

Flood Risk Assessment

for a site at

Amberley Drive, Wythenshawe

Undertaken on behalf of

Wythenshawe Community Housing Group

Report Title:	Amberley Drive, Wythenshawe Flood Risk Assessment
Report Reference:	11110/FRA/02
Client:	Wythenshawe Community Housing Group
Issue Date:	March 2025
Drafted By:	Kevin Tyldesley
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Revision Status / History

Rev	Date	Issue / Purpose/ Comment	Prepared	Checked	Authorised
01	07/06/2023	Preliminary Issue	KPT	SS	SS
02	01/04/2025	Minor amendments to proposed site layout.	KPT	SS	SS

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Project No. 11110/FRA/02

Amberley Drive, Wythenshawe
April 2025

Executive Summary

Background	WML Consulting have been commissioned by Wythenshawe Community Housing Group to undertake a Flood Risk Assessment (FRA) for a forthcoming planning application in relation to a proposed residential development located at Amberley Drive in the Newell Green district of Wythenshawe. This report comprises an FRA, as required by the National Planning Policy Framework (NPPF). It has been carried out in accordance with BS 8533:2011 – Assessing and Managing Flood Risk in Development.
Flood Risk	The Environment Agency (EA), United Utilities (UU), and Manchester City Council (MCC) have been asked to confirm if they have any information regarding past, present or future flooding issues that may affect the site. The EA, UU and MC have all confirmed that there are no known historic issues of flooding to the proposed site. River and coastal flooding - the EA's online flood mapping shows the site to be within flood zone 1. On this basis, it is considered that the risk to the development from this form of flooding is low. Groundwater flood risk is considered to be low. Sewer flood risk is currently considered to be low. Reservoir flood risk is considered to be low. The risk of flooding from other sources is considered to be low. From a review of the on-line surface water flood mapping it can be seen that the potential risk to the site from this form of flooding is categorised as “very low”, “low”, “medium” and “high”. Reference should be made to Chapter 3 for further information on this subject. The overall risk of flooding to the development is considered to be low.

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1.0 INTRODUCTION

Appointment

- 1.1 WML Consulting have been commissioned by Wythenshawe Community Housing Group, to undertake a Flood Risk Assessment (FRA) for a forthcoming planning application in relation to a proposed residential development located at Amberley Drive in the Newell Green district of Wythenshawe.

Development Proposals

- 1.2 It is understood that the development will comprise the construction of eight low rise residential properties with associated driveways and gardens.
- 1.3 There are to be no basements or other below ground facilities created as part of the development proposals.
- 1.4 A drawing illustrating the development proposals can be found at appendix 02.

Objective

- 1.5 This report comprises an FRA, as required by the National Planning Policy Framework (NPPF). It has been carried out in accordance with BS 8533:2011 – Assessing and Managing Flood Risk in Development.
- 1.6 The NPPF identifies that it is the responsibility of developers to demonstrate:
- whether the development would be affected by current or future flooding from any source
 - that the development is safe and where possible reduces flood risk overall
 - whether flood risk would be increased elsewhere
 - mitigation measures for any identified flooding risks
 - that the site can be developed and occupied safely
- 1.7 The FRA identifies whether there are any flooding or surface water management issues related to the development site that may warrant further consideration, to comply with current Planning Policy and associated Flood Risk Practice Guide.

2.0 SITE LOCATION AND DESCRIPTION

- 2.1 The site comprises land adjacent to Amberley Drive. It is centred on approximate Ordnance survey National Grid Reference 381156 E, 387933 N with an indicative postcode of M23 2RW. A site location plan can be found at appendix 01.
- 2.2 The site comprises a relatively narrow strip of land that is bordered by Amberley Drive on its western side, and a watercourse known as Mill Brook on its eastern side.
- 2.3 The surrounding area is mainly developed for residential use with localised areas of public open space with Wythenshawe Hospital some 200m to the west.

3.0 ASSESSMENT OF FLOOD RISK

Correspondence

- 3.1 The Environment Agency (EA), United Utilities (UU), and Manchester City Council (MCC) have been asked to confirm if they have any information regarding past, present or future flooding issues that may affect the site.
- 3.2 The EA have confirmed that the site lies within flood zone 1 and have indicated that they have no knowledge of flooding problems in the vicinity of the proposed development site. A copy of their response can be found in appendix 04.
- 3.3 UU have confirmed that they have no records of sewer flooding issues in the vicinity of the proposed development. A copy of their response can be found in appendix 05.
- 3.4 MCC have confirmed that they have no records of flooding problems in the vicinity of the site. However they do state that the online surface water flood mapping indicates that there could be a considerable flood risk in the vicinity of Mill Brook. A copy of their response can be found in appendix 06.

Potential Sources of Flooding

- 3.5 River and coastal flooding - the EA's online fluvial flood mapping shows the site to be within Flood Zone 1. Flood Zone 1 indicates an annual exceedance probability (AEP) of not greater than 0.1% (probability 1 in 1000 year) flood risk. On this basis, it is considered that the risk to the development from this form of flooding is low.
- 3.6 Surface water flooding – from a review of the online surface water flood mapping, it can be seen that the potential risk to the majority of the site from this form of flooding is considered to be “very low”, i.e. the area has a chance of flooding of less than 0.1% each year.
- 3.7 Though there is a small area in roughly the centre of the site where the risk is considered to increase to “low”, i.e. the area has a chance of flooding of between 0.1% and 1% each year.
- 3.12 It should be noted that flooding from surface water is difficult to predict, as rainfall location and volume are difficult to forecast. In addition, local features such as drainage systems and watercourses that were not taken into account when the modelling upon which the risk analysis is based can greatly affect the chance and severity of flooding.
- 3.14 It seems that the surface water flood risk modelling appears not to have taken account of the channel of Mill Brook, which is adjacent to the site. It is considered that this feature would mitigate the risk posed by surface water flooding by acting to drain away surface water flooding / overland flows.
- 3.15 There are to be no basements or other below ground facilities created as part of the development proposals.
- 3.16 The ground floor level(s) of the proposed buildings will be set a minimum of 300mm above adjacent Amberley Drive carriageway levels to further mitigate against the risk of surface water flooding. This will enable any potential surface water run-off to be conveyed safely across the site, in accordance with the approach promoted within DEFRA's Making Space for Water.
- 3.17 On this basis, it is considered that the risk to the development from this form of flooding is low.
- 3.18 Groundwater flooding - an intrusive site investigation has yet to be undertaken, however the Phase 1 Study suggests that the ground conditions are predominantly glacial till (clay). Such ground conditions are relatively impermeable and as such are likely to mitigate against the risk of groundwater flooding. Given the above, the risk of flooding from groundwater is considered to be low.

- 3.19 Sewer flooding - United Utilities have confirmed that they are not aware of any sewer flooding problems in the vicinity of the proposed development. Therefore the risk of flooding from this source is considered to be low. A copy of the public sewer records can be found in appendix 03.
- 3.20 Reservoir flooding - from a review of the Ordnance Survey mapping around the site it appears that the site is not in close proximity to any reservoirs, similarly from a review of the EA's on-line flood mapping, it is considered that the risk to the development from this form of flooding is low.
- 3.21 Flooding from other sources - from a review of the Ordnance Survey mapping around the site it appears that there are no other significant bodies of water in the vicinity of the site. Given this it is considered that the risk of flooding from other sources is low.

Mitigation Measures

- 3.22 From the above, it can be seen that the flood risk posed to the proposed development from all sources of flooding is considered to be low, hence it is considered that significant flood risk mitigation measures are not required as part of the development.

Future Maintenance

- 3.23 It is anticipated that the drainage for this development will be maintained by the client's maintenance team with any specialist drainage duties fulfilled by external companies / operatives as required.

4.0 DRAINAGE PROPOSALS

- 4.1 The surface water drainage proposals for the development should incorporate the principles of the NPPF and the SUDS manual.
- 4.2 The proposed drainage system should be designed in accordance with BS EN 752-4 and the Building Regulations Approved Document H (2010), which indicates the following hierarchy for the disposal of surface water drainage from new development sites:
1. discharge via infiltration
 2. discharge to watercourse
 3. discharge to sewer
- 4.3 These options are discussed in further detail below.
- 4.4 Surface water discharge via infiltration - in view of the relatively impermeable nature of the ground conditions at the site (glacial till), the use of soakaways or other infiltration techniques is not likely to be feasible, although this should be confirmed by intrusive site investigation prior to detailed design stage. If during this site investigation it appears that the ground conditions may support the use of infiltration techniques, then BRE365 compliant infiltration testing should be carried out to determine the infiltration rate.
- 4.5 Surface water discharge via watercourse – the nearest watercourse to the site is Mill Brook, which runs to the rear of the proposed dwellings. Hence it is proposed to discharge the surface water runoff to this watercourse.
- 4.6 The site is currently undeveloped and is therefore considered to be a greenfield site. As such, surface water run-off rates from the developed site should be restricted to as close to greenfield run-off rates as is practically possible. A greenfield run-off calculation has been carried out using the ICP SUDS Method in MicroDrainage WinDes software. The existing greenfield run-off rates for the site are as follows:

Return Period	Flow (l/s)
1 in 1 year	0.4
1 in 30 year	0.8
1 in 100 year	1.0

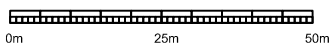
- 4.7 A copy of the MicroDrainage calculations can be found appended to this report at appendix 07. These are based upon an impermeable area for each of the eight dwellings of 110m sq. Therefore the development's total impermeable area is 880m sq.
- 4.8 To give a feel for what the brown field runoff rate would be from this area would be, we can apply a 50mm / hr rainfall rate to the above area. Under this scenario the runoff rate would be 12.2 l / sec.
- 4.9 It is generally considered that 5 l / sec is the practical minimum discharge rate that flows can be restricted to. Hence in this instance it will not be feasible to exactly match the greenfield runoff rates above, and so it is proposed to adopt a maximum discharge rate of 5 l / sec for all storms up to and including the critical 1 in 100 year return period event plus a 45% climate change allowance.
- 4.10 Under this scenario it is likely that surface water discharge rate attenuation will be required. Given the proposed scale, layout and usage of the development, it is considered that below ground attenuation storage is likely to be the preferred method. This could take the form of oversized pipework, a geo-cellular tank or porous paving, plus a flow control device towards the downstream end of the new system.

- 4.11 Foul Drainage - from the United Utilities existing sewer record it can be seen that there is an existing combined sewer passing beneath part of the proposed development site. This sewer will need to be diverted to so that it will lie beneath Amberley Drive to allow the construction of the development.
- 4.12 The foul drainage flows from the proposed development will be connected to this combined sewer as part of the diversion works.

APPENDIX 01
Existing Site Layout Drawing

Notes: This Drawing is the copyright of Paddock Johnson Partnership Limited and may not be used without prior written consent.
Written dimensions to be taken in preference to scaled dimensions
Due to inaccuracies of scanning, scanned images should not be scaled.

REV: DATE: DESCRIPTION: BY:



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STATUS:
CONSTRUCTION

PROJECT:	DRAWING NUMBER:	SCALE:	DATE:	PADDOCK JOHNSON Studio 2, The Lyceum, Bath Street, Port Sunlight, Merseyside, CH62 4UJ 0151 643 1234 Info@paddockjohnson.com www.paddockjohnson.com Paddock Johnson Partnership Limited, Registered in England and Wales. No. 06684275
New Housing Amberley Drive Wythenshawe	18073-PJA-00-00-DR-A-1000	1:1250@A4	05.07.23	
	DRAWING TITLE:	BY:	CHECKED:	
	Site Location Plan	SD	SD	

APPENDIX 02

Proposed Site Layout Drawing



Adopted Bitmac Pavement

Bitmac Parking Space with
50mm pin kerb edging

PCC Paving

Grass

Existing Tree retained

Existing Tree retained

Existing Tree/Undergrowth
removed/cut back

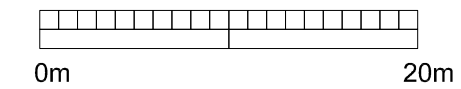
1800mm high Close-Boarded
Treated Timber Fencing

New Planting

Dropped Kerb

Drainage Outfall Easement

Existing Brook



4no. 3B/5P Wide Semi-Detached Houses @ 96.1 sqm	384.4sqm
4no. 2B/4P Wide Semi-Detached Houses @ 89.0 sqm	356.0sqm
Total 8 no. Houses	740.4sqm

APPENDIX 03

United Utilities Public Sewer Record

**The Bernard Taylor Partnership
Elizabeth House
486 Didsbury Road
Heaton Mersey
Stockport
SK4 3BS**

FAO: Daniel Sutton

United Utilities Water PLC

Property Searches
Ground Floor Grasmere House
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP

DX 715568 Warrington
Telephone 0870 751 0101
Fax Number 0870 7510102

Property.searches@uuplc.co.uk

Your Ref: 2651_WCHG_AMBERELY DRIVE
Our Ref: 13/ 976572
Date: 06/11/2013

Dear Sirs

Location: 1 Amberely Drive Wythenshawe Manchester, Greater Manchester M23 2RP

I acknowledge with thanks your request dated 04/11/13 for information on the location of our services.

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

I attach General Condition Information sheets, which details contact numbers for additional services (i.e. new supplies, connections, diversions) which we are unable to deal with at this office. In addition you should ensure they are made available to anyone carrying out any works which may affect our apparatus.

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 telephone us on 0870 7510101.

Yours Faithfully,



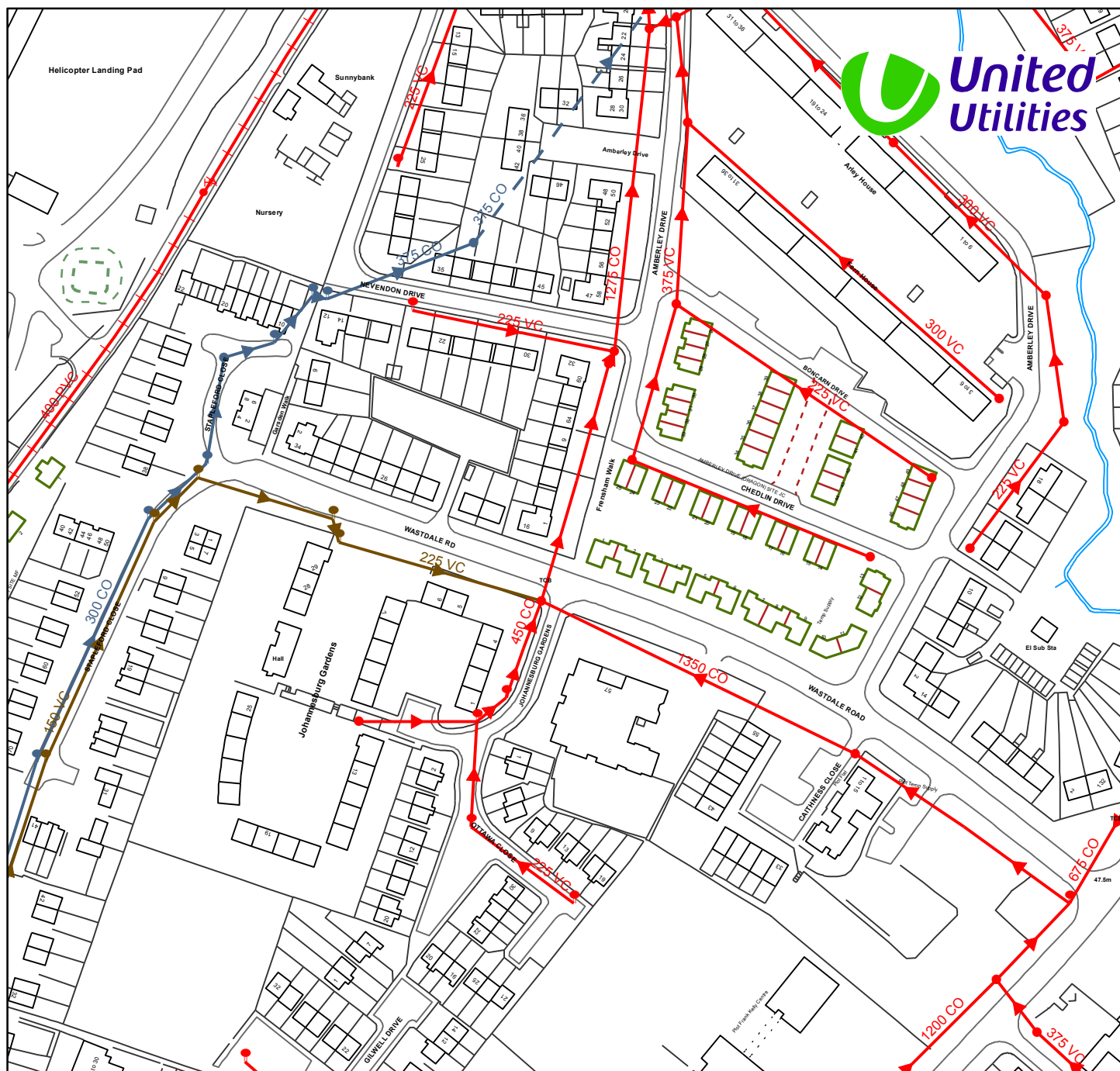
Sue McManus
Operations Manager
Property Searches

TERMS AND CONDITIONS - WASTERWATER & 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) (UW apparatus) of United Utilities Water PLC ("UW").

TERMS AND CONDITIONS:

1. 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.
2. 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.
3. In particular, the position and depth of any UW apparatus shown on the Map are approximate only. UW strongly recommends that a comprehensive survey is undertaken in addition to reviewing this Map to determine and ensure the precise location of any UW apparatus. The exact location, positions and depths should be obtained by excavation trial holes.
4. 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.
5. The position and depth of UW 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.
6. 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 UW apparatus or for the purpose of determining the suitability of a point of connection to the sewerage or other distribution systems.
7. No person or legal entity, including any company shall be relieved from any liability howsoever and whensoever arising for any damage caused to UW apparatus by reason of the actual position and/or depths of UW apparatus being different from those shown on the Map and any information supplied with it.
8. 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 effect.
9. 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 UW from bringing proceedings in any other competent jurisdiction, whether concurrently or otherwise.



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Date: 06/11/2013

Extract from Map of Public Sewers

1 Amberley Drive,
Manchester

LEGEND

Foul	Surface	Combined	Overflow	
				MainSewer, Public
				MainSewer, Private
				MainSewer, S104
				Rising Main, Public
				Rising Main, Private
				Rising Main, S104
				Highway Drain, Private

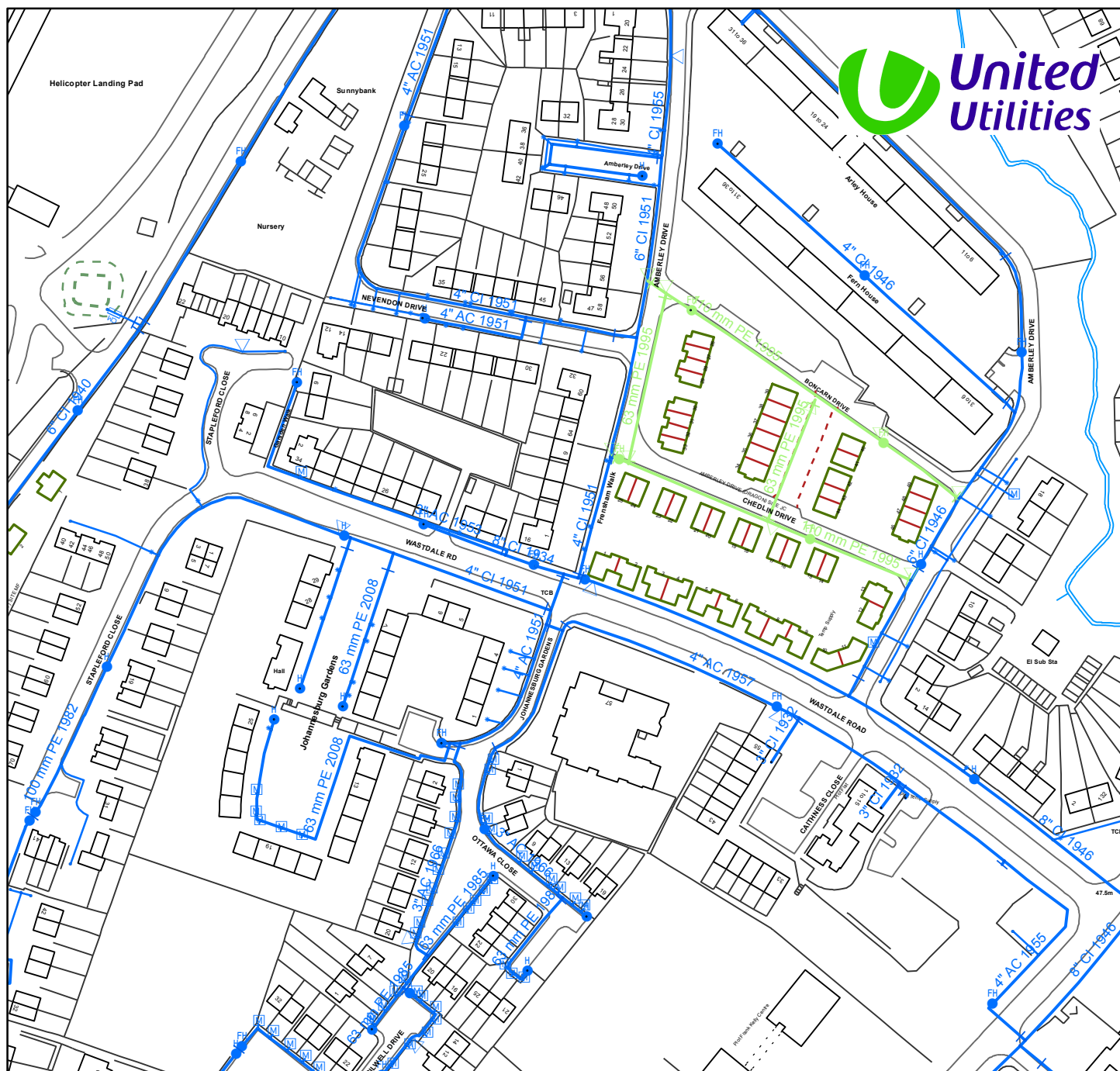
ABANDONED SEWER

	MainSewer
	Rising Main
	Highway Drain

The position of this underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. The actual positions may be different from those shown on the plan and private pipes, sewers or drains may not be recorded. United Utilities will not accept any liability for any damage caused by the actual positions being different from those shown

United Utilities 2001

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Date: 06/11/2013

Extract from Map Of Water Mains

1 Amberley Drive,
Manchester

LEGEND

Live	Proposed	
		Distribution Main
		Trunk Main
		Raw Water Aqueduct
		LDTM Raw Water Distribution
		LDTM Treated Water Distribution

ABANDONED PIPE

	Distribution Main
	Trunk Main
	Pressurised Raw Water Aqueduct
	Gravity Raw Water Aqueduct
	Pressurised LDTM Raw Water Distribution
	Pressurised LDTM Treated Water Distribution
	Gravity LDTM Raw Water Distribution
	Gravity LDTM Treated Water Distribution
	Private Pipe

The position of underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. The actual positions may be different from those shown on the plan and private service pipes may be shown by a blue broken line. United Utilities will not accept any liability for any damage caused by the actual positions being different from those shown.

United Utilities 2001.

The plan is based upon the Ordnance Survey Map with the sanction of the controller of H.M. Stationery Office. Crown and United Utilities copyrights are reserved. Unauthorised reproduction will infringe these copyrights.

These general conditions and precautions apply to the wastewater network of United Utilities.

Please ensure that a copy of these conditions is passed to your representative and contractor on site.

1. United Utilities provides the approximate locations of its sewers according to its records. These records are not necessarily accurate or complete nor do they normally show the positions of every sewer culvert or drain, private connections from properties to the public sewers or the particulars of any private system. No person or company shall be relieved from liability for any damage caused by reason of the actual positions and/or depths being different from those indicated. The records do indicate the position of the nearest known public sewer from which the likely length of private connections can be estimated together with the need for any off site drainage rights or easements.

2. Special requirements relative to our sewers may be indicated. United Utilities employees or its contractors will visit any site at reasonable notice to assist in the location of its underground sewers and advise any precautions that may be required to obviate any damage. To arrange a visit or for further information regarding new supplies, connections, diversions, costing, or any notification required under these General Conditions, please call us on **0845 746 2200**.

3. Where public sewers are within a site which is to be developed and do not take any drainage from outside the area, they are from an operational viewpoint redundant. The developer must identify all redundant sewers affected by the development and apply to United Utilities in writing for these sewers to be formally closed. The developer shall bear all related costs of the physical abandonment work.

4. Public sewers within the site that are still live outside the area will be subject to a "Restricted Building zone". This would normally be a surface area equivalent to the depth of the sewer measured from the centre line of the sewer on either side. No construction will be permitted within that zone. The developer should also note that deep and wide rooted trees must not be planted in close proximity to live sewers. Access to public sewers must be maintained at all times and no interference to manholes will be permitted during construction work.

5. Where there is a public sewer along the line of a proposed development/building, arrangements shall be made by the developer at his cost to divert the sewer around the development. Where this is not possible and as a last resort, a "Building Over Agreement" will need to be completed under section 18 of the Building Act 1984. The developer shall design building foundations to ensure that no additional loading is transferred to the sewer and submit such details both to the Local Authority's Building Control Officer and to United Utilities for approval/acceptance. United Utilities on a rechargeable basis would normally undertake all aspects of design work associated with the diversion of any part of the operational wastewater network. For further advice please call asset protection on **01925 678 306**

6. Where there is a non-main river watercourse/culvert passing through the site, the landowner has the responsibility of a riparian owner for the watercourse/culvert and is responsible for the maintenance of the fabric of the culvert and for all works involved in maintaining the unrestricted flow through it. Building over the watercourse/culvert is not recommended. The developer must contact the local authority before any works are carried out on the watercourse/culvert. Where it is necessary to discharge surface water from the site into the watercourse/culvert the developer shall make an assessment of the available capacity of the watercourse/culvert (based on a 1 in 50 year event) and ensure that the additional flow to be discharged into the watercourse/culvert will not cause any flooding. In appropriate cases, flooding may be prevented by on-site storage. The developer shall submit the relevant details required to substantiate his development proposals. Details of any outfall proposed shall also be submitted to the Environment Agency, PO Box 12, Richard Fairclough House, Knutsford Road, Warrington, Cheshire, WA4 1HT for their approval.

7. Where there is a main river watercourse/culvert passing through the site, the developer shall submit all proposals affecting the river to the Environment Agency at the address stated in paragraph 6 for approval/acceptance.

8. Your attention is drawn also to the following:

• **Private drains or sewers which may be within the site.**

On 1 October 2011 all privately owned sewers and lateral drains which communicate with (that is drain to) an existing public sewer as at 1 July 2011 will become the responsibility of the sewerage undertaker. This includes private sewers upstream of pumping stations that have yet to transfer, but excludes lengths of sewer or drain that are the subject of an on-going appeal or which have been excluded from transfer as a result of an appeal or which are on or under land opted-out by a Crown body. The transfer specifically excludes sewers and lateral drains owned by a railway undertaker. Sewers upstream of such assets, however, are transferred. Such assets may not be recorded on the public sewer record currently as it was not a requirement to keep records of previously private sewers and drains.

• **Applications to make connections to the public sewer.**

The developer must write to United Utilities requesting an application form that must be duly completed and returned. No works on the public sewer shall be carried out until a letter of consent is received from United Utilities.

• **Sewers for adoption.**

If an agreement for the adoption of sewers under Section 104 of the Water Industry Act 1991 is being contemplated, a submission in accordance with "Sewers for Adoption", Seventh Edition, published by the Water Research Centre (2001) Plc, Henley Road, Medmenham, PO Box 16, Marlow, Buckinghamshire, SL7 2HD will be required, taking into consideration any departures from the general guide stipulated by United Utilities.

• **Further consultation with United Utilities.**

Developers wishing to seek advice or clarification regarding sewer record information provided should contact United Utilities to arrange an appointment. A consultation fee may be charged, details of which will be made available at the time of making an appointment.

9. Combined sewers, foul sewers, surface water sewers, and pumped mains. These are shown separately in a range of colours or markings to distinguish them on our drawings, which are extracts from the statutory regional sewer map. A legend and key is provided on each extract for general use, although not all types of sewer will be shown on every extract.

Combined sewers shown coloured red carries both surface water and foul sewage, especially in areas where there is no separate surface water sewerage system.

Foul sewers coloured brown may also carry surface water and there may be no separate surface water system indicated in the immediate area. Both combined and foul sewers carry wastewater to our treatment works before it can safely be returned to the environment.

Surface water sewers coloured blue on our drawings are intended only to carry uncontaminated surface water (e.g. rainfall from roofs, etc) and they usually discharge into local watercourses. It is important for the protection of the environment and water quality that only uncontaminated surface water is connected to the surface water sewers. Improper connections to surface water sewers from sink wastes, washing machines and other domestic use of water can cause significant pollution of watercourses.

Pumped mains, rising mains and sludge mains will all be subject to pumping pressures and are neither suitable nor available for making new connections.

Highway drains, when included, show as blue and black dashed lines. Highway drains are not assets belonging to United Utilities and are the responsibility of local authorities.

10. For information regarding future proposals for construction of company apparatus please write to United Utilities, PO Box 453, Warrington, WA5 3QN.

11. For information regarding easements, deeds, grants or wayleaves please write to United Utilities Property Solutions, Coniston Buildings, Lingley Mere Business Park, Lingley Green Avenue, Great Sankey, Warrington WA5 3UU (Tel: 01925 731 365).

These general conditions and precautions apply to the water distribution system of United Utilities.

Please ensure that a copy of these conditions is passed to your representative and contractor on site.

1. United Utilities provides approximate locations of its water mains or apparatus according to its records. These records are not necessarily accurate or complete nor do they normally show the positions of private service pipes from the mains to properties. Where service pipes are shown, a blue broken line indicates their approximate position. No person or company shall be relieved from liability for any damage caused by reason of the actual positions and/or depths being different from those indicated.

2. Special requirements relative to our apparatus may be indicated. United Utilities employees will visit any site at reasonable notice to assist in the location of its underground water apparatus and advise any precautions that may be required to obviate any damage. To arrange a visit or for further information regarding new supplies, connections, diversions, costing, future proposals for construction of company apparatus or any notification required under these General Conditions, please telephone us on **0845 746 2200** or write to United Utilities, PO Box 453, Warrington, WA5 3QN.

3. In order to achieve safe working conditions adjacent to any water apparatus the following should be observed;

(a) All water apparatus should be located by hand digging prior to the use of mechanical excavation.

(b) During construction work where heavy plant may have to cross the line of a water main, and the main is not under a carriageway of adequate standard of construction, crossing points should be suitably reinforced with sleepers, steel plates or a specially constructed reinforced concrete raft as necessary. These crossing points should be clearly indicated and crossing the line of the water main at other places should be prevented. United Utilities employees will advise on the type of reinforcement necessary. This is particularly important on agricultural or open land, where tilling or erosion may have significantly reduced the original cover.

(c) No explosive should be used within 32 metres of any United Utilities apparatus without prior consultation with United Utilities.

(d) Where it is proposed to carry out piling within 15 metres of any water main United Utilities should be consulted so that the affected main may be surveyed.

4. During any excavation, it is important that measures should be taken to ensure continued support for any water main:

(a) Where excavation of trenches adjacent to any water main is likely to affect its support, the main must be supported to the satisfaction of United Utilities.

(b) Where a trench is excavated crossing or parallel to the line of a water main, the backfill should be adequately compacted to prevent any settlement which could subsequently cause damage to the main. In special cases it may be necessary to provide permanent support to a main which has been exposed over the length of the excavation before back-filling and reinstatement is carried out. No back-filled concrete should contact the main.

5. No other apparatus should be laid over and along the line of a water main irrespective of clearance. A minimum clearance of 450 millimetres should be allowed between any plant being installed and an existing main, to facilitate maintenance and repair, whether the adjacent plant is parallel to or crossing the main. No manhole, chamber, or other obstruction should be built over or around a water main.

6. Where a water main is coated with special wrapping and the wrapping is damaged, even to a minor extent, United Utilities must be notified, and the excavation must be left open for ready access so that repairs can be made. In case of any material damage to the main itself causing leakage, or weakening of the mechanical strength of the pipe, the person or body responsible should immediately notify United Utilities in order that the necessary remedial work can be carried out. The full cost of the necessary remedial work will be charged to the person or body responsible for the damage.

7. If you propose to change existing levels over water mains you will need to inform us. We will need specific locations to be identified together with precise details as to the scale of the proposed changes to existing ground levels. Changes to existing levels may require the diversion of our apparatus at your cost. However, in certain circumstances we may wish to leave our apparatus where it is. On these occasions you will usually be required to protect our apparatus by means of a concrete raft and either raise or lower any surface boxes affected.

8. Under no circumstances should our surface boxes be either buried or left in a situation where they are raised above finished ground levels. You should re-use and re-set any surface boxes affected by your works into the new surface so that they align over the water apparatus below. You will be responsible for the cost of repairing any damage to our apparatus as a result of your works.

9. Where proposals involve resurfacing, you must notify United Utilities if your excavation will be greater than 750mm in the highway and 300mm in a footpath, verge or other location.

10. For information regarding easements, deeds, grants, licences or wayleaves, please write to United Utilities Property Solutions, Coniston Buildings, Lingley Mere Business Park, Lingley Green Avenue, Great Sankey, Warrington WA5 3UU (Tel 01925 731 365).

Tree planting restrictions over water mains

a) Poplar and willow trees have extensive root systems and should not be planted within 10 metres of any water main.

b) The following trees and those of a similar size, whether they are deciduous or evergreen, should not be planted within six metres of any water main:

- Ash, beech, birch, elm, horse chestnut, lime, oak, sycamore;
- Apple trees and pear trees;
- Most conifers.

c) United Utilities requires access to the route of its mains at all times to inspect for leaks and carry out surveys.

We recommend that no shrubs or bushes which might obstruct or interfere with our access should be planted within one metre of the centre line of any water main.

d) There may be instances when both United Utilities and the landowner will wish to plant shrubs or bushes close to the water main for screening or other purposes. The following shallow rooting shrubs would be suitable for this purpose:

- Blackthorn, broom, cotoneaster, elder;
- Hazel, laurel, privet, quickthorn, snowberry;
- Most ornamental flowering shrubs.

e) In areas where soft fruit is grown, blackcurrant, raspberries and gooseberries may be planted close to the main, provided that a path is left clear for inspection access and surveys. United Utilities can give additional advice where required in particular circumstances.

APPENDIX 04

Environment Agency Correspondence

From: Cooke, Claire <Claire.Cooke@environment-agency.gov.uk> on behalf of GMMC Info Requests <Inforequests.gmmc@environment-agency.gov.uk>
Sent: 26 November 2018 10:54
To: Kevin Tyldesley
Subject: GMMC107356CC - Response from the Environment Agency
Attachments: 18073-001-Existing Site Plan.pdf; 18073-027 Site Plan.pdf; GMMC107356CC - Table.pdf; GMMC107356CC - DFM.pdf; Flood Risk Assessments - Climate Change Allowances.pdf

Dear Kevin,

Thank you for your enquiry which was received on 15 November 2018.

We respond to requests under the Freedom of Information Act 2000 and Environmental Information Regulations 2004.

Please see attached and see our officer's supporting comments below:

Defences - There are no flood defences in the vicinity of the site.

Historic - We have no records of flooding affecting the site. However, this does not mean flooding has not occurred in the past or that it will not flood in future. We recommend that you also contact United Utilities and Manchester Metropolitan District Council who may hold additional information (the former especially in relation to sewer flooding).

Reservoir - The Environment Agency Flood map shows that the site is not located in an area at risk of reservoir flooding.

Here are some useful links below:

<https://www.gov.uk/guidance/flood-risk-assessment-local-planning-authorities>

<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

Please refer to the [Open Government Licence](#) which explains the permitted use of this information.

Please get in touch if you have any further queries or contact us within two months if you'd like us to review the information we have sent.

Kind regards,

Claire Cooke
Customer and Engagement Officer
Greater Manchester, Merseyside and Cheshire
External: 0203 025 0048
Email: Inforequests.gmmc@environment-agency.gov.uk

From: Kevin Tyldesley [<mailto:Kevin.Tyldesley@wmlconsulting.com>]
Sent: 14 November 2018 10:15
To: Enquiries, Unit <enquiries@environment-agency.gov.uk>
Subject: 181120/JG09 8538G - Amberley Drive, Wythenshawe, Manchester, M23 2RW

Hi

Please see attached pdfs indicating the existing and proposed site layouts for the above site, upon which a new residential development is proposed.

Can you please advise if you are aware of any past, present or future flood risk issues that may affect this site ?

Kind regards.

Kevin Tyldesley

WML Consulting Ltd

No. 8 Oak Green | Earl Road | Stanley Green Business Park | Cheadle Hulme | Cheshire | SK8 6QL

Tel: 0161 482 0600 | email: kevin.tyldesley@wmlconsulting.com

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APPENDIX 05

United Utilities Correspondence

Daniel Baker

From: Dodd, Matthew <Matthew.Dodd@uuplc.co.uk>
Sent: 10 December 2018 11:03
To: Kevin Tyldesley
Cc: Wastewater Developer Services
Subject: RE: 8538G - Amberley Drive, Wythenshawe, Manchester, M23 2RW - UU Ref 4200023368

Good Morning

I can confirm that we do not have any current records of sewer flooding on our DG5 register within the vicinity of the proposed development. The DG5 register is a register of properties that have flooded as a result of hydraulic inadequacy of the public sewer network.

Please note that United Utilities Water Limited (Uuw) can only record and check flooding events which are reported to us and we have to comply with our Regulators instructions on the qualification of flooding events to place on the register.

Our response does not include:

- any sewer flooding events caused by blockages or collapses which are the result of third party actions, natural events or other actions over which Uuw has no control and not a facet of sewer capacity; or
- any historical sewer flooding events that have been removed from the register as a result of investment in our infrastructure.

As with all development sites, we recommend you liaise with our water and wastewater engineers by contacting our Developer Services team so the details of your development proposal can be considered further. Details can be found at the following link.

<https://www.unitedutilities.com/services/builders-developers/>

Should you require any further information please do not hesitate to contact me.

Kind regards

Matthew Dodd

Assistant Developer Engineer
Developer Services and Planning
Network Delivery
United Utilities
T: 01925 679369 (internal 79369)
unitedutilities.com

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From: Kevin Tyldesley [mailto:Kevin.Tyldesley@wmlconsulting.com]
Sent: 26 November 2018 11:08
To: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Subject: 8538G - Amberley Drive, Wythenshawe, Manchester, M23 2RW

Hi

Please see attached pdfs indicating the existing and proposed site layouts for the above site, upon which a new residential development is proposed.

Can you please advise if you are aware of any past, present or future flood risk issues that may affect this site ?

Kind regards.

Kevin Tyldesley

WML Consulting Ltd

No. 8 Oak Green | Earl Road | Stanley Green Business Park | Cheadle Hulme | Cheshire | SK8 6QL

Tel: 0161 482 0600 | email: kevin.tyldesley@wmlconsulting.com

EMGateway3.uuplc.co.uk made the following annotations

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APPENDIX 06

Manchester City Council Correspondence

Daniel Baker

From: e.ainsworth@manchester.gov.uk on behalf of floodriskmanagement@manchester.gov.uk
Sent: 03 December 2018 10:36
To: Kevin Tyldesley
Subject: Re: 8538G - Amberley Drive, Wythenshawe, Manchester, M23 2RW
Attachments: 18073-001-Existing Site Plan.pdf; 18073-027 Site Plan.pdf

Hi Kevin,

We do not have any record of historical flooding of the greenfield area proposed for development. However, as our historical flood investigation is prioritised on property flooding, this means that the area may have flooded in the past but this has not been reported.

The surface water flood mapping indicates that there may be a considerable depth of flooding associated with the ordinary watercourse Mill Brook.

A detailed flood risk assessment of flooding from Mill Brook and all sources needs to be undertaken to ensure that the masterplan layout reflects flood risk areas and finished floor levels are set at an appropriate level.

Kind regards

Flood Risk Management
Highways Service, Growth and Neighbourhoods Directorate
Manchester City Council
Tel: 0161 219 6295
Email: floodriskmanagement@manchester.gov.uk
Web: <http://www.manchester.gov.uk/>

POSTAL ADDRESS: Manchester City Council, Public Realm, The Neighbourhood Service, PO Box 532, Town Hall, Manchester M60 2LA

Kevin Tyldesley <Kevin.Tyldesley@wmlconsulting.com> 14/11/2018 10:26	To	"floodriskmanagement@manchester.gov.uk" <floodriskmanagement@manchester.gov.uk>,
	cc	
	Subject	8538G - Amberley Drive, Wythenshawe, Manchester, M23 2RW

Hi

Please see attached pdfs indicating the existing and proposed site layouts for the above site, upon which a new residential development is proposed.

Can you please advise if you are aware of any past, present or future flood risk issues that may affect this site ?

Kind regards.

Kevin Tyldesley

WML Consulting Ltd

No. 8 Oak Green | Earl Road | Stanley Green Business Park | Cheadle Hulme | Cheshire | SK8 6QL

Tel: 0161 482 0600 | email: kevin.tyldesley@wmlconsulting.com

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APPENDIX 07
Greenfield Runoff Calculation

WML Consulting Ltd		Page 1																								
No. 8 Oak Green Stanley Green Business Park Earl Rd, Cheadle Hulme, SK8 6QL																										
Date 05/06/2023 13:10 File	Designed by KTyldesley Checked by																									
Innovyze Source Control 2020.1.3																										
<u>ICP SUDS Mean Annual Flood</u> Input <table> <tr> <td>Return Period (years)</td> <td>100</td> <td>Soil</td> <td>0.450</td> </tr> <tr> <td>Area (ha)</td> <td>0.088</td> <td>Urban</td> <td>0.000</td> </tr> <tr> <td>SAAR (mm)</td> <td>847</td> <td>Region Number</td> <td>Region 10</td> </tr> </table> Results 1/s <table> <tr> <td>QBAR Rural</td> <td>0.5</td> </tr> <tr> <td>QBAR Urban</td> <td>0.5</td> </tr> <tr> <td>Q100 years</td> <td>1.0</td> </tr> <tr> <td>Q1 year</td> <td>0.4</td> </tr> <tr> <td>Q30 years</td> <td>0.8</td> </tr> <tr> <td>Q100 years</td> <td>1.0</td> </tr> </table>			Return Period (years)	100	Soil	0.450	Area (ha)	0.088	Urban	0.000	SAAR (mm)	847	Region Number	Region 10	QBAR Rural	0.5	QBAR Urban	0.5	Q100 years	1.0	Q1 year	0.4	Q30 years	0.8	Q100 years	1.0
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