FLUVIAL GEOMORPHOLOGY
FOR ENGINEERING AND ENVIRONMENTAL PROJECTS

GEOMORPHOLOGICAL ASSESSMENT AND AUDIT
Black & Veatch provides geomorphological expertise and advice on fluvial projects throughout the world. We serve the whole project lifecycle, from high level strategic studies through to detailed design and implementation.

Our experience ranges from catchment baseline surveys (CBS), as required for high level studies such as the Oxford FRMS and Chertsey Bourne Strategy, to more detailed assessment such as provided through a fluvial audit or geomorphological dynamics assessment (GDA), used to inform the design of a new river channel at Edinburgh Airport for BAA.

Our professionals use a wide range of assessment methods and advise on the geomorphological input required on a case-by-case basis, including the scope of works and type of fluvial geomorphological assessment required.

RIVER RESTORATION AND HABITAT ENHANCEMENT
Black & Veatch professionals have considerable experience and understanding of river restoration processes and planning for design including the following:

- Fluvial geomorphology in design
- Sediment continuity/connectivity issues
- Ecological and fisheries aspects of river restoration
- Return periods and channel forming discharge
- Hydromorphological assessment and restoration for the Water Framework Directive

Recent experience includes implementation of geomorphology in the design/restoration of a fish pass at Nant Mills along the Afon Cwyrrfal for DWry Cymru Welsh Water, in the north west of Snowdonia National Park.

Sediment sampling along the Gogar Burn near Edinburgh Airport.

Existing weir at Nant Mills, which is impeding fish migration.
HYDROMORPHOLOGY AND THE WATER FRAMEWORK DIRECTIVE
Black & Veatch provides specialist advice on the following:
- Implementation of the Water Framework Directive
- Hydromorphological assessment
- Development of suitable mitigation measures
- Controlled Activity Regulations (CAR) advice for Scottish water bodies

We recently provided advice for the Environment Agency-led flood management scheme along the Slad Brook, Stroud, where we investigated the potential effects associated with the constructing of flood storage areas along the Brook. In particular, we assessed where the solution would negatively affect fish spawning and therefore lead to deterioration under the Water Framework Directive.

Black & Veatch also provides specialist advice regarding morphological elements required to obtain the CAR license for works on water bodies in Scotland, such as input into the CAR application recently required for the Cogar Burn channel design at Edinburgh Airport.

SEDIMENT MONITORING
Black & Veatch provides advice on a wide range of sediment related river management issues, such as:
- Erosion/depositional issues
- Dredging studies
- Sediment monitoring
- Sediment transport modelling
- Sediment contaminate assessment
- Channel bank stability

We recently undertook a project for the Environment Agency to assess the current maintenance dredging strategy carried out along the River Parrett and Tone in Somerset (River Parrett and Tone Channel Monitoring Project).

OUR PROFESSIONAL GEOMORPHOLOGISTS CAN PROVIDE EXPERIENCE IN APPLYING BOTH QUALITATIVE AND QUANTITATIVE METHODS TO ASSESS EROSION AND SEDIMENTATION PROCESSES AND DYNAMICS WITHIN RIVERS.

Black & Veatch supported a FRMRC research study (river tone sediment study) to assess whether changing land use and sediment practices could reduce Environment Agency maintenance demands and flood risk in Taunton. Black & Veatch provided expert geomorphological advice and GIS data management input.

SPECIALIST SKILLS AND SERVICES
Black & Veatch takes pride in providing a comprehensive range of services:
- Catchment baseline surveys
- Fluvial audit
- Expert geomorphological assessment
- Hydromorphological Assessment
- Historic trends analysis
- Stream power calculations
- Sediment monitoring
- Sediment transport modelling
- Geographic Information Systems (GIS) and mobile data capture

- LiDAR and bathymetric survey analysis
- Geomorphological site investigation and mapping of geohazards and landscape
- Mobile data capture
- Modelling climate change scenarios
- Understanding of key legislation such as the Water Framework Directive

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