

the cbec news stream

Issue 1, Spring 2013



Introducing... cbec eco-engineering's first newsletter! We aim to give you a taste of the work we have been doing over the last few months plus any upcoming news of interest, and provide some food for thought on issues relating to river restoration. The theme of this newsletter is 'process restoration'. We hope you will find it an interesting diversion during your lunch or coffee break and if it provokes a discussion, even better! We are always eager to hear your views or comments - drop us an email at info@cbecoeng.co.uk or visit us on Facebook.

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Events

cbec has a busy conference schedule this year and they offer a good chance for you to meet our staff in person. Why not come along to discuss your needs?

- 27th April Freshwater Algae Identification, London Field Studies Council, London
- 30th April - 1st May 14th Annual Network Conference: Scaling up our Aspirations for River Restoration and Management, River Restoration Centre (visit our stand!)
- 16th May Community Led Catchment Planning and Delivery Conference & Workshop, Rivers Trust, Bristol
- 25th - 28th June European Eel Conference 'Breaking Down Barriers', IFM, London.
- 11th - 13th September European River Restoration Conference: Celebrating Successes and Addressing Challenges, ECRR, Vienna, Austria.
- 22nd - 24th October IFM Annual Conference 'What can fisheries do for us? - Learning from past successes, preparing for the future', IFM, Cardiff.



We attend conferences throughout the year, so visit our website for the latest additions plus links to the conferences above: www.cbecoeng.co.uk/news.php. For any comments or enquiries, email newsletter@cbecoeng.co.uk.

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Case Study - River Lorgy Restoration

At cbec we like to get out and get our waders wet - even in the middle of winter! Read on for a case study of 'process restoration' in action, regardless of the weather.

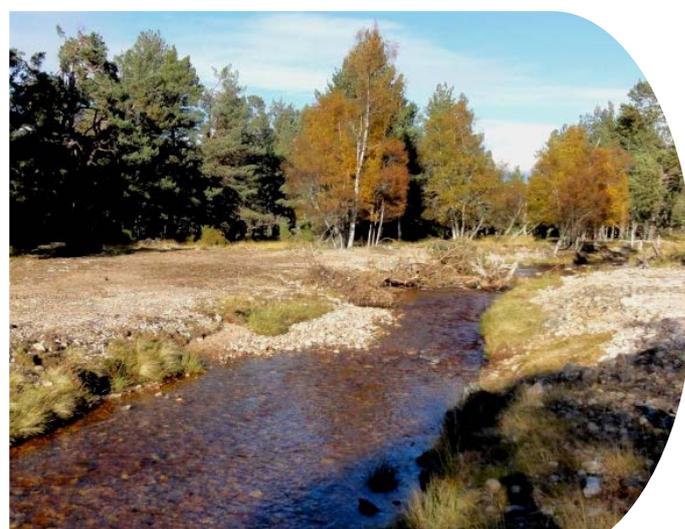
cbec has recently completed a restoration project on two tributaries of the River Dulnain within the Spey system, near Carrbridge in the Cairngorms National Park. We were able to apply the process restoration principle fully in this situation and after a few floods implemented works have proved very successful. We developed a restoration/management strategy for two tributaries of the River Dulnain, the Allt an t-Slugain and the Allt Lorgy. High resolution topographic surveys and fluvial audits developed a detailed understanding of physical processes and, coupled with a historical assessment, the dominant impacts to natural ('reference') conditions were identified.

Integration with further ecological/habitat surveys, cost-benefit assessments and stakeholder/landowner input led to detailed restoration plans for each of the sites. Construction works relating to the restoration plan on the Allt Lorgy were completed, including embankment removal, the infilling of floodplain ditches/drains, gravel augmentation and large wood placement. A detailed monitoring programme will now follow the construction phase in order to quantify the longer-term effects of the works. The works were completed in September 2012 and subsequent monitoring visits have shown the river to be developing a more natural geomorphology and flow regime.

River Lorgy, Pre-Works



River Lorgy, Post-Works



Above: Increased channel physical diversity following the first significant flood event after completion of restoration works on a section of the Allt Lorgy.

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Why Process Restoration Makes Sense

cbec's restoration work is founded on the principle of 'process restoration'. Our Director, Dr Hamish Moir, has co-authored a seminal paper on this philosophy (Beechie et al., 2010). Here we give a brief explanation of why we believe this concept to be so important and some ideas for ensuring that restoration projects result in long-term success.

Process restoration aims to solve issues in rivers by restoring natural fluvial process, as opposed to simply reproducing channel form. In practice, this involves the removal of artificial features and modification of land use practices that act to impede the natural function of the river system. The philosophy explicitly aims to treat the 'cause' rather than the 'symptom' of problems, creating an alternative to traditional engineering-based and site-specific river management.

The process-based approach provides a more sustainable and long-term economical solution to river restoration, encouraging self-sustaining river and floodplain processes and minimising the need for future intervention. Since physical process and form in rivers systems provide the template that supports habitats, it is an implicit assumption of the approach that restoring natural fluvial functioning will produce a positive biotic response and be reflected in system 'ecological health' and biodiversity.

Of course, there are usually obstacles to returning a river to a completely natural state. The challenge of the approach is to identify how to achieve the optimum degree of natural process whilst also balancing the constraints imposed by factors such as land ownership, infrastructure, economic and legislative issues.

In many cases the process restoration approach challenges the way in which people think about rivers. Decades of intervention and engineering have altered perceptions of what a river should look like and how it should behave. As more rivers are targeted for restoration we hope that adoption of the process restoration philosophy will show that by allowing rivers to behave in a more natural way, they can be managed sustainably with benefits to people, the environment and the economy.

What is your opinion on process restoration? Comment on cbec's Facebook, or email newsletter@cbecoeng.co.uk.

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A Reminder of cbec...

We focus on innovative and sustainable solutions for the water resources industry. Our research and experience enable us to combine the demands of flood-risk reduction with ecosystem enhancement and other considerations such as agricultural and urban development.

We couple this with cbec's extensive experience in a broad range of past projects: from total management of large, multi-disciplinary, multi-stakeholder water resources projects within one of our specialised Focus Areas; to providing specific modelling, surveying or data analysis within an individual Technical Service.

Focus Areas

Our services can be tailored to each project's requirements and can be used separately or in conjunction with our other offerings.

Flood Risk Management:

We combine the needs of flood risk management, ecosystem enhancement, urban development and agriculture to develop multi-objective, holistic, and sustainable solutions to floodplain and channel management issues.

River Restoration:

We use advanced hydrological, hydrographical and topographical survey techniques. These combine with the latest hydrodynamic and ecological modelling methods to enhance floodplains without impacting related factors.

Hydropower Support:

We perform a variety of desk-based and field services to support the development of new hydro-power projects, licensing and applications, post-commissioning monitoring, surveys, assessments and installations.

Diffuse Pollution Control:

We are pioneers in the field of hydromodification planning and design, and we are influencing the way water sensitive design is incorporated into new and infill development. We cover urban and rural diffuse pollution analyses, planning and design.

Fisheries Management:

Our fisheries services include habitat surveys, barrier assessment, fish pass and screening evaluation, design and placement of hydraulic structures and experimental fieldwork.

Technical Services

We provide a range of technical services, available both individually or in combinations applied to a 'Focus Area'.

Field Surveying

Our services include bespoke fluvial audits, discharge gauging, water quality monitoring, long-term meteorological monitoring, topographic and bathymetric surveying, sediment characterisation and transport monitoring and many more.

Hydrology

For years, our staff have applied hydrological theory and practice, pioneering new methodologies and techniques. We conduct hydrologic modelling assessments investigating drainage, runoff, flood risk, water budgets and so forth.

Hydraulics

Applied analyses range in complexity from simple spreadsheet models to complex 3D computational fluid dynamics simulations. These include bridge scour, fish swimming and passage, tidal and fluvial sediment transport and water quality.

Geomorphology

We conduct geomorphic reconnaissance and detailed analyses. We use our own Moir Fluvial Audit methodology and offer geomorphic interpretation and assessment, historical channel analysis, stream power assessment, habitat and GPS mapping.

Design

Our services cover streams, rivers, estuaries and tidal zones, including channel realignment, wetland design, river restoration and catchment plans. We also offer SUDS, SuDS, and modelling-based habitat design.

Feel free to contact us for more information, past experience, for quotes or just to discuss your preliminary ideas.

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