



DRAINAGE STRATEGY FOR:

Hill Partnerships Ltd

ADDRESS:

Redevelopment of
Conwy Close,
Tilehurst,
Reading.
RG30 4BZ

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APPENDICES

A. THAMES WATER – SEWER RECORDS

B. DRAWINGS H894/400, 401 & 402 – SITE SURVEY DRAWINGS

C. DRAWING H894/100&101 – SCHEMATIC DRAINAGE LAYOUTS

D. MICRO DRAINAGE CALCULATIONS

E. WSP SITE INVESTIGATION REPORT – 70012984/CC/GIR001

1 Introduction

This report outlines the surface and foul water drainage strategy for the proposed development at Conwy Close, Tilehurst, Reading. RG30 4BZ. Proposals include the construction of 3 blocks of 34 apartments and 23, 2/3 bedroom houses.

2 Public Sewer Records

Sewer records have been obtained from Thames Water which show public foul & surface water sewers in Conwy Close. Foul Water sewers are between 150&225mm diameter and are at depths of between 1.3 > 2.5m. Surface Water sewers range between 150-400mm diameter and at depths of between 1.5 > 2.0m. Refer to Appendix A – Thames Water Sewer Records.

3 Existing Drainage Network

The site is currently undeveloped with the exception of informal parking areas which have been paved in tarmac although no obvious formal drainage exists.

A network of existing public sewers are located in Conwy Close. Not all these sewers are shown on the TWU records but we assume that the foul water sewers are vested and surface water sewers serving the adopted highway and private areas are assumed to be public sewers. Laterals are shown on the sewer records and are assumed to have been laid to serve the site. With the exception of laterals, no surface water sewers have been found on the site, although the general site slope is towards the existing road and therefore any overland flow is directed towards Conwy Close. Refer to Appendix B – Drawing H894/400,401&402 – Site Surveys.

4 Ground Conditions

The encountered ground conditions were found to comprise Made Ground with a thickness of between 0.15 and 1.70m. Below this, Superficial Deposits of the Winter Hill Gravels comprising gravels and sand were encountered with a recorded thickness ranging from 1.70 to 3.35 m. London Clay was encountered beneath the Superficial Deposits and extends to a depth of 13.70m bgl, after which the Lambeth Group is present to an unproven depth.

Groundwater was encountered at approximate depths of about 2.0m bgl and subsequently at depths of between 1.52 and 1.85 m bgl. BRE365 soakage test were carried out but only one test location being successful producing an interpolated infiltration rate of around 8×10^{-6} m/s. This indicates that the groundwater infiltration rate is low.

5 SUDS Hierarchy

The hierarchical approach to SUDS selection has been used to help determine the most sustainable drainage technique for the site. Based on the topography of the site and the current proposed layout the following SUDS measures have been considered:

- Ponds – The size and nature of the site does not make the provision of a detention/retention pond a feasible element to include.
- Swales – The size of the site does not lend itself to the provision of swales.
- Ditches – The size of the site does not lend itself to the provision of a ditch.
- Soakaways – Soakage testing has been carried out and due to the poor soakage rate achieved (8×10^{-6} m/s), soakaways are not a feasible method to dispose of surface water run-off from roof areas.
- Permeable surfacing – The small areas of parking would be suitable for the installation of permeable paving. Whilst the infiltration rates are very low, the large plan area of permeable paving will allow the parking areas to be drained using sustainable methods. The sub-base will be drained into the drainage network providing additional storage in the sub-base.
- Buried surface water storage systems – Aquacell or similar storage crates can be used to attenuate the flows and control run-off at the source providing a sustainable approach to the drainage design.

Having considered the above SUDS measures the following solutions are suggested:

Separate surface water and foul water systems discharging into their respective public sewers in the vicinity of Conwy Close. In order to restrict the surface water runoff from the site to Greenfield runoff rates or 5l/s* (whichever is the greater) a SUDS drainage scheme will need to be included in the design.

*DEFRA and flow restriction device manufacturers do not recommend restricting flow rates to less than 5l/s as this increases the risk of blockage and thus increases the risk of flooding.

6 Proposed Surface Water Strategy

All of the private impermeable roof areas are designed to drain to a network of surface water sewers connecting via gravity to a Hydrobrake flow restriction with an agreed outflow rate of 5l/s. Attenuation in the form of Aquacell storage crates is provided to attenuate the flows based on the 1:100year storm + 30% for climate change. Parking areas are designed to be self draining and shall be constructed using permeable blockwork paving. The construction of porous blockwork with filter media will be used to treat any hydrocarbons prior to the sub-base being drainage into the SW drainage network.

Refer to Appendix C – Drawing H894/100&101 – Schematic Drainage Layout.

Storage volumes have been calculated using Microdrainage. The proposed surface water network is designed for the 100 year storm plus 30% for Climate Change. Refer to Appendix D – Microdrainage Calculations.

7 Proposed Foul Water Strategy

All foul water from the site is drained by gravity using a network of private sewers and connects to the public sewer network in Conwy Close. A small public sewer diversion is required at the northern end of the site around Block 1. Refer to Appendix C – Drawing H894/100&101 – Schematic Drainage Layout.