



CONNINGBROOK

CASE STUDY





The newly planted reed beds starting to establish.

CONNINGBROOK, KENT A NEW APPROACH TO NUTRIENT NEUTRALITY

The challenge of delivering up to 725 new homes at Conningbrook in Ashford, Kent, while ensuring no overall increase in nutrient levels in the Stodmarsh Special Area of Conservation, is one Redrow and its development partner Quinn Estates have met with a pioneering solution.

By cleverly engineering a new £3.5 million wetland on a neighbouring site, to naturally filter out excess nitrates and phosphates from the Great Stour River, they have been able to ensure nutrient neutrality, while providing new habitats for wildlife.

Quinn Estates secured the allocation of the land, and a subsequent hybrid planning permission for the wider Conningbrook site and the first phase in January 2022. The off-site wetlands were given the green light by Ashford Borough Council in July 2022, with subsequent approval from the Environment Agency in November 2022.

Redrow will be building the first phase at Conningbrook, which features 288 much-needed new homes, and a local centre to be delivered by Quinn Estates, while leading on the creation the wetlands, new primary school, parkland and a village green, alongside a new community building and home for Ashford Town Bowls Club.

A further 437 homes at the location will be subject to reserved matters planning.

KEY FACTS



UP TO
725
NEW HOMES
IN TOTAL



3.2 HA WETLAND CREATED
AT A COST OF £3.5m



33 HA
SITE

AROUND
11.5



HA OF OPEN SPACE (35% OF THE TOTAL SITE) INCLUDING
PLAY AREAS, A VILLAGE GREEN AND NEW PARK



30%

AFFORDABLE HOMES



NEW ONSITE COMMUNITY FACILITIES
INCLUDING A PRIMARY SCHOOL, COMMUNITY
BUILDING, BOWLS CLUB AND LOCAL CENTRE



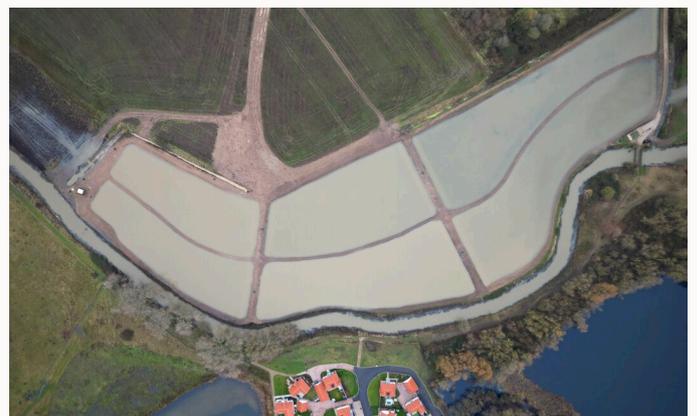
The new wetlands extract water from the river and clean it before it rejoins the river.

WHAT IS NUTRIENT NEUTRALITY?

In areas where nutrient levels at protected sites are deemed too high – in this case at the Stodmarsh Special Area of Conservation near Canterbury – developers in the area are required by Natural England to deliver offset solutions. These must mitigate for any increase in nutrient loading reaching the protected site through post treatment foul and surface water discharges.

Conningbrook is close to the Great Stour River, and within the designated Stour Valley river catchment area, which directly impacts water quality at Stodmarsh. It is therefore required to adhere to Natural England’s water quality advice. Essentially Quinn Estates, Redrow, and other homebuilders in the area, must ensure their schemes do not lead to an overall increase in nutrient levels at Stodmarsh, otherwise they cannot go ahead.

For this site, taking the development land out of agricultural use has already had a positive impact on nutrient levels, and provided some mitigation. However, further work to offset additional nutrients – which would be expected to enter the water as a result of new homes (via a wastewater treatment works, which discharges into the Stour Valley) – was required.



A PIONEERING SOLUTION

“This is the first technical solution using a wetland to address nutrient neutrality in the South East,” said Glenn Holliday, technical director for Redrow (South East). “While the industry continues to press government to deliver solutions to the issue, which is delaying planning permissions, we are finding new solutions to offset the impact of housing developments on nutrient levels and meet the requirements of the current legislation.

“It’s important to us that these solutions also have a positive impact on biodiversity and the new wetlands at Conningbrook will provide habitats for native wildlife. Ours is the first wetlands scheme of this type in the South East to have received both planning permission and Environment Agency permits to facilitate nutrient neutrality.”

The wetlands method works by extracting a small portion of the flow from the river, sending it through specially planted reed beds, which help to filter the nitrates and phosphates from the water, before the water rejoins the main river.

Glenn added: “The treatment process is entirely natural. Microbes living within the wetland soil and on the stems of the reeds help to convert the nutrients in the water to new soil and plant tissue, and harmless nitrogen gas.”

Located to the east of the Conningbrook development, the new wetlands have been created on former agricultural land, which had acted as a functional floodplain.

While the wetlands site has been created to appear as natural as possible, with the planting of 140,000 reeds its natural core, it’s underpinned by engineered infrastructure.

Its main components are two precast concrete river headwalls, submerged throughout the year on the bank of the Great Stour River. The first of these headwalls extracts water from the river, and a ‘wet well’ station, connected to the headwall via a buried pipe, brings water into the reed beds. Water is pumped from the wet well to the wetlands by an electric pumping station.

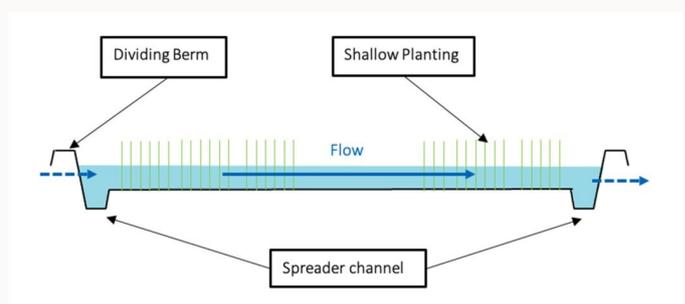
The inflow rate is controlled across the year, varying from 400m³ per day during summer months and up to a maximum of 2,000m³ per day between mid-December and mid-April.



The reed beds, planted in open water, have been arranged in a series of cells, each surrounded by raised earth ‘berms’. Water is brought in via two equal flow paths, which each travel through three reed cells. A portion of excess nutrients are removed from the water through a combination of sedimentation, plant growth and denitrification processes.

The water then leaves the wetlands and returns to the river via the second riverbank headwall.

Native species-rich grassland, shrubs and trees have been planted to provide habitats for wildlife and screening around the pumping station and other engineered features.



A LONG-TERM PLAN

While the new wetlands will blend beautifully into their surroundings, they are the result of a long and complex planning and engineering project to overcome a ban placed on all development in the area that did not address nutrient neutrality.

The ban initially delayed the delivery of hundreds of much-needed new homes at Conningbrook – an important strategic site in the council’s Local Plan to meet high demand for housing locally.

It took more than three years from the submission of a hybrid planning permission for the site in January 2020, for work to begin on the wetlands in April 2023.

The wetlands required its own separate planning application, also submitted by Quinn Estates, and approval on nutrient neutrality requirements from Natural England, before The Environment Agency could provide the required permits.



TIMELINE



The wetlands became operational in January 2024, just prior to the first home completions, as was a requirement of the planning permission. As the wetlands are located next to Conningbrook, alongside the Great Stour River, Redrow and Quinn Estates have reached an agreement with the landowner to lease the wetlands site for 100 years.

During the nine-months of construction, the wetlands site has been carefully managed and monitored by their designers Water Design Engineers, including mitigating any impact on local wildlife and the river itself. Following an ecological appraisal by Aspect Ecology, measures were taken to protect and enhance the riverbank and hedgerows nearby during the works, including the removal of invasive species such as Himalayan Balsam.

Future care of the wetlands will be undertaken on behalf of Redrow, Quinn Estates, and the local community, by Trustgreen, an open-space management company which specialises in promoting natural habitats and biodiversity. As well as cleaning water from the Great Stour, the wetland will deliver an additional area of habitat for native wildlife; it is likely to be attractive to a range of insects, birds and amphibians.

The wetland area will be partly accessible via an existing public right of way, a concrete path and bridleway, which has been enhanced as part of the works, with the area cleared of overgrown vegetation for access. The wider development site will also eventually link to Conningbrook Lakes Country Park to the south via a proposed new footbridge over the railway, ensuring people living at the development and in the surrounding community can spend time in these natural areas.



A THRIVING NEW COMMUNITY

With the first residents moving into their new homes in early 2024, and a new school and community centre planned, Conningbrook is taking shape as a vibrant new neighbourhood.

The first phase, Crown Hill View, is on sale now, offering people the perfect life balance, within commuting distance of the capital and south coast but with green space on the doorstep and views of an area of outstanding natural beauty.

A collection of three, four and five-bedroom homes is priced from £400,000.

For more information see:

www.redrow.co.uk/developments/crown-hill-view-conningbrook.

