



Sustainable Drainage Plan

Premier Inn Hosier St, Reading

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Introduction

Reading Borough Council Planning Approval 182054 was granted on 4 November 2019 for the development of a new hotel and restaurant at Hosier St, Reading.

The Planning Permission contains the following Condition included to 'ensure that the development contributes adequately towards environmental sustainable urban drainage, in accordance with Policy CS1 of the Reading Borough LDF Core Strategy 2008 (altered 2015) and Policy DM1 of the Sites and Detailed Policies Document 2012 (Altered 2015)';

****No development shall take place until full details of the drainage design along with its implementation, maintenance and management plan of the sustainable drainage scheme have been submitted to and approved by the Local Planning Authority. The details shall include:**

- i. a timetable for its implementation, and
- ii. a management and annual maintenance plan for the lifetime of the development which shall include the arrangements for adoption by any public body or statutory undertaker, or any other arrangements to secure the operation of the sustainable drainage scheme throughout its lifetime.

The approved sustainable drainage scheme shall be completed prior to the first occupation of any residential unit hereby approved and thereafter managed and maintained in accordance with the approved plan/details.

This report has been prepared as a response to this Condition to provide further, detailed, information to supplement the below documents previously submitted as part of the initial application;

- o Surface Drainage and SuDS Strategy - BJB Consulting Report 2356-DS01-RevC
- o Thames Water email dated 28 February 2019

1. Design Information

The SuDS drainage strategy submitted with the planning application has now been developed with the required attenuation calculations undertaken. This in turn has allowed the storage tank volumes and positioning to be established and the proposed arrangement of the storage tanks established.

The attenuation calculations are summarised in Table 1 below;

Site: Hosier Street, Reading
Date: 29/07/2019

Storage Volumes
 To estimate the volume of storage required to provide attenuation of an outfall
 Catchment impermeable area: ¹ 1000 square metres
 Maximum permitted discharge: ² 5.0 litres/sec

Location Hosier Street Reading
r 0.4
M5-60 20

Climate Change 30 %

Storm Duration (mins)	Rainfall 1:100 + C.C (mm/hr)*	Inflow Volume (m3)	Outflow Volume (m3)	Storage Required (m3)
5	195.47	16	2	15
10	159.68	27	3	24
15	128.82	32	5	28
30	84.42	42	9	33
60	51.74	52	18	34
120	31.51	63	36	27
240	18.36	73	72	1
360	13.31	80	108	-28
600	8.98	90	180	-90
1440	4.54	109	432	-323
2440	2.52	103	732	-629

Required storage volume is: 34 m³

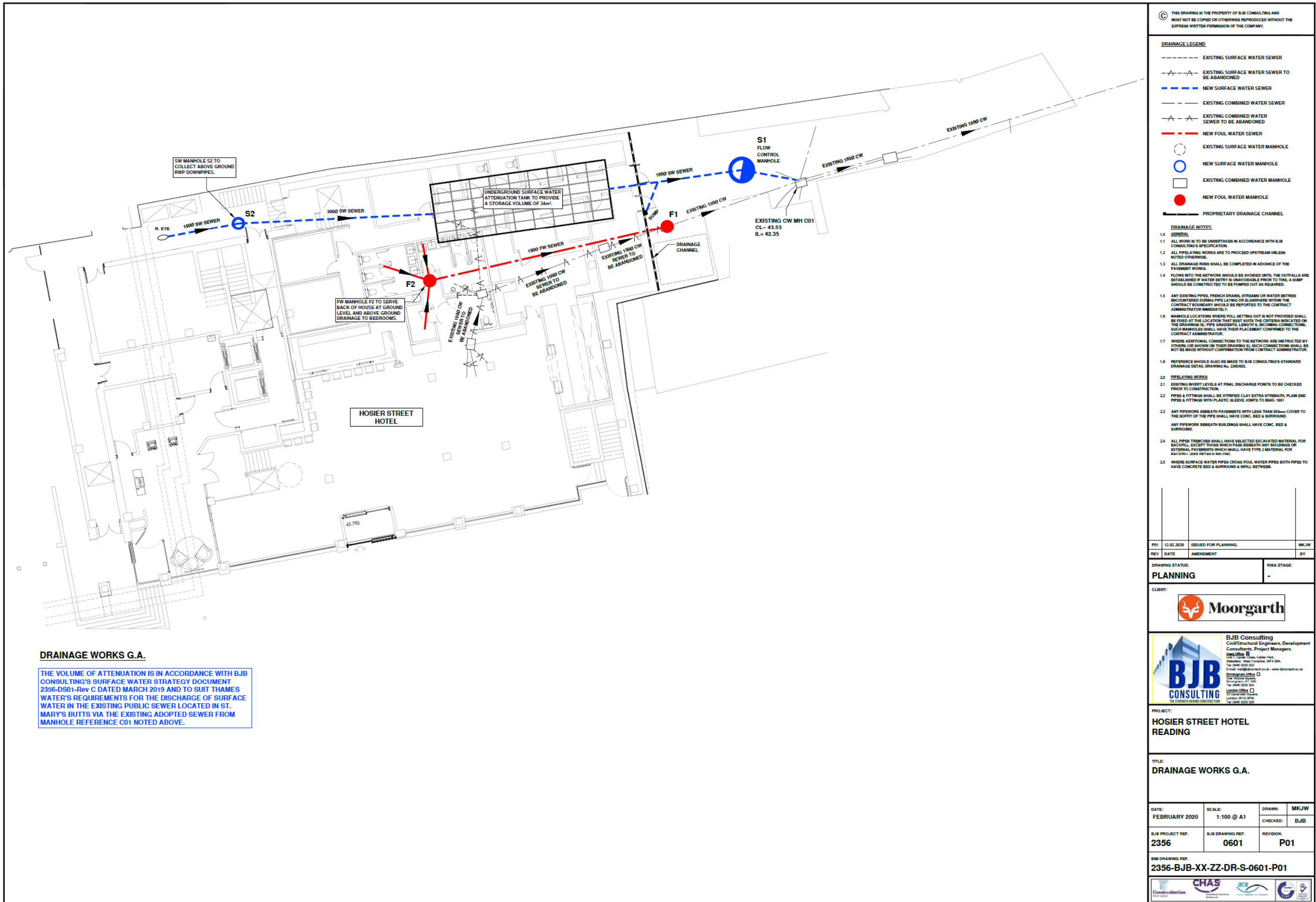
Approx flow rate into tank is: 14 l/s (1:30)

Approx flow rate into tank is: 18 l/s (1:100)

Approx flow rate into tank is: 23 l/s (1:100 + C.C.)

Table 1 – Attenuation Calculations

The below ground drainage, attenuation and connections to the existing drainage infrastructure are detailed on BJB Consulting drawing 2356-BJB-XX-ZZ-DR-S-0601-P01 overleaf



2. Timetable for Implementation

Post-demolition construction works are programmed to take place between mid-July 2020 and June 2021.

The below ground drainage installation works will be installed during this period the precise timing will depend upon coordination with the requirements of site logistics and other work elements interfacing with the drainage. We currently anticipate the below ground drainage installation occurring during October and November 2020.

Once installed and connected to the existing infrastructure the new drainage will be progressively brought into use in line with construction progress.

3. Management & Maintenance

The drainage installation associated with the development will connect into Thames water's existing adopted mains drainage infrastructure but will not be adopted, remaining a private installation. Accordingly, the responsibility for ongoing management and maintenance of the installation will remain the responsibility of the Developer and their tenants.

BJB Consulting have prepared a Drainage Maintenance Strategy which is presented in the Appendix to this report. This strategy details the maintenance regime to be adopted post-construction including the required frequencies for inspection of the various system elements.

The incoming tenant, Premier Inn, have confirmed that they will implement the requirements of the BJB strategy to ensure continued full serviceability of the drainage installation.

Appendix - Drainage Maintenance Strategy

DRAINAGE MAINTENANCE STRATEGY

NEW HOTEL, HOSIER STREET, READING

FEBRUARY 2020 REV P01.

FEBRUARY 2020

Site Name/Location	Hosier Street, Reading, Berkshire RG1 7JL
Planning Reference No:	182054
National Grid Reference of	E 471347, N 173313
Type of SUDS feature(s)	Aco drainage Channels, below ground Aco Stormbrixx modular storage, the existing Thames Water 150 diameter combined water at a controlled discharge rate at a 5 l/s. Controlled by an Aco Q-brake vortex flow control device.
SUDS Drainage Maintenance Requirements	Aco Drainage Channels Monitoring & Maintenance Clear all deleterious material Inspect and identify any areas that are not operating correctly. If required, take remedial action. Aco Stormbrixx Modular Attenuation Maintenance Inspect and identify any areas that are not operating correctly. If required, take remedial action. Aco Stormbrixx Modular Attenuation Monitoring Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed. Aco Q-Brake vortex Maintenance Requires no routine maintenance although inspections to be carried out as below to ensure correct operation. For Full Details and Descriptions of Operations and Maintenance Strategies Refer to the Accompanying Appendices
SUDS Drainage Maintenance Frequency	Aco Drainage Channels Monitoring & Maintenance Monthly for 3 months, then six monthly – see appendix A for more detail Surface Water Swales Monitoring & Maintenance Generally monthly and after large storms – see appendix C for more detail Aco Stormbrixx Modular Attenuation Maintenance Monthly for 3 months, then six monthly – see appendix B for more detail Aco Stormbrixx Modular Attenuation Monitoring Annually and after large storms – see appendix B for more detail

	Aco Q-Brake vortex Maintenance Every 3 to 6 months.
Other Drainage Maintenance Requirements	Aco Drainage Channels Monitoring & Maintenance Clear all deleterious material Inspect and identify any areas that are not operating correctly. If required, take remedial action. Gullies Monitoring & Maintenance Clear all deleterious material Inspect and identify any areas that are not operating correctly. If required, take remedial action Manhole Chambers Inspect/check all inlets & outlets to ensure that they are in good condition and operating as designed and free flowing. All of the Above Items to be Undertake on an Annual Basis at the Minimum and Also After Large Storms

Appendices:

- Appendix A - Aco Drainage Channels
- Appendix B - Aco Stormbrixx Modular Attenuation Tanks

APPENDIX A

Aco Drainage Channels

Maintenance & Inspection Guidance

ACO Drainage Channels Maintenance and Inspection Guidance

Maintenance Inspection Guidance & Procedures

It is important to note that failure to control and remove sediment build-up in SuDS is the single largest cause of system failure. The incorporation of a silt pits at the end of each ACO drainage and thus reduces the chances of sediment entering below ground pipe network and finally the surface water Stormbrixx geo cellular retention tank, therefore ensuring the effective management of silt.

The ACO drainage channel system can be accessed by removing the cover lids to allow easy access to remove any obstructions and sediment build-up, any residual settlement observed can then be removed by flushing with residue sediment collecting in silt pits to allow final removal and disposal.

Removable Drainage channel cover lids to be inspected for any obstructions and cleared as necessary.

Maintenance Inspection & Frequency

The frequency of the maintenance procedure for the tank will be determined by the local inspection regime. However it's recommended that inspections be carried initially on a monthly basis, there after three months and subsequently not less than twice-yearly. In addition to the above inspections should also be carried out after every significant storm event, in order to minimise silt build.

The inspection should be carried out visually to establish any presence of silt build-up and other obstructions. If desilting is required then this can be undertaken by jetting and/or vacuum suction techniques to remove the sediment.

As sediment from the drainage channels / silt pits has the potential to carry high levels of pollutants, it is important that any sediment removed from the system by the Vactor Unit and disposed of by a licensed contractor and in accordance with local regulations.

APPENDIX B

Aco Stormbrixx Modular Attenuation Tanks Maintenance & Inspection Guidance

StormBrixx Maintenance and Inspection Guidance

Maintenance Guidance

The definition of ownership and the responsibility for maintenance of conventional pipe drainage system is provided in 'Sewers for Adoption 7th Edition' and 'Sewers for Scotland 2nd Edition'. However, guidance for Sustainable Drainage Systems is a little less obvious, particularly where it relates to geocellular structures.

Therefore, ACO would advise that the relevant potential adopting authority should be contacted and consulted before submitting planning applications if the intention is to have the ACO StormBrixx system adopted.

Maintenance Procedures

It is important to note that failure to control and remove sediment build-up in SuDS is the single largest cause of system failure. The incorporation of a sediment forebay in an ACO StormBrixx infiltration system, or a sediment tunnel and / or draindown feature in an ACO StormBrixx attenuation system, can ensure the effective management of silt.

The open design of ACO StormBrixx allows the system to be inspected by remote CCTV either through the inlet connection, access chambers, inspection points or pipes at the edges of the ACO StormBrixx system. This allows the system to be inspected for sediment build-up and for the collected sediment to be removed from a soakaway or flushed through in the case of an attenuation system.

In the event that a sediment forebay or tunnel has not been incorporated within the ACO StormBrixx system, it will be necessary to carry out the following procedures:

Infiltration Systems

In order to check the effectiveness of the ACO StormBrixx infiltration system, a periodic inspection of the water level should be undertaken, say every quarter for the first two years, using an electronic sond and tape. This inspection should not be undertaken with 48 hours of a period of rainfall. If the water level remains above 25% full, there is the potential for a decrease in infiltration rates and the remaining water should be pumped out and the soakaway's internal walls and base be inspected by the use of remote CCTV survey techniques, with camera entry via one of the inspection units to establish whether the geotextile is clogged with silt. If desilting is required, then jetting and vacuum suction techniques will be required to remove the sediment and unbind the geotextile; the CCTV camera should be then reintroduced to establish that adequate desilting has occurred.

Attenuation systems

The frequency of the maintenance procedure for the tank will be determined by the local inspection regime. However, CIRIA C697 recommends that a programme of not less than twice-yearly inspection is carried out during the first year after construction and/or after every significant storm event. In order to minimise silt build-up good engineering practice would include the use of pre-treatment systems upstream of the attenuation device such as silt traps and catch pit manholes

The inspection should be carried out using remote CCTV survey techniques, with camera entry via one of the inspection units to establish the existence of a silt build up. If desilting is required, then jetting and vacuum suction techniques will be required to remove the sediment; the CCTV camera should be then reintroduced to establish that adequate desilting has occurred.

As sediment from either soakaway or attenuation tank has the potential to carry high levels of pollutants, it is important that any sediment removed from the system by the Vactor Unit is disposed of by a licensed contractor and in accordance with local regulations.