

Westhill, Kettering



SuDS used

- *Large balancing pond for attenuation*
- *Below-ground plastic crates within plot gardens, used as soakways to place water back into the ground*

Benefits

- *The SuDS have been integrated within a new country park to create a large amenity space for residents to use along with the general public*
- *This external space benefits the health and wellbeing of residents thanks to the inclusion of a trim trail, picnic areas, benches, a viewing area for children, orchards and native tree planting*

1. Location

Westhill, Kettering, Northamptonshire, NN15 7LB

2. Description

Kier Living's Westhill development has planning permission for 420 residential properties, a primary school, a care home and a county park. Following a detailed design code compiled during the

planning application process, the site also includes a neighbourhood centre with retail units, an onsite foul pumping station and allotments.

Currently, 185 dwellings have been constructed and sold, along with the allotments and the country park. Also completed are the foul pump station and the infrastructure within the site, plus the off-site highways works. Works within phase 2 are currently underway with the construction of a new care facility and affordable housing.

The 250m-long attenuation pond forms an integral part of this large urban extension to Kettering, all of which has created a new local environment in which people want to live, learn and play. A video about Westhill can be viewed here: https://www.kierliving.co.uk/kettering_westhill-14221



Fig 1

3. Main SuDS components used

With differing ground conditions at Westhill, the drainage strategy had to be formulated accordingly. It was found that a proportion of the site was suitable for on-plot soakaways, where rainwater could be taken from dwelling roofs and returned back into the ground. Elsewhere, parts of the site, which are located in clay soils with low impermeability, would drain to the attenuation pond before being discharged into an existing water course.

It was critical to locate this pond in just the right place. The lower part of the site is used by the Environment Agency as a flood plain, in case neighbouring Cranley Reservoir has to be drained on an emergency basis. As a result, it was imperative to carry out flood modelling of adjacent Slade Brook to ensure that the pond location would not inhibit these flows and cause issues with the Environment Agency plans.



Fig 2

4. How it works

The pond works as a large attenuation feature, designed to withstand a climate change event which has a 1 per cent chance of taking place each year, plus 30 per cent of extra water.

This means that inflows are unlimited but outflows are limited to a greenfield run-off rate of 5 litres per second via new headwall and penstock. The new headwall drains into a ditch, which was created by extending an existing ditch further into the site. This then outfalls into Slade Brook.

Water quality is managed by the use of aquatic plants within a planted belt in the pond itself, designed to keep the overall capacity within the design parameters. This planting encourages the development of existing wildlife such as butterflies.

In addition, the pond is also a key amenity space featuring boardwalks, picnic areas and viewing platforms for the site's future school to use. Meanwhile, the erection of information boards around the area informs visitors of the new orchards which have been planted to encourage self-foraging, along with information on the plants used in and around the development.

The design of this system is under Sewers For Adoption 6 and Part H of the UK Building Regulations.

5. Specific project details



Fig 3

The entire Westhill site was designed as an urban extension to Kettering. From inception, it was always envisaged that the SuDS features would be an integral component of the design and layout of the development. To this end, early engagement with our consultant engineer and landscape designer was instigated so that SuDS would not be left as an afterthought. The first 210 units of the site were delivered by Kier Living under a build license with the landowner BQ Farms Ltd; this also included the country park and on-site infrastructure.

Meanwhile, just to the south of the pond was a large badger sett which had to be relocated. This was completed before the pond works began, under a licence from Natural England and by working extensively both with the Northants Badger Group and our consultants CSA Environmental. Consultation over the sett took some 12 months, including engagement with local residents.

6. Maintenance & operation

The SuDS features which are integral to the country park are to be maintained by a management company set up by Kier Living and BQ Farms. This will be carried out in accordance with the guidance set out in the SuDS manual (C697). This includes litter and debris removal, grass cutting and sediment removal from inlets and outlets. Penstocks and inlet/outlet pipes are checked monthly and after major storm events.

7. Monitoring and evaluation

Monitoring will be carried out by the management company, with silt levels taken every six months to ensure that the pond capacity during 1 in 100 year storm events is not compromised.

8. Benefits and achievements

The pond feature is central to how the country park is used by the residents of Westhill and beyond, giving them attractive amenity space to use at their leisure. Existing public footpaths and rights of way have been incorporated into the country park, linking around the pond.

The excellent results of the SuDS and the design of the country park led to Kier Living securing two Green Apple awards in 2016. Silver status was given to the country park due to the creation of recreational opportunities for existing and future residents, while the construction of the new badger sett secured a bronze prize.

9. Lessons learnt

It was established that SuDS on this scale are integral to the site design and should not be considered after the fact. The principles used on this site - that is, prioritising the drainage design before the creation of the house layout - are now being used much more commonly within Kier Living's site design processes.

10. Interaction with local authority

Planning condition 34 of the outline planning consent (ref KET/2006/0541) relates to the flood modelling of Slade Brook, while condition 35 requires the inclusion of SuDS on the site. Consultation with the local planning officer was undertaken during the Planning condition discharge stage, along with consultation with the Environment Agency and the Bedford Group of Internal Drainage Board. We also liaised with the Environment Agency to abstract water from Slade Brook to water the planted areas in the county park.

11. Project details

Construction completed: The pond works were completed in June 2016. This was in line with the planning condition requirement, in which works had to be complete before the first residential occupation.

Cost: Total project cost: £18.1 million. Of that, SUDS costs were £405,000.

Extent: Total project area: 216,000m², SuDS area 8553m².

12. Project team

Funders	Kier Living Eastern
Clients	BQ Farms Ltd
Designers	<p>Architect: Trinity Architects, Marston House, 2 Market Close, Poole, Dorset BH15 1NQ</p> <p>Civil Engineer: JPP Consulting, Cedar Barn, White Lodge, Walgrave, Northampton NN6 9PY</p> <p>Landscape Architect: CSA Environmental, Dixies Barns, Ashwell, Hertfordshire SG7 5NT</p>
Contractors	<p>Groundworker: AD Bly Construction, Nup End Farm, Old Knebworth, Hertfordshire SG3 6QJ</p> <p>Landscaper: Dreamview Landscapes Ltd, 10 Campanula Close, Northampton NN3 3QG</p>

13. Site images and illustrations



Fig 4