITY HOTEL, DUNMORE ROAD AND INCHIDONEY ROAD. THE RED AREA ON THE MAP WILL DRAIN INTO IT

CALCULATIONS FOR MEASURES SUB 1.

ASSUMPTION: PEAK RAINFALL OF 75 MM WITHIN TWO TO THREE HOURS. SATURATED GROUNDS WHICH INVOLVES THAT $\frac{2}{3}$ OF THE RAIN WILL HAVE TO BE TRANSPORTED IN CLONAKILTY BAY IN 8 HOURS. WHICH IS 50 MM ALLOVER THE CATCHMENT AREA

THERE ARE THREE LAND AREAS.

A. THE GREEN LAND (SEE MAP) WHICH IS MAINLY AGRICULTURAL LAND TOTAL 15 km^2 .
TOTAL AMOUNT OF WATER TO BE DISPOSED OF,

$$15 \cdot 10^6 \text{ m}^2 \times 5 \cdot 10^{-2} \text{ m} = 75 \cdot 10^4 \text{ m}^3$$

UP STREAMS DOWN TO DUNNES STORE BRIDGE THE FEAGLE WILL LOOK AFTER THAT

B. THE RED LAND (SEE MAP) TOWN AND BUILT UP AREA SOUTH OF THE RIVER FEAGLE: 3.5 km^2
TOTAL AMOUNT OF WATER TO BE DISPOSED OF

$$35 \cdot 10^6 \times 5 \cdot 10^{-2} \text{ m} = 17.5 \cdot 10^4 \text{ m}^3$$

← THE **PURPLE LAND** (SEE MAP) TOWN AND BUILT UP AREA NORTH OF THE FEAGLE. 4.5 km^2

TOTAL AMOUNT OF WATER TO BE DISPOSED OF IS $4.5 \cdot 10^4 \cdot 5 \cdot 10^{-2} = 22.5 \cdot 10^4 \text{ m}^3$.

THE SITUATION AT DUNNES STORES BRIDGE IS THAT ON AVERAGE 26 m^3 PER SECOND HAS TO BE CONVEYED THROUGH THE RIVER, WITH PEAK VALUES OF DOUBLE THE AMOUNT. THE WATER SPEED ~~AT~~ DUNNES STORES AT THIS CRITICAL PERIOD IS 5 METERS PER SECOND TO CONVEY THE OPENING ~~NEED~~ UNDER THE BRIDGE NEEDS TO BE 5.2 m^2 AT 26 m^3 per sec. BUT DEMAND CAN INCREASE TO A 10 m^2 OPENING. AS OF NOW THE OPENING IS NOT MORE THAN 4 m^2 . THE SOLUTION IS THE BYPASS PIPELINE WITH A ~~CAPACITY~~ CAPACITY OF 10 m^3 PER SECOND. THE DIAMETER OF THE PIPE IS 2.6 m . AND THE GRADIENT IS 2 METERS PER KILOMETER = 2% OF THE 10 m^3 ~~HALF~~ WILL BE SUPPLIED BY THE **RED AREA** AND THE OTHER HALF COMES FROM THE RIVER FEAGLE. THE BOTTOM OF THE PIPELINE SHOULD BE JUST UNDER THE TOP LEVEL OF THE ARCH OF DUNNES STORES BRIDGE. THE WATER COMING FROM THE PURPLE AREA, $7 \text{ m}^3/\text{sec}$ WILL FLOW DIRECTLY IN THE RIVER FEAGLE AS IS THE SITUATION NOW

SUB. 2.

- A LONG TERM SOLUTION FOR WATER RETENTION, A SO CALLED FLOOD PLAIN IS OBLIGATORY FOR A SUCCESSFULL FLOOD RELIEF SCHEME.

IN THIS PROPOSAL. CLONAKILTY BAY WILL ACT AS SUCH.

A FLOOD BARRIER. IN THE FORM OF A SLUICE DAM, AT RING PIER MUST BE BUILT.

THE SLUICE WILL BE OPEN IN 99% OF THE TIME. BUT AT CRITICAL SITUATIONS THE SLUICE CAN BE CLOSED AT LOW TIDE.

THE DAM CAN BE BUILT WITH ROCK AND CLAY SOIL ~~FROM THE~~ APROXIMITY OF 2 MILES.

THE TOP OF THE DAM, BOTH SIDES OF THE SLOPE WILL BE IN GRASS. AND A CYCLE PATH OR FOOTPATH BETWEEN INCHIDONEY

^{AND} ISLAND AND RING WILL FINISH IT OFF.

TO PREVENT RING FROM FLOODING A 3 FEET WALL WILL BE BUILT ALONG THE ESTUARY FROM THE PIER UNTIL THE LAND RISES AGAIN. ~~AT~~ IN SOUTHERN DIRECTION THE HEIGHT OF THE DAM WILL BE THE SAME AS THIS WALL IN RING.

CALCULATION

THE TOTAL SURFACE OF LAND DRAINING IN CLONAKILTY IS THE AMALGAMATION OF THE WATER THAT HAS TO BE DISPOSED OFF IN ITS TOTAL CATCHMENT AREA.

WHICH IS THE TOTAL OF THE GREEN RED PURPLE AND BLUE AREAS WHICH IS 31 km^2

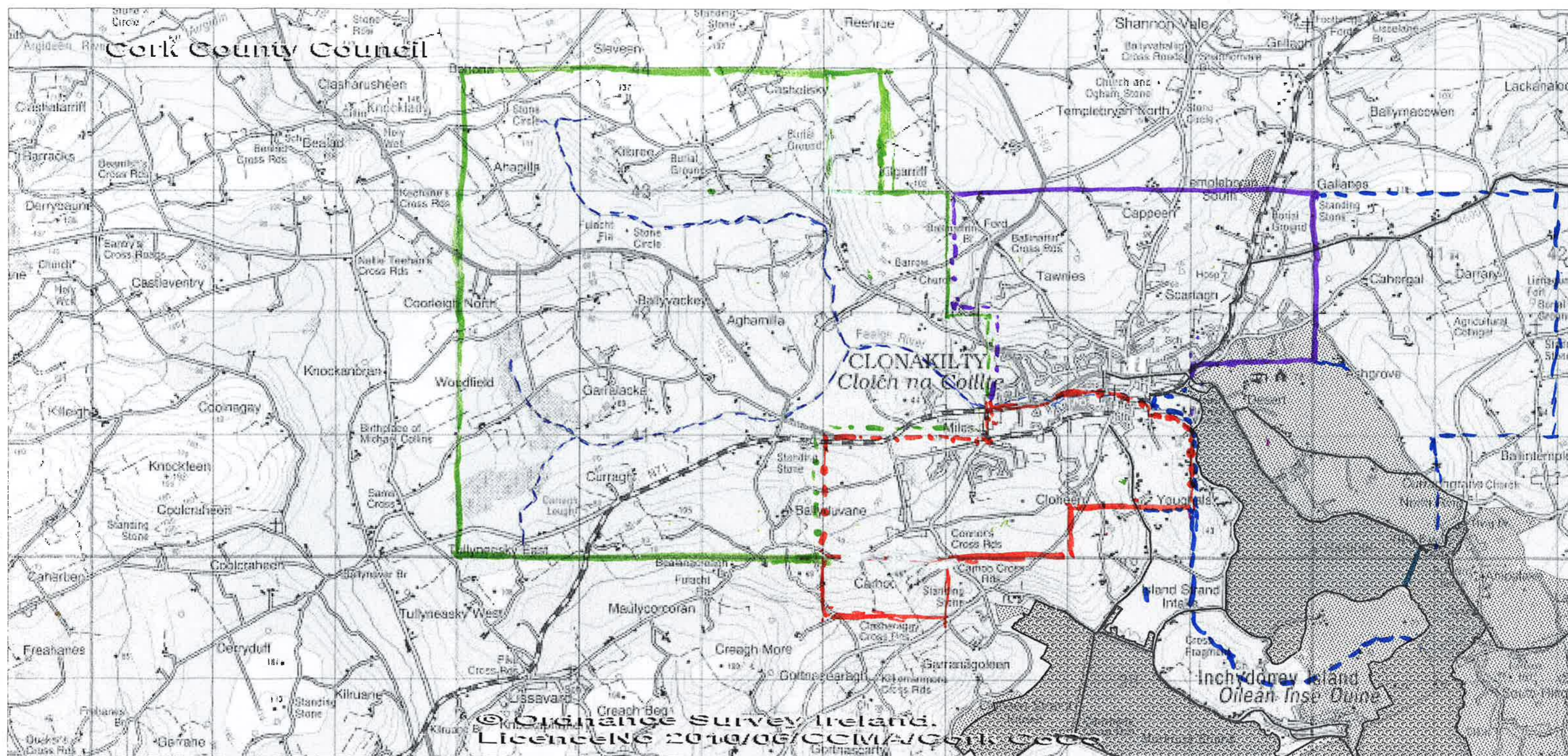
THIS AREA WILL RELEASE A TOTAL OF $31 \cdot 10^6 \times 5 \cdot 10^{-2} \text{ m}^3$ OF WATER IN THE BAY IN 8 HOURS. WHICH IS $155 \cdot 10^4 \text{ m}^3$

THE TOTAL SURFACE OF THE BAY TIL THE NEW BUILT DAM IS 1.75 km^2 which is $1.75 \cdot 10^6 \text{ m}^2$ or $175 \cdot 10^4 \text{ m}^2$

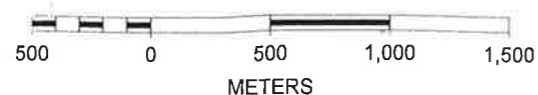
THIS MEANS THAT THE WATER LEVEL OF THE BAY AT THE END OF THE 8 HOURS IS-

$$\frac{155 \cdot 10^4 \text{ m}^3}{175 \text{ m}^2} \approx 0.9 \text{ m} = 3 \text{ FEET. WHICH IS AN AVERAGE HEIGHT AT HIGH TIDE}$$

Feagle



SCALE 1 : 31,305



sluice dam

Appendix 4B - SWRBD CFRAM Study Clonakilty July 2013 PCD Report



Clonakilty Flood Relief Study



INTRODUCTION

Clonakilty Town Council Flood Sub-Committee is comprised of Members and the executive of Clonakilty Town Council, representatives from Clonakilty Chamber of Commerce and a representative of private residential holders in the Clonakilty Area. The committee's members between them have a vast experience as to the cause of flood risk in Clonakilty and indeed they have being the victims of flood events over the last number of years. They are ideally placed to suggest the causes of flood risk and also to put forward possible solutions to eliminate or at the very least mitigate against flooding events.

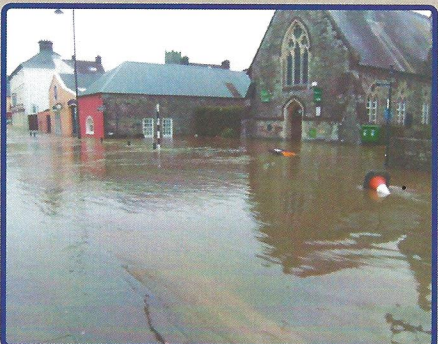
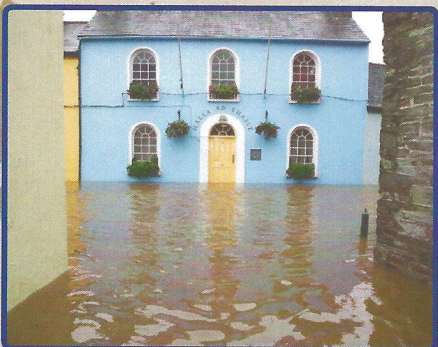
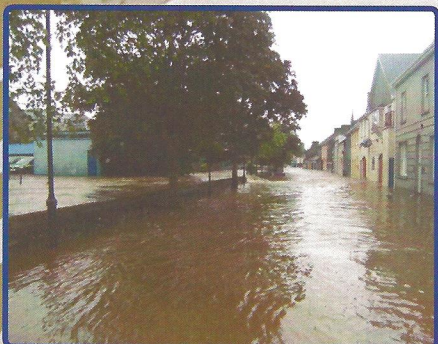
The OPW and its engineering consultants, Mott McDonald conducted a Public Consultation Day (PCD) in Clonakilty on 16th July whereby they presented to the Members of Clonakilty Town Council and the people of Clonakilty draft flood maps and identified measures and options for managing flood risk in the Clonakilty Area. These options were a result of the South Western River Basin District Catchment Flood Risk Assessment and Management (CFRAM) Study carried out by Mott McDonald.

Both the OPW and Mott McDonald arranged a period of public consultation which allows for various bodies and individuals to make submissions in relation to the options and measures identified and presented at the PCD on 16th July.

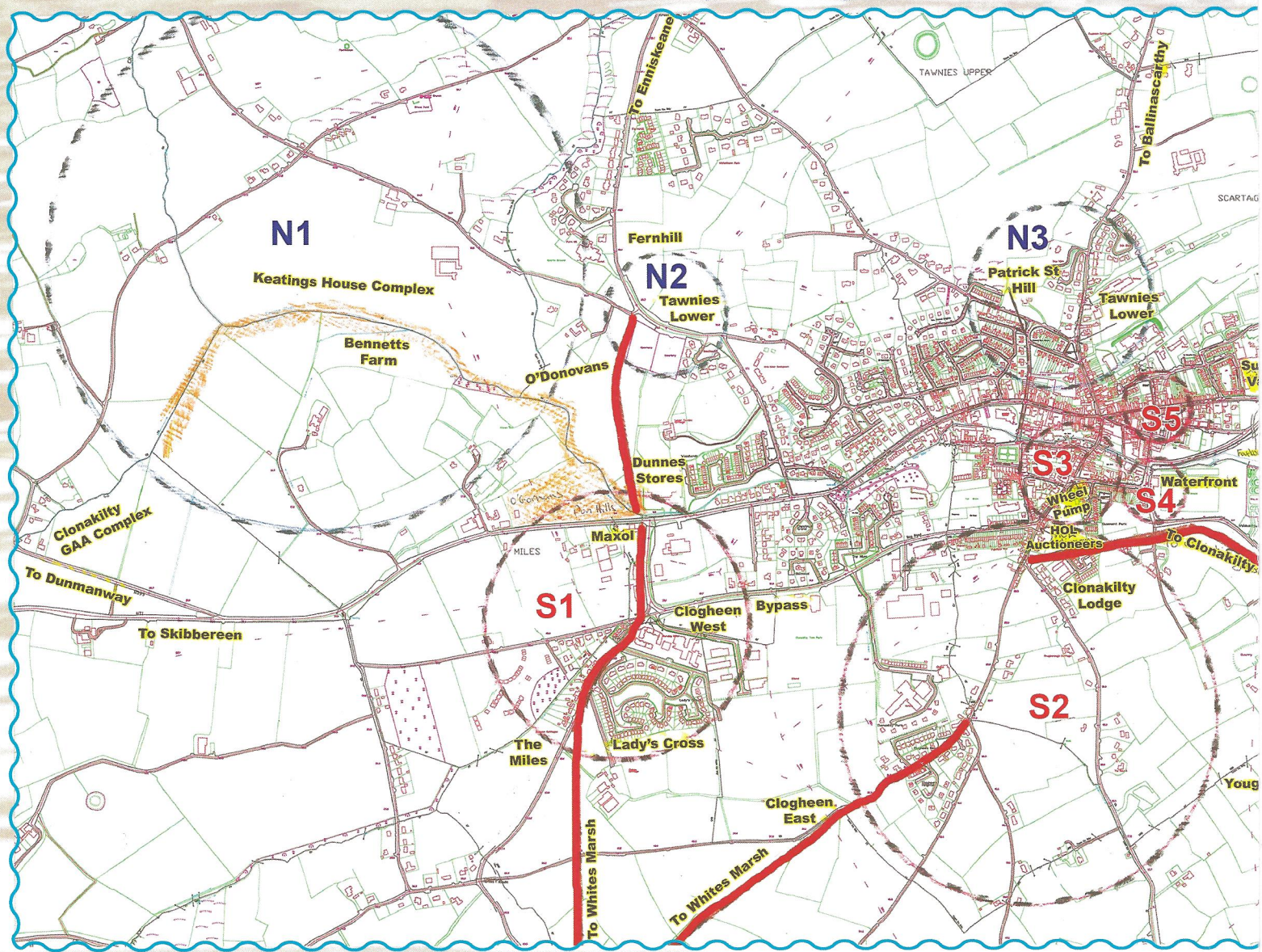
This document represents the submission of the Clonakilty Town Council Flood Sub-Committee as invited at that forum. It, in the view of the committee, identifies the areas of flood risk within the Clonakilty Urban Area and its Environs and attempts to offer solutions to these flood risks.

The purpose of this document is to allow for the discussion of preferred solutions identified and also that consideration be given to other areas of town which may not have being assessed or the risk associated with the cause to be examined in more detail.

The Committee would request that the OPW and Mott McDonald consider this submission and furthermore would invite the representatives from both bodies to meet with the committee and conduct field trips to assess how these problems occur on the ground.



Boundary Map of Clonakilty



PROBLEMS IN CLONAKILTY SOUTH

S1. LADY'S CROSS, DUNNES STORES, THE MILES

Problem: The meeting of diverted streams and water from developments resulting in water flowing into town. There is inadequate drainage & diversion of surface water away from town.

Solution: Divert drains beyond the Miles and part of the River Feale to run to marsh at Clogheen Strand / Whites Marsh (which is already OPW property)

S2. MEETING OF PARK ROAD/YOUGHALS/LAMB STREET/JIM HURLEY TERRACE

Problem: Surface water from Clogheen East flowing onto bypass through Lamb Street onto Connolly Street, Rossa Street and Casement Street which results in the flooding of Connolly Street, Casement Street and Clarke Street

Solution:

- (a) Run a storm drain from underneath Clonakilty Lodge through agricultural land to meet the bay at the sewerage plant
- (b) Run a pipe from Clogheen East to Whites marsh

S3. KENT STREET, ROSSA STREET, CONNOLLY STREET

Problem: Low lying streets without adequate drainage. Suffers flooding from hotspot 2 and from the river bursting its banks on Kent Street

Solution:

- (a) An emergency storm drain needs to be laid going through in Harte's Courtyard and then left into river. Estimated distance of pipe is 40 meters.
- (b) Rebuilding of the temporary wall in the car park that collapsed in the flood of June 28th to be considered – since completed.
- (c) All damaged bridges & drains to be accessed, enlarged & repaired as necessary

S4. WATERFRONT, EUROSPAR

Problem: Build up of water flowing from Clogheen & adjacent streets. Inadequate drainage. There is also a danger here from tidal flooding.

Solution: (a) Emergency storm drains near Street Bridge.

(b) Construction of a tidal barrage

S5. RICHY'S RESTAURANT, ONE STREET, WOLFE TONE STREET

Problem: Water from community college, A area which is also susceptible to tidal flood

Solution: Storm drain with pipe running a bypass road and fitted with a non return valve

S6. TOBAIRIN ROAD

Problem: Major surface water flowing down Fax Bridge area

Solution: New storm drain with pipe through can also be linked into a drain on Convent

S7. CLONAKILTY BAY

Problem: The culmination of heavy rain, caused Clonakilty to flood.

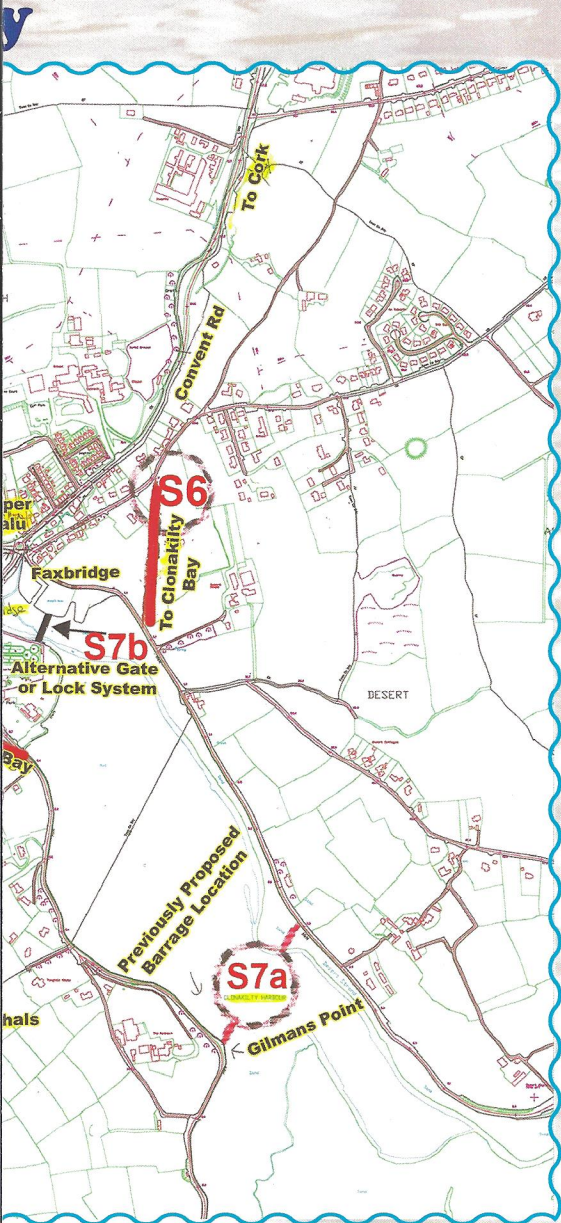
Solution: (a) The erection of a flood barrage Planning permission was sought and granted

(b) Alternatively a gate or lock closer to the town

S8. CARHOO

Problem: Build up and collection of water in Garage Stream and at its worst follows through Clogheen Cottages, N71 By-Pass and West

Solution: Water is contained and redirected under the N71 and piped into the sea



PROBLEMS IN CLONAKILTY NORTH

N1. WESTERN FLOOD PLAIN

Problem: Flood plains have been built on and excess water is going into river Feale which is bursting its banks at Dunnes Stores and from there flowing via Western Road and flooding the town centre.

Solution:

- (a) Allowing flood plains and farmland adjacent to the river to flood and arranging compensation for farmers. Creating holding ponds adjacent to Dunnes Stores.
- (b) Divert the river to Whites Marsh

N2. TAWNIES LOWER

Problem: Excess surface water flowing downhill from developments is culminating in flooding at the oil depot area on Western Road.

Solution: Build a storm drain at the junction of graveyard car park to holding ponds via river.

N3. TAWNIES LOWER, BARRACK HILL, OLD CHAPEL LANE, MCCURTAIN HILL

Problem: Water from higher ground flowing down McCurtain Hill, Old Chapel Lane and Patrick's Street Hill onto Main Street (Pearse Street)

Solution: Storm drain at the top of Patrick's Street Hill going across Old Chapel Lane meeting drain on McCurtain Hill going to Community College at the back of Strand Road and entering the bay at Faxbridge. This would alleviate flooding on the Pearse Street /Strand Road area.

N4. CONTAINMENT OF WATER FROM PATRICK'S HILL, MCCURTAIN HILL AND FILHOLS

Problem: At peak rainfall there is pressure on the drainage collection system at Patrick's Hill, McCurtain Hill and Filhols.

An assessment of the collection system in these areas needs to be completed as to how rain and water flows are collected and to the size of drainage pipes used to direct these flows to the mouth of the bay at Faxbridge.

N5. BUILD UP, COLLECTION AND FLOW RATES ON CONVENT HILL

Problem: At peak rainfall the streams on either side of Convent Hill appear inadequate to cope with water flows.

Solution: Create a proper excavated stream on the southern side of the carriageway which will connect to the current stream at Faxbridge.

eds to be laid to take water to bay side of Clarke

DELL SPORTS - JUNCTION OF ASHE AND CLARK STREET

she Street, and James P O'Regan road floods this ing & has inadequate drains adjacent to An Súgan and entering the bay on the ve.

wn Old Timoleague Road/Tobairin Road flooding

h agricultural land through to the bay; this solution Road

south east winds and high tides has historically

at Gilman's Point (the narrowest part of the bay). ed for this project but it did not go ahead.

own between Deasys Quay and the sewage plant.

in this area which contributes to the flows on the e direction of the stream flooding Ladies Cross, tern Road.

ted by piping along land adjacent to road from ttenuation area west of the Town.

INDEX



North of River



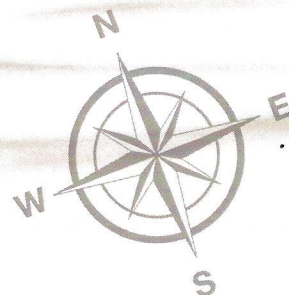
South of River



Proposed Large Drainage Pipework



Natural Flood areas & Holding Pond location



FINANCIAL DAMAGE OF FLOODING EVENTS

Flood Event of 28th June, 2012

- 170 Retail Premises affected.
- 105 Private Residences.
- 70 Motor Vehicles Lost.
- Estimated Damage €6 – €7 million euros.
- 157 Premises suffered damage between €0 and €10,000;
- 34 Premises suffered damage between €10,000 and €20,000;
- 13 Premises suffered damage between €20,000 and €30,000;
- 5 Premises suffered damage between €30,000 and €40,000;
- 10 Premises suffered damage between €40,000 and €50,000;
- Several Premises suffered damage up to €1,000,000.
- Cost of Minor infrastructural works to date carried out by the local authority €400,000.



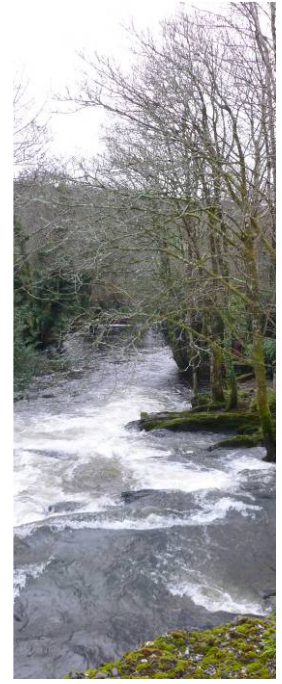
Flood Event of 19th November, 2009

- While no surveys were carried out in relation to the cost of the flooding in November 2009, factual accounts and anecdotal evidence would suggest that the damage was in the region of €2 - €3 million euros



HISTORY OF FLOODING IN CLONAKILTY

- **October 1961** – Heavy Pluvial Flooding due to heavy rainfall – areas affected were on the southern side of the town.
- **March 1962** – Tidal Flooding due to storm surge – areas affected were on the southern and eastern areas of town.
- **December 1981** – Pluvial Flooding due to heavy rainfall and high tide levels – areas affected were on the southern and eastern side of town.
- **August 1986** – Pluvial Flooding due to heavy rainfall – areas affected were on the southern and eastern side of town.
- **December 1989** – Tidal Flooding due to storm surge – areas affected were on the southern and eastern areas of town.
- **January 1995** – Pluvial Flooding due to heavy rainfall – areas affected were on the western, southern and eastern sides of town.
- **November 2009** – Fluvial flooding from the river Feagle – areas affected were on the western side of town and streets on town centre including Oliver Plunkett Street, Bridge Street, Kent Street, Rossa Street and Connolly Street.
- **June 2012** – Both Pluvial and Fluvial Flooding (Ladies Cross Stream and Feagle River) – areas affected were entire urban area with flood levels in excess of 1.5 metres.



SWRBD CFRAM Study

Clonakilty July 2013 PCD Report

October 2013

Office of Public Works

SWRBD CFRAM Study

Clonakilty July 2013 PCD Report

October 2013

Office of Public Works

Jonathan Swift Street,
Trim,
Co. Meath

Issue and revision record

Revision	Date	Originator	Checker	Approver	Description	Standard
A	21/08/13	GMcC	BOC	FMcG	Initial Issue	
B	17/10/13	GMcC	BOC	FMcG	Revised issue	
C	23/10/13	GMcC	BOC	FMcG	Revised issue	
D	24/10/13	GMcC	BOC	FMcG	Revised to include CTC Submission	

This document is issued for the party which commissioned it and for specific purposes connected with the above-captioned project only. It should not be relied upon by any other party or used for any other purpose.

We accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by other parties.

This document contains confidential information and proprietary intellectual property. It should not be shown to other parties without consent from us and from the party which commissioned it..

Contents

Chapter	Title	Page
	Executive Summary	i
1	Introduction	1
2	Submissions from the Public	2
2.1	Submissions made _____	2
3	Feedback and Comments on Flood Maps	3
3.1.1	Areas known to flood <i>not</i> shown on design flood extents _____	3
3.1.2	Areas shown as flooded & highly unlikely to ever flood _____	3
3.1.3	Evidence of Design Event Flood Profiles having been met or exceeded _____	3
4	Feedback and Comments on the Preliminary FRM Options	5
4.1	Ranking of FRM Options _____	14
5	Local importance of FRM Objectives	15
	Appendices	18
	Appendix A. Public Consultation Day Poster _____	19
	Appendix B. Public Consultation Day Leaflet _____	20
	Appendix C. Public Consultation Day Display Material _____	21

Executive Summary

The Office of Public Works (OPW) has appointed Mott MacDonald to carry out the South Western River Basin District Catchment Flood Risk Assessment and Management (CFRAM) study. The aim of this study is to prepare flood maps and identify viable measures for managing flood risk in areas of significant risk. Clonakilty has been identified as one such area and given top priority.

A Public Consultation Day (PCD) was held on 16th July 2013 in O'Donovan's Hotel on Pearse Street in Clonakilty. The purpose of the PCD was to present the public with the Draft Flood Maps and preliminary Flood Risk Management Options. Subsequently feedback and comments were gathered from members of the public and interested parties.

This report details the feedback received at the PCD as regards public experience, attitude, opinion and preference to the Flood Risk Management (FRM) Options. A detailed analysis is provided on the feedback received in terms of: flood maps, preferred options, and views on alternative options. Finally the option appraisal process of the FRM Options and Local Weightings is outlined.

1 Introduction

This Report details the Public Consultation Day (PCD) held in Clonakilty on 16th July 2013.

Following the flood events that occurred in Clonakilty in the summer of 2012, it was decided to prioritise the work of the South Western CFRAM study in the town. Originally it was scheduled that the public consultation on the preferred flood risk management option for Clonakilty would take place in June 2014. The programme for Clonakilty has been accelerated so that this consultation has taken place over a year earlier than originally planned and follows a PCD held on 16th October 2012. This PCD was held to present the public with the Draft Flood Maps and Preliminary Flood Risk Management Options for Clonakilty and to gather information on experience of flooding and opinions on potential solutions.

The format for the Public Consultation Day included:

- A background to the CFRAM study and its analysis methods and stages.
- An explanation of the Flood Maps and display of the Draft Flood Maps for public viewing.
- A presentation of six Preliminary Flood Risk Management Options, the Preferred Option and reasons for non-selection of alternative options.

At 1400h a presentation was given to the elected representatives of Clonakilty Town Council and Cork County Council. Mr Cian O Donall gave an interview to TG4 in Irish. The public were allowed into the PCD at 1500h. Questions asked by the public were answered by the study team members present. The PCD was attended by the following study team members; Mark Adamson, Michael Collins, Cian O Donall, Conor Galvin, John Kelly (all OPW), Joan Dineen, Colm Brennan, Charlie Brannigan, Michael Tobin (All Cork County Council), Fintan McGivern, Barry O'Connor Tony Donovan (all Mott MacDonald). It is estimated that the PCD was attended by over 100 members of the public.

Questionnaire forms were available at the Public Consultation Day in order to collate the opinions and information available from the public and other parties on the explanation of Flood Maps and Flood Risk Management Options for Clonakilty. The Questionnaire forms could be completed and returned on the day or by 31st July 2013 by post or directly to Clonakilty Town Hall. A summary of the public submissions is contained in Section 2.0 of this report.

2 Submissions from the Public

2.1 Submissions made

Questionnaire forms were available at the Public Consultation Day in order to collate the opinions and information available on the issue of Flood Maps and Flood Risk Management Options for Clonakilty. Information sought included information on the consultees for example; location, type of property affected, history and frequency of flooding and source of flooding. Opinions were also sought from the consultees on the following; their preference in respect of the FRM Options, the accuracy of the Flood Maps and the relative importance of the various FRM objectives.

In total 26 submissions from the public were received. 13 of the submissions were from consultees that had a residence in Clonakilty, 8 were from consultees with an interest in commercial premises in the area, 3 were from consultees who classified their properties as residential/commercial and 2 were from consultees who classified their properties as residential/other.

3 Feedback and Comments on Flood Maps

The questionnaires provided the public with an opportunity to supply feedback on the information presented in the Draft Flood Maps. A number of additional submissions were received via email and letter. The comments were reviewed and the feedback of public information and opinion related to the Draft Flood Maps is set out in the sections following.

3.1.1 Areas known to flood *not* shown on design flood extents

This section refers to submissions providing details of areas which are known to flood, (i.e. have flooded once or more in the past), but which are not shown by the design flood even extents. Related public comments on the Draft Flood Maps are provided in Table 3.1 below.

Table 3.1 Areas known to flood not on design flood extents

Ref	Comments on Draft Flood Maps	MM Comment and relevant action
3.1.1	The (flood) map does not include the area where I own 4 properties. These are slightly outside the storage area. Those properties have flooded 3 times over the last few years to a depth of 500mm. I have marked the location on the map with an X. The bridge at this point is not adequate to take the water. I am the only registered owner in this area to be flooded all 3 times. I would like to be contacted about this.	Area outside of the AFA, not covered by Flood Mapping. For consideration by CCC. This is within a drainage district.
3.1.2	Western Road / Oliver Plunkett Street area is categorised as a low hazard area on the Draft Flood Map. This is certainly not correct. All this is now very important as we no longer have flood damage cover on our insurance.	Part of Western Road is shown to flood in 1% AEP. The remainder and OP Street are shown to flood during the 0.1% AEP.
3.1.3	The plans do not take into account the water which came down the miles where the road became the actual river. This water would completely bypass the storage area and embankment.	This was Pluvial flooding. For consideration by CCC.
3.1.4	Convent stream has caused flooding to the north of the town to Convent Road and Wolfe Tone Road. Pipes blocked with silt. Source of water is in the area of the Liberty Line.	Catchment of this stream is too small to be included in CFRAM. Flooding issue could be considered by CCC.
3.1.5	Maps don't include an area I know which has flooded. Mark Adamson has details.	The area is upstream of the AFA and the Storage Area. The flood mapping does not extend to their property.

3.1.2 Areas shown as flooded & highly unlikely to ever flood

The public submissions provided no evidence of any areas which are shown by the Draft Flood Maps as flooded but which are highly unlikely to ever flood.

3.1.3 Evidence of Design Event Flood Profiles having been met or exceeded

This section refers to public submissions which indicate there is evidence of the range of design event flood profile levels having been met or exceeded. Any evidence received by way of commentary is provided in Table 3.2 below.

Table 3.2 Evidence of design flood extents being met or exceeded

Ref	Comments on Draft Flood Maps	MM Comment and Relevant Action
3.2.1	We would still have a concern with the flood defence barrier around the house on the Cappeen downstream of the Kilgariff road as this stream regularly bursts its bank and this water flows down the driveway of this house and re-enters the stream further down the field.	Fluvial from Cappeen Stream. Possible Blockage at bridge. This hazard is indicated on the Maps. No action required
3.2.2	The laneway opposite our home, the last on the terrace on the town side of the Museum, leads a few yards down to the river. On the night of the flood, we could see the river churning up and spurting water down the lane towards our house and the street (Oliver Plunkett Street/Western Road) and meeting up with the fast-flowing river, which had once been the site of the Western Road. We knew from what we could see from upstairs windows that if it had been daytime with the normal life of the town, there would have been fatalities. We never want to see this again!	Fluvial flooding on Western Road / OP Street is indicated on the maps. No action required.
3.2.3	On the maps for Area 1, the Western Road/ Oliver Plunkett Street areas are classed as Low Hazard category. How can this be the case when Oliver Plunkett Street is flooded up to 3 times a year? This area/street is much higher than 1% AEP Flood Extent quoted on the Flood Extent map. Why is Oliver Plunkett Street not included on the Flood Depth map when it floods properties at least 3 times a year for many years - same for Flood Velocity map. . Simply heavy rain causes flooding along Oliver Plunkett Street, Bridge Street, Connolly Street, etc.	OP Street has flooding indicated in the 1% AEP depth map. This area susceptible to Pluvial flooding also which leads to a higher frequency of flooding. No action required..
3.2.4	Western Road / Oliver Plunkett Street area is categorised as a low hazard area on the Draft Flood Map. This is certainly not correct. All this is now very important as we no longer have flood damage cover on our insurance.	Fluvial flooding on Western Road / OP Street is indicated on the maps. No action required
3.2.5	1961 info inaccurate. 4 inches of water on Connolly Street tidal	Tidal Flooding is indicated on Connolly Street on the Tidal maps. No action required.
3.2.6	High tide level (predicted to be 4m) was Six inches below parapet of u/s side of Clarke Street bridge.	Tidal hazard is indicated in this area on the maps. No action required.
3.2.7	The night of 28 June 2012, the Western Road was flooded at 2am. This flooding was caused by neither river or tidal - but from what came from the sky.	Flooding of Western Road was from the Feagle during this event. This hazard is indicated on the flood maps. No action required.
3.2.8	Bridges too low to take volume of flood water bursting out onto main road and entering houses and to Clonakilty Town. They did not want to know - now they know and I am suffering and worrying. Ground floor completely (house) destroyed June 28 2012 - first time since house built 1961.	Flood hazard is indicated in this area on the maps. No action required.
3.2.9	I find the maps show the flooded area well.	No action required.

4 Feedback and Comments on the Preliminary FRM Options

The questionnaire provided the opportunity for public commentary and feedback on the FRM options. The comments and opinions gathered in the submissions are set out in Table 4.1 below.

Table 4-1 Comments on FRM options

Name	Comments on Flood Risk Management Options	MM Comment and Relevant Action
4.1.1	Clear drains and dykes of debris. Dredge river. If the wall near Dunne's Stores was built up, where it is broken for years the water might stay in the river rather than flowing down the main road.	River regrading was considered in the analysis. Repairing the wall at Dunne's would not prevent flooding further downstream.
4.1.2	Drawing No. 296235/Env/DR/20/CLN/212A - Rev. E was the only option on display. Option shown to us personally by OPW is our least favourite option.	Consider that displayed option is preferred to one shown by OPW.
4.1.3	Tidal Barrage is not an option. We welcome the storage of fluvial water and its slow release in relation to both river and bridges capacity - hope it can be achieved. River walls: Would be concerned if walls on Church were to be repeated. This wall protected a tarmac surface but in turn 'sucked' river floor towards residences. The just completed wall at Kent Street is a fine piece of work. It would be a shame if the town was to lose some of its ambience by overdoing river walls - character of the river must be maintained. Maintenance: While it is sufficient to 'legislate' for the sudden and intense rainfall, it is imperative that there is a regular discipline of cleaning shores and drains. The impact on flooding of any further developments within the town will have to be taken into account at Planning stage. Until 'Flood Measures' are in place, further development should not be considered.	Consider that flood storage is preferred to fluvial defences.
4.1.4	I am the owner of a private residence and agricultural property in Aghamilla, Clonakilty. My property is located just north of the study area and includes a private bridge across the River Feagle to both the house and farm (indicated in red on attached map). I welcomed the proposed preferred option emerging for the Clonakilty Flood Relief Scheme. However, it is not clear from the study whether there will be increased water levels as a consequence of the proposed water storage solution in the area of the access to my property. I would be concerned that the proposed solution could potentially adversely affect the access to my property. I would welcome reassurance in this regard. I would be grateful if this could be taken into	It is not predicted that there will be an impact on flood levels at this location. OPW to consider contacting consultee.

Name	Comments on Flood Risk Management Options	MM Comment and Relevant Action
	account with regard to the scheme.	
4.1.5	We are not engineers or suitably qualified to know what is the best thing to do re the serious flooding problem in Clonakilty. We are still intensely involved in trying to repair our home which was badly flooded on 28/6/12. Since then, we have been living upstairs and are anxiously awaiting to continue with our lives when we can move downstairs. Constantly we worry about all this work and expense - will it all be for nothing? As we live on the western side of town, we are hoping the suggested fluvial measures re the culvert at Dunne's Stores, the defences involving walls and embankments and the upstream reservoir will all be sufficient in defending the town from future flooding.	We believe that the walls embankments and reservoir will be adequate. It is not proposed to construct a culvert at Dunne's Stores.
4.1.6	I believe the flood storage area is too small.	We believe that it is of adequate size.
4.1.7	I would be very cautious of the preferred option. Storage and tidal barrage would be my preferred option. My problem with the storage and tidal flood defences are this: The bay was empty on the night of 28 June 2012. In the event of there being a week of heavy rain and water is being released from storage facilities into the river gradually and you have a high tide, the tide will back the river up - where does water from storage facility go then? This scenario is more a probability than a possibility. The night of 28 June 2012, the Western Road was flooded at 2am. This flooding was caused by neither river or tidal - but from what came from the sky. The water had no soakage because the flood plain had been built upon. I fail to see how this proposed plan solves the problem or lowers the risk of flooding we have on the Western Road if this were to happen again. There would have been loss of life if bay was full on 28 June. Is money in place for this being ring-fenced?? I believe the fish and fauna area takes precedence over people's lives and taking livelihoods with proposed option.	The high tide and extreme flow scenario has been modelled and the FRM measures will work in these circumstances. Pluvial flooding will remain a problem as it is not addressed in the proposed FRM option. This is for consideration by CCC as an interim measure, and / or as part of the proposed scheme.
4.1.8	I feel flow diversion is the most important element of any flood management policy. It makes sense to take away the danger, not store it. I also feel the town drainage system needs to be upgraded. Many acres of land have been developed in and around Clonakilty and the original drainage system	Flow diversion was considered in the analysis. Storm water and pluvial drainage are not considered in this study. This is for consideration by CCC.

Name	Comments on Flood Risk Management Options	MM Comment and Relevant Action
	currently in place is totally inadequate. The capacity of the drainage system must be increased. Also, the height of road levels has constantly been raised with each resurfacing so that the road level is higher than ground floor level of properties. This is a huge problem on Oliver Plunkett Street. Height of road surfaces must be dropped significantly below floor levels of properties. Also, a culvert from the western end of town / Lady's Cross area to Clogheen Strand Intake (marsh) should form part of this plan.	Flow diversion was considered in the analysis. The route proposed would only impact on flows in the Garage stream where there is no flood risk (except for blockage) for the Design event and would require extensive tunnelling.
4.1.9	<p>As a resident of Oliver Plunkett Street I live in fear of flooding whenever we have heavy rain. I have lived here since 1965 and the past number of years has seen a drastic change as regards flooding in this area.</p> <p>Three areas I feel should be considered in dealing with the problem:</p> <ol style="list-style-type: none"> 1. Road surface should be lowered. 2. Drainage upgraded as it is not working efficiently at present. 3. Flow diversions to ensure the river will not flow down through the town again. 	<p>Surface water and pluvial flooding are outside the scope of this study. For consideration by CCC.</p> <p>Flow diversion was considered in the analysis.</p>
4.1.10	Height of wall on bypass - no provision for water down Convent Road, railway line, McCurtain Hill, St. Mary's Hill, Dunmore Road, Cloheen Road. Look at diverting water away from town retaining river's, stream and have a series of small retaining walls upstream. Provision to let out water at a rapid rate from Wolfe Tone Street with a non-return valve. Look at the road at the GAA pitch - Casement Street, to let flood water out through road to pitch and into bay. Look at tidal barrage with turbines to generate electricity on the tide in and out. Can be closed at times of high tide with S-E gale, with pumps to pump some of the river water over wall. Stream that is piped from Quality Hotel to be looked at. WADDI's and opened streams better than pipes for maintenance - Ref. Donegal Hospital.	<p>Surface water and pluvial flooding are outside the scope of this study. For consideration by CCC.</p> <p>Flow diversion was considered in the analysis.</p> <p>Tidal barrage has the potential to damage the environment in a protected habitat.</p> <p>The catchment of the stream at the Quality hotel is too small for consideration in this study. For consideration by CCC.</p>
4.1.11	We do not believe the flood risk management options being proposed are sufficient for the long term. We live at the western end of the town and	

Name	Comments on Flood Risk Management Options	MM Comment and Relevant Action
	<p>our threat is the fluvial flood. The storage area behind the embankment has been calculated on a single occurrence during a summer month where rainfall lasted approximately three hours. An extra allowance of 80m³ is inadequate. It does not make provision for the probability of future development in the area. Shortly after 28/06/12, I saw a documentary on flood defence measures in Rotterdam land originally reclaimed from the sea. It was very practicable, effective, and came in at a fraction of the cost of the proposed project for the western end of Clonakilty. The Daniel Goedbloed Rotterdam Climate Initiative is available to view online:</p> <p>default/files/rotterdam.climate_proof-_connecting_water_with_opportunities_-_by_daniel_goedbloed.pdf</p> <p>We also strongly believe an embankment of each inappropriate as we know first-hand water is a force of nature which knows no bounds. The water would erode the embankment. On the night in question, the water knocked clean a concrete wall at the wooden footbridge.</p>	<p>The storage area volume has been calculated on the basis of our in depth analysis and is conservative. This volume has been compared with an extreme event to put this volume in context with an event that has occurred recently.</p> <p>The embankment would be designed to withstand the forces of a flood.</p>
4.1.12	<p>I note from the OPW questionnaire form that OPW is subject to the Privacy and Confidentiality Clause and yet it is requested that the form is returned to Clonakilty Town Council or to Mott MacDonald, which is an English owned company with offices in Ireland.</p>	
4.1.13	<p>The Town Council has completed the erection of a new wall on the opposite bank of the river to us. The height of the wall is now far greater than the wall that is outside our premises and if the river floods again, the water will run into our premises as previously it ran out onto the road as well as our building.</p> <p>We feel that something should be done with the river bank on our side as no along will we be flooded, but the water will continue down to the car park and flood the premises backing Pearse Street and Rossa Street. On the car park side of the building which is Council property, at least half the wall is missing so we are at high risk of being flooded.</p>	<p>The proposed measures will limit the flow in the Feagle so that flood levels will not exceed the proposed wall heights in this area.</p>
4.1.14	<p>1. Storage - Cost of purchase of land for storage.</p>	

Name	Comments on Flood Risk Management Options	MM Comment and Relevant Action
	<p>Area prime agricultural fertile level fields. Land price very high presently. May entail CPO thus more delays before any work proceeds. What guarantee walls of storage will not breach from pressure of volume of water.</p> <p>2. Flood Plain Plenty of room for floodwater to reach its own level even with tidal backup with no danger to houses/roads prior to 1999 estate building and Dunne's Stores. Area greatly reduced, flood area reduced, plus increase in land drainage hinterland. Further house and industrial development in miles - all surfaces to river. Expressed my great concern on many occasions to Clonakilty Urban Council and Cork County Council (per letters) during planning applications 1999 - 2007 re danger of flooding to houses on Western Road (western end). Bridges too low to take volume of flood water bursting out onto main road and entering houses and to Clonakilty Town. They did not want to know - now they know and I am suffering and worrying. Ground floor completely (house) destroyed June 28 2012 - first time since house built 1961.</p> <p>3. Fluvial Flood Defences Building higher walls - water builds up - bridges from west (Dunne's Stores) too low for volume of water. Water will back from bridge to bridge from sea back to flood plain, bursting out in all directions whenever possible. Difficult to see the logic!</p>	<p>CPO/ Interference to be considered by OPW.</p> <p>The combination of flood storage and flood walls will prevent flooding in the vulnerable areas in the town.</p>
4.1.15	<p>While I am in agreement with option of storage and tidal defences, I am concerned about fluvial flood defences acting as a funnel to concentrate the fluvial flow under the bridge at Rossa Street, the foundations of which have been undermined over a period and may be even non-existent so that the danger of this bridge being destroyed is a serious concern to me. My business premises are just beside the bridge and would be undermined in the event of a bridge cataclysm. If fluvial defences are to be put in place, a restructuring of this bridge is imperative together with the removal of material from the bed of the river under the bridge to increase space for fluvial flow under bridge.</p>	<p>The flow at Rossa Street Bridge will be limited by the storage reservoir. The stability of this bridge should be investigated fully in the detailed design phase of the works.</p>
4.1.16	<p>Would like to see minor works to improve channel between Dunne's and Tobin's Bridge to open eyes</p>	<p>For consideration by CCC as an interim measure, and / or as part of the proposed</p>

Name	Comments on Flood Risk Management Options	MM Comment and Relevant Action
	of bridges. Trim vegetation from Flemming compound channel.	scheme..
4.1.17	OPW recorded some details of fluvial flooding in Q.8 field. Consultee will submit his own form.	
4.1.18	Consider using preserved bypass routing via Industrial HACC to former Dump at Youghals	Flow bypass was considered along a slightly different route in our analysis.
4.1.19	Suggest bypass route (same on 1961 road route and discharge water from land (through old surveyor's hose).	Flow bypass was considered along a slightly different route in our analysis.
4.1.20	Thinks that the storage area is too big. Will not allow embankment to be constructed in its proposed form - too much storage. Defence on his property cuts off runway. Queries what is it protecting. 3.5 hours of storage should suffice.	The size of the flood storage area has been determined using best practice and is based on our in depth analysis of the hydrology of the area. 3.5 hours storage is not adequate.
4.1.21	The two marshes at Inchydoney Road and Dunmore Road could be used for storage and run-off. Usually there are 10 horses held there. A large pipe could be run along the side of the road through the miles down to Cloheen from your proposed storage area.	Flow diversion was considered in the analysis. The route proposed would only impact on flows in the Garage stream where there is no flood risk (except for blockage) for the Design event and would require extensive tunnelling.
4.1.22	<p>Lady's Cross, Dunne's Store, The Miles</p> <p>Problem: The meeting of diverted streams and water from developments resulting in water flowing into town. There is inadequate drainage and diversion of surface water away from town.</p> <p>Solution: Divert drains beyond the Miles and part of the River Feale to run to marsh at Clogheen Strand/Whites Marsh (which is already OPW property)</p>	Flow diversion was considered in the analysis. There is no fluvial flood risk from the Garage Stream (except for blockage) for the Design event This diversion Route would require extensive tunnelling.
	<p>Meeting of Park Road / Youghals / Lamb Street / Jim Hurley Terrace</p> <p>Problem: Surface water from Clogheen East flowing onto bypass through Lam Street onto Connolly</p>	

Name	Comments on Flood Risk Management Options	MM Comment and Relevant Action
	<p>Street, Rossa Street and Casement Street which results in the flooding of Connolly Street, Casement Street and Clarke Street.</p> <p>Solution:</p> <ul style="list-style-type: none"> (a) Run a storm drain from underneath Clonakilty Lodge through agricultural land to meet the bay at the sewerage point. (b) Run a pipe from Clogheen East to Whites Marsh. 	<p>For consideration by CCC as an interim measure, and / or as part of the proposed scheme.</p>
	<p>Kent Street, Rossa Street, Connolly Street</p> <p>Problem: Low-lying streets without adequate drainage. Suffers flooding from hotspot 2 and from the river bursting its banks on Kent Street.</p> <p>Solution:</p> <ul style="list-style-type: none"> (a) An emergency storm drain needs to be laid going through Harte's Courtyard and then left into river. Estimated distance of pipe is 40 metres. (b) Rebuilding of the temporary wall in the car park that collapsed in the flood of June 28th to be considered – since completed. (c) All damaged bridges and drains to be accessed, enlarged and repaired as necessary. 	<p>For consideration by CCC as an interim measure, and / or as part of the proposed scheme.</p> <p>Works completed by CCC.</p> <p>Conveyance measures were considered as part of the analysis. It was found that this was not effective during high tide levels.</p>
	<p>Waterfront, Eurospar</p> <p>Problem: Build-up of water flowing from Clogheen and adjacent streets. Inadequate drainage. There is also a danger here from tidal flooding.</p> <p>Solution:</p> <ul style="list-style-type: none"> (a) Emergency storm drains need to be laid to take water to bay side of Clarke Street Bridge. (b) Construction of a tidal barrage. 	<p>For consideration by CCC as an interim measure, and / or as part of the proposed scheme.</p> <p>A tidal barrage was considered as part of the analysis.</p>
	<p>Richy's Restaurant, O'Neill Sports – Junction of Ashe Street, Wolfe Tone Street and Clarke Street</p>	

Name	Comments on Flood Risk Management Options	MM Comment and Relevant Action
	<p>Problem: Water from Community College, Ashe Street, and James P. O'Regan Road floods this area which is susceptible to tidal flooding and has inadequate drains.</p> <p>Solution: Storm drain with pipe running adjacent to An Súgan and entering the bay on the bypass road and fitted with a non-return valve.</p>	<p>For consideration by CCC as an interim measure, and / or as part of the proposed scheme.</p> <p>The flapping of pipes through tidal defences would be carried out as part of the tidal defences.</p>
	<p>Tobairin Road</p> <p>Problem: Major surface water flowing down Old Timoleague Road / Tobairin Road flooding Fax Bridge area.</p> <p>Solution: New storm drain with pipe through agricultural land through to the bay; this solution can also be linked into a drain on Convent Road.</p>	<p>For consideration by CCC as an interim measure, and / or as part of the proposed scheme.</p>
	<p>Clonakilty Bay</p> <p>Problem: The culmination of heavy rain, south-east winds and high tides has historically caused Clonakilty to flood.</p> <p>Solution:</p> <ul style="list-style-type: none"> (a) The erection of a flood barrage at Gilman's Point (the narrowest part of the bay). Planning permission was sought and granted for this project but it did not go ahead. (b) Alternatively, a gate or lock closer to the town between Deasy's Quay and the sewage plant. 	<p>A tidal barrage was considered as part of the analysis.</p>
	<p>Carhoo</p> <p>Problem: Build-up and collection of water in this area which contributes to the flows on the Garage Stream and at its worst follows the direction of the stream flooding Ladies Cross, Clogheen Cottages, N71 Bypass and Western Road.</p> <p>Solution: Water is contained and redirected by piping along land adjacent to road from Carhoo under the N71 and piped into the attenuation area west of the town.</p>	<p>There is no fluvial flood risk from the Garage Stream(except for blockage) for the Design event. There is a surface water problem in this area. For consideration by CCC as an interim measure, and / or as part of the proposed scheme.</p>
	N1 – Western Flood Plain	

Name	Comments on Flood Risk Management Options	MM Comment and Relevant Action
	<p>Problem: Flood plains have been built on and excess water is going into River Feale which is bursting its banks at Dunnes Stores and from there flowing via Western Road and flooding the town centre.</p> <p>Solution:</p> <p>(a) .Allowing flood plains and farmland adjacent to the river to flood and arranging compensation for farmers. Creating holding ponds adjacent to Dunnes Stores.</p> <p>(b) Divert the river to Whites Marsh.</p>	<p>Flood storage has been considered as part of the analysis.</p> <p>Flow diversion was also considered. This diversion Route would require extensive tunnelling.</p>
	<p>N2 – Tawnies Lower</p> <p>Problem: Excess surface water flooding downhill from developments is culminating in flooding at the oil depot area on Western Road.</p> <p>Solution: Build a storm drain at the junction of graveyard car park to holding ponds via river.</p>	<p>For consideration by CCC as an interim measure, and / or as part of the proposed scheme.</p>
	<p>N3 – Tawnies Lower, Barrack Hill, Old Chapel Lane, McCurtain Hill</p> <p>Problem: Water from higher ground flowing down McCurtain Hill, Old Chapel Lane and Patrick's Street onto Main Street (Pearse Street).</p> <p>Solution: Storm drain at the top of Patrick's Hill going across Old Chapel Lane, meeting drain on McCurtain Hill going to Community School at the back of Strand Road and entering the bay at Faxbridge. This would alleviate flooding from the Pearse Street / Strand Road area.</p>	<p>For consideration by CCC as an interim measure, and / or as part of the proposed scheme.</p>
	<p>N4 – Containment of Water from Patrick's Hill, McCurtain Hill and Filhols</p> <p>Problem: At peak rainfall, there is pressure on the drainage collection system at Patrick's Hill, McCurtain Hill and Filhols.</p> <p>An assessment of the collection system in these areas needs to be completed as to how rain and water flows are collected and to the size of the</p>	<p>For consideration by CCC as an interim measure, and / or as part of the proposed scheme.</p>

Name	Comments on Flood Risk Management Options	MM Comment and Relevant Action
	drainage pipes used to direct these flows to the mouth of the bay at Faxbridge.	
	<p>N5 – Build-up, Collection and Flow Rates on Convent Hill</p> <p>Problem: At peak rainfall, the streams on either side of Convent Hill appear inadequate to cope with water flows.</p> <p>Solution: Create a proper excavated stream on the southern side of the carriageway which will connect to the current stream at Faxbridge.</p>	The catchment of the stream at the Quality hotel is too small for consideration in this study. For consideration by CCC as an interim measure, and/or as part of the proposed scheme..

4.1 Ranking of FRM Options

People were asked to rank the possible FRM options 1 to 6. The number of 1st, 2nd etc. preferences submitted is summed in Table 4.2 below. These sums were multiplied by the weighting factors indicated in the table. The weighted scores for each option were summed to indicate the option preferred by the respondents. From this analysis it would appear that the fluvial storage and tidal defences option was the preferred option. This was followed closely by the fluvial flow diversion and tidal defences option.

Table 4-2 Ranking of FRM Options

Weight	Preference	Flow Diversion & Tidal Barrage	Flow Diversion & Tidal Defences	Fluvial Flood Defences & Tidal Barrage	Fluvial Flood Defences & Tidal Flood Defences	Storage & Tidal Barrage	Storage & Tidal Defences
10	1	1	5	1	2	4	5
7	2	0	3	5	3	2	3
5	3	0	1	6	2	3	1
3	4	1	0	0	5	1	3
2	5	6	2	0	0	2	0
1	6	3	5	1	1	0	2
Score		35	74	53	56	71	76
Rank		6	2	5	4	3	1

5 Local importance of FRM Objectives

Respondents were asked to indicate how important they felt certain FRM objectives were in respect of Clonakilty. People were asked to rank 19 objectives when considering a FRM option for Clonakilty according to 5 levels of importance ranging from 'very important' to 'not important'. The number of scores for each level of importance received by each objective is set out in Table 5.2 below. These sums were multiplied by the weighting factors ranging from 5 to 1 in descending 1 unit increments according to the level of importance, for example 'very important' carries a weighting factor of 5, while 'not important' has a weighting factor of 1. The weighted scores for each option were summed and then divided by the number of responses to indicate the local weighting placed on that objective by respondents. An average weighted score greater than 4.5 is taken as an indication that the objective is very important. Similarly a score between 3.5 and 4.5 is an indication that the objective is fairly important and so on. The weighting of the relative importances and the indications of importance associated with bands of average weighted scores are indicated in Table 5.1 below.

Table 5-1: Assessment of responses

	Very Important	Fairly important	Important	Slightly Important	Not important
Weight used	5	4	3	2	1
Lower bound average weighted score used to indicate this response	4.5	3.5	2.5	1.5	0

Table 5-2: Local Weighting

	Very Important	Fairly important	Important	Slightly Important	Not important	Nr of responses	Weighted Score	Avgas Weighted Score	Outcome	Local Weighting indicated	Local Weighting used in MCA
Risk to local economy	12	0	3	0	0	15	69	4.6	Very Important	5	5
Risk to transport infrastructure	5	2	4	0	0	11	45	4.1	Fairly Important	4	5
Risk to utility infrastructure	4	2	4	1	0	11	42	3.8	Fairly Important	4	2
Risk to agriculture	6	2	3	3	0	14	53	3.8	Fairly Important	4	1
Risk to human health and life of residents	14	0	2	0	1	17	77	4.5	Very Important	5	5
Risk to high vulnerability properties	15	0	1	0	1	17	79	4.6	Very Important	5	3
Risk to social infrastructure	3	5	3	1	0	12	46	3.8	Fairly Important	4	2
Risk to local employment	11	1	3	0	0	15	68	4.5	Very Important	5	5
Risk to flood-sensitive social amenity sites	3	5	2	3	0	13	47	3.6	Fairly Important	4	2
Risk to water-bodies	3	1	4	0	4	12	35	2.9	Important	3	2
Risk to environment	5	0	5	2	1	13	45	3.5	Important	3	2
Risk to protected sites and habitats	2	2	4	3	1	12	37	3.1	Important	3	5
Risk to protected and endangered species	1	3	2	5	2	13	35	2.7	Important	3	1
Risk to fisheries habitat	0	4	3	2	4	13	33	2.5	Important	3	1
Risk to visual amenity and views of the river	2	1	3	4	3	13	34	2.6	Important	3	2
Risk to architectural features	1	2	5	3	1	12	35	2.9	Important	3	2

Risk to archaeology	1	1	7	1	2	12	34	2.8	Important	3	2
Risk of soil erosion	5	2	5	1	1	14	51	3.6	Fairly Important	4	2
Risk to impacts of climate change	3	3	2	3	3	14	42	3.0	Important	3	2

For comparative purposes, the local weighting indicated by public responses for each of the objectives considered for the FRM options is shown adjacent to the local weighting assigned during the Multi-Criteria Analysis (MCA), which was used in appraising options developed and in identifying the preferred option. Further analysis of the differences in assigned local weighting will be made and due consideration will be given to the results over the coming stages of the study.

Appendices

Appendix A: Public Consultation Day Poster

Appendix B: Public Consultation Day Leaflet

Appendix C: Public Consultation Day Display Material

Appendix A. Public Consultation Day Poster

Appendix A. Public Consultation Day Poster



South Western Catchment Flood Risk Assessment and Management (CFRAM) Study

Clonakilty
Draft Flood Maps
and
Preliminary Flood Risk Management
Options



Public Consultation Day

O'Donovan's Hotel

16th July 2013
3.30pm to 9.00pm

<http://www.southwestcframstudy.ie>



www.twitter.com/SW_CFRAM_Study

Appendix B. Public Consultation Day Leaflet

Your Opportunity to Take Part

The OPW wishes to consider all of the opinions and information available on the Draft Flood Maps and the Preliminary Flood Risk Management Options for Clonakilty. The way that this information is gathered is through a questionnaire.

Questionnaire forms are available and can be completed and returned on the day or at a later day.

Completed forms can be handed in at Clonakilty Town Hall prior to the 31st July 2013. Alternatively, completed questionnaires can be posted to the Study Team at the address below before 31st July 2013.

What Happens Next

All of the feedback submitted before the 31st July 2013 will be considered by the OPW. This will inform more detailed development of the Preferred Flood Risk Management Option for Clonakilty.

Subject to the identification of a cost beneficial and publicly accepted scheme, Ministerial Consent will be sought to proceed with a public exhibition of the scheme. Following the anticipated successful exhibition of the preferred scheme, which will be carried out in accordance with the Arterial Drainage Acts, Construction Contract Documents will be prepared subject to Ministerial Confirmation.

Contact Us

The South Western CFRAM Communications Co-Ordinator can be contacted at all times by post or email. Your queries and comments are most welcome.

By Post:

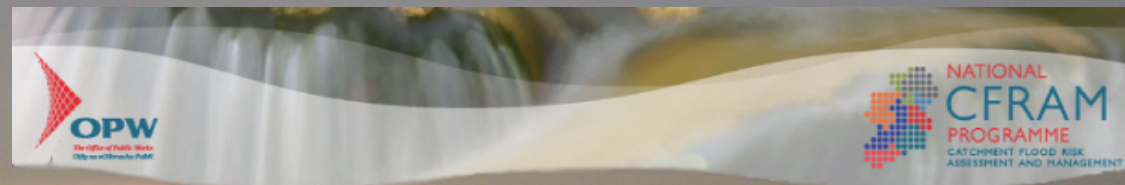
Mr. Fintan McGivern
South Western CFRAM Communications Coordinator
Mott MacDonald Ireland Ltd.
5 Eastgate Avenue, Little Island, Co. Cork

By e-mail:

SWCFRAM@mottmac.com

Visit our website: <http://www.southwestcframstudy.ie>

Follow the study on twitter: www.twitter.com/SW_CFRAM_Study



Draft Flood Maps and Preliminary Flood Risk Management Options

Clonakilty

Public Consultation Day

16th July 2013

O'Donovan's Hotel
Pearse Street

3.30pm to 9.00pm



Introduction

The Office of Public Works (OPW) have appointed Mott MacDonald to carry out the South Western River Basin District Catchment Flood Risk Assessment and Management (CFRAM) Study. The South Western CFRAM Study is part of the National CFRAM Programme that was rolled out by the Office Of Public Works between January 2011 and March 2012. The CFRAM Programme is central to the Government's medium to long-term strategy for the mitigation and management of flood risk in Ireland. The aim of this study is to prepare flood maps and identify viable measures for managing flood risk in areas of significant risk. Clonakilty has been identified as one of the areas that are at significant risk from flooding.

Prioritisation of Clonakilty

Following the flood events that occurred in Clonakilty in the summer of 2012, Clonakilty was given top priority in the South Western CFRAM Study area in order to identify the preferred flood risk management option for the town as soon as possible. Originally it was scheduled that the public consultation on the preferred flood risk management option for Clonakilty would take place in June 2014. The programme for Clonakilty has been accelerated and the Public Consultation Day has arrived almost a year earlier than originally planned.

Work Carried Out To Date

The accelerated programme for Clonakilty has resulted in significant work been carried out to date. The Office of Public Works, Cork County Council and Mott MacDonald have been gathering data and procuring river and channel surveys. The hydrology of the catchment has been assessed and the flows in the river for extreme events have been determined.

A Hydraulic Model, which uses computer programmes to represent the flows of rivers in the channels and flood plains, has been built. This model was calibrated against historical flood events for Clonakilty, such as the June 2012 event, to ensure that realistic results are provided.

The Hydraulic Model was then used to predict the extent and depth of flooding in extreme situations. These results are represented on the Draft Flood Maps.

Once the extent and depth of flooding from extreme situations were identified, methods and options on how to mitigate the flood risk in Clonakilty were assessed. These options form the Preliminary Flood Risk Management Options for Clonakilty.

Public Consultation Day

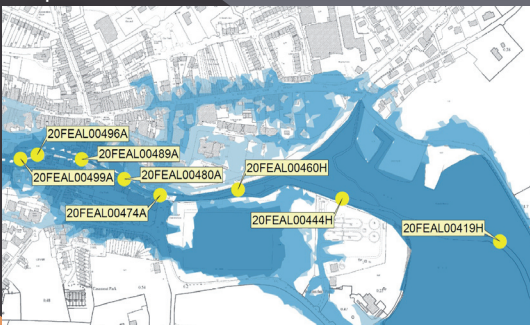
The purpose of this Public Consultation Day is to present to the public the Draft Flood Maps and the Preliminary Flood Risk Management Options for Clonakilty and to facilitate feedback from the public. It should be noted that all of the options presented at this stage are preliminary and the Study Team are on hand to explain them and assist with any enquiries.

We would invite all members of the public and interested parties to review the Draft Flood Maps and the Preliminary Flood Risk Management Options for Clonakilty. We would encourage people to provide their feedback.

The Draft Flood Maps and Preliminary Options will be available for viewing and comments on the project website (see overleaf) for a period of two weeks from 16th July.

Draft Flood Maps

The Draft Flood Maps are maps that show the expected flood extents during flood events that have a chance of occurring of 1 in 10 (dark blue), 1 in 100 (medium blue) and 1 in 1000 (light blue) in any given year, and also projected flood levels and peak flows shown in tables on maps.



Preliminary Flood Risk Management Options

A flood risk management option consists of one or, more commonly, a combination of flood risk management methods. The following structural measures have been identified as effective measures for protecting against fluvial (river) and tidal flood risk.

Fluvial (River) Measures

- Flow Diversion (i.e. underground culvert from Dunnes Stores to Waterfront)
- Fluvial Flood Defences (i.e. walls and earth embankments from Dunnes Stores, through the town to Clarke Street Bridge)
- Storage (i.e. reservoir upstream of town)

Tidal Measures

- Tidal Barrage (i.e. dam like structure downstream of town, which can open and close to prevent tidal flooding)
- Tidal Flood Defences (i.e walls and earth embankments from Clarke Street Bridge to Facksbridge)

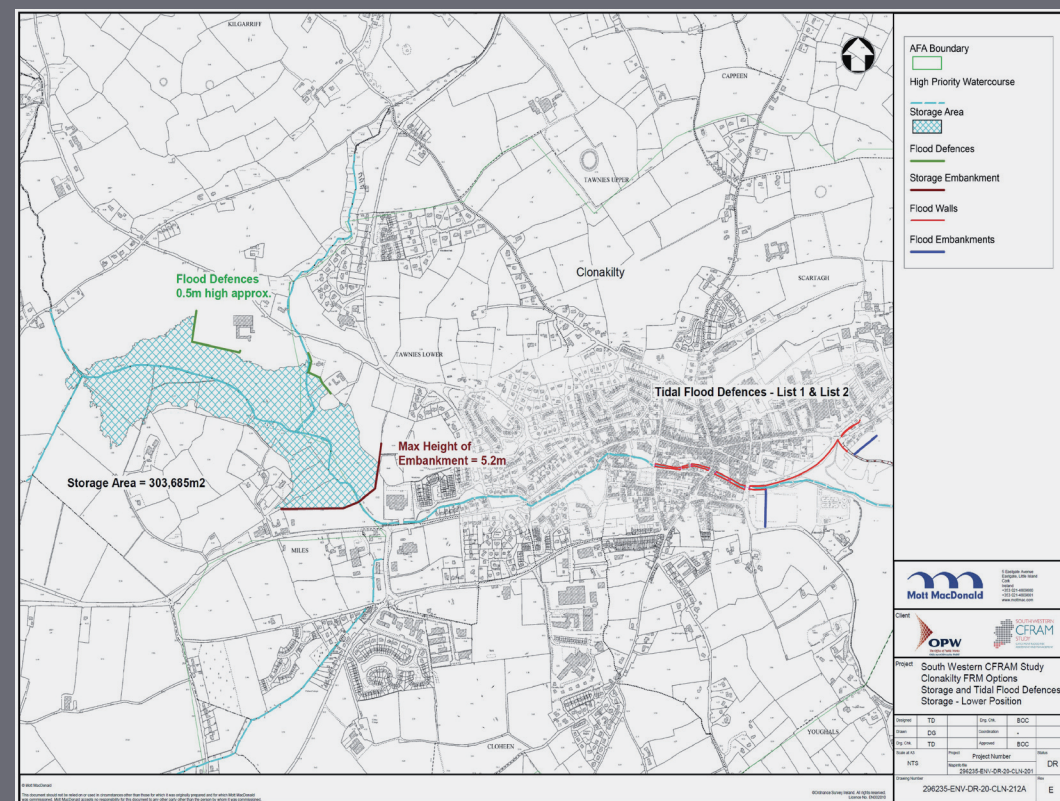
These measures have been combined into a number of Flood Risk Management Options for Clonakilty which will protect against both fluvial (river) and tidal flooding. These options are:

- Flow Diversion and Tidal Barrage
- Flow Diversion and Tidal Flood Defences
- Fluvial Flood Defences and Tidal Barrage
- Fluvial Flood Defences and Tidal Flood Defences
- Storage and Tidal Barrage
- Storage and Tidal Flood Defences

These options have undergone a Multi-Criteria Assessment which looks at each of the options under Technical, Economic, Social and Environmental headings. Scores, weightings and levels of importance have been applied to these headings.

Based on the Multi-Criteria Assessment, the preferred option is:

- Storage and Tidal Flood Defences



Appendix C. Public Consultation Day Display Material

Introduction

The Office of Public Works (OPW) has appointed Mott MacDonald to carry out the South Western River Basin District Catchment Flood Risk Assessment and Management (CFRAM) Study.

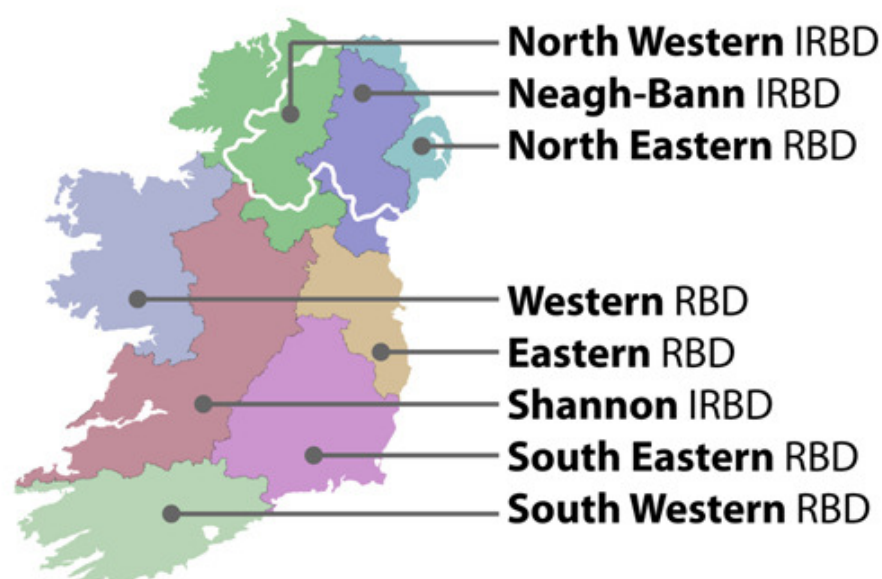
The South Western RBD CFRAM Study is part of the National CFRAM Programme that was rolled out by the Office of Public Works between January 2011 and March 2012.

The South Western River Basin District (RBD) stretches from Dingle to Dungarvan and includes parts of Counties Cork, Kerry, Limerick, Tipperary and Waterford.

The CFRAM Programme is central to the Government's medium to long-term strategy for the mitigation and management of flood risk in Ireland.

The aim of this study is to prepare **Flood Maps** and identify viable **Measures and Options for Managing Flood Risk** in areas of significant risk.

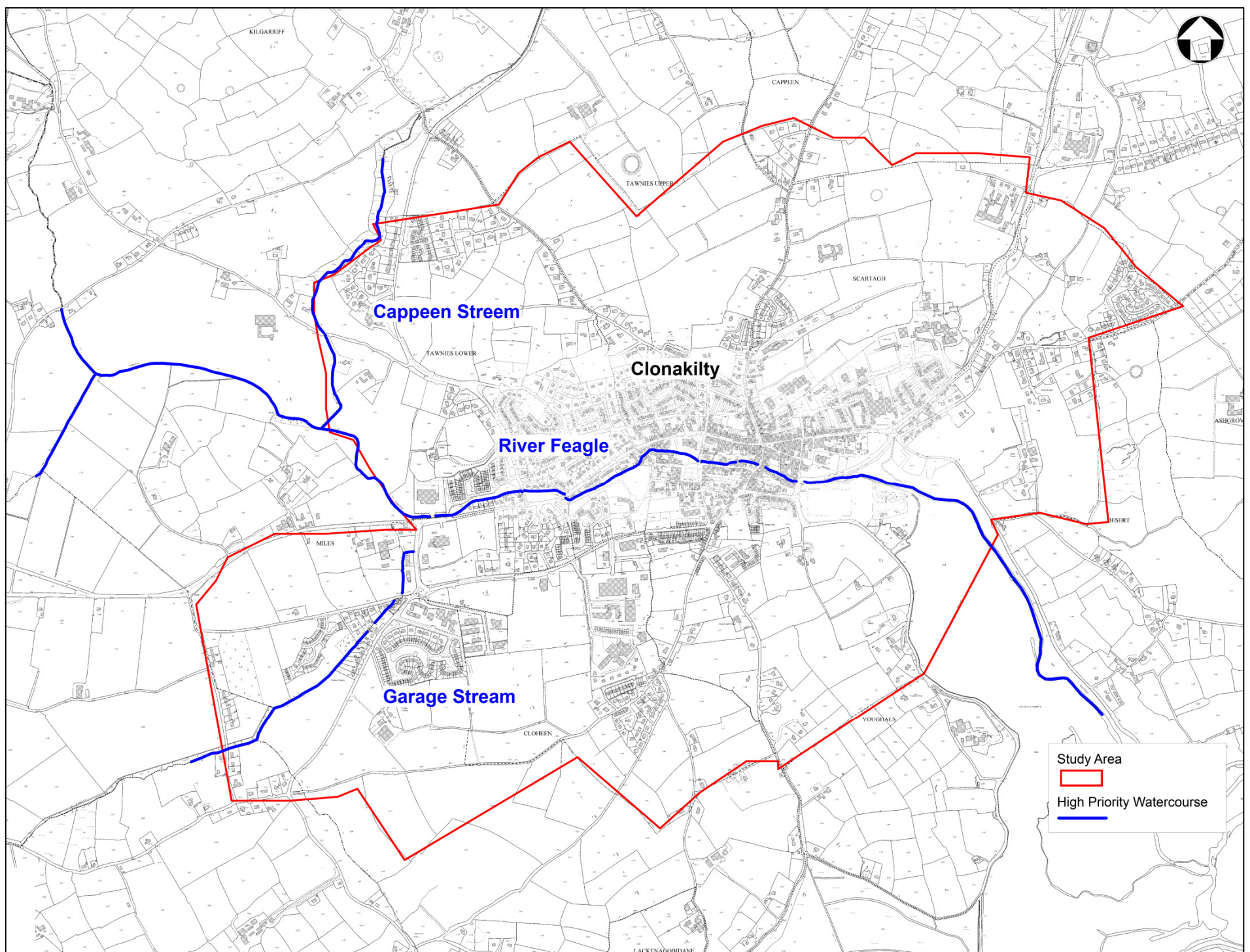
This study will use the most up to date flood modelling tools to determine the extent and depth of flooding that can be expected during extreme flood events in areas of significant risk.



Clonakilty

The SW CFRAM Study has identified Clonakilty as an area of significant risk of flooding and the River Feagle as a High Priority Watercourse (HPW).

The study area for Clonakilty is shown below:



The study area includes the River Feagle, it's northern tributary (the Cappeen Stream) and it's southern tributary (the 'Garage' Stream) which all flow into Clonakilty Harbour before discharging into the sea at Wind Rock.

Clonakilty – History of Flooding

Clonakilty has a long record of flooding from tidal storm surges, heavy rainfall and extreme river flows over the past 60 years. More recently, extreme rainfall and river flows have inundated the centre of Clonakilty causing significant damage to properties and businesses and distress to Clonakilty's residents. Flooding issues are likely to increase as the town grows and the climate changes into the future.

Prioritisation of Clonakilty

Following the flood events in the summer of 2012, Clonakilty was given top priority in the South Western CFRAM Study area in order to identify the preferred Flood Risk Management Option for the town as soon as possible.

Originally it was scheduled that this public consultation on the preferred flood risk management options for Clonakilty would take place in June 2014. The programme for Clonakilty has been accelerated and the Public Consultation Day has arrived almost a year earlier than originally planned.



November 2009



June 2012

Photos courtesy of
Cork County Council



Recorded Historic Flood Events in Clonakilty

Date	Flooding Mechanisms	Areas Affected	Properties Flooded	Reported Peak Level (mODM)	Reported Duration of Flooding (Hours)
28 Jun 2012	Saturated catchment conditions Pluvial flooding from intense rainfall along roads Fluvial flooding from Garage Stream and River Feagle Additional flooding from collapsed walls at Dunnes Stores and Kent Street	Casement St and Wolfe Tone St Well Court, Dunnes Stores, Michael Collins Rd ,Oliver Plunkett Street, Pearse Street, Ashe Street and Wolfe Tone Street.	Over 170 properties flooded Fire station and town hall flooded	3.7 (Connolly Street)	11
19 Nov 2009	Fluvial flooding from the River Feagle Additional flooding from collapsed walls at Western Road, Oliver Plunkett Street and Kent Street	Eastern end of the town was badly affected with flooding along Oliver Plunkett Street and Kent Street Car Park.	Over 20 properties flooded	3.1 (Connolly Street)	5
27 Jan 1995	Pluvial flooding from intense rainfall	Western Road, Kent Street, Connolly Street, Rossa Street and Wolfe Tone Street	Number not reported. Estimated to be > 20.	Not applicable	Estimated to be of short duration < 2 hours.
16 Dec 1989	Tidal flooding from extreme storm surge No fluvial flooding reported along the River Feagle	Wolfe Tone Street, Clarke Street, Connelly Street and the lower end of Kent Street.	Number not reported. Estimated to be 70 -100.	2.8 (Clarke Street)	25 hours of raised total tidal levels due to storm surge based on typical storm surge duration in section 5.2.
24 Aug 1986	Pluvial flooding from intense rainfall from summer storm.	Strand Street and probably other areas in the eastern end of Clonakilty but these were not reported.	Number not reported. Estimated to be > 20.	Not applicable	Estimated to be short duration.
14 Dec 1981	Pluvial flooding from heavy rainfall High tidal levels preventing discharge from the urban drainage systems causing flooding.	Wolfe Tone Street and Clarke Street areas Island strand intake	Number not reported. Estimated to be > 70.	Estimated to be 2.9 based on predicted water level of 2.24m in Clonakilty Bay*	Estimated to be 25 hours
7 Mar 1962	Tidal flooding from storm surge Possible collapse of wall along the lower River Feagle	Clarke Street and Connelly Street areas slightly greater than 1989 event	Number not reported. Estimated to be 70 - 120.	Estimated to be 2.8 based on Preliminary Tidal Barrage Report.	Estimated to be 25 hours
22 Oct 1961	Mechanisms not reported but rain gauges recorded relatively heavy rainfall over this period, suggesting pluvial flooding was involved.	Old Timoleague Road	Number not reported. Estimated to be < 10	Not applicable	Estimated to be short duration.

Work Process

The Clonakilty flood risk assessment and management study is being undertaken in seven stages:

1. Data Collection
2. Hydrological Analysis
3. Hydraulic Modelling / Analysis
4. Development of Flood Maps
5. Flood Risk Assessment of People, Economy and Environment
6. Development and Assessment of Flood Risk Mitigation Options
7. Development of the Flood Risk Management Plan (FRMP)

The accelerated programme for Clonakilty has resulted in significant work being carried out to date.

The Office of Public Works, Cork County Council and Mott MacDonald have gathered all the available data and procured river and channel surveys (Stage 1).

The hydrology of the catchment has been assessed and the flows in the river for extreme events have been determined (Stage 2).

A hydraulic model, which uses computer programmes to represent the flows of rivers in the channels and flood plains, has been built. This model was calibrated against historical flood events for Clonakilty, such as the June 2012 event, to ensure that realistic results are provided (Stage 3).

The hydraulic model was then used to predict the extent and depth of flooding in extreme situations. These results are represented on the Draft Flood Maps (Stage 4).

Once the extent and depth of flooding from the extreme situations were identified an assessment of the risk to people, property and the environment from flooding was carried out (Stage 5). Following from this assessment methods and options on how to mitigate the flood risk in Clonakilty were assessed. These options form the Preliminary Flood Risk Management Options for Clonakilty (Stage 6).

Public Consultation Day

The purpose of this Public Consultation Day is to present to the public the Draft Flood Maps (Stage 4) and the Preliminary Flood Risk Management Options (Stage 6) for Clonakilty and to facilitate feedback from the public.

It should be noted that all of the options presented at this stage are preliminary and the Study Team are on hand to explain them and assist with any enquiries.

We would invite all members of the public and interested parties to review the Draft Flood Maps and the Preliminary Flood Risk Management Options.

In addition to the maps posted for display, a full set of flood maps including Draft Flood Zone maps, are available for viewing.

The Draft Flood Maps and Preliminary Options will be available for viewing and comment on the SW CFRAM project website for a period of two weeks from the 16th July.

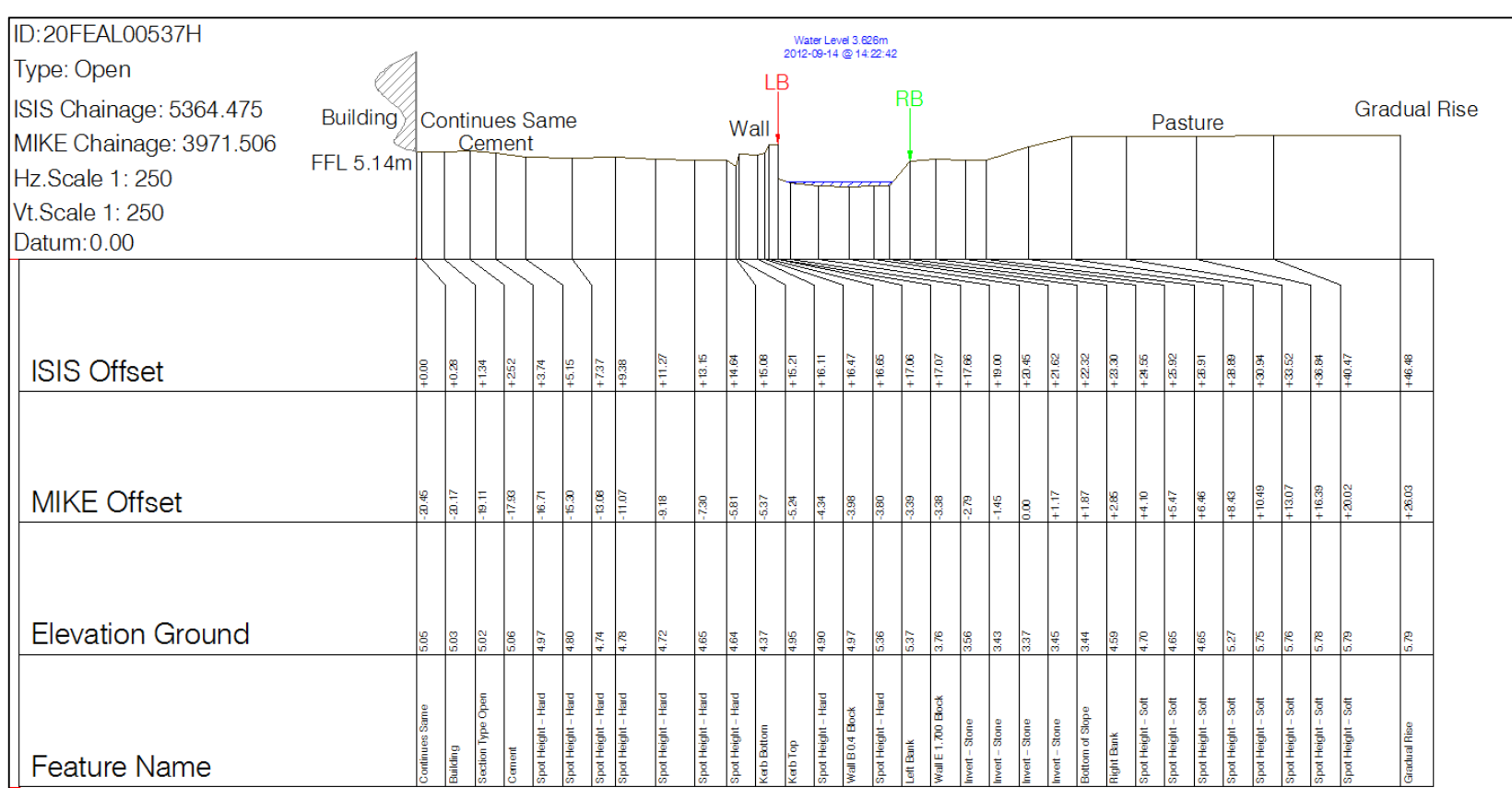
Project Website: www.southwestcframstudy.ie

Data Collection

The initial stage of the SW CFRAM Study involved the gathering of large amounts of data. Since November 2011, the Office of Public Works, Cork County Council and Mott MacDonald have gathered the data and procured the necessary surveys to define the extent of flood risk in the South Western River Basin District.

River and Channel Surveys

In order to get the most accurate results possible from flood modelling tools, it was necessary to gather large volumes of topographical data. This data covers the flood plains, the river channels and the structures that are found on the rivers. Flood plain data was captured by aerial surveying techniques. The river channel and structure data was captured by more traditional surveying techniques.

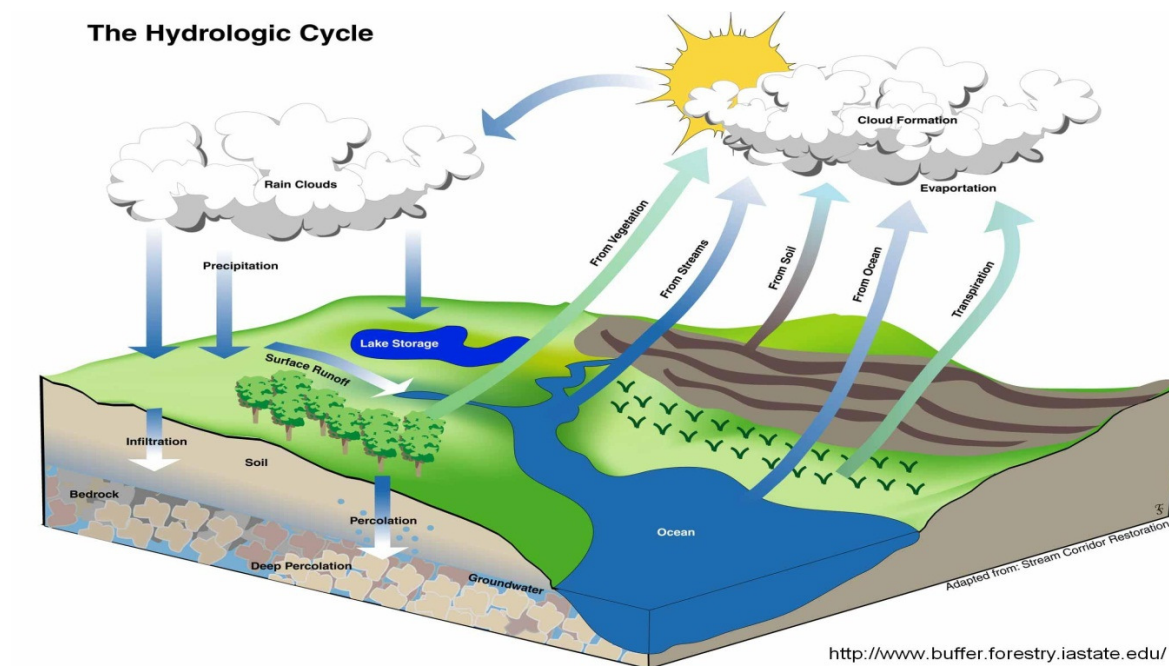


Data

The data collected includes meteorological data, hydrometric data, social datasets, land use data, habitat data, flood studies and records of past flood events.

Hydrological Analysis

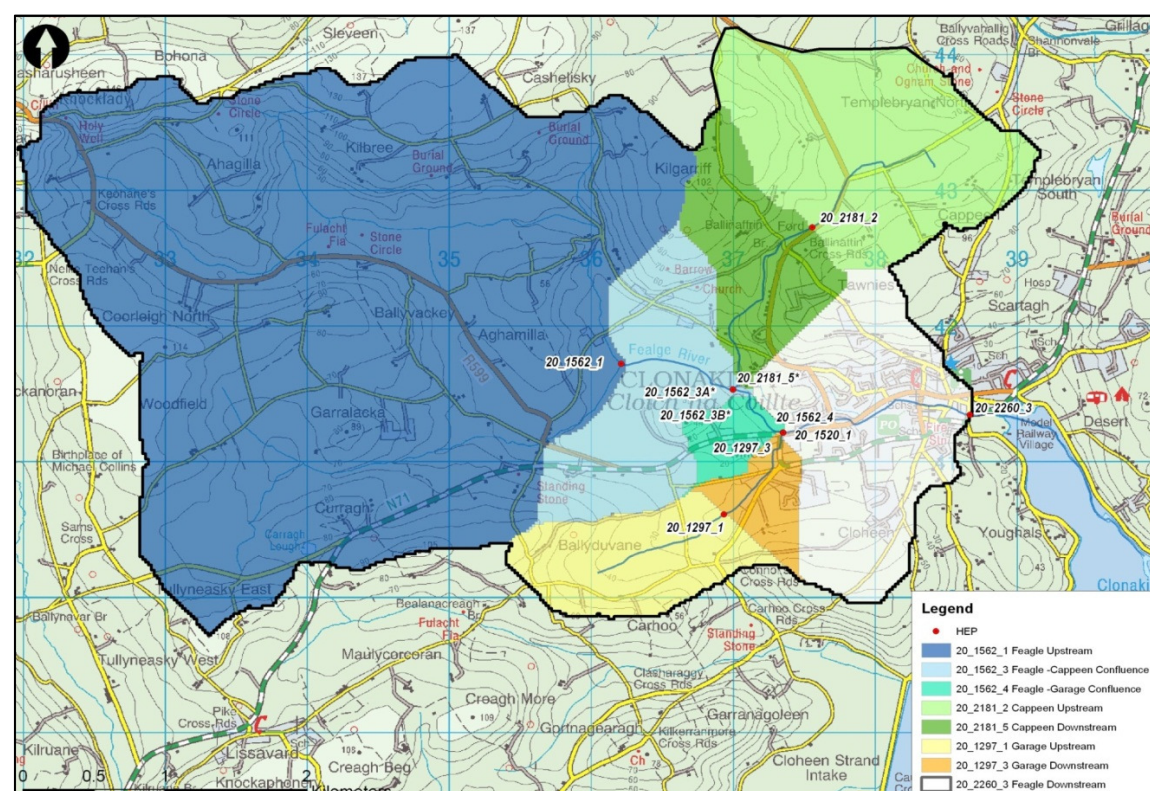
Hydrology is the study of water and its movements along its various pathways which includes rivers, oceans and soils.



Hydrology is used to determine high flows in rivers, low flows in rivers and the effect of urbanisation on rivers. For the assessment of flood risk, high flows in rivers are the primary concern.

Rain intensity, duration and occurrence are important elements in hydrological analysis.

The hydrology of a catchment is assessed and through this assessment, the design flows in rivers for extreme events are derived.



Flood Occurance (AEP)

The probability or chance of a flood event occurring in any given year can be a useful tool to better understand the rarity of a flood event.

Annual Exceedance Probability (AEP) is a term used to refer to the rarity of a flood event.

The probability or chance of a flood relates to the likelihood of an event of that size (or larger), occurring within any one year period.

For example, a “one in hundred” year flood has a:

- “one chance in a hundred” of occurring in any given year
- 1:100 odds of occurring in any given year
- or a 1% likelihood of occurring

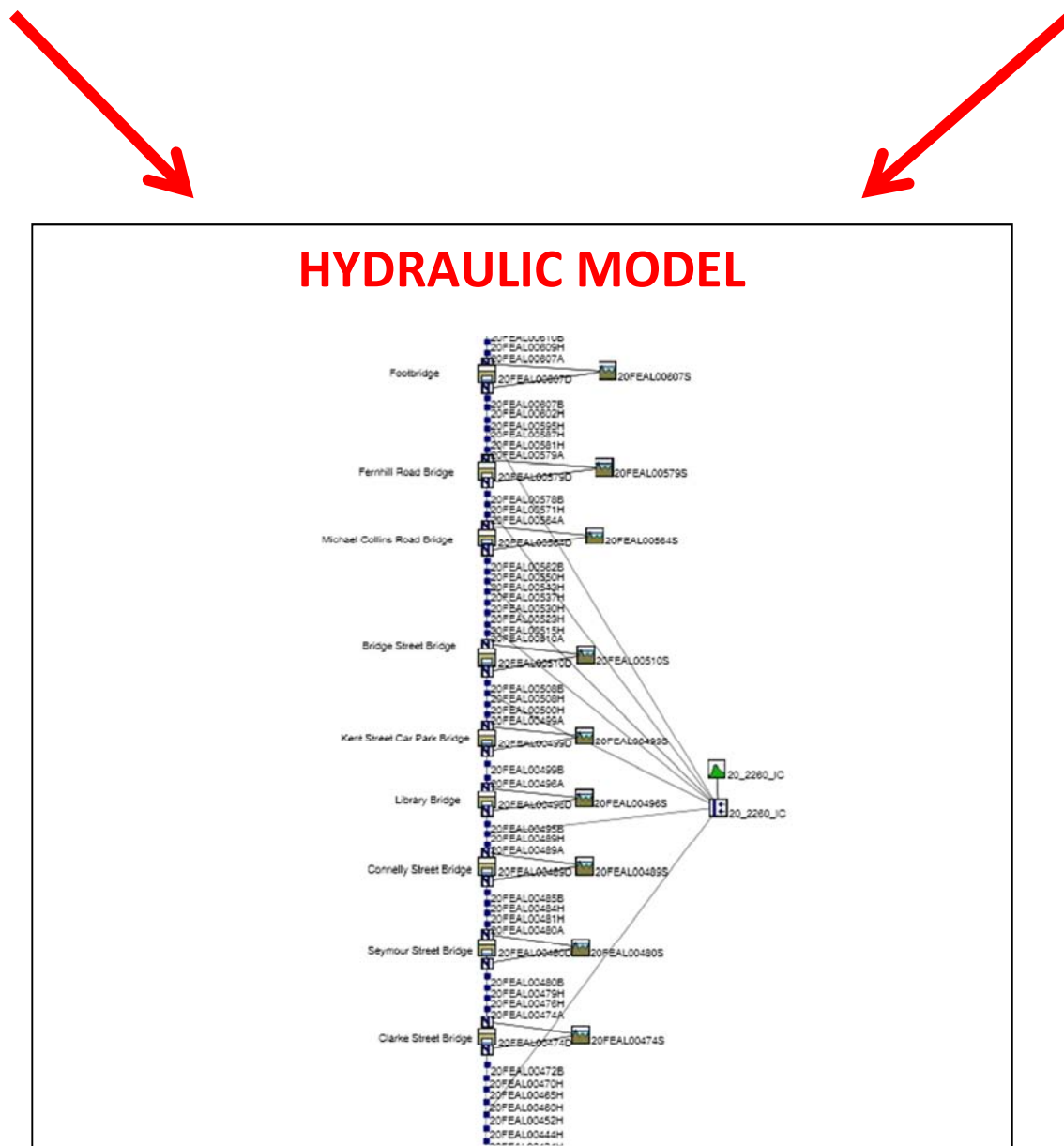
This is described as a 1% Annual Exceedance Probability (AEP) flood event.

% Annual Exceedance Probability (%AEP)	Odds of a Flood Event in Any Given Year	Chance of a Flood Event in Any Given Year or Previous ‘Return Period’
50%	1:2	1 in 2
20%	1:5	1 in 5
10%	1:10	1 in 10
5%	1:20	1 in 20
2%	1:50	1 in 50
1%	1:100	1 in 100
0.5%	1:200	1 in 200
0.1%	1:1000	1 in 1000

Hydraulic Modelling

DATA COLLECTION

HYDROLOGICAL ANALYSIS



A hydraulic model uses computer programmes to represent the flows of the rivers in the channels and flood plains. The model is then used to predict the extent and depth of flooding in extreme situations. These results are presented on Flood Maps.

FLOOD MAPS

Flood Maps

Flood maps are the representation of predicted outputs from hydraulic modelling on maps. Under the SW CFRAM Study, the following flood maps are being produced:

- Flood Extent Maps – show the extent of flooding for extreme events of a given probability, described as AEP (Annual Exceedance Probability).
- Flood Depth Maps – show the depth of flooding (in metres) relative to ground level.
- Flood Velocity Maps – show the speed of flow.
- Flood Hazard (Risk to Life) Maps – show the potential risk to life from low to extreme calculated from the depth and speed of flow.
- Flood Zone Maps – show three flood extents, as Zones A, B and C in accordance with the Guidelines on the Planning System and Flood Risk Management (DoEHLG & OPW, November 2009).

Please note that the flood maps on display are currently in Draft Status. Please review the Disclaimer and Guidance Note on display.

Flood Risk Management Options

A Flood Risk Management (FRM) Option consists of one or, more commonly, a combination of flood risk management measures.

A screening process was carried out to identify the viable measures for Clonakilty. The following structural measures have been identified as effective measures for protecting against Fluvial (River) or Tidal flood risk.

Fluvial (River) Measures

- Flow Diversion – underground culvert from Dunnes Stores to Waterfront
- Fluvial Flood Defences – walls and earth embankments from Dunnes Store, through the town to Clarke Street Bridge
- Storage – reservoir upstream of the town (2 proposed locations)

Tidal Measures

- Tidal Barrage – dam like structure downstream of the town, which can open and close to prevent tidal flooding
- Tidal Flood Defences – walls and earth embankments from Clarke Street Bridge to Facksbridge

Clonakilty is at risk from both Fluvial (River) and Tidal flooding. Therefore, a combination of fluvial and tidal measures is required to provide an effective Flood Risk Management Option for Clonakilty.

Flood Risk Management Options

The effective Fluvial (River) and Tidal measures have been combined into a number of Preliminary Flood Risk Management Options for Clonakilty which will prevent against both Fluvial (River) and Tidal flooding.

These options have undergone a Multi-Criteria Assessment which looks at each of the options under Technical, Economic, Social and Environmental headings.

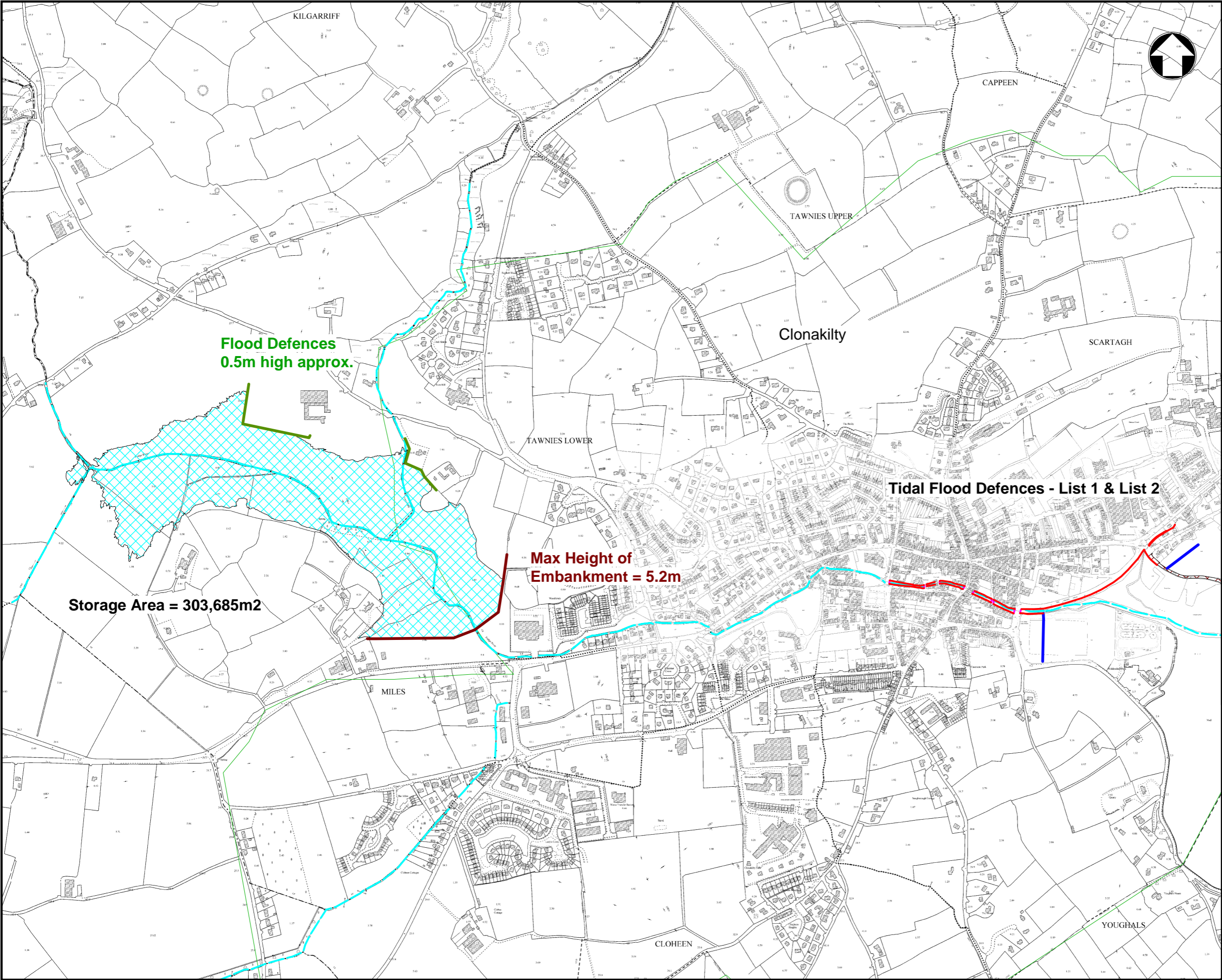
The Preliminary Flood Risk Management Options are:

(Reasons why a particular option was not selected are listed in Red)

- Flow Diversion and Tidal Barrage (Flow diversion was very disruptive and expensive, Tidal Barrage has an impact upon a protected habitat)
- Flow Diversion and Tidal Defences (Flow diversion was very disruptive and expensive)
- Fluvial Flood Defences and Tidal Barrage (Flood walls would have to be 4m high at Kent Street, which would be damaging to the visual amenity, Tidal Barrage has an impact upon a protected habitat)
- Fluvial Flood Defences and Tidal Flood Defences (Flood walls would have to be 4m high at Kent Street)
- Storage and Tidal Barrage (Tidal Barrage has an impact upon a protected habitat)
- Storage and Tidal Flood Defences

Based on the Multi-Criteria Assessment, the **preferred option** is:

- **Storage and Tidal Flood Defences**



Flood Defences
0.5m high approx.

Storage Area = 303,685m2

Max Height of
Embankment = 5.2m

Tidal Flood Defences - List 1 & List 2

- AFA Boundary
- High Priority Watercourse
- Storage Area
- Flood Defences
- Storage Embankment
- Flood Walls
- Flood Embankments

Mott MacDonald

5 Eastgate Avenue
Eastgate, Little Island
Cork
Ireland
+353 021-4809800
+353 021-4809801
www.mottmac.com

Client

OPW
The Office of Public Works
Oifig na nEithneacha Poblaithe

**SOUTH WESTERN
CFRAM
STUDY**
CARO PHLEIN FLOOD RISK
ASSESSMENT AND MANAGEMENT

Project

South Western CFRAM Study
Clonakilty FRM Options
Storage and Tidal Flood Defences
Storage - Lower Position

Designed	TD	Eng. Chk.	BOC	
Drawn	DG	Coordination	-	
Drig. Chk.	TD	Approved	BOC	

Scale at A3	Project	Status
NTS	Mapinfo file 296235-ENV-DR-20-CLN-201	DR

Drawing Number	Rev
296235-ENV-DR-20-CLN-212A	E

Your Opportunity to Take Part

The OPW wishes to consider all of the opinions and information available on the Draft Flood Maps and the Preliminary Flood Risk Management Options for Clonakilty. The way that this information is gathered is through a questionnaire.

Questionnaire forms are available and can be completed and returned on the day or at a later date.

Completed forms can be handed in at Clonakilty Town Hall prior to the 31st July 2013. Alternatively, completed questionnaires can be posted to the Study Team before the 31st July. Contact details for the Study Team are provided on the questionnaire.

What Happens Next

All of the feedback submitted before the 31st July 2013 will be considered by the OPW. This will inform more detailed development of the Preferred Flood Risk Management Option for Clonakilty.

Subject to the identification of a cost beneficial and publically accepted scheme, Ministerial Consent will be sought to proceed with a public exhibition of the scheme. Following the anticipated successful exhibition of the preferred scheme, which will be carried out in accordance with the Arterial Drainage Acts, Construction Documents will be prepared subject to Ministerial Confirmation.

Glossary of Terms

AEP	Annual Exceedance Probability; this represents the probability of an event being exceeded in any one year and is an alternative method of defining flood probability to 'return periods'. The 10%, 1% and 0.1% AEP events are equivalent to 10-year, 100-year and 1000-year return period events respectively.
AFA	Area for Further Assessment – Areas where, based on the Preliminary Flood Risk Assessment and the CFRAM STUDY Flood Risk Review, the risks associated with flooding are potentially significant, and where further, more detailed assessment is required to determine the degree of flood risk, and develop measures to manage and reduce the flood risk.
CFRAM	Catchment Flood Risk Assessment and Management – The 'CFRAM' Studies will develop more detailed flood mapping and measures to manage and reduce the flood risk for the AFAs.
HPW	High Priority Watercourse. A watercourse within an AFA.
MCA	Multi-Criteria Assessment. A process of assessment that measures the effectiveness of Flood Risk Management Options over a range of criteria.
MPW	Medium Priority Watercourse. A watercourse between AFAs, and between an AFA and the sea.
OPW	Office of Public Works, Ireland.
PCD	Public Consultation Day.
SEA	Strategic Environmental Assessment. A high level assessment of the potential of the FRMPs to have an impact on the Environment within a UoM.
SW CFRAM	South Western Catchment Flood Risk Assessment and Management study.
UoM	Unit of Management. The divisions into which the RBD is split in order to study flood risk. In this case a HA.
WFD	Water Framework Directive. A European Directive for the protection of water bodies that aims to, prevent further deterioration of our waters, to enhance the quality of our waters, to promote sustainable water use, and to reduce chemical pollution of our waters.

Appendix 4C - EIA Consultation Letters

«Name»
«Department»
«Company»
«Addr_1»
«Addr_2»
«Addr_3»
«Addr_4»
«Addr_5»

24th March 2014

Our Ref: CG\2014s0971-I-L001-1.doc

Dear Sir/Madam,

Re. Clonakilty Flood Relief Scheme – Environmental Constraints Consultation

JBA Consulting has been retained by the Office of Public Works to prepare an Environmental Impact Assessment of the proposed Clonakilty Flood Relief Scheme.

The preparation of the Environmental Impact Assessment undergoes a number of stages, this Constraints Assessment, being the first stage (see table below). The Constraints Assessment is tasked with identifying key environmental issues or constraints within the study area that may be impacted upon by a possible flood relief scheme and/or which may impose constraints on the viability or final design of the flood relief scheme.

Stage	Environmental Impact Assessment	Engineering Study
I	Part 1. Constraints Study Part 2. Screening for Appropriate Assessment	Data Gathering and review Hydrology Study & Hydraulic Modelling
II	Part 1. Environmental Assessment of options for the Scheme Part 2. Appropriate Assessment (if required)	Site Investigations and site walkovers Conduct Flood Risk Assessments Prepare a number of Flood Risk Management Options Carry out a Cost Benefit Analysis Selection of a Preferred Option
III	Environmental Impact Statement for the Preferred Option	Flood Risk Management Plan Interference Notices Public Exhibition
IV	Public Exhibition	

The table above demonstrates where this Constraints Assessments fits into the development of an environmental impact statement for the preferred scheme.

We do not have a full Engineering Study as yet, so it is impossible to say what flood alleviation measures will be proposed for the Clonakilty Flood Relief Scheme. However,

typical flood measures were provided at a public meeting that was held in Clonakilty in July 2013. This was part of an accelerated process within the Catchment Flood Risk Assessment and Management (CFRAM) programme for the SW River Basin District. These preliminary options were examined by CFRAM consultant (Mott McDonald) and a number of viable options were determined. The viable options are as follows:

- Flow Diversion and Tidal Barrage
- Fluvial Flood Defences and Tidal Barrage
- Fluvial Flood Defences and Tidal Flood Defences
- Upstream storage and Tidal Barrage
- Upstream storage and Tidal Flood Defences

During the Public Information Day held in July 2013, upstream storage and tidal defences was the most favoured option by the public. A drawing illustrating this option is attached to this letter.

As part of the EIA all feasible alternative options are to be considered and therefore the Study Area is much broader and includes the harbour area.

We invite your comments in relation to any environmental issues that may be impacted upon by a Flood Relief Scheme. The Clonakilty Flood Relief Scheme is an accelerated programme promoted by OPW under the Arterial Drainage Act and we would appreciate your comments/inputs by the 25th April 2014.

Later on this year (July) we propose to hold another public consultation meeting. This is a requirement for the Environmental Impact Assessment for the chosen scheme. At that stage we will have details of the proposed engineering measures and we will invite comments from you at this stage.

Please forward this letter to the most appropriate person in your organisation, if you will not be dealing with this scheme.

Yours faithfully,
For **Jeremy Benn Associates Limited**



Jonathan Cooper
Director
jonathan.cooper@jbaconsulting.com

<Name>
<Address>
<Address>
<Address>
<Address>

<Date>

**Re. Clonakilty Flood Relief Scheme – Environmental Constraints Consultation –
Revised Study Area**

Dear Sir/Madam,

Further to my consultation letter regarding the Clonakilty Flood Relief Scheme options, the engineering investigations into options for the scheme has identified other possible options. These include a suitable outfall for diverted fluvial water and a number of small fluvial storage areas upstream of the town. Consequently our study area has extended and I have included an updated drawing outlining the extent of the revised study area.

We invite your comments in relation to any environmental issues that may be impacted upon by these options for the Flood Relief Scheme. The Clonakilty Flood Relief Scheme is an accelerated programme and we would appreciate your comments/inputs at your earliest convenience. We would also like to take this opportunity to thank those consultees who have already made a submission. If no further interests or comments are identified in the enlarged boundary then we would appreciate an emailed reply to confirm that.

Yours Sincerely,

Jonathan Cooper

Project Director

Appendix 4D - EIA Consultation Responses



Mr. Jonathan Cooper, Director,
JBA Consulting,
24 Grove Island,
Corbally,
Co. Limerick.

Teach Naomh Máirtín / Bóthar Waterloo / Baile Átha Cliath 4
St. Martin's House / Waterloo Road / Dublin 4
Teil: / Tel: + 353 1 660 2511 Facs: / Fax: + 353 1 668 0009

Dáta | Date

Ár dTag. | Our Ref.

Bhur dTag. | Your Ref.

09 April 2014

NRA 14-89769

CG\2014s0971-I-L001-1.doc

**Re: Clonakilty Flood Relief Scheme
Environmental Constraints Consultation**

Dear Mr. Cooper,

The Authority acknowledges receipt of your correspondence of 24 March 2014. The Authority endeavours to consider and respond to planning applications and other requests referred to it given its status and duties as a statutory consultee under the Planning Acts. The approach to be adopted by the Authority in making such submissions or comments will seek to uphold official policy and guidelines as outlined in the DoECLG Spatial Planning and National Roads Guidelines for Planning Authorities (2012). Regard should also be had to NRA guidance and other relevant circulars, which are available at www.nra.ie.

The issuing of this correspondence is provided as best practice guidance only and does not prejudice the NRA's statutory right to make any observations, requests for further information, objections or appeals following the examination of any valid planning application referred.

With respect to the Lower Lee Flood Relief Scheme, the recommendations indicated below provide only general guidance in relation to matters which may affect the National Roads Network and may form part of your scoping.

The developer should have regard, *inter alia*, to the following;

- Consultations should be had with the relevant Local Authority/Regional Design Office with regard to locations of existing and future national road schemes in the area. Although some of the national road schemes may currently be suspended pending the availability of funding for further progress, it is considered good practice to address impact or relationship with the relevant national road schemes in the proposed flood relief scheme.

- The developer should assess impacts on existing national roads. The Authority would be specifically concerned as to potential significant impacts development on the national road network (i.e. N71) in the vicinity and/or downstream of any proposed works.
- In the interests of maintaining the safety and standard of the national road network, the EIS should identify the methods/techniques proposed for any works traversing/in proximity to the national road network, in particular any works that might affect existing structures on the national road network; early consultation with the NRA is recommended.
- In particular due to the potential number of structures proposed in the scheme which may have impact on the national road network, the developer is reminded of the requirements of NRA BD 2 - Technical Approval of Road Structures on Motorways and Other National Roads for structures. This Standard specifies the procedures to be followed in order to obtain Technical Acceptance for structures on motorway and other national road schemes and for the submission of as built records. The procedures cover the design of all road structures, including bridges, tunnels, subways, culverts, buried corrugated steel structures, retaining walls, reinforced earth structures, gantries, environmental noise barriers and temporary structures under or over motorways or other roads carrying public traffic.

The Technical Acceptance requirements, if any, for the assessment, alteration, modification, strengthening and repair of all road structures affected by national road schemes shall be agreed with the Bridge Management Section of the National Roads Authority (NRA).

- The developer should have regard to any Environmental Impact Statement and all conditions and/or modifications imposed by An Bord Pleanála regarding road schemes in the area. The developer should in particular have regard to any potential cumulative impacts.
- The developer, in conducting Environmental Impact Assessment, should have regard to the NRA DMRB and the NRA Manual of Contract Documents for Road Works.
- The developer, in conducting Environmental Impact Assessment, should have regard to the NRA's Environmental Assessment and Construction Guidelines, including the *Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes* (National Roads Authority, 2006).
- The EIS should consider the Environmental Noise Regulations 2006 (SI 140 of 2006) and, in particular, how the development will affect future action plans by the relevant competent authority. The developer may need to consider the incorporation of noise barriers to reduce noise impacts (see *Guidelines for the Treatment of Noise and Vibration in National Road Schemes* (1st Rev., National Roads Authority, 2004)).
- It would be important that, where appropriate, subject to meeting the appropriate thresholds and criteria, a Traffic and Transport Assessment be carried out in accordance with relevant guidelines and best practice, noting traffic volumes attending the site and traffic routes to/from the site with reference to impacts on the national road network and junctions of lower category roads with national roads. The Authority's Traffic and Transport Assessment Guidelines (2007) should be referred to in this regard. Please also have regard to Section 2.2 of the Guidelines which address circumstances where sub-threshold TTA may be required.

- The designers are asked to consult the National Roads Authority's DMRB *Road Safety Audit* (NRA HD 19/12) to determine whether a Road Safety Audit is required.

Notwithstanding, any of the above, the developer should be aware that this list is non-exhaustive, thus site and development specific issues should be addressed in accordance with best practise.

I hope that the above comments are of use in your continuing process.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Tara Spain', is written over a horizontal dashed line.

Tara Spain
Senior Policy Adviser (Planning)

From: Michael McPartland [Michael.McPartland@fisheriesireland.ie]
Sent: 25 April 2014 12:50
To: Declan Egan; Laura Thomas
Subject: Clonakilty Flood Relief Scheme

Declan/Laura

I refer to your letters of 24th March and 10th April and to our meeting on 23rd April.

The study area encompasses the Fealge River and its tributaries which contains salmonid(salmon, sea trout and lamprey) spawning and nursery waters. In addition to salmonids, lamprey and eels have been recorded within the constraints study area.

While IFI are fully aware of, and sensitive to, the hardship caused by flooding events any proposed flood alleviation measures must be sustainable and in keeping with the requirements of the Fisheries Acts, Habitats Directive and Water Framework Directive.

In this context IFI feels that the current assessment of flooding events must be a catchment wide process assessing the impact of changes in drainage, development and land use patterns and practices on the response of flows in rivers to rainfall events involved to rainfall events. Likewise potential solutions should consider the catchment in its entirety and not focus solely on the relatively small area set out in the constraints study. Each solution or series of solutions proposed should be considered not alone in financial terms but also in the context of long term sustainability and durability in combination with flood control effectiveness.

More specifically considering the significance of the rivers involved terms of fisheries, the EIS associated with any proposed flood alleviation measures needs to address the following

Assessment of Existing Conditions:

The following data is necessary, both within the study area and to the limits of the zone of influence of any proposed works, to assess existing conditions:-

- a) Mapping of the range, location and extent of each aquatic habitat type e.g. pools, nursery and spawning areas.
- b) Redd counting in the proposed study area and upstream to the limits of the zone of influence of any proposed works be carried out.
- c) Mapping of both the extent and nature of bankside vegetation, highlighting in particular all areas subject to river bank erosion at present.
- d) A complete stock survey of all fish species.
- e) Characterization and quantification of each habitat area, identified in (a), based on its macro invertebrate population.
- f) Detailed assessment and characterization of all potentially impacted channels in terms of their surface and sub-surface sedimentology.

Impact Assessment:

The following requirements apply from a fisheries perspective in relation to impact assessment of any proposed works:-

- a) Quantification of habitat losses and the impact on both flora and fauna.
- b) Impact of any proposed works on fish stock densities for each species.
- c) Changes in flow dynamics, the consequent impact on fish migrations and the loss of opportunity for fish movement.
- d) Compatibility of any proposed measures with existing legislative requirements.

It is the understanding of IFI that the main options currently being considered are as follows.

Creation of Storage Areas:

From a fisheries perspective the principle issues which would result from such a proposal are a) fish passage and b) habitat loss as a result of impoundment. These issues are liable to be particularly problematic should on line impoundment be proposed. A fish pass would be required at each storage site. Off line storage is certainly an option which would have less impact and IFI would ask that this option be fully considered.

Piped Diversion of Flood Flows:

Provided the design of such a system is such that fish cannot enter the diversion pipes at either the upstream or downstream ends nor is there a negative knock on effect in the receiving location this is an option which should not be problematic to fisheries post construction.

Tidal Barrage:

The chief concerns of IFI in relation to a tidal barrage would be a) impact on fish passage and b) potential impact on water quality particularly bearing in mind that Clonakilty WWTP discharges upstream of the proposed barrage location. The number of occasions per annum when the barrage would be closed and duration of the closures would be key factors in assessing impact.

Channel Sealing/Canalization:

IFI understands that this option effectively proposes to replace a significant section of the existing river channel in the Clonakilty town area with an open box culvert type structure. This is liable to have a significant negative impact on fisheries both at the construction and operational phases. Such a proposal would necessitate the effective replacement/recreation of the existing river features and substrate. This is high impact highly specialized work.

Discussion above has focused in general terms on the main options under consideration. When a preferred option emerges then much more detailed assessment and discussion will be needed in relation to specifics. Needless to say methodologies to minimise to construction phase impact will also be required. In relation to instream works in freshwater environments these should be limited to the period May to September inclusive to minimise the impact on salmonids.

I would ask that you keep IFI updated as the study progresses. Should you require any clarification please do not hesitate to contact me.

Michael Mc Partland
Senior Fisheries Environmental Officer.

Iascach Intíre Éireann
Inland Fisheries Ireland

Tel + 353 (0)26 412 21/2

Fax + 353 (0)26 412 23

Email

michael.mcpartland@fisheriesireland.ie<<mailto:michael.mcpartland@fisheriesireland.ie>>

Web www.fisheriesireland.ie<<http://www.fisheriesireland.ie>>

Sunnyside House, Macroom, Co. Cork, Ireland.

Help Protect Ireland's Inland Fisheries

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

From: Declan Egan [<mailto:Declan.Egan@jbaconsulting.com>]

Sent: 02 April 2014 11:27

To: Michael McPartland

Cc: Laura Thomas; Jonathan Cooper

Subject: Clonakilty Flood Relief Scheme

Michael,

Good morning. JBA Consulting has been retained by the OPW to carry out an environmental impact assessment of the Clonakilty Flood Relief Scheme. We are in the Constraints Study section of this work and we are consulting with various consultees as part of the process. Our senior ecologist, who is UK based, is in Ireland on the 23rd of April and we would like, if possible, to meet with you to discuss the various options that we are looking at. I will bring some drawings to the meeting so that we can discuss them.

Laura is flying into Cork early in the morning and flying back the same evening. Please revert to me with a time if this is suitable for you. Thanks.

Regards

Declan Egan

Project Manager # JBA first internal send 11:26 Wed 02 Apr 2014 #

Michael Mc Partland
Senior Fisheries Environmental Officer.

Iascach Intíre Éireann
Inland Fisheries Ireland

Tel + 353 (0)26 412 21/2

Fax + 353 (0)26 412 23

Email

michael.mcpartland@fisheriesireland.ie<<mailto:michael.mcpartland@fisheriesireland.ie>>

Web www.fisheriesireland.ie<<http://www.fisheriesireland.ie>>

Sunnyside House, Macroom, Co. Cork, Ireland.

Help Protect Ireland's Inland Fisheries



Mr Jonathan Cooper
Director
JBA Consulting
24 Grove Island
Corbally
Limerick.

08 April 2014

RE: Clonakilty Flood Relief Scheme - Environmental Constraints Consultation

Your Ref: CG\2014s0971-I-L001-1.doc

GSI Ref: 14/108

Dear Mr Cooper,

I would like to acknowledge receipt of your correspondence of 24 March 2014 concerning the above Scheme.

Please note that Geological Heritage data can now be viewed online on the GSI Public Data Viewer at: http://spatial.dcenr.gov.ie/imf/imf.jsp?site=GSI_Simple – see below.

Datasets

The Geological Survey of Ireland, as the national earth science agency, has datasets on Bedrock Geology, Quaternary Geology, Mineral deposits, Groundwater Resources, Geological Heritage, Landslides and the Irish Seabed. These comprise maps, reports and extensive databases that include mineral occurrences, bedrock/mineral exploration, groundwater, site investigation boreholes, karst features, wells and springs.

To assist with an Environmental impact Assessment (EIA), and especially the “Soils & Geology” and “Surface Water & Groundwater” parts, maps/databases are available on the GSI website under “Online Mapping”- direct link: <http://www.gsi.ie/Mapping.htm> with datasets currently available for Bedrock, Geological Heritage, Groundwater, Karst, Geotechnical boreholes, Mineral locations. More recent viewers accessible from the same link include the National Landslide Viewer, the Aggregate Potential Mapping and the Geotechnical Viewer.

Please note that Geological Heritage data can now be viewed online on the GSI Public Data Viewer at: http://spatial.dcenr.gov.ie/imf/imf.jsp?site=GSI_Simple

There are two map layers under ‘Geological Heritage’:



1. 'Geological Heritage Sites Boundaries': a national dataset (one shapefile with boundary polygons) showing the nine County Geological Sites audits to date (Carlow, Clare, Kildare, Sligo; and Meath, Kilkenny, Fingal, Waterford and Roscommon, at July 2013).

County Geological Sites audit data are still available for download (as individual county shapefiles and site report pdfs; with direct links to individual reports in the most recent 5 audits) at: <http://www.gsi.ie/Programmes/Heritage+and+Planning/County+Geological+Sites+Audits/>

2. 'Geological Heritage Sites No Boundaries': a national dataset (one shapefile with buffer polygons) covering all the other counties not yet audited, indicating the provisional location/extent of sites. These sites have buffers appropriate to their type (or theme), ranging between 200m, 500m and 1000m (for the largest landscape/glacial features). These are not 'mitigation' buffers, but an attempt to encompass the extent of the particular type of site.

These will all be available to download as well in the next few weeks from: <http://www.dcenr.gov.ie/Spatial+Data/Geological+Survey+of+Ireland/GSI+Spatial+Data+Downloads.htm>

Data Updates

The 'No Boundaries' data is provisional data only. As each county's geological heritage is audited, the 'No Boundaries' data will be replaced with the audited 'Boundaries' data, **so please re-visit the viewer regularly for updates. There can also be *ad hoc* updates of individual site data at any time.**

We anticipate that with necessary funding and the ongoing good partnerships of local authorities and the Heritage Council, that it will be possible to complete the remaining county audits within the next 5 years. Please note that all the above sites are of, at least, County Geological Site (CGS) status (some are also recommended for designation as Natural Heritage Areas) and are included in the relevant County Development Plan with associated protection policy/ies.

Other comments

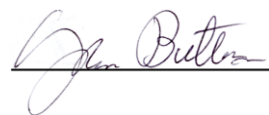
Should you identify a Geological Heritage Site with buffer within your study area, please contact Sarah Gatley, Head of the Geological Heritage and Planning Programme at sarah.gatley@gsi.ie, for further information and possible mitigation measures if applicable.

As GSI's karst dataset is far from comprehensive due to important data gaps, GSI would welcome complementary data collected during any EIA; data which would be added to the national database. If you wish to contribute data, please contact Caoimhe Hickey for details (caoimhe.hickey@gsi.ie).

At a later stage, GSI would much appreciate a copy of reports detailing any site investigations carried out. The data would be added to GSI's national database of site investigation boreholes, implemented to provide a better service to the civil engineering sector. Data can be sent to Beatriz Mozo (beatriz.mozo@gsi.ie, 01-678 2795).

I hope that these comments are of assistance, and if the GSI can be of any further help, please contact me.

Yours sincerely,



John Butler, Clerical Officer



Guidelines on the treatment of tourism in an Environmental Impact Statement

1. Introduction

Tourism is a significant component of the Irish Economy – estimated to employ approximately 190,000 people – and contributing over €5.3 billion in spending to the economy in 2009. The environment is one of the main resources upon which this activity depends – so it is important that the EIS evaluates whether and how the interacting impacts of a project are likely to affect tourism resources.

The purpose of this short note is to provide guidance on how these impacts can be assessed through the existing EIA process. Undertaking an EIA is governed by the EIA Advice Notes published by the EPA. These Advice Notes contain detailed guidance on how to describe and evaluate the effects arising from a range of projects, including tourism projects.

These guidelines were written with the assistance of Conor Skehan, Head of Department of Environment and Planning, Dublin Institute of Technology.

2. Tourism and the Environment

There are two interactions between tourism and the environment.

1. Impacts caused by Tourism Projects
2. Impacts affecting Tourism (e.g. the quality of a destination or a tourism activity)

Impacts caused by Tourism Projects

Tourism projects can give rise to effects on the environment. These are specifically dealt with under a number of Project Types in the Advice Notes, specifically:

12 TOURISM AND LEISURE

- a. Ski-runs, ski-lifts and cable-cars where the length would exceed 500 metres and associated developments. Project Type 20
- b. Sea water marinas where the number of berths would exceed 300 and fresh water marinas where the number of berths would exceed 100. Project Type 10
- c. Holiday villages which would consist of more than 100 holiday homes outside built-up areas; hotel complexes outside built-up areas which would have an area of 20 hectares or more or an accommodation capacity exceeding 300 bedrooms. Project Type 28
- d. Permanent camp sites and caravan sites where the number of pitches would be greater than 100. Project Type 28
- e. Theme parks occupying an area greater than 5 hectares. Project Type 29

Figure 1 The Advice Notes contain detailed descriptions on how to describe and evaluate the effects arising from a range of tourism projects.

Impacts affecting Tourism

Environmental effects of other projects on tourism are not specifically addressed in the Advice Notes. Taking account of the significance of tourism to the Irish economy a specialist topic of 'Tourism' has been prepared to facilitate a systematic evaluation of effects on this sector within the format laid down for other parts of the Environmental Impact Statement.

It is not intended that the assessment of effects on tourism should become a separate section of the Impact Statement, instead it is intended to become a specialist sub-section of the topic 'Human Beings' which is currently described in Section 2 of the Advice Notes

3. Tourism in the Existing Environment

Introduction

Visitor attitude surveys reveal that the following factors – in order of priority – are the reasons that tourists visit and enjoy Ireland:

- Beautiful scenery
- Friendly & hospitable people
- Safe & Secure
- Easy, relaxed pace of life
- Unspoilt environment
- Nature, wildlife, flora
- Interesting history & culture
- Plenty of things to see and do
- Good range of natural attractions

It is noteworthy that over half of the factors listed are environmental and that all others are related to the way of life of the people. The following describes how these factors are considered within an EIS, set out under EIA topic headings, and how they interact with tourism.

Beautiful scenery

This is covered in the '*Landscape*' Section. Particular attention needs to be paid to effects on views from existing purpose-built tourism facilities, especially hotels, as well as views from touring routes and walking trails. It is important to note that there appears to be evidence that the visitor's expectations of 'beautiful' scenery does not exclude an admiration of new modern developments – such as windfarms – which appear to be seen as indicative of a modern, informed and responsible attitude to the environment.

Friendly & hospitable people

This is not an environmental factor though it is indirectly covered under the '*Human Beings*' section of the EIS. The principal factor is the ratio of visitors to residents. This is of less significance in areas with long-established patterns of tourism.

Safe & Secure

This is not an environmental issue – though some of the factors that are sometimes covered under the heading of '*Human Beings*' – such as social inclusion or poverty – can point to likely effects and interactions.

Easy, relaxed pace of life

This is not an environmental issue though it is partially covered under '*Human Beings*' – see comments above.

Unspoilt environment

This is covered under the sections dealing with '*Landscape*', '*Flora*' and '*Fauna*' and to a lesser extent under emissions to '*Water*' and '*Air*'. In some instances traffic congestion, especially in rural areas, can be an issue, this is usually covered within '*Material Assets*'.

Nature, wildlife, flora

This is principally covered under the headings of '*Flora*' and '*Fauna*' and to a lesser extent by '*Landscape*', '*Water*' and '*Air*'. The principal issues being to avoid any effects that might reduce the health or extent of the habitats. This can occur either directly, by impinging on the site, or indirectly, through emission, that can affect the natural resources, like clean water, which the habitat depends on. It also considers effect on physical access to and visibility of these sites. Occasionally there are concerns about the disturbance or wear and tear of visitor numbers to such sites.

Interesting history & culture

This is principally covered under '*Cultural Heritage*' and, to a lesser extent, under '*Human Beings*'. The principal issues being to avoid damage to sites and structures of cultural, historical, archaeological or architectural significance – and to their contexts or settings. It also considers effect on physical access to and visibility of these sites. Occasionally there are concerns about the wear and tear of visitor numbers to such sites.

Plenty of things to see and do.

This is not an environmental issue though it is partially covered by the '*Human Beings*' section, where the tourism resources of an area are described and assessed.

Good range of natural attractions

This is covered by the '*Landscape*', '*Flora*', '*Fauna*', and '*Cultural Heritage*' sections of the EIS.

4. Project factors affecting Tourism

Introduction

Tourism can be affected both by the structures or emissions of new developments as well as by interactions between new activities and tourism activities – for example the effects of high volumes of heavy goods vehicles passing through hitherto quiet, scenic, rural areas. Tourism can be affected by a number of the characteristics of the new project such as:

- New Developments
 - Social Considerations
 - Land-uses and Activities
- *New Developments* - will the development stimulate or suppress demand for additional tourism development in the area? If so, what type, how much and where? Marinas, golf courses, other major sporting facilities as well as theme parks and larger conference facilities can all stimulate the emergence of new accommodation, catering and leisure facilities often within an extensive area around a new primary visitor facility. Extensive urbanisation and large scale infrastructure as well as certain processing and extractive industries all have the potential to suppress demand for additional tourism – but usually only in the immediate locality of the new development. It should be noted however, that some types of new or improved large scale infrastructure – such as roads – can improve the visitor experience – by increasing safety and comfort or can convey a sense of environmental responsibility – such as wind turbines.
- *Social Consideration* - will the development change patterns and types of activity and land use? Will it affect the demographics, economy or social dynamics of the locality?
- *Land-use* - will there be severance, loss of rights of way or amenities, conflicts, or other changes likely to ultimately alter the character and use of the tourism resources in the surrounding area?

Existing Tourism

In the area likely to be affected by the proposed development, the following attributes of tourism, or the resources that sustain tourism, should be described under the following headings.

Note that the detailed description and analysis will usually be covered in the section dealing with the relevant environmental topic – such as '*Landscape*'. Only the relevant finding as to the likely significance to, or effect on, tourism needs to be summarised in this section.

Context

Indicate the location of sensitive neighbouring tourism resources that are likely to be directly affected, and other premises which although located elsewhere, may be the subject of secondary impacts such as alteration of traffic flows or increased urban development. The following should be noted in particular:

- Hotels, conference centres, holiday accommodation – including holiday villages, holiday homes, and caravan parks.
- Visitor centres, Interpretive centres and theme parks
- Golf courses, adventure sport centres and other visitor sporting facilities
- Marinas and boating facilities
- Angling facilities
- Equestrian facilities
- Tourism-related specialist retailers and visitor facilities
- Historic and Cultural Sites
- Pedestrian, cycling, equestrian, vehicular and coach touring routes

Indicate the numbers of premises and visitors likely to be directly affected directly and indirectly.

Identify and quantify, where possible, their potential receptors of impacts, noting in particular transient populations, such as drivers, walkers, seasonal and other non-resident groups.

Describe any significant trends evident in the overall growth or decline of these numbers, or of any changes in the proportion of one type of activity relative to any other.

Indicate any commercial tourism activity which likely to be directly affected, with resultant environmental impacts.

Character

Indicate the occupations, activities or interests of principal types of tourism in the area. – Where relevant, describe the specific environmental resources or attributes in the existing environment which each group uses or values; where relevant, indicate the time, duration or seasonality of any of those activities. For example describe the number of guides, boats and anglers who use a salmon fishery and the duration of the salmon season as well as the quantity and type of local accommodation that is believed to be used by the anglers.

Significance

Indicate the significance of the principal tourism assets or activities likely to be affected. Refer to any existing formal or published designation or recognition of such significance. Where possible provide an estimate of the contribution of such tourism activities to the local economy. For instance refer to the number of annual visitors to a tourism attraction or to the grading of a hotel.

Sensitivity

Describe any significant concerns, fears or opposition to the development known to exist among tourism interests. Identify, where possible, the particular aspect of the development which is of concern, together with the part of the existing tourism resource which may be threatened. For instance describe the extent of a potential visual intrusion onto a site of historic significance which is the main local tourist attraction.

5. Impacts on Tourism

"Do Nothing" Impact;

Describe how trends evident in the existing environment will continue and how these trends will affect tourism.

Predicted impact;

- Describe the location, type, significance, magnitude/extent of the tourism activities or assets that are likely to be affected.
- Describe how the new development will affect the balance between long-established and new dwellers in an area and its affect on the cultural or linguistic distinctiveness of an area. For example describe the effect of a new multi-national population required for an international call-centre located in a Gaeltacht area.
- Describe how changes in patterns of employment, land use and economic activity arising from the proposed development will affect tourism, for example, illustrating how a new industrial development will diversify local employment opportunities thereby reducing the area's unsustainable over-reliance on seasonal tourism.
- Describe the consequences of change, referring to indirect, secondary and cumulative impacts on tourism; Examples can include describing how the new development may lead to a reduced assimilative capacity for traffic or water during the peak of the tourism season or how new urbanism combined with existing patterns of tourism may lead to unsustainable levels of pedestrian traffic through a sensitive habitat.
- Describe the potential for interaction between changes induced in tourism and other uses that may affect the environment – for instance increasing new tourism-related housing affecting water resources or structures
- Describe the worst case for tourism if all mitigation measures fail.

6. Mitigating adverse impact on Tourism

Describe the mitigation measures proposed to:

- *avoid* sensitive tourism resources – such as views, access, and amenity areas including habitats as well as historical or cultural sites and structures.
- *reduce* the exposure of sensitive resources to excessive environmental burdens arising from the development's emissions or volumes of traffic [pedestrian and vehicular], and/or losses of amenity arising from visually conspicuous elements of the development – for example by prioritizing visual screening of views from a hotel towards a quarry.
- *reduce* the adverse effects to tourism land uses and patterns of activities – especially through interactions arising from significant changes in the intensity of use or contrasts of character or appearance – for example by separating traffic routes for industrial and tourism traffic.
- *remedy* any unavoidable significant residual adverse effects on tourism resources or activities, for example by providing alternative access to tourism amenities – such as waterways or monuments.



An Roinn
Ealaíon, Oidhreacht agus Gaeltachta
Department of
Arts, Heritage and the Gaeltacht

Our Ref: G Pre00131/2014
Your Ref: CG\2014s0971-I-L001-1.doc

08 April 2014

Jonathan Cooper
24 Grove Island
Corbally
Limerick
jonathan.cooper@jbaconsulting.com

Re: Clonakilty Flood Relief Scheme - Environmental Constraints Consultation

A Chara,

On behalf of the Department of Arts, Heritage and the Gaeltacht, I refer to your correspondence in relation to the above. Outlined below are the observations of the Department in relation to nature conservation.

All aspects of this plan need to comply with the legislation relating to the Special Protection Area and Special Area of Conservation designations for the Clonakilty Bay area. The Department acknowledges that discussions with the consultants and National Parks and Wildlife Service for this project are on-going with a view to establish how this compliance can be achieved.

The acknowledgement to this letter or any further information should ideally be sent to manager.dau@ahg.gov.ie; if this is not possible, correspondence may alternatively be sent to:

The Manager
Development Applications Unit
Department of Arts, Heritage and the Gaeltacht
Newtown Road
Wexford

Finally, the above observations and recommendations are based on the papers submitted to this Department on a pre-planning basis and are made without prejudice to any observations the Minister may make in the context of any consultation arising on foot of any development application referred to the Minister, by the planning authority, in his role as statutory consultee under the Planning and Development Act 2000, as amended.

Is mise, le meas

Patricia O'Leary
Development Applications Unit
Tel: (053) 911 7482
e manager.dau@ahg.gov.ie

Jonathan Cooper
Project Manager
JBA Consulting
24 Grove Island
Corbally
Limerick.

15/04/2014

Re: Your Ref: CG\2014s0971-I-L002-1
Clonakilty Flood Relief Scheme

Dear Mr Cooper,

I am responding to your letter dated 10/04/2014 which was addressed to our Department at Darrara, Clonakilty. Our office at Darrara is now closed and we are at our new address. While I was in charge at Darrara I did not receive previous correspondence from you about this matter. Also, I am puzzled why you would need to contact us at Darrara when our location was outside the Study Area. However, I am taking this opportunity to respond in my private capacity as a resident at Wolfe Tone Street, Clonakilty where we are subject to flooding from the town's river and the sea. The sea flooding is our real concern and as you're aware it occurs with increasing frequency.

I attended at the open consultation session last year where engineers were available to hear our various submissions. I proposed support for a barrage at the narrowest point in the bay which has been on the flood works' agenda for quite some time. I added that it would provide an amenity for a looped walk route as a further enhancement for the town. While the primary purpose of the consultation was to consider means of controlling flooding, the mere suggestion of an added value amenity was frowned upon by the consulting engineer. This I found most disappointing because surely the ultimate goal is to secure the town from flooding and enhance the surroundings wherever possible for residents and visitors alike.

It would be such a relief if we had a barrage in place and not to be so fretful every time the South East gales are forecast to test our own flood defences.

Yours sincerely

John McCarthy SVI

Department of Agriculture, Food and the Marine
Cork South Regional Office
Clogheen
Clonakilty
Co. Cork

Telephone +353 23 8836200
Fax +353 23 8836006