Surface Water Drainage Strategy

March 2019

www.phlorum.com

367 Wilmslow Road, M14 6AH

March 2019

Architecture Design

Architecture Design

11-23 Bridgewater Place

Manchester

M4 1QF

	Name	Date
Written By	**David Hall**	18 March 2019
Checked By	Glen Parker	18 March 2019
Authorised By	Glen Parker	18 March 2019

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1. Introduction

1.1 Phlorum has been appointed by Architecture Design to undertake a National Planning Policy Framework (NPPF) compliant Surface Water Drainage Strategy (SWDS) for the proposed development at 367 Wilmslow Road, Manchester, M14 6AH.

1.2 The purpose of this assessment is to address condition 15 (drainage) of the planning application approval notice (119180/OO/2018) issued by Manchester City Council, which states:

> *The Reserved Matters application shall include a scheme for surface water drainage works, designed in accordance with Non_statutory Technical Standards for Sustainable Drainage Systems (March 2015) or any subsequent replacement national standards.*
>
> *Reason To promote sustainable development, secure proper drainage and to manage the risk of flooding and pollution. This policy is imposed in light of national policies within the NPPF and NPPG and local policies EN08 and EN14.*

1.3 This assessment would aim to demonstrate that the development proposal outlined above can be satisfactorily accommodated without worsening flood risk for the area and without placing the development itself at risk of flooding, as per the NPPF.

2. Site Overview

2.1 The site is shown outlined in red within Figure 1. It is partially a brownfield site and partially a greenfield site with a total surface area of approximately 1414m^2. The site comprises of a semi-detached house (367 Wilmslow Road), a parking area and a soft landscape area.

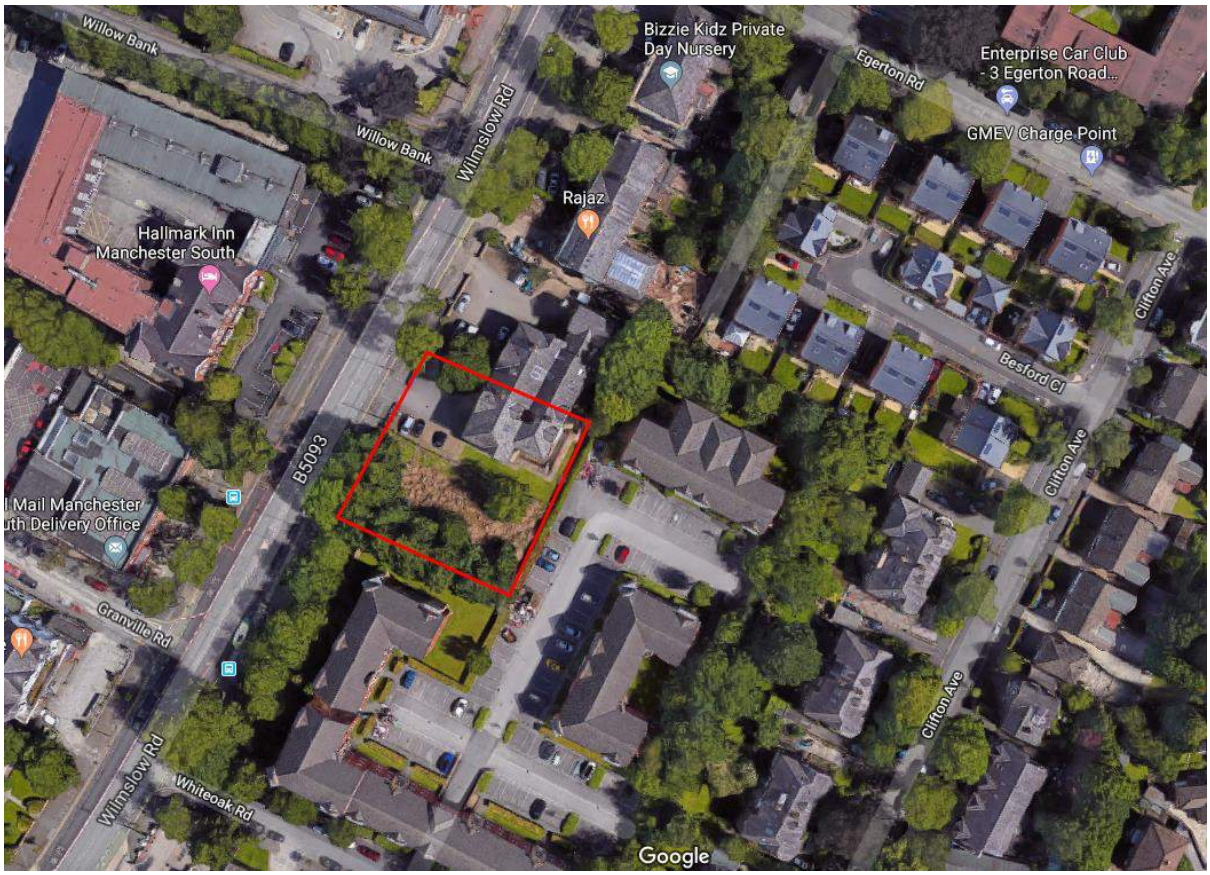

Figure 1: Location Map (Site boundary in red)

2.2 The proposal is for an extension of the existing low-rise apartment block (367 Wilmslow Road) and the construction of 3x3 bedroom houses adjacent in the greenfield area. See proposed plans in Appendix 1.

2.3 A topographic survey has not been provided at the time of writing. As such, 1m LiDAR data has been used for this assessment. Levels are shown in Figure 2. The levels on site are shown to vary from 38.48mAOD to 39.72mAOD based on 1m LiDAR data. However, it is noted that the location of the new site is significantly overgrown, and the LiDAR is not deemed reliable at this area.

2.4 A section through the site levels (see Figure 2) shows that the levels at the entrance and the back of the site differ by approximately 200mm.

2.5 The site also appears to have a slight drop of levels of approximately 300mm at the entrance to the car park.

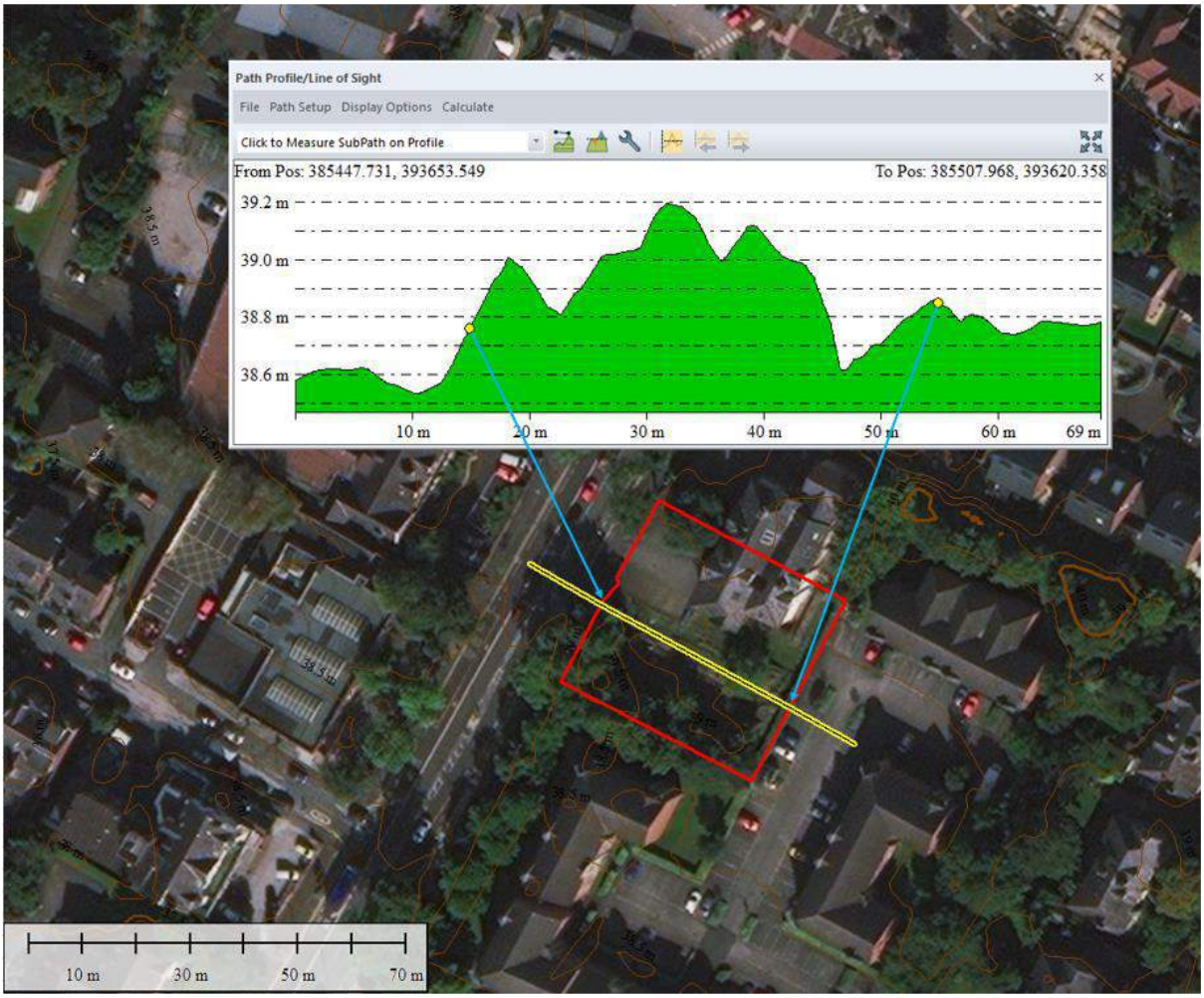

Figure 2: Topography on Site. (Source: 1m LiDAR)

2.6 From the existing and proposed site layouts provided by the client, the existing roof of 367 Wilmslow Road is 224m^2 and the hardstanding areas around the building (within the redline boundary) have an area of 402m^2 for a total of 626m^2 of existing roof and hardstanding areas. The proposed roof extension is 85m^2 and the new roof is 117m^2. The hardstanding areas would increase by 370m^2. In accordance with The SuDS Manual, an urban creep factor of 10% is applied, to give a total catchment for the post development attenuated area of 630m^2. The existing roof and hardstanding would drain as existing.

2.7 In order to mitigate flood risk posed by the proposed development, adequate control measures are required to be considered. This will ensure that surface water runoff can be managed at source and the flood risk off site is not increased. All proposed on-site storm drainage should be designed to accommodate a 1 in 100yr rainfall event including the appropriate allowance for climate change at 40%.

Geology and Infiltration Potential

2.8 The British Geological Survey (BGS) Geology of Britain Viewer indicates that the bedrock underlying the site is sandstone with superficial deposits of diamicton. Nearby boreholes from the BGS database suggest that water level could be deeper than 6m bgl.

2.9 Site specific infiltration tests have been conducted by Your Environment Limited and these demonstrate that the ground is not suitable for infiltration. The test failed to record sufficient water drop within the testing period of 220min and as such infiltration rates are deemed too low for infiltration.

2.10 The conclusion from the report is that "in this instance, it is considered that soakaways could not be utilised at this site". The report is appended in Appendix 1.

Nearby Watercourses and Existing Drainage Infrastructure

2.11 The closest watercourse to the site is the river Leigh, an EA Main River. It is culverted and is shown to go under Brook Road with its closest proximity being 140m south of the site.

2.12 Sewer records provided by United Utilities show that there are two combined sewers under Wilmslow Road. The records show the sewer closer to the site to be a 450mm pipe with an invert level of 32.54mAOD at the closest upstream manhole, which is approximately 4m deep. The sewer records also show that a combined adopted sewer runs from the back of 367 Wilmslow Road towards Wilmslow Road.

2.13 A CCTV survey provided by the client confirms the existence of a combined drain around the back of 367 Wilmslow Road. Details of the sewer (depth and exact location) are to be confirmed.

2.14 The proposed extension of 367 Wilmslow Road could potentially clash with the existing adopted sewer on site (this is to be confirmed pending information of the existing sewer location and depth). As such, a diversion may be required. This diversion would need to be designed and agreed with United Utilities pending survey information of the sewer.

Flood Zone and Vulnerability

2.15 The site proposed development can be seen to be within Flood Zone 1 as per the EA Flood Maps for Planning extract in Figure 3.

2.16 The proposed residential use of the site is deemed "More Vulnerable" under the vulnerability classifications within the NPPF.

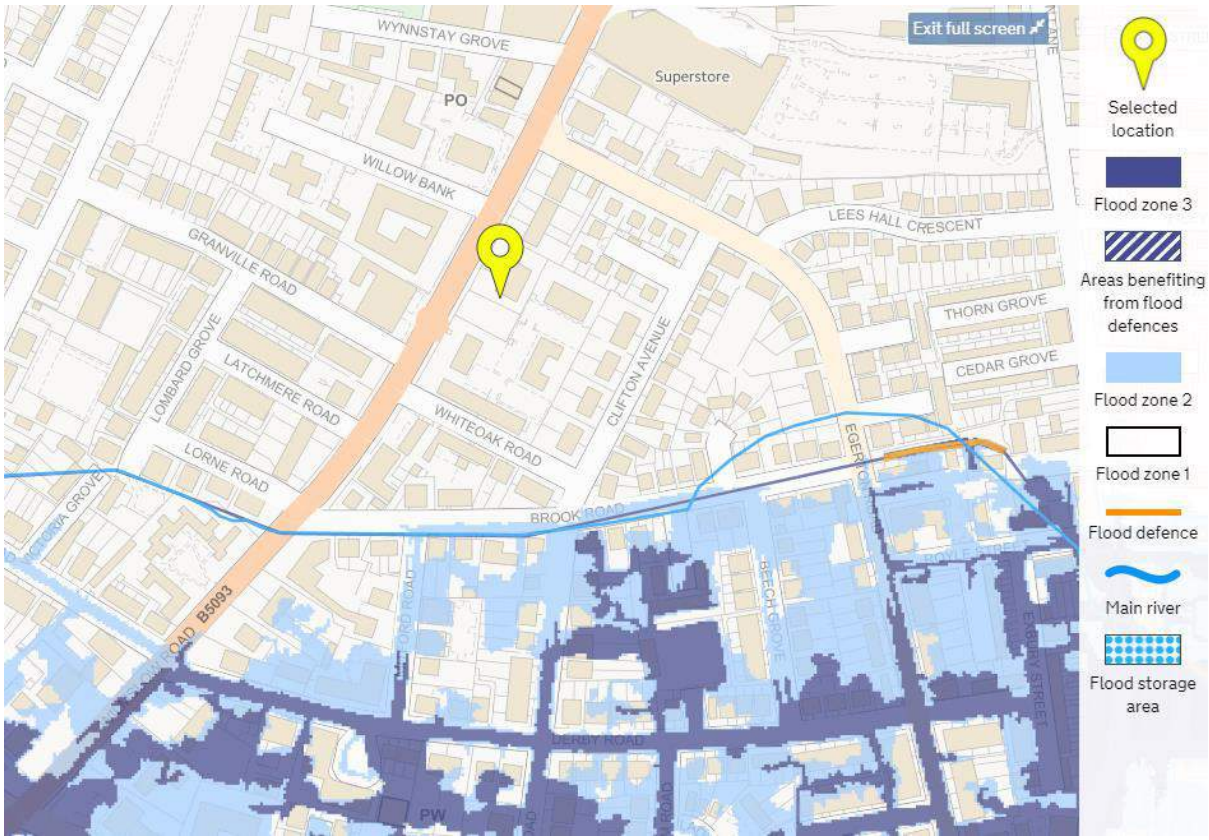

Figure 3: Flood Map for Planning

Surface Water Risk

2.17 The Long-Term Flood Risk Maps published by the EA show the site to be within an area of "Very Low" risk of surface water flooding, see Figure 4. This means that the annual exceedance probability of pluvial flooding is deemed less than 0.1%.

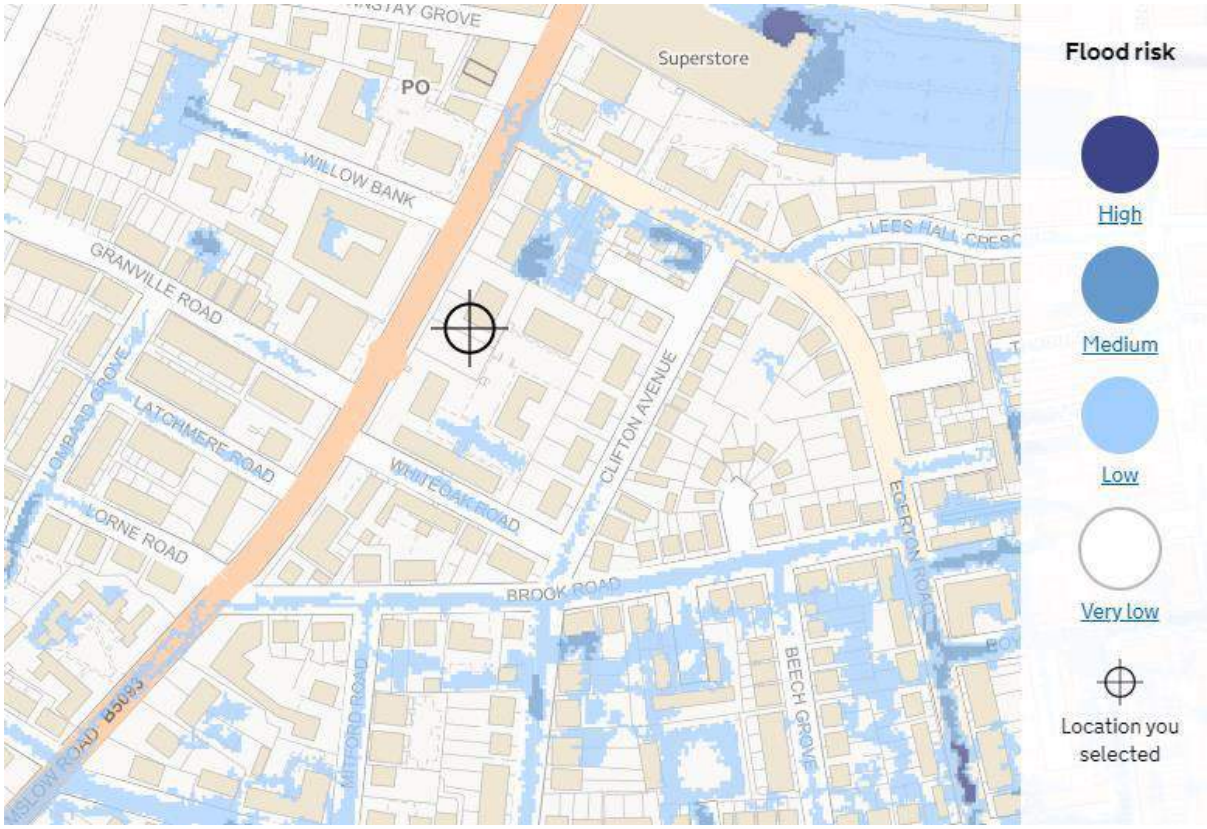

Figure 4: EA Long Term Flood Map, Surface Water Flood Extents

3. SUDS Assessment

3.1 In accordance with the SuDS management train approach, the use of various SuDS measures to reduce and control surface water flows have been considered in detail for the development.

3.2 The management of surface water has been considered in respect to the SuDS hierarchy (below) (as detailed in the CIRIA 753 'The SUDS Manual', Section 3.2.3):

SuDS Drainage Hierarchy			
		Suitability	Comment
1.	Infiltration	x	Very low infiltration rates
2.	Discharge to Surface Water	x	No watercourse in proximity
3.	Discharge to Surface Water Sewer, Highway Drain or another Drainage System	x	No surface water sewer in proximity
4.	Discharge to Combined Sewer	✓	
5.	Discharge to a foul sewer (should not be considered as a possible option)	-	

Table 1: SuDS Hierarchy.

3.3 Following the SuDS drainage hierarchy, given infiltration is not viable and no surface water body or sewer is available for connection, the only feasible option at the site is to discharge the surface water runoff into the existing combined sewer on site as per the existing drainage arrangement on site.

3.4 The suitability of SuDS components has been assessed in order to provide a sustainable means of providing the required attenuation volumes. The following components have been assessed as follows in the table:

Suitability of SuDS Components		
SuDS Component	**Description**	**Suitability**
Infiltrating SuDS	Infiltration can contribute to reducing runoff rates and volumes while supporting baseflow and groundwater recharge processes. The suitability and infiltration rate depend on the permeability of the surrounding soils	x
Permeable Pavement	Pervious surfaces can be used in combination with aggregate sub-base and/or geocellular/modular storage to attenuate and/or infiltrate runoff from surrounding surfaces and roofs. Liners can be used where ground conditions are not suitable for infiltration	✓
Green / Blue Roofs	Green Roofs provide areas of visual benefit, ecological value, enhanced building performance and the reduction of surface water runoff. They are generally more costly to install and maintain than conventional roofs but can provide many long-term benefits and reduce the on-site storage volumes. Blue roofs provide additional attenuation by storing the rainwater in crates located in the roof structure. Runoff from these structures can be reduced significantly using small orifice devices due to the low risk of blockage.	x
Rainwater Harvesting	Rainwater Harvesting is the collection of rainwater runoff for use. It can be collected form roofs or other impermeable area, stored, treated (where required) and then used as a supply of water for domestic, commercial and industrial properties	✓
Swales	Swales are designed to convey, treat and attenuate surface water runoff and provide aesthetic and biodiversity benefits. They can replace conventional pipework as a means of conveying runoff, however space constraints of some sites can make it difficult incorporating them into the design	x
Rills and Channels	Rills and Channels keep runoff on the surface and convey runoff along the surface to downstream SuDS components. They can be incorporated into the design to provide a visually appealing method of conveyance, they also provide effectiveness in pre-treatment removal of silts	x
Bioretention Systems	Bioretention systems can reduce runoff rates and volumes and treat pollution through the use of engineer soils and vegetation. They are particularly effective in delivering interception, but can also be an attractive landscape feature whilst providing habitat and biodiversity	x
Retention Ponds and Wetlands	Ponds and Wetlands are features with a permanent pool of water that provide both attenuation and treatment of surface water runoff. They enhance treatment processes and have great amenity and biodiversity benefits. Often a flow control system at the outfall controls the rates of discharge for a range of water levels during storm events	x
Detention Basins	Detention Basins are landscaped depressions that are usually dry except during and immediately following storm events, and can be used as a recreational or other amenity facility. They are generally appropriate to manage high volumes of surface water from larger sites such as a neighbourhood	x
Geocellular Systems	Attenuation storage tanks are used to create a below-ground void space for the temporary storage of surface water before infiltration, controlled release or use. The inherent flexibility in size and shape means they can be tailored to suit the specific characteristics and requirements of any site	x
Proprietary Treatment Systems	Proprietary treatment systems are manufactured products that remove specific pollutants from surface water runoff. They are especially useful where site constraints preclude the use of other methods and can be useful in reducing the maintenance requirements of downstream SuDS	✓
Filter Drains and Filter Strips	Filter drains are shallow trenches filled with stone, gravel that cerate temporary subsurface storage for the attenuation, conveyance and filtration of surface water runoff. Filter strips are uniformly graded and gently sloping strips of grass or dense vegetation, designed to treat runoff from adjacent impermeable areas by promoting sedimentation, filtration and infiltration	x

Table 2: Suitability of SuDS Components

3.5 It is proposed that the main SUDs device to be used for the site is Type C permeable pavement. Additionally, rainwater harvesting should be considered by the developer.

Permeable Pavement

3.6 The Permeable Paving would be a Type C (no infiltration) as infiltration is deemed not feasible as per the infiltration tests conducted for the site.

3.7 The paving would be formed by the following layers:

- Permeable Concrete blocks.
- Laying Course Material.
- Geotextile filter.
- Sub-Base: Clean Stone (Depth: 350mm for cell 1 and cell 3 and 600mm for cell 2 – subject to CBR testing).
- Geotextile filter.
- Impermeable geomembrane.

Rainwater Harvesting

3.8 Rainwater harvesting systems should be considered for rainwater re-use. Rainwater harvesting can take various forms including simple water butts to utilise runoff for watering and irrigation, to more complex pumped RWH systems to be used in grey water uses.

3.9 Water Butts are considered suitable for this site to reduce peak discharges and downstream flood risk. Water butts often have limited storage capacity, given that when a catchment is in flood, water butts are often full and have no spare capacity for flood waters. However, it is still considered that they have an important role to play in the sustainable use of water.

3.10 As such, downpipes could be routed through a water butt prior to overflow discharge to the underground system.

4. Surface Water Drainage Strategy

4.1 In order to mitigate flood risk posed by the proposed development, adequate control measures are required to be considered. This will ensure that surface water runoff is dealt with at source and the flood risk on/off site is not increased over the lifetime of the development.

Drainage Strategy

4.2 The existing site is drained to a combined public sewer on site. It is proposed to utilise this sewer for draining the proposed development.

4.3 The proposed extension of 367 Wilmslow Road may potentially clash with the existing adopted sewer on site (this is to be confirmed pending information of the existing sewer location and depth). As such, a diversion may be required. This diversion would need to be designed and agreed with United Utilities pending survey information of the sewer. A minimum clearance of 1.2m would be required between existing or proposed structures and extent of adoptable sewer and/or inspection chamber.

4.4 The areas of the existing roof, hardstanding to the rear of the existing building, and existing car park to the front of the existing building (total of 550m2) are to be drained as the existing situation as these would not be changed significantly as part of the proposals.

4.5 Runoff from the extension to the roof is to be managed by new rainwater pipes, the location of which is to be confirmed by the architect.

4.6 Runoff from the extension to the roof, the new roof, the new access road, the 10 new parking spaces, the foot access to the apartments, and the public footpath to the front of the new houses (total of 630m2) is to be managed as part of this drainage proposal.

4.7 Sediment traps are to be installed on the drainage network to reduce the risk of blockage from the roof runoff.

4.8 All runoff from the newly managed areas are to be conveyed to Type C permeable pavement sub-base located under the new access road, the 10 new parking spaces, and the foot access to the apartments.

4.9 A Hydrobrake or similar vortex flow control is proposed to limit the flow from the managed areas to 1.0l/s. A minimum opening for the flow control of 50mm is proposed to minimise the risk of blockage. Additionally, the risk of blockage is reduced through sediment traps.

4.10 The proposal includes a new drainage connection to the existing public combined sewer on site. As it can be seen in Table 3, there is a reduction over the existing situation in terms of surface water runoff rates therefore there should be adequate capacity for the proposed drainage scheme. This connection should be agreed with the United Utilities.

4.11 A proposed strategy plan has been included in Appendix 2.

Runoff rates

4.12 Greenfield runoff rates have been calculated using Micro Drainage Software and applying the *Institute of Hydrology Report 124* (Marshall and Bayliss, 1994), as recommended in the CIRIA 753 'The SUDS Manual' for calculating the greenfield runoff rates. *Calculations are included in Appendix 3*.

4.13 In addition, the existing brownfield runoff rates and the proposed unattenuated runoff rates have also been calculated (see Table 3 and Appendix 3).

SURFACE WATER DISCHARGE RATES SUMMARY.					
Impermeable Area (m^2)			Discharge Rates (l/s)		
		Q_{BAR}	1 year	30 year	100 year
Greenfield	1180	0.3	0.2	0.5	0.6
Existing	630		8.2	20.3	26.1
Proposed (unchanged part of site) – unattenuated	550		7.2	17.6	22.8
Proposed (new or changed surfaces or roofs) – attenuated	630		1.0	1.0	1.0
Total proposed	1180		8.2	18.6	23.8
Betterment over Existing			0	2.7	3.3

Table 3: Runoff rates

4.14 As DEFRA Report 'Rainfall runoff management for Developments' recommends, the design principle is to limit the runoff for events of similar frequency of occurrence to the same peak rate of run as that which takes place from greenfield sites. However, there are two situations where the greenfield flow rate is not actually applied to define the limiting discharge rates:

a) The limit of discharges based on QBAR that are less than 1 l/s/ha for permeable sites as this is seen as being an unreasonable requirement (producing very large storage volumes). QBAR is then set to 1 l/s/ha;

b) Small sites would require impractically small controls to achieve the required flow rates where these are calculated to be less than 5 l/s. In this case a minimum flow of 1 l/s is used as a practical minimum for flow control devices without causing blockage risks Using Hydrobrake or similar vortex control devices.

4.15 It can be seen that the proposal provides betterment over the existing situation effectively decreasing the flood risk as a result of the development. This is in line with the Non_statutory Technical Standards for Sustainable Drainage Systems (March 2015), which states:

> *For developments which were previously developed, the peak runoff rate from the development to any drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event must be as close as reasonably practicable to the greenfield runoff rate from the development for the same rainfall event, but should never exceed the rate of discharge from the development prior to redevelopment for that event.*

Long Term Storage

4.16 Long-term storage is usually required to address the additional runoff caused by the development compared to the volume that would be contributed from the site in its Greenfield state. The specialised literature CIRIA 753 'The SUDS Manual' provides two approaches guidance for the rates of discharge in relation to runoff mitigation:

4.17 Approach 1:

> "Where there is extra volume generated by the development that has to be discharged (because there are no opportunities for it to be infiltrated and/or used on site), this volume should be released at a very low rate (e.g. <2 l/s/ha or as agreed with the local drainage approving body and/or environmental regulator) and the 1:100 year greenfield allowable runoff rate reduced to take account of this extra discharge." (Kellagher, 2002).

4.18 Approach 2

> "An alternative approach to managing the extra runoff volumes from extreme events separately from the main drainage system is to release all runoff (above the 1-year event) from the site at a maximum rate of 2 l/s/ha or QBAR, whichever is the higher value (or as agreed with the drainage approving body and/or environmental regulator). This avoids the need to undertake more detailed calculations and modelling."

4.19 For the purposes of this report, Approach 2 is adopted as the proposal is to limit the offsite flows for proposed development areas to a value as close as feasible to greenfield Qbar rates.

Attenuation Storage

4.20 Attenuation storage is needed to temporarily store water during periods when the runoff rates from the development site exceed the infiltration rates or the allowable discharge rates from the site.

4.21 Rainfall depths for the 1 in 100 years return period plus 40% of CC were produced using Micro Drainage software to estimate the largest volume, critical storm for typical storm durations.

4.22 The **Total Attenuation Storage Volume required for the site is 26.5 m^3**. The critical storm duration is 180min and the half drain time is 242min. See Appendix 3, calculations.

Design Exceedance

4.23 In the event of drainage system failure under extreme rainfall events or blockage, flooding may occur within the site. In the event of the development's drainage system failure, the runoff flow will be dictated by topography on site.

4.24 A nominal fall of the access road is proposed to be adopted towards Wilmslow Road to provide an overland flow route.

4.25 In terms of drainage mechanisms to mitigate the impacts of exceedance events on the site, it is advised that non-return valves should be provided to prevent the ingress/egress of surface and foul waters should the sewer become surcharged.

4.26 It is proposed that the new houses are raised 150mm above surrounding ground levels to minimise the risk of surface water flooding.

Water Quality

4.27 Adequate treatment must be delivered to the water runoff to remove pollutants through SuDS devices, which are able to provide pollution mitigation. Pollution Hazards and the SuDS Mitigation have been indexed in the specialized literature CIRIA 753 *'The SUDS Manual'*.

POLLUTION HAZARD INDICES FOR DIFFERENT LAND USE CLASSIFICATIONS				
LAND USE	Pollution Hazard Level	Total suspended Solids (TSS)	Metals	Hydro-carbons
Residential Roofs	Very Low	0.2	0.2	0. 05
Individual property driveways, residential car parks, low traffic roads i.e. < 300 traffic movements/day	Low	0.5	0.4	0.4

Table 4: Summary of Pollution hazard Indices for different Land Use

4.28 Runoff from roof and footpath areas is considered to generally be uncontaminated. However, to prevent any potential sediment from impacting on the storage structure, sediments traps should be provided at suitable locations to prevent sedimentation.

4.29 The runoff from all the remaining hardstanding trafficked areas is to be treated through the permeable pavement. The Mitigation Indices of the proposed SuDS techniques are summarized in Table 5 below. It can be seen the water treatment provided by this SuDS train is enough to remove the pollutants.

INDICATIVE SuDS MITIGATION INDICES FOR DISCHARGES TO SURFACE WATER			
SuDS Component	Total suspended Solids (TSS)	Metals	Hydrocarbons
Permeable Pavement	0.7	0.6	0.7

. Table 5: Indicative SuDS Mitigation Indices

Adoption and Maintenance

4.30 All onsite SuDS and drainage systems will be privately maintained. A long-term maintenance regime should be agreed with the site owners before adoption. In addition to a long-term maintenance regime, it is recommended that all drainage elements implemented on site should be inspected following the first rainfall event post construction and monthly for the first quarter following construction, see Appendix 4.

5. Conclusion

5.1 Phlorum has been appointed by Architecture Design to undertake a National Planning Policy Framework (NPPF) compliant Surface Water Drainage Strategy (SWDS) for the proposed development at 367 Wilmslow Road, Manchester, M14 6AH. The aim of the study is to address condition 15 of the planning application notice (119180/OO/2018).

5.2 The proposal is for an extension of the existing low-rise apartment block (367 Wilmslow Road) and the construction of 3x3 bedroom houses adjacent in the greenfield area.

5.3 The site is shown within Flood Zone 1 as per the published Environment Agency Flood Map for Planning. The surface water risk to the site is deemed low.

5.4 Infiltration testing has demonstrated infiltration methods to be unfeasible for full infiltration at the site.

5.5 CCTV survey provided by the client confirms the existence of a combined drain around the back of 367 Wilmslow Road. Details of the sewer (depth and exact location) are to be confirmed.

5.6 The proposed extension of 367 Wilmslow Road may potentially clash with the existing adopted sewer on site (this is to be confirmed pending information of the existing sewer location and depth). As such, a diversion would be required. This diversion should be designed and agreed with United Utilities pending survey information of the sewer.

5.7 Following the SuDS drainage hierarchy, the highest-ranking feasible option is to discharge the surface water runoff into the existing public combined sewer on site.

5.8 The areas of the existing roof, existing hardstanding to the back of the existing building, and existing car park to the front (total of 550m2) are to be drained as existing as these would not be changed as part of the proposals.

5.9 Runoff from the extension to the roof, the new roof, the new access road, the 10 new parking spaces, the foot access to the apartments, and the public footpath to the front of the new houses (total of 630m2) is to be managed as part of this drainage proposal.

5.10 A Hydrobrake or similar vortex flow control is proposed to limit the flow from the managed areas to 1.0l/s while minimising the risk of blockage.

5.11 The proposal provides betterment over the existing situation effectively decreasing the flood risk as a result of the development. This is in line with the Non_Statutory Technical Standards for Sustainable Drainage Systems (March 2015)

5.12 The **Total Attenuation Storage Volume required for the site is 26.5 m^3**. The critical storm duration is 180min and the half drain time is 242min. See Appendix 3, calculations.

5.13 The treatment provided by the sediment traps and the permeable pavement is deemed sufficient for the level of anticipated pollution for the runoff from the site.

5.14 The findings and recommendations of this report are for the use of the client who commissioned the assessment, and no responsibility or liability can be accepted for the use of the report or its findings by any other person or for any other purpose.

Appendix 1
Supporting Information

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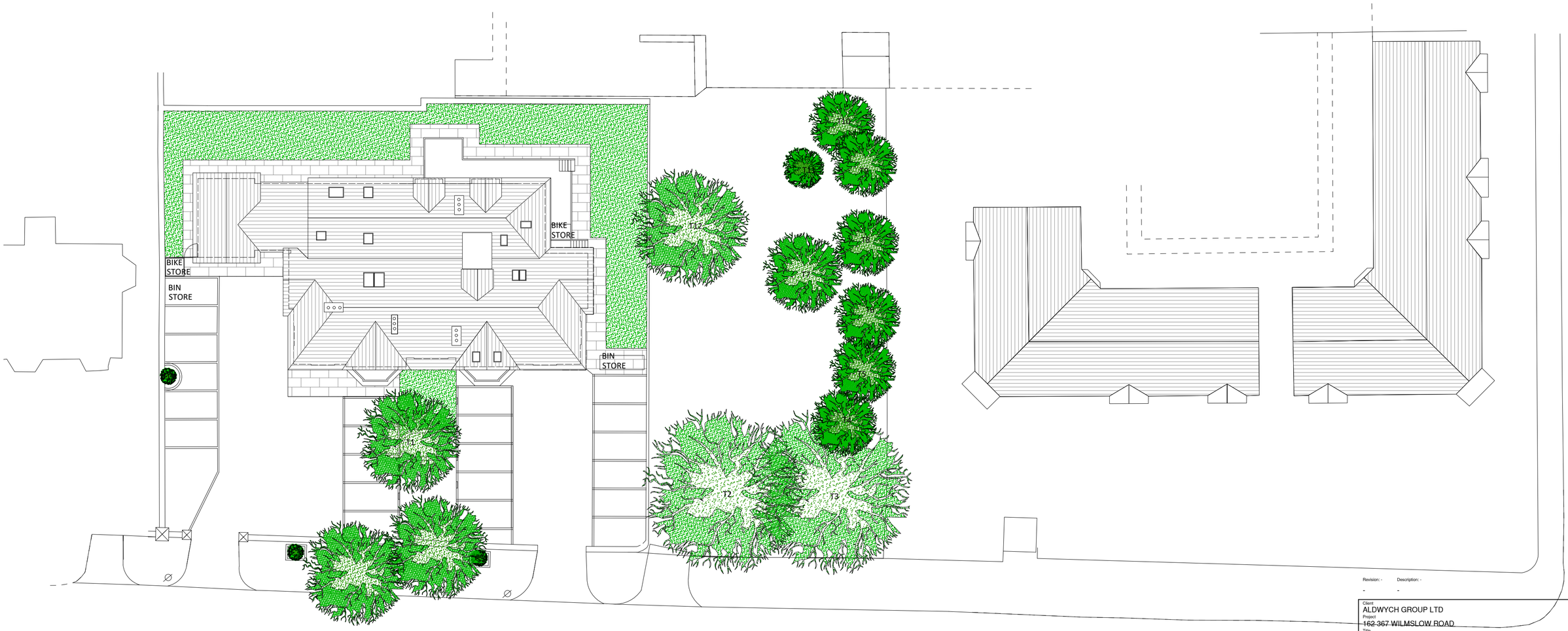

Revision: -	Description: -	Date: -	Initials: -
-	-	-	-

Client
ALDWYCH GROUP LTD
Project
162-367 WILMSLOW ROAD
Title
EXISTING SITE PLAN

Drawing No.	Revision	Scale.	Drawn.	Date.
PL 001	-	1:250 @ A2	LW	10.12.17

12/23 Architecture Design ltd

11-23 Bridgewater Place
Manchester
M4 1QF

T : 0161 711 0584
E : lwalsh@1223arch.co.uk
W: www.1223arch.co.uk

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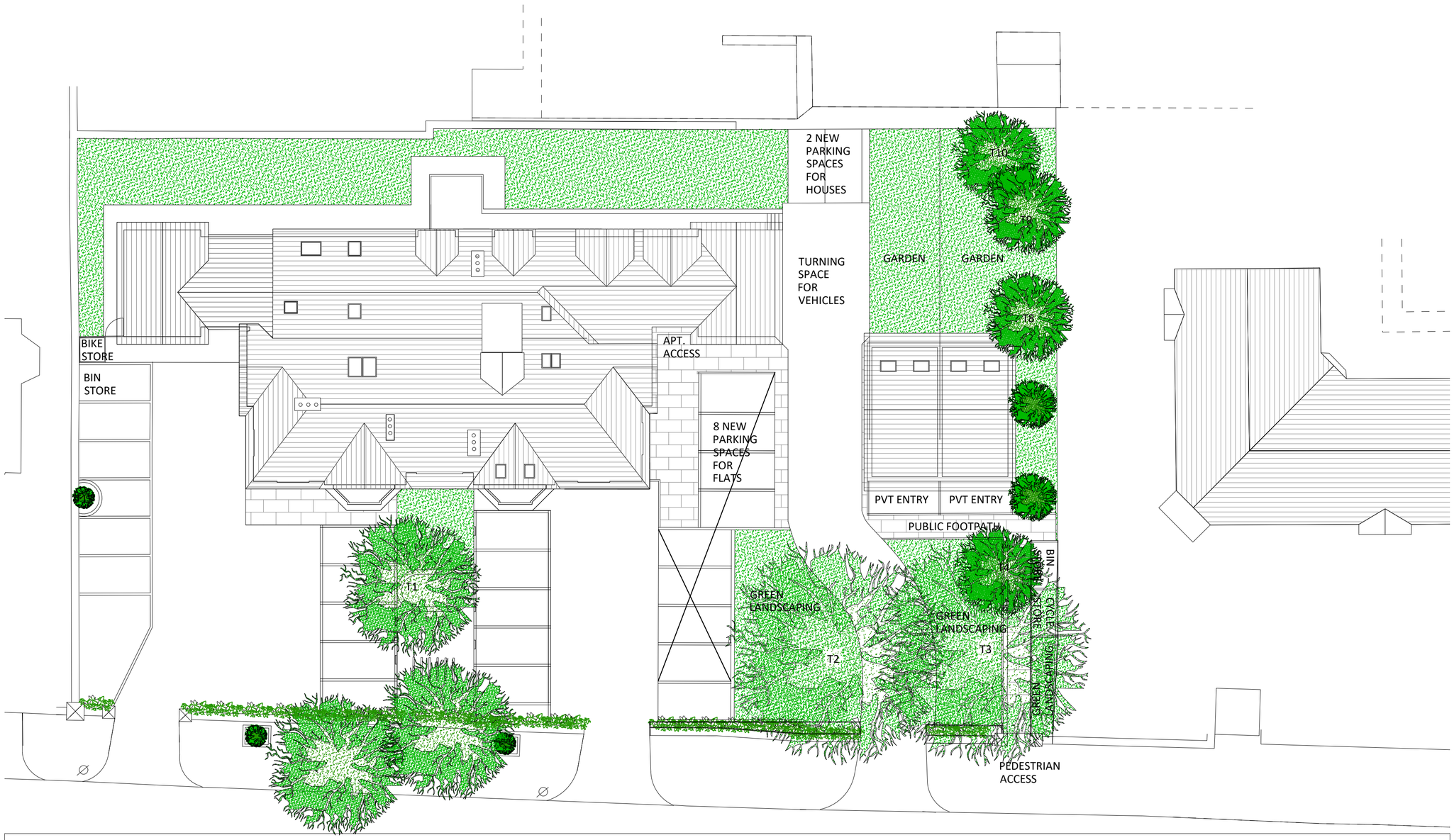

STREET SCENE 1:250

Revision: -	Description: -	Date: -	Initials: -
A	AMENDED TO LA COMMENTS	15.08.18	LW
B	STREET SCENE UPDATED	05.08.18	LW
C	PARKING AMENDED	20.09.18	LW

Client
FELTHAN GROUP
Project
162 367 WILMSLOW ROAD
Title
PROPOSED SITE PLAN

Drawing No.	Revision	Scale	Drawn.	Date.
PL 008	C	1:200 @ A2	LW	10.12.17

12/23 Architecture Design ltd

11-23 Bridgewater Place
Manchester
M4 1QF

T : 0161 711 0584
E : lwalsh@1223arch.co.uk
W: www.1223arch.co.uk

How to contact us:

United Utilities Water Limited
Property Searches
Haweswater House
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP

Telephone: 0370 7510101

E-mail: propertysearches@uuplc.co.uk

Your Ref: 4330
Our Ref: UUPS-ORD-83504
Date: 07/02/2019

Ambiental Environmental Assessment

Sussex innovation centre
Science Park Square,
Brighton,
BN1 9SB

FAO:

Dear Sirs

Location: 367 WILMSLOW ROAD, MANCHESTER, M14 6AH

I acknowledge with thanks your request dated 05/02/2019 for information on the location of our services.

Please find enclosed plans showing the approximate position of United Utilities' apparatus known to be in the vicinity of this site.

The enclosed plans are being provided to you subject to the United Utilities terms and conditions for both the wastewater and water distribution plans which are shown attached.

If you are planning works anywhere in the North West, please read United Utilities' access statement before you start work to check how it will affect our network. http://www.unitedutilities.com/work-near-asset.aspx .

I trust the above meets with your requirements and look forward to hearing from you should you need anything further.

If you have any queries regarding this matter please contact us .

Yours Faithfully,

Karen McCormack
Property Searches Manager

United Utilities Water Limited
Registered In England & Wales No. 2366678
Registered Office Haweswater House, Lingley Mere Business Park,
Lingley Green Avenue, Great Sankey, Warrington, WA5 3LP

TERMS AND CONDITIONS - WASTEWATER AND WATER DISTRIBUTION PLANS

These provisions apply to the public sewerage, water distribution and telemetry systems (including sewers which are the subject of an agreement under Section 104 of the Water Industry Act 1991 and mains installed in accordance with the agreement for the self construction of water mains) (UUWL apparatus) of United Utilities Water Limited "(UUWL)".

TERMS AND CONDITIONS:

- This Map and any information supplied with it is issued subject to the provisions contained below, to the exclusion of all others and no party relies upon any representation, warranty, collateral contract or other assurance of any person (whether party to this agreement or not) that is not set out in this agreement or the documents referred to in it.
- This Map and any information supplied with it is provided for general guidance only and no representation, undertaking or warranty as to its accuracy, completeness or being up to date is given or implied.
- In particular, the position and depth of any UUWL apparatus shown on the Map are approximate only. UUWL strongly recommends that a comprehensive survey is undertaken in addition to reviewing this Map to determine and ensure the precise location of any UUWL apparatus. The exact location, positions and depths should be obtained by excavation trial holes.
- The location and position of private drains, private sewers and service pipes to properties are not normally shown on this Map but their presence must be anticipated and accounted for and you are strongly advised to carry out your own further enquiries and investigations in order to locate the same.
- The position and depth of UUWL apparatus is subject to change and therefore this Map is issued subject to any removal or change in location of the same. The onus is entirely upon you to confirm whether any changes to the Map have been made subsequent to issue and prior to any works being carried out.
- This Map and any information shown on it or provided with it must not be relied upon in the event of any development, construction or other works (including but not limited to any excavations) in the vicinity of UUWL apparatus or for the purpose of determining the suitability of a point of connection to the sewerage or other distribution systems.
- No person or legal entity, including any company shall be relieved from any liability howsoever and whensoever arising for any damage caused to UUWL apparatus by reason of the actual position and/or depths of UUWL apparatus being different from those shown on the Map and any information supplied with it.
- If any provision contained herein is or becomes legally invalid or unenforceable, it will be taken to be severed from the remaining provisions which shall be unaffected and continue in full force and affect.
- This agreement shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts, save that nothing will prevent UUWL from bringing proceedings in any other competent jurisdiction, whether concurrently or otherwise.

United Utilities Water Limited
Registered In England & Wales No. 2366678
Registered Office Haweswater House, Lingley Mere Business Park,
Lingley Green Avenue, Great Sankey, Warrington, WA5 3LP

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
2626		CO		100			VC	7.827747	
4802	37.3	CO	32.94	450			VC	34.36568	1 in 344
2714		CO		0				15.32428	1 in
4807	38.33	CO	36.24	225			VC	29.52965	1 in 69
6502	38.06	CO	35.73	300			VC	130.2306	1 in 128
5913	37.96	CO	32.71	375			CO	20.22375	1 in 79
6609	39.28	CO	36.5	300			VC	60.87772	
3301	36.22	CO	0	375			VC	38.32842	
2901	37.15	CO	33.92	300			VC	69.12308	1 in 157
6302	37.7	CO	34.31	300			VC	118.277	1 in 141
5802		CO	32.18	525			VC	86.02325	1 in 344
2703	37.52	CO	35.89	225			VC	22.20762	
3801	36.91	CO	34.48	225			VC	7.26011	1 in 243
3409		CO		100			VC	6.679519	
6603	39.28	CO	36.63	300			VC	32.59285	1 in 251
7505	38.63	CO	36.15	300			VC	69.85699	1 in 241
7302	40.01	CO	37.89	225			VC	35.90265	1 in 117
4904	37.33	FO	34.77	225			VC	29.42788	1 in 155
5402	37.2	CO	34.44	300			VC	93.63085	1 in 98
4701	38.67	CO	35.07	225			VC	6.324555	
5918	37.94	SW	35.48	225			VC	11	1 in 100
6803	39.68	CO	32.9	375			VC	15.13435	1 in 80
4803	37.44	SW	35.72	1050			CO	125.9697	
4805	37.56	CO	33.99	300			CO	19.10497	1 in 60
5806	39.35	CO	0	1500			BR	25.94224	
2303	35.77	CO	0	600			BR	118.5205	
7600	39.71	CO	33.86	525			CO	55.97321	1 in 295
2506	36.01	CO	34.83	375			VC	29.68256	1 in 78
4801	37.08	CO	33.16	450			VC	39.81206	1 in 190
5801	37.99	SW	36.08	150			VC	28.86174	1 in 47
2900	36.06	CO	34.55	225			VC	74.1485	1 in 122
3600	37.49	CO	32.91	375			VC	5.952972	
6606	39.75	CO	36.84	375			VC	36.76955	1 in 105
7615		CO		100			VC	9.151933	
3603	37.18	CO	35.13	225			VC	58.66856	1 in 101
6800	39.52	CO	37.76	225			VC	26.53984	
6606	39.48	CO	37.48	225			VC	30.63062	
7903	39.32	SW	36.79	1500			BR	52.15362	
5917	37.89	FO	35	225			VC	11.18034	1 in 62
6901	38.53	CO	34.99	300			VC	49.36598	1 in 20
3668		CO		225			VC	8.571	
6400	38.21	CO	35.5	300			VC	52.61179	
4900	37.45	FO	34.57	225			VC	73.82411	1 in 164
3703	37.56	CO	0	225			VC	24.59675	
4609		CO		150			VC	3.407665	
5401	37.41	CO	34.7	300			VC	104.0048	1 in 104
7601	40.11	CO	34.1	525			CO	34	1 in 142
4501	38.26	CO	35.73	225			VC	8.395629	1 in 70
4804	37.85	CO	32.82	450			VC	72.78049	1 in 182
5700	38.67	CO	32.42	450			VC	3.605551	
6809	39.64	CO	32.71	375			VC	26.6619	1 in 121
6335		CO		150			VC	11.13119	
4301		CO		150			VC	6.873374	
4812		CO		100			VC	5.536504	
3638		CO		0			UN	0.9822067	1 in
3901	37.88	CO	36.03	225			VC	53.15073	1 in 60
4311		SW		100			VC	6.489469	
2302		SW		150			VC	13.78879	
4402	36.62	CO	33.38	300			VC	70.45566	1 in 271
5908	38.48	CO	31.91	525			VC	21	
2804	37.23	CO	34.23	300			VC	51.42956	1 in 177
2300	36.07	CO	32.41	600			BR	7.817534	
2625		CO		0				6.219228	1 in
3309		CO		100			VC	12.89033	
7700	39.94	CO	38.34	225			VC	37.12142	1 in 100
2502	36.25	CO	34.47	375			VC	8.554811	1 in 143
2902	38.37	CO	36.34	225			VC	49.0408	1 in 47
2400	36.07	CO	32.67	300			VC	14.64339	
4505	38.11	CO	35.61	225			VC	21.57894	1 in 57
7415		CO		0			VC	1.787004	
5915	37.88	FO	35.03	225			VC	3.605551	1 in 180
6602	39.54	CO	37.3	375			VC	55.01278	1 in 125
6903	38.6	CO	37.45	225			VC	18.72849	
7309		CO		150			VC	10.00753	
2501	36.48	CO	34.93	225			VC	26.07681	1 in 81
5909	37.87	FO	34.63	225			VC	30.14963	1 in 59
3800	37	CO	35.11	225			VC	16.12452	1 in 107
4703	38.67	CO	33.49	300			VC	16.27882	
6600	39.65	CO	37.96	225			VC	47.01064	1 in 107
3701	37.55	CO	35.16	300			VC	38.62042	1 in 77
4605	37.99	CO	30.32	1400			BR	135.1237	
3310		CO		225			VC	9.728794	
4601	38.64	CO	32.55	450			VC	3.162278	
6601	39.56	CO	33.64	525			CO	78.26243	1 in 196
7915		CO		225			VC	19.71921	
4506	37.56	CO	34.36	225			VC	11.46353	1 in 16
2504	36.3	CO	34.6	225			VC	7.211102	
3501	36.63	CO	0	300			VC	33.68236	
3643		CO		0				2.665016	1 in
4300	36.47	CO	33.09	375			VC	44.91102	
2508	35.58	CO	33.83	225			VC	37.64306	1 in 139
2715		CO		0				10.28665	1 in
3667		CO		150			VC	22.84058	
6500	38.69	CO	37.11	375			VC	36.87818	1 in 49
5704	88.83	CO	86.25	450			VC	63.95311	1 in 1
7605	39.31	CO	36.68	300			VC	55.10898	1 in 394
3802	36.99	CO	33.28	450			VC	28.44292	1 in 237
5514		CO		150			VC	4.54611	
7421		CO		0			VC	9.303135	
5933		CO		100			VC	8.315703	
7405		CO		0			VC	11.79958	
7430		CO		150			VC	10.6176	
3669		CO		100			VC	6.20912	
2601	37.27	CO	0	225			VC	3.162278	
4604	37.9	CO	32.74	375			VC	17	
7801	40.07	CO	33.39	375			VC	99.03333	1 in 206
4700	38.47	CO	35.77	225			VC	29.41088	1 in 43
6467		CO		150			VC	2.073792	
4401	37.03	SW	34.85	1600			BR	86	
5602	38.76	CO	36.36	300			VC	9.587264	
3702	37.74	CO	34.65	300			VC	95.64583	1 in 85
4809		SW		1050			CO	28.16611	
5705	38.94	CO	33.22	525			CO	79.26238	1 in 224
4811	37.18	CO	34.39	300			VC	27.29469	1 in 46
5511		CO		150			VC	5.18384	
7602	40.42	CO	38.5	225			VC	36.68787	1 in 245
5901	38.65	CO	32.15	375			VC	12	
4905	36.98	CO	34.89	225			VC	15.52417	1 in 38
2803	36.74	CO	34.82	225			VC	73.79025	1 in 123
6304	38.04	CO	34.66	300			VC	57.07869	1 in 168
7616		CO		100			VC	19.07643	
2507	36.11	SW	33.71	1350			BR	140.8028	
7417		CO		0			VC	9.350564	
5703	38.82	CO	30.79	525			CO	12.20656	
2605	37.03	CO	35	375			VC	93.53735	1 in 180
3804	37.28	CO	34.76	300			VC	53.94159	1 in 674
7416		CO		0			VC	11.88277	
4906	37.68	SW	35.82	225			VC	22.2036	1 in 65
4803	37.49	CO	33.15	225			VC	9.055386	1 in 43
6501	38.02	CO	35.18	225			VC	116.9017	1 in 249
5500	38.71	CO	35.68	300			VC	90.01413	1 in 134
5502	37.65	CO	35	300			VC	82.73451	1 in 61.2848260
5900	38.44	CO	0	525			VC	48.01041	
4903	37.33	SW	35.36	300			VC	26.4764	1 in 883
7914		CO		225			VC	5.029335	
5805	39.35	CO	31.99	450			VC	14.76482	
3410		CO		150			VC	23.69965	
5919	37.92	SW	36.03	1050			CO	13.15295	1 in 188
6301	37.64	CO	34.4	225			VC	5.09902	
5911	38.2	FO	34.1	300			VC	3.162278	1 in 105
4502	37.62	CO	32.54	450			VC	107.5407	
4908	37.79	SW	35.94	1050			CO	20.22401	
5300	37.01	CO	34.6	300			VC	47.04253	1 in 174
2713		CO		0				11.19006	1 in
5804	39.21	CO	32.47	375			VC	5.830952	1 in 117
3302	36.28	CO	33.61	225			VC	10.5672	
4902	37.29	CO	35.4	225			VC	70.5195	1 in 78
3300	36.19	CO	32.78	375			VC	11.40175	
3307		CO		150			VC	7.368841	
5914	37.97	SW	34.69	375			CO	2	1 in 4
3502	36.85	CO	30.56	1400			BR	135.0221	1 in 540
2801	38.9	CO	37.12	225			VC	19.23538	1 in 31
6462		CO		100			VC	1.801404	
7302	40.01	CO	36.88	300			VC	55.57877	1 in 25
7913		CO		225			VC	12.04729	
3500	37.01	CO	34.28	300			VC	5	
6300	38.05	CO	0	300			VC	9.729657	
4400	37.02	CO	33.69	300			VC	68.26419	1 in 228
3641		CO		100			VC	4.840899	
6463		CO		150			VC	13.50032	
5916	37.87	SW	35.47	225			VC	2.828427	
6908	39.58	CO	38.29	225			VC	33.34307	1 in 42
2802	38.8	CO	37.15	225			VC	55.9017	1 in 35
7610		CO		150			VC	7.101789	
5902	38.61	SW	36.49	1200			BR	5.09902	1 in 85
7503	39.02	CO	36.02	375			VC	31.57531	1 in 158
5935		CO		100			VC	13.68916	
6449		CO	0	150			VC	9.430099	
5800	37.97	FO	34.81	225			VC	30.46309	1 in 179
4503	37.56	CO	33.63	300			VC	56.35601	1 in 54
5910	37.99	SW	35.31	300			VC	15.23155	1 in 169
7606	39.63	CO	36.48	375			VC	50.44799	1 in 120
7904	39.73	CO	38.38	225			VC	30.01922	1 in 429
5903	38.57	SW	36.36	1050			CO	22	1 in 275
5503	37.73	SW	35.35	1600			BR	157.1327	1 in 314
7504	38.62	CO	35.79	375			VC	43.73785	1 in 146
5905	38.16	SW	36.19	1050			CO	27.78489	1 in 185
5807	39.38	CO	32.48	375			BR	1	
4901	37.45	SW	35.32	300			VC	77.10383	
5906	37.89	SW	35.11	300			CO	26.30589	1 in 64
3408		CO		100			VC	6.496434	
6909	38.97	CO	36.3	300			VC	55.35171	1 in 49
5803	89.4	CO	79.73	1500			BR	161.9783	
6400	38.21	CO	36.34	300			VC	82.03658	1 in 152
7803		CO		225			VC	12.888	
4808		CO		100			VC	14.23052	
7419		CO		0			VC	13.75912	
3400	36.78	CO	32.91	450			VC	116.0172	1 in 322
5400	37.46	CO	0	225			VC	23.41073	
4907	37.69	CO	35.14	225			VC	19	1 in 190
5907	38.5	SW	36.82	1050			VC	9.486833	1 in 59
2700	37.11	CO	33.93	375			VC	52.75191	1 in 85
2300	36.07	CO	30.91	1400			BR	131.7118	
7627		CO		150			VC	14.08591	
5904	38.08	SW	36.27	1050			CO	24.20744	1 in 346
7420		CO		0			VC	4.361861	
7314		CO		100			VC	14.65236	
6420		CO		100			VC	7.933636	
7425		CO		0				23.97941	
6416		CO		100			VC	7.829777	
6469		CO		100			VC	7.540952	

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
6608	39.37	CO	36.64	225			VC	9.82317	1 in 164
5606	39.39	SW		0			VC	0.8464512	
6801	39.44	CO	35.16	300			VC	7.28011	
7804		CO		225			VC	23.81813	
3900	37.1	CO	35.66	225			VC	60.40695	1 in 118
2600	36.91	CO	33.92	225			VC	7.615773	
2651		CO		100			VC	3.049689	
2719		CO		150			UN	6.50612	
2702	37.01	CO	33.14	375			VC	1.427856	
6409		CO		100			VC	9.041945	
5605	39.26	FO	37.24	150			VC	15.2912	1 in 48
5604	39.25	SW	37.1	1200			CO	15.04844	1 in 251
5603	38.87	SW	37.16	1200			CO	26.61281	1 in 444
7705		CO		100			VC	8.35139	
7706		CO		100			PVC	5.182099	
5701	38.73	CO	30.1	1500			BR	68.51839	
5808	38.74	CO	32.79	300			VC	16.03122	
2603	36.8	CO	34.44	225			VC	36.67425	1 in 72
3605	37.7	CO	34.54	225			VC	29.15476	
3602	37.69	CO	32.84	375			VC	40.99368	1 in 373
4302		CO		225			VC	8.003864	
7327		CO		150			VC	7.284311	
7400	38.52	CO	35.85	300			VC	105.019	1 in 184
7414		CO	0	150			VC	11.77049	
2604	36.8	CO	35.21	225			VC	46.95744	1 in 62

LEGEND

Abandoned | Foul | Surface Water | Combined

- Public Sewer
- Private Sewer
- Section 104
- Rising Main
- Sludge Main
- Overflow
- Water Course
- Highway Drain

All point assets follow the standard colour convention:
red - combined, blue - surface water, brown - foul, purple - overflow

- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- Change of Characteristic

MANHOLE FUNCTION

- FO Foul
- SW Surface Water
- CO Combined
- OV Overflow

SEWER SHAPE

- CI Circular
- EG Egg
- OV Oval
- FT Flat Top
- RE Rectangular
- SQ Square
- TR Trapezoidal
- AR Arch
- BA Barrel
- HO HorseShoe
- UN Unspecified

SEWER MATERIAL

- AC Asbestos Cement
- BR Brick
- PE Polyethylene
- RP Reinforced Plastic Matrix
- CO Concrete
- CSB Concrete Segment Bolted
- CSU Concrete Segment Unbolted
- CC Concrete Box Culverted
- PSC Plastic / Steel Composite
- GRC Glass Reinforced Plastic
- DI Ductile Iron
- PVC Polyvinyl Chloride
- CI Cast Iron
- SI Spun Iron
- ST Steel
- VC Vitrified Clay
- PP Polypropylene
- PF Pitch Fibre
- MAC Masonry, Coursed
- MAR Masonry, Random
- U Unspecified

Address or Site Reference:

367 WILMSLOW ROAD,
MANCHESTER,
M14 6AH

Scale: 1:1250 **Date:** 07/02/2019

Sheet: 1 of 1

Printed by: Property Searches

SEWER RECORDS

United Utilities — helping life flow smoothly

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

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Happy Drains Ltd
Unit 12A Chalex Industrial Estate, Manor Hall Road, Southwick, BN42 4NH
Tel: 0800 849 8099 Email: service@happydrains.co.uk

Ref C0009805

Date 26/02/2019

Phlorum Limited
Ground Floor, Adamson House
Towers Business Park
Wilmslow Road
Didsbury
M20 YY

Re: 367 Wilmslow Road,Manchester,M14 6AH

Dear Sir/Madam

1. DESCRIPTION OF PROPERTY

Residential Properties

2. DRAINAGE SYSTEM

This is a combined drainage system accessible by 4 Manholes. The pipework is circular in shape, 100mm in diameter and vitrified clay and polyvinyl Chloride material. Further specific variations can be found in the report content.

3. SHARED

The sections identified within the property boundary are for the sole use of this property and therefore the responsibility of the site owner to maintain.

The sections as shared or beyond the property boundary generally are the legal responsibility of the local water company to maintain.

4. CIRCUMSTANCES

- General CCTV Survey

5. SUMMARY

The defects are fully noted in the attached report. We have surveyed as much as possible , but some sections were un-surveyable due (without further time and safety equipment)due to the depth of the manhole. so we have put a price in for
this, this is a day rate price plus confined space entry as this will take
us a day to complete, we have also put the price for the localised liners
there is 7 in total but we believe we will find more on site.

6. Quotation and Specification of Repairs

Checkatrade.com Where reputation matters
Which? Trusted trader
SAFE contractor APPROVED
CHAS Accredited Contractor www.chas.co.uk

Happy Drains Ltd
Unit 12A Chalex Industrial Estate, Manor Hall Road, Southwick, BN42 4NH
Tel: 0800 849 8099 Email: service@happydrains.co.uk

Repair 1)- To return to site with confined space safety equipment. To facilitate man entry into the 3m deep manhole to survey and complete the full site survey (Additional day @ £895.00 + VAT)

Repair 2) - High pressure jet the drainage system in preparation

Repair 3) - Carry out a pre-and post-installation CCTV inspection

Repair 4) – Section 1,2,3,5 and 6 To install 7 x 600mm long 100mm diameter' 'Silicate Repair Patch' repair (cost items @ £2450.00 +_ VAT)

- 1.91m and 3.46m upstream of MH between MH 1 to SVP,
- 0.40m downstream of MH between MH1 and Carrier,
- 0.70m upstream of MH between MH4 and SVP, 4.49m and 6.49m downstream of MH between MH3 and MH2,
- 1.22m upstream of MH between MH2 to SVP.

The following method will be applied: -

To high pressure jet the system, to clean and remove all debris for lining acceptance. To carry out CCTV survey to ensure the systems are clear of obstructions to control lining. To install lining process. Inspect & test on completion.
Water Supply and access to be provided by the client for the installation purposes.

We will be pleased to carry out the above works for the sum of £3325.00 + VAT.

7. COST SAVINGS

The proposed repair methods have been specifically selected as the most cost-effective method and expedient to rectify the defects noted.

8. GUARANTEE

Please note that all repair works proposed are guaranteed for up to 5 years for repairs and our guarantee does not affect your statutory rights.

Due to the nature of working underground it is not possible to state conclusively that there will be no further damage discovered once the repairs are commenced, if this occurs, we will make all efforts to mitigate the costs and seek the authority through the proper channels before carrying out additional repairs.

Please ensure that appropriate access to water and electricity are provided on site to complete the repair (the engineer will confirm these details with you) If you require more information or wish to discuss this matter, please contact us.

Yours sincerely

Happy Drains Ltd

Project

Project Name: 367 Wilmslow Road-Manchester-M14 6AH

Project Date: 23/02/2019

Project Standard: MSCC4 Sewers & Drainage GB (SRM4 Scoring)

Happy Drains
12A Chalex Industrial Estate, Southwich Manor Hall Road
Tel. 0800 849 8099
Reports@happydrains.co.uk

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367 Wilmslow Road-Manchester-M14 6AH		23/02/2019

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Scoring Summary

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367 Wilmslow Road-Manchester-M14 6AH		23/02/2019

Structural Defects

Grade 3: Best practice suggests consideration should be given to repairs in the medium term.

Grade 4: Best practice suggests consideration should be given to repairs to avoid a potential collapse.

Grade 5: Best practice suggests that this pipe is at risk of collapse at any time. Urgent consideration should be given to repairs to avoid total failure.

Section	PLR	Grade	Description
5	SVPX	4	Broken pipe at joint from 9 o'clock to 1 o'clock ,

Service / Operational Condition

Section	PLR	Grade	Description
All inspected pipes are in an acceptable service condition (< grade 3).			

Abandoned Surveys

Section	PLR	Description
All inspections complete, none are abandoned.		

Information

These scoring summaries are based on the SRM grading from the WRc.

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Project Information

Project Name	Project Number	Project Date
367 Wilmslow Road-Manchester-M14 6AH		23/02/2019

Contractor

Company:	Happy Drains
Description:	CCTV Survey
Street:	12A Chalex Industrial Estate
Town or City:	Southwich Manor Hall Road
County:	Sussex
Post Code:	BN43 4HN
Phone:	0800 849 8099
Mobile:	07824 757572
Email:	Reports@happydrains.co.uk

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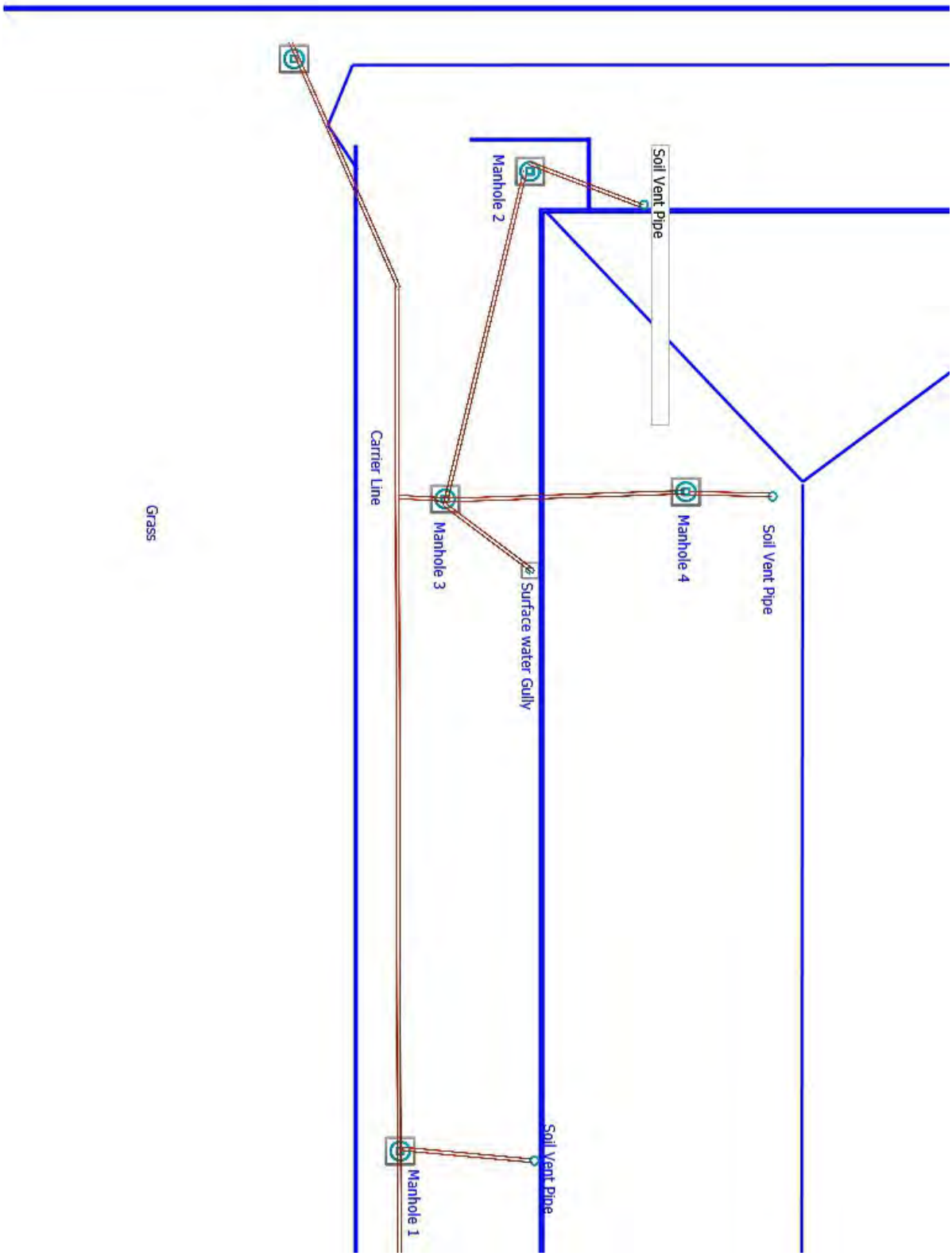
Project Information

Project Name	Project Number	Project Date
367 Wilmslow Road-Manchester-M14 6AH		23/02/2019

Project Drawing



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Section Profile

Project Name	Project Number	Project Date
367 Wilmslow Road-Manchester-M14 6AH		23/02/2019

Circular, 100 mm, 100 mm

Section	Upstream Node	Downstream Node	Date	Road	Pipe Material	Total Length	Inspected Length
1	SVP	Manhole 1	23/02/2019	367 Wilmslow Road	Vitrified clay pipe (i.e. all clayware)	3.71 m	3.71 m
2	Manhole 3	carrier	23/02/2019	367 Wilmslow Road	Vitrified clay pipe (i.e. all clayware)	0.40 m	0.40 m
3	SVP	Manhole 4	23/02/2019	367 Wilmslow Road	Polyvinyl chloride	1.15 m	1.15 m
4	manhole 4	Manhole 3	23/02/2019	367 Wilmslow Road	Vitrified clay pipe (i.e. all clayware)	7.43 m	7.43 m
5	SVP	Manhole 2	23/02/2019	367 Wilmslow Road	Vitrified clay pipe (i.e. all clayware)	3.04 m	3.04 m
6	Manhole 3	Manhole 2	23/02/2019	367 Wilmslow Road	Polyvinyl chloride	9.98 m	9.98 m
7	Swg	manhole 3	23/02/2019	367 Wilmslow Road	Polyvinyl chloride	1.30 m	1.30 m

Total: 7 Sections x Circular 100 mm, 100 mm = 27.01 m Total Length and 27.01 m Inspected Length

Total: 7 Sections = 27.01 m Total Length and 27.01 m Inspected Length

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Section Summary

Project Name	Project Number	Project Date
367 Wilmslow Road-Manchester-M14 6AH		23/02/2019

Number of sections	7
Total length of sewer network	27.01 m
Inspected length of sewer network	27.01 m
Not inspected length of sewer network	0.00 m
Total abandoned inspections	0
Number of section inspection photos	30
Number of section inspection videos	7
Number of section inspection scans	0
Number of section inclination measurements	0

PLR:	SVPX	**Upstream Node:**	SVP
Inspection Direction:	Upstream	**Downstream Node:**	Manhole 1
Inspected Length:	3.71 m	**Dia/Height:**	100 mm
Total Length:	3.71 m	**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)

No.	m+	Code	Observation
1	0.00	WL	Water level, 0% of the vertical dimension
2	0.00	MH	Start node type, manhole, reference number: Manhole 1
3	0.37	JN	Junction at 2 o'clock, diameter: 100mm
4	1.91	JDM	Joint displaced, medium
5	3.46	JDM	Joint displaced, medium
6	3.71	BRF	Finish node type, major connection without manhole, reference number: SVP, Soil Vent Pipe

PLR:	Manhole 3X	**Upstream Node:**	Manhole 3
Inspection Direction:	Downstream	**Downstream Node:**	carrier
Inspected Length:	0.40 m	**Dia/Height:**	100 mm
Total Length:	0.40 m	**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)

No.	m+	Code	Observation
1	0.00	WL	Water level, 0% of the vertical dimension
2	0.00	MH	Start node type, manhole, reference number: Manhole 3
3	0.40	CC	Crack, circumferential from 9 o'clock to 3 o'clock
4	0.40	BRF	Finish node type, major connection without manhole, reference number: carrier, carrier line

PLR:	SVPX	**Upstream Node:**	SVP
Inspection Direction:	Upstream	**Downstream Node:**	Manhole 4
Inspected Length:	1.15 m	**Dia/Height:**	100 mm
Total Length:	1.15 m	**Pipe Material:**	Polyvinyl chloride

No.	m+	Code	Observation
1	0.00	WL	Water level, 0% of the vertical dimension

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Section Summary

Project Name	Project Number	Project Date
367 Wilmslow Road-Manchester-M14 6AH		23/02/2019

No.	m+	Code	Observation
2	0.00	MH	Start node type, manhole, reference number: Manhole 4
3	0.52	JN	Junction at 3 o'clock, diameter: 100mm
4	0.73	JDM	Joint displaced, medium
5	1.15	BRF	Finish node type, major connection without manhole, reference number: SVP, soil vent pipe

PLR:	manhole 4X	**Upstream Node:**	manhole 4
Inspection Direction:	Upstream	**Downstream Node:**	Manhole 3
Inspected Length:	7.43 m	**Dia/Height:**	100 mm
Total Length:	7.43 m	**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)

No.	m+	Code	Observation
1	0.00	WL	Water level, 0% of the vertical dimension
2	0.00	MH	Start node type, manhole, reference number: Manhole 3
3	7.43	MHF	Finish node type, manhole, reference number: manhole 4, internal manhole

PLR:	SVPX	**Upstream Node:**	SVP
Inspection Direction:	Upstream	**Downstream Node:**	Manhole 2
Inspected Length:	3.04 m	**Dia/Height:**	100 mm
Total Length:	3.04 m	**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)

No.	m+	Code	Observation
1	0.00	WL	Water level, 0% of the vertical dimension
2	0.00	MH	Start node type, manhole, reference number: Manhole 3
3	0.19	JN	Junction at 3 o'clock, diameter: 100mm
4	1.22	BJ	Broken pipe at joint from 9 o'clock to 1 o'clock ,
5	3.04	BRF	Finish node type, major connection without manhole, reference number: SVP, soil vent pipe

PLR:	Manhole 3X	**Upstream Node:**	Manhole 3
Inspection Direction:	Downstream	**Downstream Node:**	Manhole 2
Inspected Length:	9.98 m	**Dia/Height:**	100 mm
Total Length:	9.98 m	**Pipe Material:**	Polyvinyl chloride

No.	m+	Code	Observation
1	0.00	WL	Water level, 0% of the vertical dimension
2	0.00	MH	Start node type, manhole, reference number: Manhole 3
3	4.49	CC	Crack, circumferential from 8 o'clock to 3 o'clock
4	6.49	CC	Crack, circumferential from 12 o'clock to 4 o'clock
5	9.98	MHF	Finish node type, manhole, reference number: Manhole 2

PLR:	SwgX	**Upstream Node:**	Swg
Inspection Direction:	Upstream	**Downstream Node:**	manhole 3
Inspected Length:	1.30 m	**Dia/Height:**	100 mm
Total Length:	1.30 m	**Pipe Material:**	Polyvinyl chloride

No.	m+	Code	Observation
1	0.00	WL	Water level, 0% of the vertical dimension
2	0.00	MH	Start node type, manhole, reference number: manhole 3
3	1.30	GYF	Finish node type, gully, reference number: Swg, surface water gully

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Section Inspection - 23/02/2019 - SVPX

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
1	1	23/02/19	14:40	Not Specified	No Rain Or Snow	N	SVPX

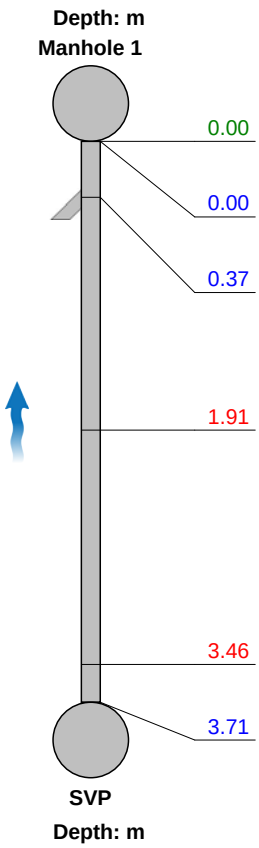
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
Not Specified	Not Specified	Not Specified	Not Specified	Private Drain	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	SVP
Road:	367 Wilmslow Road	**Inspected Length:**	3.71 m	**Upstream Pipe Depth:**	
Location:	Gardens	**Total Length:**	3.71 m	**Downstream Node:**	MANHOLE 1
Surface Type:		**Joint Length:**	0.00 m	**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular		
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm	**Width:**	100 mm
Year Constructed:		**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)		
Flow Control:	No flow control	**Lining Type:**	No Lining		
Inspection Purpose:	Routine inspection of condition	**Lining Material:**	No Lining		

Comments:
Recommendations:

Scale: 1:50



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	WL	Water level, 0% of the vertical dimension			
0.00	MH	Start node type, manhole, reference number: Manhole 1	00:00:00		
0.37	JN	Junction at 2 o'clock, diameter: 100mm	00:00:20		
1.91	JDM	Joint displaced, medium	00:00:49		1
3.46	JDM	Joint displaced, medium	00:01:17		1
3.71	BRF	Finish node type, major connection without manhole, reference number: SVP: Soil Vent Pipe	00:01:35		

Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
2	1.0	0.5	2.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 23/02/2019 - SVPX

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
1	Upstream	SVPX		

, 0.00 m
Water level, 0% of the vertical dimension

, 00:00:00, 0.00 m
Start node type, manhole, reference number: Manhole 1

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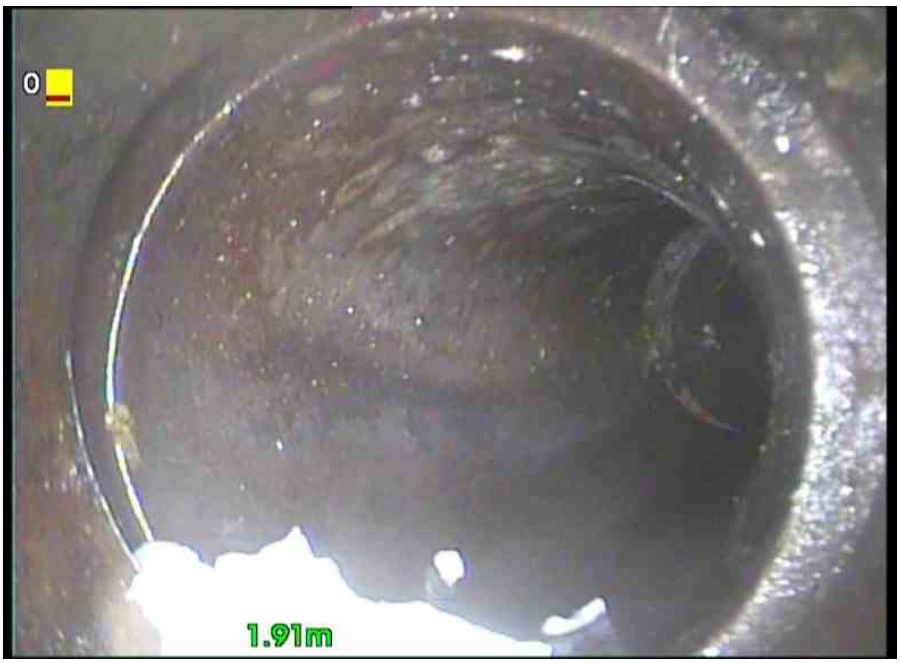
Section Pictures - 23/02/2019 - SVPX

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
1	Upstream	SVPX		

, 00:00:20, 0.37 m
Junction at 2 o'clock, diameter: 100mm



, 00:00:49, 1.91 m
Joint displaced, medium

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Section Pictures - 23/02/2019 - SVPX

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
1	Upstream	SVPX		

, 00:01:17, 3.46 m
Joint displaced, medium

, 00:01:35, 3.71 m
Finish node type, major connection without manhole, reference number: SVP, Soil Vent Pipe

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Section Inspection - 23/02/2019 - Manhole 3X

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
2	2	23/02/19	14:54	Not Specified	No Rain Or Snow	N	MANHOLE 3X

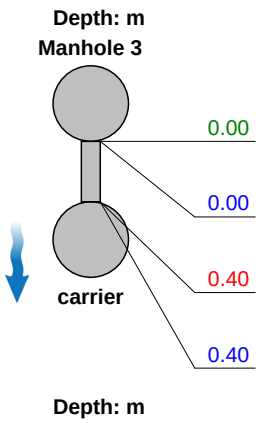
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
Not Specified	Not Specified	Not Specified	Not Specified	Private Drain	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Downstream	**Upstream Node:**	MANHOLE 3
Road:	367 Wilmslow Road	**Inspected Length:**	0.40 m	**Upstream Pipe Depth:**	
Location:	Gardens	**Total Length:**	0.40 m	**Downstream Node:**	CARRIER
Surface Type:		**Joint Length:**	0.00 m	**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular		
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm	**Width:**	100 mm
Year Constructed:		**Pipe Material:**	Vitrified clay pipe (i.e. all clayware)		
Flow Control:	No flow control	**Lining Type:**	No Lining		
Inspection Purpose:	Routine inspection of condition	**Lining Material:**	No Lining		

Comments:
Recommendations:

Scale: 1:50



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	WL	Water level, 0% of the vertical dimension			
0.00	MH	Start node type, manhole, reference number: Manhole 3	00:00:00		
0.40	CC	Crack, circumferential from 9 o'clock to 3 o'clock	00:00:11		2
0.40	BRF	Finish node type, major connection without manhole, reference number: carrier: carrier line	00:00:14		

Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
1	10.0	25.0	10.0	2.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 23/02/2019 - Manhole 3X

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
2	Downstream	MANHOLE 3X		

, 0.00 m
Water level, 0% of the vertical dimension

, 00:00:00, 0.00 m
Start node type, manhole, reference number: Manhole 3

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Section Pictures - 23/02/2019 - Manhole 3X

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
2	Downstream	MANHOLE 3X		

, 00:00:11, 0.40 m
Crack, circumferential from 9 o'clock to 3 o'clock

, 00:00:14, 0.40 m
Finish node type, major connection without manhole, reference number: carrier, carrier line

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Section Inspection - 23/02/2019 - SVPX

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
3	3	23/02/19	15:00	Not Specified	No Rain Or Snow	N	SVPX

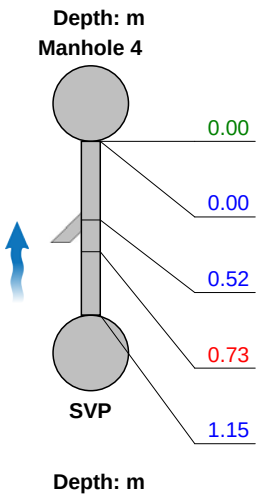
Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
Not Specified	Not Specified	Not Specified	Not Specified	Private Drain	Not Specified

Town or Village:	Manchester	**Inspection Direction:**	Upstream	**Upstream Node:**	SVP
Road:	367 Wilmslow Road	**Inspected Length:**	1.15 m	**Upstream Pipe Depth:**	
Location:	Gardens	**Total Length:**	1.15 m	**Downstream Node:**	MANHOLE 4
Surface Type:		**Joint Length:**	0.00 m	**Downstream Pipe Depth:**	

Use:	Foul	**Pipe Shape:**	Circular		
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	100 mm	**Width:**	100 mm
Year Constructed:		**Pipe Material:**	Polyvinyl chloride		
Flow Control:	No flow control	**Lining Type:**	No Lining		
Inspection Purpose:	Routine inspection of condition	**Lining Material:**	No Lining		

Comments:
Recommendations:

Scale: 1:50



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	WL	Water level, 0% of the vertical dimension			
0.00	MH	Start node type, manhole, reference number: Manhole 4	00:00:00		
0.52	JN	Junction at 3 o'clock, diameter: 100mm	00:00:10		
0.73	JDM	Joint displaced, medium	00:00:14		1
1.15	BRF	Finish node type, major connection without manhole, reference number: SVP: soil vent pipe	00:00:23		

Structural Defects					Construction Features				
Service & Operational Observations					Miscellaneous Features				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
1	1.0	0.9	1.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 23/02/2019 - SVPX

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
3	Upstream	SVPX		

, 0.00 m
Water level, 0% of the vertical dimension

, 00:00:00, 0.00 m
Start node type, manhole, reference number: Manhole 4

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Section Pictures - 23/02/2019 - SVPX

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
3	Upstream	SVPX		

, 00:00:10, 0.52 m
Junction at 3 o'clock, diameter: 100mm

, 00:00:14, 0.73 m
Joint displaced, medium