

FOUL AND SURFACE WATER DRAINAGE STRATEGY

LAND AT GREEN LANE, ASHWELL

Introduction

SDP Consulting Engineers have been instructed by our client Osprey Homes Limited to prepare a foul and surface water drainage strategy for the above site to support the planning application for a development of 7 houses.

Site Description

The site is situated to the north-east of the village of Ashwell within the settlement boundary of North Hertfordshire District Council.

The site area is approximately 0.38HA and comprises maintained grass and trees forming part of the rear garden to an existing residential property.

Ground Conditions

Geological records indicate the site to be underlain by zigzag chalk with alluvium mapped to the east.

Soakage tests have been carried out by Southern Testing (Report ref: JN 1904) and BRE Digest 365.

The investigation found in general a covering of topsoil over grey-brown, silty, sandy clay over chalk. The top of the chalk being 1.0-1.5m below ground level.

From the geological mapping and local archive boreholes infer ground water to be between 3.0-5.85m below ground level.

The soakage test results varied across the site suggesting workable rates are achievable in parts of the site, within the deeper chalk sub-grades.

Surface Water Drainage

Flooding results from sources external to the development site and rain falling onto and around the site. The sustainable management of this rainfall, described as surface water, is an essential element in reducing future flood risk to both the site and its surroundings.

Undeveloped sites generally rely on natural drainage to convey or absorb rainfall, the water either soaking into the ground or flowing across the surface into watercourses, providing a natural flow of environmental and ecological benefit.

To satisfactorily manage flood risk in new developments, appropriate surface water drainage arrangements are required to deal with surface water and the impact of the natural water cycle on people and property.

Sustainable Urban Drainage Systems (SuDS) aim to reduce the volume of runoff arising from a site at source and/or attenuate those flows that do arise such that the runoff rates being released into the wider environment are reduced. SuDS can rely on infiltration of runoff into the ground (using soakaways, swales, infiltration trenches and permeable pavements) or attenuation of flow at the surface (using filter strips or swales and attenuation basins / ponds). Infiltration-based SuDS require favourable ground conditions (i.e. uncontaminated and highly permeable ground) and surface SuDS require sufficient land to be available for the siting of SuDS structures.

SuDS cover the whole range of sustainable approaches to surface water drainage management including:

- source control measures including rainwater recycling and drainage;
- infiltration devices allowing water to soak into the ground, these can include individual soakaways and communal facilities;
- filter strips and swales, which are vegetated features that hold and drain water downhill mimicking natural drainage patterns;
- filter drains and porous pavements to allow rainwater and runoff to infiltrate into permeable material below ground and provide storage if needed; and
- Basins and ponds to hold excess water after rain and allow controlled discharge that avoids flooding.

The use of SuDS, where they are feasible, provides a significant contribution towards more sustainable development since they:

- manage environmental impacts at source, rather than downstream;
- manage surface water runoff rates, reducing the impact of urbanisation on flooding;
- protect or enhance water quality;

- are sympathetic to the environmental setting and the needs of the local community;
- provide opportunities to create habitats for wildlife in urban watercourses; and
- can encourage natural groundwater recharge.

The surface water runoff destination for a development should be considered in the following order of preference:-

- discharge into the ground;
- discharge to a surface watercourse;
- discharge to a surface water sewer;
- discharge to a combined sewer.

From the Anglian Water sewer records there are no surface water sewers in the vicinity of the site. Therefore, the proposal for this development is to discharge surface water runoff to the ground.

The site falls within Flood Zone 1 and a review of the Government's flood maps for planning services shows it is not in an area at risk of surface water flooding. The site has no recorded history of surface water flooding.

Using the principles of the CIRIA SuDS Manual (C753), the surface water runoff from the access road and parking spaces is treated using permeable construction techniques to remove any contaminants before discharging to the ground.

Similarly, the surface water runoff from the roofs is collected and discharged via underground pipes to catchpit manholes, then to soakaways in rear gardens.

The site drainage plan E21-011-1000 P2 shows the proposed surface water drainage. The access drive to car parking areas are all proposed to be a form of porous construction.

Due to the variable nature of the ground and soakage rates, where possible the soakaways have been linked to allow them to take advantage of where the best rates are.

The soakaways do not achieve half drain times of less than 24 hours, therefore have been designed to have capacity for an additional 1 in 10 year storm event. The sizes and capacities are as detailed on the drawings and designed in the calculations.

Foul Water Drainage

The Anglian Water sewer records indicate the nearest accessible foul sewer is at the junction of Lucas Lane and Station Road. The foul drainage from the development will be collected together and pumped via a new private pump station located on site and pumped to existing AWA manhole 2901. The pump station location is shown on drawing E21-011-1000 P2.

Drawings and Calculations

- E21-011-1000 P3 - Strategy Site Drainage Plan
- E21-011-1001 P3 - Drained Areas Plan
- E21-011-1002 P2 - Drainage Construction Details Sh. 1 of 2
- E21-011-1003 P1 - Drainage Construction Details Sh. 2 of 2
- E21-011 - Microdrainage Surface Water Calculation – July 2024