ESP was commissioned to rework the restoration proposals for Ardley North Quarry, Oxfordshire by Smiths and Sons (Bletchington) Limited as mineral workings neared completion in 2010. Together with our client, ESP recognised the potential for improving bio and geo diversity beyond the scope of the approved low-level agricultural scheme, through the creation of ‘off-line’ wetlands, unaffected by agricultural or urban pollutants.

Using detailed topographical and on-site surveys, a series of overflowing ponds was designed with varying depths, edge profiles, islands and shore treatments to control the flow of surface water. A weir sill cut through the rock headland in the corner of the quarry forms the outfall which links the bottom pond to an existing stream. A seasonal spring was discovered as works began and incorporated into the scheme, creating a spring-fed marsh above the upper pond.

A volumetrically balanced restoration landform was designed with digital terrain modelling software and transferred to earthmoving plant on site. It was essential for the earthmoving plant operators to work to fine tolerances using GPS guidance so that the ponds and outfall system worked exactly as designed.

The original seed burden was allowed to germinate, establishing the initial sward during the spring of 2011, which was then oversown with an Emmorsgate meadow mix later in the autumn. The brash side slopes were contour ploughed in order to relieve compaction and prevent surface attrition, allowing them to naturally regenerate as calcareous grassland.

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The sensitive and detailed design of the pond network and surrounding landform by ESP was a critical factor in gaining planning approval for the revised restoration proposals. Smith’s decision to enter the site into the Mineral Products Association’s Biodiversity Awards 2013 was justified when the project won the award for the Innovation Category; just three years after last tonne of aggregate was quarried.

The minimal intervention approach to this restoration allowed Smiths & Sons (Bletchington) Ltd to showcase the site’s potential bio and geo diversity, without the costly long-term conservation land management techniques normally associated with ecologically enhanced restorations.