

Matchborough First School, Worcestershire

SuDS used

- Swales
- Detention basins
- Constructed wetland
- Rainwater harvesting



Benefits

- The wetland provides added amenity to the school and also provides an educational resource.
- SuDS helped overcome the need for a pumping station.

1. Location

Matchborough First School, Matchborough Way, Redditch, B98 0GD.

2. Description

A SuDS retrofit project completed in 2003, which included swales, detention basins and a constructed wetland. The original design involved traditional drainage, however, during construction it was discovered that this would not work. SuDS were used to overcome the problems and to remove the need for a pumping station (with the on-going maintenance costs that involves).

The school development was originally designed with traditional drainage that flowed to a pumping station where it was pumped to a sewer. However, one playground area was not actually able to drain by gravity to the pumping station.

The SuDS approach drains the site by following the gradient downhill to Ipsley stream, reducing the need for pumping (with its associated costs) and also removes the annual charge for a sewer connection.



Figure 1 Main drive storage basin with controlled outfall (Bob Bray)

3. Main SuDS used

- Swales
- Detention basins
- Constructed wetland
- Rainwater harvesting

4. How it works

The use of SuDS was proposed to overcome the gradient and remove the need for the pumping station and associated on-going maintenance costs. The SuDS scheme follows the contours of the site and drains downhill to the Ipsley Stream (removing the annual charge for the sewer connection).

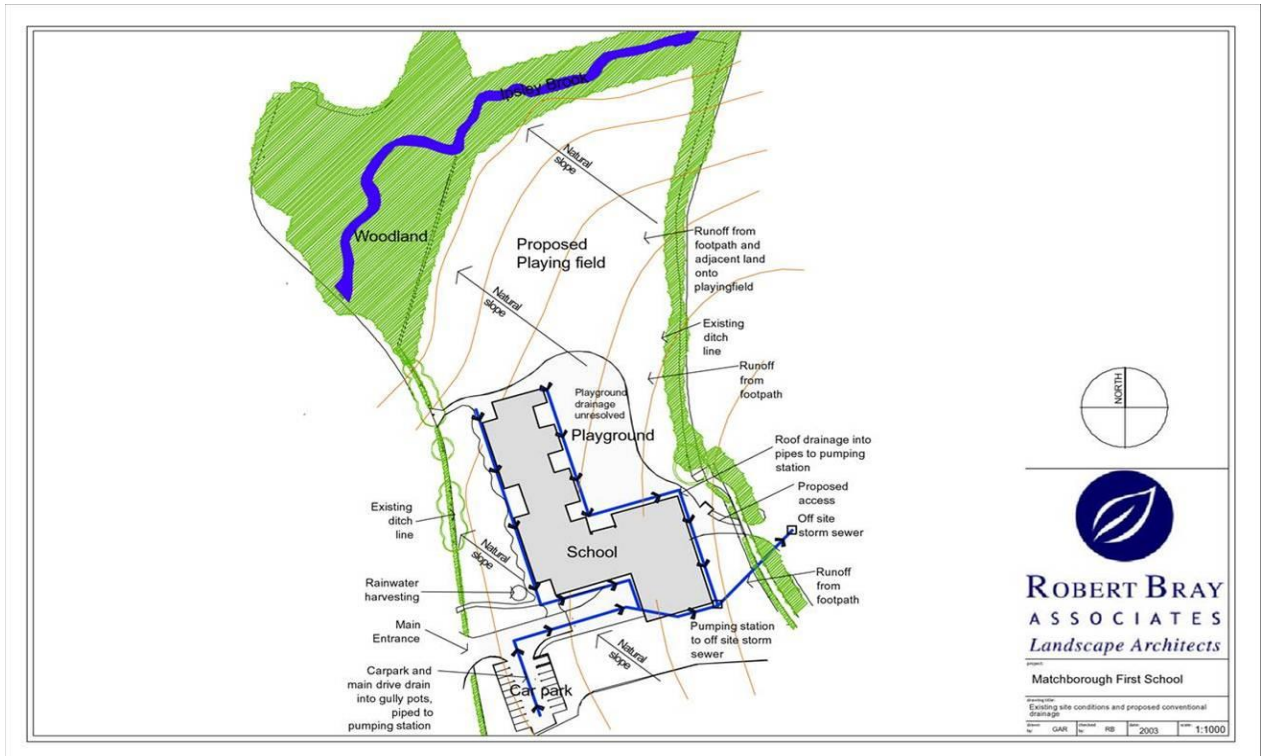


Figure 2 Initial drainage proposal (Bob Bray)

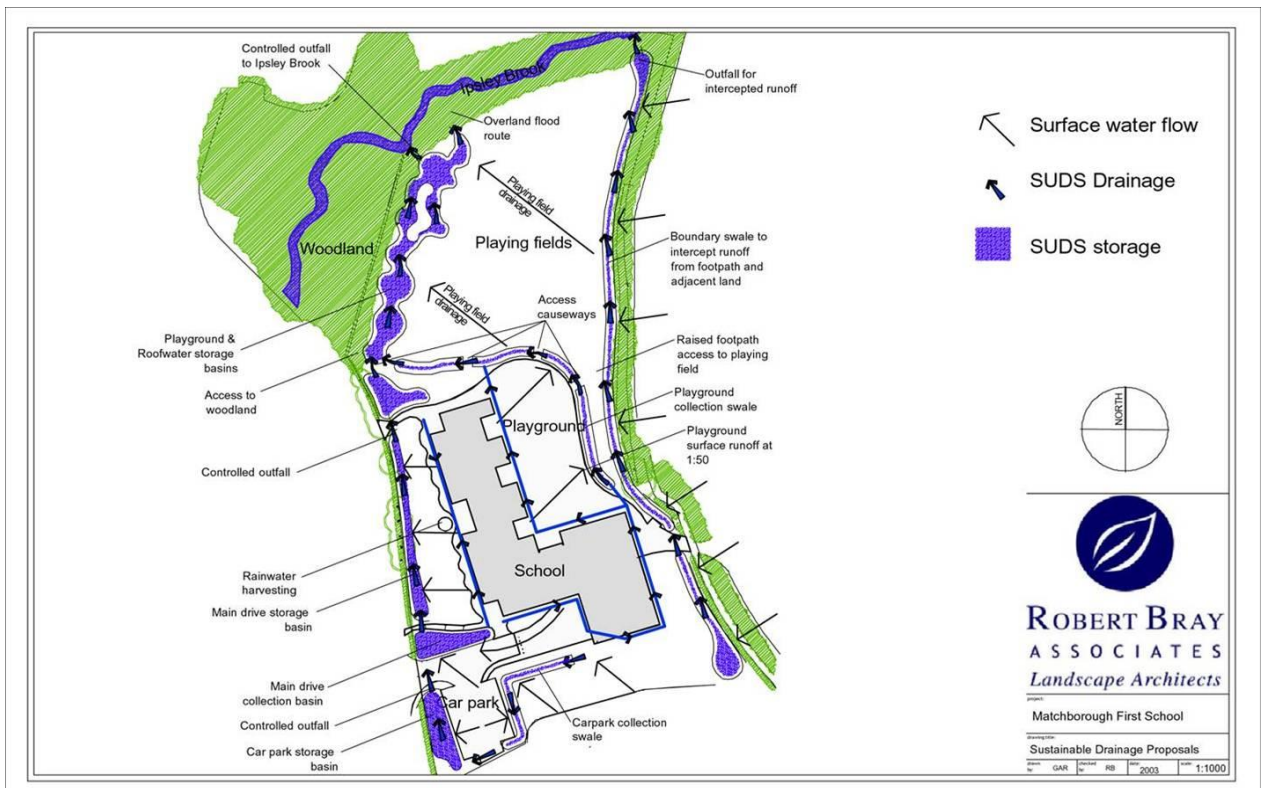


Figure 3 SuDS outline proposal (Bob Bray)

5. Specific project details

Swales collect overland flows from an adjacent site and the runoff from the car park and playground, providing source control. The main driveway is drained to an extended detention basin. These systems connect to a constructed wetland, which also takes runoff directly from the roof and provides amenity as well as well as useful educational resource.

The system was designed to cope with a 1 in 100 year return period storm event, and overland flow routes were provided for events exceeding this. The SuDS system has also been designed to provide a valuable amenity and teaching resource for the school.



Figure 4 Car park inlet (Bob Bray)



Figure 5 Car park collection swale (Bob Bray)

6. Benefits & achievements

6.1. Benefits

- Maintenance costs. The maintenance of the newly constructed system is planned to be a marginal extension to the landscape contract required for the school grounds, with regular inspections undertaken by the school caretaker. Hence maintenance costs for SuDS are expected to be marginal compared with the conventional drainage costs of sewer connection (around £3200 p.a.) and pumping station maintenance (around £800 p.a.);
- Amenity and educational resource. The wetland provides added amenity to the school and also provides an educational resource. Risk is managed by appropriate design and education of school children.



Figure 6 Dipping platform on a wetland (Bob Bray)

6.2. Barrier

- Adoption: The highways authority was initially unwilling to adopt SuDS for road drainage.

7. Challenges & lessons learnt

- Incorporating and allowing SuDS early in the development design will reduce costs;
- SuDS can effectively control overland flows and land drainage flows from adjacent sites;
- SuDS are cost-effective compared to conventional drains;
- Well-considered design provides valuable amenity and habitat for marginal cost;
- Water safety issues need not prevent the use of SuDS;
- Retrofitting SuDS to existing sites is feasible.

Information provided by the designer: Robert Bray Associates