

Proposed Student Accommodation, East Street, Reading

DRAINAGE MANAGEMENT & MAINTENANCE
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Prepared by:
Leanne Christie

Checked by:
Andrew English



Approved by:
Marc Horn

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Revision	Comments	Prepared by	Approved by	Date

Studio 207, Maling Exchange
Hoults Yard
Walker Road
Newcastle upon Tyne
NE6 2HL

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Report Methodology

This report is based upon information supplied to SHL by the client, by third parties and from publically available information to allow an office-based assessment of flood risks associated with the proposals. SHL cannot guarantee or vouch for the accuracy, completeness or reliability of this information, nor will it accept responsibility for any of the data provided by others.

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1 Introduction

A Flood Risk and Drainage Assessment (FRDA) for the proposed student accommodation development at East Street, Reading was submitted to Reading Borough Council as part of the planning application. Planning Permission has been granted with conditions.

This reports details further the drainage strategy for the site and the steps taken in selecting the drainage elements. It also outlines the maintenance scheme for the drainage elements of the site.

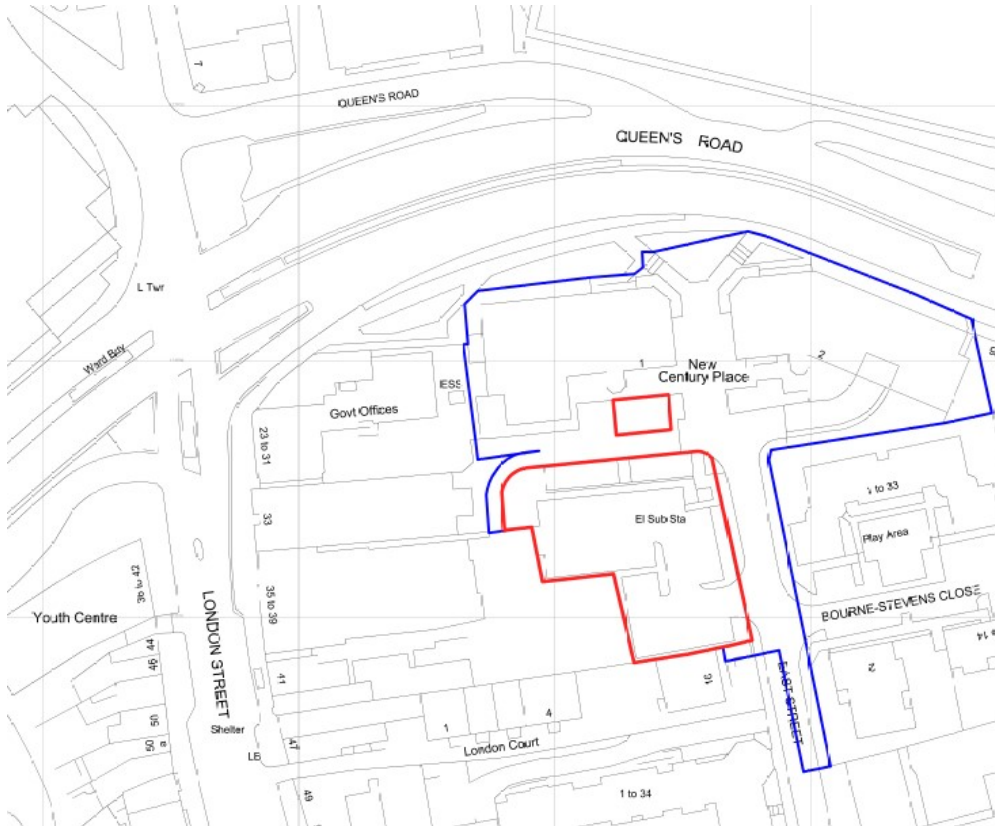
2 Development Site

2.1 General

The site lies on the west side of East Street. It is part of a wider development identified by the blue line on Figure 1 below.

The area of the development site is approximately 0.127 hectares.

Figure 1: Location Plan



2.2 Surrounding Features and Site Characteristics

The development site is situated on the outskirts of Reading Town Centre. The site is bound by East Street to the east, New Century Place to the north and London Court to the south.

The development site currently comprises a car park.

A topographic survey has been undertaken which reveals that existing ground levels over the area of the site vary from approximately 42.47m to 40.37m AOD southwest to north.

There are no watercourses within the site, nor drainage ditches, but there are formal drainage features, such as gullies and manholes. The River Kennet lies approximately 130 m to the north.

2.3 Proposed Development

The project comprises the development of a multi-story student accommodation block.

3 Existing Drainage

3.1 Existing Foul Drainage

There is no foul drainage present at the site. The nearest foul sewer is the public sewer located within East Street.

3.2 Existing Surface Water Drainage

Existing surface water drainage is present at the site. There are 2no. systems, one in the north section of the site and one in the mid-section of the site which collect runoff via gullies and discharge via two separate connections to the public surface water sewer located within East Street.

An assessment of impermeable areas which discharge into the existing sewers has been undertaken to establish the current rate of discharge.

Based on a 15-minute duration storm, the following existing flows are estimated;

- 1 in 1 = 10.685 l/s
- 1 in 10 = 20.686 l/s
- 1 in 30 = 26.181 l/s
- 1 in 100 = 33.893 l/s

4 Proposed Drainage

4.1 Proposed Surface Water Drainage

4.1.1 Hierarchy of surface water disposal

Building Regulations Approved Document H sets out the hierarchy of surface water disposal. Firstly, runoff should be directed to the ground, then if that is not feasible to a watercourse. If discharge to a watercourse is not feasible then runoff should be discharged to the surface water sewer and lastly if this is not feasible to the combined sewer.

Infiltration is not feasible given the site topography, it is perched higher than the surroundings and has a retaining wall at the rear, guidance also states that soakaways should be located at least 5m from buildings, the site is very space constrained and therefore does not allow for the size of a soakaway plus the 5m buffer. There is also no space for a rainwater holding tank or pond. The building footprint is sized in order to make the development feasible. There is no watercourse nearby to which a connection could be made.

It follows therefore that a connection should be made to the local public sewer. As the site is classed as brownfield, with known positive connections of drainage to the public sewer, this further reinforces the proposed surface water discharge method. Thames Water have granted consent to discharge both foul and surface water from the development into the foul and surface water public sewers.

4.1.2 Discharge rate

Thames Water have agreed a restricted rate of 3 l/s can discharge into their sewer located within East Street. This provides a betterment to all storms including the critical existing 1 in 1-year storm event.

This is deemed to be the lowest practicable rate achievable. Modelling of the proposed drainage system has been undertaken to ensure no flooding of the site for all storms up to and including the critical 1 in 100 year + 30% climate change event.

4.2 Sustainable Urban Drainage Systems (SuDS)

In accordance with Building Regulations, the new development's drainage will be split into separate foul and surface water.

4.2.1 SuDS Selection

SuDS method / component	Selected / Not selected	Reason for selection / Reason for being discounted
Rainwater harvesting	x	Expensive. Space constraints.
Green roofs	x	Expensive.

Filter strips	×	No infiltration. Space constraints.
Swales	×	No infiltration. Space constraints.
Bioretention	×	No infiltration. Space constraints.
Permeable pavement	×	Limited external works. Not capable of storing entire attenuation volume.
Detention basin	×	No infiltration. Space constraints.
Pond / wetland	×	Space constraints.
Attenuation tank	✓	Can be located within building footprint. Capable of storing entire attenuation volume.

4.3 Adoption Arrangement

The drainage at the development site will remain private until connection with the public sewer. It will be the responsibility of the landowner or a management and maintenance company employed by the landowner to maintain the drainage system.

4.4 Management & Maintenance

The attenuation tank and vortex flow control will require the following maintenance;

Maintenance Schedule	Required Action	Frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then 6 monthly
	Debris removal from catchment surface (where may cause risks to performance)	Monthly
Remedial actions	Repair/ rehabilitation of inlets, outlets and vents	As required
	Clear any blockages from vortex flow control	As required
Monitoring	Inspect/ check all inlets, outlets and vents to ensure they are in a good condition and operating as designed	Annually and after large storms.
Monitoring	Inspect vortex flow control to ensure it is in a good condition and operating as designed.	Annually and after large storms

This maintenance strategy is to be followed for the lifetime of the development.

4.5 Proposed Foul Water Drainage

It is proposed that the foul water drainage will discharge to the existing public sewer in East Street.

The location and free discharge rate have been agreed with Thames Water by way of a pre-development enquiry.

The contractor is to make formal a S106 sewer connection application to Thames Water.