# Dundalk
## FLOOD RELIEF SCHEME

Rialtas na hÉireann Government of Ireland | Tionscadal Éireann Project Ireland 2040

Comhairle Contae Lú Louth County Council

binnies an RSK company

NICHOLAS O'DWYER an RSK company

# WELCOME

The North-Western and Neagh-Bann Catchment Flood Risk Assessment and Management (CFRAM) study, commissioned by the Office of Public Works (OPW) and completed in 2017, identified areas at risk of flooding in Dundalk, including Blackrock. This study developed a long-term strategy and identified high-level measures to manage that risk.

Following on from this, Louth County Council appointed the Binnies and Nicholas O'Dwyer Joint Venture to deliver the Dundalk Flood Relief Scheme. This Scheme aims to assess in greater detail the flooding extents around Dundalk and Blackrock, and subsequently identify, design, and submit for planning consent a Preferred Option that alleviates flooding to the Dundalk and Blackrock community to the required Standard of Protection.

## WHY WE ARE HERE TODAY

At this Public Participation Day (PPD) we are here to present the potential measures for the protection of Blackrock, both from the coastal and fluvial flooding risks. We would like your feedback regarding the potential measures to proceed towards the selection of a preferred option.


## ABOUT THE PROJECT TEAM

Louth County Council acting as the client is working in partnership with the OPW to undertake this flood relief scheme.

The OPW is the national funding authority for flood relief projects and a decision on the most viable option will, in part, be informed by this public consultation. Funding for some other aspects of the design options, such as public realm, are not funded by the OPW. Non-flood defence related aspects will be required to be funded from alternative sources.

The CFRAM Programme set out the measures and policies to be pursued to achieve the most cost effective and sustainable management of flood risk. As this scheme is flood related, it is encompassed within the OPW Flood Risk Management programme and funding is provided under the Government's National Development Plan.

Binnies / Nicholas O'Dwyer Ltd. Joint Venture is designing the scheme on behalf of Louth County Council. Nicholas O'Dwyer Ltd. is a consulting engineering firm with its head office in Dublin. Since its founding in 1932, Nicholas O'Dwyer Ltd. has carried out projects across Ireland and in 20 countries worldwide and is currently working on flood relief projects in Wexford, Tipperary, Rosslare and Dublin.

Binnies UK are a global consultant bringing their specialist skills in marine modelling and coastal protection and Flood Design.

# Dundalk
## FLOOD RELIEF SCHEME

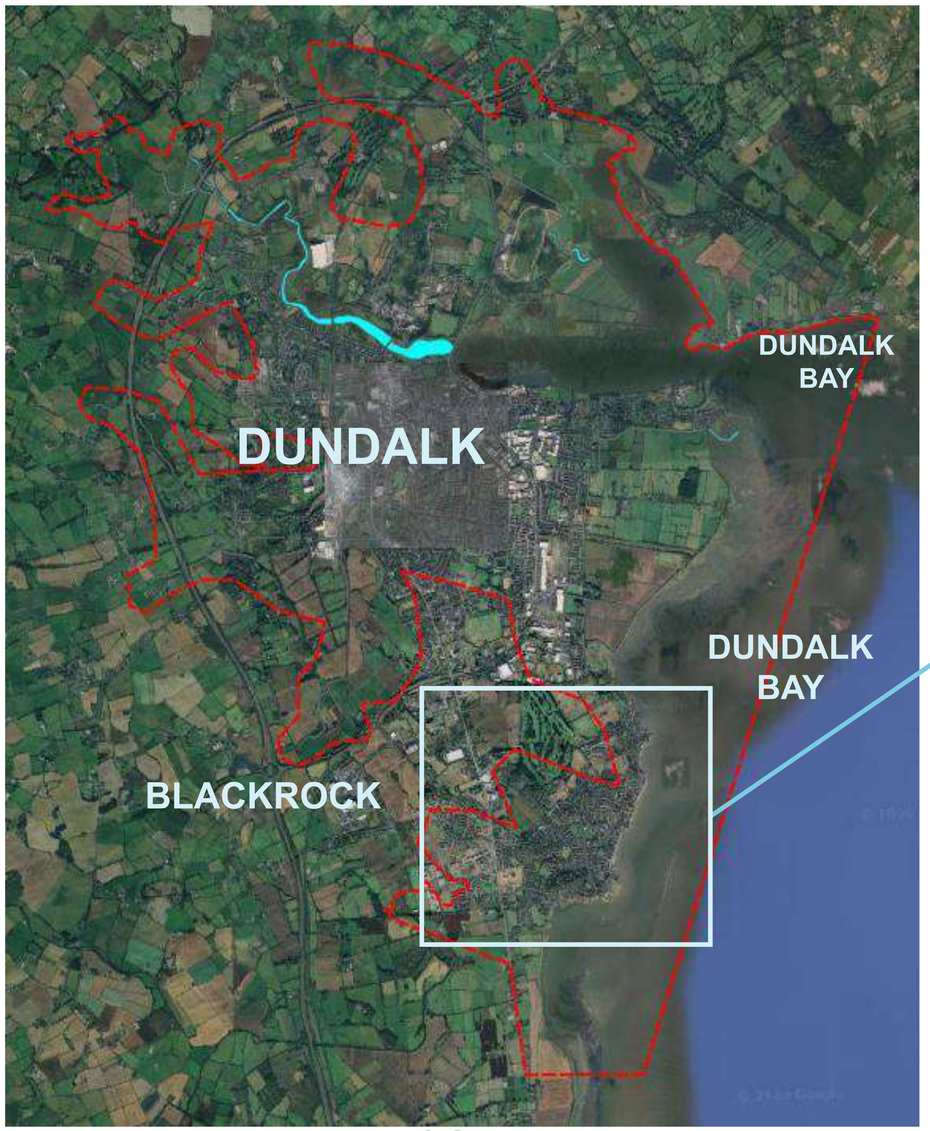
Rialtas na hÉireann Government of Ireland | Tionscadal Éireann Project Ireland 2040

Comhairle Contae Lú Louth County Council

binnies an RSK company

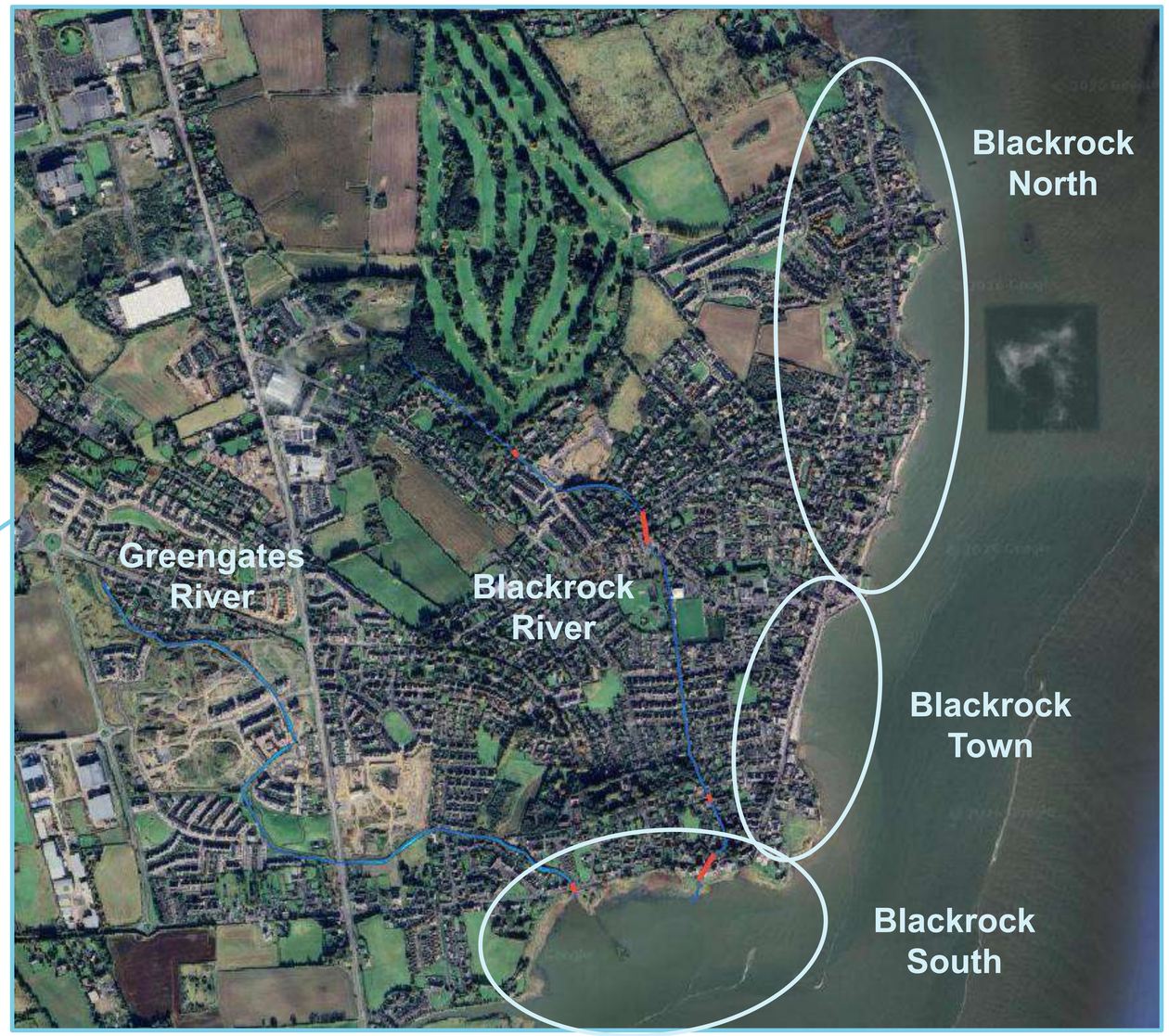
NICHOLAS O'DWYER an RSK company

## SCHEME AREA - Dundalk




Dundalk Flood Relief Scheme Area

## SCHEME AREA - Blackrock



# SCHEME DEVELOPMENT PROCESS

The objective of this project for the town of Blackrock is the identification, design, submission (for planning consent), and the construction of a Flood Relief Scheme to manage and mitigate fluvial (river) and coastal flood risk.

## Scheme Stages

- DATA COLLECTION — COMPLETED
- COASTAL AND FLUVIAL MODELLING — COMPLETED
- OPTION LONGLISTING — COMPLETED
- OPTION SELECTION
- DESIGN
- PLANNING CONSENT
- CONSTRUCTION

A long list of options were complied which were evaluated against various categories to identify the most appropriate solution for your community.

The impacts are evaluated in a scored Multi-Criteria Analysis to determine a ranking for each option. These rankings, together with the public opinions of the options, are used to determine which option should be brought forward as the preferred option.

## Multi-Criteria Categories

- Cost/Benefit Assessment
- Environmental Impacts
- Technical Difficulty and Climate change adaptation
- TODAY
- Public Opinion of Potential Options
- Social Impacts
- Regulatory Impacts

Today, we would like your opinion of the potential options so that your views can be considered when we choose a preferred option for the protection of Blackrock from flood events. Your views will form one element of the evaluation of the emerging preferred option.

Once it is chosen, the emerging preferred option will be presented to the community to allow further comments to be considered before its detailed design and any application for planning consent.

Rialtas na hÉireann Government of Ireland
Tionscadal Éireann Project Ireland 2040
Comhairle Contae Lú Louth County Council
binnies an RSK company
NICHOLAS O'DWYER an RSK company

# OPTION DEVELOPMENT PROCESS

Following the estimation of flood extents, potential flood risk management options were developed and assessed to identify a preferred solution. The option development process includes the following stages:

## FLOOD RISK MANAGEMENT POLICIES

Policies are potential management approaches to address flood risk within an area. These define the alignment of the proposed flood defences.

## FLOOD MANAGEMENT MEASURES

Flood risk management measures are potential solutions to address the impacts of flooding.

*Not all measures are suitable for every location or management policy, so each measure was qualitatively screened to evaluate its appropriateness.*

## OPTIONS LONG LIST

At this stage, a comprehensive long list of potential measures was developed. This represents a wide range of possible approaches to managing flood risk, including both individual measures and combinations of measures. These options broadly align with the policy approaches identified previously.

Each option on the long list was assessed qualitatively against a defined set of criteria, including technical performance, compatibility with local constraints, and environmental, social, and cultural considerations.

Options that did not sufficiently meet these criteria were screened out to produce a more focused shortlist for further development.

*We want to hear your views!*

***That's today***

## EMERGING OPTIONS

A short list was developed from the high-level options that were not eliminated during the long list stage. These shortlisted proposals are progressed through further engineering design and assessment and are referred to as the Emerging Options.

The Emerging Options are presented to the public to gather feedback before undertaking a detailed multi-criteria analysis to identify a Preferred Option.

## PREFERRED OPTION

A Preferred Option is selected and design and planning of the option can commence.

# ENVIRONMENTAL CONSTRAINTS

Dundalk Bay is a designated Special Area of Conservation (SAC) and a Special Protection Area (SPA). SACs and SPAs are protected sites designated under EU legislation (Habitats and Birds Directives). They are designed to meet specific conservation objectives for designated habitats and species. SACs are designated to protect a wide range of habitats or species while SPAs are designated for the protection of bird species. Any proposal that could affect these protected areas must undergo an Appropriate Assessment process. This is a detailed environmental assessment to ensure the project will not adversely affect the integrity of the site.

Designated Areas


## Dundalk Bay SAC

**Qualifying Interests**

- Estuaries
- Mudflats and sandflats not covered by seawater at low tide
- Perennial vegetation of stony banks
- Salicornia and other annuals colonising mud and sand
- Atlantic salt meadows
- Mediterranean salt meadows

*Salicornia*

*Atlantic Salt Meadows*

## Dundalk Bay SPA

**Qualifying Interests**

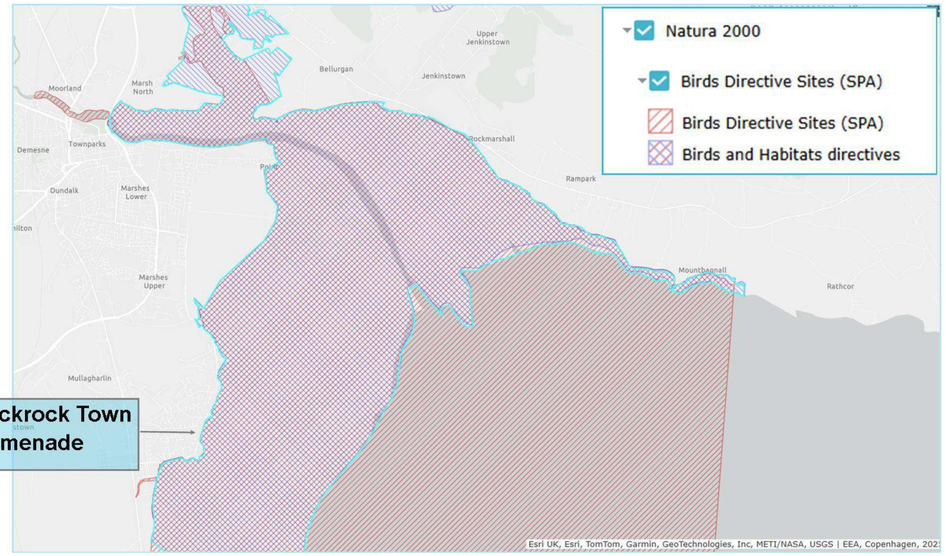
- Great Crested Grebe
- Greylag Goose
- Light-bellied Brent Goose
- Shelduck
- Teal
- Mallard
- Pintail
- Common Scoter
- Red-breasted Merganser
- Oystercatcher
- Ringed Plover
- Golden Plover
- Grey Plover
- Lapwing
- Knot
- Dunlin
- Black-tailed Godwit
- Bar-tailed Godwit
- Curlew
- Redshank
- Black-headed Gull
- Common Gull
- Herring Gull
- Wetland and Waterbirds

*Oystercatcher*

*Lapwing*

*Grey Plover*

# WHAT DOES THAT MEAN FOR THE FLOOD RELIEF SCHEME?




The presence of SAC and SPA designations means that any flood relief proposals must be carefully designed to **avoid or minimise impacts on protected habitats and bird species**, meaning:

- ✓ Seaward expansion should be avoided
- ✓ Habitat impacts must be minimised
- ✓ Nature-based solutions prioritised where feasible
- ✓ Any loss of habitat would require compensation

European environmental legislation requires a rigorous assessment process where works are proposed within protected sites:
Stage 1: Screening for Appropriate Assessment
Stage 2: Appropriate Assessment – Natura Impact Statement
Stage 3: Alternative Solutions
Stage 4: IROPI (Imperative Reasons of Overriding Public Interest)

**WHAT IS IROPI*? (Imperative Reasons of Overriding Public Interest)***

**Conditions:** It is a last-resort exception to the Directive only applicable if there ***are no alternative solutions*** and the public interest overrides the ecological damage.

**Compensatory Measures**: If invoked, the developer must implement measures to ensure the overall coherence of the Natura 2000 network is protected

The **Habitats Directive** requires Member States to inform the Commission of the compensatory measures; this enables the Commission to review whether the compensatory measures are sufficient to ensure that the coherence of the network is maintained.

**Protecting public safety from flooding and protecting the natural environment must both be considered in developing a preferred option**

# FLUVIAL (RIVER) FLOOD RISK

For a 1 in 100 year fluvial event (1% Annual Exceedance Probability (AEP)) + 1 in 2 year tidal event (50% AEP).

## Present Day Scenario


## Drivers of flooding:

- The scheme assessed the flooding risk on Blackrock and Greengates rivers.
- On Blackrock, flooding is driven by low slopes, undersized culverts, and can be worsened by blockages.
- On Greengates, flooding is driven by the downstream coastal water levels coming up the river.

## Mid-Range Future Scenario (MRFS)


## High-End Future Scenario (HEFS)


## Flood Extent Scenarios:

Flood extent maps were developed for the Present Day scenario, and two future scenarios accounting for the potential impact of climate change. The Mid-Range Future Scenario accounts for an increase of 20% in peak flood flows, and extreme rainfall depths, including +500mm of mean sea level rise. The High-End Future Scenario accounts for increase of 30% in peak flood flows, and extreme rainfall depths, including +1,000mm of mean sea level rise.

# TIDAL FLOOD RISK

For a 1 in 200 year tidal event (0.5% Annual Exceedance Probability (AEP)) + 1 in 2 year fluvial event (50% AEP).

## Present Day Scenario


## Mid-Range Future Scenario (MRFS)


## High-End Future Scenario (HEFS)


## Flood Extent Scenario's:

Flood extent maps were developed for the Present Day scenario, and two future scenarios accounting for the potential impact of climate change. The Mid-Range Future Scenario accounts for an increase of 20% in peak flood flows, and extreme rainfall depths, including +500mm of mean sea level rise, and the High-End Future Scenario accounts for increase of 30% in peak flood flows, and extreme rainfall depths, including +1,000mm of mean sea level rise.

# FLUVIAL (RIVER) FLOOD PROTECTION MEASURES

Typical means of providing flood protection are presented below.

## Upstream Storage

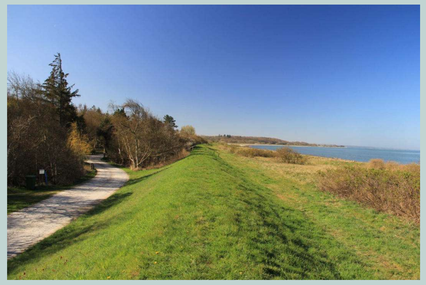
Description:

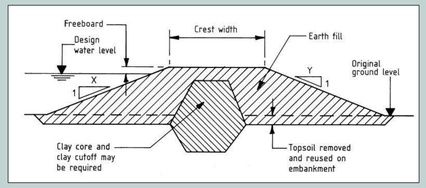
- Upstream storage contains floodwaters for temporary storage. Water is then slowly released back to the river following a flood event. Storage can provide additional habitats and create opportunities to enhance amenity value.

Consequences/effects:

- Loss of land and/or amenities during flood events.
- Sometimes requires an impounding structure such as an embankment, bund, dam and weir for waters to be held back.

## Containment - Embankments






Typical Embankment Cross-Section

Description:

- Embankments are earthen structures built along rivers to create a physical barrier and hold back floodwaters. Embankments often extend over long distances to protect large tracts of land from flooding.

Consequences/effects:

- Embankments require regular maintenance.
- Requires sufficient space. Not suitable in confined areas.

## Culvert Upgrades

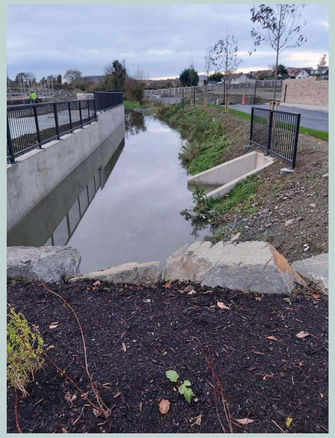
Description:

- Culvert upgrades aim to improve the conveyance of water through the channel in flood events. Upgrades can include the addition of culvert channels or increasing the size of existing channels of the culvert.

Consequences/effects:

- Requires regular maintenance to remove the build up of debris and vegetation or else this can increase flood risk.
- Limited adaptation to climate change.
- Traffic management during construction.

## Containment – Flood Walls



Description:

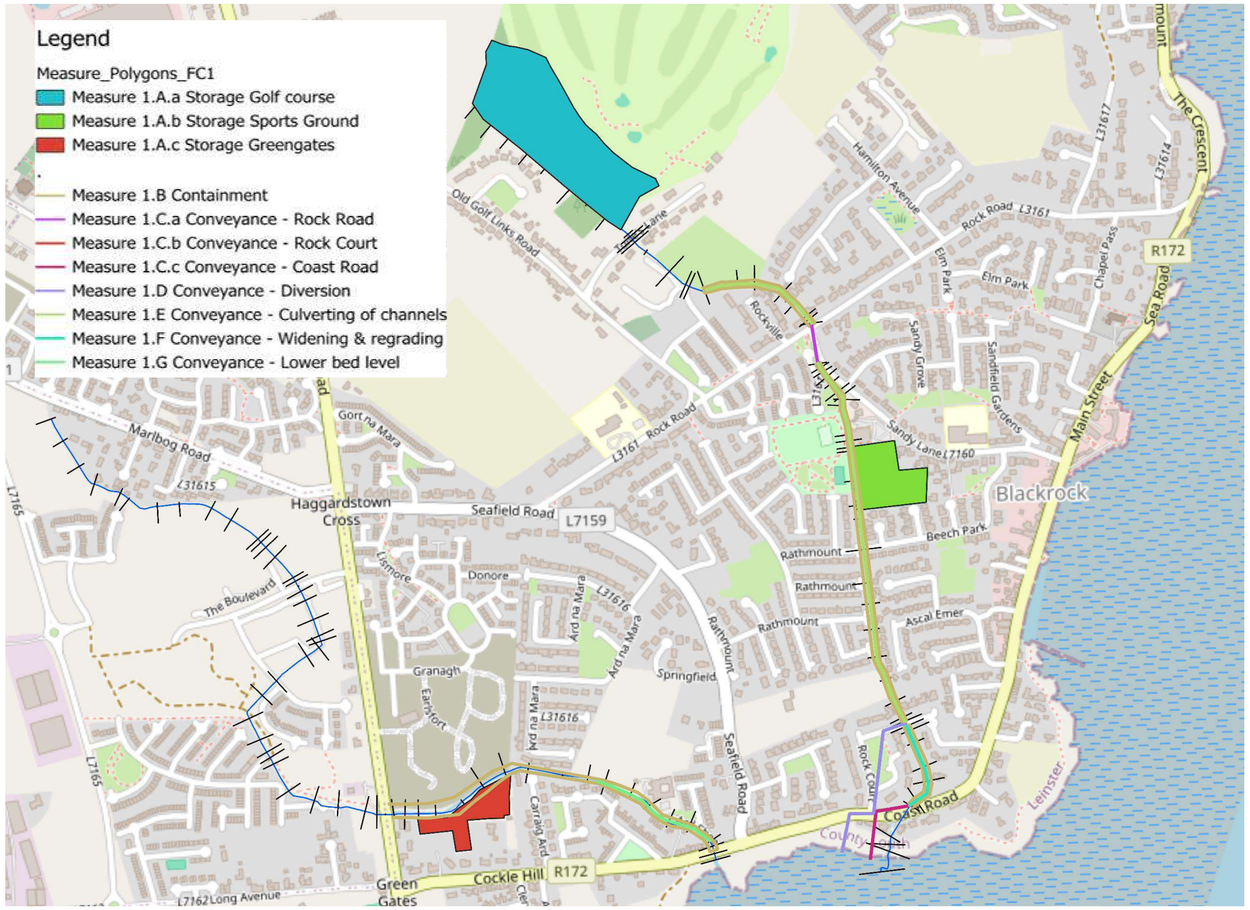
- Flood walls are permanent hard engineered structures built along the banks of a river to create a physical barrier to hold back floodwaters.

Consequences/effects:

- Visually obstructive when higher walls are required.
- Access for debris cleaning may be difficult.
- Can limit access to the river channel.
- Require less lands than an embankment.

# BLACKROCK/GREENGATES AREA

## OVERVIEW OF MEASURES




Blackrock stream is heavily urbanised and culverted/constrained which makes its adaptability to climate change challenging. Known constraints for flow are the Rock Road culvert, the channel downstream of Rock Court and Coast Road culvert. Walls would likely have to be designed for the climate change scenario to avoid future adaptation works. Greengates stream is dominated by tidal downstream water levels which limits applicable measures.

| Discarded measures | |
|---|---|
| 1.A.a – Flood storage in golf course | This measure was discarded due to its limited effect for flood relief as it is too far upstream and has significant environmental and amenity impacts. |
| 1.A.b – Flood storage in sports club | This measure was discarded due to its limited effect for flood relief, and due to the low available volume for a large impact on amenities. |
| 1.A.c – Flood storage in Greengates | This measure was discarded as it has no effect on flood level since the main risk comes from tidal levels (lower down the watercourse). |
| 1.E - Culverting of channels | This measure was discarded as it not adaptable to climate change and it has a high cost. |
| 1.G – Lowering bed in Greengates | This measure was discarded as it has no effect on flood level since the main risk comes from tidal levels. |

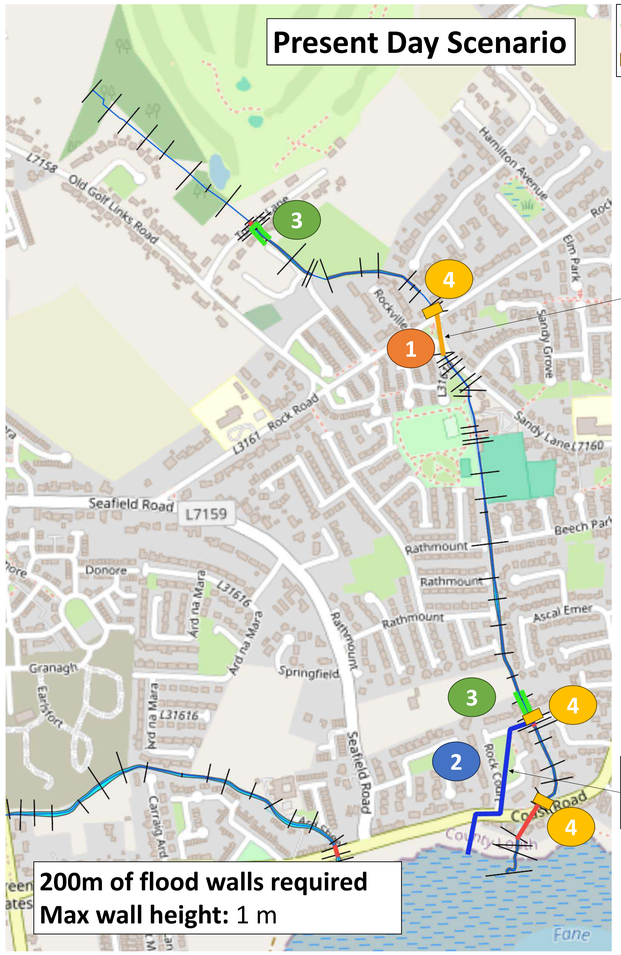
# BLACKROCK RIVER

## OPTION 1: Diversion and flood walls

This option, for the present day scenario, includes:

1. Rock Road culvert upgrade.
2. Addition of an overflow pipe installed through Rock Court upstream of the existing culvert with a new outfall at the coast
3. Addition of flood walls which can be extended for future proofing.
4. Screen upgrades on Rock Road, Rock Court and Coast Road

This scheme is designed for the present-day scenario but climate change adaptation measures (for MRFS or HEFS) may be incorporated into the final detailed design.
The High-End Future Scenario defences are presented for illustration only.




### Advantages

The diversion and the culvert upgrade greatly reduces the need for flood walls at the back of private properties.

The diversion is mainly on public land/green spaces and road and could create new habitats.

No risk to archaeological heritage.

No protected habitats reported in surveys in direct proximity to works.

Removes need for culvert upgrade on Coast Road.

### Limitations

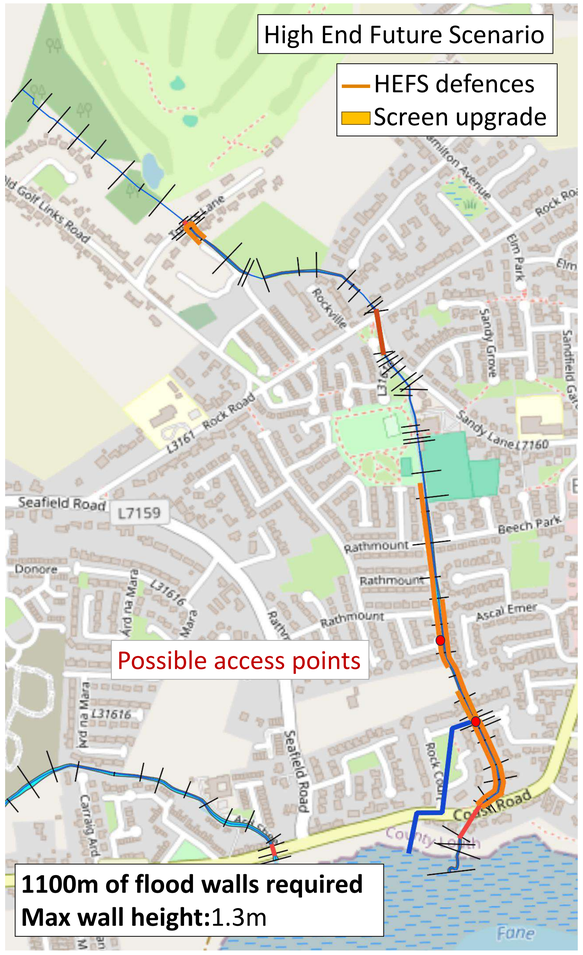
Visual impact for the flood walls but limited height expected (max 1m).

Management of debris on culvert required.

Potential for loss of garden areas on local properties.

New outfall will likely require a Maritime Area Consent.

The works / outfall are within Dundalk Bay designated protected sites (SPA, SAC), and Geological Heritage Area, as well as a designated Ramsar Site.



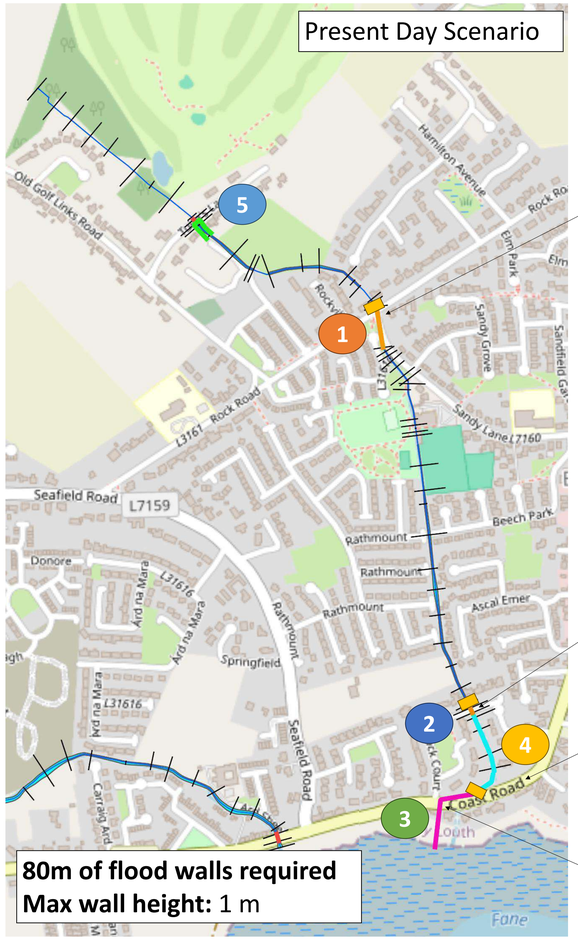
# BLACKROCK RIVER

## OPTION 2: Culverts upgrade, regrading and flood walls

This option, for the present day scenario, includes:

1. Rock Road culvert upgrade + new screen
2. Rock Court culvert upgrade + new screen
3. Coast Road culvert upgrade + new screen
4. Widening and regrading of channel downstream of Rock Court culvert
5. Addition of flood walls which can be extended for future proofing.

This scheme is designed for the present-day scenario but climate change adaptation measures (for MRFS or HEFS) may be incorporated into the final detailed design.
The High-End Future Scenario defences are presented for illustration only.




### Advantages

The upgrade of the 3 culverts and the regrading and widening of the channel significantly reduce the length of flood walls required.

It removes the local constraints in the channel near Coast Road and is more adaptable to climate change.

Strong localised effect.

Culvert upgrades require limited costs.

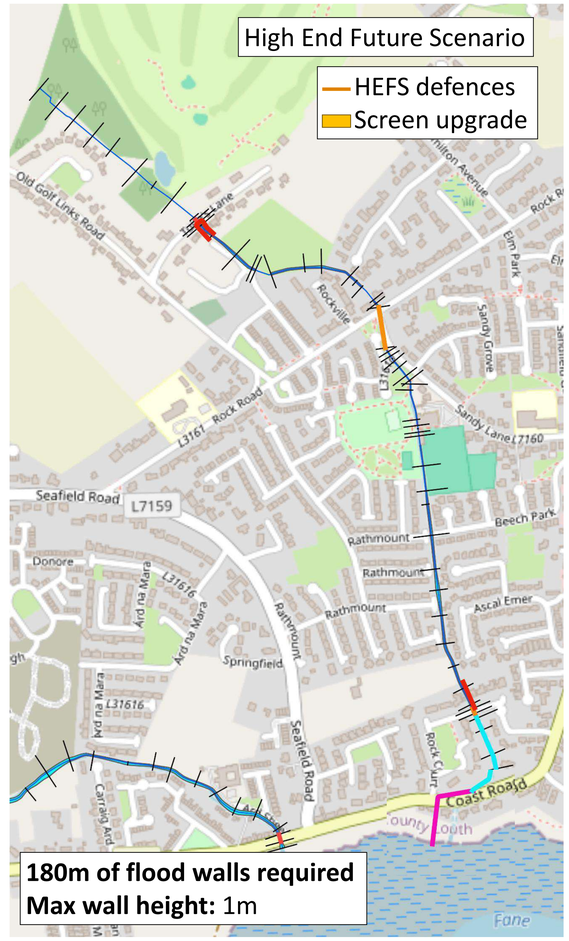
### Limitations

Visual impact for the flood walls but limited height expected (max 1m).

The widening and regrading of the channel may result in a local loss to some garden properties.

Will require future management of debris on culverts.

The upgrade of the Coast Road Culvert will likely require a Maritime Area Consent.



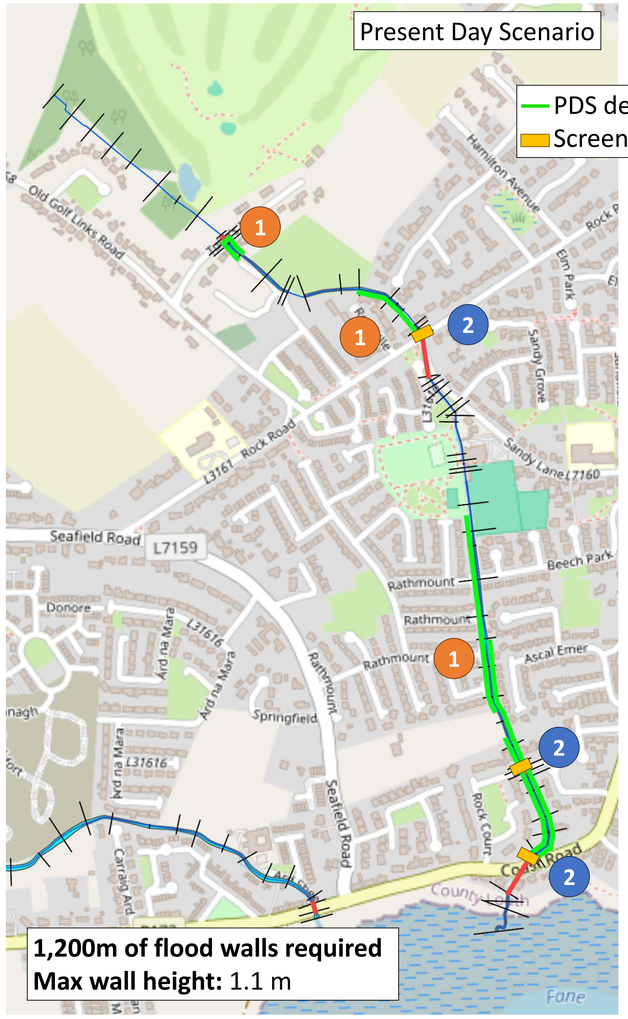
# BLACKROCK RIVER

## OPTION 3: Flood walls

This option, for the present day scenario, includes:

1. Addition of flood walls which can be extended for future proofing.
2. Screens at existing culverts.

This scheme is designed for the present-day scenario but climate change adaptation measures (for MRFS or HEFS) may be incorporated into the final detailed design.
The High-End Future Scenario defences are presented for illustration only.




### Advantages

Flood walls are effective at reducing flooding.

No risk to archaeological heritage.

No protected habitats reported in surveys in direct proximity to works. and not within a European designated site (SPA / SAC)

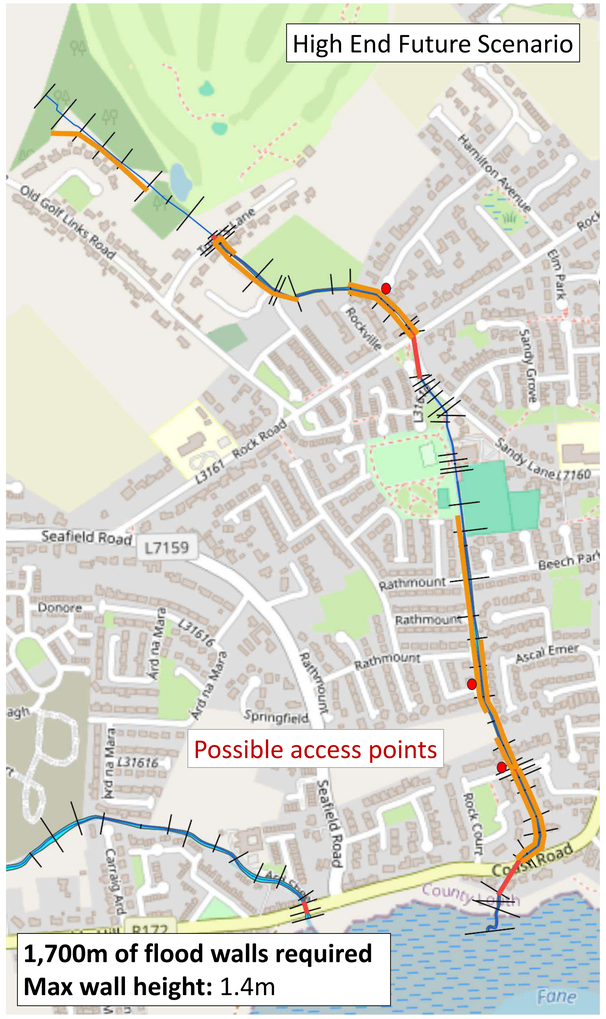
Limited costs, but dependant on wall heights.

### Limitations

Visual impact of flood walls, which are likely to be higher than those in options 1 and 2.

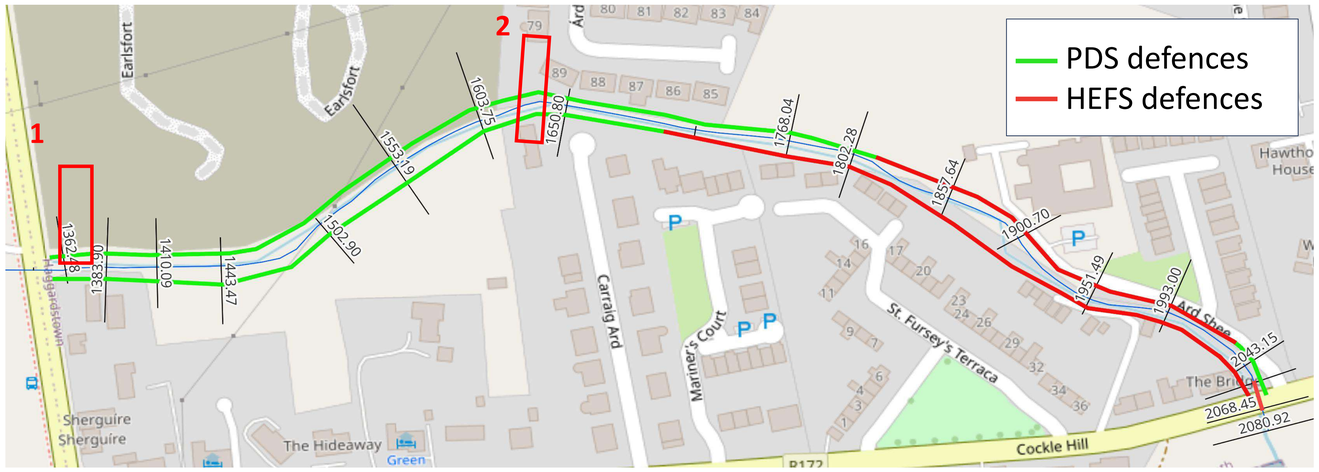
Extent of flood walls significantly higher than for options 1 and 2 resulting in significant work at the back of private properties.

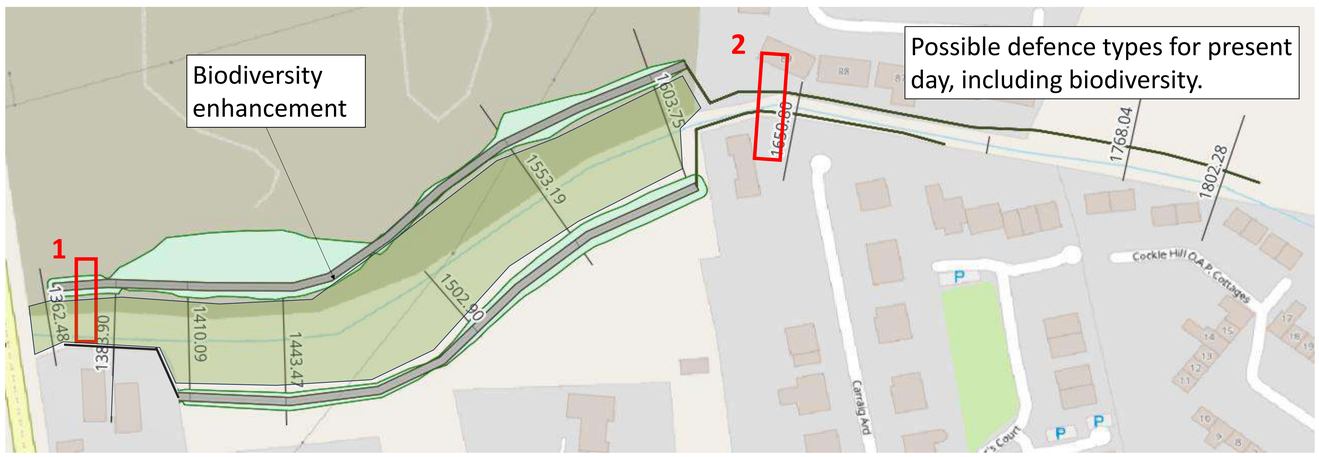
Reduction in access to the river for local residents.



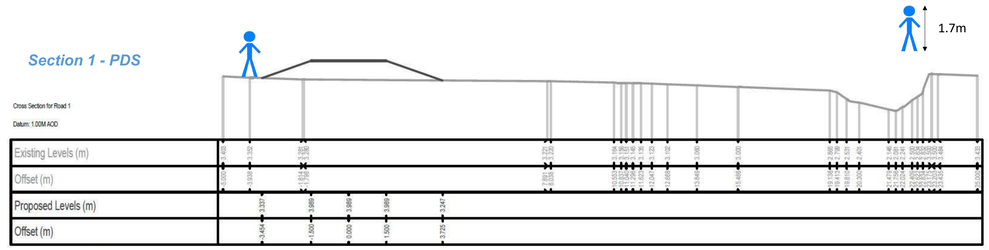
# GREENGATES AREA

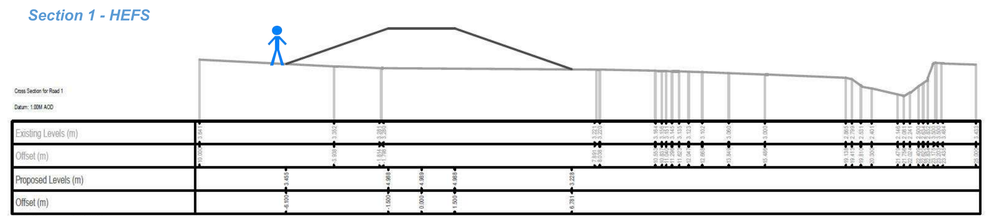
For Greengates, embankments and flood walls are proposed as the levels of the defences are dictated by the tidal effects. Space constraints will determine whether embankments or walls will be proposed for the final design. For the present day scenario, the total proposed length is 860m (shown in green below) and an extra 530m is required for climate change (in red below). The maximum height is 2.3m for the present day scenario. Setting back the embankment lines could provide potential for biodiversity enhancement.

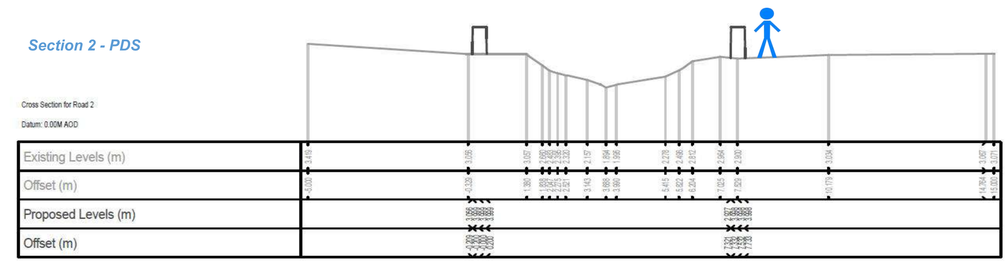


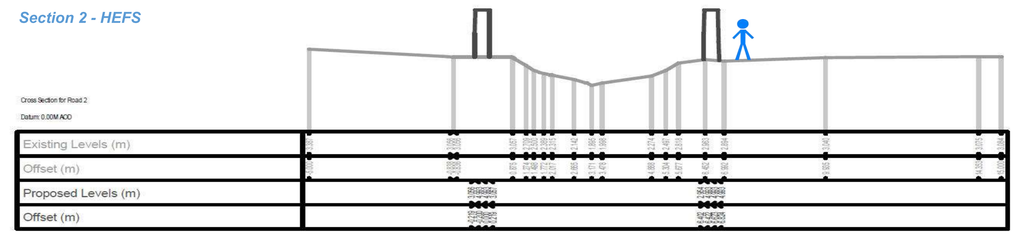




This scheme is designed for the present-day scenario but climate change adaptation measures (for MRFS or HEFS) may be incorporated into the final detailed design.
The High-End Future Scenario defences are presented for illustration only.



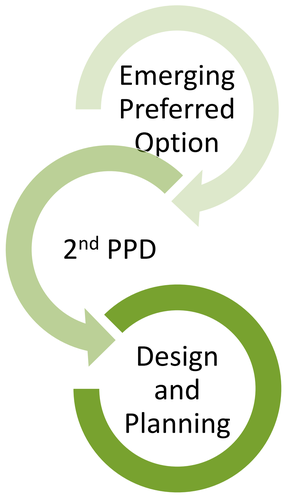
# NEXT STEPS

Once the preferred option is identified in Q3 2026, the flood scheme will progress, and the below indicative programme will be revisited to identify any opportunities to advance part or all of the works.

## Project Timeline

| Activity | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Stage I - Scheme Development and Design** | | | | | | | | | | | | | | | | |
| **Stage II - Planning / Development Consent** | | | | | | | | | | | | | | | | |
| **Stage III - Detailed Design and Tender** | | | | | | | | | | | | | | | | |
| **Stage IV - Construction** | | | | | | | | | | | | | | | | |
| **Stage V -Handover of Works** | | | | | | | | | | | | | | | | |

## WHAT IS NEXT:




Following this PPD and the gathering of the public's information and opinion, an emerging preferred option will be identified which best meets the Social, Economic, Environmental and Technical criteria to deliver a sustainable solution.

A second PPD will be held to present a Preferred Option.

The Preferred Option will be developed, designed and brought forward for statutory consultation and submitted for planning in 2028

**THANK YOU FOR YOUR ATTENDANCE.**
**IT IS IMPORTANT FOR US TO HEAR YOUR OPINIONS SO THEY CAN BE CONSIDERED WHEN DECISIONS ARE MADE.**

## CONTACT US

Please have your say – speak to the project representatives today and fill in the questionnaire.

Further questions can be directed to:
Louth County Council or to Nicholas O'Dwyer Limited

Dundalk Flood Relief Scheme
Nicholas O'Dwyer Ltd. Unit 4E Nutgrove Office Park, Nutgrove Avenue, Dublin D14 V3F6

DundalkArdeeFRS@nodwyer.com
https://www.floodinfo.ie/frs/en/dundalk/home/