Sallins Flood Alleviation Scheme

General

In the aftermath of severe flooding in the Waterways Estate in Sallins (November 2009), PUNCH Consulting Engineers were commissioned to provide engineering services in relation to emergency works and also the development of permanent flood alleviation works.

Background

The stream which flooded is fed from a catchment in the Monread area of Naas. This catchment extends to approximately 545 hectares and is almost fully developed to its current zoning. It discharges to the Grand Canal via culverts under the Dublin Cork railway line and Kerdiffstown Road. The main stakeholders involved in the project therefore included Kildare County Council, Irish Rail, Waterways Ireland, Office of Public Works and the Eastern Region Fisheries Board.

The flooding primarily affected the Waterways Estate, a development of 103 residential units, and which had to be evacuated.

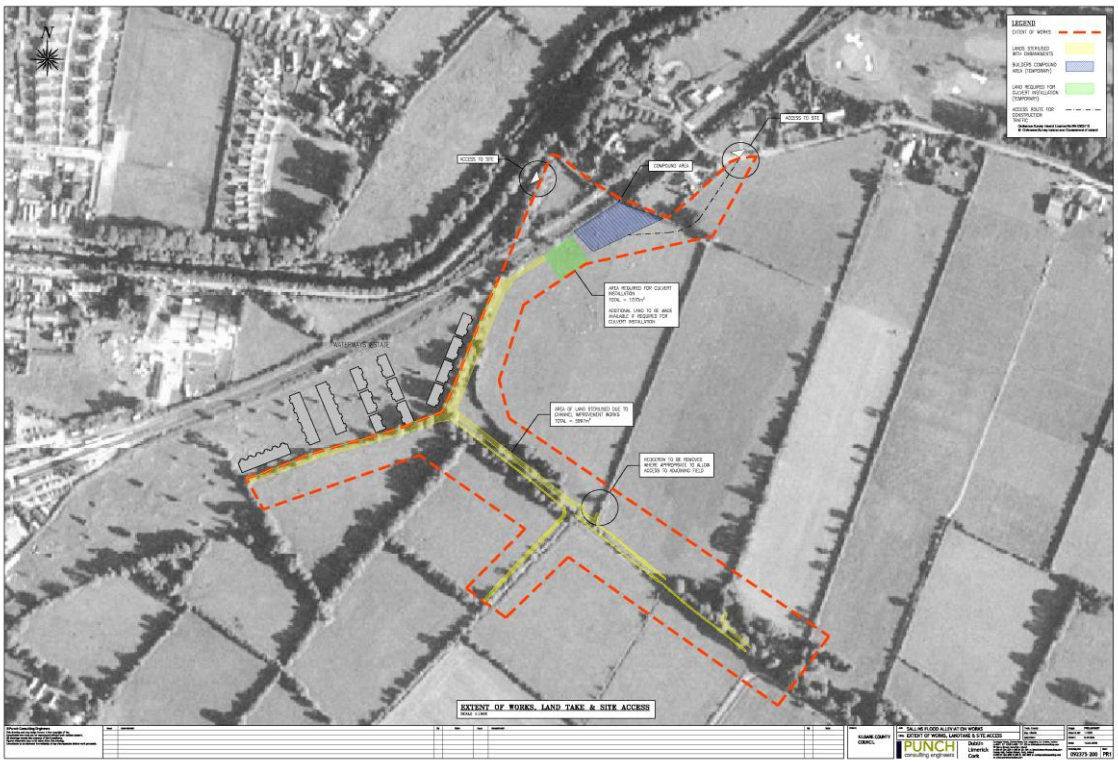
In order to release the flood waters, a relieving channel was excavated through the Kerdiffstown Road embankment, creating a legacy of siltation of the canal and severance of an important local road. The priority element of the project was the restoration of this road.

The site is in a pNHA and posed a number of environmental difficulties, including crayfish and otters which are protected under the E.U. Habitats Directive.

The Project

Phase 1 of the project involved the restoration of Kerdiffstown Road and PUNCH Consulting Engineers provided design, certification and PSDP services for the Phase 1 works which provided a new culvert under Kerdiffstown Road, together with a new outfall in the canal.

Phase 2 was designed to upgrade the railway culvert and carry out any upstream works needed to cater for a future 100 year future flood with allowance for climate change.



Our Services

Project Management

The project commenced with the primary objective of reopening Kerdiffstown Road at the earliest possible date, and the designers were faced with the challenge of designing and constructing the emergency works while ensuring that they would not compromise the later works which were not yet decided. This required very close co-ordination between designers, contractor and stakeholders to ensure that the works progressed as intended. Progress/design meetings were attended by all the stakeholders, which greatly speeded up decision making on all aspects of the project

Analysis & Design

- HECRAS modelling of watercourse and proposed new features based on topographical survey and supplemented with a detailed site inspection by the designers. An iterative approach was adopted, modelling the improvement generated by the improved canal outfall, followed by the inclusion of a new culvert under the railway, and eventually by channel improvements upstream of the culverts.
  The overall scheme required:
  (1) A new culvert and outfall structure at the Grand Canal
  (2) An new railway culvert and retention of the existing one.
  (2) Channel deepening/widening at certain locations
  (3) Raising of bank levels generally to contain the design flood
  (4) Scour protection works to prevent erosion.

- Design of roadworks, concrete canal outfall, culverts, retaining walls all to current NRA standards.

Cost Benefit Analysis

The overall project has been valued at €1.2M, and the financial benefits accruing to the Scheme were assessed by reference to "Benefits of Flood and Coastal Risk Management: A Handbook of Assessment Techniques" (Multi-Coloured Notebook) as published by the UK Department of Environment Food and Rural Affairs (DEFRA).

Planning and Statutory Approvals

Part 8 Planning Approval, including an Appropriate Assessment Screening of the proposed works in accordance with the requirements of the EU Habitats Directive (Directive 92/43/EEC).

Health & Safety

PUNCH Consulting Engineers act as PSDP for the project. The very rapid design development which was progressing in tandem with works on site posed a number of challenges in our role as PSDP. It required ongoing re evaluation of the risks, and close liaison with the PSCS to ensure that effective safety management was maintained at all times. Among these challenges the needs to maintain a pedestrian right of way through the site, as well as excavating and disposing of large quantities of mud and silt.

Construction Monitoring

The construction phase of the emergency works was characterised by a high level of design office involvement in rapidly assessing new information, making decisions and keeping the works progressing on site.

Environment

The canal is a pNHA, and the design development was constantly validated against the findings of the Ecological Impact Assessment, which identified crayfish, otters and the rare and legally protected Opposite-leaved Pondweed at a number of sites. Electro fishing of the canal outfall works yielded approx. 1500 crayfish and the agreed mitigation for loss of original habitat was the replacing of a layer of mud/silt on top of the new concrete canal bed.

Procurement

The emergency works were procured as a form of design build, while the Phase 2 works are currently being tendered under the Department of Finance conditions of Contract