







J. Foul Water Drainage Estimate Calculations

Appendices Former Stag Brewery, Mortlake Project Number: WIE10667 Document Reference: WIE10667-101-R-9-5-1-DS



Sheet No: 1 of 2 Project No: WIE10667 Project Title: Stag Brewery By: N Balboni Date: 23/10/2017 Calculations Title: Existing Foul Flow Estimate Checked: D O'Donovan Date: 23/10/2017

		Dry Weather Flow Rate (per day)	Source	Number of	Factor	Profile (hours)	Peak Flow Rate (litres/second)
Residential					2.12	24	
Existing property =	160 litres/person/day	368.0 litres per unit	Thames Water Guidelines (2016)	0 existing units			0.0
New property =	125 litres/person/day	287.5 litres per unit	Thames Water Guidelines (2016)	0 proposed units			0.0
Occupancy =	2.3 persons						
Hotel		500.0 litres per room	British Water (2013)	15 rooms	3	24	0.3
Student Accommodation		200.0 litres per bed	Thames Water Guidelines (2016)	0 beds	3	24	0.0
Offices		750.0 litres per 100m ²	Jones (1992)	2318 m ²	3	10	1.4
Retail		400.0 litres per 100m ²	Jones (1992)	0 m ²	3	12	0.0
Cinema		10.0 litres per seat	Jones (1992)	0 seats*	3	8	0.0
Health Club/Sports Centre		50.0 litres per customer	British Water (2013)	168 customers**	3	16	0.4
Day School		90.0 litres per pupil	British Water (2013)	0 pupils	3	10	0.0
Boarding School		175.0 litres per pupil	British Water (2013)	0 pupils	3	24	0.0
Hospital		625.0 litres per bed	Jones (1992)	0 beds	3	24	0.0
Nursing Home		350.0 litres per bed	British Water (2013)	0 beds	3	24	0.0
Restaurant		30.0 litres per cover	British Water (2013)	0 covers	3	8	0.0
Pub/Club		15.0 litres per customer	Butler and Davies (2004)	0 customers***	3	12	0.0
Warehouse		150.0 litres per 100m ²	Jones (1992)	0 m ²	3	12	0.0
Manufacturing		550.0 litres per 100m ²	Jones (1992)	28671 m ²	3	12	11.0
Commercial		300.0 litres per 100m ²	Jones (1992)	0 m ²	3	12	0.0
SUB TOTAL							13.1
Infiltration percentage	109	6					1.3
TOTAL							14.4

* Foul flow rate needs to be calculated based on number of seats. An allowance of 4m² has been made for each seat.

Floor area = 0 m^2 $4 \text{ m}^2 \text{ per person}$

** Foul flow rate needs to be calculated based on number of customers. An allowance of 4m² has been made for each customer.

Floor area = 672 m^2 $4 \text{ m}^2 \text{ per person}$

*** Foul flow rate needs to be calculated based on number of customers. An allowance of 4m² has been made for each customer.

Floor area = 0 m^2

4 m² per person



 Project Title:
 Stag Brewery
 By:
 N Balboni

 Calculations Title:
 Proposed Foul Flow Estimate
 Checked:
 D O'Done

Sheet No:	2 of 2	Project No:	WIE10667
By:	N Balboni	Date:	25/01/2018
Checked:	D O'Donovan	Date:	25/01/2018

		Dry Weather Flow Rate (per day)	Source	Number of	Factor	Profile (hours)	Peak Flow Rate (litres/second)
Residential					2.12	24	
Existing property =	160 litres/person/day	400.0 litres per unit	Thames Water Guidelines (2016)	0 existing units			0.0
New property =	125 litres/person/day	312.5 litres per unit	Thames Water Guidelines (2016)	667 proposed units			5.1
Occupancy =	2.5 persons						
Hotel		500.0 litres per room	British Water (2013)	16 rooms	3	24	0.3
Student Accommodation		200.0 litres per bed	Thames Water Guidelines (2016)	0 beds	3	24	0.0
Offices		750.0 litres per 100m ²	Jones (1992)	7121 m ²	3	10	4.5
Retail		400.0 litres per 100m ²	Jones (1992)	0 m ²	3	12	0.0
Cinema		10.0 litres per seat	Jones (1992)	530 seats*	3	8	0.6
Health Club/Sports Centre		50.0 litres per customer	British Water (2013)	185 customers**	3	16	0.5
Day School		90.0 litres per pupil	British Water (2013)	1200 pupils	3	10	9.0
Boarding School		175.0 litres per pupil	British Water (2013)	0 pupils	3	24	0.0
Hospital		625.0 litres per bed	Jones (1992)	4 beds	3	24	0.1
Nursing Home		350.0 litres per bed	British Water (2013)	230 beds	3	24	2.8
Restaurant		30.0 litres per cover	British Water (2013)	0 covers	3	8	0.0
Pub/Club		15.0 litres per customer	Butler and Davies (2004)	0 customers***	3	12	0.0
Warehouse		150.0 litres per 100m ²	Jones (1992)	4493 m ²	3	12	0.5
Manufacturing		550.0 litres per 100m ²	Jones (1992)	0 m ²	3	12	0.0
Commercial		300.0 litres per 100m ²	Jones (1992)	0 m ²	3	12	0.0
SUB TOTAL							23.2
Infiltration percentage	10	%					2.3
TOTAL							25.5

* Foul flow rate needs to be calculated based on number of seats. An allowance of 4m² has been made for each seat.

Floor area = 2120 m^2

** Foul flow rate needs to be calculated based on number of customers. An allowance of 4m² has been made for each customer.

Floor area = 740 m^2 $4 \text{ m}^2 \text{ per person}$

*** Foul flow rate needs to be calculated based on number of customers. An allowance of 4m² has been made for each customer.

Floor area = 0 m^2

4 m² per person

4 m² per person



UK and Ireland Office Locations





C. Appendix 12.3: Condition Survey of the River Wall



APPENDIX 12.3 CONDITION SURVEY OF THE RIVER WALL





Condition Survey of the Thames River Wall

Stag Brewery

14 December 2016

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Client Name:	Dartmouth Capital Advisors Ltd
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Quality Assurance – Approval Status

Issue	Date	Prepared by	Checked by	Approved by
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Commei	nts	1 miles		

Comments



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1. INSPECTION DETAILS AND GENERAL DESCRIPTION OF STRUCTURE

1.1 General Description of Structure

The section of the Thames River wall that was inspected in this condition survey is along the Northern edge of the Stag Brewery, Mortlake, Richmond-upon-Thames in London. The wall, which is situated along the south bank of the Thames, runs in an east-to-west direction within the vicinity of the site. The inspection was carried out along the Thames River wall from the flood defence gate on Bulls Alley, along the Thames Tow Path to Ship Lane and approximately 50m up Ship Lane.

The Thames River walls is comprised of a compilation of different wall segments. These segments range from a fully brick wall to blocked up brick wall supported at intervals by steel columns to a mix of brick and reinforced concrete wall.

The Thames River wall acts as a flood defence wall and at the time of this inspection the current flood defence level is +5.94m. The defence immediately past the eastern end of the site is formed of a demountable barrier and is located in Bulls Alley. On the western end of the inspected defence, Ship Lane acts as a fixed barrier. The demountable barrier and ship lane are outside the scope of this condition survey.

1.2 Purpose

The purpose of this inspection is to undertake a general visual condition survey of the Thames River wall for a length of 368m along the front of the Stag Brewery Site from Bulls Alley and along the Thames Tow Path to Ship Lane.

1.3 Details and Method of Inspection

Inspection date: 16th September 2016

Inspected by: T Rowe and T S Chang

Weather: Cloudy and raining

The inspection was carried out during day time from the ground level. The lower section of the wall was inspected within touching distance where possible and the higher sections of the wall was inspected visually using a ladder. The inspection was undertaken using a camera and measuring tape. The position, extent and severity of all significant defects were recorded.

The extent of the inspection was limited to the Thames River wall from Bulls Alley to Ship Lane. A close inspection was carried out from the Thames (northern) side of the wall, while a brief visual inspection was carried out from the brewery yard (southern) side of the wall.

The inspection started at the entrance of the eastern demountable barrier staircase located in Bulls Alley and has therefore been referred to as chainage 0m.

This survey did not include the bank of the Thames, which is located roughly 6m to the north of the wall.



2. LOCATION PLAN



Figure 1: Location plan showing extent of Thames River wall surveyed



3. INSPECTION REPORT

3.1 Foundation

The buried foundation of the Thames River wall was not visible hence not inspected. However, as no signs of distress (e.g. settlement, tilt) was observed during inspection, the foundation is considered to be in satisfactory condition.

3.2 River Wall

This section of the Thames River wall is formed of several different segments. The condition of the wall varies according to the condition of the specific segment. The segments of wall from east to west are presented in the following sections:

3.2.1 Old Building Brick Wall

This section of the Thames River wall is made up of a compilation of brick walls that have remained in place after the buildings behind them were previously removed. The survey chainage for this section of wall is 0m to 163m. There are steel columns that provide support to the wall, spaced at intervals behind the wall (south side). There is a newer reinforced concrete (RC) wall that runs along the north side of the main wall for roughly 40m. The RC wall has a brick cladding.

This section of wall is in poor condition. In general, there are many cracks, areas with mortar loss, areas where render is cracked/missing, surface spalling of the bricks, vegetation growth and graffiti. Most of these defects are not considered to be structural. The defects observed for this wall section are presented in Table 1. For the locations and photos of these defects, refer to the drawings in Appendix A and B.



Approx. Chainage	Defects	Photo ID
0m	Render spalled off bricks at the base of the stairs.	P01
0m	Crack propagating upwards from the top of the stairs.	P03
0m – 4m	Loss of mortar on the face of the brick wall above the stairs.	P02
5m	Crack propagating upwards from the corner of a bricked up window.	P04
8m	Crack in the brick wall, extending upwards from the top of the RC wall (to the right of a bricked up window).	P05
10m	Crack propagating down from a change in height at the top of the wall.	P06
16m	The foundation of the reinforced concrete retaining wall's south-eastern corner is exposed.	P07
39m – 46m	Loss of mortar along the bottom face of the wall.	P08
45m	Crack from the top of a bricked up window to the top of the wall.	P09
49m	Cracks running diagonally in the wall.	P10 & P11
52m	Loss of mortar on the face of the bricked up window.	P12
53m	Cracks running vertically in corners of the wall.	P14 & P15
53m	Bricks spalling due to a rusting metal pipe in the wall.	P13
60m – 77m	Loss of render (330mm high) along the bottom face of the wall.	P19
61m	Render on a previously blocked up vent shaft is cracked/missing and the vent is now open.	P17
62m	Loss of mortar on face of brick wall.	P18
112m – 125m	Cracks from the top of wall. Vegetation on top of the wall appears to be pushing the concrete capping out.	P21 – P24
129m	Bricks spalled off or missing from the top of the wall.	P25
130m	Crack propagating upwards from the top of a bricked up window.	P26
130m – 161m	Minor spalling on the edges of bricked up windows and doors.	P27
142m	Missing/damaged bricks resulting in a hole through the wall.	P28
145m	Loss of mortar on the face of the brick wall near the top of the wall.	P29
163m	A large crack (approx. 20mm) that runs the height of the wall.	P30 – P32

Table 1: Defects of the Old Building Brick Wall



3.2.3 Newer Wall – Stag Brewery Sign

This section of the Thames River wall consists of a newer brick wall section that connects the Old Building Brick Walls to the Maltings Building. The survey chainage for this section of wall is 163m to 257m.

This section of wall is in good condition. In general, there is minimal loss of mortar, vegetation and graffiti. There are no significant defects observed for this section of wall. For the locations and photos of the wall, refer to the drawings in Appendix A and B.

3.2.4 Maltings Building Wall

This section of the Thames River wall consists of the northern brick wall of the Maltings building and the segment of brick wall to the west of the building. The survey chainage for this section of wall is 257m to 318m. The windows of this building are boarded up and there are open vents below the windows.

This section of wall is in fair condition. In general, there are a few cracks, areas with mortar loss, areas where render is cracked/missing, surface spalling of the bricks, and vegetation growth between the western wall and the Maltings building. Most of these defects are not considered to be structural. The defects observed for this wall section are presented in Table 2. For the locations and photos of these defects, refer to the drawings in Appendix A and B.

Approx. Chainage	Defects	Photo ID
271m	Bricks chipped out around old pipes embedded in the wall.	P37
271m	Mortar loss below metal pipe in brick wall.	P38
287m	Loss of mortar on the face of the brick wall.	P39
288m	Mortar loss below metal pipe in brick wall.	P40
300m	Loss of render along bottom face of wall. Render cracked and broken off.	P41
301m – 318m	Loss of mortar along the bottom face of the western wall.	P43 & P44
303m	The top of the wall to the west of the building is cracked.	P42
314m	Mortar loss and spalling bricks near the top of the western wall.	P45

Table 2: Defects of the Maltings Building Wall



3.2.6 Newer Wall – Ship Lane

This section of the Thames River wall consists of a brick wall supporting the roof of an open structure that was previously used for trailer parking. The survey chainage for this section of wall is 318m to 368m.

This section of wall is in good condition. In general, there is some brick staining and areas of previously repaired brickwork. Most of these defects are not considered to be structural. The defects observed for this wall section are presented in Table 3. For the locations and photos of these defects, refer to the drawings in Appendix A and B.

Approx. Chainage	Defects	Photo ID
319m	Brick staining due to the outlet of a pipe above the wall.	P46
332m	A narrow 140mm long hole through the wall.	P47
356m – 368m	Areas of existing repaired brickwork.	P48

Table 3: Defects of the Maltings Building Wall



4. CONCLUSION

The Thames River wall was found to be in poor to fair condition, generally with the following defects:

- Cracks in the brickwork
- Loss of mortar
- Cracking and damaged render
- Holes in the wall
- Surface spalling of the bricks
- Vegetation growing on or against the wall
- Graffiti



APPENDICES

A. Drawings

WIE-SA-04-1000 Rev A01	Thames Defence Wall Condition Survey Defect Plan
WIE-SA-04-1001 Rev A01	Thames Defence Wall Condition Survey Defect Elevation Sketch (Sheet 1 of 4)
WIE-SA-04-1002 Rev A01	Thames Defence Wall Condition Survey Defect Elevation Sketch (Sheet 2 of 4)
WIE-SA-04-1003 Rev A01	Thames Defence Wall Condition Survey Defect Elevation Sketch (Sheet 3 of 4)
WIE-SA-04-1004 Rev A01	Thames Defence Wall Condition Survey Defect Elevation Sketch (Sheet 4 of 4)













B. Photographs

Name	Photograph
P01 Render spalled off bricks at the base of the stairs	
P02 Loss of mortar on the face of the brick wall above the stairs	
P03 Crack propagating upwards from the top of the stairs	











Name	Photograph
P10	
Crack running diagonally	
P11	
Crack running diagonally	
P12	
Loss of mortar on brick face	



































