# Floodline Consulting Ltd
# Capability Statement

## Our Company:

Floodline Consulting is a specialist engineering consultancy business offering tailor-made technical services and planning advice with emphasis on flood prevention, sustainable drainage systems, water cycle management, water and wastewater engineering, environmental enhancement and utilities infrastructure including water supply and power. We also offer Expert Witness services associated with flooding and drainage disputes and provide technical reports, cost analysis and planning advice to a variety of client to undertake corrective action.

Floodline Consulting is an **NCE Top 100** engineering company in the UK for the past 3 years and recently voted as one of the 'Companies to Watch' and nominated for awards in the categories of 'Technical Excellence', 'Designer of the Year' and 'Specialist in Climate Change Adaptation'. Floodline was invited to be part of the House of Lords – 'Water and Infrastructure Management Committee' and recently nominated a 'T20-Trending' company. Floodline Consulting is going from strength to strength in establishing highly-valued flood prevention strategies in both the UK and overseas.

Floodline Consulting is a key contributor to national planning policies and provides detailed feedback and guidance to new UK flood planning documents and strategies which allows for increase in tidal and fluvial floodwater levels resulting from Climate Change. Detailed feedback and good working examples of live projects have been provided to the relevant authorities to update planning guidance in the fields of flood mitigation, flood-proof homes and sustainable drainage including submissions to the Raynsford Review covering the updated National Planning Policy Framework and CIRIA SuDS Manual. Floodline also takes an active role with the UK's Town and Country Planning Association - 'Rethinking our Approach to Flood Risk'.

We work closely with Floodline Developments which is a specialist property company with unique expertise in how to maximise the value of land at risk of flooding by sustainably developing the area using a technical and engineered approach including design of fully-floating, can-float and flood-resilient buildings. Our broad client-base includes various developers, consulting civil and structural engineers, architects, FTSE 100 companies, local authorities, major landowners, mechanical and electrical engineering consultancies, individual property owners, financial institutions and insurance companies.

Our major clients include The Church of England, Kier, Palmer Capital, Countryside, Redrow Homes, Whitbread Group, Hammerson, John Lewis Partnership, Larkfleet and Hanson Aggregates.

## Our services:

**Water Management:**

Strategic Flood Risk Assessment
Site-Specific Flood Risk Analysis
River Modelling & Breach Analysis
Detailed Project Appraisal Guidance (FCERM-PG)
Water and Wastewater Engineering
Water Cycle Management
Environmental Improvement and Pollution Control


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| **Drainage:** | Sustainable Drainage Analysis<br>Drainage Modelling<br>Highway Drainage Design<br>Pump Station Design<br>Irrigation and Land Drainage<br>Lake, Swale and Pond Design |
| **Expert Witness:** | Dispute Resolution<br>Analysis of Flood Damage<br>Investigation into Drainage Failures<br>Guidance to Planning Authorities<br>Earthquake Damage and Dam Failures |
| **Infrastructure:** | Rainwater Management<br>Power, Lighting and Telecommunications Systems<br>Water Supply and Wastewater Treatment<br>Highway Drainage and Pollution Control<br>Land Drainage and Irrigation |
| **Management:** | Turnkey Project Management<br>Site Supervision<br>Contract management |

## Our staff:

Mr Faruk Pekbeken, BEng CEng MICE is the Technical Director of Floodline Consulting whose extensive experience spans over 30 years in the flood prevention, water and civil infrastructure industry. Faruk is a technical director managing a wide-variety of technical and administrative staff on multiple projects for private and public-sector clients in the UK and abroad. He has worked on major projects in some of the most difficult to access areas around the world covering Eastern Europe, Africa, Middle East and Asia.

He is also an Expert Witness in the water and civil engineering sectors advising solicitors and re-insurers on cases relating to industrial-scale failures, dispute resolution, financial assessment and development of corrective action. Faruk is acutely aware of the need to establish a concise scope of work, programme and cost profile to avoid technical problems in the future

Floodline's design team is delivering sustainable infrastructure, flood alleviation schemes and water engineering projects of all sizes through their specialist team of coastal, fluvial, drainage and groundwater modellers and hydraulic and hydrology experts.

Where projects extend to extensive catchments Floodline works in close partnership with other specialist hydraulic engineers at Arup and Hydro-Logic International to deliver flood defence schemes.



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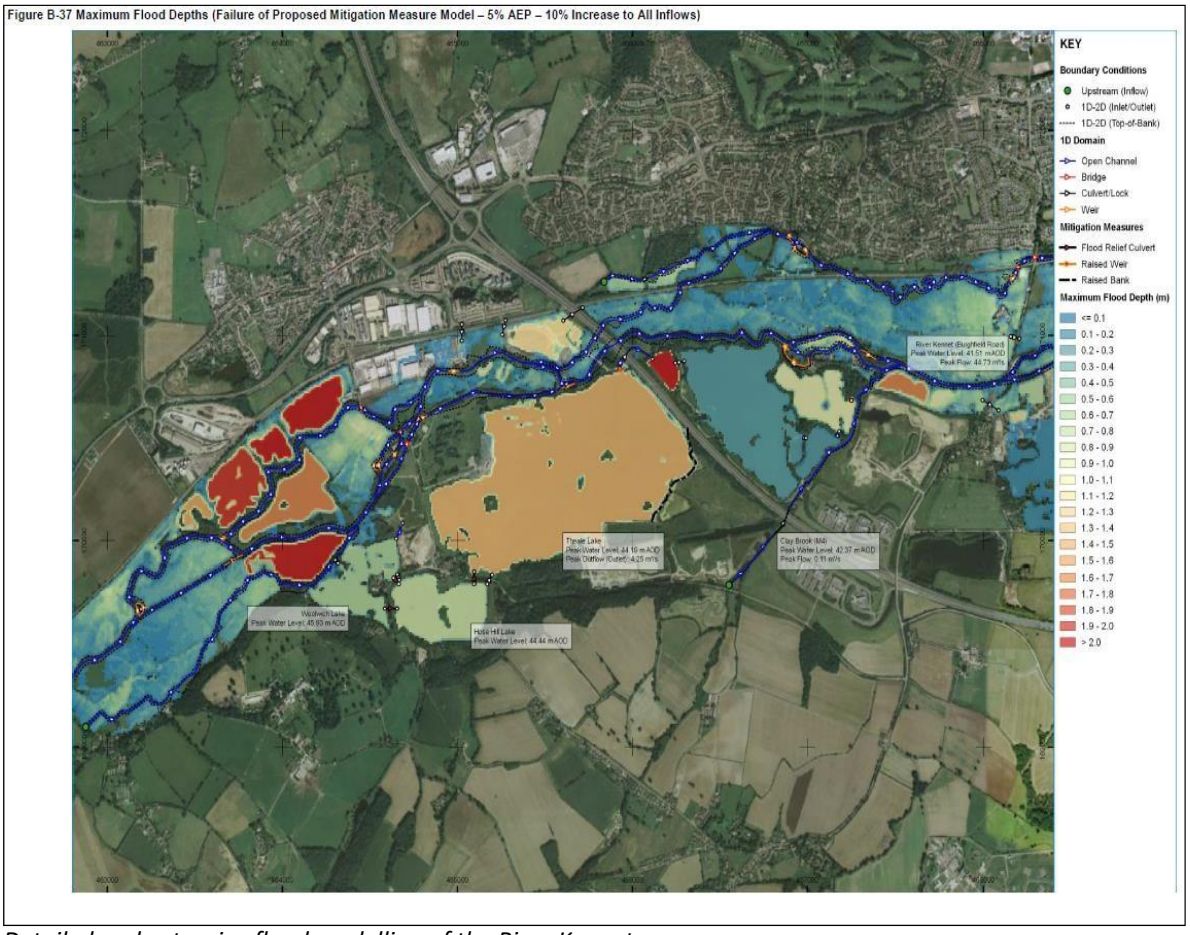
## Our Projects:

### Example 1: Burghfield Park, UK

Extensive flood modelling of the River Kennet, the largest tributary of the River Thames, was undertaken by Floodline Consulting to assess flood risk to the wider-community. A subsequent £3 million flood alleviation scheme was proposed by the developer involving large culverts to divert floodwater away from the urbanised areas and into local lakes and watercourses. The largest lake controlled by the developer is 200-acres in plan area and can-float homes were proposed on the lake shore that would fund the flood alleviation scheme at no cost to the public purse.




*Detailed and extensive flood modelling of the River Kennet*

*Proposed Culvert and Weir Works*



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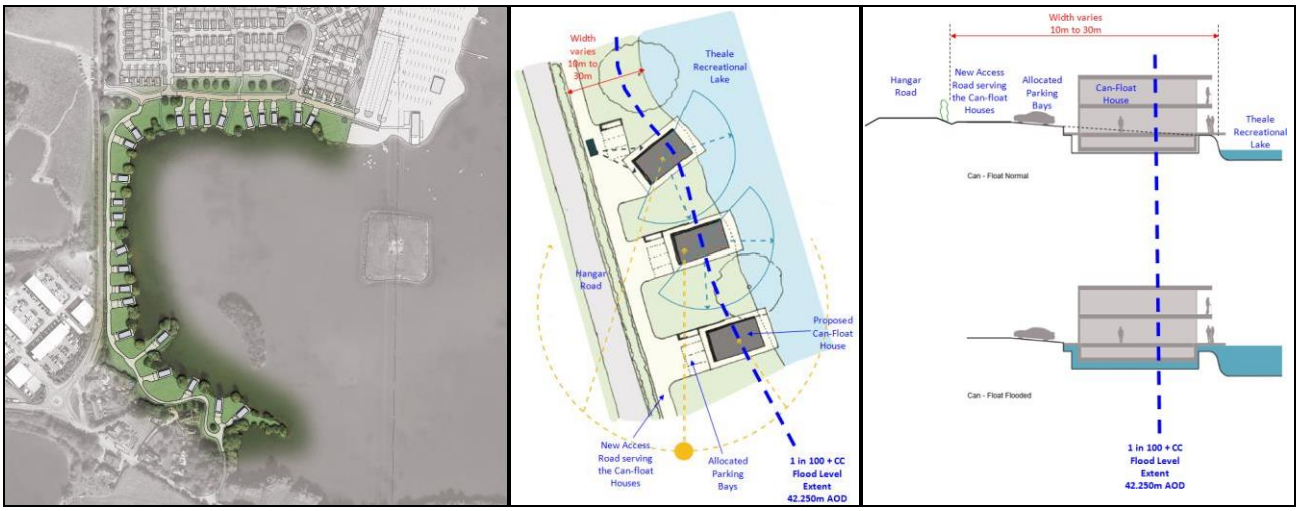


*Proposed Can-float flood-proof homes on the lake shore*

*New Sailing Club clubhouse building built on a raised embankment beside the lake*


*Proposed sustainable drainage plans for ponds and swales to control flash flooding*



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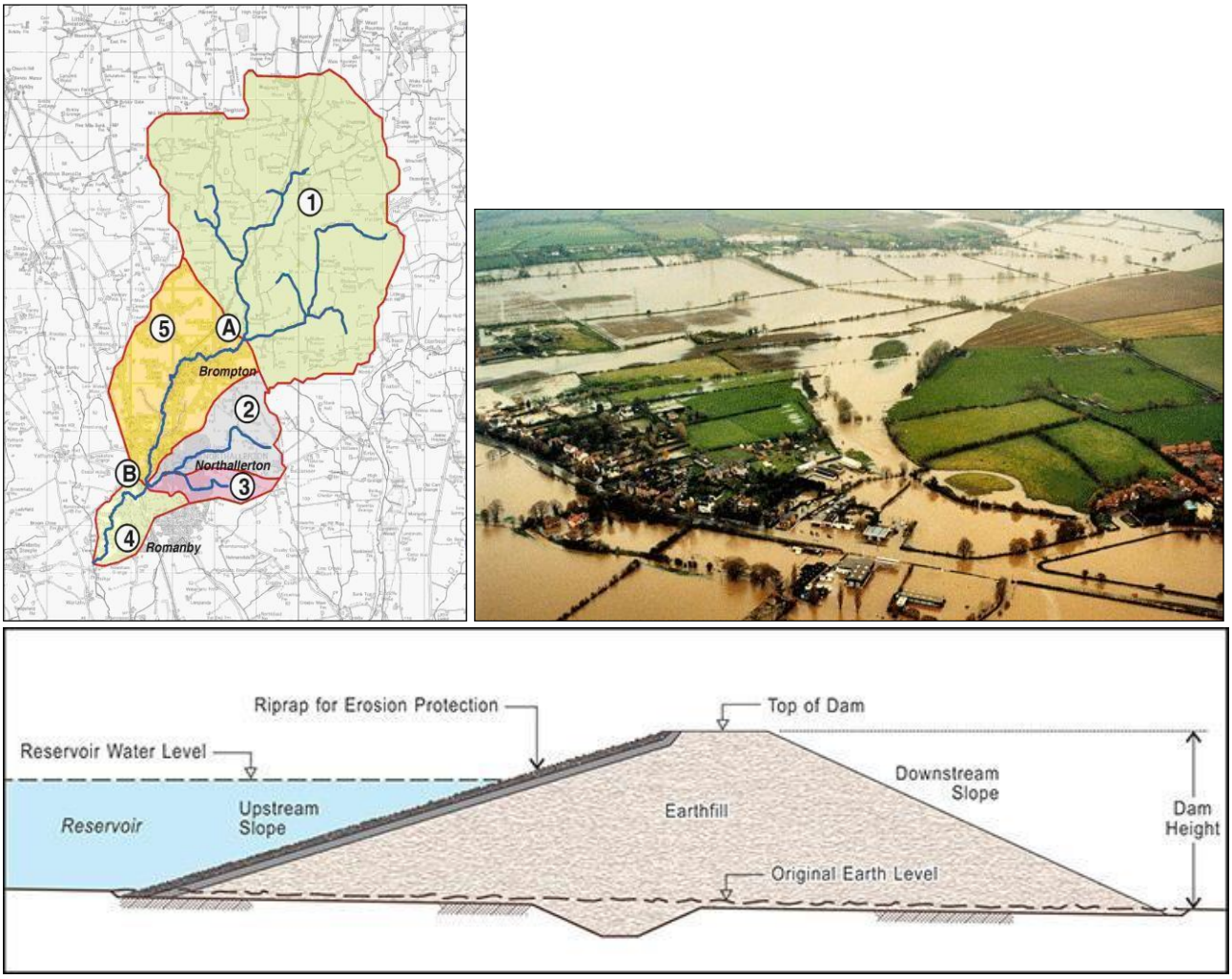
## Example 2: Northallerton Flood Alleviation Scheme, UK

The major floods of 2000 and 2002 caused extensive flooding of residential houses and commercial buildings throughout the urban environs. The local authority took the lead role to develop and promote a flood alleviation scheme with key stakeholders.

The commission involved implementation of a two-stage solution consisting of Stage 1: Emergency Works and, Stage 2: Long Term Protection Works. The preferred solution included construction of five earth dams and an urban storage tank attenuating a total of 700,000 $m^3$ of floodwater. Several presentations and exhibitions were prepared on behalf of the client to promote the scheme to the residents and businesses in the affected areas.




*Extent of 6nr rivers and a typical dam and proposed flood defences*

The client agreed to the proposal to adopt Early Contractor Involvement for the design of the 5nr earth embankments and the 5,500$m^3$ underground storage tank in the town centre. This approach allowed further assessment of the designs against buildability issues and apply realistic values for a low, medium and high risk estimate for the capital works costs. These costs varied according to the degree of known and unknown parameters used to develop the initial cost estimates which were included in the final Project Appraisal Report.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The project concentrated on the public relations element of the project as this is a very complicated area of the planning process. The plethora of stakeholders varied from the main parties listed above but also included several riparian owners, organic and specialist animal farmers, Network Rail, schools, local businesses including sports centres, flooded property owners, town and village councils, emergency services, Church Commissioners and several other land owners and agents. The transparent approach included several public exhibitions, newsletters, newspaper articles, web-data, one-to-one meetings, a regular Flood Forum, technical reviews, site visits and letter drops.

At each event comments and feedback from the stakeholders was encouraged to allow better understand the flood mechanism observed in the recent floods to reassure the residents that their feedback will be incorporated into the final solution where appropriate.

Final proposals included earth embankments to control flood waters at upstream locations involved utilising the natural profile of the land. Following detailed assessment of the soil conditions the original design parameters was reviewed and it was determined that it was possible to use the local material to construct the embankments. This would also prevent excessive lorry movements and earthworks costs, minimise environmental impact considerably within the 'Roman' towns, and allow the work to take place in stages thus providing protection in the highest risk areas in case funding could not be secured for the full works.

*Variation of river levels in Brompton Beck during base flow and 1 in 100 year flood scenarios.*

*Old culvert in Romanby replaced with a new bridge to improve through-flow and reduce upstream water levels without detriment to designated flood zones downstream*

*Flooding in Northallerton town centre*



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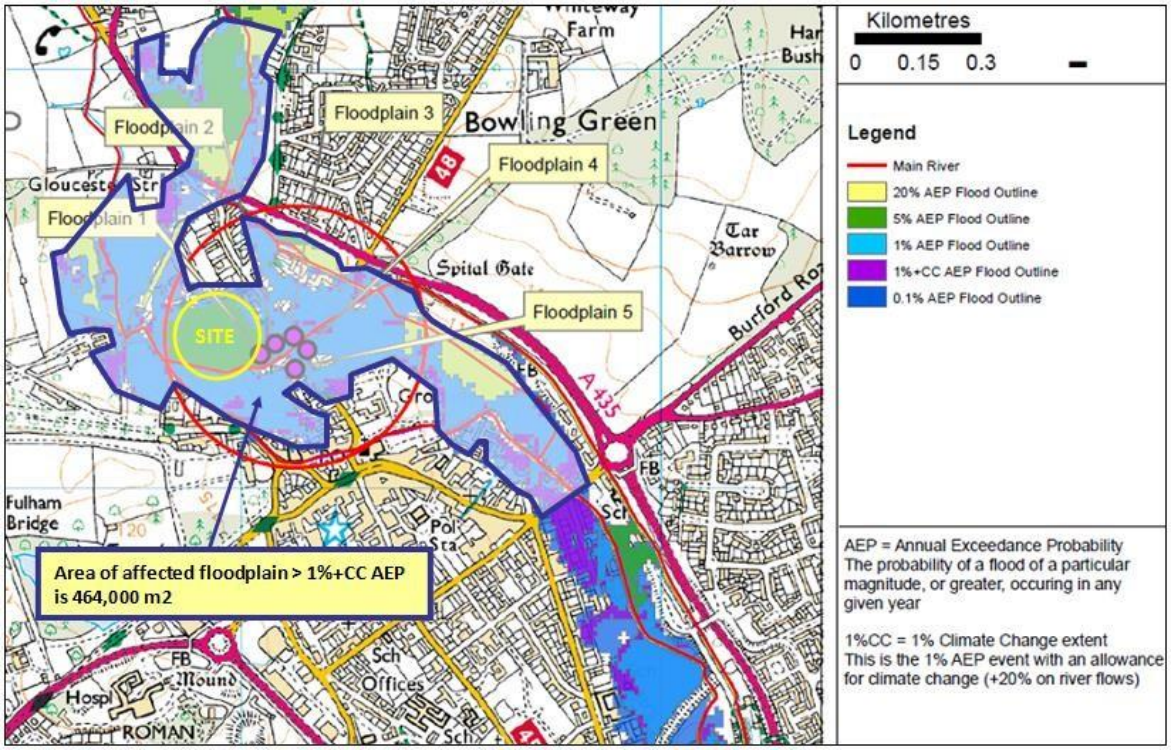
## Example 3: Powells School Flood Protection Works, UK

The 300-year old listed school buildings were protected using flood defences walls (solid and glazed flood defence walls capable of withstanding up to 1.6m high water depth. Trash screens, self-activating flood barriers and control measures were also designed and built.




*Flood modelling in the catchment around the School*

*Solid and glazed flood defence walls beside a Main River*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*Flood Wall around the school grounds*

*Self-activating flood gate (gate rises itself when floodwater enters underground control chambers)*

*Trash Screen in watercourse*



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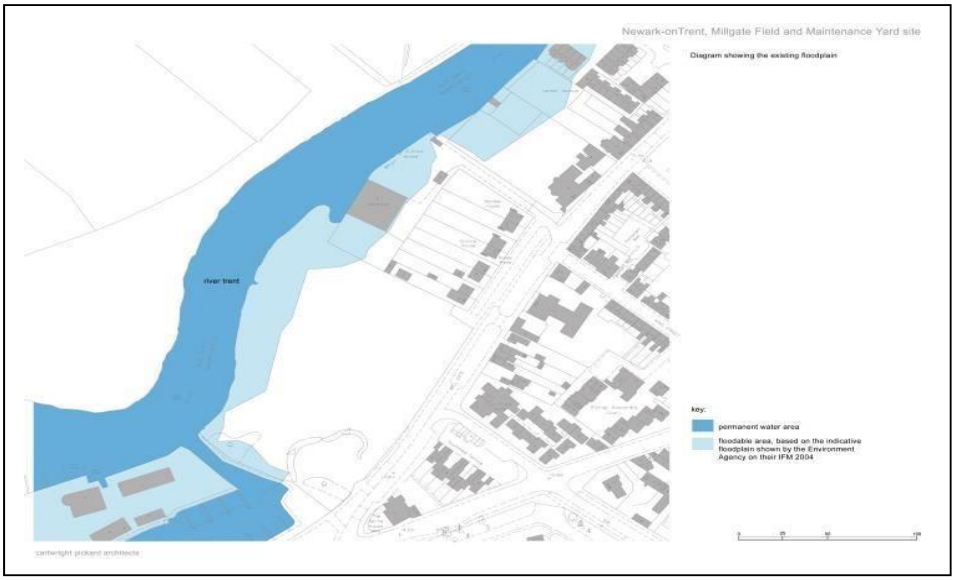
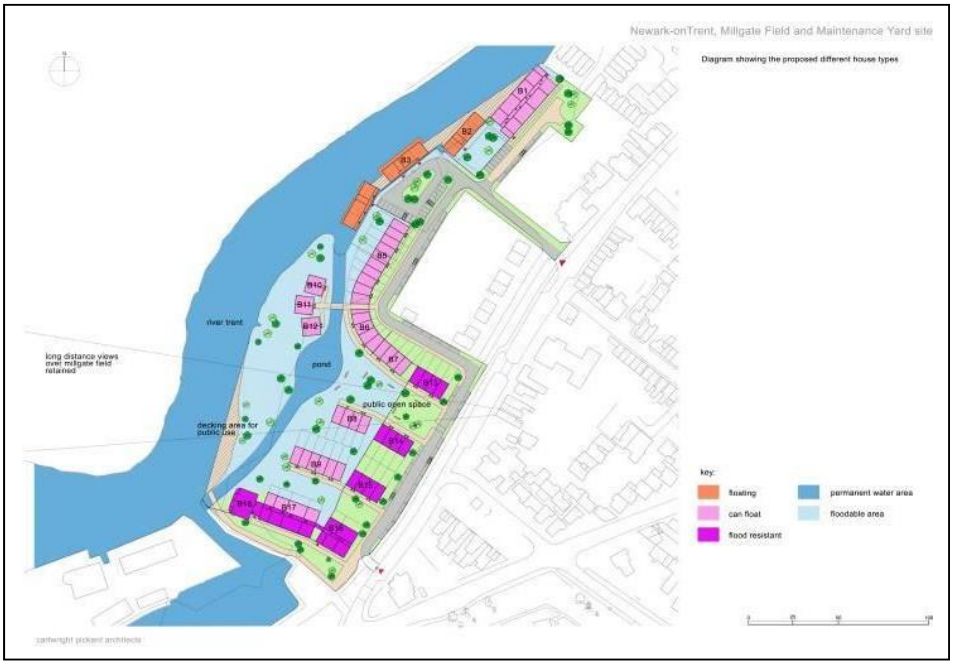
## Example 4: Nottingham, UK

An existing town near the River Stroud was prone to frequent flooding and damage to homes and infrastructure. Floodline Consulting was appointed by the local authority and the Environment Agency to identify a feasible solution that could prevent prevent flooding to the local area and fund the works at no cost to the public purse. Floodline's joint thinking on finding a technical and financial solution resulted in an innovative approach which increased flood alleviation at the site, protected the existing community using earthen flood defences and funded the entire scheme by introducing an opportunity to build traditional, flood-proof and can-float homes at the site.




*Before; site in its existing condition*




*After; showing the location of a new earth embankment, new flow channel and three types of new dwelling including traditional, can-float and fully-floating.*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*Hoe Valley Flood Alleviation Scheme including private development by others*

*Proposed flood defence embankments beside the river*



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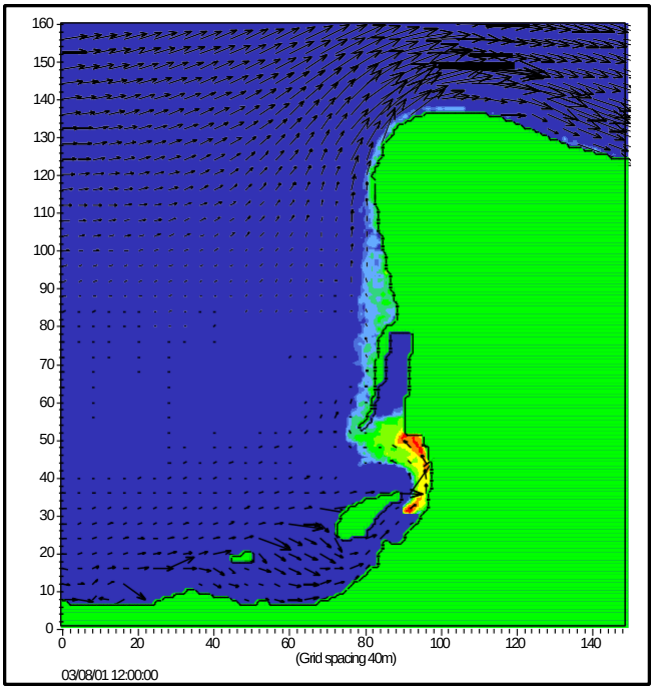
## Example 5: East Cowes, UK

This was a 8-hectare regeneration projects for the wider Cowes Waterfront Initiative (including the Local Authority, EA, English Nature and developers). Technical studies and field work campaigns involved assessment of the impact of the proposed waterfront redevelopment on the hydrographic conditions in the Medina Estuary. The East Cowes development was managed by the South East England Development Agency (SEEDA). As part of this study, assessment tools, numerical and desk based, were developed for the whole of the Medina Estuary which could be used to provide a decision tool for all future developments within the Estuary taking account of the needs and concerns of Key Stakeholders.




*Coastal flood modelling outputs*


*East Cowes Development Area*

*FEH© screen capture*



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## Other Examples of 'Living with Water'

Flooding is a major concern around the world as it results in a detrimental effect on human lives and property. Floodline Consulting takes into consideration a need to 'live safely' in areas prone to flooding. We consider this a water management challenge rather than a flood risk problem. There are many options for making use of the water environment including areas that may be susceptible to frequent flooding. In some areas heavy engineering is necessary to control floodwater. In other areas many other options are available for living safely in the water environment including;

### 1. Adaptive homes and businesses in the UK that can operate safely if the area is flooded

*WWF Building, Brewery Road, Woking, Surrey*


*Brockholes can-float Visitor Centre – Preston, Lancashire*



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*Thames Can-float, floodproof house in raised position UK Feb 2020 - Thames*

## Examples form Holland

*Can-float floodproof homes, Maasbommel, Netherlands*

*Can-Float floodproof homes, Medemblik, Netherlands*



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