

Rumbush Lane, Dickens Heath, Solihull



SuDS used

- *Diversion of existing watercourse*
- *Creation of on-line attenuation storage for new development*
- *Flow restriction via weir walls*

Benefits

- *On site attenuation for rainfall events up to a 1 in 100 year (+30% Climate Change) for both ours and adjacent development*
- *Flows from site limited to Greenfield rates*
- *Alleviation of existing flood issue to Rumbush Lane and adjacent properties*

1. Location

Rumbush Lane, Dickens Heath, Solihull. B90 1FL; 52°22'53.7"N 1°50'26.6"W

2. Description

Dickens Heath was an agricultural hamlet just 3 miles from Solihull town centre. In recent years it has undergone significant growth and now consists of circa 1,700 homes, most of which have been constructed in the last 10 years [2018].

The David Wilson Homes (part of Barratt Developments plc) site was an extension on the South-Western edge of the village, absorbing a former bungalow residence and adjacent agricultural land with a stream flowing through the Northern edge of the site. The site consists of 71 new homes, associated infrastructure and green space comprising the SUDs and an amenity area. The site fits in with the 'Modern Rural' feel of the village, with a mix of smaller 2 & 3 bed properties, with some larger 4 & 5 bed detached homes.

3. Main SuDS components used

- *Diversion of existing watercourse*
- *Creation of on-line attenuation storage for new development*
- *Flow restriction via weir walls*

4. How it works

The site required lifting in order to drain to the North and enable all storm water flows to be controlled and managed using the SuDS proposed.

The brook which flowed across the Northern boundary of the scheme was diverted, and its flow was controlled by the introduction of a weir wall to the NE. The creation of a large basin for the stream to flow also provides the attenuation as the weir wall restricts flows during storm events.

All surface water flows for the development discharge via 2 headwalls into the new alignment of the brook.

The large culvert underneath the site access road, and the increased culvert underneath Rumbush Lane avoids the bottlenecks which caused Rumbush Lane to flood (see image 3) under the previous scenario. This culvert also links to the upstream Bellway development for whom their on site flows are attenuated within their curtilage.

The Brook then reverts to its previous course after the weir wall.

Due to the nature of the feature with flows passing through the pond was allowed to self-set with vegetation, ensuring suitable local planting is in situ. This assists with the filtration of the flows, as well as providing visual amenity. The banks of the feature are also only being managed with minimal intervention to allow their biodiversity value to maximise. The existing trees have been retained wherever possible, together with some new trees being added as well.

5. Specific project details

The scheme has been critical to alleviating the flooding to Rumbush Lane and adjacent premises. To date it has been proven to deliver, delivering excellent results including avoiding any flooding during the recent heavy rain and snow.

As with all above ground SuDS features the concept and design is relatively straightforward. The difficulties arose in proving the design would deliver the results required. The council insisted on extensive flood modelling and the discussions between the Drainage Engineer, ourselves and the council were particularly detailed. The issue became the crux of the Planning Application and

resolving this in detail was the key to releasing the development in what became a 6-month application period.

The option to attenuate with traditional drainage, oversized pipes and/or crates was never really an option. The flooding of Rush Lane and its alleviation was critical, and the council were insistent on their adoption of the features to ensure effective operation in perpetuity.

6. Maintenance & operation

As required via the S106 agreement the council are insistent on adoption of the SUDs so as they can ensure continued effective operation. This process is ongoing as details are finalised around fencing and public accessibility.

The scheme will entail minimal operational maintenance with the bed and banks designed to be allowed to grow naturally. A trim once or twice a year as the council decide is all that is proposed.

7. Monitoring and evaluation

The site continues to be monitored by ourselves and the council as we work towards adoption of the area. Regular visits are occurring, and our customers and neighbours are heavily invested in the scheme and will advise us should there be any issues.

8. Benefits and achievements

The scheme's biggest achievement is alleviating the flood risk that existed prior to development. This made the roads inaccessible and impacted the adjacent properties. Now with the SuDS in place the flooding has stopped which is benefiting the whole community. The collaboration with Bellway who developed the adjacent field upstream was also positive, and shows that competing developers can work together to deliver mutual benefit and improvements for the locality.

The scheme is visually very attractive and adds to the semi-rural nature of the development, as the edge of the village blurs into the adjacent countryside.

9. Lessons learnt

The key lesson learnt is that development can be a catalyst to make improvements that benefit the wider area. The site was not just looked at in isolation, but in the context of the existing surface water patterns and flooding issues, and has worked to resolve these.

10. Interaction with local authority

The Local Authority was a key stakeholder in the process as they were familiar with the flooding issues that existed on Rumbush Lane. They acknowledged the opportunity of the development to help address the issues and should be credited for this. They worked with us to develop the solution which was mutually beneficial for everyone involved.

11. Project details

Construction completed: *Construction Completed Summer 2016*

Cost: *Overall cost of works - £9,000,000*

Extent: Total Site – 6.9 acres, SUDs – 0.5 Acres

12. Project team

Funders	<ul style="list-style-type: none"> • David Wilson Homes Mercia Ltd
Clients	<ul style="list-style-type: none"> • David Wilson Homes Mercia Ltd
Designers	<ul style="list-style-type: none"> • RPS Group Ltd
Contractors	<ul style="list-style-type: none"> • Shannonside Civil Engineering Ltd
Other	<ul style="list-style-type: none"> •

13. Project images and illustrations



Fig 1: Brook as it existed crossing the Northern Boundary of the site



Fig 2: Minor example of flooding as previously observed during FRA site visit

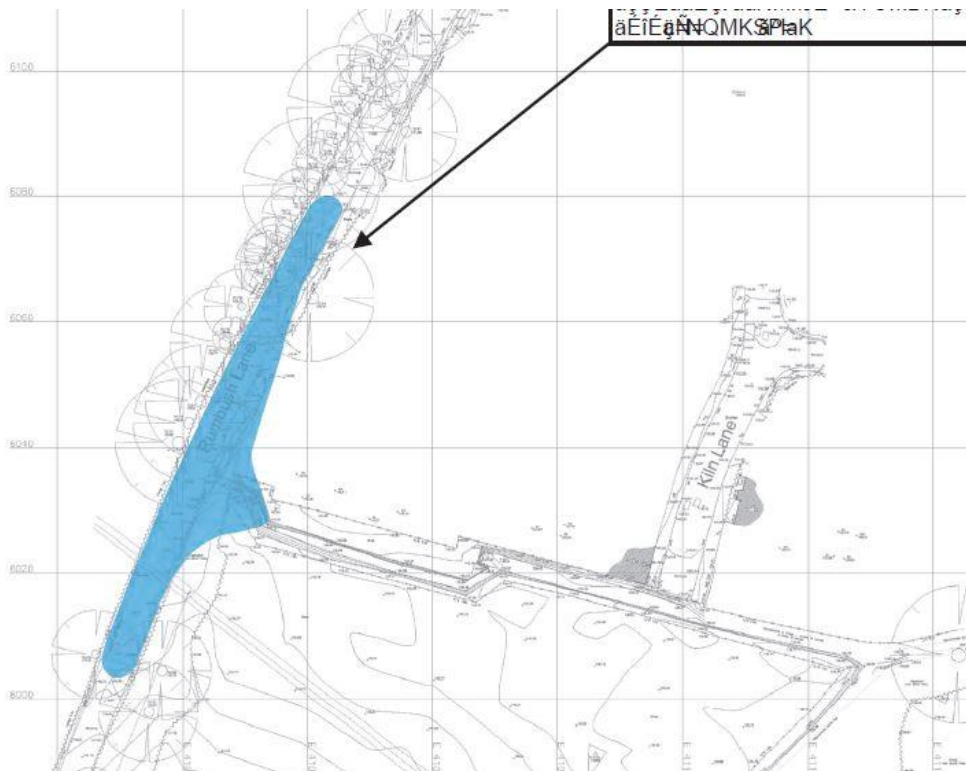


Fig 3: Model data showing extent of Flooding to Rumbush Lane



Fig 4: Environment Agency data showing flooding along line of existing brook

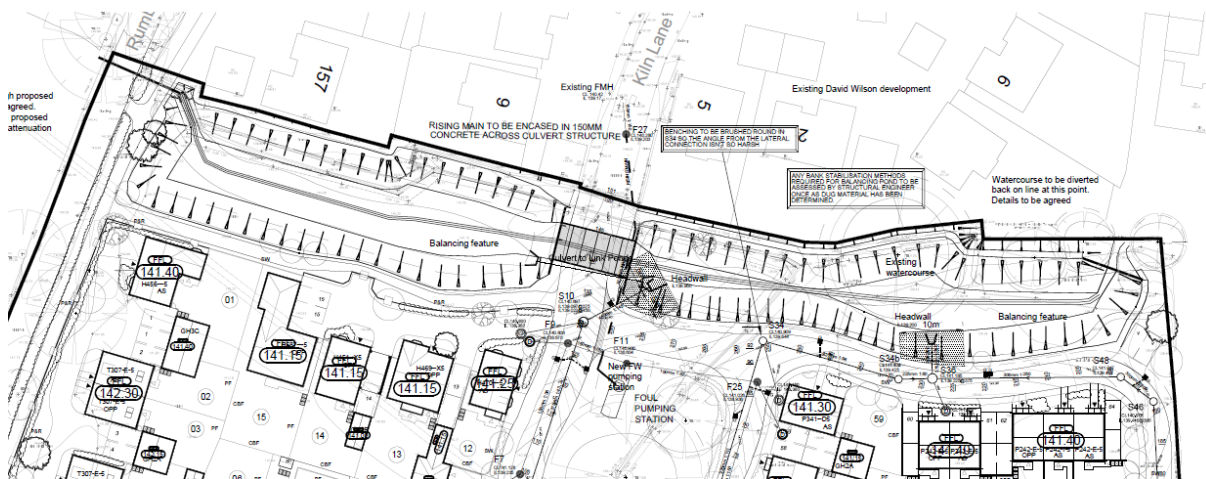


Fig 5: The resultant design showing the 2 connected swales with bridge providing access

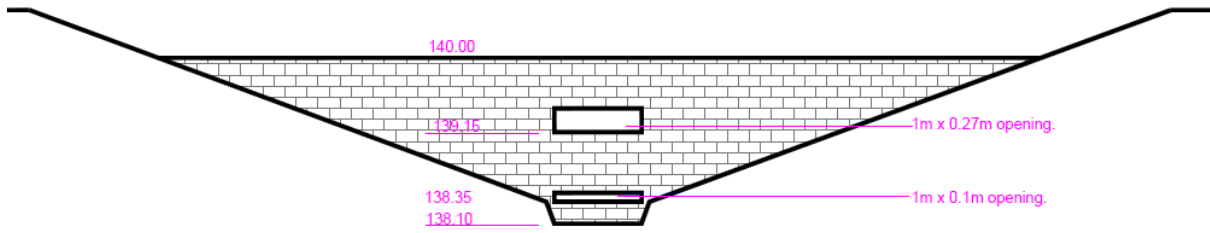


Fig 6: Weir wall design to attenuate flows on Eastern boundary of site



Fig 7: The Eastern Swale



Fig 8: The Western Swale