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Revision : 0
R- 9221J-PL-01

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Hotel Development, Bakers Road, Uxbridge

Drainage Strategy

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Revision	Date	Description	Prepared	Reviewed
0	15.08.2018	First draft for comment	JPH	LS
1	17.08.2018	Final issue for planning submission	JPH	LS
2	20.08.2018	Section 2.4 added	JPH	LS

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1.0 Project background

1.1 Existing site and drainage arrangements

1.1.1 The proposed site is located on an existing, developed site bounded by Belmont Road, Bakers Road, Cocks Yard and the High Street in Uxbridge, Middlesex.

1.1.2 The site location is as shown in Figure 1.1 below.

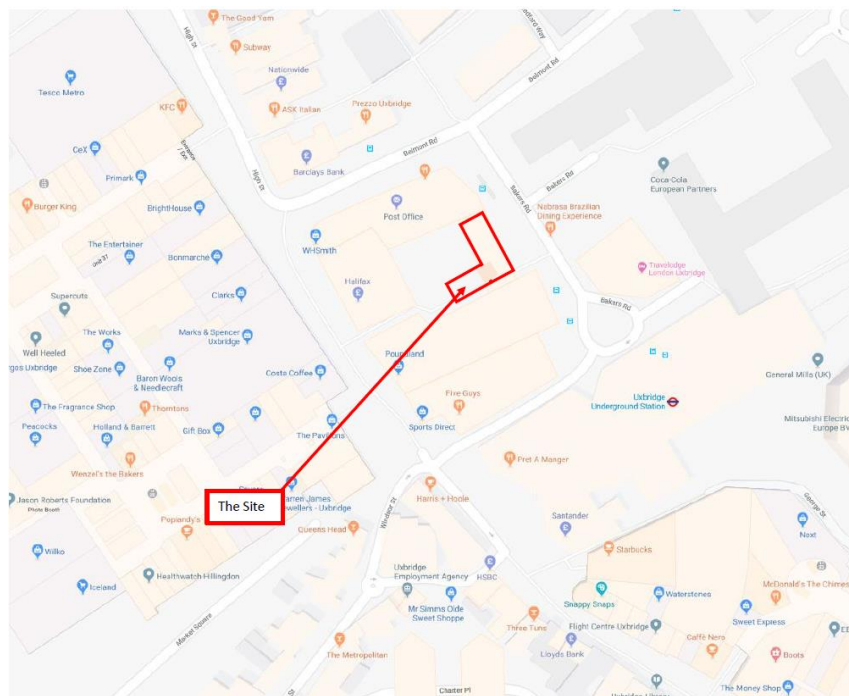


Figure 1.1

1.1.3 The location references for the proposed site development are:-

Postcode - UB8 1RG

Grid reference - TQ 05552 84224

Easting – 505552 ; Northing – 184224

Latitude – 51.547043; Longitude - -0.47918886

1.1.4 The existing site development consists of a basement car park underlying the full extent of the site indicated in Figure 1.1, beneath a retail and residential development building along the High Street, a retail and office development building along Belmont Road and an office development building, Bakers House, along Bakers Road. The

existing development buildings are formed around a ground level, central service yard accessed from Bakers Road.

1.1.5 From records provided by Thames Water, the Thames Water Asset Register, and surveys undertaken by the development owners the existing below ground drainage consists of:-

a) Surface Water

2 separate systems (see Appendix B) both of which are located beneath the basement carpark slab (approximate slab level 37.80m A.o.D.).

System 1 appears to drain the main buildings and ground floor service yard with rainwater pipes and yard gullies dropping down through the ground floor slab (often cast within basement columns) into manholes in the basement floor slab.

System 2 appears to collect surface water from floor gullies located within the basement floor slab itself .

Both systems appear to discharge, from separate manholes located immediately adjacent to the South West basement wall, into surface water sewers located within the High Street (Refer to Thames water Asset Register – Appendix C)

No evidence of pumping systems has been noted in the basement and it is therefore assumed that all surface water drains via gravity into the public sewer.

b) Foul sewage

Foul sewage soil and vent pipes from the all the development buildings drop through the ground floor slab and are connected to cast iron drainage pipes supported off the ground floor slab soffit.

Drainage from the buildings fronting Belmont Road and the High Street run along the soffit of the ground floor slab, within the basement, to a collection point along the basement south west wall and then discharge (presumed) into the foul sewers in the High Street (refer to Thames Water Asset Register – Appendix C). No evidence of pumping systems has been noted in the basement and it is therefore assumed that all foul sewage drains via gravity into the public sewer.

Drainage from Bakers House also runs along the soffit of the ground floor slab and discharges through the North Western wall of the basement to the foul drain located in the footpath immediately to the front of Bakers House (refer to Thames Water Asset Register – Appendix C). The foul drain discharges at 2 positions on the drain run, MH5206, as identified on Thames Water’s Asset register, and a 2nd manhole immediately in front of the existing entrance to Bakers House. This manhole is not identified on Thames Water’s Asset Register but has been identified on topographical and drainage surveys undertaken by the Building Owner (Refer to Appendix A – Existing Site Drainage Arrangements)

1.2 Proposed Development

- 1.2.1 The proposed development involves the demolition of Bakers House, and associated single storey buildings along Cocks Yard, down to ground slab level, and the construction of a new 9 storey hotel building occupying, approximately, the same footprint as the demolished building (see Appendix B – Proposed Site Drainage Arrangements)
- 1.2.2 The new building development will include a small footprint extension over the footpath in Bakers Road. This will necessitate the relocation of an existing foul manhole beneath the proposed hotel lobby. Initial discussions with Thames Water indicate that the drain running beneath the proposed hotel lobby is unlikely to require diversion. A build-over application will be made in respect of this sewer during the detailed design phase of the project.
- 1.2.3 No other works are proposed outwith the curtilage of the new building footprint noted in Appendix B

2.0 Proposed Drainage Strategy

2.1 General

- 2.1.1 A pre-planning enquiry was submitted to Thames Water in July 2018 for their consideration. Thames Water's response, in the form of a report on wastewater capacity check, dated 13th August 2018, is included in Appendix D.
- 2.1.2 Thames water confirmed that, in terms of the capacity of their assets, that there was sufficient capacity in both the public foul and surface water sewers to accommodate the proposed hotel development as described.
- 2.1.3 The Thames Water report notes that, in accordance with Policy 5.13 of the London Plan, in terms of the design of the surface water drainage system, "*...greenfield run-off rates of 5 l/s/Ha should be aimed for using the drainage hierarchy*". The report goes on to state that the actual criteria regarding limiting surface water discharges from the proposed development will be determined by the local authority, Hillingdon Borough Council.
- 2.1.4 Subsequent discussions with the relevant department within Hillingdon Borough Council revealed that the Council would "*...want the development to achieve greenfield run off rates...*" but the Council were not prepared to provide specific surface water run-off / attenuation / design storm requirements / parameters prior to any formal planning submission.

2.2 Foul Drainage

- 2.2.1 Based on Thames Water's "Pre-planning Enquiry: Wastewater Capacity Check", foul drainage for the new hotel development will follow the route of the existing foul drainage from Bakers House. Specifically, soil and vent pipes will drop through the ground floor slab and drainage will run in cast iron pipes fixed to the soffit of the ground floor slab, within the existing basement, to connect with the existing foul sewer in the southern footpath of Bakers Road at manhole MH5206 and the relocated manhole adjacent to the proposed hotel lobby (See Appendix B).
- 2.2.2 The existing manhole to the front of the existing entrance to Bakers House will be relocated approximately 4m North West of its current location, and a build-over application made for the new hotel lobby over the existing public foul sewer.

2.3 Surface Water Drainage

- 2.3.1 Small areas of "Green Roof" will be provided on the hotel to effect some slow-down in, and treatment for, surface water run-off from rainwater collected on the building. In addition surface water will be treated utilising a proprietary treatment system (e.g. Hydro International Downstream Defender or similar) located in the vicinity of the proposed attenuation tank, in accordance with the requirements of table 26.2 and 26.3 of the C.I.R.I.A SuDS Manual.

- 2.3.2 Rainwater pipes will drop through the existing ground floor and be connected to new drainage pipes fixed to the soffit of the ground floor slab within the existing basement.
- 2.3.3 Pipes supported below the ground slab soffit will be collected at high level and discharge into an attenuation tank sited within the basement, either within the central core area of the proposed hotel and / or beneath the proposed East wing of the new hotel (See Appendix B). The attenuation tank will sit directly on the basement floor slab and will discharge, via a restricted orifice plate, into the nearest existing manhole on the existing surface water system 1 (refer to 1.1.5 a) above).
- 2.3.4 The design of the new surface water drainage and attenuation system will be based on the following criteria:-
- a) Drained area to be attenuated – 700 m², the plan area of the proposed hotel building.
 - b) Permitted rate of discharge of surface water from attenuated area – 2.5 litres/second.
 - c) Design storm for system and attenuation – 1 in 100 years plus 40% for climate change.

Preliminary calculations for the required size of surface water attenuation storage, based on the above assumed criteria, are included in Appendix E.

2.4 Policy compliance and conclusion

- 2.4.1 The proposed drainage concept complies with policy, as set out in Hillingdon Borough Council's document "Sustainable drainage – Design and Evaluation Guide" and guidance as set out in the CIRIA SuDS Manual 2015.
- 2.4.2 The site is currently completely developed and impermeable and surface water discharge from the existing site building is currently unrestricted.
- 2.4.3 The site is completely urban in its nature and is sited within a developed town centre environment. In terms of the SuDS hierarchy there is, therefore, no opportunity to provide open attenuation storage, infiltration systems or to discharge to open watercourses; discharge to the public sewer being the only practical option for surface water drainage from the site.
- 2.4.4 Where possible SuDS source control features, e.g. green roofs, have been included within the development although opportunities for this are limited by the relatively small plan surface area of the new building. In addition to the provision of green roofs proprietary treatment devices will be installed to improve water quality in accordance with the requirements of the CIRIA SuDS Manual 2015 and Hillingdon Borough Council's document "Sustainable drainage – Design and Evaluation Guide"
- 2.4.5 Flows is to be attenuated to a practical minimum limit of 2.5 l/s and the attenuation design is based on this minimum discharge rate and a 1 in 100 year design storm plus an allowance of 40% to account for climate change in compliance with stated policy.

Appendix A

Existing Site Drainage Arrangements



KEY

SW

Existing Surface Water Drainage Below Basement Slab

FW

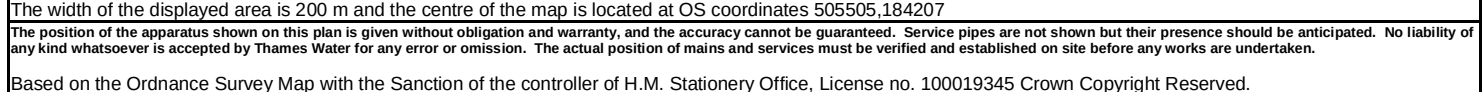
Existing C.I Foul Drainage to soffit of Ground Floor Slab

Outline of Existing Bakers House

Outline of Proposed Hotel Development

Appendix B
Proposed Site Drainage Arrangements

Appendix C
Thames Water – Asset Register Drawing



NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
5109	40.88	37.53
5108	n/a	n/a
5115	40.95	39.1
511A	n/a	n/a
5114	41.52	39.41
5103	41.72	38.47
5102	42.01	38.49
5106	42.25	39.11
5101	42.18	38.68
5207	42.75	40.7
5206	42.25	39.9
5208	42.72	41.34
5203	n/a	n/a
4220	n/a	n/a
4203	40.74	37.72
4219	n/a	n/a
4209	n/a	n/a
4202	n/a	n/a
4212	n/a	n/a
4218	n/a	n/a
4213	40.72	39.12
4204	40.72	39.29
4217	40.76	37.65
4211	40.74	33.87
4205	n/a	n/a
4210	40.65	38.97
4102	40.69	39.04
4103	40.45	38.52
4104	n/a	n/a
5107	n/a	n/a
5118	n/a	n/a
5105	40.03	37.17
5117	40.22	36.46
5111	39.96	37.6
5205	42.23	39.96
5110	43.24	37.68
5104	40.5	37.78
5204	n/a	n/a
5116	n/a	n/a
5201	42.98	39.58
5202	43.8	40.32
5306	43.97	41.13
4101	n/a	n/a
4208	n/a	n/a
4201	n/a	n/a
4214	n/a	n/a
4206	40.71	37.66
4207	40.57	38.17
The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.		

Appendix D
Thames Water – Pre-Planning Enquiry; Wastewater Capacity Check



Mr W Slack
JPP Consulting
3rd floor
82 king street
Manchester
M2 4WQ



Our ref: DS6051435



0800 009 3921

Monday to Friday, 8am to 5pm

13th Aug 2018

Pre-planning enquiry: Wastewater Capacity check

Dear Mr Slack

Thank you for providing details of your development with the Pre-Planning application dated 23rd July 18' for development @ Bakers road Uxbridge UB8 1JY

{ Brownfield site with 664 m2 commercial area developed to a hotel with 140 bedrooms plus a restaurant/daycare centre max capa 104}.

Foul

If your proposals progress in line with the details you've provided as above, we're pleased to confirm that there will be sufficient sewerage capacity to serve your foul discharges from your development.

Surface Water

In considering your surface water needs, we support the use of sustainable drainage on development sites.

The surface water drainage strategy should follow policy 5.13 of the London Plan. Typically greenfield run off rates of 5l/s/ha should be aimed for using the drainage hierarchy. The hierarchy lists the preference for surface water disposal as follows; Store Rainwater for later use > Use infiltration techniques, such as porous surfaces in non-clay areas > Attenuate rainwater in ponds or open water features for gradual release > Discharge rainwater direct to a watercourse > Discharge by storing and attenuating rainwater direct to a surface water sewer/drain > Discharge by storing and attenuating rainwater to the combined sewer.

Please refer to the attached document titled "Planning your wastewater" attached to this letter, specifically to notes relating to surface water. Also I would advise you to liaise with the LA and discuss their criteria regarding surface water discharges in that area and adhere to their stipulation. If you agree & adhere to a LA stipulation then TW will be able to accommodate that agreed discharge.

This confirmation is valid for 12 months or for the life of any planning approval that this information is used to support, to a maximum of three years.

Please note that you must keep us informed of any changes to your design – for example, an increase in the number or density of homes. Such changes could mean there is no longer sufficient sewerage capacity.

Please note that you have to contact the Developer Services Clean Water section for the Clean water response.

What happens next?

Please make sure you submit your connection application, when you are ready, giving us at least 21 days' notice of the date you wish to make your new connection/s.

If you've any further questions, please contact me.

Yours sincerely

Siva Sivarajan

Developer Services- Wastewater Adoptions Engineer
Office: 0203 577 7752 Mobile: 07747842608
siva.sivarajan@thameswater.co.uk

Thames Water Utilities Ltd, Clearwater Court, Vastern Road, Reading, Berkshire, RG1 8DB
Find us online at developers.thameswater.co.uk



TW internal ref: DTS 58822

Appendix E
Preliminary attenuation storage calculation

J P P Consulting

Cedar Barn

White Lodge

Northampton NN6 9PY

Hotel Development

Bakers Road

Uxbridge

Date 15.08.2018

File STORAGE.SRCX

Designed by JPH

Checked by

Micro Drainage

Source Control 2016.1

Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 49 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	1.078	1.078	0.0	4.1	4.1	15.4	O K
30 min Summer	1.273	1.273	0.0	4.1	4.1	18.1	O K
60 min Summer	1.320	1.320	0.0	4.1	4.1	18.8	O K
120 min Summer	1.239	1.239	0.0	4.1	4.1	17.7	O K
180 min Summer	1.121	1.121	0.0	4.1	4.1	16.0	O K
240 min Summer	0.995	0.995	0.0	4.1	4.1	14.2	O K
360 min Summer	0.705	0.705	0.0	4.1	4.1	10.0	O K
480 min Summer	0.484	0.484	0.0	4.1	4.1	6.9	O K
600 min Summer	0.342	0.342	0.0	4.1	4.1	4.9	O K
720 min Summer	0.250	0.250	0.0	4.0	4.0	3.6	O K
960 min Summer	0.153	0.153	0.0	3.6	3.6	2.2	O K
1440 min Summer	0.097	0.097	0.0	2.8	2.8	1.4	O K
2160 min Summer	0.073	0.073	0.0	2.0	2.0	1.0	O K
2880 min Summer	0.062	0.062	0.0	1.6	1.6	0.9	O K
4320 min Summer	0.051	0.051	0.0	1.2	1.2	0.7	O K
5760 min Summer	0.044	0.044	0.0	0.9	0.9	0.6	O K
7200 min Summer	0.040	0.040	0.0	0.8	0.8	0.6	O K
8640 min Summer	0.037	0.037	0.0	0.7	0.7	0.5	O K
10080 min Summer	0.034	0.034	0.0	0.6	0.6	0.5	O K
15 min Winter	1.226	1.226	0.0	4.1	4.1	17.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	138.394	0.0	18.4	17
30 min Summer	90.786	0.0	24.2	31
60 min Summer	56.713	0.0	30.2	48
120 min Summer	34.218	0.0	36.4	82
180 min Summer	25.118	0.0	40.1	118
240 min Summer	20.049	0.0	42.7	152
360 min Summer	14.556	0.0	46.5	216
480 min Summer	11.596	0.0	49.4	270
600 min Summer	9.714	0.0	51.7	326
720 min Summer	8.402	0.0	53.7	382
960 min Summer	6.677	0.0	56.9	494
1440 min Summer	4.823	0.0	61.6	734
2160 min Summer	3.478	0.0	66.7	1092
2880 min Summer	2.755	0.0	70.4	1468
4320 min Summer	1.981	0.0	75.9	2188
5760 min Summer	1.566	0.0	80.1	2856
7200 min Summer	1.304	0.0	83.3	3656
8640 min Summer	1.123	0.0	86.1	4320
10080 min Summer	0.989	0.0	88.5	5136
15 min Winter	138.394	0.0	20.6	17

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J P P Consulting		Page 3
Cedar Barn	Hotel Development	
White Lodge	Bakers Road	
Northampton NN6 9PY	Uxbridge	
Date 15.08.2018	Designed by JPH	
File STORAGE.SRCX	Checked by	
Micro Drainage		Source Control 2016.1

Model Details

Storage is Online Cover Level (m) 2.000

Cellular Storage Structure

Invert Level (m) 0.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	15.0	0.0	2.000	15.0	0.0

Hydro-Brake Optimum® Outflow Control

Unit Reference MD-SHE-0092-5000-2000-5000
Design Head (m) 2.000
Design Flow (l/s) 5.0
Flush-Flo™ Calculated
Objective Minimise upstream storage
Application Surface
Sump Available Yes
Diameter (mm) 92
Invert Level (m) 0.000
Minimum Outlet Pipe Diameter (mm) 150
Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.000	5.0
Flush-Flo™	0.398	4.1
Kick-Flo®	0.816	3.3
Mean Flow over Head Range	-	3.9

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake Optimum® as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.9	1.200	3.9	3.000	6.0	7.000	9.0
0.200	3.8	1.400	4.2	3.500	6.5	7.500	9.3
0.300	4.1	1.600	4.5	4.000	6.9	8.000	9.6
0.400	4.1	1.800	4.8	4.500	7.3	8.500	9.9
0.500	4.1	2.000	5.0	5.000	7.7	9.000	10.2
0.600	4.0	2.200	5.2	5.500	8.0	9.500	10.4
0.800	3.4	2.400	5.4	6.000	8.4		
1.000	3.6	2.600	5.6	6.500	8.7		

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