



# Lower Lee (Cork City) Flood Relief Scheme

*Protecting Cork from future flooding*



**Exhibition Report  
Non-Technical Summary**

In association with





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# 1. Introduction

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This report outlines the statutory public consultation process on the proposed Lower Lee (Cork City) Flood Relief Scheme (“The Scheme”). This formal public consultation, known as “Public Exhibition”, followed on from a number of informal consultations with the public during 2013 and 2014 and is provided for under the Arterial Drainage Acts, 1945 and 1995, under which the Scheme is being advanced.

The Scheme was commissioned by the Office of Public Works (OPW) with the objective of providing protection for Cork City and environs against the 1 in 100 year fluvial/1 in 200 year tidal flood events which is the international and best practice standard.

The proposed Scheme is a hugely important project for Cork city and for the country as a whole. The OPW has a very successful track record in delivering effective flood defence schemes and its goal is to ensure that the schemes it builds are technically, economically and environmentally sound and provide the best possible protection and benefit to the communities affected.

In its consultation on the Scheme, the OPW was anxious to hear the comments and concerns of members of the public and to address genuine issues in a constructive way. In this report, the main issues that arose during the Public Exhibition are highlighted and addressed. These can be grouped into a number of main topic areas as outlined in the sections following and in the body of the report. The report explains the essential facts about the project and answers some of the main questions raised in relation to suggested alternative solutions to address flooding in Cork city. This is not a legal or technical document. If more detail is needed on the topics covered, this can be found in the Supplementary Reports accompanying this Report and on the Project website

[www.lowerleefrs.ie](http://www.lowerleefrs.ie)



## 2 Project Objectives and Delivery

### 2.1 The Need for the Project

There is a long history of flooding in Cork City and the River Lee valley. A number of severe floods have affected the city, most recently in November 2009, February 2014 and winter 2015/16. The event of November 2009 was an exceptionally severe event, with major damage caused to commercial and residential buildings in Cork City.

It has been estimated that the damages caused in the 2009 river flood and 2014 tidal flood amounted to €90m and €40m respectively.

The 2009 event heightened public awareness of the significant flood risk which exists in Cork City and the need to provide a flood relief scheme.

### 2.2 Background

The project followed on from the pilot Lee Catchment Flood Risk Assessment and Management (CFRAM) Study carried out between 2006 to 2013. This study identified the preferred scheme as being a combination of a flood forecasting and warning system, revised procedures for operating the ESB dams and raised waterside defences.

Following extensive study and assessment, a proposed scheme has now been developed which consists of a modified version of the measures identified in the Lee CFRAMS, together with a flow control structure on the south channel to rebalance flows between the north and south channels.

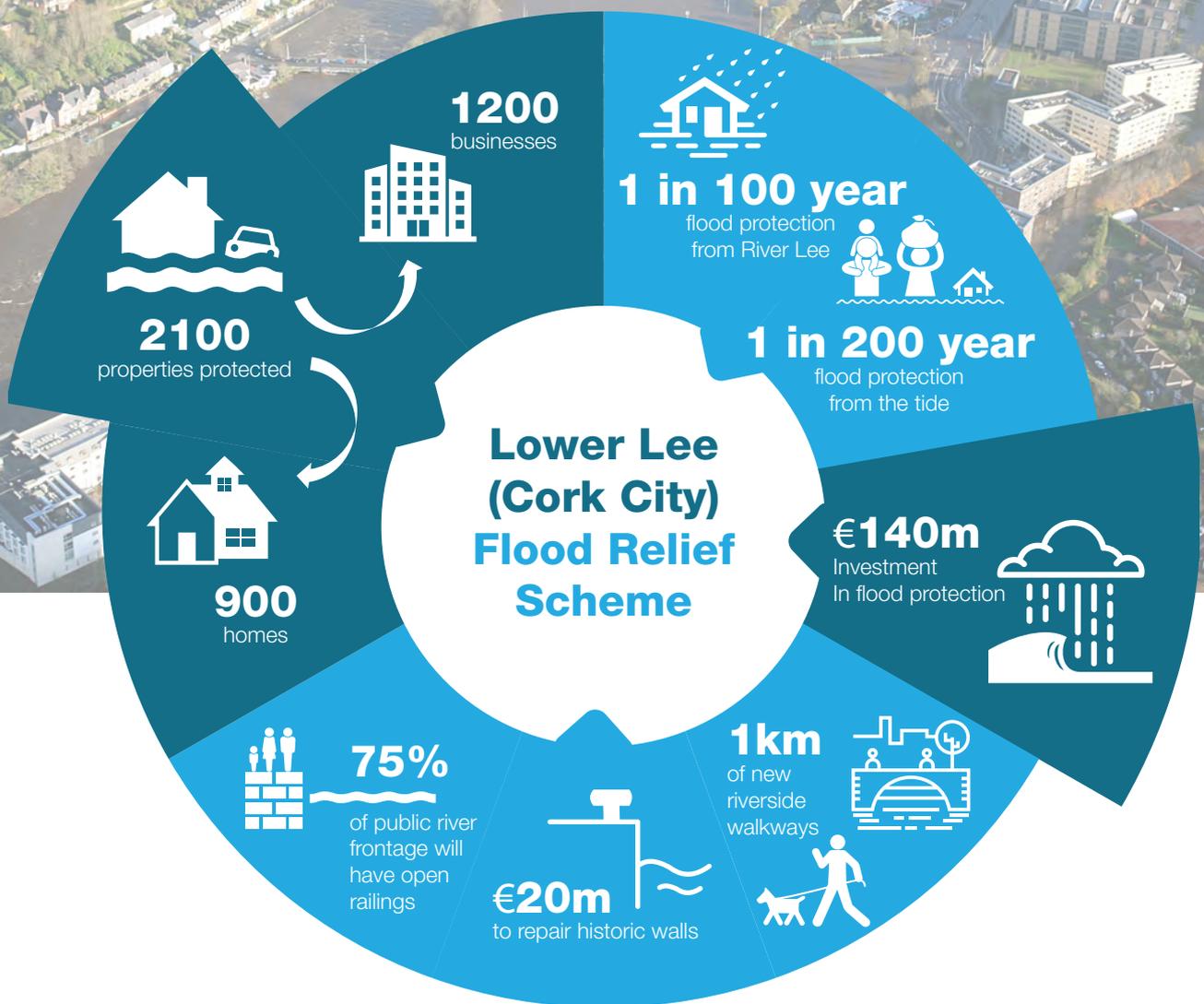
The Scheme was developed in close co-operation with all key stakeholders, in particular; Cork City Council, Cork County Council and the ESB.

The proposed Scheme was subsequently brought to Public Exhibition stage in late 2016/early 2017 where details of the Scheme were available for inspection by members of the public as well as being available to view online on the project website

[www.lowerleefrs.ie](http://www.lowerleefrs.ie)



“It has been estimated that the damages caused in the 2009 river flood and 2014 tidal flood amounted to €90m and €40m respectively.”



## 2 Project Objectives and Delivery cont.

### 2.3 The Benefits of the Project

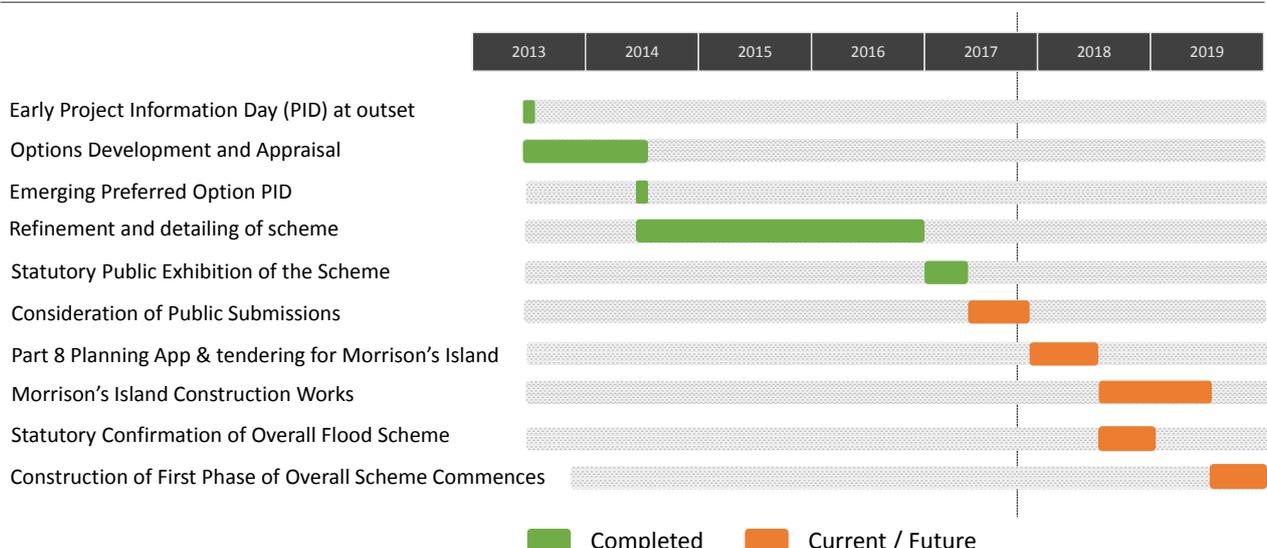
The Lower Lee Flood Relief Scheme will run from Inniscarra Dam to the city centre protecting over **2,100 properties**, including **900 homes** and **1,200 businesses** against tidal and river flooding. It will be the largest flood relief investment project ever proposed in Ireland.

In line with international best practice, the standard of protection provided by the Scheme is the 1 in 100 year flood from the River Lee and the 1 in 200 year flood from the tide. The Scheme is adaptable to provide greater protection in the future in response to climate change.

This integrated and holistic scheme will substantially free the people of Cork from the worry and stress of living with flood risk. It will remove barriers to future private investment and help to reinvigorate the city centre and its environs. It will also provide significant local employment during construction.

The Scheme includes €20m of much needed investment in repair of historic quay walls which could otherwise be at serious risk of collapse. It will provide almost 1km of new river walkways, enhancing connectivity to the river and improving public realm spaces in collaboration with the City Council, such as proposed works on Morrison’s Island.

### Process and Timeline



## 2.4 Project Delivery and Governance

The Scheme is a key deliverable of the National Flood Risk Management programme and is being brought forward by the OPW, which is the state body with the lead role nationally in flood risk management.

The OPW is working in association with Cork City and County Councils and the ESB as one of the main stakeholders and operators of the hydroelectric dams on the system.

The project is governed by a Steering Group, which meets regularly and comprises the following key decision makers and stakeholder representatives.

- Office of Public Works (the client);
- Cork City Council;
- Cork County Council;
- ESB;
- The Engineering Design team led by Arup in association with JBA Consulting, the Paul Hogarth Company and Alastair Coey Architects;
- The Environmental Team of consultants, Ryan Hanley and McCarthy Keville O'Sullivan.

Funding for the project is currently provided for in the OPW's multi-annual capital expenditure plans for the next seven years. In discrete areas, e.g. Morrison's Island, supplementary funding is being provided by Cork City Council for public realm enhancements to take advantage of the synergies with the flood defence works, and thus avoid the need for future disruption in these areas.

The Scheme has been designed to a Standard of Protection (SOP) that is an internationally recognised standard which is also the standard generally being requested by the insurance industry.



## 2 Project Objectives and Delivery cont.

### 2.5 Public Participation Process

The OPW has engaged in an extensive and proactive consultation process in relation to a flood relief scheme for Cork since 2006 when the Lee CFRAMS commenced.

During the Lee CFRAMS, a series of public information and consultation days were held in December 2006 (seven events) and in May 2009 (four events) when the draft flood maps and preliminary flood risk management options were presented to ensure that the public was aware of the study and had sufficient opportunity to express their views and comment. The final stage of this consultation process was the publication of and consultation on the draft Catchment Flood Risk Management Plan (CFRMP) which was issued for consultation on 1 February 2010. Following this consultation, the final Lee CFRMP was published in 2014, and this included the essential elements of the Scheme now proposed.

By the time that the design team for the Lower Lee Flood Relief Scheme was appointed in 2013, the importance of public participation was recognised. Following every public consultation event, feedback from the public was considered and the Scheme was refined accordingly.

At the outset of the Lower Lee Flood Relief Scheme, an early Public Information Day (PID) was held in July 2013, to advise the public on the process and anticipated timeline for the project and to invite input from the public. This input was critical to the subsequent optioneering stage.

In mid-2014, having completed the initial optioneering and scheme design work, a further 'Emerging Preferred Option' PID was held to present details of the proposed Scheme and to further encourage members of the public to make submissions. Feedback from this event informed the further refinement of the Scheme.



The formal public exhibition then took place in late 2016/early 2017. A series of schedules, drawings and plans were displayed at a number of high profile venues in Cork city and county. An interactive display was also made available in both City and County Hall and received very positive feedback from the public.

Four manned open days were held in the Millennium Hall in Cork City Hall to enable members of the public to discuss issues or raise questions with representatives of the OPW and the engineering design and environmental teams.

All of the above events were widely advertised to the public in advance through advertisements in local and national newspapers, radio advertisements, the project website, and social media accounts operated by the OPW.

All documents including project reports, posters, brochures, drawings, photomontages and comment sheets that were on display at the public days are available on the project website

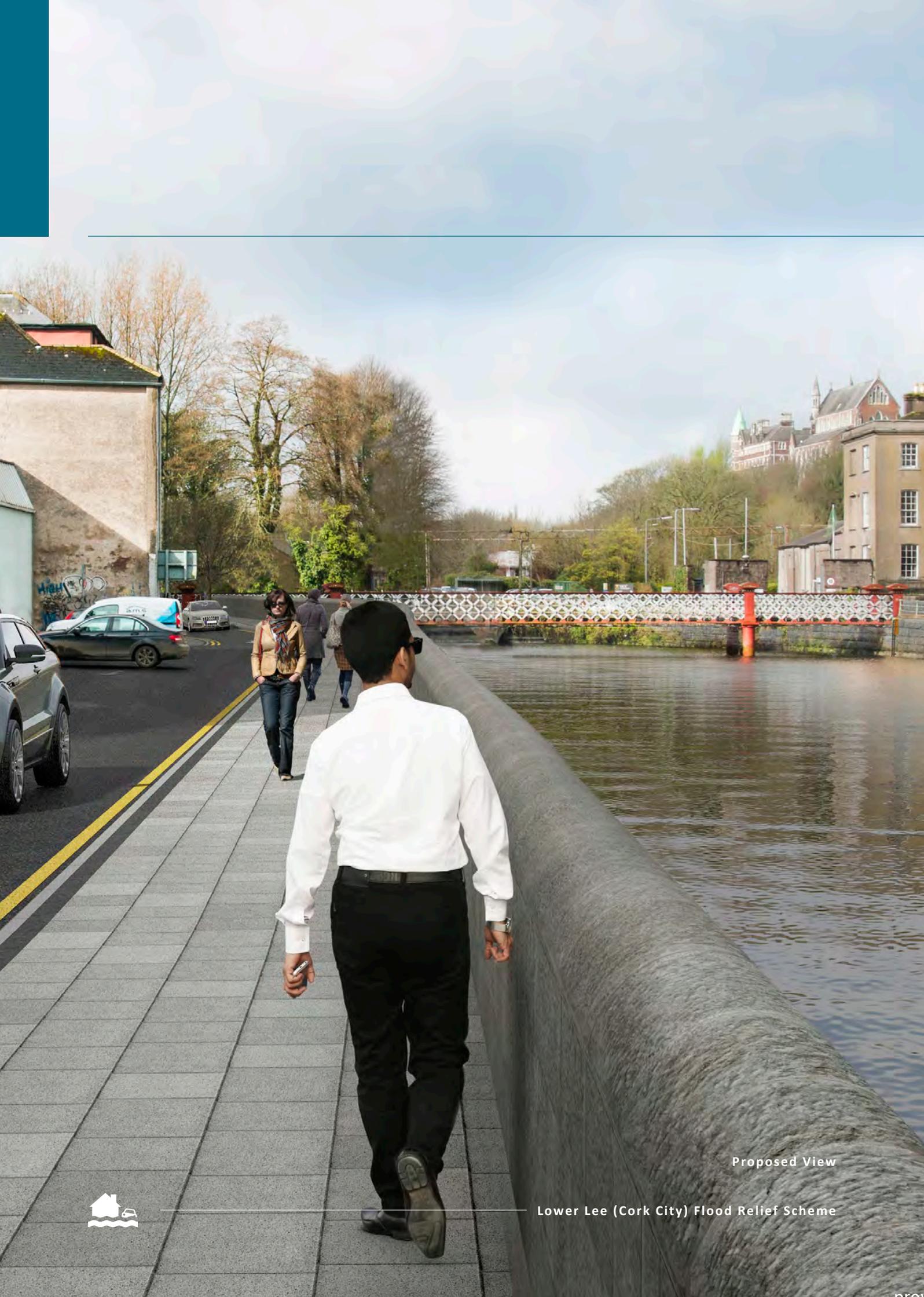
[www.lowerleefrs.ie](http://www.lowerleefrs.ie)

Extensive landowner and stakeholder consultation has been undertaken, including over 100 one-to-one meetings, to ensure that those who are directly impacted by the project remain informed and are provided with the opportunity to provide feedback.

Numerous presentations have also been made to key representative groups including Cork Chamber of Commerce, Cork Business Association, Cork Public Participation Network and ICOMOS, as well as to elected representatives of both Cork City Council and Cork County Council. A presentation was also made in Leinster House to Members of both houses of the Oireachtas, from Cork Constituencies.

In summary, in line with normal practice on other flood relief schemes and the desire to have the fullest possible engagement with the public, extensive and wide ranging public participation has continually been sought, encouraged and facilitated by the OPW, both local authorities and the design team. Feedback received has played a significant part in shaping the final detail of the proposed Scheme for Cork.





Proposed View

Lower Lee (Cork City) Flood Relief Scheme



### 3 Alternative Solutions Considered

Both as part of the Lee CFRAM Study and again in the early stages of the Lower Lee Flood Relief Scheme, a long list of potential measures was considered.

The consideration of these measures (and combinations of measures) is covered in great detail in the Lower Lee FRS Options Report. After detailed and careful assessment, the option selected includes all of the following key components:

- Flood forecasting and flood early warning system
- Modified operation of Inniscarra and Carrigadrohid dams

- Upstream washlands (i.e. flooding of designated agricultural land)
- Regulation of flow between the north and the south channel
- Low level direct defences
- Local pumping of back of wall drainage

A number of Supplementary Reports have subsequently been prepared which provide further detail on various alternative proposals considered, which are not viable.



# 3 Alternative Solutions Considered

## 3.1 Tidal Barrier

The supplementary Tidal Barrier report addresses, at an appropriate level of detail, the queries raised at Exhibition, by considering all of the key requirements and constraints for a tidal barrier in Cork. The key findings can be summarised as follows:

- Any tidal barrier would need to be located downstream of Lough Mahon to have sufficient storage to cater for inflow from the Lee during periods of closure.
- **Little Island:**  
The furthest upstream location for a potential barrier is at Little Island. However, this location presents particular problems as follows:

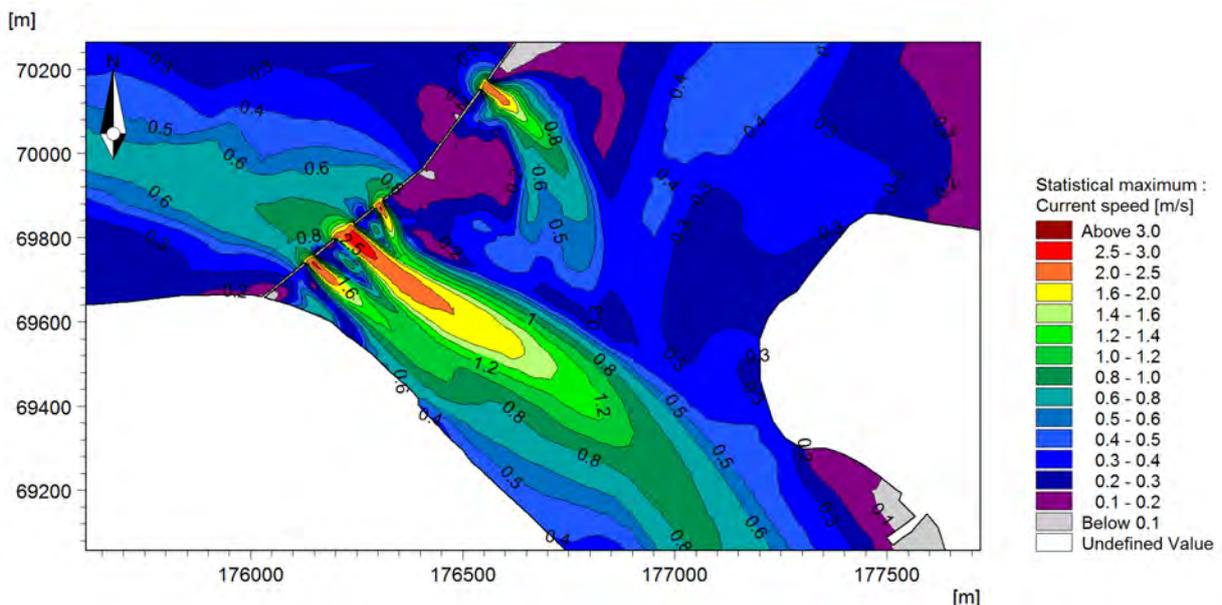
**Environmental:** Its immediate proximity to environmentally designated sites means that achieving the necessary statutory consents would be challenging and time consuming and would likely require very large 'gates' to minimise impacts on the existing regime.

**Navigation and Navigational Safety:** Such large gated area would also be required to meet acceptable navigational safety requirements.

**Cost:** A technically viable barrier at this location is estimated to cost almost €1bn, which is not economically viable.

**Climate Change:** Furthermore, this location does not have sufficient upstream storage to cater for the likely future climate change scenarios and thus is unlikely to represent the optimum long-term solution for Cork.

Modelling of navigational impact of Little Island barrier proposed by stakeholder group



- **Great Island:**

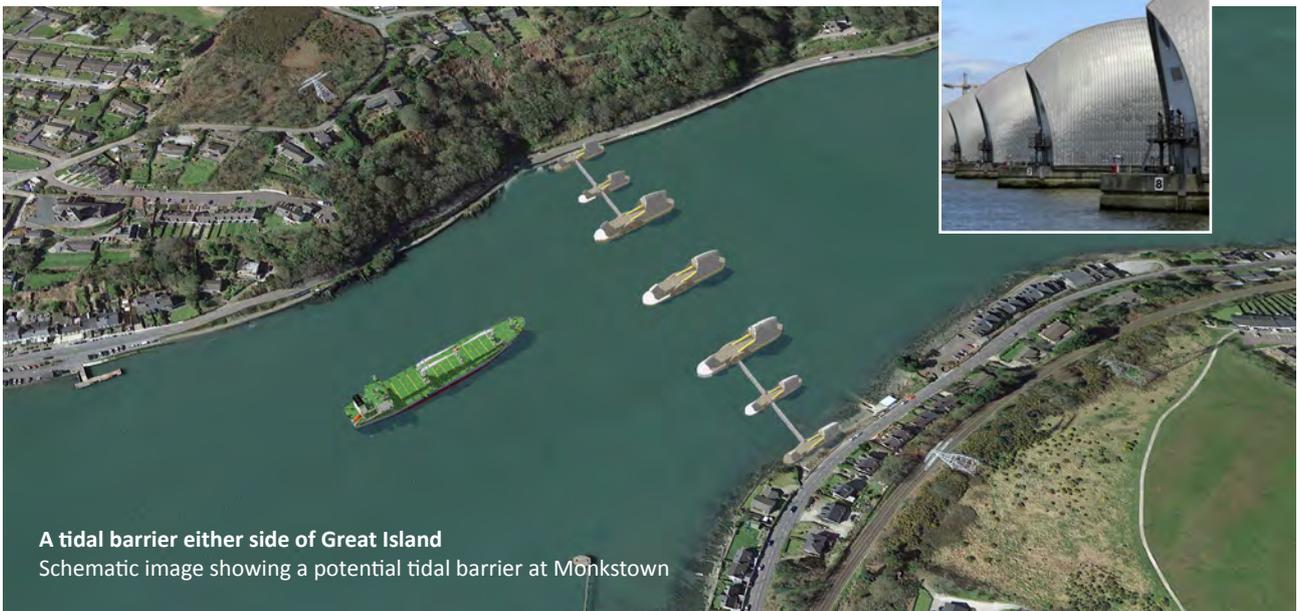
**A tidal barrier either side of Great Island** has sufficient upstream storage to cater for sea level rise of 1m or more, as well as increases of 30% or more in river flows. Technically, it therefore represents a better long-term solution in the face of climate change and also has the benefit of protecting a greater area of the harbour including Midleton, Passage West, etc.

**To maintain continued safe navigation,** and minimise environmental impacts, a barrier at Great Island would need to be gated across the full width of the existing channel at East and West Passage. This option is technically feasible but has an estimated cost in excess of €1.7bn.

- To minimise the frequency and thus cost and impact of frequent closures, as climate change occurs, any tidal barrier would likely only be feasible in

conjunction with low level waterside defences in the city, as proposed in the exhibited scheme.

- In conclusion, the further detailed analysis proves that a tidal barrier is not currently viable and will not likely become viable for approximately 50 years or more. This eventuality is so far in the future and the timing so uncertain that it should not unduly influence decision making at this time
- Low level waterside defences in Cork (as per the exhibited Scheme) are therefore the optimum solution for Cork at this time, to meet the short and medium term needs of the city. Such defences are also the first step in a climate change strategy to manage flood risk in Cork and will form a key component of any future tidal barrier system.



**A tidal barrier either side of Great Island**  
Schematic image showing a potential tidal barrier at Monkstown

## 3 Alternative Solutions Considered cont.

### 3.2 Alterations to and Modified Operation of the Dams

#### Revised Operation:

A fundamental component of the exhibited scheme is revised operational procedures for control of the dams during extreme flood events. These revised rules will allow the dam operator to safely draw down the reservoirs in advance of a flood, which will maximise the storage available, and safely manage discharges during the event without causing flooding.

A number of exhibition submissions suggested that the existing dams have sufficient storage to avoid defences entirely. This is incorrect, and not accepted for the following reasons:

- Such submissions are premised on a large number of incorrect assumptions and are based on a proposed operating regime which would jeopardise dam safety by significantly increasing the risk of overtopping.

- They do not address the residual risks associated with events greater than the 1 in 100 year event. International best practice dictate that events up to the 10,000 year event must be safely passed at all times. The magnitude of a developing flood event cannot be established with enough certainty beforehand to advocate an approach that completely fills the reservoirs during events up to the 1 in 100 year event as has been proposed.

The Scheme as exhibited proposes revised rules which have been optimised following extensive detailed analysis of all the real-world constraints, to maximise the benefit of the dams. These revised rules result in almost a 40% reduction in peak flows reaching the city, meaning that required defence heights can be minimised. However, due to the limited size of the reservoirs, the revised rules cannot on their own provide the required standard of protection and therefore these rules can only be utilised in conjunction with direct defences, as proposed.



### Raising the Dams:

It has been established that peak discharges during the design 1 in 100 year event, cannot be limited to a rate which would avoid downstream defences, without compromising dam safety. This is due to the limited storage available in the existing reservoirs. Therefore, the option of physically raising the existing dams to provide additional storage was also considered.

In order to allow the reservoirs to fully mitigate the existing fluvial (river) flood risk in Cork City, i.e. avoiding the need for direct fluvial defences, significant additional storage would be required. A number of options to achieve this have been considered and, while such options may be technically viable, they all have significant shortcomings compared with the exhibited scheme, as summarised below:

- It would give rise to significant alterations to the natural regime of the Gearagh Special Protection Area. Accordingly there is a significant risk that a dam-raising scheme may not gain statutory consent when alternatives exist which do not impact on Natura 2000 sites.
- A minimum of 80 residential landowners and families would need to be displaced due to the increased reservoir area. This could critically damage communities such as Toonsbridge.
- A minimum of 8km of existing roads would need to be raised/relocated. Several bridges would also need to be raised/reconstructed and significant alterations would be required to the proposed new Macroom bypass.
- A minimum of 5 square km of substantially productive agricultural land would be sterilised.
- Even if all of the above was undertaken, it would only eliminate or reduce a small proportion of the overall direct defences, as defences would still be required in the city centre.
- It is therefore evident that such a proposal would have an unacceptable and inappropriate impact on an area and community not currently at risk of flooding, in order to protect others elsewhere.
- It has been established that such an alternative scheme is less attractive on technical, social and environmental grounds, than the exhibited scheme.

**All of the options considered are significantly more expensive than the exhibited scheme, and crucially none of the options are cost beneficial.**





## 3 Alternative Solutions Considered cont.

### 3.3 Natural Flood Management (NFM)

NFM is the alteration, restoration or use of small scale localised landscape features to reduce flood risk. Put simply, the design philosophy is to create a large number of small features that 'slow, store and filter' runoff and peak flow in the landscape.

Natural Flood Management (NFM) measures were not considered in detail as a potential option for Cork, because there is no evidence base to demonstrate that NFM can deliver significant benefits in large catchments such as the Lee and for large floods such as the 1 in 100 year event. In conjunction with other storage and land use management options, it was therefore screened out as a potentially viable measure for Cork. It was also recognised that the existing reservoirs provided a far more efficient means of flood attenuation in the Lee catchment.

However, in response to the submissions received, a supplementary NFM report was prepared to evaluate the potential impact of NFM for the River Lee Catchment to Cork. The detailed assessment of the Lee Catchment concluded that almost 5000 potential interventions combined would still only reduce the 100 year flow at Cork by between 1-4%, i.e. will not significantly alter the need for direct defences. In fact, it identified that there was a risk that NFM measures could give rise to a potential for delayed peak flows on Shournagh which could actually increase flood risk in Cork.

Therefore, an NFM solution is not technically viable as an alternative to the proposed scheme.





Proposed View



Lower Lee (Cork City) Flood Relief Scheme

## 4 Technical Concerns about the Exhibited Scheme

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A number of submissions were received expressing some technical concerns about some aspects of the scheme. These concerns are addressed in detail in the Exhibition Report and are summarised below.

### 4.1 River Containment

A number of submissions have cited the Dutch “Room for the River” programme as an example of best practice and a move away from river containment. However, the “Room for the River” programme includes a number of complementary measures, including direct defences. Cities in the Netherlands (such as Nijmegen) continue to rely on high flood protection dikes as a key element of their flood protection strategy. The scale of defences on the Nijmegen project are significantly greater than those proposed for the Cork Scheme.

The recent award winning Leeds flood alleviation scheme, includes over 4.2km of direct defences in the city but like Cork, the defence heights are limited to guarding height.

The risk of failure/breach due to degradation of the defences over time is extremely low and is minimised by a planned maintenance regime which is a statutory requirement for the OPW under the Arterial Drainage Act and for which annual State funding will be provided.

In conclusion, the Direct Defence or River Containment solution is an internationally recognised and proven approach, and in conjunction with the suite of other complementary measures (such as dam management etc.), it is the optimum and most appropriate solution for Cork.

### 4.2 Flooding from Sewers and/or Pumping Stations

The Scheme has been designed to ensure that existing sewers and culverts will not convey flood water from the river into the defended areas. All sewer outfalls to the river will be fitted with non-return valves. In addition, an overflow pipe system will be constructed which will discharge to a series of proposed pumping stations which will pump any excess water back into the river. The proposed pumping stations will be designed to incorporate appropriate redundancies, including permanent standby pumps and backup generators. Regular maintenance and test runs of the pumps will ensure their optimal performance during flood events. This approach is well proven and has been successfully incorporated into numerous flood relief schemes, both in Ireland and internationally.



## 4 Technical Concerns about the Exhibited Scheme

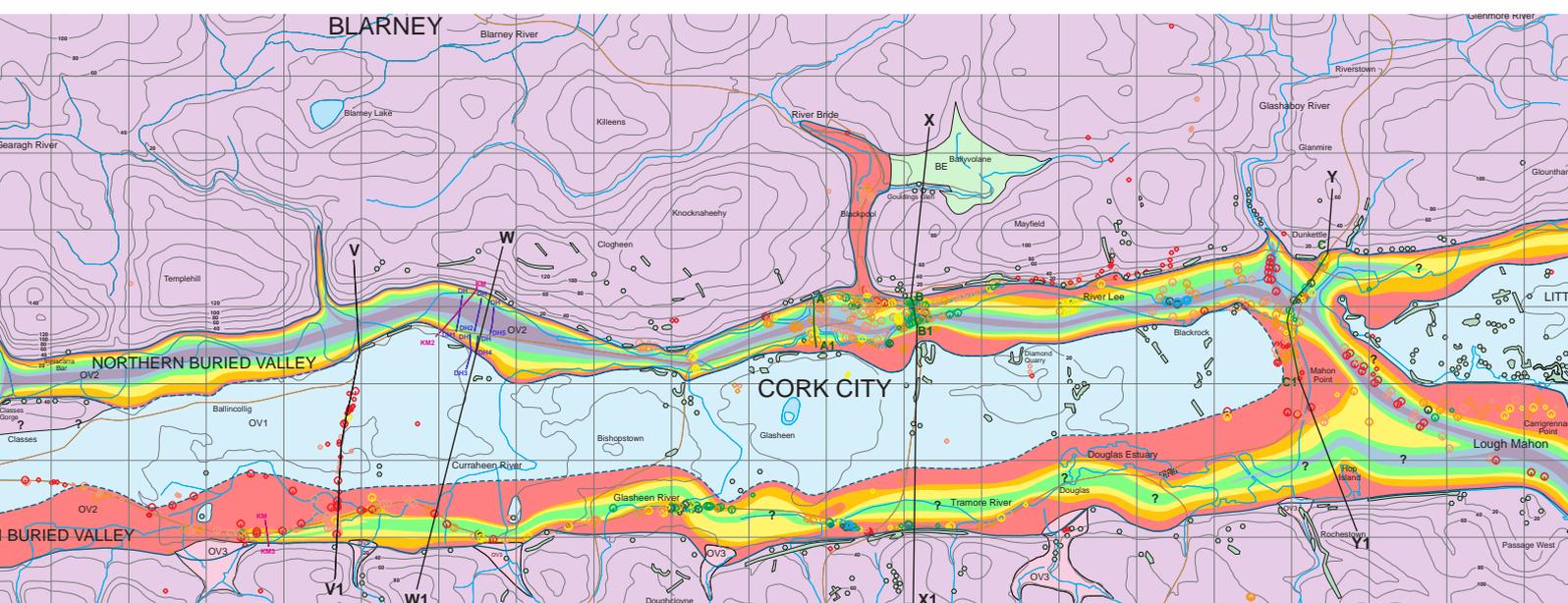
### 4.3 Groundwater Issue

Management of groundwater is a key part of the design consideration of flood relief schemes and the Cork Scheme is no exception. The existing geology and groundwater regime in Cork is well understood by the design team, and has been at the forefront of design considerations from the outset of the project.

The design of the Scheme has sought to largely retain the existing situation in the non-flood case. In the flood scenario, groundwater levels will only be locally reduced close to the surface. Therefore, as the existing regime will remain largely unchanged, the scheme will not negatively impact existing structures and their foundations.

A tidal lag/or dampened effect between groundwater and river/tidal water is observed across the City Island. Historically, the peak groundwater level in the city is typically circa 1m lower than the peak river water level and only occurs for a short duration. Because of the low defence heights required, this lag means that it will be possible to manage groundwater levels effectively.

In summary, extensive investigation and design work has and is continuing to be undertaken to ensure that groundwater flood risk is satisfactorily managed as part of the scheme.



## 4.4 Climate Change

Climate change has been considered in detail in the scheme development and is set out in Chapter 14 of the Options Report (available on [www.lowerleefrs.ie](http://www.lowerleefrs.ie)).

The Scheme has been designed both to work as a standalone scheme for the current scenario, but also to be adaptable in the future as part of a longer term climate change strategy for flood risk management in Cork.

For example, greater future gauge records, together with expected improvements in the reliability and resolution of rainfall forecasts, will allow the proposed flood forecasting system and dam operation rules to be further optimised in the future. This will offset some of the impacts of increasing rainfall and river flows.

The low level riverfront direct defences now proposed will form an essential part of future tidal defences as they will be needed to minimise the frequency of closures of any future tidal barrier, if and when a tidal barrier may become viable.





## 5 Potential Impacts of the Exhibited Scheme

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### 5.1 Cultural Heritage

Consideration of the City's riverside heritage has been at the forefront of the Scheme design. The design has sought to minimise the impact on heritage and, where possible, to enhance the cultural heritage value.

The scheme design to date has been undertaken in close collaboration with the relevant architectural, conservation and cultural heritage staff within Cork City Council.

A significant and very important cultural and heritage benefit of the Scheme is that approximately 400 protected structures and 20 structures on the Record of Monuments and Places currently lie within the area of the design flood extents, and will be protected from flooding.

Over €20m of much needed investment is being committed to carefully restore the historic quay walls which are in very poor structural condition, and in many cases are at risk of collapse as occurred at Grenville Place during the 2009 flood event.

The impact of the scheme on cultural heritage has been assessed in detail in the Project EIS, which also includes detailed mitigation measures which will form part of the future construction contracts.

The detailed design team includes a Grade 1 Conservation Architect who will ensure that the final design preserves and enhances the integrity of the city's rich heritage. The OPW have also engaged the services of a project archaeologist who, working closely

with the National Monuments Service, will fulfil a monitoring role for the duration of the project. The project archaeologist will be supported by works archaeologists, should any archaeological evidence be uncovered during the construction period.

A key part of the detailed design has included an appraisal of the area and its built and natural heritage, which will inform the further development of detailed design proposals, safeguarding and, as appropriate, restoring existing assets and improving their setting, where possible.

Research has informed the proposed approach to interpretation. Through the use of signs/panels and bespoke features/public art, there is an opportunity to explain the significance of existing, retained historical features as well as bringing to life stories about the area, its people, heritage and culture.

Where existing masonry parapets require strengthening to function as a flood defence, the existing Cork limestone will be salvaged and reused insitu to ensure that the proposed defence parapets retain their original scale and aesthetic.

Areas containing historic features, for example, ornate railings, such as at North Mall and Sullivan's Quay are being redesigned to preserve the existing railings and features insitu.



## 5 Potential Impacts of the Exhibited Scheme

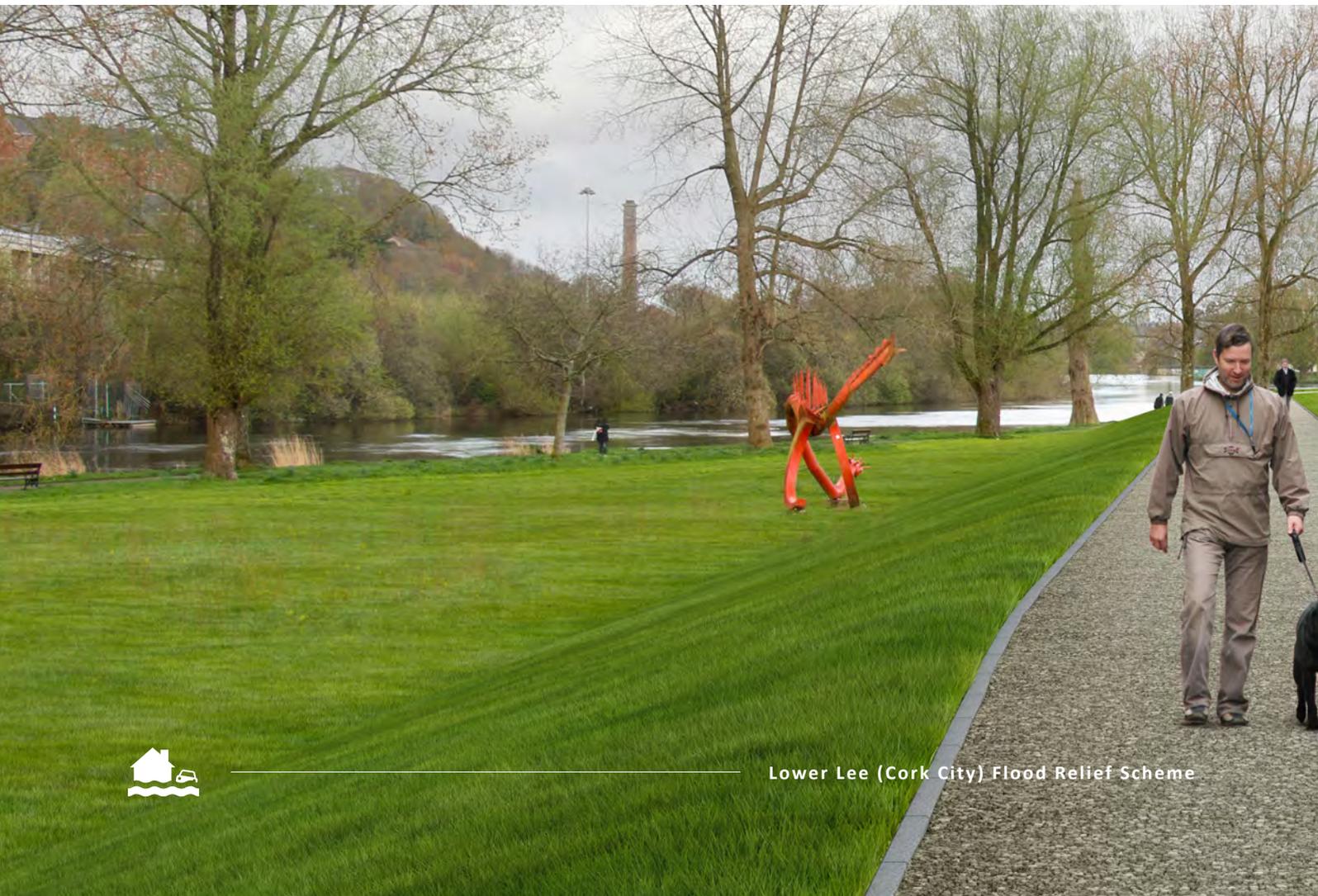
### 5.2 Visual Impacts of Proposed Flood Defence Walls and River Amenity

Careful consideration has been given to the means by which the flood defence should be provided within each part of the project area. The design solutions seek to provide the most aesthetically appropriate appearance, whilst fulfilling the technical requirements in terms of flood protection and public safety.

Importantly, the appearance is considered within the context of its wider setting, taking opportunities to integrate changes in levels and surface finishes to deliver comprehensive environmental improvements.

In the city centre area, the vast majority of proposed defence walls have a solid element no higher than knee height with a light guard railing on top. In some areas on the North Channel, solid river wall heights increase locally to a maximum of 1200mm high, i.e. midriff height. Views of the river will be maintained in all cases.

Views of and connection to the river will be significantly enhanced with approximately 1km of new river walkway and cycleway being created as part of the scheme.



The detailed design of all defences is being completed by a design team including an experienced urban landscape designer, who in collaboration with the City Architect's Department will ensure that the defences are integrated seamlessly into the enhanced public realm spaces adjoining the river.

The project provides opportunities to improve pedestrian/cycle access along/over the river, with strengthened connections to the city centre/neighbourhoods to either side. This will encourage increased use and appreciation of the environment, by the local communities and visitors alike.

Some glass flood defences, appropriate lighting, soft landscaping and street furniture will also enhance the enjoyment of the river frontage both by day and by night. In some discrete locations, land will be reclaimed to create new plaza areas and walkways adjacent to the waterfront.



## 5 Potential Impacts of the Exhibited Scheme

### 5.3 Impact on Tourism and the Local Economy

This project will serve as a catalyst for future investment in and development of the city by providing a much higher level of flood protection. This will enable the City to develop in terms of amenities, business, tourism and investment potential in the medium and the long-term.

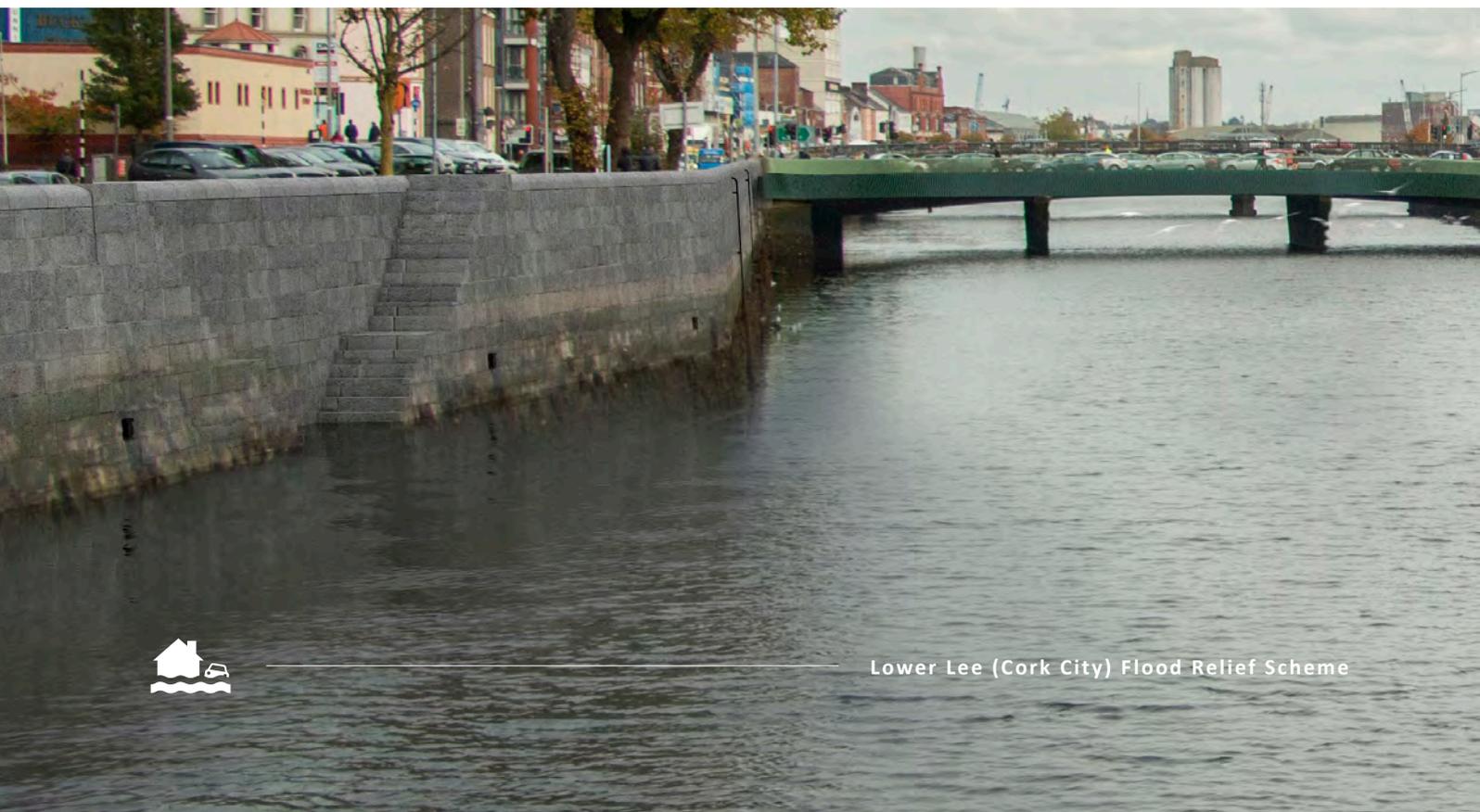
The improved public realm areas, parkland areas and riverside walks, will enhance physical and visual connections along and to the river. The quays connecting to the city will alleviate congested areas during the busy tourist season, whilst the investment in stabilising the historic quay walls will preserve one of the city's most identifiable features. Tours and walking trails of the quays will add to the traditional tourist offering.

Any short term negative impact on tourism during the construction period will be offset by the long term benefit of a much improved tourist offering.

### 5.4 Impact on Ecology

Chapter 5 of the EIS assesses the impacts of the proposed scheme in terms of ecology. The report was carried out by experienced professionals and in accordance with the relevant legislation and guidance.

An Appropriate Assessment Screening Report was also carried out for the proposed scheme in relation to European Designated sites. The impact on flora, fauna and habitats is in many cases temporary in nature and will be minimised by use of mitigation provided.



Significant care has been taken to ensure that tree/vegetation/habitat loss is minimised. Throughout the project area, there are opportunities for significant improvement. Invasive species surveys have been carried out and the OPW has already procured a contractor and commenced a programme of eradication and management of invasive species within the study area prior to the construction phase. This will facilitate new planting. Existing vegetation to be retained will be managed (crown lifting, removal of ivy, etc.). Working closely with the proposed project ecologist, proposals will integrate extensive areas of new landscape, which will strengthen the bio-diversity.

## 5.5 Other Construction Disruption

Whilst there will be some disruption during construction, this will be minimised by careful phasing of the works and inclusion of contractual provisions in relation to working times, traffic management, noise and dust management, maintaining critical infrastructure, etc.

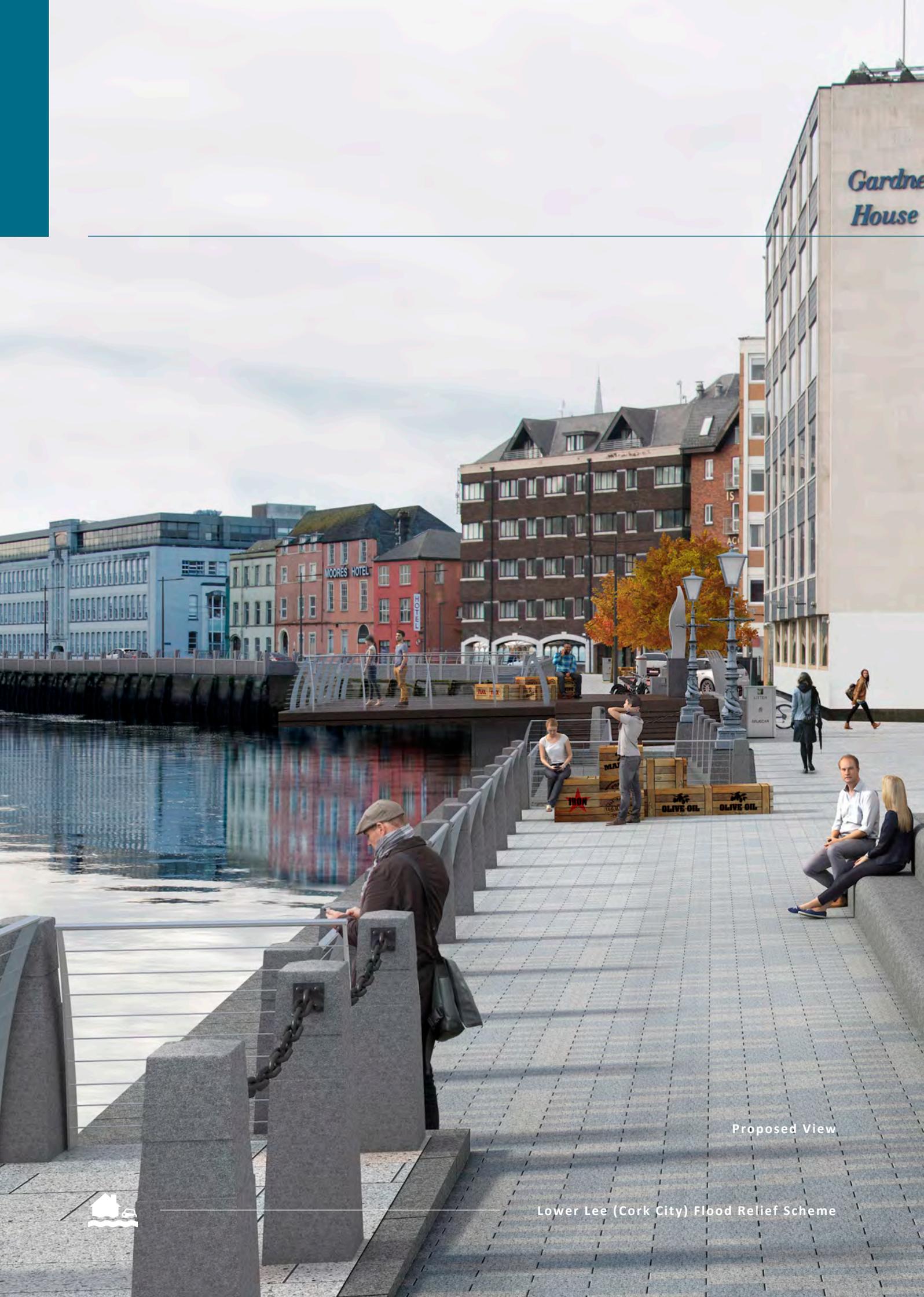
The construction timing and phasing will be co-ordinated with other works in the city such as development works and works associated with the Cork City Movement Strategy (CCMS), thus reducing the overall duration of disruption in areas.

The permanent benefit of the scheme in protecting existing businesses and attracting new business will exceed the short-term impacts.



Proposed View





Gardner House

MOORE'S HOTEL

Proposed View

Lower Lee (Cork City) Flood Relief Scheme



## 6 Proposed Changes to the Scheme arising from Exhibition Stage

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As a result of submissions received at Exhibition Stage, and to address some key concerns raised by the public, it is proposed to make a number of amendments to the Scheme. A summary of some key changes is provided below.

### 6.1 North Mall and Sullivan's Quay

Revised proposals are now being developed by our landscape architect and conservation architect in consultation with Cork City Council to ensure the existing historic setting is preserved. These proposals predominantly rely on demountable defences (to be erected only during times of flood) which will allow the historic river edge, historic railings and the setting of the historic terraces to be improved.

### 6.2 FitzGerald's Park

Following feedback received at exhibition stage, the proposals for the park are being considered again by the urban landscape consultants in consultation with Cork City Council. The revised solution here will integrate flood protection into the park, whilst at the same time creating areas for the park which deliver increased value and pleasure. In particular, the rose garden has potential to be improved, along with the rockery and pavilion.

### 6.3 Lee Fields

Proposals for Lee Fields will shape the landform to seamlessly integrate flood protection levels, within areas, which can also provide improved walking routes, access to

the river and parking, with enhanced passive surveillance. The detail of this is under consideration at present.

### 6.4 Mardyke Walk

Subsequent to exhibition submission, it is now proposed to modify the solution by raising the ground levels of the riverside walkway which will ensure that the area is visually well connected and safe. Careful earthworks on the riverside, combined with vegetation management, will enhance the biodiversity of the area.

### 6.5 Rear of South Mall properties

Further to exhibition submissions and subsequent review, it has been decided to remove the boardwalk element from the scheme at this time, given that it is not essential to the function of the flood defence scheme. However, the revised design will provide the flexibility for such a boardwalk to be constructed in the future, subject to the necessary landowner consultation and statutory consents.

### 6.6 Lee Road

The OPW now proposes to protect the Lee Road from flooding and thus provide safe access for residents who rely on the road. Proposals are being developed in consultation with the local residents and will incorporate significant landscape mitigation and ensure that the views (including protected views) from the other side of the river have a 'green' foreground and are not dominated by the proposed defence.



## 7 Next Steps

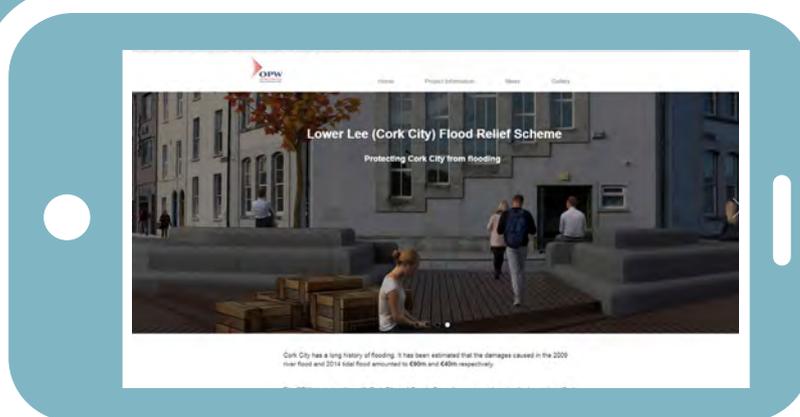
### 7.1 Responses to Exhibition Submission

Over the course of the next few months, the OPW will issue detailed individual responses to all persons and organisations who made formal submissions during the Public Exhibition process.

Where works are proposed on individual landholdings, the OPW and the design team will continue to liaise with these landowners in refining the final design where appropriate.

### 7.2 Preparation of Statutory Documentation for Ministerial Consent

Over the coming months, the Exhibition documentation will be updated to reflect any changes arising out of the Exhibition process, as well as refinement of the Scheme to a greater level of detail, particularly with regard to architectural and conservation detailing. Once this work is completed, it is proposed to submit the documentation to the Minister for Finance and Public Expenditure and Reform in mid-2018 for Confirmation (i.e. statutory approval). The Confirmation process is then expected to take approximately six months to complete.



Additional reports mentioned within this report can be found on the project website:

[www.lowerleefrs.ie](http://www.lowerleefrs.ie)



### **7.3 Morrison’s Island Public Realm Project (with integrated flood defence)**

Cork City Council (CCiC) has had a long term ambition to enhance the south facing quays to the north of the South Channel. These are currently dominated by parking and are underutilised as a city centre river amenity. It is an aim of Cork City Council to create a linked pedestrian route along the riverside between the existing boardwalks at Grand Parade and Lapps Quay East. A key element of this is the length between Parliament Bridge and Parnell Bridge along Morrison’s Quay and Fr. Mathew Quay.

These quays are also the lowest lying and are the primary source of regular tidal flooding. Tidal flood defences are therefore a priority for this area in reducing the impact of more frequent flooding.

Given the synergies between both projects and in order to avoid multiple projects in a short timeframe, the OPW and CCiC have agreed to co-fund a project which combines the proposed public realm works with integrated flood defences.

Planning design for this project has been undertaken in the last number of months and Cork City Council propose to lodge a Part 8 Planning Application for the project in the coming weeks.

The project will deliver a high quality public amenity space which also delivers the required standard of flood protection in a seamless and integrated fashion. It is considered representative of the integrated approach which will be adopted in the design of the flood relief scheme as a whole.

The proposals for Morrison’s Island represent an outstanding opportunity to bring about comprehensive regeneration of this historic area.

Subject to a successful grant of planning, it is proposed to begin construction of this project in mid-2018.





Lower Lee (Cork City) Flood Relief Scheme

## 8 Conclusion

The Public Exhibition process for the Lower Lee (Cork City) Flood Relief Scheme has been comprehensive, detailed and fully inclusive. The OPW, in partnership with Cork City and County Councils, is fully committed to open and constructive communication with all stakeholders and wants to ensure that all genuine concerns are addressed. The extensive consultations with the public from the earliest stages of the Scheme up to the further detailed analysis and consideration of specific concerns as outlined in this report, underline that commitment.

*“The project will deliver a high quality public amenity space which also delivers the required standard of flood protection in a seamless and integrated fashion”*

Proposed View





**STEERING GROUP**  
Office of Public Works  
Cork City Council  
Cork County Council  
Electricity Supply Board

**DESIGN CONSULTANTS**  
Lead Design Consultant – Arup  
Hydrology and Flood Forecasting – JBA Consulting  
Urban Landscape and Public Realm Architecture – The Paul Hogarth Company  
Conservation Architect – Alastair Coey Architects

**ENVIRONMENTAL CONSULTANTS**  
Lead Environmental Consultant – Ryan Hanley in partnership with McCarthy Keville O' Sullivan  
Specialist Ecology Services - Trituris Environmental Services  
Noise and Air Quality – Dixon Brosnan  
Archaeology and Cultural Heritage – John Cronin & Associates  
Graphic Design – Proviz Creative

**ARUP**

