# Flood Risk and Drainage Statement

# Proposed Convenience Store, Ash Bank Road, Werrington

## INTRODUCTION

The drainage statement has been prepared to accompany a planning application for redevelopment of land located to the south of Ash Bank Road, Werrington, near Stoke-on-Trent, Staffordshire.

This statement has been prepared for the sole use of Carta Real Estate LLP and their appointed design team. No other third party may rely upon or reproduce the contents of this report without the written approval of Hydrock 3E. If any unauthorised third party comes into the possession of this report, they rely on it entirely at their own risk and Hydrock 3E do not owe them any Duty of Care or Skill.

## SITE DESCRIPTION

### Location

The site, centred on National Grid Reference, 393860, 347280, approximately 5.5km north east of Stoke-on-Trent town centre. Access to the site is currently located off Ash Bank Road to access the northwest corner of the site.

The site is roughly triangular in shape and covers an area of approximately 0.23Ha. There are number of agricultural buildings in the west of the site with the majority of the site appears to be covered in rough grass.




*Figure 1 : Extract of Existing Site Plan*

## Topography

A topographical survey has been undertaken which shows site levels range from 252 mAOD in the northeast corner to 246 mAOD in the southeast corner.

## Ground Conditions

From the Phase 1 Geo-Environmental Assessment undertaken by 3E Consulting Engineers this shows the site is underlain by Glacial Till, comprising of gravelly clay.

The British Geology Survey (BGS) identifies the north of the site to be underlain by sandstone of the Rough Rock Formation with the extreme south potentially underlain by the Millstone Grip Group, which comprises of mudstone, siltstone and sandstone.

A geological fault trending NE/SW potentially crosses the northwest corner of the site.

The site is underlain by Secondary Aquifer (undifferentiated) for the superficial soil and Secondary A Aquifer for the solid strata.

# EXISTING DRAINAGE NETWORKS

A copy of Severn Trent Water public sewer map has been obtained; this shows a 300mm diameter surface water sewer located north of Ash Bank Road flowing in a southwest direction. A 150/225mm diameter foul water sewer is showing south of Ash Bank Road flowing in a southwest direction.

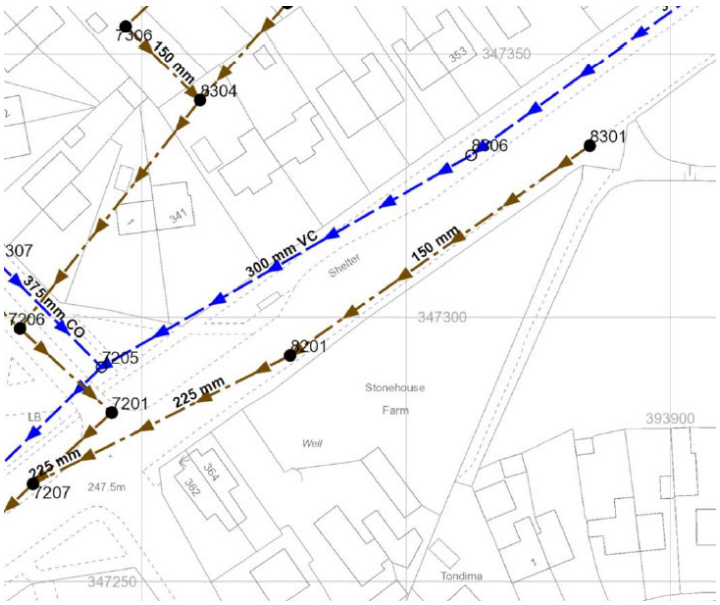


*Figure 2 : Extract of Severn Trent Sewer Record Plan*

## PROPOSED DEVELOPMENT

The proposed development comprises of the construction of a new convenience store with associated car parking and soft landscaping.

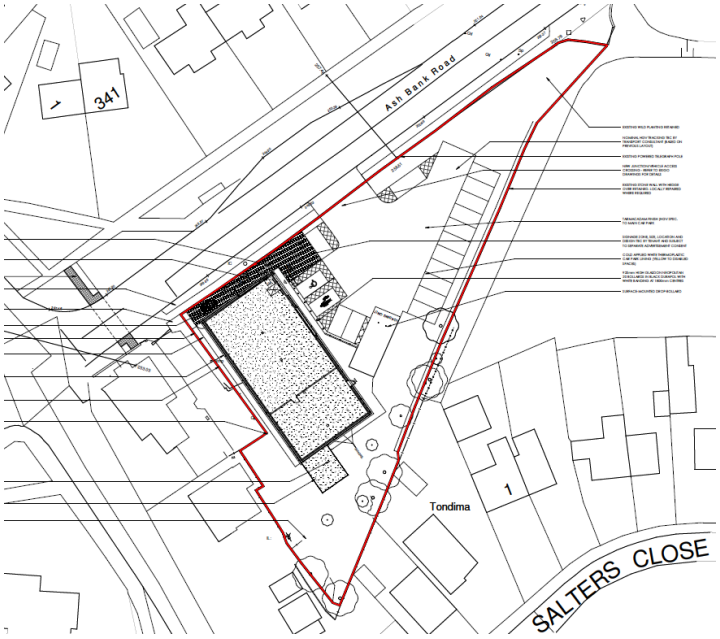


*Figure 3 : Extract of Proposed Site Plan*

## FLOOD RISK

The site has been assessed for flood risk based on information from online Environment Agency (EA) Flood Map for Planning and Long term Flood Risk Mapping.

All sources of flooding have been reviewed including fluvial, sea, surface water, groundwater, sewer and artificial sources.

The EA Flood Map for Planning show the site to be located within Flood Zone 1 with all sources considered to be at low probability of flooding based on the EA online flood maps.

## SURFACE WATER AND FOUL DRAINAGE

### General Underground Drainage

The on-site development will provide a separate system for both foul and surface water disposal in accordance with Building Regulations.

## Proposed Surface Water

In line with the National Planning Policy Framework (NPPF), the aim should be to discharge surface water run-off from the site in line with the order of priority within the surface water drainage hierarchy;

1. Into the ground (infiltration)
2. To a surface water body
3. To a surface water sewer, highway drain or another drainage system
4. A combined water sewer.

Additionally Staffordshire County Council Policy SD5 the site should consider flood risk and incorporate SuDS to reduce the risk of flooding from surface water runoff and contribute to on-site flood alleviation

From review of the Phase 1 Geo-Environmental report it is considered the site is underlain by Secondary Aquifer, based on the Initial report for the ground conditions the site may be suitable for infiltration. Therefore the primary preference (Option A) is to use of infiltration SuDS techniques for discharge of surface water flows into the ground.

Further site investigation works will need to be undertaken to determine the actual ground conditions associated with the site. Insitu soakaway tests will need to be undertaken in accordance with BRE Digest 365 once further ground investigation is undertaken.

Should soakaways prove not to be suitable, a secondary route (Option B) will look to discharge surface water flows to a nearest existing surface water public sewer.

A predevelopment enquiry has been submitted to Severn Trent Water and their response dated 26th January 2022 states that surface water flows can discharge to the 300mm surface water sewers on Ash Bank road.

## Surface Water Discharge Rate

In accordance with the NPPF the proposed peak discharge rate for the site will be set as close as practicable to the Qbar greenfield runoff rate. This has been calculated to be 1.8 l/s from Innovyze Microdrainage software based on a proposed impermeable area of 0.12ha.

Flows from the proposed development are to be restricted to the greenfield runoff rate using a suitable flow control device with surface water attenuation to accommodate these flow rates.

Given the relatively small size of the proposed catchment, it is generally not practical to restrict the offsite flow rate of surface water to less than 2 l/s. It is therefore proposed to restrict surface water flows to 2 l/s as a minimum to reduce the future risk of blockages occurring to the flow control unit.

## Surface Water Attenuation

All proposed surface water systems should be designed to accommodate the worst case 1 in 30 year storm event without flooding. Furthermore, the worst case 1 in 100 year plus climate change storm event should also be retained on site in an area that will not cause flooding to any existing or proposed buildings. In accordance with the updated NPPF Technical Guidance a climate change uplift of 40% should be applied to all rainfall estimates and proposed run-off calculations.

Drainage calculations have been undertaken within Innovyze Microdrainage software based on a proposed impermeable area of 0.12ha. Surface water is proposed to be attenuated attenuation crates, located within the parking area, to accommodate the worst case 1 in 100-year + 40%cc storm event. This has been calculated as approximately 66.5m3.

## Surface Water Maintenance

Maintenance and inspection of all drainage including the cellular storage tank and the flow control device will be maintained by an appointed management company.

## Foul Water Drainage

A predevelopment enquiry has been submitted to Severn Trent Water and their response dated 26th January 2022 confirms flows can discharge to 150/225mm foul sewer on Ash Bank Road.