

Flood Alleviation Schemes

Working with nature to achieve sustainable and cost-effective solutions



Introduction

Rivers are a source of pleasure for millions who use them for navigation, fishing and other recreational purposes, but can also be a source of misery for those living in properties susceptible to flooding. Rivers perform a vital function as receiving watercourses for highway drainage, sewerage infrastructure and land drainage systems but ultimately are natural features often rich in biodiversity and sensitive to the impacts of mankind's activities.

Arup has extensive experience in the feasibility, assessment, design and construction management of flood alleviation and drainage infrastructure schemes including:

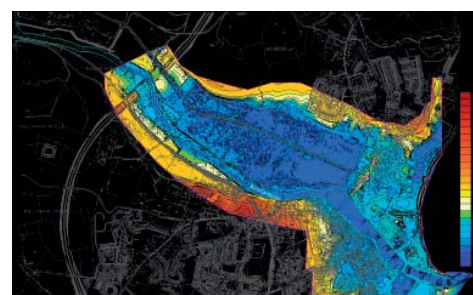
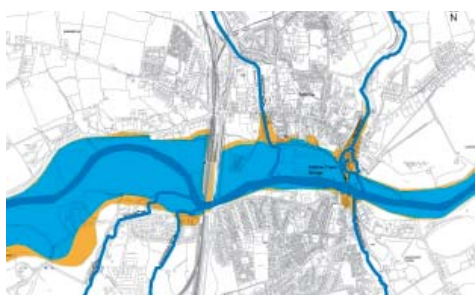
- Detailed design of flood defence structures – Walls, Embankments etc.
- Detailed design of drainage systems, including Pumping Stations, to prevent flooding from flood locked systems
- Assessment of possible use of wet lands and storage reservoirs
- Hydrological modelling of both fluvial and groundwater flows
- Reservoirs, washland optimisation and river regulation schemes
- Weirs, gauging stations and fish passes
- River restoration and floodplain rehabilitation schemes

Our comprehensive flood alleviation and drainage infrastructure service encompasses:

- Water resources studies and flood risk assessments
- Modelling of rivers, sewerage systems and land drainage systems
- Asset condition surveys and asset management planning
- Structural and geotechnical surveys of existing structures
- Environmental studies and ecological services
- Evaluation of existing physical, social, statutory and environmental constraints and opportunities
- Geotechnical desk studies
- Engineering feasibility, design and construction supervision
- Project Appraisal and cost benefit analysis
- Sustainability appraisals

Sample of our Projects

- Mallow Flood Relief Scheme
- Arklow Flood Relief Scheme – Environmental Aspects
- Templemore Flood Alleviation Scheme Feasibility – Staff Secondment to OPW
- Water of Leith Flood Alleviation Scheme, Edinburgh
- River Kelvin Flood Prevention Scheme, East Dunbarton
- Gowdall Urgent Works Flood Defence Scheme Phase 2, Yorkshire
- Ashford Flood Alleviation Scheme
- Fife Flood Prevention Scheme



Case Study 1

Mallow Flood Alleviation Scheme

Mallow in Co. Cork has a long history of flooding from the River Blackwater. In 2002, Arup was commissioned to prepare a flood study report for the town. In this study, Arup developed and assessed options including flood warning, upstream storage (both floodplain washland storage and upland reservoir storage), channel modification, provision of a bypass channel and flood defences.

Following this report, Arup prepared a preliminary flood defence scheme inclusive of a cost benefit analysis.

In 2004 Arup was commissioned to carry out the detailed design for a flood alleviation scheme for Mallow and in 2005, the proposed scheme was publicly exhibited.

The proposed flood defence works for Mallow were split into three separate projects, defined by region as Mallow North, Mallow South and Mallow West.

2006 saw the completion of an advance contract of the Mallow North scheme which was mainly in public lands. The main contract for the Mallow North Scheme commenced in the spring of 2008 and construction was substantially completed in November 2009.

Construction of the Mallow South and West Schemes is due to begin in Summer 2010.

Case Study 2

Arklow Flood Relief Scheme Environmental Aspects

Arup undertook an Environmental Constraints Study and held a Public Information Day, identifying potential constraints of a Flood Relief Scheme. This study guided the design of a range of possible flood relief options (by others). The potential environmental impacts of these options were subsequently assessed by Arup and an Options Assessment Report completed. Phase 3 of the study is an EIA of the preferred Scheme, compilation of an Environmental Impact Statement and a Public Exhibition.