

**SUDBROOK PAPERMILL SITE
SUDBROOK VILLAGE – MONMOUTHSHIRE, UK**

Arcadis/ Redrow Homes

BIG Biodiversity Challenge Award Category: *Biodiversity Legacy Award*

Project overview

Sudbrook Village is on the banks of the Severn Estuary. It was built for railway workers and supported a paper mill which closed in 2006. Arcadis has delivered the project from site closure and disposal to development of the masterplan, and residential redevelopment as well as habitat creation, management and monitoring, maintaining the principles of sustainability.

What were the biodiversity conditions on site, prior to the enhancement?

This 100 acre (over 40ha) site included a papermill, which **supported small numbers of non-breeding, transient, roosts for common pipistrelle, lesser horseshoe and brown long eared bats**, 34 acres of previously developed land (concrete) former plantation woodland, agricultural land, and a Scheduled Ancient Monument. The **Severn Estuary SPA/SAC/ Ramsar for wintering birds and salt marsh habitats was adjacent to the site**, within the site there is a **county wildlife site**, and a **population of slow-worms**. The development is still ongoing but mitigation and enhancement was installed **in advance of development**, Arcadis is undertaking the monitoring for the habitat creation.

What were the reasons behind this project ?

The project focused on **innovative mitigation and enhancement measures** to avoid any significant effects on the Severn Estuary. Furthermore, a sustainable approach to development protected the former plantation woodland and the Scheduled Ancient Monument on site. Arcadis managed to deliver biodiversity net gain through habitat design and creation, site supervision, mitigation and management plans, and ecological monitoring.



Main papermill building prior to demolition



Purpose-built bat house



What were the biodiversity measures taken?

The masterplan was designed to **maximise ecological value of previously developed land and existing habitat**. Important features including the former plantation, the CWS and Scheduled Ancient Monument and protected species populations were safeguarded and enhanced throughout. In addition to delivering habitat quality habitat in general, the scheme delivered **1 ha of bespoke south facing reptile habitat**. Arcadis designed a **bespoke bat house**, which contained rooms to be used for **light sampling** with **feeding perches**, a **loft with hot boxes** and a **room with a cool tower**. It also contains many features suitable for crevice dwelling bats: **weather boarding, tiles, access to cavity walls**. It is of concrete construction with a steel door so that it is **resistant to vandalism**- so far there has been none. Arcadis obtained **advance planning permission** for this building so that it could be **erected well in advance** of demolition and construction works. Monitoring by Arcadis in 2020 confirmed that **all three species of bats** are using the building as a roost and for the first time there is now also a **maternity roost** comprising **15 adult lesser horseshoe bats, three with pups**, it is also being used as a **hibernation roost**. This has **enhanced the population status** of this rare species as previously only transient non-breeding roosting bats were present within the site. It is estimated that the UK has over 170 maternity roosts and over 300 hibernation sites (hibernacula) for this species <https://sac.jncc.gov.uk/species/S1303/>.

The success of this bat house is due to the multiple features it incorporates within it and the surrounding habitat has been designed to support foraging bats including cattle grazed pasture, hedgerows, scrub and **ditches / reens** to provide connecting habitats. The cattle producing dung in surrounding field **support invertebrate prey species for horseshoe bats** in particular.

By incorporating open space into the scheme design and linking the site to the existing footpath and cycle network a healthy active travel environment has been created environment for the new residents and recreation is encouraged away from more sensitive habitats.



Masterplan enhancing the previously developed land



Breeding colony of lesser horseshoe bats



Further information

Continued monitoring has revealed the grassland remains cattle-grazed with an appropriate stocking density, ensuring the fields are not poached, providing suitable foraging habitat for rare lesser horseshoe bats. The hedgerows and stock-proof fencing ensure suitable reptile habitat is maintained.

An **invasive plant species eradication programme** was instigated, no Japanese Knotweed or Himalayan Balsam have been recorded on site since 2016. Plant species diversity in the retained habitats has been maintained, and the reptile receptor site is beginning to develop a **more botanically diverse sward**.

Installing such quality mitigation so long in advance of construction did incur additional costs, but by undertaking ecological surveys in advance and making that information available to the potential purchasers this was factored into the sale.

Committing to **completing mitigation measures in advance of receipt of planning permission and construction** enabled Redrow Homes to redevelop without constraints. We and Redrow Homes have been committed to ensuring that ecological monitoring does take place and **remedial actions undertaken** where required for example repairs to the stock-proof fence to ensure that the reptile habitat retains it's best condition. Mitigation in retained farmland with low density stocking and a long term management plan means that the **long-term future of the measures and their management has been secured**.

Project Team

- Client Redrow Homes
- Arcadis Consulting UK Ltd

What was the motivation for carrying out the enhancement?

To ensure sustainable development in a sensitive location and to remove constraints prior to construction to facilitate land purchase.



Area to receive reptiles with new hibernacula created and fenced to protect from future grazing:



Pasture continues to be grazed to provide habitat for bats area with reptiles remains fenced