

TECHNICAL NOTE

Project: 2 VALE ROAD, NORTHFLEET, GRAVESEND
Job No: 3474 – P01
Purpose of Note: DRAINAGE STRATEGY APPRAISAL
Date: 03/11/2021

This technical note is provided to support the drainage design for 2 Vale Road, Gravesend, DA11 8BZ.

In accordance with Gravesham Borough Council's planning decision notice, the proposed drainage at the site has been designed to satisfy comments made within the previous planning application (20181113) by the Lead Local Flood Authority (LLFA), Kent County Council and to meet the required conditions.

The current design proposals are presented under planning application number 20190727.

Surface Water

The previous LLFA comments noted the following:

"the site location plan includes permeable paving and information in the desk study assessment shows that the bedrock geology is chalk, therefore infiltration could be viable here. Should infiltration be considered, we would emphasise that ground investigation will be required to support the use of infiltration. It is recommended that soakage tests be compliant with BRE 365, notably the requirement to fill the test pit several times. Detailed design should utilise a modified infiltrate rate and demonstrate that any soakaway will have an appropriate half drain time."

"We would recommend that ground investigation results are submitted as part of the detailed design. As LLFA, KCC will require that the design accommodates the 1 in 100 year storm with a 20% allowance for climate change and an additional analysis undertaken to understand the flooding implication for a greater climate change allowance of 40%."

As noted, the British Geological Survey (BGS) identifies that the site is underlain by the Lewes Nodular Chalk Formation, Seaford Chalk Formation and Newhaven Chalk Formation. However, historically the site has been used as a chalk pit (material mining and removal) with later use as a garage site for vehicle storage / maintenance with sub-ground fuel storage. The Phase 2 site investigation (Lustre Consulting, October 2021) identifies a mixture of strata underneath the site with significant depths of made ground, bands of Clay, Sand and Gravel above the chalk bedrock previously noted. Note, groundwater strikes were located at the chalk / made ground interface.

According to MAGIC mapping, the site is located within an area of High Groundwater Vulnerability and soluble rock risk as well as within a Source Protection Zone (Zone 1 – Inner Protection Zone).

The Phase 2 report highlights the made ground to contain evidence of contamination with specific mention of leachates which could impact groundwater quality. It notes that where the existing site conditions is preventing the infiltration of surface water (largely impermeable) which is preventing the deterioration of groundwater quality.

Planning Condition 17 states "No infiltration of surface water drainage into the ground is permitted. The development shall only be carried out in accordance with approved drainage details."

Where infiltration has been determined to be unsuitable, the proposed discharge method has been selected following the Building Regulations (H3) discharge priority:

Re-Use		Discounted - Rainwater harvesting systems should be assumed to be full during rainfall events to ensure suitable design for the worst case scenario.
Infiltration		Discounted - Infiltration has been determined as unsuitable (see previous paragraphs)
Watercourse		Discounted – No watercourse in the vicinity of the site.
Surface Water Sewer		Discounted – No Surface Water sewer within the vicinity of the site.
Combined Sewer		Discounted – No Combined Sewer within the vicinity of the site.
Foul Sewer		Viable Option – Existing Foul Sewer within the vicinity of the site.

It is proposed to discharge surface water to the existing public foul sewer located to the north of the site via a controlled and attenuated outfall. The proposed outfall location is higher than the attenuation invert level and therefore a pump is required to lift surface water to the outfall.

The greenfield runoff rate has been calculated at QBAR 0.3 l/s and a Q100 1.0 l/s. Where the lowest practicable discharge rate is 2.0 l/s, this has been used for all storm intensities up to and including the 1 in 100 year event + 40% climate change with the appropriate geocellular attenuation provided.

External areas are proposed in Type C permeable paving (as per CIRIA C753) with the provision of a positively drained perforated drainage network to convey flows to the attenuation system.

Landscaped areas also require drainage to comply with Condition 17. These are proposed in-line with the clean cover system and are designed as a Type C permeable system positively drained with a perforated drainage network beneath for surface water not intercepted by natural evapotranspiration.

The proposed area to be drained is approximately 2,059m². This comprises the access road and parking areas (Type C permeable paving), residential roof areas, external paving and landscaped areas.

The attenuation comprises a lined geo-cellular crate structure. The structure is designed to provide a gross volume of 152m³ with a 95% void ratio, thus creating 144.4m³ of effective storage.

The permeable pavements are designed to collect via perforated pipes within the road sub-base. Whilst paving has been designed to convey surface water within the sub-base, it is not designed as a primary storage method.

The proposed point of discharge is to the existing Southern Water sewer crossing Vale Road to the north of the site. The means and mode of connection is subject to a S106 agreement.

Foul Water

It is proposed that the foul water is discharged to the public sewer crossing 2 Vale Road. Due to the site topography, a foul packaged pumping station with 24hr storage shall be required.

The means and mode of connection is subject to a S106 agreement.

General

A maintenance manual has been produced in a separate document for the drainage scheme.

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