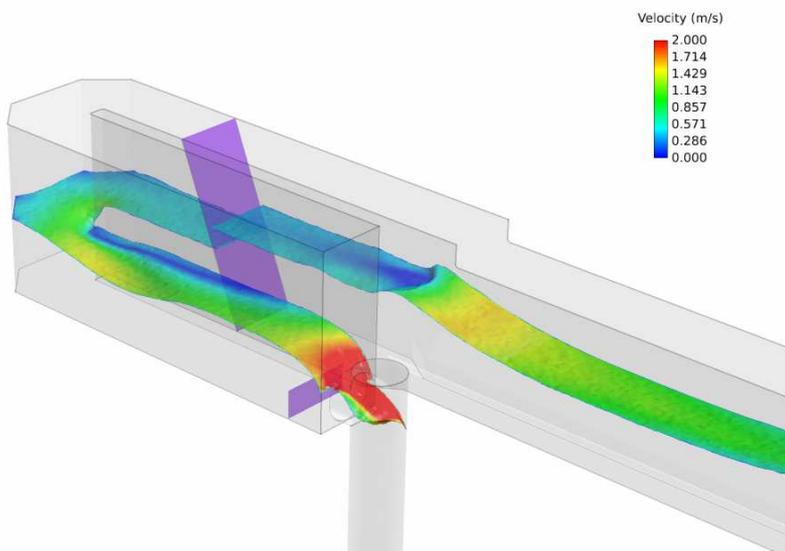


## Optimising Inlet Works

The reception plant at Wastewater Treatment facilities are commonly overlooked in terms of design. Flows from the catchment arrive at inlet works, often from multiple sources; they are screened (at least once), typically splitting down multiple lanes, with grit or larger solids removed. However, the performance of subsequent primary and secondary treatment facilities - and the operational lifetime of screens and ancillary plant - is critically dependent on even flow profiles over time.

However, when there are sharp bends, multiple channels and several inlet sources (gravity and pumped), flows rarely split equally as intended.

Wastewater, as with all incompressible fluids, tends to prefer to travel in straight lines. And solids have greater inertia than liquids, often meaning that central channels and outlets directly opposite inlets are particularly overloaded.



We have modelled a wide range of inlet works in the past ten years; predicting the flow split to screens from first principles, ensuring down pipes to secondary treatment are not blocked at high flows, reducing surging, identifying vortices and eliminating hydraulic jumps in the wastewater surface. Undesirable surface features (see the figure above) can be identified prior to construction, to ensure your treatment plant works optimally.

The Fluid Group provides expertise in a range of simulation techniques including:

- CFD (ANSYS Fluent)
- Process (GPS-X)

Recent projects using CFD include:

- Kennick Reservoir Spillway Modelling – Dartmoor National Park
- Hornsey WTW Pumping Stations
- Helsinki WwTW Clarifiers
- Boltenhagen WwTW Settlement Tanks
- Lound WTW – Northumbrian Water
- Integrated Process/CFD simulation
- Reservoir improvement
- Clarifier optimisation
- Flow split prediction
- Digester mixing, and
- Acoustic modelling

plus ...

air profiling and fluid flow in and around a range of structures: from commercially sensitive turbo-machinery, to new designs in the built environment.

To discuss potential projects, contact us:

**Tel. 0845 055 8571, or  
email: [info@thefluidgroup.com](mailto:info@thefluidgroup.com)**

## The Fluid Group are specialists in Computational Fluid Dynamics & Process Modelling for Chemical Engineering, Water and Wastewater Treatment.

### Dynamic Simulation or Steady State

- Effective selection of the best technique for each job,
- The ability to combine techniques in-house.

### Multiphase

- Air, water/chemical & solids modelled simultaneously, standard within our models,

### 3 Dimensional

- Accurate 3D model of existing structures,
- Model wireframes can be imported from existing 2D and 3D CAD designs,

### Fully Inclusive Quotation

- All known options inclusive at fixed price,
- Fast turnover, one-to-one availability,
- No hidden costs.

### Animation and still images included

- Images and animation at client's request, all free within the project, for commercial use.

### Flexibility and Innovation

- All-inclusive combination with Process and 2D Hydraulic/Network modelling if required.