Alcester Primary Care Centre, Warwickshire

SuDS used

- Soakaways
- Swales
- Rain gardens
- Permeable pavings

Benefits

- Creation of an environment that benefits both patients and staff.
- Control of surface runoff.
- Water is treated biologically through the system.
- Significantly lower cost of installation over a conventional piped or underground drainage.
- Biodiversity potential greatly increased.
- A positive example of sustainable design.

1. Location

Alcester Primary Care Centre, Fields Park Drive, Alcester B49 6QR.

2. Description

Alcester Primary Care Centre is a new health centre that is replacing the existing 1960's health centre development close to the centre of Alcester. The site has one main building and is surrounded by the NHS Trusts first rain gardens.

The site is roughly 'L' shaped and approximately 0.75 hectares in size including the Centre itself, the rain gardens and surrounding earthworks. The land slopes from 43m AOD at Fields Park Drive to 42.5m AOD adjacent to the neighboring care homes at Meadow View Close.

The site was previously occupied by the Alcester Hospital. The existing mature specimen trees have been retained and incorporated into the landscape proposals.

Figure 1 Southern rain garden under construction

Figure 2 The therapy garden under construction

3. Main SuDS components used

At the beginning of the project it was clear an innovative approach should be used to encourage biodiversity and create an environment for patients to explore. The concept of a SuDS treatment train to deal with storm water was developed between the client and the design team. It was important that the SuDS encompassed the landscape around the building to allow people good access (see Figure 3).

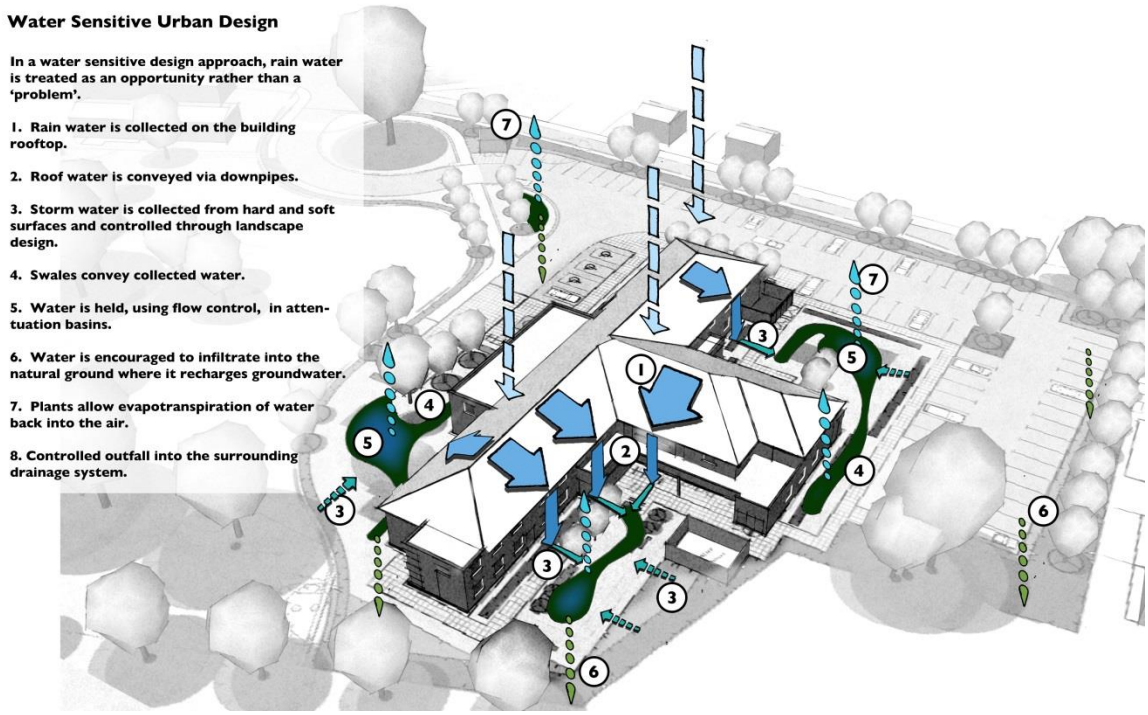

Figure 3 Schematic showing concept of water sensitive urban design for Alchester Health Centre

The rain gardens are shallow depressions that allow rainwater to be collected; they contain a mix of ornamental and native species. These areas are laid out in a bold sinuous form and planted with a tessellated pattern of native wetland edge species, such as wildflowers, sedges and grasses.

It was envisaged that these rain gardens would not contain permanent water, since these would not be lined, but would function instead as 'marsh', drying out in warm weather.

The rain gardens make up three distinct areas.

3.1. Rain garden north-west

A semi-public garden space viewed from the main entrance or from within the building, it is contained to the north by the boundary hedgerow and existing trees. The area is a shallow, gently sloping depression that holds rainwater runoff and acts as a habitat resource. The depression is planted with native wetland edge species, such as wildflowers, sedges and rushes. An ornamental conifer reflects the Victorian style original planting of the site.

Figure 4 The completed northern rain garden

3.2. Rain garden south east

An accessible and useable garden space, enclosed from the car park by rows of clipped ornamental hedges, is created to the southeastern side of the new building. This area contains the second 'rain garden', again planted with native wetland edge and wildflower species. This space has a southern aspect and species will differ from the northern garden, including, for instance, colorful herbaceous perennials. A paved seating area is provided with tables and access directly from the building. Trees and planting alongside the footpath soften views from the waiting and reception area.

Figure 5 The completed southern rain garden

3.3. Staff & therapy garden

The private garden and therapy space is situated to the south west of the building. Elevated views of this garden are gained from the external terrace at first floor level. A bitmac path leads around the space, via seating and dining areas to allow exploration of demonstration edible and medicinal-themed planting.

Figure 6 Entrance to the site

4. How it works

The site is underlain by medium dense and dense sand and gravel, together with some horizons of firm and stiff sandy gravelly clays.

Infiltration testing carried out as part of the Site Investigation Report found that the use of soakaways would be suitable, with a recommended infiltration rate of 3 x 10-6 m/s.

By utilising a range of SuDS the permeability of the sub-soil could be used to its full potential.

The majority of the runoff comes from the building roof, car park and paved area immediately surrounding the building. The water either runs through swales that lead to the rain gardens or through gullies that connect to the gardens.

The swales are shallow and designed to feed from the surrounding landscape into the rain gardens.

Large rocks were placed within the rain gardens to encourage the 'natural' look of the system and to benefit species biodiversity.

There is a fourth (road side) swale beside the entrance approach to the building that takes runoff from the road and paths.

At times water will be visible in the gardens demonstrating to the patients and staff how SuDS work and how biodiversity can contribute to education and experience. The design will allow simple everyday maintenance by site staff or landscape contractors.

The bio-swales are very shallow and have been carefully graded to fit into the new landscape and enable mowing.

The total catchment area is approximately 0.75 hectares.

Approximate linear m of swales is 120m.

5. Specific project details

Figure 7 Porous paving was used for the main car park areas

Porous paving was used for the main car park areas (see Figure 7). This fitted in well with the 'no dig' construction required for several mature trees adjacent to the car park.

The Contractor chose to use over 90% recycled material for the sub-base and bedding for the porous paving. The material was delivered from a Recycle Centre within a 10km radius of the site.

The design of the SuDS scheme meant there was no need for oil interceptors to be installed. Permeable paving installed in areas with a relatively low risk of watercourse pollution.

All of the SuDS were designed for a critical 100 year + climate change storm event in accordance with BREEAM requirements.

Previous to the development the site was deemed to be of low ecological value by the Ecologist. The site now has significant benefits to biodiversity and the increase in species is notable already.

Importantly interpretation boards were installed in each of the three gardens to help educate people (see Figure 8). Each board has a narrative explaining the function of the rain garden illustrating the wildlife and plant species that may be found.

Figure 8 Interpretation board

Figure 9 The completed therapy garden

The site is covered by a Landscape Management Plan (LMP) to help guide management of the SuDS for a period of twenty years. This has been completed as part of the BREEAM assessment exercise.

6. Benefits

- Creation of an environment that benefits both patients and staff. Control of surface runoff;
- Wetland features manage runoff to ensure clean water enters the natural drainage system;
- Water is treated biologically through the system;
- Significantly lower cost of installation over a conventional piped or underground drainage;
- Biodiversity potential greatly increased;
- A positive example of sustainable design.

7. Challenges and lessons learnt

- Safety and maintenance concerns overcome;
- Working on site with the contractor is often essential when determining gradients of swales.

8. Interaction with local authority and Environmental Agency

- Support from Stafford District Council (Local Authority)

- Support from Environment Agency

9. Date of completion

Project completion: 2013

10. Project team

Client: Arrow Lodge and Priory Road

Main Contractor: Benniman Construction Group. Max Holdsworth

Landscape Architect: DSA Environment & Design. David Singleton, Gerard Harries

Engineer: Couch Consulting. Nicola Karmelita

Architect: West Hart Partnership. Justin Jones, Colin Trace

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