vkhp-consulting
civil and structural

[redacted]

PLEASE REPLY TO Tunbridge Wells

Our ref: WZ/ATB/201016

12 July 2017

John Dyver
Planning Officer
Development Management
Support Communities
London Borough of Camden
2nd Floor
5 Pancras Square
London N1C 4AG

Dear Mr Dyver

VARIATION OR REMOVAL OF CONDITIONS GRANTED, REGARDING 1 ARDWICK ROAD, LONDON, NW2 4PX
REF: 2017/3253/INV

Following your response sent by email to Dimitris Argyros regarding our letter dated 3 May 2017, we would like to respond as follows:

1. Possible reduction in surface water run-off from 3.7 l/s to 3 l/s:

   The reduction in the outflow rate from 3.7 l/s to 3 l/s has reduced the maximum volume during a peak storm significantly, and to try to reduce the outflow rate even further would not be feasible. For instance, a difference of 0.5 l/s in the outflow rate could potentially have a difference in the maximum volume during a peak storm of about $2m^3$.

   Most of the existing rainwater pipes will discharge into a lower ground floor and external courtyard, which are lower than the external garden, and as such it is not possible to consider other forms of SUDS. We can confirm that our micro drainage calculations have been carried out for peak flows related to 1:100 year storms, with 30% climate change.

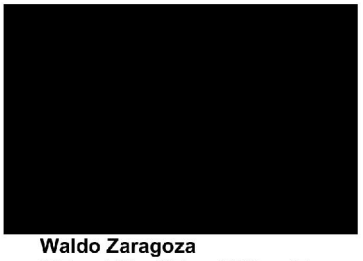
2. As mentioned above, a pump system has been considered for this site due to the reduction in levels of the original lower ground floor with the addition of a new external courtyard. Due to land restrictions there are not other possible SUDS opportunities. Therefore this pump system will need to deal with 100% of the surface water.

3. Please find attached micro drainage calculations in Appendix 2 enclosed with this letter, identifying the worst case storm event and maximum water volumes for storage. Please also find attached a simple sketch (Appendix 1) showing the size and the levels at the proposed surface water pump station, which indicates that the size of this pump station will have sufficient storage capacity (maximum storage volume 6.25 cubic metres against a volume of 4.6 cubic metres required during a 1:100 year storm). It is demonstrated that even given the exceedance of a 1:100 year storm and 30% climate change, the tank proposed will still have sufficient additional storage capacity.

4. All pumping stations require service and maintenance to ensure that the system remains in the optimum operational condition. We have confirmation from the client that New Haden Pumps will service the stations twice a year and that they will be equipped with high level alarms which will automatically contact the maintenance team. Please see Appendix 3 for information on this.

We trust that the above information will satisfy the latest comments from your sustainability team and that it will enable matters to proceed.

Yours sincerely



Waldo Zaragoza
MEng, MSc, CEng, MIStructE
Director

Encs.

APPENDIX 1

PUMP STATION LEVELS

Sheet No.

Job No. 201016

Date 06/07/16

1 ARDWICK RD

PLEASE REPLY TO

vkhp-consulting
civil and structural

The Forge • Little Mount Sion • Tunbridge Wells • Kent TN1 1YS
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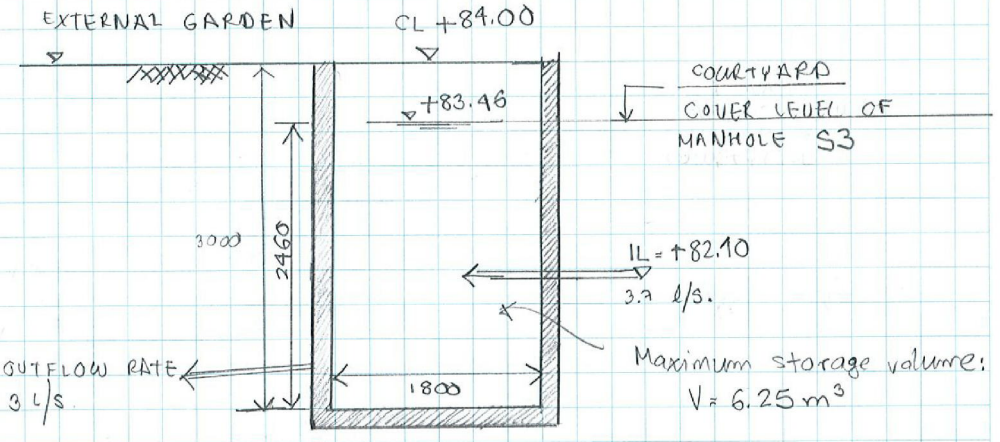

Maximum storage volume:
V = 6.25 m³

VOLUME REQUIRED DURING
1 in 100 STORM (+30%) = 4.6m³.

SW PUMP STATION

1 ARDWICK RD

Job No
Sheet No

APPENDIX 2

MICRODRAINAGE CALCULATIONS

	Ardwick Road London NW2 2BX
Date 10/07/2017 10:53	Designed by JP/SC
File Ardwick_SW_pump jp.srcx	Checked by
Micro Drainage	Source Control 2016.1.1

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	1.489	1.489	3.0	3.7	O K
30 min Summer	1.565	1.565	3.0	3.9	O K
60 min Summer	1.406	1.406	3.0	3.5	O K
120 min Summer	0.933	0.933	3.0	2.3	O K
180 min Summer	0.493	0.493	3.0	1.2	O K
240 min Summer	0.194	0.194	3.0	0.5	O K
360 min Summer	0.000	0.000	2.8	0.0	O K
480 min Summer	0.000	0.000	2.2	0.0	O K
600 min Summer	0.000	0.000	1.9	0.0	O K
720 min Summer	0.000	0.000	1.6	0.0	O K
960 min Summer	0.000	0.000	1.3	0.0	O K
1440 min Summer	0.000	0.000	0.9	0.0	O K
2160 min Summer	0.000	0.000	0.7	0.0	O K
2880 min Summer	0.000	0.000	0.5	0.0	O K
4320 min Summer	0.000	0.000	0.4	0.0	O K
5760 min Summer	0.000	0.000	0.3	0.0	O K
7200 min Summer	0.000	0.000	0.2	0.0	O K
8640 min Summer	0.000	0.000	0.2	0.0	O K
10080 min Summer	0.000	0.000	0.2	0.0	O K
15 min Winter	1.776	1.776	3.0	4.4	O K
30 min Winter	1.858	1.858	3.0	4.6	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	139.338	0.0	6.6	15
30 min Summer	90.071	0.0	8.6	24
60 min Summer	55.351	0.0	10.4	42
120 min Summer	32.840	0.0	12.6	74
180 min Summer	23.880	0.0	13.9	104
240 min Summer	18.941	0.0	14.5	130
360 min Summer	13.666	0.0	15.8	0
480 min Summer	10.831	0.0	16.7	0
600 min Summer	9.038	0.0	17.4	0
720 min Summer	7.792	0.0	18.0	0
960 min Summer	6.162	0.0	19.0	0
1440 min Summer	4.421	0.0	20.4	0
2160 min Summer	3.167	0.0	21.9	0
2880 min Summer	2.498	0.0	23.0	0
4320 min Summer	1.785	0.0	24.6	0
5760 min Summer	1.406	0.0	25.8	0
7200 min Summer	1.167	0.0	26.7	0
8640 min Summer	1.002	0.0	27.5	0
10080 min Summer	0.881	0.0	28.2	0
15 min Winter	139.338	0.0	7.5	16
30 min Winter	90.071	0.0	9.7	26

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Micro Drainage	Source Control 2016.1.1

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	1.588	1.588	3.0	4.0	O K
120 min Winter	0.819	0.819	3.0	2.0	O K
180 min Winter	0.206	0.206	3.0	0.5	O K
240 min Winter	0.000	0.000	2.8	0.0	O K
360 min Winter	0.000	0.000	2.1	0.0	O K
480 min Winter	0.000	0.000	1.6	0.0	O K
600 min Winter	0.000	0.000	1.4	0.0	O K
720 min Winter	0.000	0.000	1.2	0.0	O K
960 min Winter	0.000	0.000	0.9	0.0	O K
1440 min Winter	0.000	0.000	0.7	0.0	O K
2160 min Winter	0.000	0.000	0.5	0.0	O K
2880 min Winter	0.000	0.000	0.4	0.0	O K
4320 min Winter	0.000	0.000	0.3	0.0	O K
5760 min Winter	0.000	0.000	0.2	0.0	O K
7200 min Winter	0.000	0.000	0.2	0.0	O K
8640 min Winter	0.000	0.000	0.2	0.0	O K
10080 min Winter	0.000	0.000	0.1	0.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
60 min Winter	55.351	0.0	11.9	44
120 min Winter	32.840	0.0	14.1	78
180 min Winter	23.880	0.0	15.5	106
240 min Winter	18.941	0.0	16.3	0
360 min Winter	13.666	0.0	17.7	0
480 min Winter	10.831	0.0	18.7	0
600 min Winter	9.038	0.0	19.5	0
720 min Winter	7.792	0.0	20.1	0
960 min Winter	6.162	0.0	21.2	0
1440 min Winter	4.421	0.0	22.9	0
2160 min Winter	3.167	0.0	24.5	0
2880 min Winter	2.498	0.0	25.8	0
4320 min Winter	1.785	0.0	27.6	0
5760 min Winter	1.406	0.0	28.9	0
7200 min Winter	1.167	0.0	30.0	0
8640 min Winter	1.002	0.0	30.9	0
10080 min Winter	0.881	0.0	31.6	0

	Ardwick Road London NW2 2BX
Date 10/07/2017 10:53	Designed by JP/SC
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Micro Drainage	Source Control 2016.1.1

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	21.000	Shortest Storm (mins)	15
Ratio R	0.435	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+30

Green Roof

Area (m^3)	18	Evaporation (mm/day)	3
Depression Storage (mm)	5	Decay Coefficient	0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000327	32	36	0.000066	64	68	0.000013	96	100	0.000003
4	8	0.000268	36	40	0.000054	68	72	0.000011	100	104	0.000002
8	12	0.000219	40	44	0.000044	72	76	0.000009	104	108	0.000002
12	16	0.000180	44	48	0.000036	76	80	0.000007	108	112	0.000001
16	20	0.000147	48	52	0.000030	80	84	0.000006	112	116	0.000001
20	24	0.000120	52	56	0.000024	84	88	0.000005	116	120	0.000001
24	28	0.000099	56	60	0.000020	88	92	0.000004			
28	32	0.000081	60	64	0.000016	92	96	0.000003			

Time Area Diagram

Total Area (ha) 0.024

Time From:	(mins) To:	Area (ha)
0	4	0.024

	Ardwick Road London NW2 2BX
Date 10/07/2017 10:53	Designed by JP/SC
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Micro Drainage	Source Control 2016.1.1

Model Details

Storage is Online Cover Level (m) 83.460

Tank or Pond Structure

Invert Level (m) 0.000

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	2.5	2.460	2.5

Pump Outflow Control

Invert Level (m) -2.260

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.0000	1.200	3.0000	3.000	3.0000	7.000	3.0000
0.200	3.0000	1.400	3.0000	3.500	3.0000	7.500	3.0000
0.300	3.0000	1.600	3.0000	4.000	3.0000	8.000	3.0000
0.400	3.0000	1.800	3.0000	4.500	3.0000	8.500	3.0000
0.500	3.0000	2.000	3.0000	5.000	3.0000	9.000	3.0000
0.600	3.0000	2.200	3.0000	5.500	3.0000	9.500	3.0000
0.800	3.0000	2.400	3.0000	6.000	3.0000		
1.000	3.0000	2.600	3.0000	6.500	3.0000		

APPENDIX 3

SERVICE AND MAINTENANCE

NEW HADEN PUMPS

PUMPING SOLUTIONS

NHP GSM Alertpac Remote Alarm Warning System

Introduction

The New Haden Pumps GSM Alarm Modem is used to send alarm information over a GSM network. Although it is designed to be used with New Haden Pumps boosters or sump pumps, it can be used to send other information, any device that can provide a set of volt-free contacts may be used as an input to the modem.

The New Haden Pump GSM Alarm Modem can send pre-programmed SMS messages over a mobile telephone network. It is installed as part of an alarm monitoring system and sends messages to programmed telephone numbers stored within the modem unit.

The New Haden Pumps Alarm Modem must be programmed with the required telephone numbers to receive the messages.

Messages

The unit is equipped with 6 alarm inputs; each input can send four individual text messages to two different recipients. (Two messages sent when alarm input goes active, two messages when it returns to its healthy state)
To attract further attention to the sent SMS, the unit is also able to make a call to the recipients of the SMS messages.

The maximum text length is160 characters.

Telephone numbers

The New Haden Pumps GSM Alarm Modem SMS two numbers per alarm. Please ensure that the numbers selected are correct and in the priority required. The New Haden Pumps GSM Alarm Modem will dial the numbers in this order. Mobile phones or land phones can be designated (the land line must be capable of receiving SMS).

Battery Back-up

The SMS Transceiver is equipped with an internal battery back up complete with charging control circuitry. Upon the unit losing power a SMS alarm will be sent. The Battery back up duration is for 1 day. Upon the mains power been restored the unit will also send a SMS to advise that the power has been restored.

Re-Start.

To ensure that the SMS transceiver is online with the GSM network, the unit automatically re-starts the GSM module once a day.

Monitoring Inputs in case of power loss.
All inputs are continuously monitored and stored in the unit's memory, In the event of power loss, the unit will at re-start compare the inputs status before and after power loss. If any anomalies are found the unit will generate an alarm condition based on the inputs change of state.

Remote Access
It is possible to obtain a status report on the current condition of the unit. For this function to be available any mobile phone that requires access will need to be programmed into the modem, this is so when a request is made from a mobile to the unit it will then compare the number making the request to a list of authorised numbers stored in the modem, only after establishing a match will the status report be sent. The flowing information will be sent in the form of a SMS:-

- Input 1 - 6 Alarm or Healthy
- Mains power ON or OFF
- Current GSM Signal strength
- Software version

SIM Card requirements.
The SMS transceiver requires a valid GSM subscription with the following configuration:

1.The PIN code must be removed.
2.The SMS feature needs to be enabled.
3.PAYG can be used if you do not expect to send a lot of messages, however some providers deactivate the SIM when long periods of inactivity have been experienced.
The caller ID function needs to be activated.

Programming the New Haden Pumps Alarm Modem

The unit is only programmable by using software, this would be carried out on site once the station is up and running and SIM card is available.

If in any doubt about any of the above information, please contact New Haden Pumps on [redacted]

NEW HADEN PUMPS
PUMPING SOLUTIONS

Scheduled Service and Maintenance of Submersible Sewage/Drainage Pumps Rainwater Harvesting Petrol Interceptors Pressurised Cold Water Booster Sets For Service Contracts

Undertaken on an annual basis, comprising periodic visits of agreed frequency to maintain efficient and reliable system operation

The plant is visually inspected, **pumps raised and inspected** on each service visit, seal chamber oil change/replenished as necessary, level control equipment cleaned and tested, hose down of chamber (where practicable), an inspection and test of Control Panel Functionality and Motor Insulation tested and recorded.

A full and detailed service check list and report is submitted to the client, indicating the work undertaken and any matters that require rectification and/or attention.

Pump tankerage and cleaning of chambers is available at an additional cost

Emergency call outs are chargeable as detailed on your Service Quotation

Existing Service Contract Customers will attract priority service at all times over non service contract customers

For further information please contact any of the following:

Les Manning:
Andy Forrester:
[redacted]
Hannah Sales: