- 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 (2014) 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) to determine whether a Road Safety Audit is required.
- In relation to potential need for haul routes, the applicant/developer should clearly identify haul routes proposed and fully assess the network to be traversed. Separate structure approvals/permits and other licences may be required in connection with the proposed haul route and all structures on the haul route should be checked by the applicant/developer to confirm their capacity to accommodate any abnormal load that might be proposed.

Notwithstanding, any of the above, the developer should be aware that this list is nonexhaustive, 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,

Michael McCormack Policy Adviser (Planning)

*Note: In accordance with the provisions of section 13 of the Roads Act 2015, Transport Infrastructure Ireland (TII) is the operational name of the National Roads Authority with effect from 1 August, 2015.



Oifig an Aire Post, Fiontar agus Nuálaíochta Office of the Minister for Jobs, Enterprise and Innovation

Our Ref: 151687/MIN

6 October, 2015

McCarthy KOS Received on 8 OCT 2015 121004 - 2 John Staunton

Mr. John Staunton McCarthy Keville O'Sullivan Ltd. Planning and Environmental Consultants Block 1, G.F.S.C. Moneenageisha Road County Galway

Dear Mr. Staunton,

I wish to acknowledge receipt of your recent correspondence to the Minister for Jobs, Enterprise and Innovation, Mr Richard Bruton T.D., regarding the River Bride (Blackpool) Drainage Scheme - EIA Scoping.

I will bring your correspondence to the Minister's attention at the earliest opportunity.

Yours sincerely,

THERESE WALSH PRIVATE SECRETARY

Appendix 2C Public Information Day No.1 & 2 – Brochure

WHAT HAPPENS NEXT?

All comments received in response to this Public Information Event will be considered by the OPW and will be taken into account in the preparation of the first stage in the Lower Lee (Cork City) Flood Relief Scheme (Including Blackpool And Ballyvolane) Environmental Impact Assessment and the Engineering Study.

The Environmental Impact Assessment and Engineering Study for the Lower Lee (Cork City) Flood Relief Scheme will be delivered in the following Stages:

Environmental Impact Assessment				Engineering Study		
Stage I	Part 1	Constraints Study (this stage)	Stage I	Scheme Development		
	Part 2 Screening for Appropriate Assessment age II Part 1 Environmental Assessment of Viable Options Part 2 Appropriate Assessment age III Environmental Impact Statement Public Exhibition		Data Gathering and Surveying			
Stage II			Hydrology Study & Hydraulic Modelling			
			Site Investigations			
Stage III			Flood Risk Assessments			
Stage IV			Flood Risk Management Options			
oluge IV				Cost Benefit Analysis		
				Selection of Preferred Option		
				Flood Risk Management Plan		
			Stage II	Public Exhibition		
			Stage III	Detailed Design		
			Stage IV	Construction		

YOUR OPPORTUNITY TO TAKE PART

The Office of Public Works wishes to consider all viewpoints in relation to the Study Area being examined. This is your opportunity to take part at the early stages of the planning of the Flood Relief Scheme. Time spent communicating your views to the Office of Public Works is appreciated.

The general public and all interested parties are invited to give their opinions on the Study Area. Please examine the Study Area shown overleaf and let your views be known by either completing the enclosed questionnaire or writing to the address below, giving your comments. Your opinion will be appreciated and given full consideration.

Completed questionnaires may be handed in at the exhibition or posted to the address below using the stamped and addressed envelope provided, by Friday 26th July 2013.

FURTHER INFORMATION

All queries, questionnaires and comments in relation to this project can be addressed to:

Contact Name: Contact Title:

Brian Keville **Project Manager** McCarthy Keville O'Sullivan Ltd. Planning & Environmental Consultants Block 1, G.F.S.C., Moneenageisha Road, Galway

Tel: +353 (091) 735611 Fax: +353 (091) 771279 Email: bkeville@mccarthykos.ie

















LOWER LEE (CORK CITY) **FLOOD RELIEF SCHEME** (INCLUDING BLACKPOOL **AND BALLYVOLANE)**

PUBLIC CONSULTATION

JULY 2013

Ryan Hanley in association with McCarthy Keville O'Sullivan has been appointed by the Office of Public Works to carry out an Environmental Assessment of the proposed Lower Lee (Cork City) Flood Relief Scheme.

This is the first public consultation; its objective is to seek initial views from the public in relation to the key issues that the study should address, and highlight points of local importance that may constrain the design of potential flood alleviation measures.

PURPOSE OF THE PROJECT

The purpose of the Lower Lee (Cork City) Flood Relief Scheme is to assess and develop a viable, costeffective and sustainable Flood Relief Scheme to alleviate flooding in Cork City, based on preferred options already identified in the Lee CFRAM Study. The Blackpool and Ballyvolane areas on the River Bride (north) will also be assessed for flood relief measures as part of the Flood Relief Scheme.

CURRENT POSITION

Following on from the Lee CFRAMS and the publication of the draft CFRMP, the next stage is the commencement of the Lower Lee Flood Relief Scheme. The first phase of the scheme is the identification of a study area and the preparation of a Constraints Study as part of the Environmental Impact Assessment for the scheme. The Study Areas for the project are shown on the map above outlined in red and blue.



WHAT IS A CONSTRAINTS STUDY?

A Constraints study identifies the key environmental issues in a study area which may be impacted upon by possible flood alleviation measures and/or which may impose constraints on the viability and/ or design of these measures.

ENGINEERING STUDY

An Engineering Study is being advanced in parallel with the Environmental Assessment of the Flood Relief Scheme.

The range of engineering measures typically considered for possible flood alleviation schemes in an Engineering Study include, but are not limited to those listed in the box to the right.

It is not possible at this stage to define the number of scheme options that will require study, although a typical Engineering Study of this nature will identify between three and five viable options.

POTENTIAL FLOOD ALLEVIATION MEASURES (non exhaustive list)

- a) Do Nothing (i.e., implement no new flood alleviation measures)
- b) Non-Structural Measures (e.g. flood warning system or individual property protection)
- c) Relocation of Properties and/or infrastructure
- d) Reconstruction of Properties and/or infrastructure to a higher level
- e) Flow Diversion (e.g. river diversion or flood flow bypass channel)
- f) Flow Reduction (e.g. upstream catchment management or flood storage)
- g) Flood Containment through Construction of Flood Defences
- h) Increase Conveyance of Channel (upstream and/or through and/or downstream of the town) i) Sediment Deposition and Possible Sediment Traps
- i) Pump storm waters from behind flood defences
- k) For Lower Lee specifically, works to facilitate a revised operating regime for Carrigadrohid and Inniscarra dams for the purposes of flood risk management

WHAT HAPPENS NEXT?

All comments received in response to this Public Information Event will be considered by the OPW and will be taken into account in progressing to the next stage in the Lower Lee (Cork City) Flood Relief Scheme (Including Blackpool And Ballyvolane) Environmental Impact Assessment and the Engineering Study.

The Environmental Impact Assessment and Engineering Study for the Lower Lee (Cork City) Flood Relief Scheme will be delivered in the following Stages:

Environmental Impact Assessment			Engineering Study			
Stage I	Part 1	Constraints Study (complete)	Stage I	Scheme Development (complete)		
	Part 2	Screening for Appropriate		Data Gathering and Surveying (complete)		
Stago II	Part 1	Environmental Assessment of		Hydrology Study & Hydraulic Modelling (complete)		
Slugell	tage II Part I Environr Viable	Viable Options (next stage)		Site Investigations (complete)		
	Part 2	Appropriate Assessment		Flood Risk Assessments (complete)		
		(next stage)		Flood Risk Management Options (complete)		
Stage III		Environmental Impact		Cost Benefit Analysis		
	Statement	Statement		Selection of Preferred Option		
Stage IV		Public Exhibition		Flood Risk Management Plan		
			Stage II	Public Exhibition		
			Stage III	Detailed Design		
			Stage IV	Construction		

YOUR OPPORTUNITY TO TAKE PART

The Office of Public Works wishes to consider all viewpoints in relation to the Emerging Preferred Option being proposed. This is your opportunity to take part and make your view and comments known as the Emerging Preferred Option is developed further and before final preferred options is selected. Time spent communicating your views to the Office of Public Works is appreciated.

The general public and all interested parties are invited to give their opinions on the Emerging Preferred Options. Please examine the details of the Emerging Preferred Options shown overleaf, on display at the Public Information Day, and online on the project website (<u>www.lowerleefrs.ie</u>) and let your views be known by either completing the enclosed comment sheet or writing to or emailing the address below, giving your comments. Your opinion will be appreciated and given full consideration.

Completed comment sheets may be handed in at the exhibition or posted to the address below, by Friday 29th August 2014.

FURTHER INFORMATION

All gueries and comments in relation to this project can be addressed to: Contact Name: Brian Keville Contact Title:

Project Manager McCarthy Keville O'Sullivan Ltd. **Planning & Environmental Consultants** Block 1, G.F.S.C., Moneenageisha Road, Galway

+353 (091) 735611 Tel: Fax: +353 (091) 771279 Email: bkeville@mccarthykos.ie











JBA

RYAN HANLEY

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Keville

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ARUP





LOWER LEE (CORK CITY) **FLOOD RELIEF SCHEME** (INCLUDING BLACKPOOL **AND BALLYVOLANE)**

EMERGING PREFERRED OPTIONS PUBLIC CONSULTATION JULY 2014

INTRODUCTION

Ryan Hanley in association with McCarthy Keville O'Sullivan, has been appointed by the Office of Public Works to carry out an Environmental Assessment of the proposed Lower Lee (Cork City) Flood Relief Scheme. The series of measures and options that will make up the proposed flood relief scheme are being developed as part of an Engineering Study being conducted by ARUP and JBA Consulting. This is the second public consultation on the proposed flood relief scheme, and its objective is to inform the public and stakeholders of the progress made since the project commenced, and outline the emerging preferred options for alleviating flooding in the Lower Lee, including Blackpool and Ballyvolane.

PURPOSE OF THE PROJECT

The purpose of the Lower Lee (Cork City) Flood Relief Scheme is to assess and develop a viable, cost-effective and sustainable Flood Relief Scheme to alleviate flooding in Cork City, based on preferred options already identified in the Lee CFRAM Study. The Blackpool and Ballyvolane areas on the River Bride (north) are also being assessed for flood relief measures as part of the Flood Relief Scheme.

CONSTRAINTS STUDY UPDATE

A Constraints Study, identifying the key environmental issues in a study area that may be impacted upon by possible flood alleviation measures and/or which may impose constraints on the viability and/or design of these measures has also now been finalised, and is available on the project website (www.lowerleefrs.ie).

EMERGING PREFERRED OPTIONS

An ongoing project Engineering Study being advanced in parallel with the Environmental Assessment of the Flood Relief Scheme, has now identified Emerging Preferred Options for the Lower Lee, Blackpool and Ballyvolane. The Options are listed in the boxes to the right, for each section of the study area.



Existing view looking south over boardwalk at end of Grand Parade towards Sullivan's Quay



Proposed view of flood defence walls doubling as public seating with "tilt-up" or demountable flood barriers to fill gaps

LOWER LEE - EMERGING PREFERRED OPTION

- a) Detailed Flood Forecasting System
- b) Flood Warning System (public alerts)
- c) Further Optimised Dam Operating Procedures
- d) Creation of Upstream Washlands
- e) Local Conveyance Improvements and Direct Defences at Inniscarra Bridge
- f) Local Defences at Inchagaggin
- g) Flow Reduction Structure on South Channel
- h) Direct Defences on Curaheen, Glasheen, North & South Channels
- i) Flood Gates (at some footbridges and boardwalk locations)
- Possible Raising of Vincent's Pedestrian Bridge & Cornmarker Street Footbridge
- k) Localised Surface Water Pumps

EXAMPLES OF PROPOSED MEASURES – BEFORE AND AFTER VIEWS



Existing view looking northwest from Lavitt's Quay towards Christy Ring Bridge



Proposed view of new quay defence wall and solid bridge parapet

BLACKPOOL - EMERGING PREFERRED OPTION

- a) Channel Clearance and Maintenance
- b) Direct Defences from Upstream of Northpoint Business Park to Fitz's Boreen
- c) Replacement of some Bridges at Dulux and Fitz's Boreen
- d) Sedimentation Area at Dulux
- e) Flood Defence Walls at Orchard Court
- f) Removal of Pedestrian Bridge & Replacement of Road Bridge at Orchard Court
- g) Replacement/Upgrading of Culvert between Orchard Court & Blackpool Church
- h) Infilling of Open Channel Section at Blackpool Church
- i) Cleaning & Sealing of Culvert Downstream of B'pool Church
- Realignment of Bride/Glin/Kiln Culvert at Madden's Buildings
- k) Localised Surface Water Pumps



Existing view from Cork College of Commerce on Union Quay looking north towards pedestrian bridge



Proposed view of new flood defence walls to be closed off with flood gates when necessary

BALLYVOLANE - EMERGING PR a) Replacemen b) Managemen Flood Risk i. Re-grad Road ii. Re-grad Mervue d Court iii. Remova northea iv. Re-grad Nervue tiv. Re-grad Nervue v. Creation Leeds P vi. Replace with slot

- EMERGING PREFERRED OPTION

a) Replacement of Existing Trashscreen

- b) Management of Residual Overland Flood Risk
 - i. Re-grading of Ballyhooley Road in vicinity of Mervue Lawn
 - i. Re-grading of access road into Mervue Lawn
 - i. Removal of boundary wall to northeast of Kempton Park
 - v. Re-grading of Kempton Park
 - Creation of new swale to east of Leeds Park and Park Court
 - i. Replacement of manhole covers with slotted gratings

Appendix 2D Public Information Day No.1 & 2 – Qustionnaire

Landscape & Visual Amenity

Comment:

Angling, Tourism & Recreation

Comment:

•••

Comment:			

The Office of Public Works (OPW) undertakes to hold any information provided to it by individuals or others on a confidential basis, subject to the OPW's obligations under law, including the Freedom of Information Act. If, for any reason, it is intended that information provided to the OPW should not be disclosed due to the sensitive nature of such information, it is incumbent on the person or body supplying the information to make clear this wish and to specify the reasons for the information's sensitivity. The OPW will consult with any individual or body so supplying sensitive information before making a decision on any freedom of information request received.

THANK YOU FOR YOUR CO-OPERATION

		OPPW To collect or final the Week of an eloffment and the Her	ARUF
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(Please complete this questionnaire and return to Brian Keville, McCarthy Keville O'Sullivan, Block 1 GFSC, Mo Road, Galway or <u>bkeville@mccarthykos.ie</u> by Friday 26 th July 2013) 1. Name (optional):	۲U	BLIC CONSU	LIAIION NO.	I - CONSTRAINTS STUDY	QUESTI	IONN
1. Name (optional):	(PI	ease complete this que	estionnaire and return to Road, Galway or <u>bkev</u>	Brian Keville, McCarthy Keville O'Sullivan, Blo <u>ville@mccarthykos.ie</u> by Friday 26th July 2013	ock 1 GFSC, 3)	Moneer
Address:	1.	Name (optional): _				
Phone (optional):		Address:				
 2. Are you aware of the Lee Catchment Flood Risk Assessment and Management Study, CFRAMS and or recommendations? Yes		– Phone (optional):		Email (optional):		
or recommendations? Yes 3. Do you own, rent or occupy a property within the study area being considered? Yes 4. Address of property (if different from home address)	2.	Are you aware of t	he Lee Catchment Floo	d Risk Assessment and Management Stud	y, CFRAMS	S and it:
3. Do you own, rent or occupy a property within the study area being considered? Yes 4. Address of property (if different from home address)	or re	ecommendations?			Yes 🗆	No
 4. Address of property (if different from home address) 5. Have you had any personal experience of flooding? Yes 6. If yes, please give date(s): Most recent Previous Previous 7. Type of property flooded: Retail Gffice Open Space Other If other, please describe: 8. Approximate maximum depth of flooding: Other 9. Source of Flooding: Directly from River / Stream From Drains Overground flow (surface water) 10. Do you have photographs of flooding? Yes 	3.	Do you own, rent or	occupy a property wit	thin the study area being considered?	Yes 🛛	No
5. Have you had any personal experience of flooding? Yes 6. If yes, please give date(s): Most recent Previous Previous 7. Type of property flooded: Retail Residential Retail Office Workshop Open Space Other If other, please describe:	4.	Address of property	(if different from hom)	ne address)		
6. If yes, please give date(s): Most recent Previous Prev	5.	Have you had any	personal experience o	f flooding?	Yes 🗆	No
Previous Previous Previous Previous 7. Type of property flooded: Previous Residential Retail Image: Constraint of the constraint	6.	lf yes, please give d	late(s):	Most recent		
7. Type of property flooded: Residential Image: Retail Office Image: Workshop Open Space Other If other, please describe: Other 8. Approximate maximum depth of flooding: Oirectly from River/ Stream 9. Source of Flooding: Directly from River/ Stream From Drains Overground flow (surface water) 10. Do you have photographs of flooding? Yes Image: Yes				Previous		
Residential Image: Retail Image: Retail <th></th> <th>Type of property fly</th> <th>ooded:</th> <th>Flevious</th> <th></th> <th></th>		Type of property fly	ooded:	Flevious		
Office Image: Constraint of the constr	7.	., , , , , , , , , , , , , , , , , , ,			п	
Open Space □ Other □ If other, please describe:	7.	Residential		Retail		
If other, please describe:	7.	Residential Office		Retail Workshop		
 8. Approximate maximum depth of flooding: 9. Source of Flooding: Directly from River/ Stream From Drains Overground flow (surface water) 10. Do you have photographs of flooding? Yes □ 11. If you do may the OPW have permission to use them? 	7.	Residential Office Open Space		Retail Workshop Other		
 9. Source of Flooding: Directly from River / Stream From Drains Overground flow (surface water) 10. Do you have photographs of flooding? Yes □ 11. If you do may the OPW have permission to use them? Yes □ 	7. If ot	Residential Office Open Space her, please describe		Retail Workshop Other		
From Drains Overground flow (surface water) 10. Do you have photographs of flooding? Yes □ 11. If you do may the OPW have permission to use them? Yes □	7. If ot 8.	Residential Office Open Space her, please describe Approximate maxir	unum depth of flooding	Retail Workshop Other :		
Overground flow (surface water) 10. Do you have photographs of flooding? Yes 11. If you do may the OPW have permission to use them?	7. If ot 8. 9.	Residential Office Open Space her, please describe Approximate maxir Source of Flooding:	u u num depth of flooding	Retail Workshop Other : Directly from River/ Stream		
10. Do you have photographs of flooding? Yes □ 11. If you do may the OPW have permission to use them? Yes □	7. If ot 8. 9.	Residential Office Open Space her, please describe Approximate maxir Source of Flooding:	u u num depth of flooding	Retail Workshop Other : Directly from River/ Stream From Drains		
11 If you do may the OPW have permission to use them?	7. If ot 8. 9.	Residential Office Open Space her, please describe Approximate maxir Source of Flooding:	u u mum depth of flooding	Retail Workshop Other : Directly from River/ Stream From Drains Overground flow (surface water)		
	7. If of 8. 9.	Residential Office Open Space her, please describe Approximate maxir Source of Flooding: Do you have photog	unterprint of flooding?	Retail Workshop Other : Directly from River/ Stream From Drains Overground flow (surface water)	Yes D	No
Note: Photographs will be collected at a later date	7. If of 8. 9. 10.	Residential Office Open Space her, please describe Approximate maxir Source of Flooding: Do you have photog If you do, may the C	undepth of flooding?	Retail Workshop Other : Directly from River/ Stream From Drains Overground flow (surface water)	Yes D	No







If so, please describe:

13. Please indicate, in order of preference, your preferred flood defence works: (please score from 1-11 as appropriate)

No Works (Do Nothing)	Non-Structural Measures (e.g. flood warning system or individual property protection)
Relocation of Properties and/or infrastructure	Reconstruction of Properties and/or infrastructure to a higher level
Flow Diversion (e.g. river diversion or flood flow bypass channel)	For Lower Lee specifically, Works to facilitate a revised operating regime for Carrigadrohid and Inniscarra dams for the purposes of flood risk management
Flood Containment through Construction of Flood Defences	Increase Conveyance of Channel (upstream and/or through and/or downstream of the town)
Sediment Deposition and Possible Sediment Traps	Pump storm waters from behind flood defences
Flow Reduction (e.g. upstream catchment management or flood storage)	

14. How do you think the issue of flooding can be resolved?

15. In your opinion, how important are the following environmental constraints to the proposed Flood Relief Scheme for Cork City? (please tick appropriate boxes)

Issue	Very Important	Important	Moderately Important	Of Little Importance	Unimportant
Flora and Fauna					
Local Fisheries					
Habitats					
Water Quality					
Architectural and Cultural Heritage					
Landscape and Visual Amenity					
Angling, Tourism & Recreation					

If you have any comments relating to the proposed scheme or the constraints, please record them here:

Flora and Fauna

Comment:

Local Fisheries

Comment:

Habitats

Comment:

Water Quality

Comment:

Architectural & Cultural Heritage

Comment:





LOWER LEE (CORK CITY) FLOOD RELIEF SCHEME

(INCLUDING BLACKPOOL AND BALLYVOLANE)

PUBLIC CONSULTATION NO.2 – EMERGING OPTIONS COMMENT SHEET

(Please complete this comment form and return to Brian Keville, McCarthy Keville O' Sullivan, Block 1 GFSC, Moneenageisha Road, Galway or bkeville@mccarthykos.ie by Friday 29th August 2014).

Name (optional):					
Address:					
Phone (optional):			Email (optional):		
Questions:					
1. Did you atte	nd the first Publi	ic Informa	tion Day held on 19 th .	July 2013? Yes 🗆	No E
2. How did you	ı hear about toda	y's Public	Information Day?		
3. What part of the study area have you a particular interest in?					
4. Have you ar	ıy personal exper	rience of fl	ooding?	Yes 🗆	No 🗆
5. If yes, pleas	e give date(s):		Most recent		
			Previous		_
			Previous		_
6. Type of pro	perty flooded:				
Resid	ential			Retail	
Offic	e			Workshop	
Open	Space			Other	
lf other, please	describe:				

Having reviewed the details of the emerging preferred options, we would appreciate your comments:

Are there any other flood alleviation options or measures you would suggest should be considered?

Further comment can be made through the project website at <u>www.lowerleefrs.ie</u>. All information on display will be available on the website. Alternatively please send further comments by email or post to Brian Keville, McCarthy Keville O' Sullivan, Block 1 GFSC, Moneenageisha Road, Galway or <u>bkeville@mccarthykos.ie</u>.

The Office of Public Works (OPW) undertakes to hold any information provided to it by individuals or others on a confidential basis, subject to the OPW's obligations under law, including the Freedom of Information Act. If, for any reason, it is intended that information provided to the OPW should not be disclosed due to the sensitive nature of such information, it is incumbent on the person or body supplying the information to make clear this wish and to specify the reasons for the information's sensitivity. The OPW will consult with any individual or body so supplying sensitive information before making a decision on any freedom of information request received.

THANK YOU FOR YOUR CO-OPERATION

Appendix 2E Public Information Day No.1 & 2 – Exhibition Posters



















Constraints Study

A Constraints Study is currently being undertaken by the project Environmental Consultants. The purpose of the Constraints Study is to determine and document the constraints that may inform the selection and design of the proposed Flood Alleviation Measures.

Primary Constraints

A range of constraints are being considered under the following categories:

- Flora and Fauna
- Fisheries
- Habitats
- Water Quality
- Archaeological, Architectural and Cultural Heritage
- Landscape and Visual Amenity
- Angling, Tourism and Recreational Use
- Flood Related Socio-Economic and Social Issues







ARUP JBA





Consulting Engineers



Public Involvement

Consultation will be undertaken throughout the process to ensure that the views of the public and other stakeholders are taken into account.

The purpose of this initial Information Gathering Day is to:

- Provide information about the Objectives of the Scheme
- Outline the Design and Statutory Process
- Provide an Opportunity for Comment at a preliminary stage
- Gather information about Environmental Constraints
- Obtain other information relevant to the Scheme

Following this initial public consultation, there will be further opportunities for involvement through attendance at future information days, when updates on the scheme progress will be presented. A questionnaire is available for you to complete and return with your own comments.

Members of the project teams are present today to answer any questions you have, or take note of any relevant information.















Consulting Engineers

Scheme Objectives & Overview

The Office of Public Works, OPW have carried out a Catchment Flood Risk Assessment and Management (CFRAM) Study for the Lee Catchment. From this study, the draft Catchment Flood Risk Management Plan, published in February 2010, set out a range of potential flood risk management options for particular areas within the catchment including the Lower Lee (Cork City).

The OPW has now commissioned Engineering and Environmental Studies to assess and develop a viable, cost-effective and sustainable Flood Relief Scheme, based on the preferred option from the Lee CFRAM Study. A report will be prepared describing the findings of the Engineering Study, which will include a description of the measures and scheme options assessed and the justification for its selection.

The Project Team includes a Design Team made up of consulting engineers, the OPW, Cork City Council and Cork County Council in addition to the Environmental Team. A study area has been identified and the initial stages of the Lower Lee flood relief scheme have commenced, including Constraints Study and Preliminary Design Surveys. An Indicative Flow chart showing the process from inception through to construction for a flood relief scheme is shown on the figure below:



Planning & Environmental Consultants



Formal Public Exhibition Process

Once a preferred Flood Relief Scheme has been determined and an outline design completed, the OPW will formally publicly exhibit the proposed scheme in accordance with the Arterial Drainage Acts.

This statutory process includes a four week Public Exhibition, during which the plans and particulars of the proposed scheme will be put on Public Display.

Representatives of the Project Team will attend the Public Exhibition on various dates to explain the scheme to members of the public and to address queries.

Copies of the EIS for the scheme will be available to the public during this time.

Members of the public will be invited to submit written observations which will be considered and responded to.

An Exhibition Report, including all observations received will be sent to the Minister for Public Expenditure and Reform before formal approval of the Scheme.















Lower Lee (Cork City) Flood Relief Scheme



The Office of Public Works Offig na nOibreacha Polbh D'Sulliva

dy Stages
lic Modelling
f Feasible Flood Relief Options, nefit Analysis, referred Options
Stage 3 I Detailed Flood Maps I Final Engineering Report I
ition of Proposed Scheme
ge 5 Detailed Design & Statutory confirmation of scheme
•
Stage 6 Construction
Consulting Engineers

Lower Lee (Cork City) Flood Relief Scheme

History of Flooding in Cork City

The Irish Times - Saturday, November 18, 1916 - Page 5

THE IRISH TIMES

STORM AND FLOODS.

GREAT DAMAGE IN THE PROVINCES.

ENORMOUS DAMAGE IN CORK. Accompanied by torrential rains, a storm has been sweeping over Cork for the past twenty-four hours, and up to 10 a.m. yesterday the gale, which was from the south-east, blew with hurricane force. It caused enormous damage to property, and has been the worst storm ex-perienced there for twenty years. To the west of the city the Biver Low concerned its hash of the city the River Lee overflowed its banks to a depth in some places of six feet, and, sweeping with great force over the grazing lands which lie on either bank, carried away horses, cattle, and sheep, notwithstanding the efforts of the owners to save them. University College football grounds were covered with four feet of water, and here a number of sheep are stated to have been less. The executivative hours was to have been lost. The caretaker's house was severely flooded. Indeed, the valley of the Lee extending westwards was one huge lake. The Cork and Muskerry Railway, which traverses this district, was inundated to a depth of Cork and Muskerry Railway, which traverses this district, was inundated to a depth of several feet, and the train service had to be sus-pended yesterday, with great incorvenience to the public. The Cork cricket grounds upon the Mardyke were swept by the tide early in the morning, and the waters roze with such rapidity that the residents of the pavilion were con-sidered in danger, and a pleasure boat manned by local gentlemen went to their assistance, and rescued them. Houses on the Mardyke Walk and Western road suffered flooding to the extent of from three to four feet. The Fitzgeraid Park was also under water. The district of Blackpool, which is low-lying, was ravaged by the floods, which ran down some of the streets like a fair-sized river, and so bad was the flooding that bread on the top of poles into the upper windows of the flooded houses. On St. Patrick's Bridge and other bridges which span the north channel, hun-dreds of people stood watching the flood as it brought down dead cuttle and tree trunks. The river steamer Roslellan, of Cork, Blackrock, and Passage Railway Co., was torn from its moorings at Merchant's quay and dashed against the city milney built. and rassage Kallway Co., was torn from its moorings at Merchant's quay and dashed against the city railway bridge, sustaining serious damage. It afterwards ran aground lower down the river.

the river. The great floods in Cork reached their climax at nine o'clock lost night, when the water rose to five feet in the vicinity of the courthouse and to four and five feet in the western and northern districts. The river presented a won-derful spoetacle as the enormous volume of water surged down, with waves seven feet high and the torrent breaking itself against the houses on either bank of the river. People rathered on the bridges were perturbed rathered on the bridges were perturbed to see a sealed coffin with a breastplate tossed about in the torrent, and a Cork undertaker gave it as his opinion that it had been washed out of the Inniscarra graveyard.

Courtesy The Irish Times

ONSIDERABLE doubt 7 still exists as to the number of persons who lost their lives by the sad accident on Patrick's Bridge, but the general opinion is that the number did not exceed seven or eight. Amongst those who fell in was a tradesman named Murphy, who struck out manfully and was fortunately rescued some distance below the Custom House.

In the latter part of the day, the gate-house or lodge of the Munster Model farm at Inchigaggin was carried away and conveyed down the Western Road but it subsequently floated to Parliament Bridge where it was picked up and removed to the Constabulary station in Dunbar Street. The house which fell down in Fishamble Lane was one in the occupation of a person named Hingston. The inhabitants fortunately perceived the danger that impended over them in time to escape with their lives into the next house and no accident happened beyond the destruction of whatever property the house contained.

In a short time, the house in which they took refuge was threatened with the same fate that had befallen the adjoining tenement, but the Officers of the Courthouse procured a boat into which the parties got and were then conveyed to the Courthouse. They were placed in the Grand Jury Room and were supplied with fire, provisions and every other comfort that their miserable circumstances required.

In rescuing them from their perilous situation and removing them to the Courthouse — Constable Carey exerted himself with great courage and activity and narrowly escaped with his life. He was carried away by the force of the water as far as Broad Lane and was in imminent danger of being swept into the river when a gingle man reached him the handle of his whip and thereby rescued him.



HE calamitous inundation of which we gave intelligence in our publication of Wednesday has from the City at least subsided, and the waters have returned to their usual course, leaving still however, a

rapid and dangerous fresh in the river. This flood, the largest that has been ever known in this city, since the year 1769, it is needless to say, resulted from the enormous rains which fell during the last month.

From the meteorological observations of Mr Humphreys, of the Cork Institution, which we publish in another part of the paper, it will be seen that the number of wet days out of the preceding month amounted to the very large number of 23, and the rain in inches reached an enormous

On Tuesday evening, a portion of the city was flooded, but chiefly the

low grounds such as the Mardyke and the City Park, and of course little alarm of apprehension was excited as such occurrences have been very common. But before this had subsided, another inundation followed, which soon caused feelings of a very different character to be excited.

Towards the morning of Wednesday, the river which had hitherto borne a turbid and angry appearance, but which at the approach of winter caused little surprise, soon rose to a height that caused some alarm to those living in the neighbourhood of the Western Road, the Mardyke, and the lower part of Sunday's Well, but that feeling was not at all shared by those living further in towards the

Before eight o'clock, the water below Wellington Bridge, which for a long time previously had overflowed its banks, now rose steadily, higher and higher, until the water formed in a tremendous stream across the fields and found an access for itself in the Western Road and Mardyke, which became like the bed of a torrent and swept along in an eastward direction until all parts between those and North Gate Bridge were completely covered.

The main stream came right down along Great George's Street, which by 10 o'clock was hopelessly flooded -







ARUP





Irish Examiner

(Previously the Cork Examiner) Friday Evening November 4 1853 "The Late Dreadful Flood"

hence through the Parade along Patrick Street and the South Mall until, by 12 o'clock, the whole flat of

the city was submerged. At the time the flood came first into the city, the condition of North Gate Bridge, whose construction and the number of small arches by which the rush of water through it is impeded has been so often condensed, began to excite serious apprehension, and certainly, by any spectator it would be supposed that no apprehension was too great.

The river, which makes a bend in Grenville Place, from that rushes upon a considerable slope down to that with tremendous velocity, and some idea of its appearance may be formed from the fact, that while on the eastern of lower side the water did not reach to within eight feet of the top of the arch, on the other side it was completely covered and the form of the waters actually springing over the parapets.

Below the bridge, the waters, which came through it in a fall of five or six feet, leaped and roared in enormous waves, and rushed through the channel at a rate whose rapidity was tremendous. At an early hour chains accordingly were placed across the North bridge to prevent further traffic upon it, as it was considered dangerous to human life to permit cars of passengers upon it.

But the danger came where it was least expected, and the surprise that was felt through the city nearly equalled the horror with which the intelligence was heard of the breaking of Patrick's Bridge and the sacrifices of eleven human lives.

The fall of Patrick's Bridge of course compelled the necessity of allowing traffic to be resumed, but cautiously on North Bridge.

At 12 o'clock, the appearance of the western portion of the city from the heights above was that of a broad and disturbed lake. For miles along the course of the river its natural bed

HE baths known as Welstead's were the first to suffer, the whole of the wooden erections there having been borne away along the Western Road, and not a vestige left to mark where they stood.

The inhabitants of the houses along the Mardyke, were for the entire day, confine to upper stories, as the lower portion were filled with water, which in some cases reached the fearful height of nine feet, actually touching the drawing room floors.

Along the high hedge which sepa-rated Mr Heath's garden from the Mardyke there can be yet seen straw and vegetable matter, deposited on the tops by the subsiding of the water which had rolled above it. But a deposit of a rather more extraordinary character was made in Mr Heath's garden in the shape of a 20 ton sand barge, which was buried into the middle of it by the force of the flood.

This matter may indeed be account ed on exceedingly fortunate circum-stances, for had the lighter been carried down the channel of the river, in all human probability it would have smashed the piers of North-bridge, or else acted as a dam to the terrific stream, and forced the waters in a more fearful deluge through the city.

The little street which joins the Mardyke with the Western Road was flooded at an early hour, so much so that at 10 o'clock a gentleman requiring to leave his home had to mount on the top of a gingle from the window of his drawing room and progress from the lower part being completely barred by the progress of the flood.

Owing to the enormous rapidity with which the water rushed through the streets, the depth of the water in places of nearly the same elevation varied considerably. On Grenville place it averaged about four feet. Great damage was done to shopkeep-ers, particularly to those in the grocery trade, their goods being particularly liable to being spoiled by the action of water.

At present it is impossible to arrive at anything resembling a just calcula-tion or estimate of the damage done. but taking into account the injuries to public and private property in and about the city it is believed that it will exceed $\pounds 80,000$.

Courtesy Irish Examiner



Scheme Objectives & Overview

- The Office of Public Works (OPW) has carried out a Catchment Flood Risk Assessment and Management (CFRAM) Study for the Lee Catchment. From this study, the Draft Catchment Flood Risk Management Plan, published in February 2010, set out a range of potential flood risk management options for particular areas within the catchment including the Lower Lee (Cork City).
- The OPW has now commissioned Engineering and Environmental Studies to assess and develop a viable, cost-effective and sustainable Flood Relief Scheme, building on the preferred option from the Lee CFRAM Study.
- The Project Team includes a Steering Group made up of the OPW, Cork City Council and Cork County Council, the ESB in addition to the engineering and environmental consultants.
- A broad study area was initially identified. The project has since progressed through a constraints study, hydrological and hydraulic analysis, preliminary geotechnical investigations and is currently at the options assessment stage.
- The process of identifying the preferred scheme includes a detailed assessment of a range of flood risk management measures to determine their technical, economic, social and environmental viability.



Public Consultation



Constraints Study

- The Constraints Study for the scheme was completed following the initial public consultation, taking into account your views.
- The purpose of a Constraints Study is to identify the key environmental issues in a study area which might be impacted by possible flood alleviation measures and/ or which may impose constraints on the viability and/ or design of these measures.
- The design constraints identified include the requirement to maintain traffic and pedestrian links across the River Lee in addition to local amenity and angling areas, minimise disruption to residents and businesses, protect the various landscape types in the study area and also protect archaeological, architectural and cultural heritage sites. Ecological constraints include the importance of the River Lee and banks as a habitat. Other constraints include the protection of water quality and material assets in the study area.
- A copy of the full Constraints Study Report is available to download from the project website <u>www.lowerleefrs.ie</u>.



Option Development

Flood Risk Management Options Considered at Preliminary Assessment	Options Brought Forward for Detailed Assessment	Emerging Preferred Options
 Do Nothing Non-Structural Measures (e.g. flood warning system or individual property protection) Relocation of Properties and/or infrastructure Reconstruction of Properties and/or infrastructure to a higher level Flow Diversion (e.g. river diversion or flood flow bypass channel) 	 Flood defences Flood forecasting system Channel widening Bridge modifications/ Removal of obstructions from channel In-channel flow regulation Modified operation of Inishearra 	River Lee (Inishcarra to Cork City)
 Flow Reduction (e.g. upstream catchment management or flood storage) Flood Containment through construction of Flood Defences 	 Dam Upstream flood storage/ washlands 	Blackpool
 Increase Conveyance of Channel (upstream and/ or through and/or downstream of the town) 	 Local conveyance improvements Flood early warning system 	Ballyvolane
Options assessed using Technical, Social,	Environmental & Economic Crite	YAN HANLEY sulting Engineers

Formal Public Exhibition Process

- Once a preferred Flood Relief Scheme has been determined and an outline design completed, the OPW will seek consent for the proposed scheme in accordance with the provisions of the Arterial Drainage Act.
- This statutory process includes a four week Public Exhibition, during which the plans and particulars of the proposed scheme will be put on Public Display.
- Representatives of the Project Team will attend the Public Exhibition on various dates to explain the scheme to members of the public and to address queries.
- Copies of the EIS for the scheme will be available for sale to the public during this time.
- Members of the public will be invited to submit written observations which will be considered and responded to.
- An Exhibition Report, including all observations received will be sent to the Minister for Public Expenditure and Reform before formal approval of the Scheme.



Appendix 2F Scoping Document Distribution List

RYANHANLEY

in association with

	Name	Surname	Position/section	Body
1				An Comhairle Ealaion (The Arts Council)
2				An Taisce - The National Trust for Ireland
3				Bat Conservation Ireland
4			General Manager	Birdwatch Ireland
5	Tadhg	O'Leary		Blackpool Flood Action Group
6	Noreen	Lynch		Blackpool Historical Society
7	Tim	O'Brien	Chairperson	Blackpool Traders Association
8				Coillte Teoranta
9				Cork Business Association
10				Cork Chamber of Commerce
			Environment	
11			Section	Cork City Council
12			Planning Section Water Services	Cork City Council
13			Section	Cork City Council
48	John	Sheehan		Cork City Council
	Kenneth			
49	Noel	O'Flynn		Cork City Council
50	Lil	O'Donnell		Cork City Council
51	Mick	Barry		Cork City Council
52	Thomas	Gould		Cork City Council
14	Tim	Lucey	County Manager	Cork County Council
15	Declan	Daly	Divisional Manager Director of	Cork County Council
16	Maurice	Manning	Services	Cork County Council
17	David	Keane	County Engineer Communications	Cork County Council
18	Tom	O'Sullivan	Officer	Cork County Council
19				Cork Historical & Archaeological Society
20			The Manager	Department of Arts, Heritage & the Gaeltacht
21				Department of Agriculture, Food & the Marine
				Department of Communications, Energy & Natural
22				Resources
23				Department of Jobs, Enterprise & Innovation
				Department of the Environment, Community & Local
24				Government
25				Eircom
26				Environmental Protection Agency (EPA)
27				ESB Networks Ltd.
28				Failte Ireland
				Forest Service (Dept of Agriculture, Fisheries & The
29	Mark	Twomey		Marine)
30				Gas Networks Ireland
31				Geological Survey of Ireland
32				Health & Safety Authority
			Archaeology	
33			Section	Heritage Unit, Cork County Council
34				HSE Southern Regional Health Forum

	Senior Fisheries	
	Environmental	
McPartland	Officer	Inland Fisheries Ireland
		Irish Farmers Association (Cork Region)
	Regional	
	Operations	
Walshe	Manager	Irish Water
Sharkey		Irish Water
		National Monuments Service
		National Museum of Ireland
		National Roads Authority
		Office of Public Works
		Port of Cork
		South West Regional Authority
		Southern River Basin District Office
		The Heritage Council
		Waterways Ireland
	McPartland Walshe Sharkey	Senior Fisheries Environmental McPartland Officer Regional Operations Walshe Manager Sharkey

Appendix 2G Scoping Document & Cover Letter



Consultee Name Address



Planning & Environmental Consultants

30th September 2015

Our Ref: 121004a

Re: River Bride (Blackpool) Drainage Scheme – EIA Scoping

A Chara,

Ryan Hanley, in association with McCarthy Keville O'Sullivan, have been appointed by the Office of Public Works to carry out an Environmental Impact Assessment of the proposed River Bride (Blackpool) Drainage Scheme. Following the initial Public Consultation and Information Gathering Event, more detailed surveys and modelling of the River Bride and Blackpool area have been completed and a Constraints Study identifying key environmental issues was prepared. This information was subsequently used to identify and analyse a number of drainage options as part of the proposed Scheme and a preferred option has been identified and preliminary public consultation on the scheme has been undertaken.

The design of the preferred drainage option is being constraints-led, with a view to minimising environmental impacts, and has been informed by the constraints study and public consultation to date. As part of the EIA process, the project team would appreciate any comments that you might have in relation to the proposed drainage scheme. In order to facilitate this, a scoping pack providing details of the proposed scheme is enclosed with this letter. If you require more details or have any queries, please contact us. Comments can be issued by return to:

By Post to: John Staunton, McCarthy Keville O'Sullivan Ltd. Block 1, GFSC, Moneenageisha Road, Galway or by email to: jstaunton@mccarthykos.ie

A final public consultation event will take place in November, following preparation of the Environmental Impact Statement for the scheme, where the public will be given a further opportunity to make observations.

We would appreciate that you would forward this documentation to the most appropriate person within your organisation, if it has been issued to you in error.

Yours sincerely,

John Staunton BSc PhD, McCarthy Keville O'Sullivan Ltd.

Correspondence:

McCarthy Keville O'Sullivan Ltd. Planning & Environmental Consultants Block 1, G.F.S.C. Moneenageisha Road, Galway Tel: (091) 735611 Fax: (091) 771279 Corina Colleran Email: ccolleran@mccarthykos.ie

Jonathan Reid Email: jonathanr@ryanhanley.ie

River Bride (Blackpool) Drainage Scheme

EIA Scoping Document









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1. Introduction and Background

1.1. Overview

The Office of Public Works (OPW) is progressing a proposed flood relief project for the Blackpool area of Cork City.

To-date, the project has been advanced as part of a larger Lower Lee (Cork City) Flood Relief Scheme. However, the River Bride (Blackpool) Drainage Scheme will now be progressed independently of the remainder of the Lower Lee scheme.

This project is a follow on project from the Lee Catchment Risk Assessment and Management Study (CFRAMS). The project will assess and develop a viable, costeffective and sustainable Flood Relief Scheme to alleviate flooding in the Blackpool area on the River Bride (north) of Cork City, based on preferred options already identified in the Lee CFRAM Study.

Ryan Hanley in association with McCarthy Keville O'Sullivan has been appointed by the Office of Public Works as the Project Environmental Team to carry out an Environmental Impact Assessment of the proposed River Bride (Blackpool) Drainage Scheme.

ARUP and JBA Consulting have been appointed by the Office of Public Works as the Project Engineering Team to provide engineering services and develop the detailed proposals for the proposed River Bride (Blackpool) Drainage Scheme.

1.2. Location & Study Area

The study area for the Blackpool Flood Relief Project encompasses three major watercourses: the Bride (North), the Glenamought and the Glen. The total catchment area upstream of Blackpool Village is 41.7 km².

The Bride (North) rises in the townland of Ballycannon, near Healy's Bridge, before flowing in an easterly direction towards Cork City. The Glenamought River rises in Whitechurch and flows in a southerly direction before making an abrupt right-turn in the townland of Ballincrokig. The Bride (North) and the Glenamought meet each other in a culverted system at the North Point Business Park on the N20. The Glen River flows in a westerly direction from Mayfield, through the Glen River Park, before entering a culvert under Spring Lane. It then merges with the Bride (North) in a large culvert junction under Madden's Buildings, 100m downstream of Blackpool Church. Downstream of the confluence of the Bride (North) and the Glen, the watercourse has traditionally been known as the Kiln River. The Kiln River then discharges to the River Lee at Christy Ring Bridge.

The culverted system in Blackpool has been incrementally constructed since the early the 1980s as part of the Glen-Bride-Kiln River Improvement Scheme which was commissioned by Cork Corporation in 1981. The topography of the entire catchment varies between 188mOD at Whitechurch and 25mOD in the Blackpool river valley.

Figure 1-1 below shows the contributing rivers and catchments draining to Blackpool village that are within the study area for the River Bride (Blackpool) Drainage Scheme.



Figure 1-1 Study area catchment and rivers

1.3. Brief Flood History

There has been an extensive history of flooding in the Blackpool area of Cork City in recent years. Prior to the early 2000s, the primary source of flood risk came from the Glen River. However, in recent years this risk has transferred over to the Bride River. Figure 1-2 below summarises the flood history and illustrates the transition of risk between both watercourses.



Figure 1-2 Timeline and source of recent flood events in Blackpool

1.4. Blackpool (Cork City) Flood Relief Scheme

The project has been progressed to-date by the Project Engineering and Environmental teams as follows:

- Review of published literature and site surveys;
- A Public Information Day (17th July 2013) attended by OPW, Cork City Council, Cork County Council and the Engineering and Environmental Teams;
- Preparation of a Constraints Study by the Environmental Team to inform Options Report, in advance of second Public Information Day
- A second Public Information Day (29th July 2014) attended by OPW, Cork City Council, Cork County Council and the Engineering and Environmental Teams;
- Preparation of an Options Report to assess all of the possible flood relief options that could be implemented in the study area and to outline the procedure for how the preferred option was developed and selected.

A number of options were considered under their technical, social, environmental and economic viability. On the basis of the preliminary assessment, five options were shortlisted for further consideration. These included those outlined in Table 1.1 below:

Table 1.1	Options Shortlisted for Detailed Consideration
Option	Brief Description
1	'Do-Minimum'.
2	Ballincrokig flood storage, combined with conveyance improvements and direct defences in Common's Road/Blackpool
3	Conveyance improvements and direct defences (with high walls in Orchard Court).
4	Conveyance improvements and direct defences (with culvert through Orchard Court).
5	Conveyance improvements & direct defences (culvert replacement from Orchard Court to Madden's Building).

The process for the selection of the preferred flood relief option is outlined below:

- An initial screening of a long list of possible flood risk management measures against a predetermined set of criteria, was carried out in order to determine their viability;
- A technical assessment of the viable flood risk management measures was undertaken;
- Potential flood relief options were developed using combinations of those flood risk management measures which were determined to be technically viable:
- These flood relief options were then subjected to economic, environmental, and multicriteria assessments, allowing preferred flood relief options to be selected.

Option 4 – Conveyance improvements and direct defences, with a culvert through Orchard Court, has been chosen as the preferred option following consideration of the Flood Risk Management Strategy Options. The Environmental Impacts associated with this option are currently being assessed.

The following sections of this report provides further information on the preferred option to statutory and non-statutory consultees as part of the EIA Scoping process.

2. Preferred Flood Relief Option – Flood Defences

The preferred flood relief option will require a combination of flood defence measures at specific locations and a rigorous and organised channel maintenance programme throughout the reach of the catchment.

2.1. Channel Maintenance

A rigorous and organised channel maintenance programme throughout the catchment's reach. The channel maintenance programme will include The Bride River from its confluence with the Glenamought River, down along the Kiln reach to its outfall into the River Lee, (approximately 3,470m). The maintenance programme also includes the predominantly culverted Brewery Branch reach of the Kiln River (approximately 825m). The channel maintenance programme will pay particular attention to locations where debris is likely to accumulate, such as at structures, sharp bends, culvert inlets etc.

2.2. Flood Defences

The flood defence works proposed as part of the preferred flood relief option include:

- Replacement of existing masonry bridges with new reinforced concrete bridges
- Replacement of existing pipe culverts with new reinforced concrete bridges
- Replacement of existing masonry arch bridges with new reinforced culvert
- Local repair/reconstruction of parapet walls
- Works to existing bridge parapets
- Flood embankments
- Flood defence walls
- Removal of sluice structure
- Provision of sedimentation trap
- Installation of trashscreen
- New culverted river section
- Removal of existing bridge and reinstatement of access over new culvert
- Replacement of existing culvert inlet
- Reconstruction of existing culvert junction to minimise head losses

The locations and extents of the proposed flood defence measures are outlined drawings attached as Appendix 1 to this Scoping Report. The proposals shown are indicative and subject to change associated with environmental assessment and detailed design and assessment.

2.3. Feature Descriptions

The design drawings in Appendix 1 contain brief descriptions of all of the proposed features along the river channel. To undertake the proposed works on site, some access will be required to adjacent lands, the extent of which can be seen in Appendix 2. The locations of each of the proposed works features are marked on the relevant drawing with a code, with the adjacent table providing a description for each code.

In the case of the sediment trap and winter channel features, the following text provides additional information.

Sediment Trap

It is proposed to construct a sediment trap at the upstream end of the Sunbeam Industrial estate. The purpose of the sediment trap is to capture fluvial sediments (primarily small cobble sized material), to help minimise the risk of large sediments settling in the Blackpool culvert system, which would reduce hydraulic capacity.

A sediment trap is an online pond which increases local width and depth of the channel and reduces flow velocity. This promotes the settlement of suspended solids, and the deposition of coarser bedload. Sediment traps require regular maintenance to remove sediment and will no longer function when full.

On this basis, the sediment trap would be sized within the region of approximately 15m wide x 30m long. It will most likely be constructed of reinforced concrete or sheet pile walls and a concrete floor. It will be constructed by excavating an area of the existing channel to make it wider and deeper. The inlet and outlet structures will have the same invert level and approximate dimensions as the existing channel in those locations, to minimise impact on upstream and downstream water levels. The bed level of the basin will be approximately 1.5m below the existing bed level. The exact dimensions and profile of the trap will need to be confirmed after detailed hydraulic analysis.

The sediment trap will also incorporate a ramp along the left bank to allow access for a JCB/excavator to remove accumulated sediment.

Winter Channel

A series of sharp bends in the Bride channel contribute to elevated flood levels along the Commons Road. This is because the water velocity is abruptly slowed at each of these bends. It is proposed to introduce a 'winter channel' to the existing channel to help with high flows by cutting a secondary flow route into the existing bank. In normal flow conditions, the river would be confined to the 'low-flow' or 'summer channel', however during periods of high flow the winter channel would provide additional capacity.

The winter channel will consist of an excavation of the right bank (looking downstream). The left bank will be undisturbed. The width of the cut will vary from 0m at the upstream/downstream ends, to maximum 7-10m at the apex of the river bend. The formation level of the cut will be at approximately 1.2m above the channel invert (approx. 18.7mOD). This will leave the existing low flow channel

substantially undisturbed apart from cutting back vegetation. The total length of the cutting will be approximately 50m on plan, measured along the bank line.

The slope of the new cutting will match the existing bank slope. The surface of the new cut slope will be covered with a biodegradable membrane, which will protect the exposed soil from erosion while vegetation is re-established over a number of months following the works.

Appendix 3A Project Design Drawings

Office of Public Works Cork City Council, Cork County Council

Arterial Drainage Acts, 1945 and 1995

River Bride (Blackpool) Certified Drainage Scheme

Exhibition Drawings

T.SMYTH DIRECTOR OF ENGINEERING SERVICES

EXHIBITION COPY

ARUP

24 /11/ 2015









Tel +353 (0) 1 647 6000 Fax +353 (0) 1 661 0747

Drg. No. RB_101 Cover Sheet

Office of Public Works Cork City Council, Cork County Council

Arterial Drainage Acts, 1945 and 1995

River Bride (Blackpool) Certified Drainage Scheme

Exhibition Drawings

Drawing Number	Drawing Name
Series 1	
RB_101	Cover Sheet
RB_102	Index Sheet
RB_103	Channel Codes Drawing
RB_104	Existing Flood Extents and Proposed Flood Benefit Area (Sheet 1 of 2)
RB_105	Existing Flood Extents and Proposed Flood Benefit Area (Sheet 2 of 2)
RB_106	Proposed Flood Defence - Restrictions
Series 2	
RB_201	Proposed Flood Defences - Plan Layout (Sheet 1 of 10)
RB_202	Proposed Flood Defences - Plan Layout (Sheet 2 of 10)
RB_203	Proposed Flood Defences - Plan Layout (Sheet 3 of 10)
RB_204	Proposed Flood Defences - Plan Layout (Sheet 4 of 10)
RB_205	Proposed Flood Defences - Plan Layout (Sheet 5 of 10)
RB_206	Proposed Flood Defences - Plan Layout (Sheet 6 of 10)
RB_207	Proposed Flood Defences - Plan Layout (Sheet 7 of 10)
RB_208	Proposed Flood Defences - Plan Layout (Sheet 8 of 10)
RB_209	Proposed Flood Defences - Plan Layout (Sheet 9 of 10)
RB_210	Proposed Flood Defences - Plan Layout (Sheet 10 of 10)

Drawing Number	Drawing Name
Series 3	
RB_301	Proposed Flood Det
RB_302	Proposed Flood Det
RB_303	Proposed Flood Det
RB_304	Proposed Flood Det
Series 4	
RB_401	Proposed Flood De
Series 5	
RB_501	Proposed Access R
RB_502	Proposed Access R



fences - Sections (Sheet 1 of 4) fences - Sections (Sheet 2 of 4) fences - Sections (Sheet 3 of 4) fences - Sections (Sheet 4 of 4)

fence Works Finishes (Sheet 1 of 1)

Routes and Works Area (Sheet 1 of 2) Routes and Works Area (Sheet 2 of 2)



24 Grove Island, Corbally, Co Limerick, Ireland. Tel. + 353 (0) 61 345463 Fax.+ 353 (0) 61 280146



City Hall, Anglesea Street, Cork, Ireland. Tel. +353 (0) 21 4966222. Fax +353 (0) 21 4314238.



Cork County Council Headquark County Hall, Carrigrohane Road, Cork, Ireland. Tel: + 00 353 (0) 21 4276891 Fax: + 00 353 (0) 21 4276321



51 St. Stephen's Gree Dublin 2, Ireland.

River Bride (Blackpool) Certified Drainage Scheme

Issued for Exhibition November 2015



Location Plan



Scale 1:5,000 at A1 Scale 1:10,000 at A3

Notes:

- 1. Do not scale from drawing.
- 2. The channels on this drawing have been assigned colours for the purpose of assigning identification labels and interference references.
- 3. This drawing should be read in conjunction with all other River Bride (Blackpool) Certified Drainage Scheme Exhibition Drawings and Schedules.

Drg. No. RB_103 Channel Codes









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Proposed Flood Defences - Restrictions

Proposed Flood Defence	Restrictions
Flood Defence Embankments	Flood defence embankments shall not be tilled or planted with any vegetation other than grass.
	Permanent access to be provided for maintenance and inspection of the flood defence embankments - refer to proposed access and work area drawings RB_501 and
	RB_502.
	Flood defence embankments to be regularly maintained through frequent grass cutting (approximately four times per year).
	Flood defence embankments shall not be grazed by lifestock other than sheep due to the potential rick of rutting or causing damage to the embankments
	No works shall be permitted in close proximity to flood defence embankments without approval from the Office of Public Works (OPW).
Flood Defence Walls	Permanent access to be provided for maintenance and inspection of flood defence walls - refer to proposed access and work area drawings RB 501 and RB 502.
	No works shall be carried out to flood defence walls or in close proximity to flood defence walls without approval from the Office of Public Works (OPW).
	No excavation of material close to flood defence walls shall be permitted without the approval of the Office of Public Works (OPW).
Pumping Stations	Permanent access to be provided for maintenance and inspection of pumping stations - refer to proposed access and work area drawings RB_501 and RB_502.
	No works shall be carried out near pumping stations or in close proximity to the pumping stations without approval from the Office of Public Works (OPW)
	No local connections or drains shall be connected to a pumping station without approval from the Office of Public Works (OPW).
	No vegetation, material or detritus shall be disposed of within the channel, as this may increase the risk of blockage at pumping stations.
Bridges	Permanent access to be provided for maintenance and inspection of bridges - refer to proposed access and work area drawings RB_501 and RB_502.
	No vegetation, material or detritus shall be disposed of within the channel, as this may increase the risk of blockage at bridges
Culvorts	No vegetation, material of defined shall be connected to culverts without approval from the Office of Public Works (OPW)
Cuivents	No works shall be carried out to culverts or in close proximity to culverts without approval from the Office of Public Works (OPW).
	No vegetation, material or detritus shall be disposed of within the channel, as this may increase the risk of blockage within culverts.
Winter Channel	No works shall be carried out to the winter channel or in close proximity to the winter channel without approval from the Office of Public Works (OPW).
	No vegetation, material or detritus shall be disposed of within the winter channel, as this may reduce the capacity of the channel.
Sediment Trap	No works shall be carried out to the sediment trap or in close proximity to the sediment trap without approval from the Office of Public Works (OPW).
Regraded Ground	No works shall be carried out to regraded ground, such as road resurfacing, without approval of the Office of Public Works (OPW).
Trash Screens	No works shall be carried out to the trash screens or in close proximity to the trashscreens without approval from the Office of Public Works (OPW).

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Drg. No. RB_106 Proposed Flood Defences - Restrictions

River Bride (Blackpool) Certified Drainage Scheme



Interference Reference	Channel Chainage (m)	Proposed Works Chainage (m)	General Description of Proposed Works
C08_B01	-	0 to 8	Replace existing masonry bridge with a new reinforced concrete bridge. Bridge to be of 10.50m clear span and 8m wide deck. Construct new access ramps to bridge, incorporating new reinforced concrete retaining walls where necessary.
C08_E01	-	0 to 137	Proposed flood defence embankment to be constructed typically 5.40m wide and to a height of 1.10m above existing ground levels to flood defence level (varies from 27.01 to 28.44mOD). Flood defence embankment to tie into high ground at each end.
C08_R01	-	0 to 47	Proposed surface water drainage measures and regrading of local ground levels to divert excess surface water runoff into the River Glenamought upstream of North Point Business Park bridge.
C08_G01	0 to 517	-	Channel to be maintained over a distance of 517m from the confluence of the River Glenamought and River Bride (C08-000) to upstream of the proposed roughing screen (C08-517).
C08_T01	510	-	Proposed roughing screen to be installed downstream of Kilnap Bridge.
C08_R02	-	0 to 273	Proposed ramp to facilitate maintenance access to the channel and proposed roughing screen. Formalise existing track for maintenance vehicles, including constructing guard barriers where necessary.

Notes

Do not scale from drawing. 1. Proposed works geometry and extents are subject to detailed design. 2.

3. Schedules.



Key Plan

Scale 1:20,000 at A1 Scale 1:40,000 at A3

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This drawing should be read in conjunction with all other River Bride (Blackpool) Certified Drainage Scheme Exhibition Drawings and

Drg. No. RB_201 Proposed Flood Defences - Plan Layout (Sheet 1 of 10)



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River Bride (Blackpool) Certified Drainage Scheme



Interference Reference	Channel Chainage (m)	Proposed Works Chainage (m)	General Description of Proposed Works
C06_T01	2616	-	Existing 2 no. trash screens to be removed and replaced with a single new roughing screen upstream of Rose Cottage.
C06_L01	-	0 to 41	Proposed reinforced concrete wall to be constructed to a height typically 0.65m above existing ground levels to flood defence level (25.00mOD). All drainage outfalls to be fitted with non-return valves.
C06_L01	-	41 to 122	Proposed reinforced concrete wall to be constructed above flood defence level (25.00mOD) to 25.80mOD on the wet side of the existing boundary wall at Rose Cottage. Flood wall to tie into high ground at each end. Finished wall height to be typically 1.70m above existing ground levels. All drainage outfalls to be fitted with non-return valves.
C06_L01a	-	0 to 6	Proposed reinforced concrete headwall and wing wall structure to be constructed around the existing concrete culvert inlet.
C06_R01	-	0 to 15	Proposed vehicle access ramp crest to be at flood defence level (25.00mOD). Proposed ramp to tie into the proposed flood defence wall at Rose Cottage and high ground at the N20 road embankment.
C09_R01	-	0 to 93	Proposed surface water drainage measures and regrading of local ground levels to divert excess surface water runoff from the Commons Road and the River Bride (from Rose Cottage) into the Rathpeacon Stream.
C06_R02	-	0 to 13	Proposed regrading of existing ground levels to divert surface water overland flow (during a design exceedance event) underneath the existing N20 road bridge to the Rathpeacon Stream.
C08_B01	-	0 to 8	Replace existing masonry bridge with a new reinforced concrete bridge. Bridge to be of 10.50m clear span and 8m wide deck. Construct new access ramps to bridge, incorporating new reinforced concrete retaining walls where necessary.
C08_R01	-	0 to 47	Proposed surface water drainage measures and regrading of local ground levels to divert excess surface water runoff from Sweeney's Hill into the River Glenamought upstream of North Point Business Park bridge.
C08_B02	-	0 to 20	Replace existing pipe culvert bridge with a new reinforced concrete bridge. Bridge to be of 9.00m clear span and 20m wide deck. Construct new access ramps to bridge, incorporating new reinforced concrete retaining walls where necessary.
C06_C01a	2077 to 2241	-	Proposed sediment trap. Proposed flood scalping and lowering on the inside channel bends to create a second stage channel to reduce velocities in lower order floods.
C06_C01b	2124 to 2192	-	Proposed landscaping to deposition areas to match existing ground.
C06_C01c	2071 to 2192	-	Proposed geomorphic features, such as riffles, to be constructed within the channel.
C08_G01	0 to 517	-	Channel to be maintained over a distance of 517m from the confluence of the River Glenamought and River Bride (C08_000) to upstream of the proposed roughing screen (C08_517).
C06_G01	0 to 2623	-	Channel to be maintained over a distance of 2623m from Blackpool Church (C06_000) to upstream of Rose Cottage (C06_2623).
C09_G01	0 to 193	-	Channel to be maintained over a distance of 193m from C09_000 to C09_193.

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Do not scale from drawing.

Schedules.



	For Contin	uation	See Drg. No. RB_203	te
	0 5 10 20 50 Metres		Scale 1:1,000 at A1 3. Scale 1:2,000 at A1	
to Plan				
	Watercourse		Existing Culvert to be Retained	
08_300	Channel Centreline, Reference (C08) and Chainage (300m)		Proposed Regrading of Ground Levels	
PM 01	Photomontage (Location, Orientation and No.) Proposed Flood Defence Wall	$\overline{}$	Proposed Vehicle Access Gate Proposed Fencing	
06_L01 - <u>RB_301</u> C08.1▼	Interference Reference Location and Reference of Cross Section	-	Proposed Surface Water Overland Flow Route	
50	Proposed Works Chainage (m) Proposed New Bridge		Proposed Sediment Trap (Flood Plain Reprofiling)	
	Proposed Roughing Screen	•	Proposed Geomorphic Features (Riffles)	



Key Plan

Scale 1:20,000 at A1 Scale 1:40,000 at A3

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Proposed works geometry and extents are subject to detailed design. This drawing should be read in conjunction with all other River Bride (Blackpool) Certified Drainage Scheme Exhibition Drawings and

Drg. No. RB_202 Proposed Flood Defences - Plan Layout (Sheet 2 of 10)



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River Bride (Blackpool) Certified Drainage Scheme



Scale 1:1,000 at A1 Scale 1:2,000 at A3

Interference Reference	Channel Chainage (m)	Proposed Works Chainage (m)	General Description of Proposed Works
C06_C01a	2077 to 2241	-	Proposed sediment trap. Proposed flood scalping and lowering on the inside channel bends to create a second stage channel to reduce velocities in lower order floods.
C06_C01b	2124 to 2192	-	Proposed landscaping to deposition areas to match existing ground.
C06_C01c	2071 to 2192	-	Proposed geomorphic features, such as riffles, to be constructed within the channel.
C06_E01	-	0 to 105	Proposed flood defence embankment to be constructed 6.80m wide and to a height of typically 0.80m above existing ground levels to flood defence level (21.90mOD). Flood defence embankment to tie into high ground and a proposed flood defence wall as shown on the drawing.
C06_R03a	-	0 to 36	Proposed access track to provide vehicular maintenance access from the Commons Inn to the sediment trap upstream.
C06_R03b	-	0 to 20	Proposed vehicle access ramp crest to be at flood defence level (21.90mOD). Proposed ramp to provide vehicular access over the proposed flood defence embankment.
C06_L02	-	0 to 31	Proposed reinforced concrete flood defence wall to be constructed typically 0.45m above existing ground levels to flood defence level (21.72mOD). Proposed defence wall to tie into proposed flood defence embankment. All drainage outfalls to be fitted with non-return valves.
C06_C01	-	0 to 78	Proposed winter channel to be constructed downstream of the Commons Inn in order to increase conveyance during flood events. Winter channel to be a maximum width of 10m wide at mid-section.
C07_B01	-	0 to 38	Proposed 0.90m diameter concrete pipe culvert to be constructed over a length of 38m at the rear of Bride Villas to tie into the existing 0.45m diameter concrete culvert. Existing channel to be backfilled over the proposed culvert over a distance of 38m and reinstated with topsoil and grass. A proposed surface water drain is to be constructed to discharge excess surface water run off to the Fairhill Stream. All drainage outlets to be fitted with non-return valves.
C07_L01	-	0 to 74	Proposed reinforced concrete flood defence wall to be constructed typically 1.20m above existing ground levels to flood defence level (20.01mOD). Proposed flood wall to tie into high ground at the Commons Inn car park and into proposed flood wall C06_L03. All drainage outfalls to be fitted with non-return valves, other than the outlet of the proposed 0.90m pipe.
C07_R01		0 to 9	Proposed regrading of existing ground levels at the Commons Inn entrance to divert excess surface runoff to the Fairhill Stream.
C06_L03	-	192 to 244	Proposed reinforced concrete flood defence wall to be constructed typically 0.83m above existing ground levels to flood defence level (20.01mOD). Proposed flood wall to tie into flood wall C07_L01 at the upstream end. All drainage outfalls to be fitted with non-return valves.
C06_L03	-	174 to 192	Proposed reinforced concrete flood defence wall to be constructed typically 1.32m above existing ground levels to flood defence level (19.80mOD). All drainage outfalls to be fitted with non-return valves.
C06_L03	-	119 to 174	Proposed reinforced concrete flood defence wall to be constructed typically 1.20m above existing ground levels to flood defence level (19.58mOD). All drainage outfalls to be fitted with non-return valves.
C06_P01	1685	-	Proposed overflow surface water pumping station and rising main to operate during a flood event at C06_1685. All outlets to be fitted with non-return valves.
C06_G01	0 to 2623	-	Channel to be maintained over a distance of 2623m from Blackpool Church (C06-000) to upstream face of Rose Cottage (C06_2623).
C07_G01	0 to 108	-	Channel to be maintained over a distance of 108m from the confluence of the River Bride and the Fairhill Stream(C07_000) to the tie in of the existing 450mm diameter pipe culvert and the proposed 900mm diameter pipe culvert (C07_108).

Do not scale from drawing. 1. Proposed works geometry and extents are subject to detailed design. 2. 3.

Schedules.



Key Plan

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Scale 1:20,000 at A1 Scale 1:40,000 at A3

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Key to Plan

RB_301 V C06.1

	Watercourse	
<u>C06_300</u>	Channel Centreline, Reference (C06) and Chainage (300m)	
← ● PM 01	Photomontage (Location, Orientation and No.)	
	Proposed Flood Defence Wall	
C06_L01	Interference Reference	
301 RB_301 06.1 C06.1▼	Location and Reference of Cross Section	P
	Proposed Manhole (Surface Water)	
i nananan	Proposed Drain (Surface Water)	٠
	Existing Drain (Surface Water)	
50	Proposed Works Chainage (m)	
~ ~	Proposed Maintenance Track	

	Proposed Flood Defence Embankment
	Proposed Winter Channel
	Proposed Pipe Culvert
	Proposed Backfill of Existing Watercourse
	Proposed Regrading of Ground Levels
Р	Proposed Pumping Station (Surface Water)
	Proposed Rising Main (Surface Water)
•	Proposed Geomorphic Features (Riffles)
	Proposed Sediment Trap (Flood Plain Reprofiling)
	Proposed Landscaping

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This drawing should be read in conjunction with all other River Bride (Blackpool) Certified Drainage Scheme Exhibition Drawings and

Drg. No. RB_203 Proposed Flood Defences - Plan Layout (Sheet 3 of 10)



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River Bride (Blackpool) Certified Drainage Scheme



Location and Reference of Cross Section

Proposed Works Chainage (m)

Interference	Channel Chainage	Proposed Works	General Description of Proposed Works	
Reference	(m)	Chainage (m)	seneral Description of reposed works	
C07_L01		0 to 74	Proposed reinforced concrete flood defence wall to be constructed typically 1.20m above existing ground levels to flood defence level (20.01mOD). Proposed flood wall to tie into high ground at the Commons Inn car park and into proposed flood wall C06_L03. All drainage outfalls to be fitted with non-return valves, other than the outlet of the proposed 0.90m pipe.	
C06_L03	-	192 to 244	Proposed reinforced concrete flood defence wall to be constructed typically 0.83m above existing ground levels to flood defence level (20.01mOD). Proposed flood wall to tie into flood wall C07_L01 at the upstream end. All drainage outfalls to be fitted with non-return valves.	
C06_L03	-	174 to 192	Proposed reinforced concrete flood defence wall to be constructed typically 1.32m above existing ground levels to flood defence level (19.80mOD). All drainage outfalls to be fitted with non-return valves.	
C06_L03	-	119 to 174	Proposed reinforced concrete flood defence wall to be constructed typically 1.20m above existing ground levels to flood defence level (19.58mOD). All drainage outfalls to be fitted with non-return valves.	
C06_L03	-	43 to 119	Proposed reinforced concrete flood defence wall to be constructed typically 1.20m above existing ground levels to flood defence level (19.50mOD). All drainage outfalls to be fitted with non-return valves.	
C06_L03	-	0 to 43	Proposed reinforced concrete flood defence wall to be constructed typically 1.00m above existing ground levels to flood defence level (19.30mOD). Flood wall to tie into existing bridge parapet. All drainage outfalls to be fitted with non-return valves.	
C06_P01	1685	-	Proposed overflow surface water pumping station and rising main to operate during a flood event at C06_1685. All outlets to be fitted with non-return valves.	
C06_L03a	-	0 to 9	Proposed new reinforced concrete bridge parapet to be constructed typically 0.55m above existing bridge deck level to flood defence level (19.30mOD). All drainage outfalls to be fitted with non-return valves.	
C06_C02	-	-	Not used.	
C06_P02	1414	-	Proposed overflow surface water pumping station and rising main to be constructed on existing surface water drainage network at C06_1414. Pump to operate during a flood event. All outlets to be fitted with non-return valves.	
C06_B01	-	0 to 9	Replace existing masonry bridge with a new reinforced concrete bridge. Bridge to be of 7.40m clear span and 9.00m wide deck. Construct new access ramps to bridge, incorporating new reinforced concrete retaining walls where necessary.	
C06_L04	-	0 to 81	Existing river wall to be raised to a height typically 0.59m above existing ground levels to flood defence level (17.51mOD). The proposal to raise the existing river wall is subject to structural assessment. All drainage outfalls to be fitted with non-return valves.	
C06_L05	-	0 to 76	Existing river wall to be raised to a height typically 0.56m above existing ground levels to flood defence level (17.51mOD). The proposal to raise the existing river wall is subject to structural assessment. All drainage outfalls to be fitted with non-return valves.	
C06_L06	-	0 to 9	Existing bridge parapet to be raised to a height 0.57m above existing ground levels to flood defence level (17.51mOD). The proposal to raise the existing bridge parapet is subject to structural assessment. All drainage outfalls to be fitted with non-return valves.	
C06_L07	-	0 to 9	Formalise and repair existing bridge parapet to flood defence level (17.03mOD), where necessary.	
C06_L08	-	75 to 153	Existing river wall to be raised to a height typically 0.45m above existing ground levels to flood defence level (17.03mOD). The proposal to raise the existing wall is subject to structural assessment. All drainage outfalls to be fitted with non-return values.	
C06_L09	-	75 to 151	Existing river wall to be raised to a height typically 0.35m above existing ground levels to flood defence level (17.03mOD). The proposal to raise the existing wall is subject to structural assessment. All drainage outfalls to be fitted with non-return valves.	
C06_G01	0 to 2623	-	Channel to be maintained over a distance of 2623m from Blackpool Church (C06-000) to upstream of Rose Cottage (C06-2623).	
C07_G01	0 to 108	-	Channel to be maintained over a distance of 108m from the confluence of the River Bride and the Fairhill Stream(C07_000) to the tie in of the existing 450mm diameter pipe culvert and the proposed 900mm diameter pipe culvert (C07_108).	

Proposed Regrading of Ground Levels

Do not scale from drawing. Proposed works geometry and extents are subject to detailed design. This drawing should be read in conjunction with all other River Bride (Blackpool) Certified Drainage Scheme Exhibition Drawings and 2. 3. Schedules.



Key Plan

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Scale 1:20,000 at A1 Scale 1:40,000 at A3

RB_301 ▼C06.4 RB_301 C06.4 C0

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Drg. No. RB_204 Proposed Flood Defences - Plan Layout (Sheet 4 of 10)



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River Bride (Blackpool) Certified Drainage Scheme



(Surface Water)

Do not scale from drawing.

Proposed Drain (Surface Water)

Proposed Pumping Station (Surface Water)

Proposed Rising Main (Surface Water)

	a))	n 1	a 15 .
Interference	Channel	Proposed	General Descrip
Reference	Chainage	Works	
	(m)	Chainage	
	()	(m)	
		(111)	
C06_L08	-	19 to 75	Existing river wa
			defence level (1
			All drainage out
			7 in uraniage out
C06_L09	-	19 to 75	Existing river wa
			defence level (1
			All drainage out
			All utalliage out
C06_L08	-	0 to 19	Existing river wa
			defence level (1
			All drainage out
<u> </u>			All utallage out
C06_L09	-	0 to 19	Existing river wa
			defence level (1
			All drainage out
			All utallage out
C06_L10	-	0 to 9	Existing bridge
			flood defence le
			assessment All
	1000		assessment. An
CO6_P03	1200	-	Proposed surface
			operate during
000 111		0 . 0	
C06_L11	-	0 to 9	Formalise and r
			necessary.
COG 112		56 to 170	Dropogod norry
C00_L12	-	30 10 170	Proposed new v
			above existing g
			wall is subject to
CO0 110		50 4 155	n 1, 1
C06_L13	-	59 to 155	Formalise and r
			outfalls to be fit
CO6 112		0 to 50	Formalian and a
C00_L13	-	01039	Formalise and r
			outfalls to be fit
C06 L12	-	0 to 56	Proposed reinfo
000_112		01000	aviating ground
			existing ground
			non-return valv
C06 L12a	-	0 to 66	Proposed perim
C00 D04	1001		D 1 C
C06_P04	1031	-	Proposed surface
			operate during
CU8 CU3	1019 to		Dropogod godin
00_003	101010	-	Proposed sedin
	1081		from C06_1041
			sheet piles to re
CO6 CO2	1074		Pomovo ovistina
000_002	1074	-	Remove existing
C06_R02	-	0 to 202	Proposed new a
_			level (15 31mO)
			10101
C06_C04	915 to	-	Removal of the
	1015		long x 8.5m wid
000 114		00 1 100	D 1 1 0
C06_L14	-	39 to 139	Proposed reinfo
			existing ground
			outfalls to be fit
C06_L14	-	0 to 39	Proposed reinfo
			existing ground
			non-return valv
COC 115		0 4 - 45	
C06_L15	-	0 to 45	Proposed reinfo
			existing ground
			sealed up. All di
000 115		45 4 . 144	D 1 1 C
C06_L15	-	45 to 144	Proposed reinfo
			ground levels to
			be fitted with n
COG 110		0 to 10	Dropose J Lat J
COO_F10	-	01010	r roposea bridge
			defence level (1
			concrete retaini
COC 000		0.1.00	D 1
C00_B02	-	01020	Replace existing
			span and 20m v
			bridge, incorpor
CO6 E00		0 + = 117	D
CU0_EU2	-	010115	rroposed flood
			above existing g
			into high ground
			defence wall at
<u> </u>			acience wall at
C06_T02	750	-	Proposed trash
CUE DU3			Evicting group 1
COO_KO3	-	-	LXISUNG ground
			into the park to
C06 R022	741	_	Evisting nodocts
000_D02a	171	-	LAISTING herest
C06_L17	-	0 to 212	Proposed reinfo
-			existing ground
			non rotum vol-
			non-return valv
C06_G01	0 to 2623	-	Channel to be n
			Rose Cottage (C
	I		
			urg. No. KB

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Key Plan

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Scale 1:20,000 at A1 Scale 1:40,000 at A3

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Notes

3.

Proposed works geometry and extents are subject to detailed design. This drawing should be read in conjunction with all other River Bride (Blackpool) Certified Drainage Scheme Exhibition Drawings and Schedules

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Scale 1:2,000 at A3

Proposed Works Chainage (m) Proposed Road and Footpath

Proposed Vehicle Access Gate

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ption of Proposed Works

all to be raised to a height typically 0.65m above existing ground levels to flood 6.80mOD). The proposal to raise the existing wall is subject to structural assessment. tfalls to be fitted with non-return valves.

all to be raised to a height typically 0.45m above existing ground levels to flood 16.80mOD). The proposal to raise the existing wall is subject to structural assessment. tfalls to be fitted with non-return valves.

all to be raised to a height typically 0.94m above existing ground levels to flood 16.58mOD) . The proposal to raise the existing wall is subject to structural assessment. tfalls to be fitted with non-return valves.

all to be raised to a height typically 0.68m above existing ground levels to flood 16.58mOD). The proposal to raise the existing wall is subject to structural assessment. tfalls to be fitted with non-return valves.

parapet wall to be raised to a height typically 0.73m above existing ground levels to evel (16.58mOD). The proposal to raise the existing wall is subject to structural drainage outfalls to be fitted with non-return valves.

ce water overflow pump station, collector drain, overflow manhole and rising main to g a flood event at C06_1200. All outlets to be fitted with non-return valves.

epair existing bridge parapet wall to flood defence level (16.03mOD), where

wall to be constructed and existing river wall to be raised to a height typically 1.27m ground levels to flood defence level (16.03mOD). The proposal to raise the existing o structural assessment. All drainage outfalls to be fitted with non-return valves. epair existing wall to flood defence level (16.03mOD), where necessary. All drainage tted with non-return valves.

repair existing wall to flood defence level (15.65mOD), where necessary. All drainage tted with non-return valves.

prced concrete flood defence wall to be constructed to a height typically 0.88m above levels to flood defence level (15.65mOD). All drainage outfalls to be fitted with /es

neter toe sheet piles to retain access to the proposed sediment trap.

ce water overflow pump station, collector drain, overflow manhole and rising main to a flood event at C06_1031. All outlets to be fitted with non-return valves.

nent trap to be 63m long and 25m wide with maintenance access platform and ramp to C06_1081. Rock weirs to be constructed at 20m centres. Proposed perimeter toe etain sediment basin

g pedestrian bridge and weir structure at C06_1074

access road and footpath 202m long x 9m wide. Locally raise road to flood defence D) between chainage 115 and 140m.

existing Sunbeam culvert and replace with new re-aligned walled open channel 100m le from C06_915 to C06_1015.

orced concrete flood defence wall to be constructed to a height typically 0.93m above l levels to flood defence level (15.31mOD) to form a new open channel. All drainage tted with non-return valves.

orced concrete flood defence wall to be constructed to a height typically 0.71m above l levels to flood defence level (15.12mOD). All drainage outfalls to be fitted with

orced concrete flood defence wall to be constructed to a height typically 0.31m above l levels to flood defence level (15.12mOD). Existing culvert connection and weir to be rainage outfalls to be fitted with non-return valves.

orced concrete flood wall to be constructed to a height typically 0.50m above existing o flood defence level (15.31mOD) to form a new open channel. All drainage outfalls to on-return valves

e parapet to be raised to a height typically 0.34m above existing ground levels to flood 5.12mOD). Construct new access ramps to bridge, incorporating new reinforced ing walls where necessary. All drainage outfalls to be fitted with non-return valves. concrete bridge with a new reinforced concrete bridge. Bridge to be of 10.50m clear wide deck. Soffit level of new bridge to be 14.85mOD.Construct new access ramps to rating new reinforced concrete retaining walls where necessary.

defence embankment to be constructed typically 12m wide and to a height of 1.15m ground levels to flood defence level (14.65mOD). Flood defence embankment to tie d downstream of Sunbeam Industrial Estate bridge and into the proposed flood Blackpool Retail Park.

screen to be constructed adjacent to Blackpool Retail Park.

to be regraded to provide pedestrian access over the proposed flood embankment flood defence level (14.65mOD). Ramp to be graded at a maximum slope of 1:20. rian footbridge to removed.

orced concrete flood defence wall to be constructed to a height typically 1.53m above levels to flood defence level (14.65mOD). All drainage outfalls to be fitted with

maintained over a distance of 2623m from Blackpool Church (C06-000) to upstream of 206-2623)

_205 Proposed Flood Defences - Plan Layout (Sheet 5 of 10)





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