

Land South of the Swan: Drainage Issues

There are two concerns with using this site for building.

1. The site itself is largely underlain by clay which is not porous so that water cannot drain into the ground. It is drained by the stream called Charing East Brook, also known lower down as Newlands Stream. Later this stream runs over or abuts sand for part of its course. During this part it loses about a quarter of its water into the aquifer. This happens very close to the public water supply bore holes which serve not just Charing but many other areas. Preventing contamination of this major aquifer is therefore crucial.

2. The site is on a spring line. The underlying clay is overlain by alluvium and headsoil making what has been described as a “silty, spongy layer”. Not all springs are evident at the surface or may only be evident occasionally. Water from others runs through the alluvium and headsoil making affected parts frequently, or permanently, wet. Sometimes water from a spring will not emerge immediately but run through the soil for a while emerging lower down. This caused a lot of problems in Poppyfields where buildings or walls interrupted the course of this water meaning that gardens or drives and garages flooded and remedial work had to be undertaken.

Summary of the plan:

Essentially this document indicates that the existing streams will be left to drain the water from gardens and green areas as they do now. The ground level of the built up areas will be raised by 50cm. The surface water that will run off roofs, roads and drives will be piped to the area identified on the plan as a detention basin and will flow from there in a new stream, to the existing stream at the edge of the site near the railway bridge. Outflow from the basin will be at a controlled rate to avoid flooding downstream. The detention basin will only fill in storm conditions – or a very wet winter such as we have just had.

The surface water in the new drainage system will be gathered from gulleys in the roads and so will potentially carry hydrocarbons and heavy metals – but there will be measures put in place to reduce this contamination (4.8 Treatment) such as manhole chambers constructed with catchpits, trapped gullies incorporated throughout the development and the planting of bio-retentive plant species in the base of all swales, low flow channels, the detention basin and ditches.

The development will have a foul sewer pipe network with gravity fall from the A20 side of the site down towards the railway line, where a pumping station will be built. From there it will be pumped back across the site to the main access road to the site, where it will connect to the existing Southern Water main sewer pipe.

AREAS OF CONCERN

Hydrology, Flood Risk and raised ground levels

The Environment Agency surface water flood risk maps show half of the site to be at ‘very low risk’ of flooding whilst the other half is at ‘low risk’ of flooding. Although the site is not technically in a flood risk area, it is on the spring line – where water drains out of the chalk Downs at surface level all year round – and the land is very wet in winter. In the wettest conditions, such as last winter, there

was standing water across most of the two upper fields – technically the land was waterlogged and/or flooded with surface water, apart from the field adjacent to the railway line which is, in fact, the driest part of the site. The storm modelling appears to account for rainfall only and does not take account of the fact that the groundwater present across the site arises from natural drainage out of the chalk Downs with 2 permanent springs and a number of ephemeral springs.

CONCERN 1: In order to solve the problem of the land being so wet the developer plans to cover the upper areas of the site that have a wet spongy layer of topsoil with 50cm of additional material between the top soil and the subsoil. In a meeting the liaison team had with the developers we were told that “drainage blankets” would be used to deal with this issue. This is a layer of stones and rocks with gaps between them so that they are porous and let water flow through. We were told by email that:

“The drainage blanket would be about 500mm thick and be placed on the proposed garden and green space areas, that will need to drain naturally. This will allow rainfall etc to permeate through it and outfall into the existing ditch network. The drainage blanket would be placed once existing topsoil has been stripped away. It would be covered by a layer of the re-used topsoil, (to provide the garden and green space areas) separated by a layer of geo-textile so the layers are kept apart and the drainage blanket does not get clogged up.” This is not confirmed in the material submitted in the application nor do we understand how it would work when the drainage layer is interrupted by house foundations.

However, this additional material will have the effect of raising the buildings by 50cm – half a metre. This will increase their potential visibility from all viewpoints and particularly from the AONB making the need to ensure provision of an effective tree screen even more important.

(3.1 Design Parameters: Based on Stantec 3D modelling of proposed highway layout. Site levels are to be raised 500mm to mitigate potential issues related to hydrogeological conditions within the site)

CONCERN 2: Although the developer says that water will still flow through the groundwater below the 50cm of added material, the foundations of the buildings will be deeper than 50cm and so will impede this flow. There is no written advice on the effect of the draining water on the foundations of the new houses, or the drainage outcome of multiple house foundations interrupting the natural flow of the groundwater.

Foul Water Drainage Strategy (5.1 and 5.2) and risk of contamination of public water supply

“It is proposed that foul water from the proposed dwellings will travel to the pumping station via a gravity network which for the majority of the network will run adjacent to the proposed surface water drainage network. The foul water network encounters the same constraints with regards to crossing the ditches and it is proposed that this will be dealt with in the same way as the surface water”.

CONCERN 1: That the foul sewer and the piped run-off water from the roads etc will cross underneath the existing streams at roadways, only 10cm below the hard bed of the stream. The development site is within very short travel time for contaminants to reach the public water supply

via the existing streams and so at any time that the sewer pipes are damaged there may be potential for the public water supply to be contaminated.

CONCERN 2: There is an existing problem with Southern Water's sewage system through part of Poppyfields and later passes by the Surgery. The additional housing will only add to the existing problem. The report to ABC's Planning Committee at the time of the outline application stated: *"...an accurate assessment of the impact of discharging foul water to a public sewer within the site has not yet been carried out due to a lack of reliable data on the performance of the downstream network. The Sewerage Undertaker is therefore building a new hydraulic model of its network to enable Alternative connection options to be investigated."* Southern Water (the "Undertaker" referred to) does not appear to have yet made public its findings.

(Note: there are separate problems with a different sewer which travels through Poppyfields, Charing Green and Hitherfield.)

Potential contamination of groundwater/public water supply during construction

CONCERN: The development site land is frequently saturated. We know water will accumulate within any hole that is dug – this happened throughout the Poppyfields development. Water will accumulate during digging of foundations and may be contaminated by heavy machinery and building materials and processes. How will this water be removed from the site without threat of contamination of the public water supply?

The Environment Agency have noted this in their comments. They state that "Informative: A CEMP should be implemented for the site development, including aspects such as the temporary drainage of the site during construction works and how risk to controlled waters can be mitigated." A CEMP is a Construction Environmental Management Plan (CEMP) which sets out the responsibilities with regard to compliance with legislation and to implement any mitigation measures.

Charing Parish Council is grateful to Lucy Simmons for providing most of this note.