CALCULATIONS

Company:	WIE	Office:	London
Sheet No:	2 of 9	Project No:	WIE18671
By	S Whelan	Date	29/07/2022
Checked:	B McCarthy	Date	29/07/2022

Project Title **Former Stag Brewery, Mortlake**

Calculations Title **Surface water attenuation volume, IH124 Greenfield Runoff Rate**

LOCATION	CALCULATIONS	OPTIONS

In order to calculate the volume of surface water attenuation required for the Site, Windes Microdrainage version 2016.1, Source Control module, Quick Storage Estimate has been used. The input and output data for which are shown below;

IH124 Greenfield Runoff Rate - Q100

7.7 l/s/ha

Summary **Attenuation volumes required by Drainage Catchment**

Catchment	Area (ha)	Allowable runoff Rate (l/s)	Required attenuation (m^3)
East - 1	0.30	2.4	251
East - 2	0.25	1.9	210
East - 3	0.18	1.4	150
West - school	1.31	10.1	1095
West - 4	1.07	8.3	893
West - 5	0.92	7.1	769
West - 6	0.79	6.1	319
Total	4.84	37.4	3686

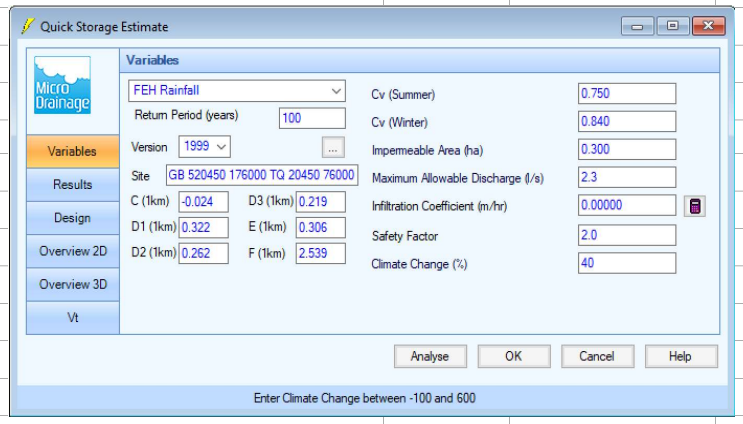
CALCULATIONS

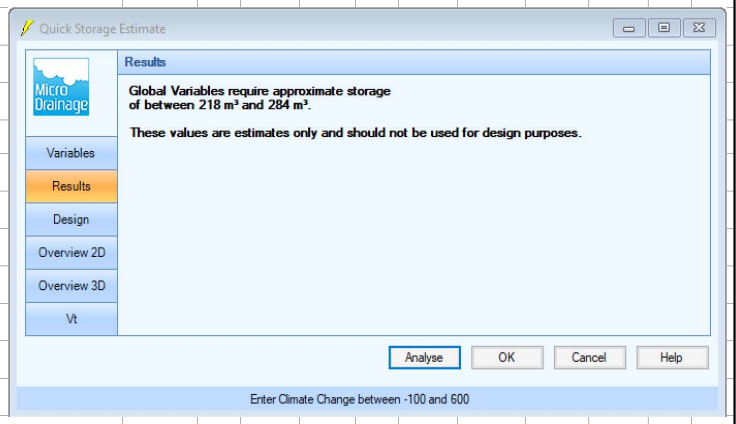
Company:	WIE	Office:	London
Sheet No:	3 of 9	Project No:	WIE18671
By	S Whelan	Date	29/07/2022
Checked:	B McCarthy	Date	29/07/2022

Project Title **Former Stag Brewery, Mortlake**

Calculations Title **Surface water attenuation volume to achieve IH124 greenfield runoff rate**

LOCATION	CALCULATIONS			OPTIONS
	In order to calculate the volume of surface water attenuation required for the Site, Windes Microdrainage version 2016.1, Source Control module, Quick Storage Estimate has been used. The input and output data for which are shown below;			
	Drainage Catchment - East 1			
	Area	0.30	ha	
	IH124 Greenfield Runoff Rate - Q10	7.73	l/s/ha	
	Maximum allowable discharge	2.35	l/s	





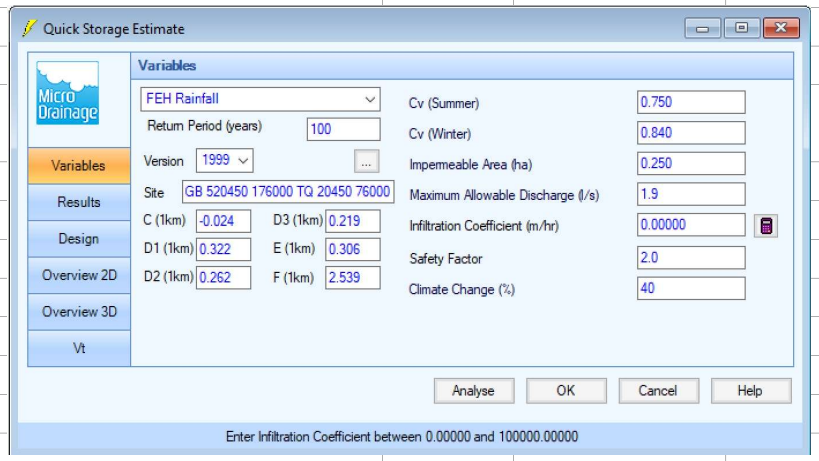
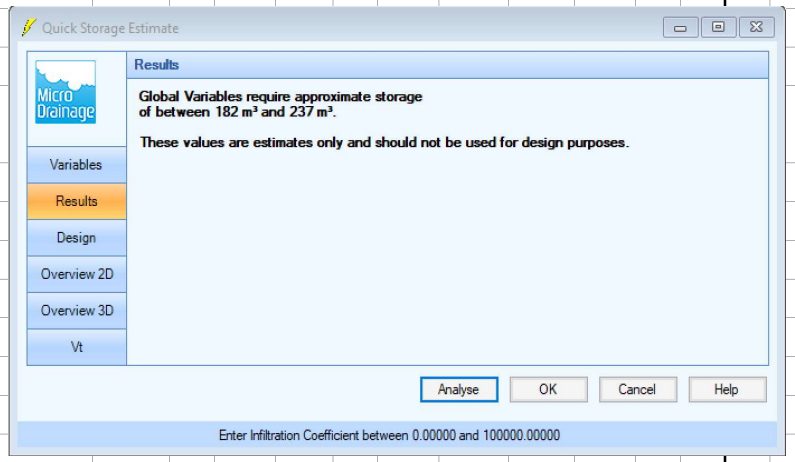
	50% attenuation volume (m^3)	140	
	Greenfield attenuation volume (m^3)	251	

CALCULATIONS

Company:	WIE	Office:	London
Sheet No:	4 of 9	Project No:	WIE18671
By	S Whelan	Date	29/07/2022
Checked:	B McCarthy	Date	29/07/2022

Project Title **Former Stag Brewery, Mortlake**

Calculations Title **Surface water attenuation volume to achieve IH124 greenfield runoff rate**

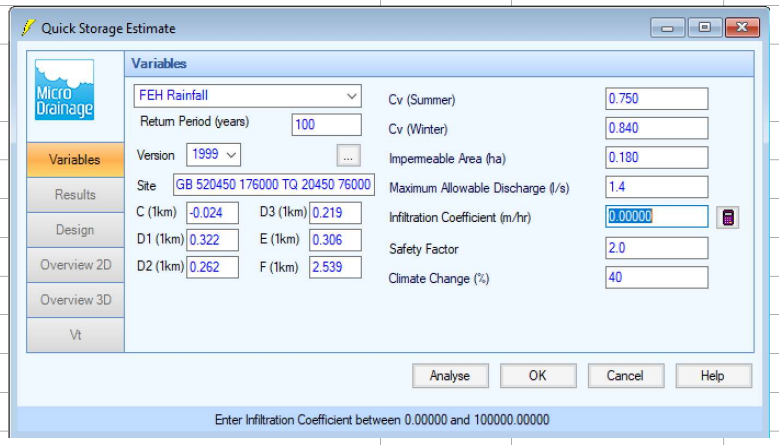
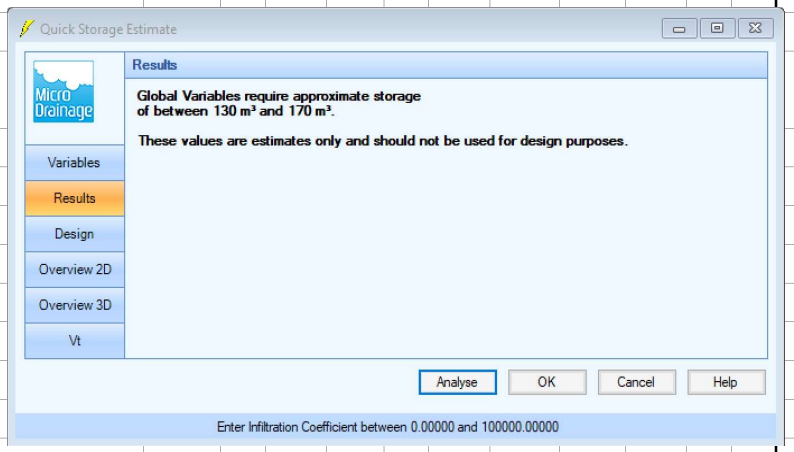
LOCATION	CALCULATIONS			OPTIONS
	In order to calculate the volume of surface water attenuation required for the Site, Windes Microdrainage version 2016.1, Source Control module, Quick Storage Estimate has been used. The input and output data for which are shown below;			
	Drainage Catchment - East 2			
	Area	0.25	ha	
	IH124 Greenfield Runoff Rate - Q10	7.73	l/s/ha	
	Maximum allowable discharge	1.94	l/s	
				
				
	50% attenuation volume (m^3)	116.5		
	Greenfield attenuation volume (m^3)	210		

CALCULATIONS

Company:	WIE	Office:	London
Sheet No:	5 of 9	Project No:	WIE18671
By	S Whelan	Date	29/07/2022
Checked:	B McCarthy	Date	29/07/2022

Project Title **Former Stag Brewery, Mortlake**

Calculations Title **Surface water attenuation volume to achieve IH124 greenfield runoff rate**

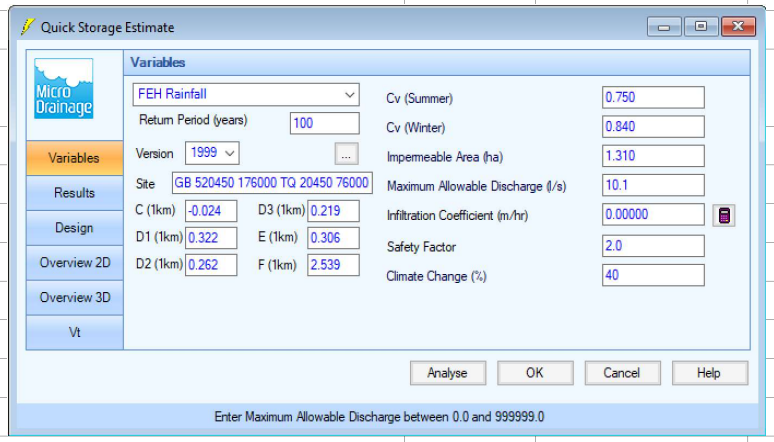
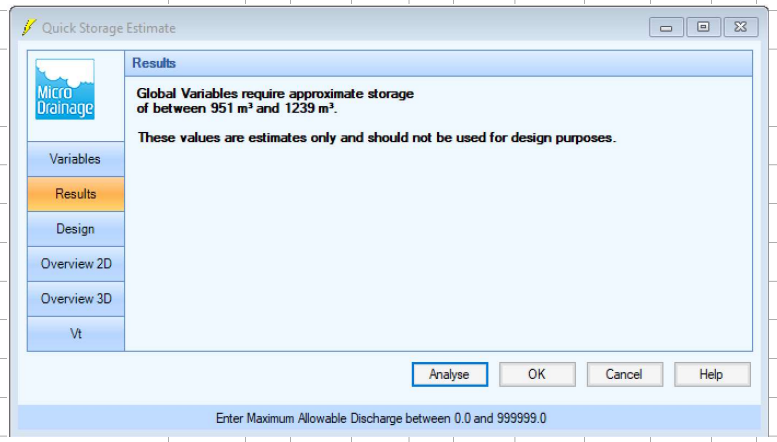
LOCATION	CALCULATIONS			OPTIONS
	In order to calculate the volume of surface water attenuation required for the Site, Windes Microdrainage version 2016.1, Source Control module, Quick Storage Estimate has been used. The input and output data for which are shown below;			
	Drainage Catchment - East 3			
	Area	0.18	ha	
	IH124 Greenfield Runoff Rate - Q10	7.73	l/s/ha	
	Maximum allowable discharge	1.39	l/s	
				
				
	50% attenuation volume (m^3)	84		
	Greenfield attenuation volume (m^3)	150		

CALCULATIONS

Company:	WIE	Office:	London
Sheet No:	6 of 9	Project No:	WIE18671
By	S Whelan	Date	29/07/2022
Checked:	B McCarthy	Date	29/07/2022

Project Title **Former Stag Brewery, Mortlake**

Calculations Title **Surface water attenuation volume to achieve IH124 greenfield runoff rate**

LOCATION	CALCULATIONS			OPTIONS
	In order to calculate the volume of surface water attenuation required for the Site, Windes Microdrainage version 2016.1, Source Control module, Quick Storage Estimate has been used. The input and output data for which are shown below;			
	Drainage Catchment - School			
	Area	1.31	ha	
	IH124 Greenfield Runoff Rate - Q10	7.73	l/s/ha	
	Maximum allowable discharge	10.14	l/s	
				
				
	50% attenuation volume (m^3)	NA		
	Greenfield attenuation volume (m^3)	1095		

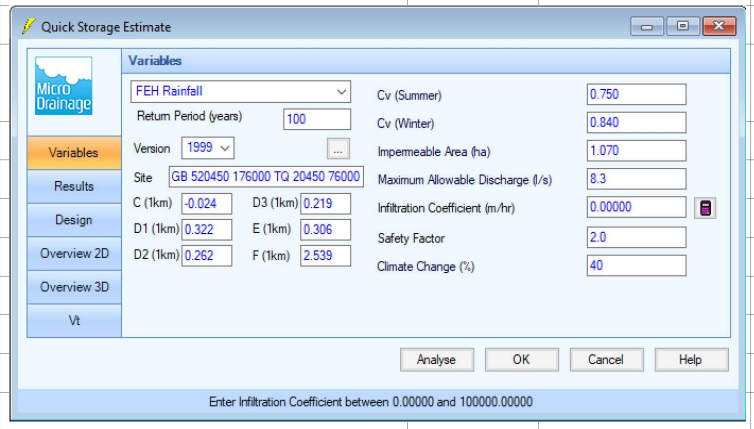
CALCULATIONS

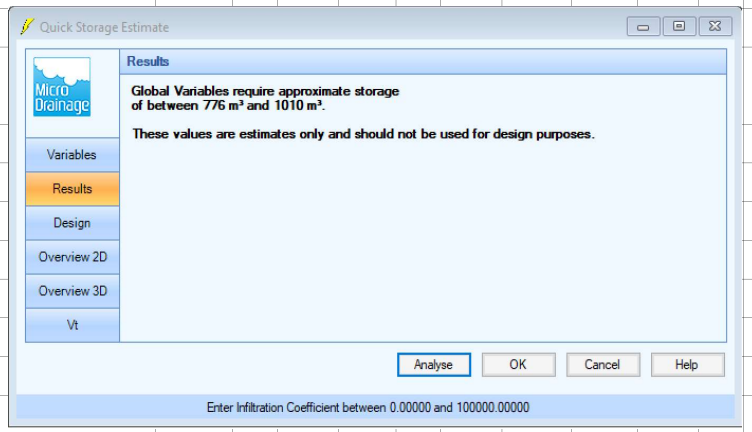
Company:	WIE	Office:	London
Sheet No:	7 of 9	Project No:	WIE18671
By	S Whelan	Date	29/07/2022
Checked:	B McCarthy	Date	29/07/2022

Project Title **Former Stag Brewery, Mortlake**

Calculations Title **Surface water attenuation volume to achieve IH124 greenfield runoff rate**

LOCATION	CALCULATIONS			OPTIONS
	In order to calculate the volume of surface water attenuation required for the Site, Windes Microdrainage version 2016.1, Source Control module, Quick Storage Estimate has been used. The input and output data for which are shown below;			
	Drainage Catchment - West 4			
	Area	1.07	ha	
	IH124 Greenfield Runoff Rate - Q10	7.73	l/s/ha	
	Maximum allowable discharge	8.30	l/s	





	50% attenuation volume (m^3)	499	
	Greenfield attenuation volume (m^3)	893	

waterman

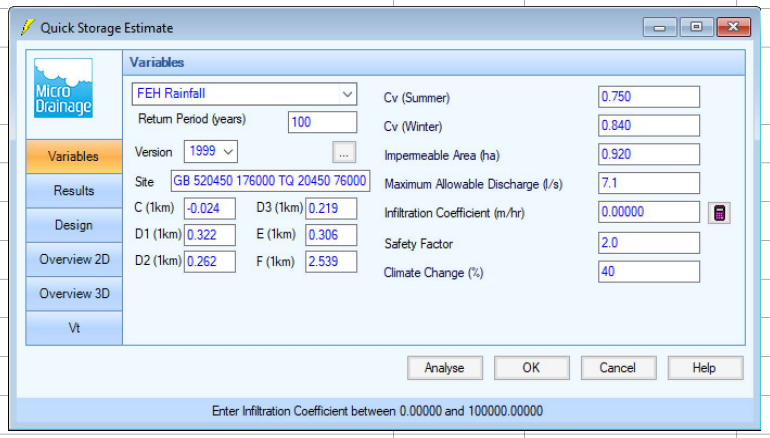
CALCULATIONS

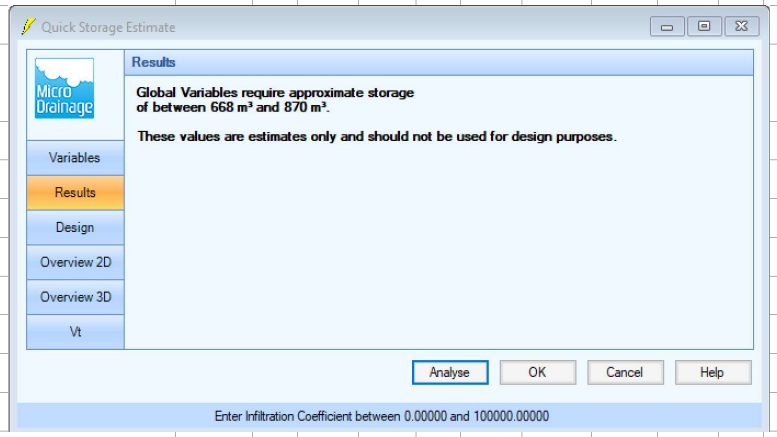
Company:	WIE	Office:	London
Sheet No:	8 of 9	Project No:	WIE18671
By	S Whelan	Date	29/07/2022
Checked:	B McCarthy	Date	29/07/2022

Project Title **Former Stag Brewery, Mortlake**

Calculations Title **Surface water attenuation volume to achieve IH124 greenfield runoff rate**

LOCATION	CALCULATIONS			OPTIONS
	In order to calculate the volume of surface water attenuation required for the Site, Windes Microdrainage version 2016.1, Source Control module, Quick Storage Estimate has been used. The input and output data for which are shown below;			
	Drainage Catchment - West 5			
	Area	0.92	ha	
	IH124 Greenfield Runoff Rate - Q10	7.73	l/s/ha	
	Maximum allowable discharge	7.14	l/s	





	50% attenuation volume (m^3)	NA	
	Greenfield attenuation volume (m^3)	769	

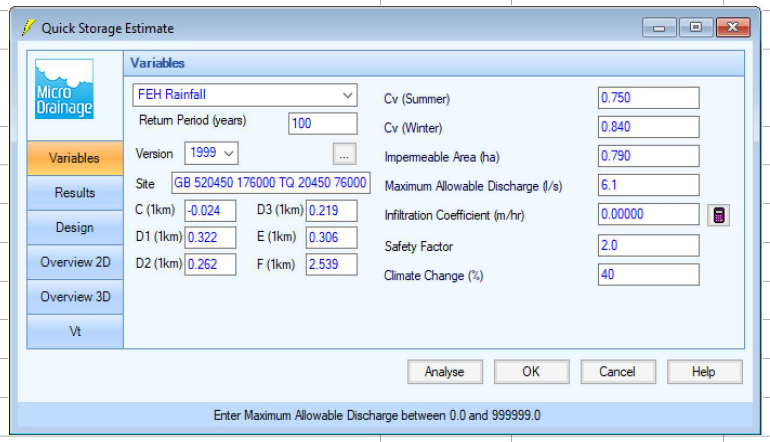
CALCULATIONS

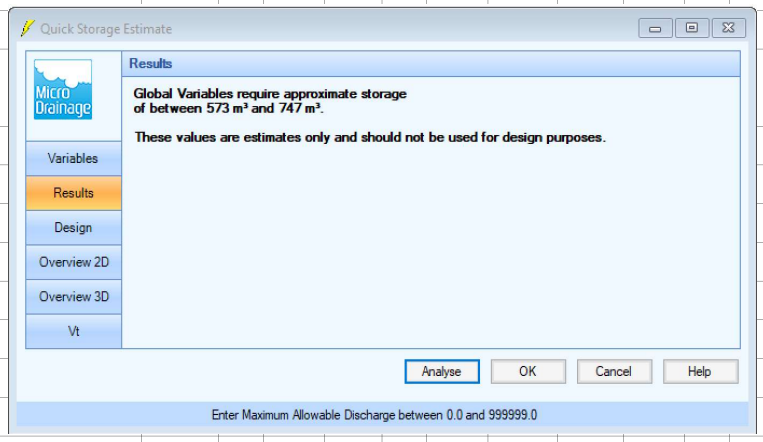
Company:	WIE	Office:	London
Sheet No:	9 of 9	Project No:	WIE18671
By	S Whelan	Date	29/07/2022
Checked:	B McCarthy	Date	29/07/2022

Project Title **Former Stag Brewery, Mortlake**

Calculations Title **Surface water attenuation volume to achieve IH124 greenfield runoff rate**

LOCATION	CALCULATIONS			OPTIONS
	In order to calculate the volume of surface water attenuation required for the Site, Windes Microdrainage version 2016.1, Source Control module, Quick Storage Estimate has been used. The input and output data for which are shown below;			
	Drainage Catchment - West 6			
	Area	0.79	ha	
	IH124 Greenfield Runoff Rate - Q10	7.73	l/s/ha	
	Maximum allowable discharge	6.11	l/s	





	50% attenuation volume (m^3)	177	
	Greenfield attenuation volume (m^3)	318.5	

I. Foul Flow Estimate

		Sheet No:	1 of 3	Project No:	WIE18671	
Project Title:	**Stag Brewery**	By:	M Stuart	Date:	18/02/2022	
Calculations Title:	**Existing Foul Flow Estimate**	Checked:	B McCarthy	Date:	18/02/2022	

	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 10%						1.3
TOTAL						**14.4**

* Foul flow rate needs to be calculated based on number of seats. An allowance of $4m^2$ has been made for each seat.

Floor area = 0 m^2 4 m^2 per person

** Foul flow rate needs to be calculated based on number of customers. An allowance of $4m^2$ has been made for each customer.

Floor area = 672 m^2 4 m^2 per person

*** Foul flow rate needs to be calculated based on number of customers. An allowance of $4m^2$ has been made for each customer.

Floor area = 0 m^2 4 m^2 per person

			Sheet No:	2 of 2	Project No:	WIE18671	
Project Title:	**Stag Brewery**		By:	S Whelan	Date:	02/08/2022	
Calculations Title:	**Proposed Foul Flow Estimate**		Checked:	B McCarthy	Date:	02/08/2022	

		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)	1071 proposed units			8.2
Occupancy =	*2.5 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)	4468 m^2	3	10	2.8
Retail		400.0 litres per $100m^2$	Jones (1992)	4782 m^2	3	12	1.3
Cinema		10.0 litres per seat	Jones (1992)	334 seats*	3	8	0.3
Health Club/Sports Centre		50.0 litres per customer	British Water (2013)	0 customers**	3	16	0.0
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)	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)	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							21.9
Infiltration percentage	10%						2.2
TOTAL							**24.1**

* Foul flow rate needs to be calculated based on number of seats. An allowance of $4m^2$ has been made for each seat.

Floor area = 1606 m^2 4 m^2 per person

** Foul flow rate needs to be calculated based on number of customers. An allowance of $4m^2$ has been made for each customer.

Floor area = 0 m^2 4 m^2 per person

*** Foul flow rate needs to be calculated based on number of customers. An allowance of $4m^2$ has been made for each customer.

Floor area = 0 m^2 4 m^2 per person

		Sheet No:	3 of 3	Project No:	WIE18671
Project Title:	**Stag Brewery**	By:	S Whelan	Date:	02/08/2022
		Checked:	B McCarthy	Date:	02/08/2022
Calculations Title:	**Proposed Foul Flow Estimate by development block**				

Description: **The proposed foul flows per development block have been calculated based on the number of residential units, commercial floor space, cinema seating, hotel rooms, and number of students attending the school, as captured within the proposed foul flow estimate calculation (Sheet 2 of 3) and the development proposals (Appendix A).**

Development Block	TW Manhole ref	Foul Flow (l/s)
1	4902	2.0
2	3005	1.1
3	4101	0.4
4	4101	0.3
5	4903	1.8
6	4901	0.3
7	4101	0.8
8	4101	0.9
9	6003	0.2
10	6901	0.3
11	6003	0.5
12	6003	0.5
13	3005	0.3
14	3901	0.3
15	3901	0.9
16	3007	0.6
17	3005	0.6
18	3007	0.9
19	3007	0.4
20	3007	0.1
21	3007	0.1
School	2801	9.0
Total	-	21.9

J. LBRuT SuDS Proforma

1. Project & Site Details		
	Project / Site Name (including sub-catchment / stage / phase where appropriate)	The Former Stag Brewery
	Address & post code	The Former Stag Brewery, Mortlake
	OS Grid ref. (Easting, Northing)	E 520470
		N 176018
	LPA reference (if applicable)	
	Brief description of proposed work	Section 1
	Total site Area	9941 m^2
	Total existing impervious area	5890 m^2
	Total proposed impervious area	5890 m^2
	Is the site in a surface water flood risk catchment (ref. local Surface Water Management Plan)?	See FRA
	Existing drainage connection type and location	Section 3
	Designer Name	Brendan McCarthy
	Designer Position	Technical Director
	Designer Company	Waterman

2. Proposed Discharge Arrangements			
	2a. Infiltration Feasibility		
	Superficial geology classification	Section 4	
	Bedrock geology classification	Section 4	
	Site infiltration rate	m/s	
	Depth to groundwater level	m below ground level	
	Is infiltration feasible?	Yes	
	2b. Drainage Hierarchy		
		Feasible (Y/N)	*Proposed (Y/N)*
	1 store rainwater for later use	Y	Y
	2 use infiltration techniques, such as porous surfaces in non-clay areas	N	
	3 attenuate rainwater in ponds or open water features for gradual release	N	
	4 attenuate rainwater by storing in tanks or sealed water features for gradual release	Y	Y
	5 discharge rainwater direct to a watercourse	Y	Y
	6 discharge rainwater to a surface water sewer/drain	Y	Y
	7 discharge rainwater to the combined sewer.	N	
	2c. Proposed Discharge Details		
	Proposed discharge location	Section 4	
	Has the owner/regulator of the discharge location been consulted?	Section 4 and 5	

3. Drainage Strategy

3a. Discharge Rates & Required Storage				
	Greenfield (GF) runoff rate (l/s)	*Existing discharge rate (l/s)*	*Required storage for GF rate (m^3)*	*Proposed discharge rate (l/s)*
Qbar	See Section 4			
1 in 1				
1 in 30				
1 in 100				
1 in 100 + CC				
Climate change allowance used		40%		
3b. Principal Method of Flow Control				

3c. Proposed SuDS Measures	*Catchment area (m^2)*	*Plan area (m^2)*	*Storage vol. (m^3)*
Rainwater harvesting	See Section 4		0
Infiltration systems			0
Green roofs			0
Blue roofs			0
Filter strips			0
Filter drains			0
Bioretention / tree pits			0
Pervious pavements			0
Swales			0
Basins/ponds			0
Attenuation tanks			0
Total	0	0	0

4. Supporting Information

4a. Discharge & Drainage Strategy	*Page/section of drainage report*
Infiltration feasibility (2a) – geotechnical factual and interpretive reports, including infiltration results	Section 4
Drainage hierarchy (2b)	Section 4
Proposed discharge details (2c) – utility plans, correspondence / approval from owner/regulator of discharge location	Section 4
Discharge rates & storage (3a) – detailed hydrologic and hydraulic calculations	Section 4
Proposed SuDS measures & specifications (3b)	Section 4
4b. Other Supporting Details	*Page/section of drainage report*
Detailed Development Layout	Appendix E
Detailed drainage design drawings, including exceedance flow routes	Appendix E
Detailed landscaping plans	Appendix A
Maintenance strategy	Section 4
Demonstration of how the proposed SuDS measures improve:	Section 4
a) water quality of the runoff?	Section 4
b) biodiversity?	Section 4
c) amenity?	Section 4

K. Urban Greening Factor

Intensive green roof area assumed for Development Area 2: 1787m2

Extensive green roof area assumed for Development Area 2: 369m2

LEGEND

GENERAL

- Semi-natural vegetation
- Intensive green roof
- Standard trees
  Soil volume equivalent to at least two thirds of the projected canopy
- Extensive green roof
- Rain gardens
- Hedges
- Standard trees
  Soil volume less than two thirds of the projected canopy area of the mature tree
- Flower-rich perennial planting
- Amenity grassland
- Water features
  Chlorinated
- Permeable paving

rev	details	by	date
P00	Issued for planning submission	WQ	11.03.2022

rev	details	by	date

Notes

1.0 Do not scale from drawing, use figured dimensions only
1.1 All dimensions to be checked onsite
1.2 This drawing to be read in conjunction with all other Gillespies drawings and specifications

N

0 5 10 25 50 m

Project title
STAG BREWERY

Drawing title
URBAN GREENING FACTOR - SITE WIDE

Drawing number
P10736-00-004-GIL-0802

Drawing Status: PLANNING
Revision: P00

Date	Scale	Drawn	Checked
11.03.2022	1:500 @ A0	WQ	JG

Client
DARTMOUTH CAPITAL

Alameda House, 90-100 Sydney Street, London SW3 6NJ
P: 0207 629 0239

GILLESPIES
1 St John's Square, London, EC1M 4DH
P 0207 2520929 E design.london@gillespies.co.uk

Our vision

"Engineering a better environment for people and the planet"

Our mission

"To solve complex problems for the benefit of clients, communities and the climate"

Our values

People orientated

Individually and collectively, people are our business.
We strive to create environments for everyone to flourish and thrive.

Flexible

Pragmatic by nature and dedicated to getting the job done to the highest possible standard.

Professional

Operating at pace with integrity to deliver technical and robust solutions.

Environmentally aware

We understand our responsibility to the environment, it shapes our decision making and informs our practice.

Innovative

Our forensic questioning provides the ability to deliver appropriate innovations at every stage on every project.

Relationship focused

We value individuality and the benefits of working collaboratively to achieve positive outcomes for all.