River Restoration Scheme as Part of a Mixed Use Redevelopment

Key Issues –

This case study provides an overview of a river restoration scheme (RRS) proposed for Dibbinsdale Brook as part of the redevelopment of the former Croda site in Bromborough. The scheme aims to provide volume for volume compensation to mitigate for raising the level of land within Flood Zones 1, 2 and 3 to acceptable levels for redevelopment of the site for residential and commercial use.

The stretch of Dibbinsdale Brook that borders the development site has long been canalised and lacks ecological interest, issues which the RRS aimed to improve.

The scheme relied upon detailed early consultation with the Environment Agency and provides an example of innovative flood risk alleviation being used to restore natural fluvial processes and river habitat.

Description of the project –

Dibbin Estate and Equipment Ltd propose to demolish a former chemical processing plant and construct a mixed-use commercial and residential redevelopment on the site.

The 15 ha site, situated near the banks of the Mersey Estuary, was originally a candle factory in the 1850s, and later a successful soap factory owned by the Lever Brothers, who also built their vision of a model village, Port Sunlight, alongside the factory to accommodate their workers and improve their welfare. The factory site was later used by Unilever and Croda as a chemical processing plant. The site is currently vacant, except for the decommissioned processing plant, which require dismantling and removal prior to the site being levelled ready for construction.

The site is bounded to the north and east by Dibbinsdale Brook and former Bromborough Dock, and beyond that the Mersey Estuary, which is designated as an Special Protection Area (SPA) for internationally important winter and passage birds. The site lies within Flood Risk Zones 1, 2 and 3, but there is limited opportunity for providing level for level flood storage compensation, required to allow parts of the site to be raised to provide finished floor levels suitable for residential and commercial development.
Lessons learnt –

Cascade Consulting undertook a preliminary Flood Risk Assessment (FRA) of the site to establish potential risk to redevelopment. The FRA concluded that large proportions of the site would not be suitable for development due to flooding, without mitigation.

Typically, mitigation would comprise raising floor levels and access routes using level for level compensation, however there was limited opportunity for level for level compensation within the site. At this early stage in the planning process, Cascade Consulting consulted with the Environment Agency about flood risk issues, and arranged a site visit to discuss our proposed options for a RRS on Dibbinsdale Brook.

Dibbinsdale Brook originally meandered naturally along the northern boundary of the site, but was widened for use as a dock with access to the Mersey Estuary during the early 20th century. During the post war era, the docks were closed and infilled to create the current canalised section with v-shaped channel and steep banks.

We proposed an innovative RRS to restore this stretch of Dibbinsdale Brook to a more naturalised form, with the watercourse aligned more centrally within the channel to reduce risk of erosion to neighbouring property, and the steep banks opened to provide marginal floodplain and intertidal habitat, improving the range of habitat available. Critically the RRS would also provide volume for volume flood storage compensation through removal of material excavated from the channel. The material proposed for excavation was tested for contaminants, which confirmed its suitability for re-use elsewhere on site to raise levels.

The Environment Agency agreed to waive the “level for level” requirement for flood storage compensation in view of the benefit of the scheme in restoring this stretch of the Dibbinsdale Brook to a more naturalised state.

Lessons learnt cont. –

Benefits of the scheme included providing permanent new habitats, i.e. shoals and riffles in the channel and marginal inter-tidal wetland areas along the riverbank, and improving its recreational value.

Preliminary RRS design suggest the scheme will provide 20,000m³ of compensation storage volume and sufficient excavated material to raise the area of the site lying in Flood Zone 3 to achieve at least protection from an extreme 2115 1 in 100 year fluvial flood event.

The key lesson learnt from the scheme is that through thoughtful design, RRS can be used to provide multiple benefits (flood alleviation, habitat creation, recreation, etc) and thereby help developers to achieve planning consent.

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