Grand Union House, 16-20 Kentish Town Road

TO	Camden Council	**FROM**	William Ko - WSP
DATE	**03 September 2021**	**CONFIDENTIALITY**	**Public**
SUBJECT	Re: Sustainability: Flooding & SUDS – April 2021 - Ref: 2021/0911/P		

WSP are writing in response to the Sustainability: Flooding & SUDS, dated 19th February 2021, within which comments have been provided related to Flood Risk and Sustainable Drainage.

WSP, as the authors of these sections of the Flood Risk Assessment (FRA) and Outline Drainage Strategy (ODS), we would like to respond to the comments within the following sections. This note should be read in conjunction with the submitted FRA an ODS.

<table>
<tr><th>#</th><th>Camden Council Comment</th><th>WSP Response</th></tr>
<tr><td colspan="3">Sustainability: Flooding & SUDS – Information Requirements</td></tr>
<tr><td>1</td><td>Shows where the green roof and raingardens will be included in the development.</td><td>Please refer to Djao Rakitine Landscape Architect Drawing DR_P0032_PL_142.</td></tr>
<tr><td>2</td><td>Specifies the greenfield and proposed runoff rates for the entire site along with supporting calculations. Clarifies the unrestricted discharge rate from the office building.</td><td>The greenfield runoff rate for the entire Site (0.3ha area) has been calculated using the HR Wallingford UKSuDS.com online tool. A summary of the results are as follows:

<table><tr><th>Storm Event</th><th>Greenfield Runoff Rate (l/s)</th></tr><tr><td>Q_{bar}</td><td>1.32</td></tr><tr><td>1 in 1</td><td>1.12</td></tr><tr><td>1in 30</td><td>3.04</td></tr><tr><td>1in100</td><td>4.21</td></tr><tr><td>1in200</td><td>4.94</td></tr></table>
See appended calculations.

Due to the nature of the Site and Proposed Development i.e. the reutilisation of existing structural foundations for the office building and associated external landscaping, it is not feasible to discharge at greenfield runoff rates. No surface water runoff can be conveyed to an attenuation system without imposing a significant structural load. In addition, the third party land below the site (Sainsbury's Superstore Car-park) must not be affected as a result of the Proposed Development. Therefore, the office building will discharge without significant stormwater attenuation.</td></tr>
</table>

<table>
<tr>
<td></td>
<td></td>
<td>
The unrestricted discharge for the office building and associated external landscaping (0.2875ha) has been calculated using the Wallingford Procedure, and is summarised as follows:

<table>
<tr><th>Storm Event</th><th>Flow Rate (l/s)</th></tr>
<tr><td>1 in 2 Year</td><td>29.6</td></tr>
<tr><td>1 in 30 Year</td><td>77.5</td></tr>
<tr><td>1 in 100 Year</td><td>103.9</td></tr>
</table>

However, please note significant green roof/soft landscaping planting is provided across the entire site including the office building.

Please refer to Djao Rakitine Landscape Architect Drawing DR_P0032_PL_142 for extent of green roof/soft landscaping. As a result, the surface water runoff volume is reduced, in addition to minor reductions in rate of discharge.

Practically, the proposed Outline Drainage Strategy proposes to provide a blue roof solution to the new build residential building.

In line with best practice and manufacturer recommendations, at this stage, the limiting discharge rate shall not be set lower than 2.0l/s for the blue roof system for all storm events up to 1:100 year+40% climate change allowance.

In detailed design, further restrictions may be possible to achieve discharge rates between 1.0-2.0l/s, however for the purposes of planning, a limiting discharge rate of 2.0l/s has been targeted. The full detailed design with manufacturer design parameters shall be submitted at post planning stage and is proposed to be secured under an appropriate planning condition.
</td>
</tr>
<tr>
<td>3</td>
<td>Specifies the greenfield runoff volume, the proposed attenuation volume and the volume of attenuation required to achieve the proposed runoff rate along with supporting calculations.</td>
<td>
As the Site proposes to increase the permeable area, when compared to the undeveloped scenario, there is no additional greenfield runoff volume to be managed, in accordance with UKSuDS.com guidance.

The attenuation volume required to achieve a greenfield runoff discharge has been calculated to be approximately 288m^3 using HR Wallingford’s online “surface water storage requirements for sites’ tool.

See appended calculations.

However, as discussed in the Flood Risk Assessment and Outline Drainage Strategy report, the office building is retaining the existing structural foundations and therefore no additional significant structural loading associated with stormwater attenuation can be provided within this area of the Site.
</td>
</tr>
<tr>
<td>4</td>
<td>Clarifies the storage volume provided by the blue and green roof.</td>
<td>
The Attenuation Volume provided, are as follows:

Office Building – Green Roof: ~ 1387m^2*0.035mm drainage layer =18.72m^3

Residential Building – Blue Roof: ~ 156m^2*0.150mm drainage layer =23.4m^3
</td>
</tr>
</table>

<table>
<tr><td>5</td><td>Shows how the exceedance flows are managed on site by adding flow paths on the drawing.</td><td>Please refer to the appended plans within this note.</td></tr>
<tr><td>6</td><td>Amends the MicroDrainage calculations to include the whole site area.</td><td>MicroDrainage calculations are applicable solely for the residential building, as this is the area to include a new SuDs drainage solution. This has been included in Appendix E of the report.</td></tr>
<tr><td>7</td><td>Shows the maintenance tasks and frequencies for all proposed drainage features.</td><td>Maintenance Plan details for flow control devices and raingardens are detailed as follows:

<table>
<tr><th>Feature</th><th>Regular Maintenance</th><th>Occasional Maintenance</th><th>Monitoring</th></tr>
<tr><td>Flow Control</td><td>Inspect every 3 months or as needed if problems occur</td><td>-</td><td>Inspect every 3 months</td></tr>
<tr><td>Raingarden</td><td>Inspect every month for debris and silt and cut and clean as necessary.</td><td>Reseed areas of poor vegetation growth, alter plant types to better suit conditions.</td><td>Inspect monthly, or when required.</td></tr>
</table>
</td></tr>
<tr><td>8</td><td>Specifies who will own the maintenance tasks.</td><td>Camden Mixed Developments Ltd. will appoint an appropriate maintenance specialist to undertake maintenance tasks for the lifetime of the development.</td></tr>
<tr><td>9</td><td>Includes a Flood Risk Emergency Plan.</td><td>A Flood Risk Emergency Plan is typically provided for sites subject to flooding from tidal/fluvial sources. The Site has been classified to lie in Flood Zone 1, at very low risk from tidal and fluvial flooding from Rivers and Sea, by the Environment Agency.

As a result, a Flood Risk Emergency Plan is not envisaged to be required for the Site.</td></tr>
<tr><td>10</td><td>Shows consent (or initial correspondence) for the proposed discharge point connections and discharge rates once this is received from Thames Water.</td><td>Initial correspondence for proposed discharge points and discharge rates are attached.</td></tr>
</table>

William Ko
Senior Engineer

Appendices

Print | Close Report

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	William Ko
Site name:	Grand Union House
Site location:	16-20 Kentish Town Road

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	51.54003° N
Longitude:	0.14201° W
Reference:	446757750
Date:	Apr 16 2021 11:03

Runoff estimation approach

FEH Statistical

Site characteristics

Total site area (ha): 0.3

Methodology

Q_{MED} estimation method:	Calculate from BFI and SAAR
BFI and SPR method:	Specify BFI manually
HOST class:	N/A
BFI / BFIHOST:	0.272
Q_{MED} (l/s):	
Q_{BAR} / Q_{MED} factor:	1.14

Hydrological characteristics

	Default	Edited
SAAR (mm):	625	637
Hydrological region:	6	6
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 30 years:	2.3	2.3
Growth curve factor 100 years:	3.19	3.19
Growth curve factor 200 years:	3.74	3.74

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited
Q_{BAR} (l/s):		1.32
1 in 1 year (l/s):		1.12
1 in 30 years (l/s):		3.04
1 in 100 year (l/s):		4.21
1 in 200 years (l/s):		4.94

Surface water storage requirements for sites

www.uksuds.com | Storage estimation tool

Calculated by: William Ko

Site name: Grand Union House

Site location: 16-20 Kentish Town Road, London

This is an estimation of the storage volume requirements that are needed to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). It is not to be used for detailed design of drainage systems. It is recommended that hydraulic modelling software is used to calculate volume requirements and design details before finalising the design of the drainage scheme.

Site Details

Latitude:	51.53979° N
Longitude:	0.14211° W
Reference:	831822244
Date:	Apr 16 2021 14:11

Site characteristics

Total site area (ha):	0.3
Significant public open space (ha):	0
Area positively drained (ha):	0.3
Impermeable area (ha):	0.3
Percentage of drained area that is impermeable (%):	100
Impervious area drained via infiltration (ha):	0
Return period for infiltration system design (year):	10
Impervious area drained to rainwater harvesting (ha):	0
Return period for rainwater harvesting system (year):	10
Compliance factor for rainwater harvesting system (%):	66
Net site area for storage volume design (ha):	0.3
Net impermable area for storage volume design (ha):	0.3
Pervious area contribution to runoff (%):	30

* where rainwater harvesting or infiltration has been used for managing surface water runoff such that the effective impermeable area is less than 50% of the 'area positively drained', the 'net site area' and the estimates of Q_{BAR} and other flow rates will have been reduced accordingly.

Methodology

Q_{MED} estimation method:	Calculate from BFI and SAAR
BFI and SPR method:	Specify BFI and SPR manually

Soil characteristics

	Default	Edited
BFI HOST:	--	0.272
SPR HOST:	--	0.6

Hydrological characteristics

	Default	Edited
Q_{MED}:	--	1.1
Q_{BAR} / Q_{MED} conversion factor:	--	1.136
Rainfall 100 yrs 6 hrs:	--	63
Rainfall 100 yrs 12 hrs:	--	102.41
FEH / FSR conversion factor:	1.33	1.33
SAAR (mm):	625	625
M5-60 Rainfall Depth (mm):	20	20
'r' Ratio M5-60/M5-2 day:	0.4	0.4
Hydological region:	6	6
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 10 year:	1.62	1.62
Growth curve factor 30 year:	2.3	2.3
Growth curve factor 100 years:	3.19	3.19
Q_{BAR} for total site area (l/s):	--	1.25
Q_{BAR} for net site area (l/s):	--	1.25

Design criteria

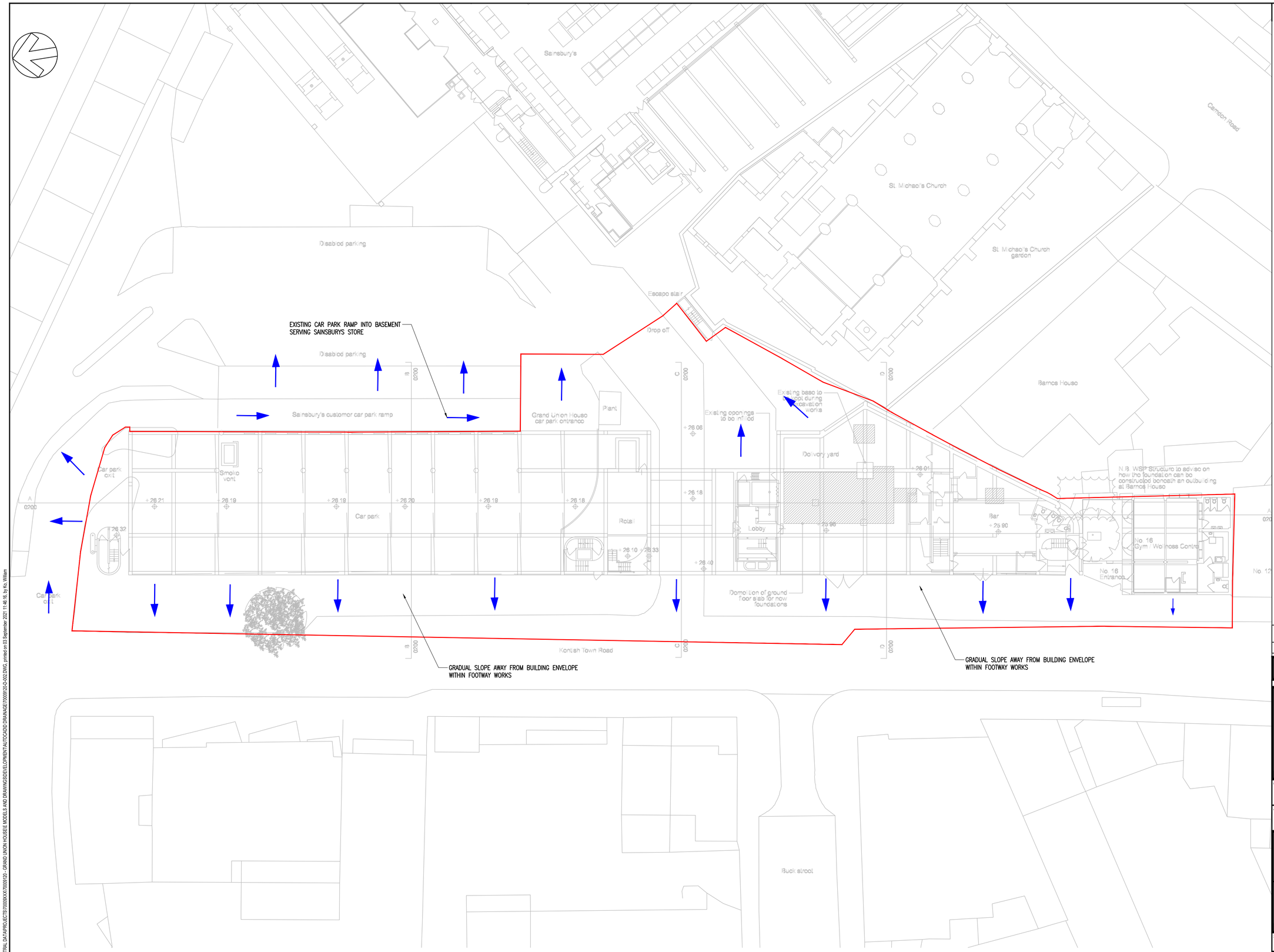
Climate change allowance factor:	1.4
Urban creep allowance factor:	1.1
Volume control approach	Flow control to max of 2 l/s/ha or Qbar
Interception rainfall depth (mm):	5
Minimum flow rate (l/s):	2

Site discharge rates

	Default	Edited
1 in 1 year (l/s):	--	2
1 in 30 years (l/s):	--	2
1 in 100 year (l/s):	--	2

Estimated storage volumes

	Default	Edited
Attenuation storage 1/100 years (m³):	--	288
Long term storage 1/100 years (m³):	--	0
Total storage 1/100 years (m³):	--	288



DO NOT SCALE

NOTES:

1. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL RELEVANT DOCUMENTATION, DRAWINGS AND STANDARD DETAILS.
2. ALL DIMENSIONS IN METRES UNLESS STATED OTHERWISE.
3. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE.
4. ANY DISCREPANCIES IN THE DETAILS SHOWN ARE TO BE REPORTED TO THE EMPLOYER'S REPRESENTATIVE/ENGINEER FOR CLARIFICATION.

KEY

SITE BOUNDARY

DIRECTION OF SURFACE WATER EXCEEDANCE FLOW PATH

REV	DATE	BY	DESCRIPTION	CHK	APP
P1	02/08/2021	WK	ISSUED FOR PLANNING	GB	GB

DRAWING STATUS:
S2 - FOR INFORMATION

WSP House, 70 Chancery Lane, London, WC2A 1AF, UK
T+ 44 (0) 207 314 5000, F+ 44 (0) 207 314 5111
wsp.com

CLIENT:
CAMDEN MIXED DEVELOPMENTS LTD

ARCHITECT:
6a ARCHITECTS

SITE/PROJECT:
GRAND UNION HOUSE
16-20 KENTISH TOWN ROAD, LONDON, NW1 8NH

TITLE:
SURFACE WATER EXCEEDANCE ROUTES

SCALE @ A1:	CHECKED:		APPROVED:
1:200	GB		GB
PROJECT NO:	DESIGNED:	DRAWN:	DATE:
70051063	WK	WK	AUGUST 2021

DRAWING No: 70009120-D-002 REV: P1

Ko, William

Subject: Pre-planning Enquiry - GUH, 16-20 Kentish Town Road, London

From: Ko, William
Sent: 03 June 2021 12:03
To: 'DEVELOPER.SERVICES@THAMESWATER.CO.U' <DEVELOPER.SERVICES@THAMESWATER.CO.UK>
Subject: Pre-planning Enquiry - GUH, 16-20 Kentish Town Road, London

Dear Sir/Madam

Please find attached a pre-planning enquiry to process. I have attached the drainage strategy plan which hopefully confirms our proposals.

In summary, we are limiting the surface water runoff of the new build aspect to 2.0l/s via a blue roof solution. The existing building which retains existing structural foundations is proposed to discharge at the existing rate, as no attenuation can be provided due to third party use i.e. the Sainsbury's Superstore Car Park below the site cannot be impacted with structural reinforcements. Additional foul loadings have been detailed on the application form.

If there are any queries, I am happy to have a quick teams call to run through on screen our proposals. Otherwise I look forward to your response.

Best Regards

William Ko
Senior Engineer

T+ 44 020 73145084

WSP House
70 Chancery Lane
London WC2A 1AF

wsp.com

Pre-planning enquiry

Application form

Please complete this form and return it to us at
developer.services@thameswater.co.uk or
Thames Water, Developer Services, Clearwater Court,
Vastern Road, Reading, RG1 8DB.

Thames Water

Application for a pre-planning enquiry

Please complete ALL relevant sections of this form in BLOCK CAPITALS

Use this form to find out if there's existing capacity in our network for your proposed development. Please ensure you complete the form in full and we'll respond within 21 calendar days from receipt of your completed application form. We'll let you know if sufficient capacity already exists in the network or if further modelling will be needed to determine if network adjustments or reinforcement will be required.

Is your application for: Water and sewerage ☐ Water ☐ Sewerage ■ (Please tick one.)

Section A - About you

(i) Details of applicant

Company name WSP

Developer ☐ Consultant ■ Land promoter ☐ SLP ☐ NAV ☐ Other ☐

Title Mr ■ Mrs ☐ Ms ☐ Miss ☐ Dr ☐ Other ☐

First name(s) WILLIAM

Last name KO

Preferred phone no. 020 7314 5084

Alternative phone no.

Email address WILLIAM.KO@WSP.COM

Full postal address

Address line 1 WSP HOUSE

Address line 2 70 CHANCERY LANE

Town LONDON

County Postcode WC2A 1AF

(ii) Who should we contact to discuss the application?

Applicant ■ Nominated contact ☐ (Please tick one.)

If nominated contact:

Company name

Developer ☐ Consultant ☐ Land promoter ☐ SLP ☐ NAV ☐ Other ☐

Title Mr ☐ Mrs ☐ Ms ☐ Miss ☐ Dr ☐ Other ☐

First name(s)

Continued...

Last name		
Preferred phone no.		
Alternative phone no.		
Email address		
Full postal address	Address line 1	
	Address line 2	
	Town	
	County	Postcode

Section B - About the site

(i) Your site address

Same as applicant ☐ Same as nominated contact ☒ At another location ☐ (Please tick one.)

If another location:

Site name	GRAND UNION HOUSE	
Full postal address	Address line 1	KENTISH TOWN ROAD
	Address line 2	CAMDEN
	Town	LONDON
	County	Postcode NW1 9LQ

Does the developer own the site? Yes ☒ No ☐ Don't know ☐

What is the local authority? CAMDEN COUNCIL

Ordnance Survey grid ref 528953 184033

Type of site Greenfield ☐ Brownfield ☒ Mixed ☐

How big is the site? 0.30 hectares

(ii) Your planning status (If you've already started the planning process).

Is the development identified in the local plan? Yes ☐ No ☐ Don't know ☒ If Yes, reference number

Does it have outline planning permission? Yes ☐ No ☒ Don't know ☐ If Yes, reference number

Does it have full planning permission? Yes ☐ No ☒ Don't know ☐ If Yes, reference number

Does the development have building regulations permission? Yes ☐ No ☒ Don't know ☐

(iii) Your development

To enable us to determine whether the capacity is sufficient or whether further modelling and reinforcement of our network will be required please provide details of the properties currently existing on the site (where applicable) and how you will phase your development. The information you provide at this stage will help improve the accuracy of our assessment. If you have more than 6 phases for your development please add details on a separate sheet.

		Proposed site						
Property type	Existing site to be demolished	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Total
Start on site date								
Date of Occupation								
General housing (total units)								
Flat (total units)		6						
Primary school (max. pupil capacity)								
Secondary school (max. pupil capacity)								
Boarding school (max. pupil capacity)								
Assembly hall (max. capacity)								
Cinema (max. capacity)								
Theatre (max. capacity)								
Sports hall (max. capacity)								
Hotel (total bedrooms)								
Guest house (total bedrooms)								
Motel (total bedrooms)								
Holiday apartment (total capacity)								
Leisure park (max. capacity)								
Caravan park standard (total spaces)								
Caravan site standard (total spaces)								
Camping site standard (total spaces)								
Camping site serviced (total spaces)								
Student accommodation (max. capacity)								
Public house (max. capacity)								
Restaurant / Day care centre (max. capacity)								
Drive in restaurant (max. capacity)								
Hospital (total beds)								
Nursing / Care home (total beds)								
Offices (gross internal area in m^2)	2692	6657						
Shopping centre (gross internal area in m^2)								
Warehouse (gross internal area in m^2)								
Commercial premises (gross internal area in m^2)	497	251						
Manufacturing unit (gross internal area in m^2)								
Other (please state units and description)								

Section C - About the water supply

(Not required if only applying for sewerage connection).

(i) Phasing water supply for your development

If you already have a plan for the phasing of your development please give details below.

Property type	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6
Date water connection required						
Estimated peak clean water flow rate (litre/sec)						
Break tank capacity, if any (m^3)						

If you're using a break tank please advise what measures you plan to take to avoid high peak flow over a short period of time.

Section D - About your sewerage connections

(Not required if only applying for water connection).

(i) Your existing sewerage connections (brownfield site only).

Please give us details of your existing connections.

	Foul water	Surface water
Does the site have the following sewerage connections?	☐	☐
What is the type of discharge method?	☐ Gravity	☐ Gravity
	☐ Pumped	☐ Pumped
If sewage is pumped, what is the pump rate?	☐ litres/sec	☐ litres/sec
What is the existing impermeable area per connection?		3033 m^2
What are the existing connection points? (For example, 'X' properties to TW manhole ref 'Y')	EXISTING CONNECTION INTO 1422x672mm TW COMBINED SEWER ON KENTISH TOWN ROAD	EXISTING CONNECTION INTO 1422x672mm TW COMBINED SEWER ON KENTISH TOWN ROAD

(ii) Your proposed sewerage connections

Please give us details of your proposed connections.

	Foul water	Surface water
Does the site have the following sewerage connections?	☐	☐
What is the type of discharge method?	☐ Gravity	☐ Gravity
	☐ Pumped	☐ Pumped
If sewage is pumped, what is the pump rate?	☐ litres/sec	☐ litres/sec
What is your proposed approach to surface water drainage?		☐ Sustainable drainage system (SuDS)
		☐ Traditional piped system
Do you propose using separate highway surface water drainage systems?		☐ Yes ☐ No
If the surface water rate is attenuated, to what rate is it attenuated?		2.0 litres/sec
What is the proposed impermeable area per connection?		156 AND 2877 m^2
What are the proposed connection points? (For example, 'X' properties to TW manhole ref 'Y')	NEW LATERAL CONNECTION INTO 1422x672mm TW COMBINED SEWER ON KENTISH TOWN ROAD	NEW LATERAL CONNECTION INTO 1422x672mm TW COMBINED SEWER ON KENTISH TOWN ROAD

Please note: The developer is expected to follow the local authority's drainage strategy and be able to demonstrate how the proposed (attenuated) discharge rate of any surface water flows have been calculated. For developments in Greater London, please refer to the London Plan Drainage Hierarchy (Policy 5.13). We will challenge the rates provided if they are not in line with those based on the local drainage strategies.