

While it remains an active quarry with parts being used for gravel extraction, Bardon Aggregates' Bestwall Quarry now provides important natural habitats for wildlife as a result of a major environmental and restoration programme that began more than 15 years ago and has also raised the standard of restoration in the county of Dorset.

Bestwall Quarry is situated close to the historic town of Wareham in south-east Dorset. Poole Harbour lies to the east and the land, which has Sites of Special Scientific Interest (SSSI) on three sides, is bounded to the north and south by the rivers Piddle and Frome. In addition, adjacent areas of grassland and Poole Harbour have each been designated as a Special Protection Area (SPA). Poole Harbour SPA represents a large natural harbour comprising extensive tidal mudflats and saltmarshes, together with associated reed beds, freshwater marshes and wet grasslands.

The land occupied by Bestwall Quarry is covered by the Biodiversity Action Plan (BAP) for Purbeck, which is co-ordinated by the local district council. Within the BAP a range of key species and habitats were identified as priorities for the delivery of biodiversity conservation. This includes a variety of habitats that Bardon Aggregates have included within their restoration plan, including lowland wet grassland, unimproved lowland neutral grassland, standing open water and reed bed.

Both the environmental/ restoration programme and the gravel extraction itself were preceded by an archaeological evaluation.

Initially, potential was thought to be limited, but it developed into a full-scale open-area excavation that has allowed a 10,000-year history of this area of Dorset to be accurately charted. The dig has revealed many



Aerial view of Bestwall Quarry

Looking Beneath the Surface at Bestwall

thousands of finds including 48,348 pieces of worked flint from the early Mesolithic Age, 12,595 shards of Bronze Age pottery and an astounding two tonnes of Roman pottery.

As a result, the archaeological investigation, gravel-extraction operation and restoration programme have been interlinked, and required close consultation between all parties involved, including English Nature, the Wildfowl and Wetlands Trust, the RSPB, Bardon Aggregates, the local community and local councils.

Planning permission to

extract gravel from a 55ha area of the site, bought by parent company Aggregate Industries, on the Bestwall peninsula was granted in 1991 and work began in 1992.

Bardon Aggregates have wholeheartedly supported the archaeological project, planning extraction activity in line with the archaeological activity. In addition to almost £200,000 from the Aggregates Levy Sustainability Fund (ALSF), Bardon Aggregates have also contributed to the completion and publication of the project.

In a recently published booklet



Gravel extraction takes place once an archeological evaluation has been carried out

Environment & Restoration



Reed bed planting on the lakeside

charting the progress of the archaeological project, Simon Thurley, chief executive of English Heritage, commented: 'The project fulfils a number of English Heritage objectives by demonstrating that a local community can successfully carry out academically important research to the highest professional standards, while also helping to train the next generation of archaeologists.'

'More impressive still is the way that a working relationship has developed between the Bestwall Quarry team and the extracting company, enabling the successful excavation of 55ha of historic landscape over the last 15 years.'

The archaeological project was led by amateur archaeologist and project leader Lilian Ladle. She said: 'Modern gravel extraction has continued a long tradition of using the local mineral reserves, which began in the early-

Mesolithic period when the first flint tools were made.

'Had it not been for quarrying, the extraordinary richness of the archaeological tapestry would have remained hidden. The work could not have been achieved without the unstinting support of Bardon Aggregates and their staff.'

Extraction and Restoration

As the gravel extraction has progressed, phased restoration has left the quarry area with an enhanced amenity value.

The Wetlands Advisory Service (WAS) — part of the Wildfowl and Wetlands Trust — was commissioned by Bardon Aggregates to advise on the restoration of the gravel workings at Bestwall Quarry.

Rebecca Woodward, senior wetland ornithologist with WAS, said: 'Our objective was to investigate the feasibility of creating wetland habitats and to produce habitat restoration designs in keeping with adjacent areas of high conservation value with respect to the Section 73 planning application.'

'In consultation with stakeholders such as English Nature and the RSPB, our restoration plan creates a wildlife lake with extensive reed beds within a dedicated conservation area, which maximizes the ecological potential of the area. We aimed to provide a mosaic of

habitats in order to increase the overall diversity of the site, in particular for waterbirds, while meeting the requirements of the Purbeck BAP.'

The mosaic of habitats created at Bestwall includes:

Reed beds

The western margin of the lake now contains an extensive (greater than 4ha) stand of freshwater reed bed that will encourage dense patches of common reed to grow, separated by open water channels and pools. This satisfies the Purbeck BAP target habitats, and is thought to be one of the largest freshwater reed beds in Dorset, which it is hoped will become a haven for birds and other wildlife. The reed beds have been planted with reeds grown from seeds collected locally.

Islands

The plan has also included the construction of a number of gravel islands, approximately 0.5ha in total. The islands were designed to provide suitable habitats for loafing and roosting wildfowl, little ringed plover and breeding common tern, and are ideal because they encourage wildfowl to breed and reduce the risk of predation.

Wader scrapes

Between the individual islands, seasonally inundated areas of shallow water between 0–0.2m suitable for waders, such as the redshank and the curlew, are being created. Topsoil excavated from the overburden is added locally in thicknesses of less than 0.1m to provide local nutrient-rich areas in order to establish a rich invertebrate food source. In addition, some of the wader scrapes will be surrounded by deeper water, again to reduce the risk from predators.

Wet woodland

An extensive fringe of wet woodland has also been planted along the northern shore of the lake; this complements the existing fringing copses and provides a link between other areas of the woodland from the west and east. The aim is that this aspect of the plan will become a pioneering woody vegetation community at the margins of standing open waters, including

Creeping thistle, just one of the many species of flora found at the site





Gatekeeper butterfly on a bramble

trees such as alder and willow and at the same time attract a wider range of flora and fauna.

Open water

The most extensive habitat to be created is the open freshwater of the wildlife lake and the WAS design aims to provide habitats to complement those currently used by the waterbird species in Poole Harbour, including the red-throated diver and the goldeneye.

This again links into the aims and objectives of the Purbeck BAP.

Results

Progressive restoration began in 1994 and this new and attractive wetland environment is already increasing biodiversity and adding to the ecological value of the area. Bestwall received a Quarry Products Association Restoration Award in 2000 for its environmental and restoration programme.

Dave Searle, quarry manager at nearby Warmwell Quarry, has been closely involved in the Bestwall project.

He said: 'The quarrying industry is sometimes seen as being incompatible with nature when in reality, the opposite is true — indeed the industry is playing an important role in helping to achieve the Government's biodiversity targets. This project is further evidence that business and biodiversity can co-exist happily side by side.'

Bestwall Quarry produces approximately 160,000 tonnes of sand and gravel a year, which is processed at nearby Tatchells



A honeybee on a thistle

Quarry and supplied to local concrete plants and to the wider building industry. In addition, around 43,000 tonnes of sharp washed pit sand is shipped from Poole to the Channel Islands each year.

Extraction at the site will be completed by the end of the year. The habitats have been designed to minimize the burden of long-term site management, though Bestwall will continue to be managed in an ecologically sensitive way by a nature conservation organization in the future. ■