

Glebelands Park, Leicester



SuDS used

- *Permeable paving*
- *Shallow swale taking highway water at grade*
- *Filter drain*
- *Wetland*
- *Trees*

Benefits

- *Improved amenity*
- *Safe*
- *Maintainable*
- *Biodiversity friendly*

1. Location

Glebelands Park, Ashton Green, Leicester, Leicestershire, LE4 2WE

2. Description

This housing development was the first phase of the city’s major urban expansion; which eventually will comprise 3000 – 3500 houses, industrial/business areas, schools and a village centre. Phase 1 is made up of 100 houses; 30 of which are affordable homes.

The desire to do good SuDS has been included as a part of this wider project for over 20 years. It was a case study in the CIRIA SuDS ‘bible’; C523 2001 (page 105 and following). At that time it was envisaged that building on site would begin in 2003; it has taken a bit longer than that; but the principles set out initially adhered to have been maintained. It has been important to ensure that SuDS happened in the first development here; to set an example for following phases.

The housing is a mix of 2, 3 and 4 bedroom housing; 30% of which is affordable housing. When the development parcel was put out to the market there was limited interest. The developers who won the contract were not known in the city. There was a lot of learning to be done on all sides; and a reluctance to depart from tried and trusted development principles. Initial designs were very conservative. What helped was having clear principles enshrined from the outset in published design guidance for Ashton Green as a whole (shown in the figure below from the Ashton Green Design and Access Statement June 2010)

6. Design Principles and Framework

6.2 Open Space framework

The use of rainwater harvesting and green roofs especially in association with commercial and public buildings will also be of benefit in the reduction and attenuation of surface water runoff.



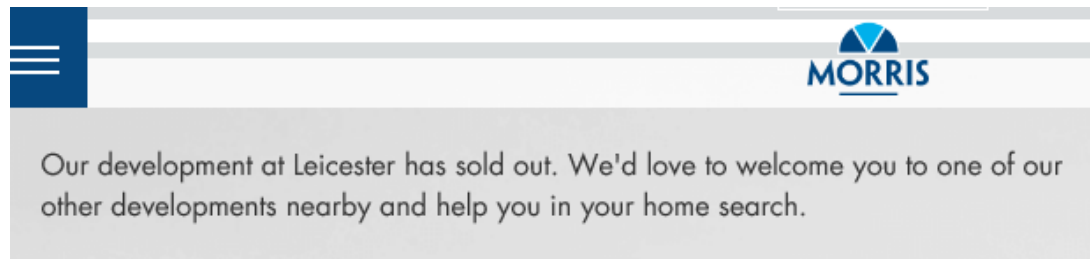
Figure 6.2.2 Indicative SuDS strategy



Examples of sustainable urban drainage solutions

The scheme was very important to the city; and as a result many consultants were brought in to help with all aspects of the design; including ecologists, landscape architects, landscape/drainage engineers and many others.

There was lot hanging on the development as the first parcel and the need for SuDS could have been seen as a drag on the whole scheme. A careful path has been taken to keep all partners involved. The end result is a housing area where houses sold quickly and which is being valued by its new residents.



Our development at Leicester has sold out. We'd love to welcome you to one of our other developments nearby and help you in your home search.

Residents welcomed to Ashton Green's first new affordable homes

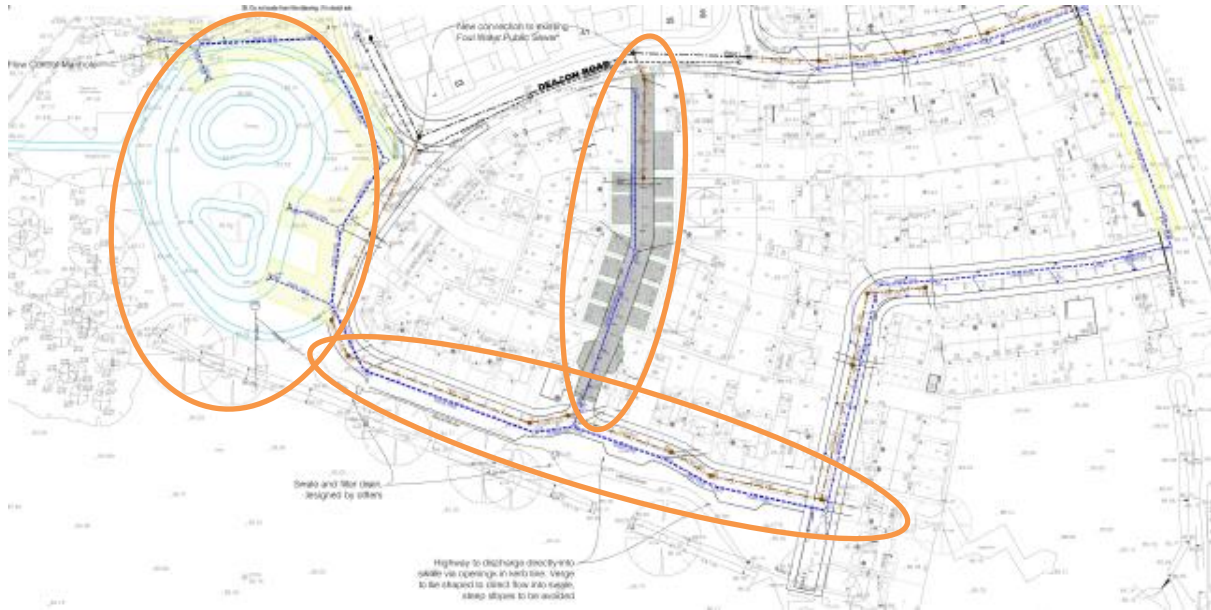
Published on Wednesday, October 31, 2018



THE first residents are moving into their new affordable homes at Glebelands Park in Ashton Green, Leicester.

The 30 affordable rent properties from leading housing association Midland Heart and developer Morris Homes are part of an ambitious project to create a mixed-use sustainable community of up to 3,000 much-needed new homes, along with community and health facilities, employment land and retail.

3. Main SuDS components used



Drainage plan of the development, with the SuDS features (wetland, swale, filter drain and permeable paving) highlighted in orange.

The eastern side of the development drains towards the existing road drainage network.

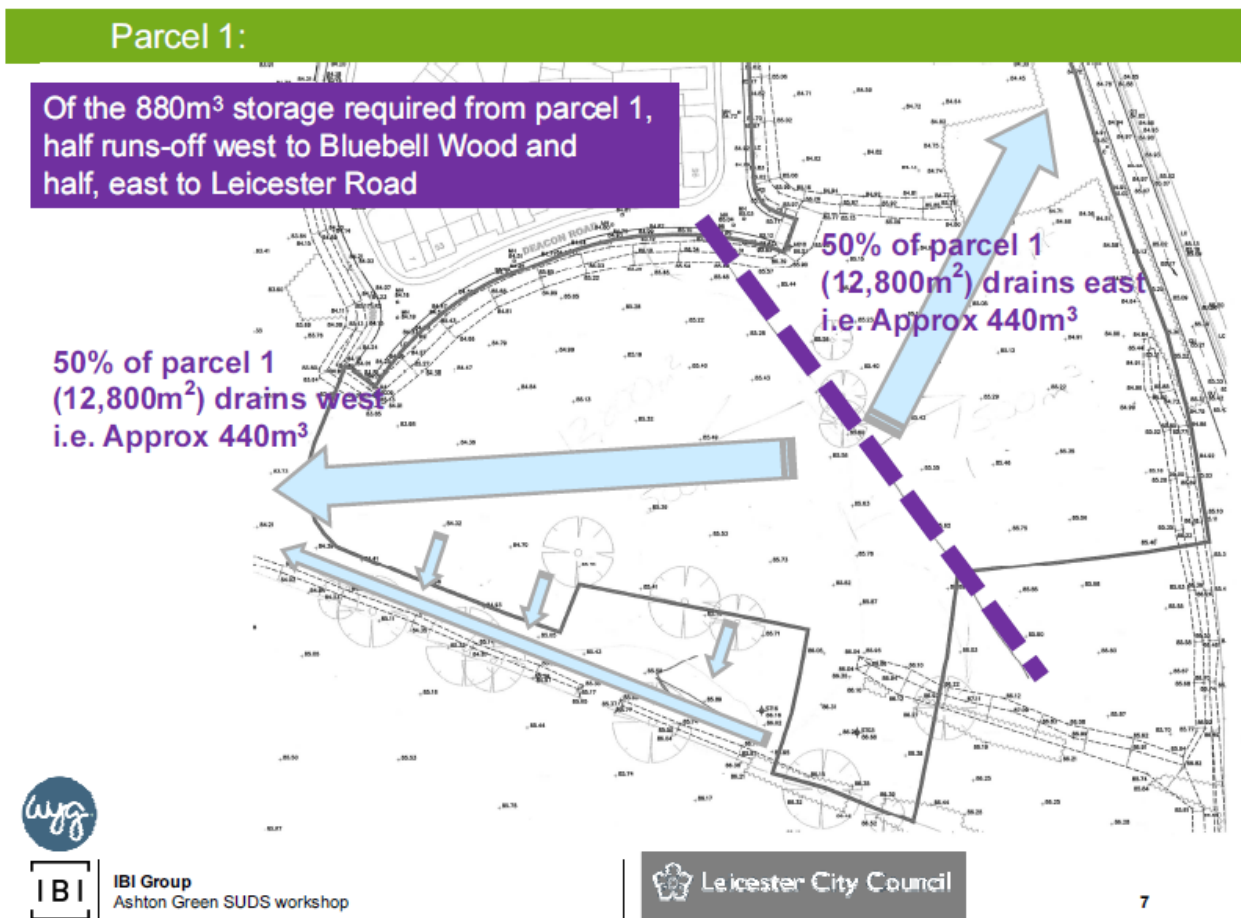
The western side includes the 2 areas of permeable paving; only one shown in the figure above; running north to south. This is tanked permeable paving taking highway drainage and roof water from front roofs of houses; the water is picked up by a drain under the highway. The southern boundary road all drains at grade into a very shallow swale; part of which is a filter drain where there are roots from nearby mature trees. This stays shallow with appropriate headwalls along its length. Initially there was to be a large pipe discharging into the balancing pond. This was reduced to 3 x 300mm diameter pipes. This has had a less detrimental impact on the wetland. There are some safety rails which we have always wanted to remove! There was lot of attention paid to the pond to ensure that it was of benefit to the scheme. The permanent water level is at 81.5m and the top water level is at 82.25m. The maximum depth of the pond is 1.5m. There is a nearby pond to the west of the new pond. This is much smaller and was drying out. It now takes overflow from this pond which in turn discharges to an existing ditch flowing northwards. The pond has a volume of 1500m³.

4. How it works

What has happened here is taking a volume house development and managing to include some SuDS components and have them implemented well.

The overall site falls to the west and to the east. The eastern side drains towards the conventional and adequate existing drainage.

The whole of the Ashton Green area has been designed to incorporate SuDS features to work at a macro scale and also at an individual development phase level. What this means in practice is that some of the early phases will be designed to accommodate surface water from adjacent parcels of land.



There is highway adopted permeable paving to the home zones within the development.

The southern boundary road drains at grade into a shallow swale system that drains to a wetland feature. This capitalises on the natural topography and existing ditch. Developments to the south of this site will drain towards the wetland as well. The capacity for this has been included within this design.

Drainage into the wetland has been divided into smaller outfalls to limit dominance of large engineered features. The wetland has an outfall into an existing smaller wetland and ditch system.

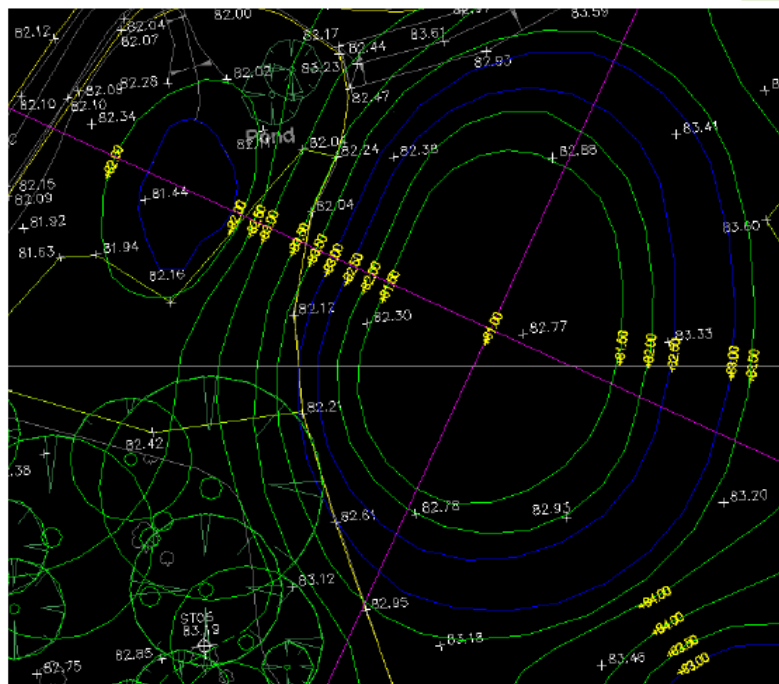
There are also trees planted along highways and within front gardens which although they cannot be formally measured and counted as a part of the drainage system will help through maintaining healthy uncompacted soils.

Parcel 1: Retention Pond Capacity Study

This shows:
 Retention Pond
 average surface area
 approx. 1570m²
 Assume a 0.5m depth
 of storage = 785m³

As Parcel 1 is 38% of
 Catchment Area 6, it is
 entitled to 38% of the
 storage available in
 the pond i.e. 298m³

Note: contours are at
 half meters, slopes no
 greater than 1:4



IBI IBI Group
 Ashton Green SUDS workshop

 Leicester City Council

This outline study for the pond eventually became the wetland shown in the landscape plan below.



5. Maintenance & operation

The site itself is looked after by a management company. The green spaces to the south and west are the responsibility of the local authority. The physical landscaping of these spaces was carried out by Leicester City Council direct works services. The city’s landscape architect drew up and oversaw the design. This provided opportunities to engage with those who would maintain the site in the longer term.

Management prescriptions are contained within the Site wide Green Infrastructure Strategy (May 2015) and also within landscape management plans submitted as part of planning.

Maintenance requirements for swales and filter strips		
Item	Frequency	Comments
Litter removal	1 per month	Litter quantity and characteristics will be dependent on the site
		Litter may collect in ponds and wetland features
		Litter collection may be part of the general landscape maintenance
		Litter collection should be undertaken at each site visit and the beginning of any maintenance task, particularly grass cutting.
Inspect control structures to/from swales	1 per month	Surface control structures can be slot weirs, v-notch or gabion baskets with control in the stone fill. They can be inspected without removing covers or special keys. Maintenance of control structures in manhole chambers will be more expensive.
Grass cutting in swales - amenity grass	1 per month	All grass cuttings managed on site in wildlife or compost piles
Scrub clearance from bankside	1 per year	Overhanging branches and encroaching growth will normally be undertaken as part of landscape maintenance
Remove planting and silt from 25% to 30% of base and place in site piles	1 per 5 years	Silt accumulation is slow if 'source control' features are located upstream in the 'management train'.
		Only required once every 5 years
Extra costs if silt, grass cuttings etc. are removed from site during routine maintenance	To suit other operations	Ideally all cuttings should be used on site to construct and maintain wildlife piles but this may not be best option in public open space and removal from the site may be needed.

6. Monitoring and evaluation

The establishment of the wetland and swale has been monitored following construction, with site visits being completed regularly by Leicester City Council staff. The vegetation within the public open space has now become well-established. The maintenance of the open space is down to Leicester City Council.

The site has been used as good practice and an exemplar scheme of how to integrate SuDS within a residential development. This then should encourage more high-quality SuDS schemes to be developed within the city.

7. Benefits and achievements

- Having clear objectives (at the start) and having a multidisciplinary team working with the developer to achieve this. (Right from the planning guides / parcel guides for tender)
- Doing the 'simple' things well and something that every developer should be able to do – although we still had hurdles to achieve those.
- Road cross falls and draining at grade into swales; setting a good example for later phases
- Smaller pipes
- Surface water outfalls sympathetic to the landscape
- Use of permeable paving – but matching neighbouring non permeable areas (a small point but makes a big difference to the space) etc.
- SuDS can create places – a well-designed pond has massive benefits to sense of place, biodiversity etc.

It is already becoming a place to show off; Trent Rivers Trust have already used it as a demonstration site; as have these fellows.



Ashton Green Pond (1).MOV

8. Lessons learnt

- That having a clear vision is essential. We had worked on this project for years. Nearly all the project team had actively been at consultation events. The city council team stayed almost constant throughout. All this meant that we were committed to achieving the Ashton Green dream!
- That it takes time to achieve new ways of thinking. Some of the original aims were 'watered' down.
- Don't trust the figures! There have been a series of engineering forms working on the overall masterplan. Rather like new builders carrying out work to your home each one sighed about previous estimate prior to upping the specifications; particularly for the amount of water that could be managed by sustainable drainage and argued for pipes. The underlying message in the city is always that there is underlying clay so no infiltration is possible.
- There have been conflicts with biodiversity that have been hard to resolve. The existing pond to the west of the new pond was viewed as not to be touched. However it is now a part of the system and looks healthy. Each time the council is successful at multi disciplinary working helps in building both our competence and confidence.
- The council as a whole needs to work together; especially if the drainage forms part of the overall space. Splitting the pipe into 3 has meant less intrusive outfalls. It has taken time but the gains have been worth it; both for the city and the developer. All the houses have sold quickly.

9. Interaction with local authority

Details of interaction with local authority (or client)

A Lot of involvement. It has always been a priority for Ashton Green to be an exemplary housing scheme. There is an overall project manager within the city. His post has provided continuity. SuDS has been one of a series of key aims for this big new development. Outside examples have been visited to see good practice; such as the Brooklands development at Milton Keynes. The Ashton Green manager has ensured that the different departments within the council have sat down together to achieve the best design parameters and practical details. Departments within the city have included economic development, housing, highways, drainage, parks, urban design, planning, ecology and landscape. Outside consultants have included a range of engineers, ecological practices and landscape architects.

The city council carried out the landscaping works through in house staff and the city's direct works organisation.

10. Project details



Construction completed: *Insert date of completed or stage of project at submission, making it clear if SuDS was a subcontract or separate package of work to the main contract if timings are different.*

Completion September 2018. SuDS initial construction; main contractor; landscaping was then carried out by the city's direct works service.

Cost: *Of overall project excess of £9m, landscape; earthworks and landscaping works £300k*

Extent: 2.9 Ha for phase 1

Project team

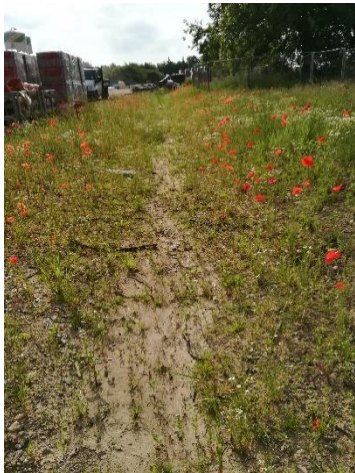
Funders	<ul style="list-style-type: none"> Leicester City Council 	
Clients	<ul style="list-style-type: none"> Leicester City Council 	
Designers	<ul style="list-style-type: none"> IBI White Young and Green DSA and LCC re pond detailing 	  
Contractors	<ul style="list-style-type: none"> Housing areas Kellys Wetland landscaping – Leicester City Council Landscape Services 	
	<ul style="list-style-type: none"> Drainage, civil engineers Wormald Borrows Partnership Ltd 	
Project management/cost consultants	<ul style="list-style-type: none"> ARCADIS 	



Pond under construction winter 2017



Housing almost complete; landscaping still to happen



Keeping the swale shallow – house construction stage



May 2020 showing swale and outlet from piped section close to trees



October 2019; showing the drainage at grade into the filter drain



Permeable paving through the 'mews' street summer 2019



Trees in front gardens as a part of the housing design