



Drainage Statement

Proposed Gordon House Development

Revision A

2016039-DS

March 2017

Revision Log

Revision	Description	By	Date
∅	Initial Issue	JR	03/03/2017
A	Updated to suit latest layout	JR	22/03/2017

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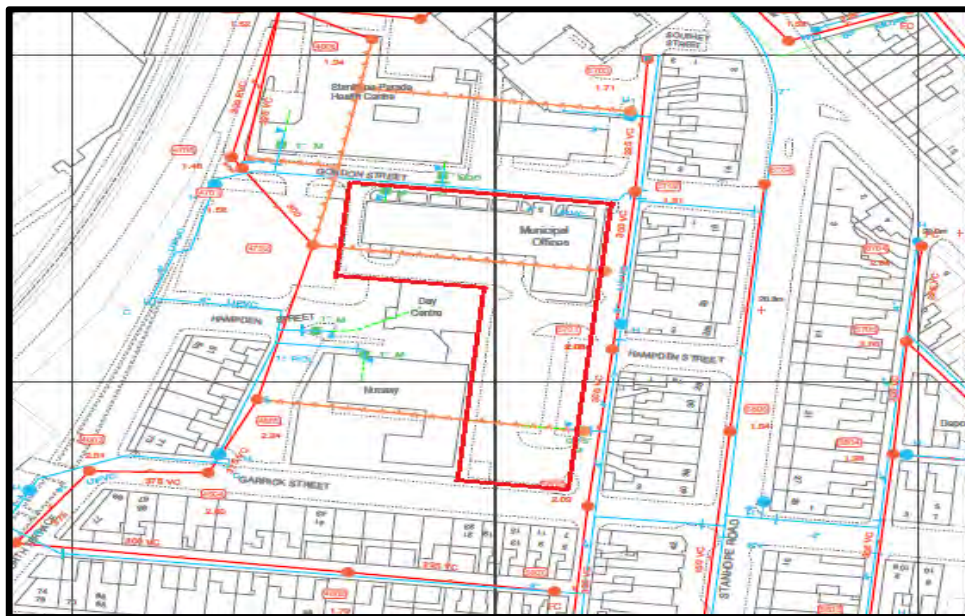
Appendix C – Surface Water Calculations

Introduction

It is proposed to construct 20 No 2 story 3 bed residential houses, along with the improvement of an existing highway and new plot accesses. The site is currently occupied by the former Gordon House Municipal Offices and associated car parks.

The proposed site area is as shown below and is centered on Ordnance Survey reference 436506, 565723.

The site is under 1 hectare and with reference to the Environment Agency flood maps is in Zone 1, therefore no Flood Risk Assessment is required.



Extract from NWL Record Sheet NZ3665NW

(Note: site boundary approximate only)

The full 'GIS' extract can be found in Appendix A and a drawing showing the proposed drainage strategy and the existing network is contained within Appendix B.

Surface Water Drainage

Part H of the Building Regulations provides a recommended hierarchy for surface water disposal:

- i) By infiltration;
- ii) To watercourse;
- iii) To sewer.

4.01 Discharge via Infiltration

The site investigation report shows that the site is underlain by clay and sand and has been given a permeability class of very low. Therefore, the ground conditions are unsuitable for the use of infiltration techniques.

4.02 Discharge to Water Course

The closest Water Course is the River Tyne which lies approximately 1000m to the North West of the site, there are various 3rd party land ownerships and infrastructure between the site and the River therefore for this reason, this option has been discounted as a method of surface water disposal.

4.03 Discharge to Public Sewers

A pre-development enquiry (PDE) was submitted to Northumbrian Water Ltd (NWL) who have allowed, within their response in Appendix A, a restricted discharge of 20l/s into the existing 300mm diameter combined sewer, via existing manhole 4702 located to the North West of the proposed development site.

LASOO guidance states that brownfield sites should be restricted, as close as reasonably practical to greenfield run off with a minimum of 5 l/s. Greenfield run off for this development has been calculated using ICP SU DS at 0.6l/s. Therefore, the discharge rate will be restricted to 5l/s. These calculations are contained within Appendix A.

The site has an area of 3380m² of which 3160m² is impermeable and positively drained. The new development will reduce the impermeable area by 54% (1710m²) to 1450m².

It is therefore proposed to attenuate new surface water (SW) run off, generated by new roof and hard standing areas, on site, using plastic storage crates. The attenuation system will be privately owned and maintained by ISO S Developments. The discharge rate will be restricted in accordance with the LASOO as started above. A drainage strategy drawing has been included within Appendix B along with SW calculations for the 2, 30 and 100 (+40% CC) year events in Appendix C.

Foul Water Drainage

A PDE was submitted to NWL who have allowed, within their response in Appendix A, an unrestricted discharge of into the existing 300mm diameter combined sewer, via existing manhole 4702 located to the North West of the proposed development site, situated within the car park of the NHS Stanhope Parade Health Care Centre.

Appendix A

NWL Pre-Development response and records.

Ext: 36603
Direct Line: 0191 419 6603
Email: niki.mather@nwl.co.uk
Our Ref: 16NO43BBB4
Your Ref:

Monday, 21 November 2016

Portland Consulting Engineers
10 Bankside
The Watermark
Swalwell
Newcastle upon Tyne
Tyne & Wear
NE11 9SY



Dear Mr. Joe Ryans,

Re: Pre-Development Enquiry – Former Gordon House Offices, Gordon Street, South Shields

Further to receiving the Pre-Development Enquiry for the above site, received 2nd November 2016, we are now able to provide the following response.

We have based our response on the information in your application and accompanying correspondence. Therefore, should any of the information now be different, then you must ensure that you inform us of any changes as further Network Modelling may be required and our response may also change, leading to this response being invalid.

Northumbrian Water assesses the impact of the proposed development on our assets and assesses the capacity within our network's to accommodate and treat the anticipated flows arising from the development. We do not therefore offer comment on aspects of planning applications that are outside of our area of control.

Enclosed for your information is a scaled extract showing the approximate position of our water and wastewater networks and associated assets. Please note that the actual position of any of our assets shown on the plan must be established by taking trial holes in all cases.

An appropriate risk assessment and method statement (RAMS) must be provided to us prior to gaining approval for any trial hole investigations, at least 5 working days in advance of starting any work onsite.

Also enclosed is our extract showing locations within the approximate vicinity of this site that have, from our records, experienced flooding. This has been provided to demonstrate the known flood risks within the vicinity which have been considered as part of our assessment on this enquiry.

We have also carried out a review of your application and can confirm the following:

Sewerage and Sewerage Treatment

Northumbrian Water would ask that you separate the foul and surface water flows in accordance with Part H of the Building Regulations prior to the final connection to the public sewer.

All new connections to the public sewerage system must first be approved through the Section 106 of the Water Industry Act 1991 process prior to construction.

Should you decide to proceed with this development, a fully completed Sewer Connection application form will be required. These are available to download from the following link:

<https://www.nwl.co.uk/developers/new-connections.aspx>

- Foul Water Discharge

The foul flows can discharge without restriction into the 300mm diameter combined sewer adjacent to the western boundary of the site as proposed, preferably utilising the existing connection into manhole 4702.

- Surface Water Discharge

In applying for planning permission you will be required to demonstrate to the Local Planning Authority through your flood risk appraisal that you have considered the 3 alternative options for the management of surface water which are listed within Part H of the Building Regulations 2010:

(a) an adequate soakaway or some other adequate infiltration system; or, where that is not reasonably practicable,

(b) a watercourse; or, where that is not reasonably practicable,

(c) a sewer.

If the more sustainable options prove to be unfeasible, a restricted surface water flow of 20 l/sec would be permitted to discharge into the 300mm diameter combined public sewer via manhole 4702. Any excess in flows must be attenuated on site.

- Protection of Existing Sewerage Assets

We wish to draw your attention to the existing sewer which passes through the site. This sewer could be diverted, protected or accommodated within your site layout with an appropriate easement.

Part H of the Building Regulations also details the reasons why Northumbrian Water does not permit buildings to be built over or near to its sewerage network:

- Undue risk in the event of failure of the drain or sewer
- Maintaining access
- Protection of the drain or sewer during construction

- Protection form settlement
- Protection against piling

To discuss the diversion of this asset in further detail, please contact:

Mr. Roger Perkins
0191 419 6621
roger.perkins@nwl.co.uk

Mr. Stephen O'Hair
0191 419 6553
steve.o'hair@nwl.co.uk

Mr. Steve Somerville
0191 419 6648
steve.somerville1@nwl.co.uk

- Sewage Treatment Capacity

The Sewage Treatment Works to which this development finally discharges to is able to accept the additional flows.

Water Efficiency Information

Water efficiency information can be found on our website by following the web link below:

<https://www.nwl.co.uk/your-home/saving-water/why-save-water.aspx>

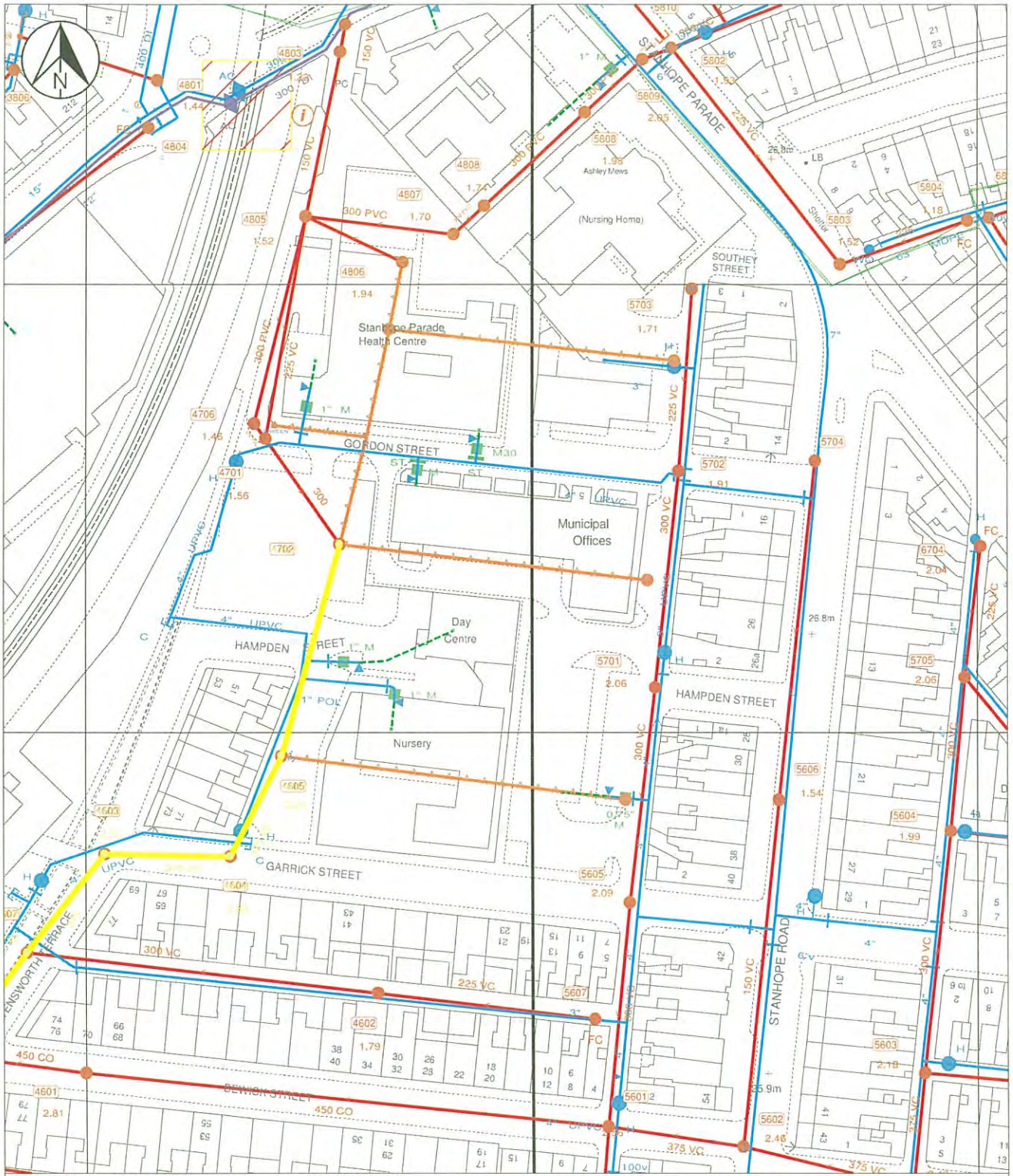
Please note that this response is valid for 1 year only and you should resubmit your proposals should this period lapse prior to your development beginning.

Should you require any further assistance or information, then please do not hesitate to contact me via niki.mather@nwl.co.uk or alternatively on 0191 419 6603, please quote our reference number above in any future correspondence.

Yours sincerely,



Mr. Niki Mather
Technical Support Advisor
Asset Protection - New Development



Waste Water -		Private/Non NWL		Proposed		Water Network -		Network Types	
Combined		Combined		Combined		Distribution		AB Asbestos	
Foul		Foul		Foul		Treated		Abandoned	
Surface		Surface		Surface		Raw		Out of Comm	
Treated Eff		Trade Eff				Fire			
Untreated Eff		Watercourse				Supply			
Overflow						Private			



User : BOWMS
 Title :
 Centre Point : 436494,565732

Date : 04/11/2016 12:19:46
 Map Sheet : NZ3665NW
 Paper / Scale : A4@1:1250

The material contained on this plot has been reproduced from an Ordnance Survey map with permission of the controller of H.M.S.O. Crown Copyright Reserved. Licence No.100022480. The information shown on this plan should be regarded as approximate and is intended for guidance only. No Liability of any kind whatsoever is accepted by Northumbrian Water, its servants or agents for any omission. The actual position of any water mains or sewers shown on the plan must be established by taking trial holes in all cases. In the case of water mains Northumbrian Water must be given two working days notice of their intention to excavate trial holes. With effect from 1 October 2011, private lateral drains and sewers automatically transferred to Northumbrian Water under a scheme made by the Secretary of State pursuant to section 105A Water Industry Act 1991. These former private drains and sewers together with existing private connections may not be shown but their presence should be anticipated. WARNING...Where indicated on the plan there could be abandoned asbestos cement materials or shards of pipe. If excavating in the vicinity of these abandoned asbestos cement materials, the appropriate Health & Safety precautions should be taken. Northumbrian Water accepts no liability in respect of claims, costs, losses or other liabilities which arise as the result of the presence of the pipes or any failure to take adequate precautions. Emergency Telephone Number: 0345 717 1100

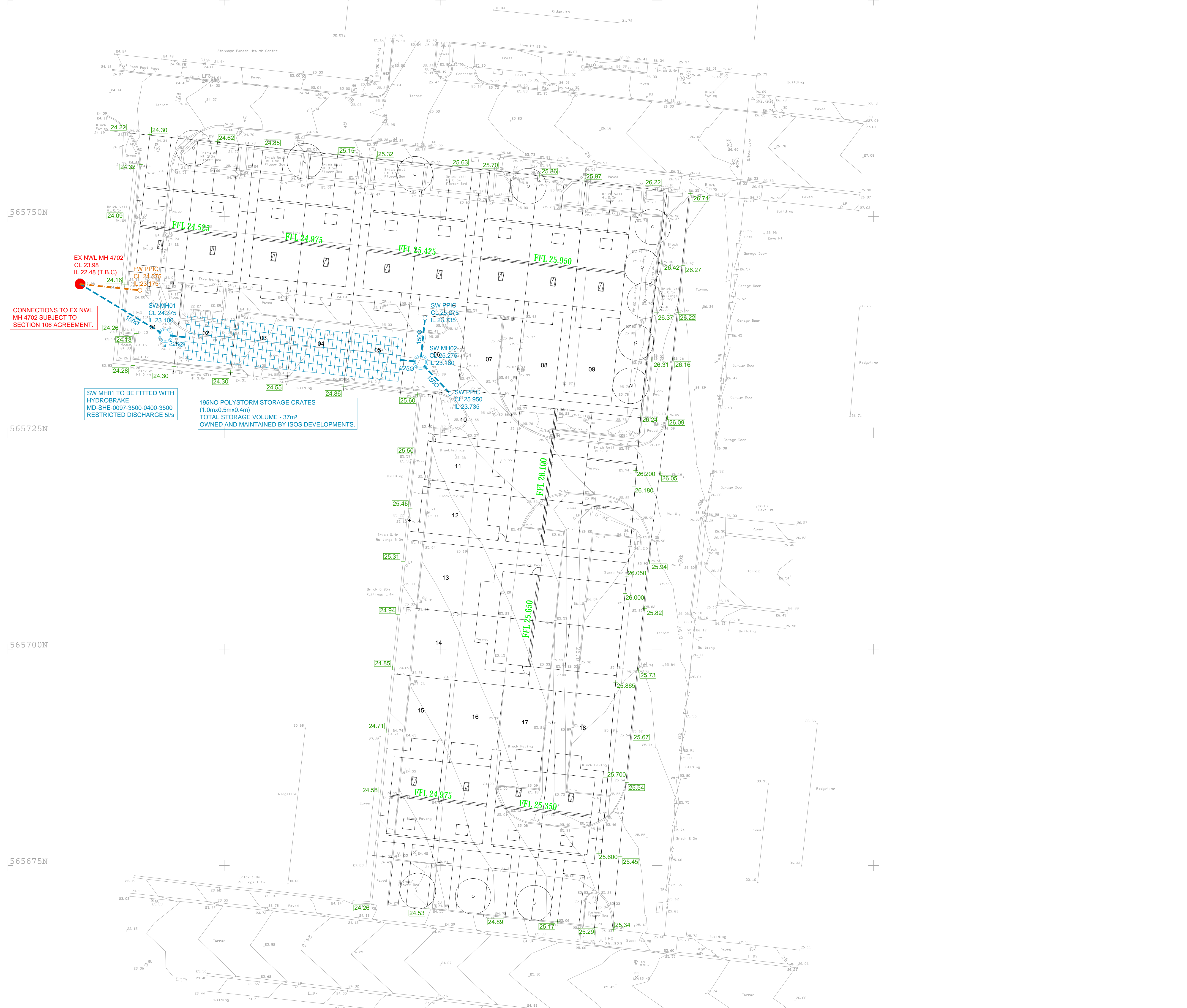


Appendix B

Drainage Strategy

NOTES:

- HEALTH & SAFETY**
 1. CONTRACTOR SHOULD BE AWARE OF GENERAL CONSTRUCTION RISKS TO PREVENT SLIPS, TRIPS AND FALLS AND TAKE NECESSARY PRECAUTIONS WITHOUT SPECIAL INSTRUCTION.
ROADS & DRAINAGE
 2. CONTRACTOR TO PROVIDE TRENCH SUPPORTS AS APPROPRIATE AND ENSURE THAT PLANT REMAINS A SAFE DISTANCE FROM TRENCHES PRIOR TO INSTALLING DRAINAGE.
 3. THE TIME THAT EXCAVATIONS ARE OPEN ON SITE SHOULD BE KEPT TO A MINIMUM AND ALL TRENCHES SHOULD BE SURROUNDED BY A BARRIER.
 4. CONNECTIONS TO EXISTING SEWERS TO BE MADE BY NWL APPROVED CONTRACTOR ONLY.
 5. CONTRACTOR TO MAKE OPERATIVES AWARE OF ASSOCIATED DANGERS TO HEALTH SUCH AS LEPTOSPIROSIS (WELLS DISEASE) AND RECOMMENDED PRECAUTIONS, ADEQUATE WELFARE FACILITIES AND PROTECTIVE CLOTHING TO BE PROVIDED AS REQUIRED.
 6. UNBENT MANHOLES MUST BE COVERED WITH LOAD BEARING MATERIALS AND SURROUNDED WITH BARRIER.
PIPES & CABLES
 7. SERVICE RECORDS TO BE REFERRED TO PRIOR TO WORK COMMENCING. CONTRACTOR TO PROCEED WITH CAUTION AND SERVICES TO BE LOCATED BY HAND DIG AND PROTECTED ACCORDINGLY.
EXCAVATION/FILL
 8. CONTRACTOR TO ENSURE RELEVANT MEASURES ARE TAKEN TO KEEP PLANT AND PEOPLE A SAFE DISTANCE FROM STEEP SLOPES DURING THE WORKS.
 9. CONTRACTOR TO ENSURE THAT PROCEDURES ARE IN PLACE TO KEEP PEOPLE A SAFE DISTANCE FROM WORKING PLANT WHERE NECESSARY.
 10. CONTRACTOR TO REFER TO GROUND INVESTIGATION REPORT FOR CONTAMINATION TESTS AND TO PROVIDE ADEQUATE WELFARE FACILITIES AND PROTECTIVE CLOTHING AS REQUIRED.



565750N

565725N

565700N

565675N

A	Updated to suit latest layout	JR	SH	LRB	22/03/17
φ	Initial Issue	JR	SH	LRB	03/03/17
Rev.	Description	By	Chk	App	Date



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 F: 0191 4603028 E: info@portlandconsulting.co.uk

Client: Gus Robinson Developments Ltd

Project: Former Gordon House
 Gordon Street
 South Shields

Drawing Title: Drainage Strategy Plan

Scale	1:200	Sheet Size	A1
Drawn By	JR	Checked By	SH
Approved By	LRB	Date	27/02/17

Drawing Status: Preliminary		
Project No.	Drawing No.	Revision
2016093	000	A

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Appendix C

Surface Water Calculations

10 Bankside, The Watermark
Gateshead
NE11 9SY



Date 03/03/2017 09:16
File

Designed by joe.ryans
Checked by

Micro Drainage Source Control 2016.1

ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	Soil	0.300
Area (ha)	0.338	Urban	0.000
SAAR (mm)	639	Region Number	Region 3

Results 1/s

QBAR Rural 0.6
QBAR Urban 0.6

Q1 year 0.5

Q1 year 0.5
Q30 years 1.0
Q100 years 1.2

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Date 03/03/2017 11:17
File 2016093 - Drainage

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Micro Drainage Network 2016.1

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.090	4-8	0.055

Total Area Contributing (ha) = 0.145

Total Pipe Volume (m³) = 1.585

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall C. Name	Level I. (m)	Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
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1.002	23.980	22.405	22.480	0	0	
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Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start (mins)	0	Inlet Coefficient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Storage Structures	1
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	2	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	17.000	Storm Duration (mins)	30
Ratio R	0.344		

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Micro Drainage Network 2016.1

Online Controls for Storm

Hydro-Brake Optimum® Manhole: 2, DS/PN: 1.002, Volume (m³): 2.6

Unit Reference MD-SHE-0097-3500-0400-3500
Design Head (m) 0.400
Design Flow (l/s) 3.5
Flush-Flo™ Calculated
Objective Minimise upstream storage
Application Surface
Sump Available Yes
Diameter (mm) 97
Invert Level (m) 23.100
Minimum Outlet Pipe Diameter (mm) 150
Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.400	3.5	Kick-Flo®	0.302	3.1
Flush-Flo™	0.149	3.5	Mean Flow over Head Range	-	2.9

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	3.2	1.200	5.8	3.000	9.0	7.000	13.5
0.200	3.4	1.400	6.3	3.500	9.6	7.500	14.0
0.300	3.1	1.600	6.7	4.000	10.3	8.000	14.5
0.400	3.5	1.800	7.0	4.500	10.8	8.500	14.9
0.500	3.9	2.000	7.4	5.000	11.4	9.000	15.4
0.600	4.2	2.200	7.7	5.500	12.0	9.500	15.8
0.800	4.8	2.400	8.1	6.000	12.5		
1.000	5.3	2.600	8.4	6.500	13.1		

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 Gateshead
 NE11 9SY



Date 03/03/2017 11:17
 File 2016093 - Drainage

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 Checked by

Micro Drainage Network 2016.1

Storage Structures for Storm

Cellular Storage Manhole: 1, DS/PN: 1.001

Invert Level (m) 23.925 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	97.5	0.0	0.401	0.0	0.0
0.400	97.5	0.0			

