

# Dunkellin River and Aggard Stream Flood Relief Project

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**Project Manager: (name)**

**NOTE: This document is not the Official Planning & Control document for this project. The objective of this document is to keep the public informed of project progress on social media and on-line platforms and to support and complement those working directly on the project. This document relies wholly on publicly available information from the stakeholders involved in the initiation, planning and execution of the project. In this context it is not the intention of this exercise to undermine any authority involved with the execution of “Dunkellin River and Aggard Stream Flood Relief Project”.**

# Dunkellin River and Aggard Stream Flood Relief Project

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# 1 Dunkellin River and Aggard Stream Flood Relief Project

This document is a project planning and control document for the Flood Relief Project at the Dunkellin River and Aggard Stream. It has been put together in the public interest to give information on the project and monitor progress. The works will consist of channel deepening in Craughwell village, channel widening at Rinn Bridge, selective channel maintenance downstream of the Rahasane Turlough and channel widening from Dunkellin Bridge to the N18 in Kilcolgan. The project will also include the completion of maintenance works and culvert replacement works along the Aggard stream.

## 1.1 Project Integration

In 2010 a study on flooding on the Dunkellin River and the Aggard Stream (from Craughwell Village to Kilcolgan) was commissioned as a result of flooding that occurred in the area in November 2009. A previous application for a Flood Relief Project at Dunkellin River and Aggard Stream was withdrawn on 01/12/2011 (An Bord Pleanála Case reference: PL07 .JS0010)

### 1.1.1 Project Initiation

On March 11, 2016 An Bord Pleanála granted permission for the project with conditions. Application Case reference: PL07 .JA0035 Appendix 1.

#### 1.1.1.1 Project Definition

The Dunkellin River is a major watercourse in the area with a total catchment of 373km<sup>2</sup>. In the vicinity of the village of Craughwell to the point where it is joined by the Aggard Stream the river is known as the Craughwell River. It flows largely in an east to west direction entering Galway Bay at Kilcolgan. In the upstream area east of Craughwell village the Dunkellin is composed of a dense network of smaller streams which merge close to Craughwell. The other main tributary of the Dunkellin is the Aggard Stream which joins the Dunkellin downstream of Craughwell. This is a very small watercourse. In Craughwell village is a bypass channel which takes some flow from the Dunkellin in times of high water levels.

The area around the Dunkellin has a long history of flooding. The Dunkellin and Aggard Stream form part of the Dunkellin Drainage District constructed around 1857 which involved widening and deepening of existing channels and removal of bends and creation of new cuts. Its purpose was related to drainage of agricultural lands. A further arterial drainage scheme was undertaken in the early 1920s and 1950. Flooding has regularly occurred notably in 2015, 2009 and 2005. At the time the 2005 flood was a record event and then the 2009 exceeded that event. More than 20 homes have been flooded in the area and many roads blocked for more than six months at a time.

## Dunkellin River and Aggard Stream Flood Relief Project

No works are proposed in Zone 2 of the Dunkellin which encompasses the lands in the vicinity of and including Rahasane Turlough.

### Legislative Requirements

The following Legislation governs flood relief projects.

Directive 2007/60/EC on the Assessment and Management of Flood Risks.

Flood Policy Review Group in 2004 - Flood Policy Review- Final Report.

The National Development Plan (NDP) 2007-2013.

Planning System and Flood Risk Management – Guidelines for Local Authorities, 2009.

European Communities (Assessment and Management of Flood Risks) 2010 (S.I. No. 122 of 2010).

Catchment Flood Risk Assessment and Management (CFRAM) Programme.

Regional Planning Guidelines for the West 2012-2022. Policy SPP11: Objective SPO31:

Draft Regional Flood Risk Appraisal.

The Galway County Development Plan 2009-2015. Objective HL40:

The Draft Galway County Development Plan 2015-2021. Policy FL

### **1.1.1.2 Stakeholder Consultation**

In March 2011, when the environmental assessment work was being commenced, a letter was issued to twenty-nine statutory and non-statutory stakeholders informing them of the commencement of the environmental assessment of the proposed flood relief project and seeking their feedback.

Two public information evenings were held in Craughwell (17th May 2011 & 15th July 2014) during the course of preparing the environmental reports for the project.

A number of meetings took place with Galway County Council, the OPW, the design engineers, the environmental consultants and various statutory bodies and interested parties

### 1.1.1.3 Undertake Environmental & Natura Impact Study

The EIS was carried out by RPS Group Ireland. Work commenced on the EIS in the 1<sup>st</sup> quarter of 2010 and the report was signed off on 8th October 2014. The majority of the information contained in this document has been sourced from the EIS and from An Bord Pleanála's report.

### 1.1.1.4 Project Charter

#### **Goal**

The over-riding goal of the project is to provide flood relief in the catchments of the Dunkellin River and Aggard.

#### **Stakeholders**

Teagasc	Department of Agriculture, Fisheries and Food
Geological Survey of Ireland	Development Applications Unit
Clarinbridge Oyster Co-Op Society Ltd	Inland Fisheries
National Roads Authority	Bord Iascaigh Mhara (BIM)
An Taisce	Birdwatch Ireland
Bat Conservation Ireland	Fáilte Ireland - West
Western River Basin District Project Office	Heritage Officer, Galway CC
Environment Department, Galway CC	Water Services Unit, Galway CC
Planning Department, Galway CC	Roads & Transportation Unit, Galway CC
EPA Headquarters	Irish Farmers Association (Galway Branch)
The Marine Institute	IFA Aquaculture
Irish Shellfish Association	Galway Rural Development Company Ltd
Western Development Commission	Galway Archaeological and Historical Society
Irish Rail	National Roads Authority
Residents of the area	The General Public

**Budget**

The budget for the event is €6 million euro.

**Funding**

The project is to be funded by the Office of Public Works.

**Timescale**

The completion date is not determined yet and the duration of the project is not established. .

**Resources**

The resource requirements are: To be established

**Project Roles**

Briefly outline the roles of project human resources. (Project Team, Sponsor, Steering Group etc.)

**Signed**

\_\_\_\_\_

Date: \_\_\_\_\_

(Sponsor)

**1.1.2 Success Framework**

**1.1.2.1 Select Project Resources**

The business requirements are the specifications that describe the functions that the product is expected to provide. The identification and attainment of Project Resources is the first order of business meeting those requirements. Galway County Council (GCC) is the Contracting Authority with overall responsibility for the management and implementation of the Dunkellin River and Aggard Stream Flood Relief Project.

The EU Flood Directive (2007/60/EC) was transposed into Irish law through the European Communities (Assessment and Management of Flood Risks) Regulations 2010 (S.I. No. 122 of 2010). The regulations appoint the Commissioners of Public Works in Ireland as the Competent Authority under the Directive, reinforcing the Lead Agency role the OPW was given in 2004 under

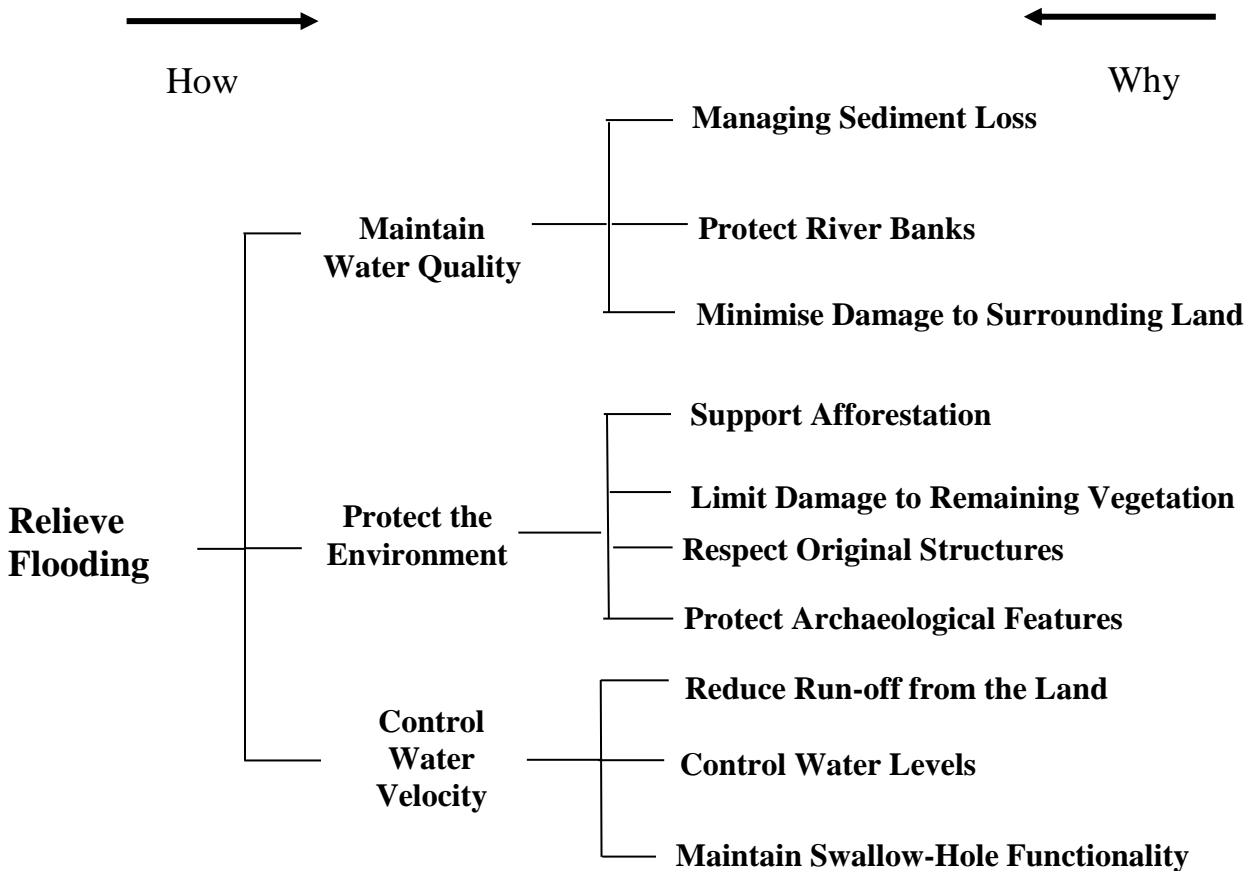
the National Flood Policy. The EU flood regulations, identifies the OPW as the Lead Agency and roles for other organisations, such as the Local Authorities, Waterways Ireland and ESB, to undertake certain duties with respect to flood risk within their existing areas of responsibility.

The OPW has developed a Catchment Flood Risk Assessment and Management (CFRAM) Programme. This programme lies at the core of the assessment of flood risk and the long-term planning of the flood risk management measures throughout the country.

### 1.1.2.2 Project Outputs

The project is stated to have been designed to maintain the existing hydrological regime at Rahasane Turlough SAC and to address a flood event of the scale which occurred in 2009. The product objectives and the project management objectives can be combined under the heading of Project outputs. The product objectives are:

**Tree Diagram - Dunkellin River and Aggard Stream Flood Relief Project**



The project Management objectives are:

- Meet stakeholder needs
- Deliver within Time-frame
- Operate within budget



### 1.1.2.3 Critical Success Factors

The Critical Success Factors are:

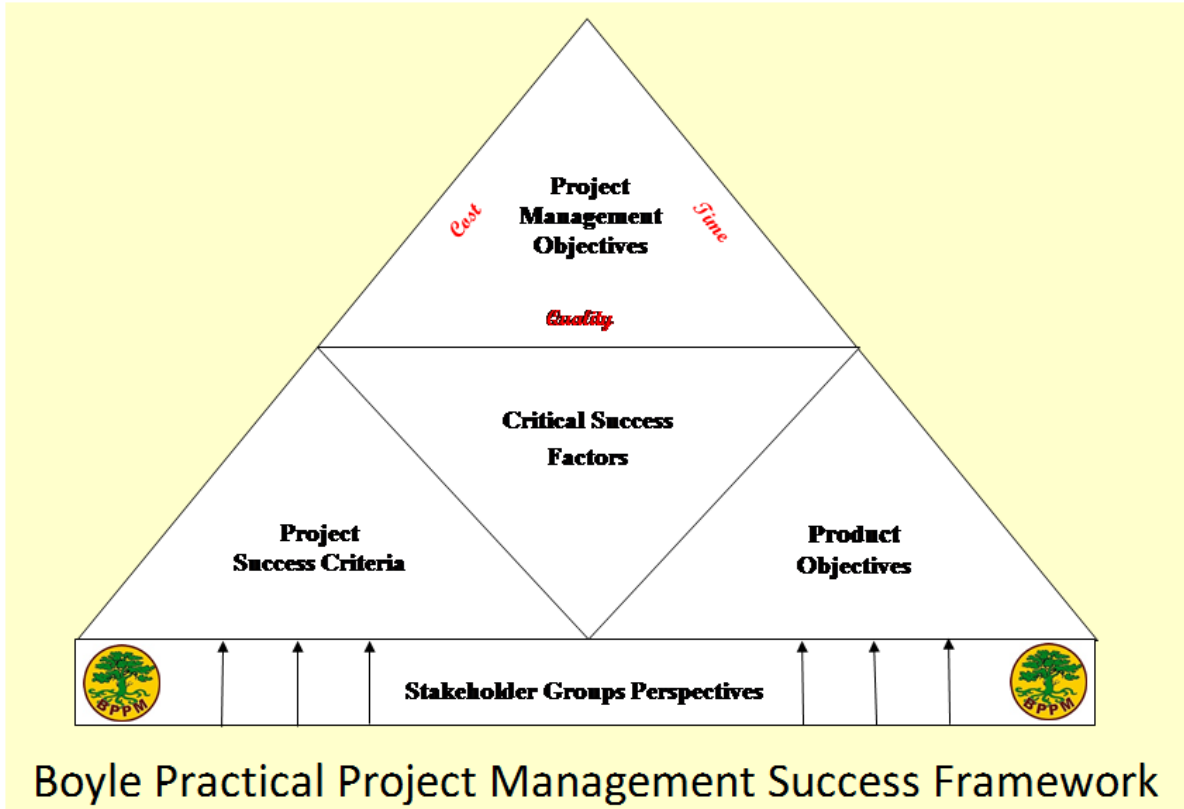
- Clear Objectives
- Environmentally Aware Contractors
- Community Support
- Political Will

### 1.1.2.4 Success Criteria

The criteria as set out in the table below have been drawn up by the stakeholders to measure the success of the project based on the project outputs.

Project Outputs	Success Criteria Measurement Unit Specification	Time Base	Expected Result
Managing Sediment Loss			
Protect River Banks			
Minimise Damage to Surrounding Land			
Support Afforestation			
Limit Damage to remaining Vegetation			
Respect Original Structures			
Protect Archaeological Features			
Reduce Run-off from the Land			
Control Water Levels			
Maintain Swallow-Hole Functionality			

The basis for succeeding with this project is through satisfying the success criteria. Meeting stakeholder needs involves realizing the benefits of the product to achieve the success criteria metrics. The time base for measuring success normally extends beyond the product completion date. The Critical success factors are represented in the middle of the Theoretical Success Framework Diagram, representing their relationship to achieving both project and product objectives and their influence on satisfying the success criteria. The objectives, the success factors and the success criteria have been determined by the Stakeholders.



### 1.1.2.5 Risk

The risks, their likely impact and the necessary response are outlined in the table below:

<b>Risk No.</b>	<b>Risk Identified</b>	<b>Probability of Occurrence</b>	<b>Likely Impact</b>	<b>Risk Response</b>
1	Shellfish Industry	<b>Medium</b>	Material Assets	
2	Marine Ecology	<b>Medium</b>	Decrease in Water quality	
3	Create Further Flooding	<b>Medium</b>	Shifting the risk of flooding downstream	
4	M17/M18 Gort/Tuam	<b>Low</b>	Hinder Progress	
5	Finding Archaeological Material	<b>Low</b>	Suspend Progress	

**Risk 1 - Shellfish Industry**

The works will affect the shellfish industry in the area. The risks of any major negative impacts are addressed under headings of salinity modelling, consideration of downstream impacts and existing water quality issues. The project shall provide for monitoring and protection of water quality in the river and bay to ensure it does not give rise to effects which might adversely impact on the environment and the shellfish industry.

**Risk 2 - Marine Ecology**

Legislation requires that the quality of the waters is protected and enhanced. Thus every effort will be taken to prevent movement of silt downstream and to control the volume and speed of fresh water entering the bay. The applicant shall engage a suitably qualified archaeologist to monitor all riverbed and bank disturbance. The commitments given at the oral hearing regarding baseline, construction and post construction monitoring of a single point in the estuary shall be undertaken. The collection of data shall be undertaken following consultation with the Environmental Officer to be engaged by Galway County Council, who shall have delegated powers to stop works and direct the carrying out of emergency mitigation operations if necessary.

**Risk 3 - Create Further Flooding**

Measures shall be taken to deal with the water from subsidiaries into the Dunkellin to avoid flooding further downstream. The floodplain for the 350m upstream of the N18 Bridge is to be retained. To ensure optimum understanding of Rahasane Turlough including any future naturally occurring changes to the Special Areas of Conservation (SAC), to provide a record of same and to verify that the project has no significant impact on water levels in Rahasane Turlough.

**Risk 4 - M17/M18 Gort/Tuam Road Project**

M17/M18 Gort/Tuam road scheme shall be safeguarded. Other than removal of terrestrial vegetation, no works between Ch.3053 and Ch.3858 – the M18 is under construction at this location

**Risk 5 - Finding archaeological material**

If archaeological material is found during project execution work may be suspended.

**1.1.3 Project Constraints**

The project inputs explain how the product will be done and are defined, by the work breakdown structure, responsibility chart, schedule, and budget. These inputs are further decomposed into work package activities and tasks. There are 7 conditions attached by An Bord Pleanála, including that mitigation measures in the environmental impact statement be implemented.

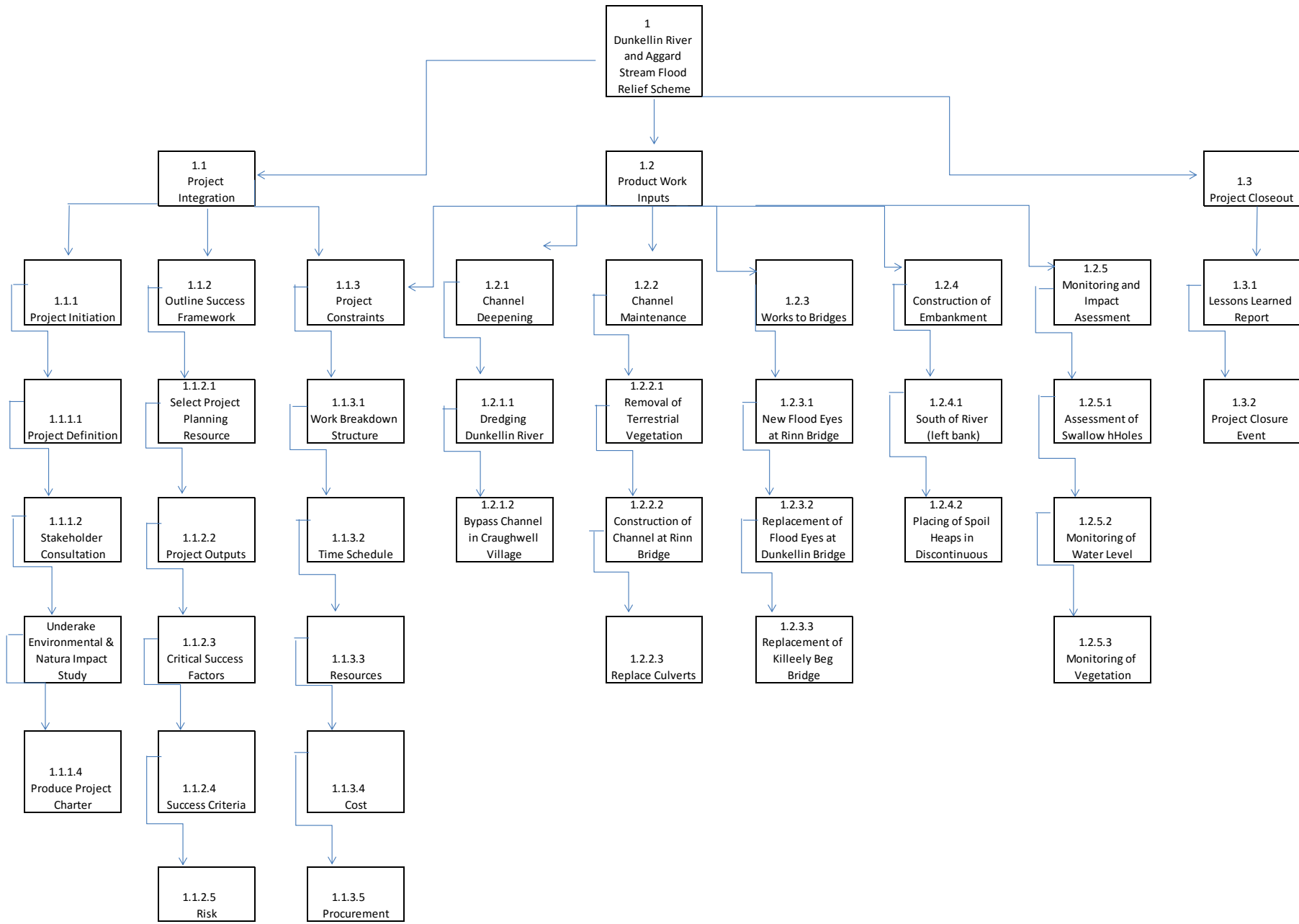
### 1.1.3.1 Work Breakdown Structure

The product work inputs are the resource activities required to deliver each output objective. The product work inputs are:

- Channel Deepening
- Channel Widening
- Channel Maintenance
- Works to Bridges
- Construction of Embankment
- Monitoring and Impact Assessment

These inputs are further broken into work packages as follows:

# Dunkellin River and Aggard Stream Flood Relief Project



### 1.1.3.2 Time Schedule

The project team determines the length of time needed to complete each of the work packages as follows: (Insert a table with the start and finish dates for each activity. The WBS on the left is the work breakdown structure code.)

ID		WBS	Task Name	Start	Finish
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### 1.1.3.3 Resources

#### **Responsibility Assignment Matrix**

“The matrix outlined below depicts how the roles and responsibilities are assigned to the various members of the project team.

## Dunkellin River and Aggard Stream Flood Relief Project

Responsibility Assignment Matrix				
Activity	WBS Code	Resource 1	Resource 2	Resource 3
Dunkellin River and Aggard Stream Flood Relief Scheme	1			
Project Integration	1.1			
Project Initiation	1.1.1			
Project Definition	1.1.1.1			
Stakeholder Consultation	1.1.1.2			
Underake Environmental & Natura Impact Study	1.1.1.3			
Produce Project Charter	1.1.1.4			
Outline Success Framework	1.1.2			
Select Project Planning Resource	1.1.2.1			
Project Outputs	1.1.2.2			
Critical Success Factors	1.1.2.3			
Success Criteria	1.1.2.4			
Risk	1.1.2.5			
Project Constraints	1.1.3			
Work Breakdown Structure	1.1.3.1			
Time Schedule	1.1.3.2			
Resources	1.1.3.3			
Cost	1.1.3.4			
Procurement	1.1.3.5			
Product Work Inputs	1.2			
Channel Deepening	1.2.1			
Dredging Dunkellin River	1.2.1.1			
Bypass Channel in Craughwell Village	1.2.1.2			
Channel Maintenance	1.2.2			
Removal of Terrestrial Vegetation	1.2.2.1			
Construction of Channel at Rinn Bridge	1.2.2.2			
Replace Culverts	1.2.2.3			
Works to Bridges	1.2.4			
New Flood Eyes at Rinn Bridge	1.2.4.1			
Replacement of Flood Eyes at Dunkellin Bridge	1.2.4.2			
Replacement of Killeely Beg Bridge	1.2.4.3			
Construction of Embankment	1.2.5			
South of River (left bank)	1.2.5.1			
Placing of Spoil Heaps in Discontinuous Formatent	1.2.5.2			
Monitoring and Impact Aseessment	1.2.6			
Assessment of Swallow hHoles	1.2.6.1			
Monitoring of Water Level	1.2.6.2			
Monitoring of Vegetation	1.2.6.3			
Monitoring & Protection of Water Quality in the River/Bay	1.2.6.5			
Project Closeout	1.3			
Lessons Learned Report	1.3.1			
Project Closure Event	1.3.2			

### 1.1.3.4 Cost

#### Cost Breakdown Structure

A Cost Breakdown Structure (CBS) is constructed by assigning the cost to each allocated activity of the WBS.

Dunkellin River and Aggard Stream Flood Relief Project

<b>WBS</b>	<b>Task Name</b>	<b>Total Cost</b>
1	Dunkellin River and Aggard Stream Flood Relief Scheme	
1.1	Project Integration	
1.1.1	Project Initiation	
1.1.1.1	Project Definition	
1.1.1.2	Stakeholder Consultation	
1.1.1.3	Underake Environmental & Natura Impact Study	
1.1.1.4	Produce Project Charter	
1.1.2	Outline Success Framework	
1.1.2.1	Select Project Planning Resource	
1.1.2.2	Project Outputs	
1.1.2.3	Critical Success Factors	
1.1.2.4	Success Criteria	
1.1.2.5	Risk	
1.1.3	Project Constraints	
1.1.3.1	Work Breakdown Structure	
1.1.3.2	Time Schedule	
1.1.3.3	Resources	
1.1.3.4	Cost	
1.1.3.5	Procurement	
1.2	Product Work Inputs	
1.2.1	Channel Deepening	
1.2.1.1	Dredging Dunkellin River	
1.2.1.2	Bypass Channel in Craughwell Village	
1.2.2	Channel Maintenance	
1.2.2.1	Removal of Terrestrial Vegetation	
1.2.2.2	Construction of Channel at Rinn Bridge	
1.2.2.3	Replace Culverts	
1.2.4	Works to Bridges	
1.2.4.1	New Flood Eyes at Rinn Bridge	
1.2.4.2	Replacement of Flood Eyes at Dunkellin Bridge	
1.2.4.3	Replacement of Killeely Beg Bridge	
1.2.5	Construction of Embankment	
1.2.5.1	South of River (left bank)	
1.2.5.2	Placing of Spoil Heaps in Discontinuous Formatent	
1.2.6	Monitoring and Impact Aessment	
1.2.6.1	Assessment of Swallow hHoles	
1.2.6.2	Monitoring of Water Level	
1.2.6.3	Monitoring of Vegetation	
1.2.6.5	Monitoring & Protection of Water Quality in the River/Bay	
1.3	Project Closeout	
1.3.1	Lessons Learned Report	
1.3.2	Project Closure Event	



### **1.1.3.5 Procurement**

The procurement process for the national programme of CFRAM Studies has been initiated and the OPW has set out the following:

The CFRAM Programme comprises three phases:

- The Preliminary Flood Risk Assessment (PFRA): 2011;
- The CFRAM Studies and parallel activities: 2011-2015; and
- Implementation and Review: 2016 onwards.

The contractors to undertake the works have not yet been established.

## **1.2 Product Work Inputs**

The proposed development shall be carried out in accordance with the plans, drawings and documentation submitted with the application on the 9th day of October 2014, as amended by information submitted to An Bord Pleanála on 10th July 2015 and at the oral hearing on 27th and 28th of October and 3rd of November 2015, including the Environmental Impact Statement, Natura Impact Statement and supporting documentation.

### **1.2.1 Channel Deepening**

#### **1.2.1.1 Dredging Dunkellin River**

The Channel deepening is between Craughwell and Rahasane Turlough, along the Craughwell / Dunkellin River (Zone 1). The works will deepen 950m of the main river channel of the Dunkellin River in and to the west of Craughwell village. The excavation will be between 0.6m and 1.0m depth.

#### **1.2.1.2 Bypass Channel in Craughwell Village**

The dredging of a Bypass Channel in Craughwell Village and the subsequent requirement for underpinning of the R446 Road Bridge, the Masonry Arch Pedestrian Bridge, the Bypass Channel Bridge and the Railway Bridge all of which are within Craughwell village

## 1.2.2 Channel Maintenance

### 1.2.2.1 Removal of Terrestrial Vegetation

Out-of-channel maintenance work involving removal of terrestrial vegetation including trees, bramble and scrub between Rahasane Turlough and Rinn Bridge. Out of channel maintenance works at Rinn Bridge.

### 1.2.2.2 Construction of Channel at Rinn Bridge

Out of channel maintenance works at Rinn Bridge and construction of two stage channel 20m wide for 100m at Rinn Bridge and between Ch. 645 and Ch.3053.

### 1.2.2.3 Replace Culverts

Replace 14 culverts and undertake channel maintenance work for the length of the Aggard Stream.

## 1.2.3 Works to Bridges

Works to bridges west of Rahasane Turlough, along the Dunkellin River (Zone 3) -

- Works to Rinn Bridge (Ch.4050) involving new flood eyes
- Works to Dunkellin Bridge involving replacement of flood eyes with box culverts.
- Replacement of Killeely Beg Bridge and relocation of a salmon counter.

## 1.2.4 Construction of Embankment

### 1.2.4.1 South of River (left bank)

The dredging works involve the excavation of about 70,000 m<sup>3</sup> of spoil which will be used where possible in the construction of embankments south of river (left bank) or spread in the vicinity.

- A drawing presented to the hearing revised Drawing no. 6408-2202-Rev G –clarified that a continuous embankment would not be constructed adjacent to the Dunkellin for much of the land downstream of Killeely Beg Bridge

### 1.2.4.2 Placing of Spoil Heaps in Discontinuous Format

Further upstream to Ch1058 (less than 500m of river bank) there would be placing of spoil heaps to form a discontinuous embankment

### 1.2.5 Monitoring and Impact Assessment

For a period of five years after completion of all works the local authority shall undertake annual monitoring at Rahasane Turlough and to ensure availability of information to interested parties. Measures to include:

- (a) Field assessment of swallow holes and recording of natural collapse of conduits or infilling of swallow holes
- (b) Monitoring of water level at existing river gauges up-gradient and down-gradient of Rahasane Turlough
- (c) Monitoring of vegetation and indicator species at Rahasane Turlough as described.

The timeframe for measuring product success can be immediately or several years after project completion. Describe here to what extent the criteria for measuring success have been met compared to expectations. Outline your recommendations for future projects of a similar nature.

Project Outputs	Success Criteria Measurement Unit Specification	Time Base	Expected Result	Actual Result

## 1.3 Closeout

Project Closeout heralds the formal end of the project. The closeout shall verify that the objectives have been accomplished.

### 1.3.1 Lessons Learned report

The identification and recording of issues arising on the project shall help to reduce or eliminate the chances of re-occurrence on similar projects in the future. Details of the original lessons learned report are incorporated into this document.

### 1.3.2 Project closure event

(details)

## Appendix

### 1. An Bord Pleanála Docs

- [Inspectors report 1 \(JA0/RJA0035.pdf, PDF format 416kB\)](#)
- [Inspectors report 2 \(JA0/RJA0035A.pdf, PDF format 128kB\)](#)
- [Order \(JA0/DJA0035.pdf, PDF format 49kB\)](#)
- [Direction \(JA0/SJA0035.pdf, PDF format 60kB\)](#)

Environmental Impact Study

<http://www.galway.ie/en/media/EIS%20Volume%202%2008.10.14.pdf>

Office of Public Works (OPW)

Dunkellin River & Aggard Stream Study:

[Main Report June 2010](#) (PDF 9MB)

[Appendix No. 1](#) (PDF 12.5MB)

[Appendix No. 2](#) (PDF 270KB)

[Appendix No. 3](#) (PDF 62KB)

[Appendix No. 4](#) (PDF 1.2MB)