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The complexity of Flood Risk Management

Integrating flood relief solutions into Clonakilty's urban setting

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21st October 2020

Engineers Ireland Conference – Wednesday, 21st October 2020

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Presentation Roadmap

1 OPW & Flood Risk Management
2 History of Flooding in Clonakilty / Evolution of Scheme
3 Scheme Concept / Climate Change Adaptability
4 Public Realm Objectives
5 Construction Challenges
6 Outcomes & Conclusion

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1 // OPW & Flood Risk Management

- Report of the Flood Policy Review Group approved by Government in 2004
- (Closely aligned with subsequent EU Floods Directive, 2007)
- OPW nominated as the Lead Agency for flood risk management in Ireland
- Coordinating role across Government
- Interdepartmental Flood Policy Coordination Group

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1 // OPW & Flood Risk Management

- Flood Policy - **P**revention / **P**reparedness / **P**rotection
  - *LA's retain Planning & Development Management in context of Flood Risk, and flood response and emergency management under MEM;*
  - *Met Eireann developing National Flood Forecasting capability*
  - *OPW manages, funds, and provides technical and policy support, for Capital Flood Relief Programme*
- OPW also maintains a number of defined Arterial Drainage Schemes built under the 1945 Arterial Drainage Act

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1 // OPW & Flood Risk Management

- OPW Flood Project Management Services Section
- Manage Capital Flood Relief Programme
- Blend of OPW led schemes, and LA led schemes with funding, technical support and Steering Group participation from the OPW

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1 // OPW & Flood Risk Management

46 - Schemes completed since 1995

92 schemes currently at various stages of development (including **10** already at construction)

A further **60** to be progressed in the lifetime of the NDP 2018-2027

118 – of these identified through the Catchment-based Flood Risk Assessment and Management Programme (2010 – 2018) and its output: 29 x Flood Risk Management Plans, launched in May 2018

Annual budget ramping from **€45m** to **€100m** over lifetime of NDP

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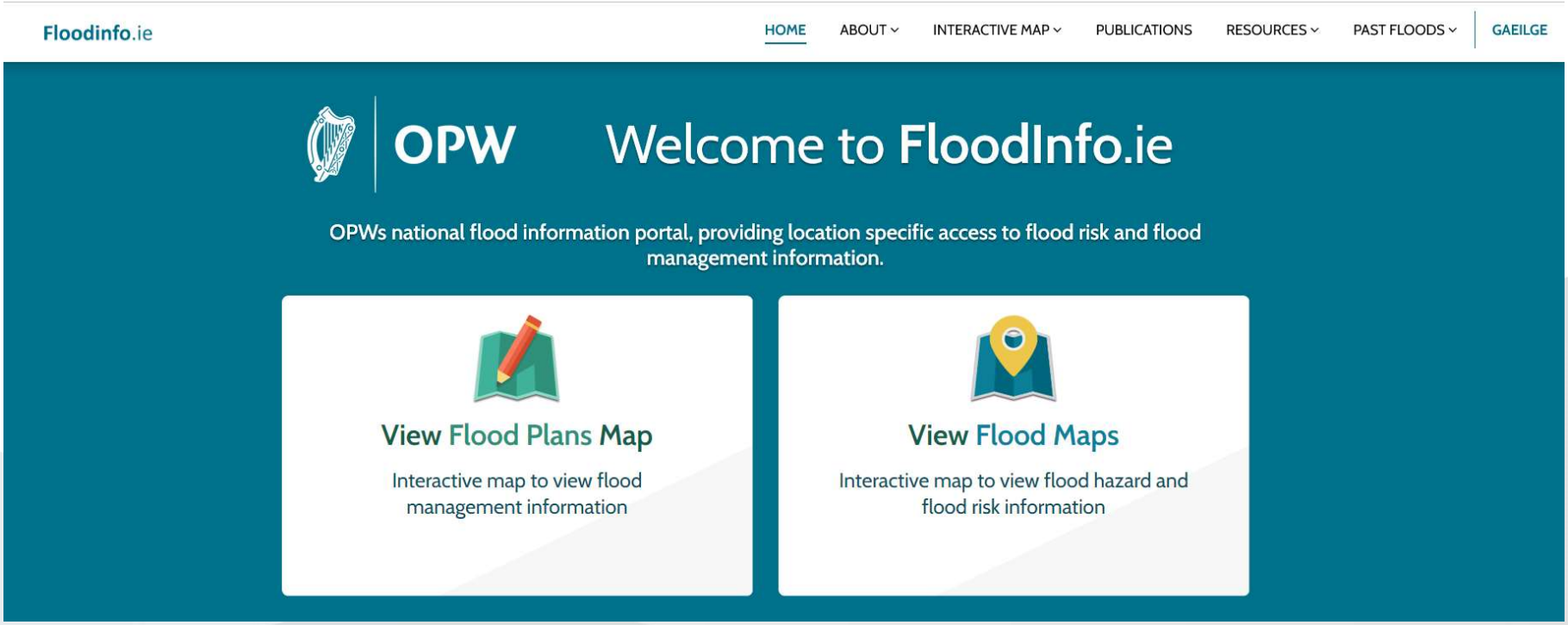
1 // OPW & Flood Risk Management



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2 // Flooding in Clonakilty / Evolution of Scheme

- Clonakilty has a long flood history, with recent floods in 1989, 2009, 2014, and severe flooding in June 2012

- In 2012, assessment of Clonakilty's flood risk was already underway under the CFRAM programme

- Accelerated on foot of calls after this flood event

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2 // Flooding in Clonakilty / Evolution of Scheme

June 2012

February 2014

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2 // Flooding in Clonakilty / Evolution of Scheme

Flood Risks -

- Fluvial flooding resulting from intense rainfall in upstream catchment, and

- Tidal flooding in the Estuary area, as well as up the river and through the town

- Built on gravels - groundwater coupled with river and tidal levels

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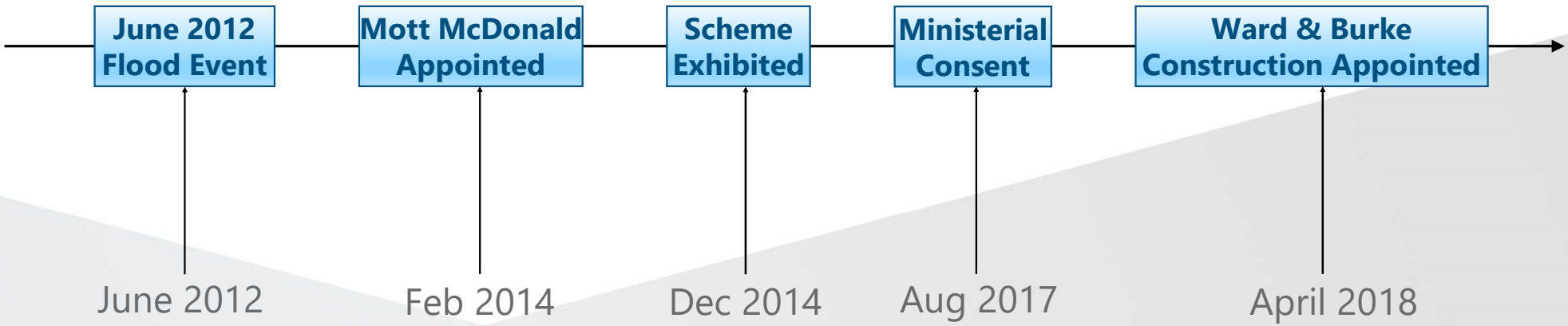
2 // Flooding in Clonakilty / Evolution of Scheme

Timelines



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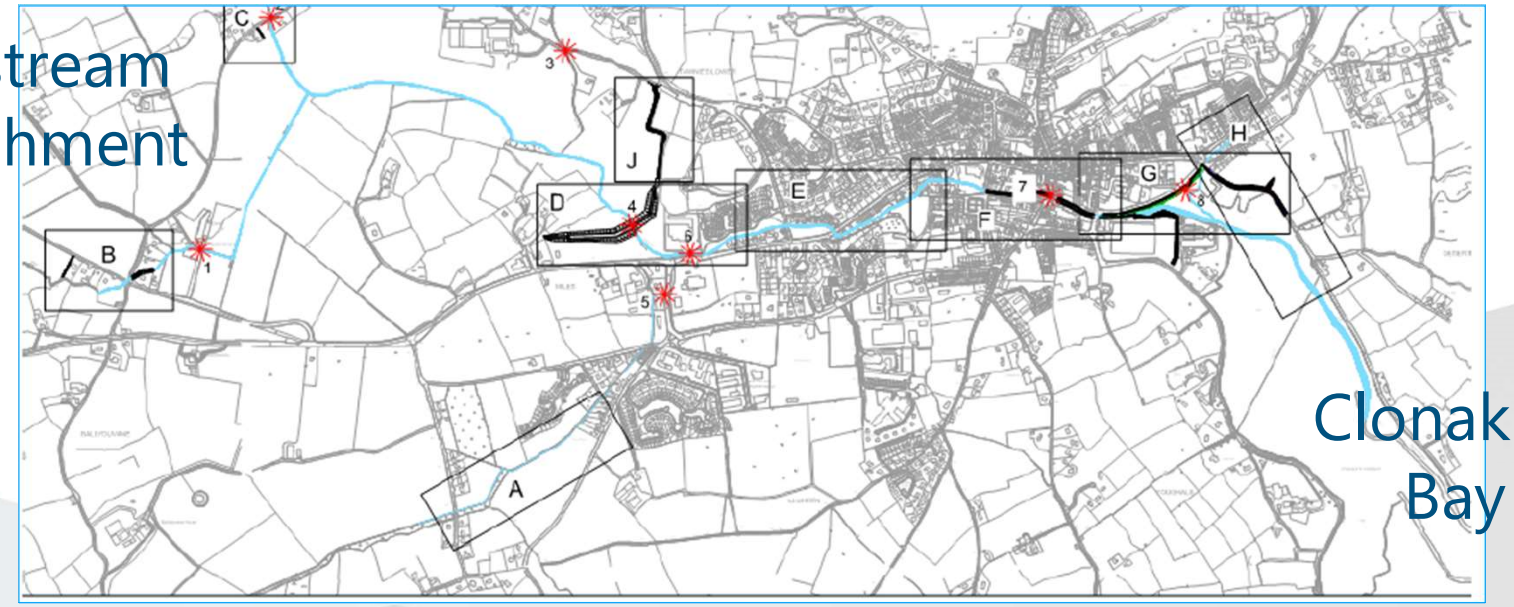
3 // Scheme Concept / Climate Change Adaptability

Upstream Catchment



Clonakilty Bay

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3 // Scheme Concept / Climate Change Adaptability

Range of options considered / All subject to EIS / NIS

Preferred option includes:

- Upstream Storage area & Flow Control Structure
- River defences through the Town
- Tidal defences, including road raising, on the Clonakilty Bay frontage
- Seepage cut-off
- Pumping stations, trash screens, culverts and channel improvements

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3 // Scheme Concept / Climate Change Adaptability

- For embankments (including storage area), the width of the crest allows for future increases in height to be made without changes to the footprint or slope of the embankment
- The foundation design of the walls will allow for future increases in wall height
- Within the pump stations, the sumps will be oversized to allow pumps with greater capacity to be installed in the future
- Design allows for an additional 500mm of flood water to be accommodated by raising walls and embankments in the town centre and harbour areas.

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4 // Public Realm Objectives

Cork County Council – 'Clonakilty Masterplan' 2012

Phase I - Two Squares
Phase II - Streetscape
Phase III – Croppy Quay and Kent Street // Integrated cross-agency collaboration

- Identify key areas for adding specific aesthetic value
- Some areas more expensive, but savings in other areas
- Recognise value and significance of certain materials
- Seek to address Multiple Policies through integrated design

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4 // Public Realm Objectives

Example 1 / Croppy Road:

- Exposed sheet piling
- Public realm strategy in lights, trees, footpath space etc.
- Integrated sustainable drainage
- ‘Avenue’ of trees addresses multiple policies
- Important circulation route for pedestrian traffic
- Safe connections to the town's amenities and green way

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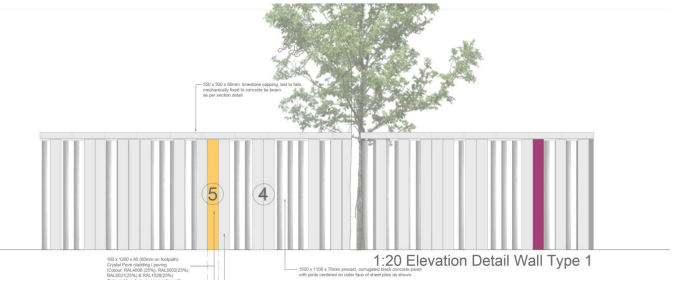
4 // Public Realm Objectives

Example 2 / Kent Street:

- Flood Relief walls - planters
- Dry soldier-course masonry
- Make Kent Street one-way to facilitate wide footpath (none previously)

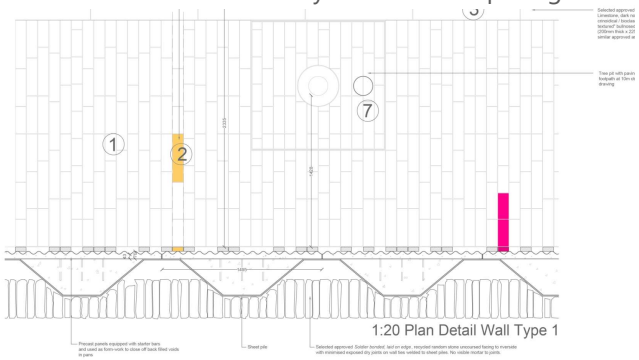
Kent Street, Town Centre ACA Architectural Conservation Area

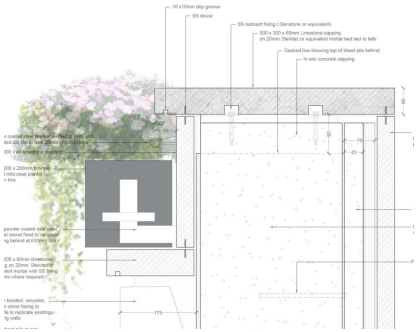
The Flood Relief Infrastructure includes contemporary architectural design detail to enhance the townscape heritage



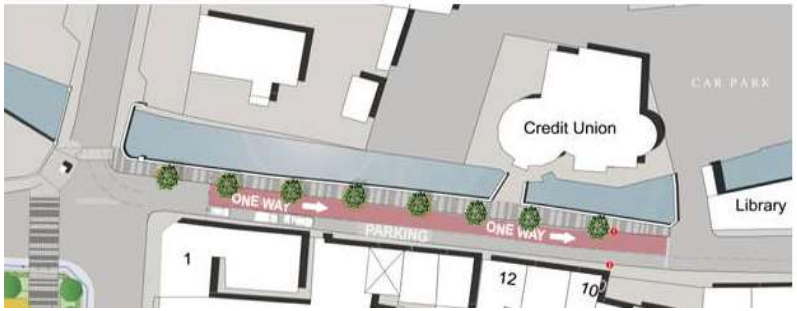
Kent Street cut stone on dry side wall and paving

Integrated planter [wet side] detail

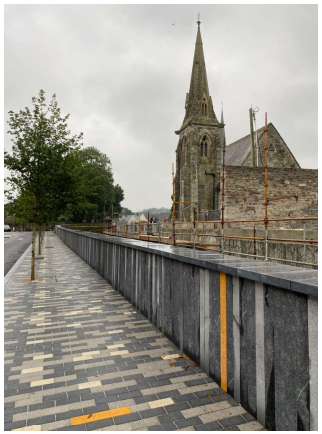


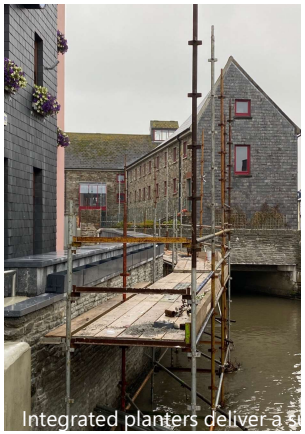


BUILDING RESILIENCE AND AUTHENTICITY OF THE PLACE [Rather than pastiche design solution].



The new flood wall and paving are crafted into a one elegant contemporary design detail for Kent Street where a new one way traffic allows to maximise the new footpath width. Coloured recycled glasses pavers recall the main streetscape design and a new avenue of trees in lieu of the loss of the existing trees including up lights and tree pit system to facilitate sustainable drainage





Integrated planters deliver a sustainable river green channel.

CLONAKILTY [construction stage]

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4 // Public Realm Objectives

Example 3 / Ring Road:

- Special Protected Area
- Wintering Birds
- Stunning Views
- Road raised to avoid high walls
- Added Footpath Amenity

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5 // Construction Challenges

- Heavy earthworks at upstream end (Storage area)
- Landowner engagement (throughout)

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5 // Construction Challenges

- Very tight work spaces in the town, with close proximity to many old, historic and vulnerable structures
- Sheet piling / vibration
- Impact on functioning urban areas

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5 // Construction Challenges

- Sheet piling on Clonakilty Bay area / EU Designated Site
- Impacts on Road users / Road Closures

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6 // Outcomes & Conclusion

- Scheme tested during multiple flashy rainfall events - Winter 2019/Summer 2020

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6 // Outcomes & Conclusion

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6 // Outcomes & Conclusion

- Public acceptance of completed scheme

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Project Partners

MOTT MACDONALD

Comhairle Contae Chorcaí
Cork County Council

WARD & BURKE