

Ballyhale Flood Relief Scheme

Public Consultation No 2: Emerging Preferred Scheme

August 2021



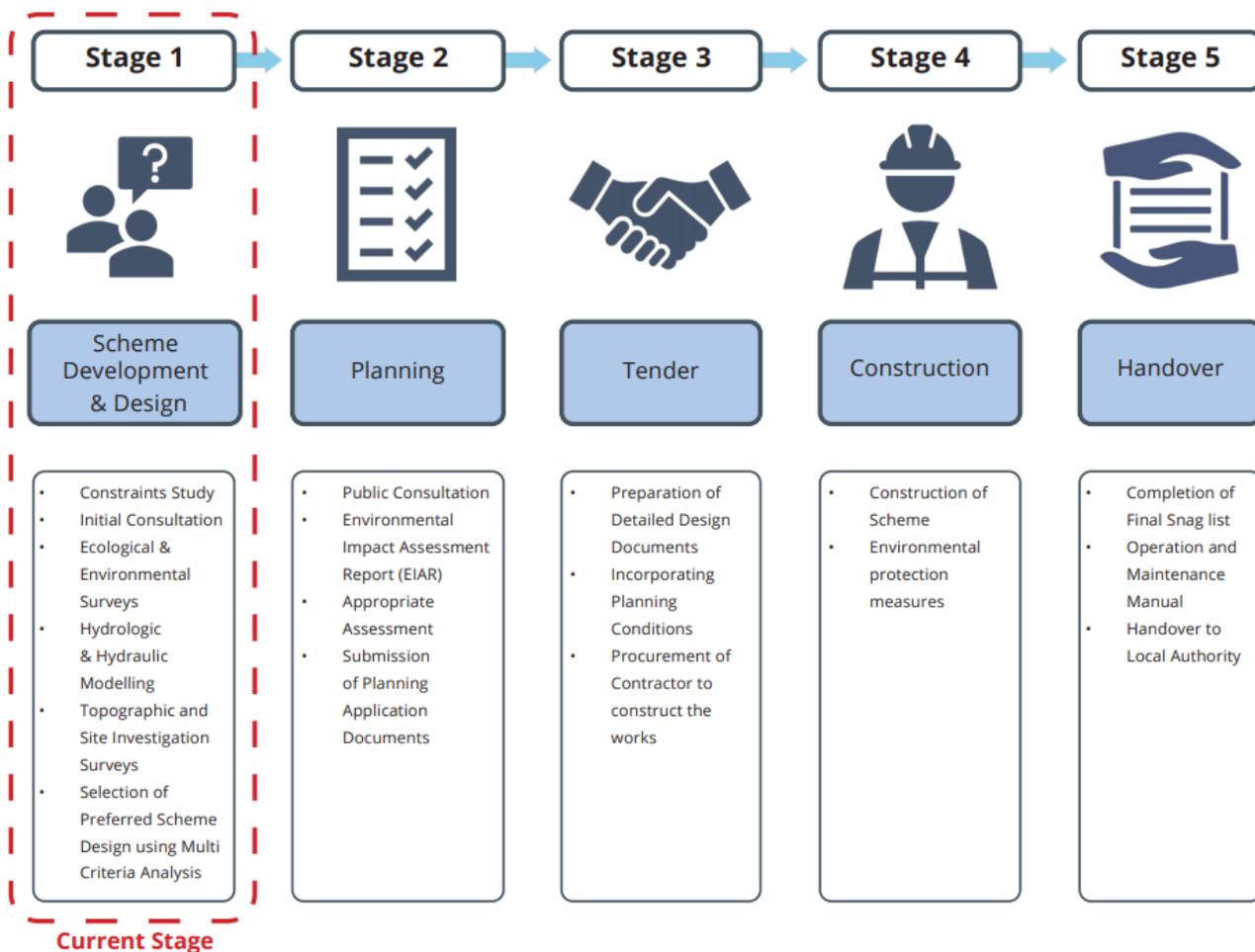
Background To the Study

The Office of Public Works (OPW) commissioned the South Eastern CFRAM study to determine locations in Ireland which may be at risk of flooding. This study concluded in 2017 and determined that properties in Ballyhale are at risk of flooding for the current day 1% Annual Exceedance Probability (AEP) event. This led to Ballyhale being approved for funding for a Flood Relief Scheme which involves a detailed study of flooding and constraints in Ballyhale

Kilkenny County Council have appointed DBFL Consulting Engineers to develop a sustainable flood relief scheme for Ballyhale. DBFL is an Irish owned multi-disciplinary engineering consultancy with head office located in Dublin and regional offices in Waterford & Cork cities. The scheme is funded by the Office of Public Works (OPW).

The objective of this project is the identification, design and construction of a Flood Relief Scheme, that is technically, socially, environmentally and economically acceptable, to alleviate the risk of flooding to the Community of Ballyhale.

The current stage is Stage 1. This establishes the existing causes of flooding and constraints in the area and identifies an emerging preferred scheme. This consultation is intended to get public feedback on the emerging scheme design. The project team are pleased to invite residents, businesses, landowners and other interested parties to participate by providing comments or other background information.



Flood Processes

Ballyhale is within the catchment of the Little Arrigle River which is a tributary of the River Nore. Ballyhale is affected by a tributary of the Little Arrigle River called the Ballyhale River. The Ballyhale River enters the village near the church and splits into two channels either side of the church.

A number of culverts/bridges are present on the watercourse along its route through the village.

A detailed hydrological study and hydraulic modelling of the existing flood risk environment has been carried out as part of this project. The predicted 1% AEP [1 in 100 year] flood event are shown in the Figure below.

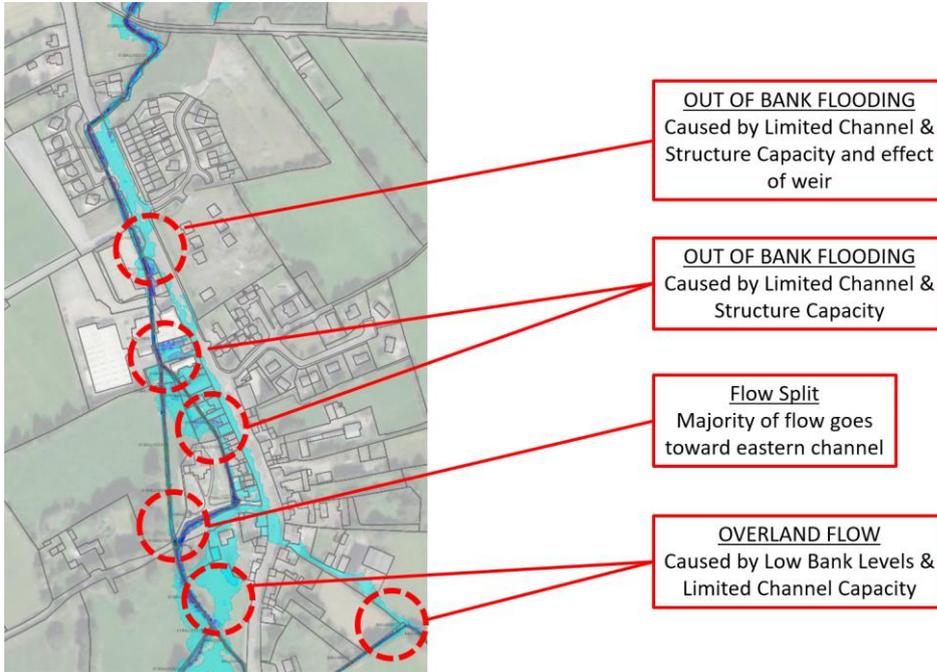


Fluvial Flood Extents 1% AEP

The primary flood mechanism for the flooding within the village is caused by structure incapacity with resulting backwater effect causing out of bank flooding along the Ballyhale River resulting in flooding at the rear of the Main Street properties, coupled with two significant overland flow routes from the south of the village.

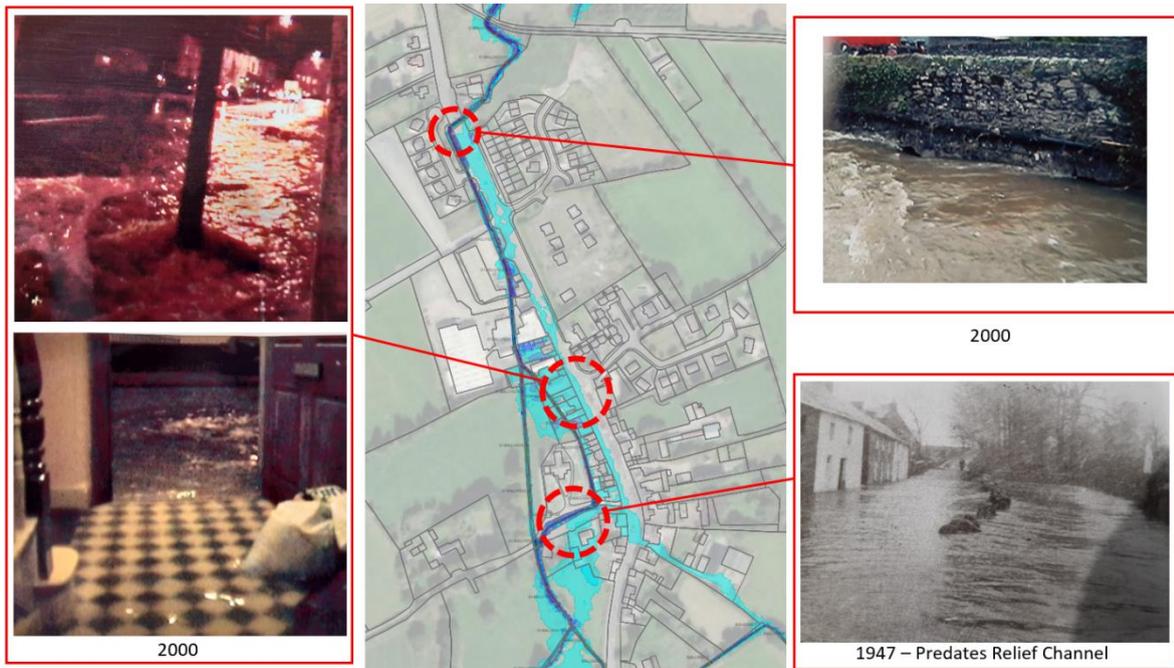
Flood Processes

The flow route diverges at the Chapel Lane junction, flows that tend down Chapel Lane enter the western channel at the church entrance. Flows that tend down Main Street enter the Ballyhale River along the Main Street.



Flood Mechanisms - Overview

In higher flow events, the flow path on the Main Street continues and re-joins the Ballyhale River at either the downstream section of the 'Main Street Bridge' at the Hazelbrook development or downstream of the Station Road bridge.



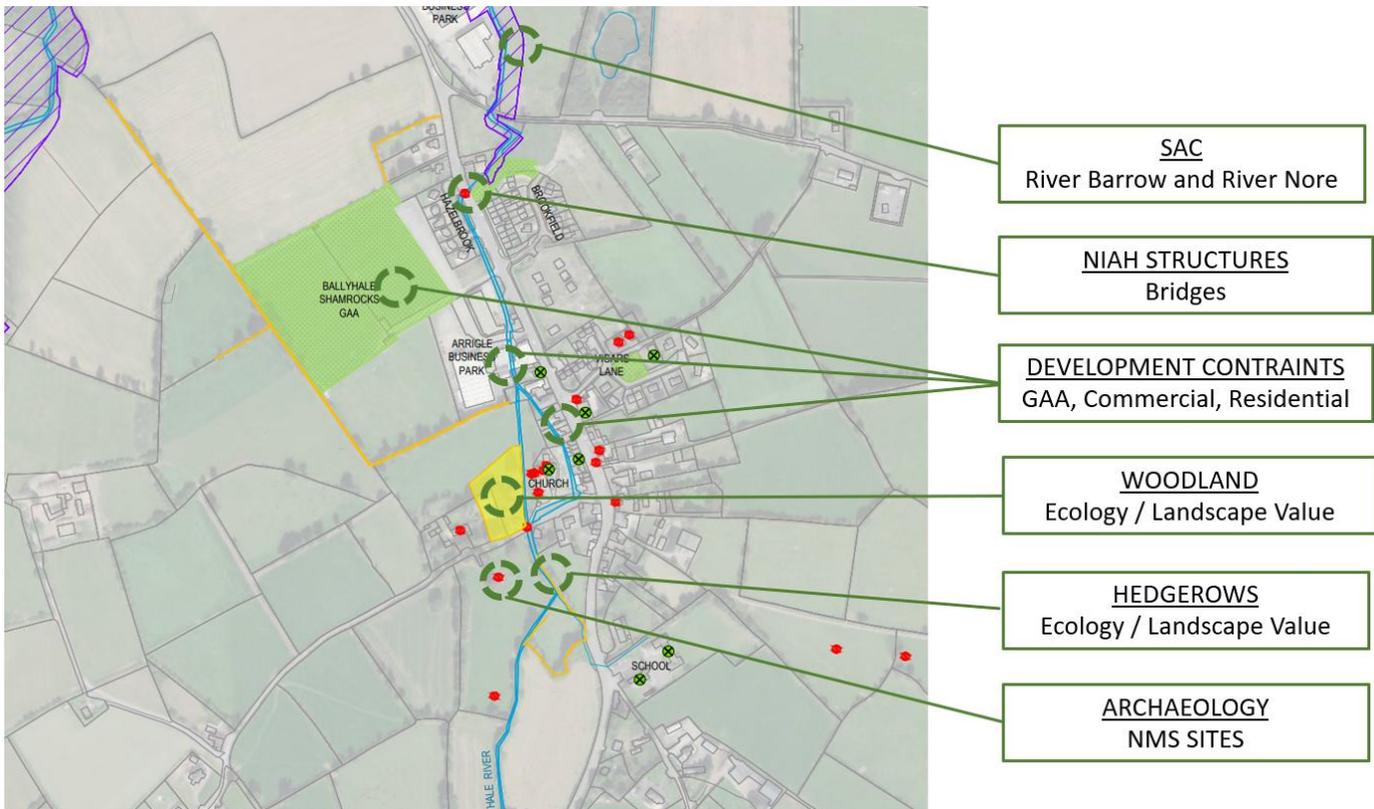
Previous Flood Events - Overview

Constraints

A range of studies have been carried out to identify Social, Environmental, Economic and Technical Constraints. Various specialist studies were undertaken to establish the existing conditions & constraints in the surrounding area.

These studies include Topographical and River Surveys, Water Environment, Land & Soils, Biodiversity (Freshwater Ecology, Mammals, Bats), Cultural Heritage, Landscape and Air & Noise.

An initial public consultation was also carried out in May 2020 to get local knowledge and public feedback to help understand existing conditions and to develop options



Constraints Mapping

Appraisal of Options

An Initial screening was carried out to determine if various flood protection methods could be implemented to lower the flood risk within Ballyhale. A table of the screening carried out is shown below.

Table: Initial Screening of Flood Risk Management Options

Flood Risk Management Option	Applicability	Social Screening	Economic Screening	Environmental Screening	Cultural Screening	Screening Result
Do Nothing	x					Not Viable
Do Minimum	x					Not Viable
Maintenance Programme	✓	✓	✓	✓	✓	Viable
Flood Forecasting and Warning	x					Not Viable
Individual Property Protection	x					Not Viable
Property Relocation	x					Not Viable
Land Use Management	x					Not Viable
Improvement of Channel Conveyance	✓	✓	✓	✓	✓	Viable
Overland Flood Paths	x					Not Viable
Rehabilitation of Existing Defences	x					Not Viable
Pumping	x					Not Viable
Upstream Flood Storage	✓	✓	✓	✓	✓	Viable
Flow Diversion	✓	✓	✓	✓	✓	Viable
Culverting	x					Not Viable
Hard Defences	✓	✓	✓	✓	✓	Viable
Debris Control Measures	✓	✓	✓	✓	✓	Viable
Natural Retention Measures	✓	✓	✓	✓	✓	Viable

The viable measures were then examined to establish if they could be developed into a scheme which would provide the required level of protection from flooding (1% AEP [1 in 100 year] flood).

Each developed scheme was then subject to a Multi Criteria analysis with Social, Environmental, Economic and Technical scoring to determine the most suitable option.

Emerging Preferred Option: Option A

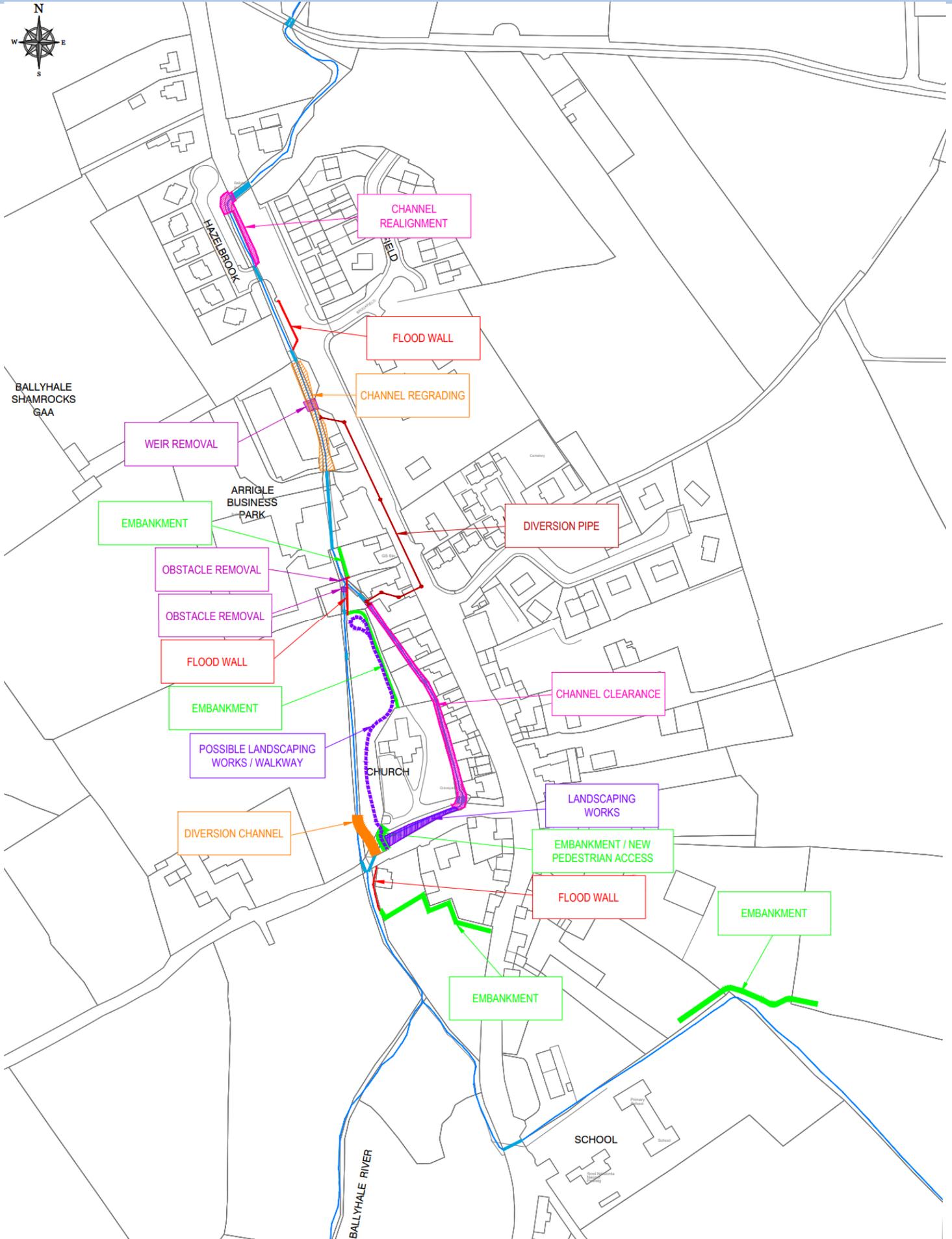
Option A consists of a range of interventions along the watercourse reach. The general intent of Option A is to enhance the flow capacity and level of defence through the town so that the design flows can be conveyed through the town without causing property flooding.

- Embankments are proposed upstream of the village to cut off overland flow routes (these embankments are included in all options)
- Hydraulic modelling and review of survey information has found that the majority of flow at the flow split at Chapel Lane tends to flow to the eastern channel to the rear of properties. The proposal seeks to redirect flow to the open channel western branch. This removes flow from the heavily modified and under capacity eastern channel which is adjacent to a number of at-risk properties. It allows a continuous flood defence to be provided between all river flows and the at-risk properties. This would involve removal of a portion of the existing church walkway to allow the streams to be connected and a replacement access to the church walkway would be provided
- Only a very limited flow will be maintained in the eastern channel, therefore landscaping works will be carried out in the channel to reprofile the bed and banks to suit the lower flow conditions.
- It has been found that flood levels are elevated upstream of the long culvert under Arrigle Business Park. The discharge of the eastern channel is therefore proposed to be piped down Main Street to connect downstream of this culvert. This prevents elevated flood levels backing up through the eastern channel and affecting the at risk properties.
- The channel at Ballyhale Business Park is to be regraded and the existing weir removed to increase capacity in the channel
- It may be possible to deliver a future riverside pathway linking to the existing church walkway. The feasibility of including this with the flood scheme is to be reviewed as the scheme progresses
- When compared to other options considered via Multi Criteria Analysis Option A
 - Receives the Highest MCA Option Selection Score
 - Represents the lowest PV Cost
 - Provides the Highest Economic BCR

	Multi Criteria Score Option Selection	Present Value Cost	Benefit to Cost Ratio
Option A			
Option B			
Option C			
Option D			

Summary of Multi Criteria Analysis Results

Emerging Preferred Option: Option A



Option A Schematic layout

Emerging Preferred Option: Option A



STONE WALKWAY



WETLAND TYPE PLANTING AND ROCKS

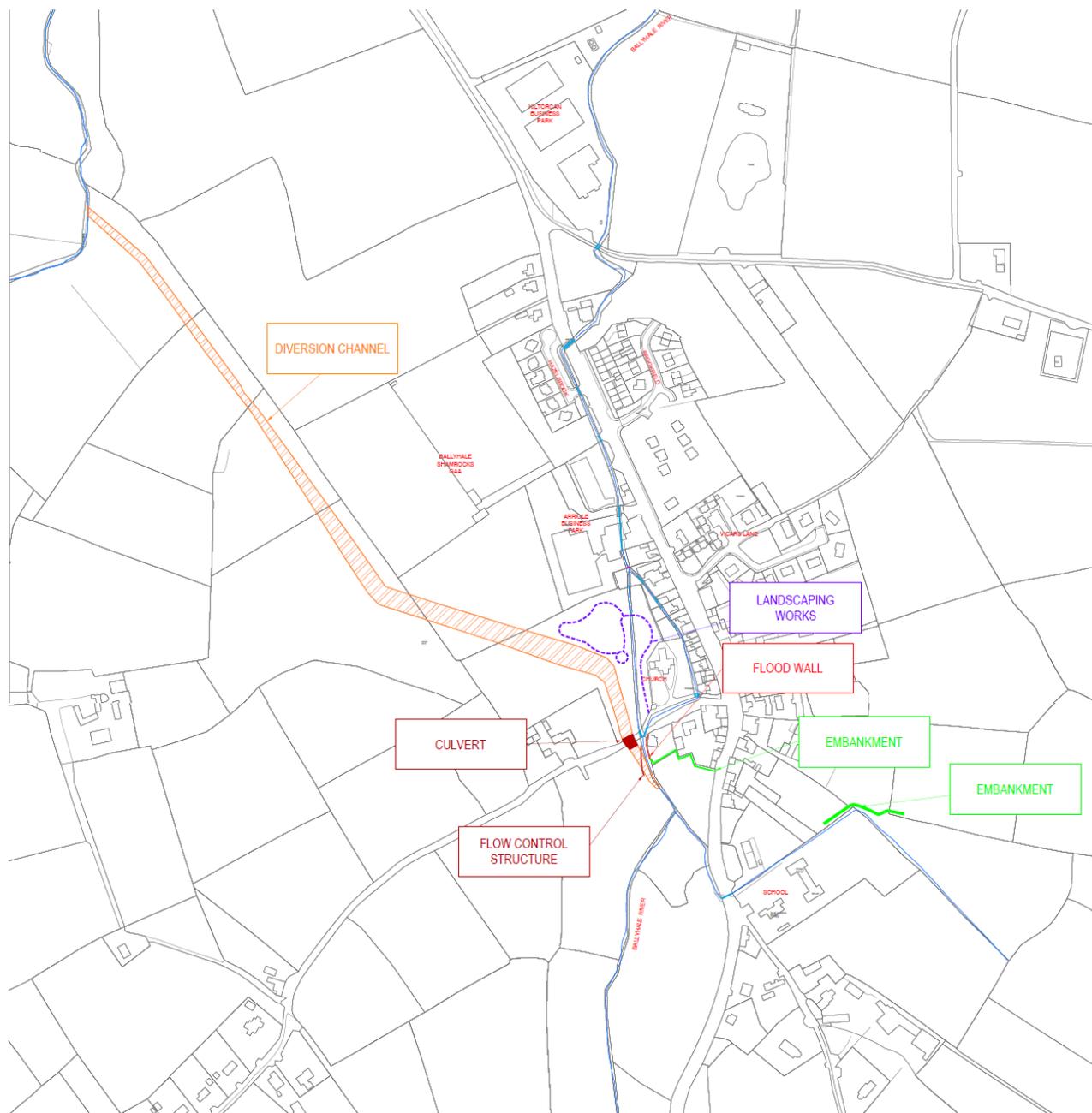
Black cohos, Cowslip, Ragged robin, Yellow iris, Siberian iris, Bugle weed, Tufted hair grass, Meadowsweet,

Concept Landscaping Proposals (Vicinity of Church). Including Potential Riverside Walkway

Other Options Considered -Option B

Option B aims to create an overflow diversion channel around the village and discharges to the Little Arrigle River. It would retain normal flows in the existing system and divert flows above the existing capacity into the diversion.

This option is similar to what was proposed in the original CRFAM Options report however the route has been amended to avoid the GAA grounds due to unacceptable social/cultural impacts. It was found to result in a number of negative environmental effects associated with significant earthworks due to topography (up to 6m cut depth required) and due to diversion to a different river. The level of earthworks and rock excavation anticipated also led to a high predicted cost.

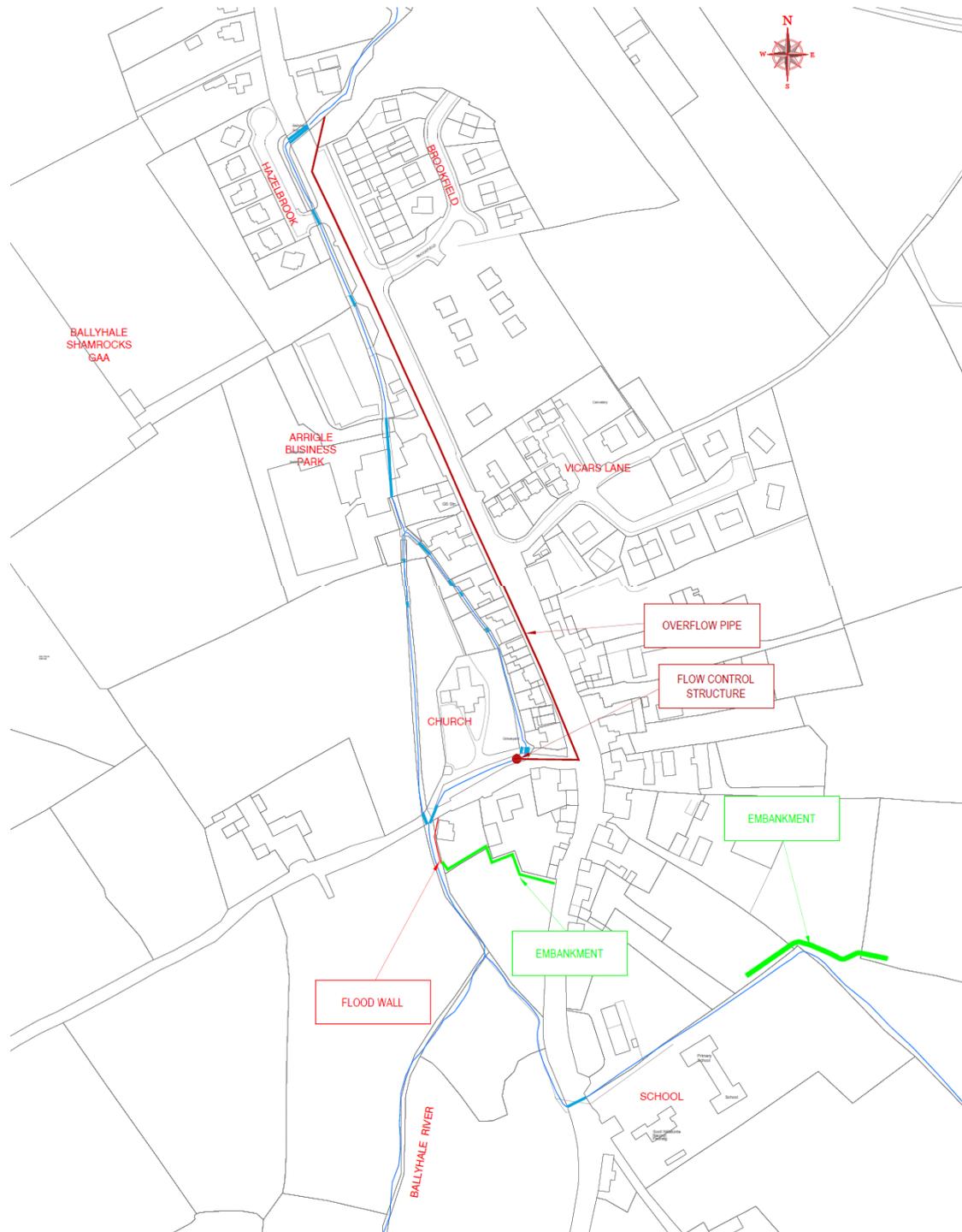


Schematic Option B layout

Other Options Considered -Option D

Option D aims to create an overflow piped route along the main street and discharges back into the Ballyhale River downstream of the village.

The routing for the piped overflow channel follows the main street of Ballyhale and would provide a bypass for flows in excess of the existing flow capacity through the village. This option would require a large diversion pipe which would traverse the length of the Ballyhale main street. It was found to result in a number of negative environmental effects and poor climate change adaptability.



Schematic Option D layout

Your Chance to Shape the Scheme

The Design Team are keen to incorporate the views and local knowledge of the local community and others who may also have an interest in the plans. Please lodge any comments or queries you have through the Kilkenny Consultation Portal (link below) or via the contact details provided below.

If you wish to book a follow up consultation with a member of the project team to chat through your thoughts and to allow us to answer any questions you may have, please request this by contacting us.

Due to COVID-19 restrictions, we can't hold a public consultation event but the design team will hold a short online presentation outlining the scheme and will hold a Q&A session.

The online consultation will be held at **7.30pm on 19th August 2021**. You can attend the consultation by clicking on the link below at the scheduled meeting time

Link to Join Online Meeting - <https://tinyurl.com/3nmejvwp>

Following this round of public consultation, comments received will be incorporated to the scheme design and the planning application documents for the scheme will be prepared. As part of the Statutory Planning process there will be another opportunity to make submissions on the scheme

Scheme Documents

The full set of documents for the emerging options can be found at:

<https://consult.kilkenny.ie/>

Submissions can also be made via this consultation portal until 30/08/2021



Queries

Comments or queries on the scheme can also be sent to Kilkenny County Council:

Post to: Flood Relief Capital Office,

The Lodge, County Hall, Kilkenny.

Email to: declan.fitzpatrick@dbfl.ie

