

Derrymullan, Ballinasloe Flood Defence Wall, Report October 2011



Following the November 2009 flood event Galway County Council and the OPW have been working together on the Ballinasloe flooding situation. The OPW are looking at the broader River Suck and Shannon flooding under the EU Floods Directive. Galway County Council identified a number of schemes that could progress as advanced works that could be delivered in a shorter time frame. One such scheme was the Derrymullan Flood defence Wall.

The Derrymullan area of Ballinasloe is a primarily residential area of housing constructed in the 70's and 80's. It is on the banks of the River Suck and north of the railway station.

This area has been flooded on a number of incidents during the late 1990's and early 2000. The OPW National Flood Map Hazard Mapping (www.floodmaps.ie) has a number of reports with details of these flood events. The area was very badly affected again during the November 2009 flood event with a very significant number of houses flooded. This area was a priority for Galway

County Council & Ballinasloe Town Council as houses in this area are flooded during a 1:10 to 1:15 flood event. As the likelihood of repeated flooding the following winter was high, it was critical that this project be fast tracked to construction so as to protect our Community, its residences and its Water and Sanitary systems from a repeat of the catastrophe of Nov 2009.

A study commissioned by Flood Alleviation Ballinasloe and carried out by Hydro Environmental Ltd confirmed that the river hydrology of the catchment at this location would result in extensive flooding to an extensive residential area during a 1 in 10 year flood event.

Due to the location of the Derrymullan Area and the return period for flood events, channel maintenance or improvement works would not provide appropriate protection to these properties. The only solution to providing flood protection was by the construction of a flood defence structure.

Galway County Council appointed Atkins as consultants to assist with the Contract Documentation and Administration. Outline design was delivered in June 2010 and Part VIII planning was passed at the Town Council Meeting in July 2010. The project was brought through pre-qualification of contractors, ground investigation tendering and SI works, finalisation of the detailed design and preparation of the fixed priced tender documentation. The project went out to tender in September 2010 and works commenced in November 2010, less than one year after the Nov'09 flood event. Works were carried out over the 2010/2011 winter and are now complete with the exception of final snagging.

The flood protection scheme involved the construction of a total length of approximately 1.19km of flood defence structure (reinforced concrete walls and embankments) to surround a residential area of approximately 12ha. This flood wall now protects 130 houses, 4 commercial units and a community facility in Ashfield Drive, Willow Park and an Doire Beg, and the R358 road from flooding. A stream that flows through the area now has penstock controls at the upstream and downstream end so that the residential area can be closed off from the rivers and streams at the time of floods. A bypass drain was constructed around the area with a new culvert under the regional road. Finally, surface water and foul services are now controlled by sluice valves so that they can be shut-off to isolate the area and pumping chambers have been constructed to facilitate over-pumping.

It was initially intended to construct a RC Wall. However, due to very poor ground conditions a suitable bearing stratum could not be found at a reasonable depth. A sheet piled wall was then constructed, with the sheet piles embedded into the rock at a depth of up to 13m. This prevents seepage under a wall. The wall was then finished with a reinforced cap and facade as can be seen on the photos. A longitudinal drain was constructed on the residential side of the wall with pumping chambers so that any leakage can be pumped out during a severe flood event.

At the northern end where flood water was not as deep, embankments were constructed. This involved the removal of up to 1m of the existing topsoil and subsoil and the construction of an earth embankment using imported low permeability clay material.

The level of the flood defences has been provided by referencing previous flood studies and flood levels recorded during the flooding of November 2009 which has been estimated at greater than a 1 in 800 year flood event. The max flood level recorded during the Nov'09 flood event was 39.33m OD. To allow for climate change and safety factor the flood defences include a freeboard of 300mm at hard installations (e.g. structural walls/piles) and a free board of 500mm at earth embankment. The wall detail has been constructed to a top level of 39.650m OD and the bund to a level of 39.85m OD. This gives protection during a 1 in 200 year flood event with adequate free board.

The construction of the flood wall impacted on a substantial number of properties. The land owners have been very accommodating. Two of the primary land owners have dedicated the land free of charge to Galway County Council for the construction of the wall. They have also fully cooperated with the contractor in the construction of the wall and no payment what so every has been paid to any land owner.

As outlined above, due to the flood sensitivity of this area it was crucial that this project be fast tracked to construction before a repeat flood event. If works were not carried out before the following winter Ballinasloe Town Council, Galway County Council and the OPW would have been in a difficult situation and open to severe criticism. During the construction of the wall a flood event occurred in February 2011, as shown in the photos below. Was it not for the flood wall in place a number of properties at the lowest end of Ashfield drive would have been flooded. This emphasizes the importance of this project going ahead. I am sure that this flood defence will provide savings into the future in preventing flooding. The residents in this area are also unable to get house insurance on their property but with the flood defence in place the insurance companies may be able to take that into account in their assessment.



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Flooding Nov'09





DERRYMULLAN FLOOD DEFENCE WALL



Area prior to construction



Progress January 2011



Progress 8th March 2011

Photo of South East Wall, sheet piles in place and concrete capping under construction



Photo of South West Wall, sheet piles in place with full faced concrete capping & cladding (gap shown will be narrowed and flood gates provided)



Photo of North East Bund, drain is culverted and headwall and bund under construction in foreground



Flood gates in place

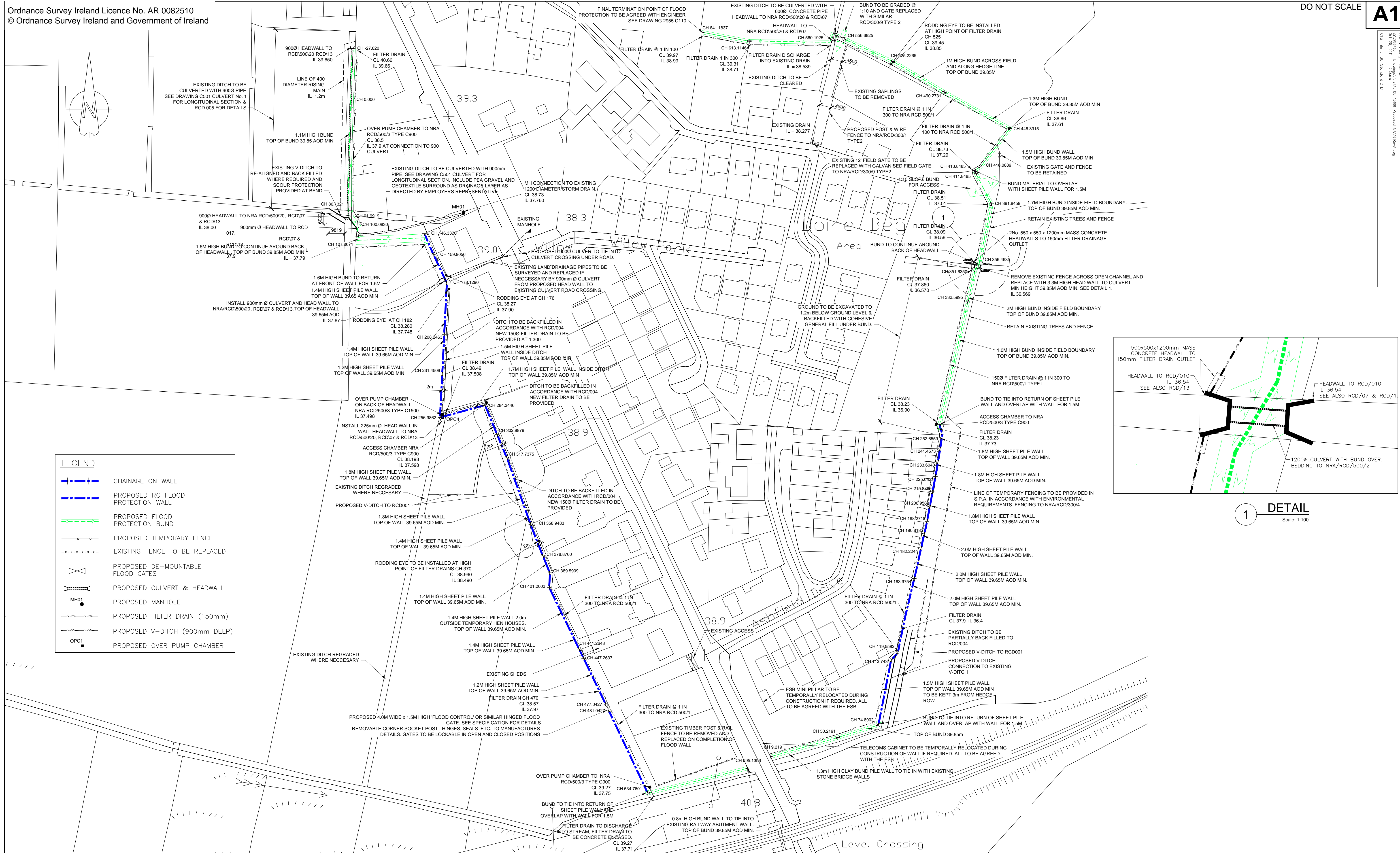


Penstock on culvert stream



February Flooding during construction





NOTES:

- LEVEL OF PROPOSED WALL CONSTANT @ 39.65M AOD
- LEVEL OF PROPOSED BUND CONSTANT @ 39.85M AOD
- PROPRIETARY DE-MOUNTABLE FLOOD GATES TO THE APPROVAL OF THE ENGINEER. ACCESS TO BE MAINTAINED DURING NON-STORM PERIODS.
- MIN HEIGHT OF FLOOD WALL 1.1M ABOVE GROUND LEVEL. HEIGHT LEVELS SHOWN ARE INDICATIVE ONLY
- WORKS BETWEEN CHAINAGE 120. & 225. ARE WITHIN SPECIAL ENVIRONMENTAL PROTECTION AREA (SPA). CONTRACTOR TO PROVIDE CONSTRUCTION PLAN FOR WORKS WITHIN THIS AREA
- TEMPORARY FENCING TO BE PROVIDED FOR WORKS WITHIN SPA
- CONTRACTORS TO TAKE ALL NECESSARY PRECAUTIONS WHEN EXCAVATING IN VICINITY OF EXISTING STRUCTURES INCLUDING PROPPING OF EXISTING STRUCTURES WHERE NECESSARY.

NOTES -
 These notes apply except where noted otherwise on the drawings or in the Specification

- GENERAL NOTES -**
- DO NOT SCALE. Use only figured dimensions.
 - All dimensions are in millimetres unless stated otherwise.
 - Levels shown to Malin Head Datum unless stated otherwise.
 - Coordinates are to National Grid unless stated otherwise.



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Project
BALLINASLOE FLOOD PROTECTION

DRAWING TITLE				PROPOSED FLOOD PROTECTION WALL - WALL PLAN	
Original Scale	1:1000	Drawn	WMcG	Checked	BH
Date	MAY 2010	Authorised	BMcK	Status	CONSTRUCTION
Job No.	2955	Unique Dwg No.	C101	Revision	-

