

Contents

Quality Assurance Record	4
Contributors for Townsend Water Engineering Limited:	4
Document Status and Revision History:	4
Limitation of Liability and Use	4
1. INTRODUCTION	5
1.1 Purpose of this Report	5
1.2 Sources of Information and Consultation	5
1.3 Policy Context	5
1.4 Structure of this Report	5
2. SPATIAL PLANNING CONSIDERATION	7
2.1 Location and Background	7
2.2 Topography	9
2.3 Geology and Soil	10
2.4 Flood Zone	14
2.5 NPPF Vulnerability	15
2.6 Climate Change Allowances for Peak Rainfall Intensity	15
3. FLOOD HAZARD FOR EXISTING SITE	17
3.1 Source of Flood Risk	17
4. ASSESSMENT OF FLOOD RISK FOR PROPOSED DEVELOPMENT	20
4.1 Development Proposals	20
4.2 Fluvial Flood Management	20
4.3 Groundwater Flooding	20
4.4 Infrastructure Flooding	21
5. DRAINAGE STRATEGY	22
5.1 Existing Drainage Arrangements	22
5.1.1 Surface Water	22
5.2 Infiltration Rates	22
5.3 Run-off	22
5.4 Surface Water Drainage Strategy	22
5.4.1 Hierarchy of Discharge	22
5.4.2 Sizing of SUDS Features	22
5.4.3 Maintenance Plan	23
6. SUMMARY & CONCLUSIONS	24
7. REFERENCES	25
Appendix A: Topographical Survey	26
Appendix B: Proposed Layout	27
Appendix C: Confirmation of the discharge from United Utilities.	28
Appendix D: Lees Roxburgh Drainage Strategy	29

Figure 1: Site Location (Source: Bing Map).....	8
Figure 2: OS View of the Site (Source: Bing Maps).....	9
Figure 3: Topographical Survey.....	10
Figure 4: Bedrock underneath the Site (Source: BGS Bedrock Geology Mapping).....	11
Figure 5: Soil Map of the Site (Source: Cranfield University Soil Mapping)	12
Figure 6: EP3 Report Infiltration Test Results.....	13
Figure 7: Flood Risk Maps	14
Figure 8: Peak Rainfall Allowances for Climate Change	16
Figure 9: 1% AEP Surface Water Depth (Source: EA Open Dataset).....	17
Figure 10:Extent of Flooding from Reservoirs (Source; EA Flood Warning Information Service).....	18
Figure 11: EP3 Geoenvironmental Report Extract	19
Figure 12: Proposed Site (Source: Client)	20
Table 1: Site Details	7
Table 2: Flood Risk Vulnerability Classification (Source: NPPF Technical Guide)	15
Table 3: Flood Risk Vulnerability and flood zone compatibility (Source: NPPF Technical Guide)	15
Table 4: Operation and Maintenance Requirements for pipes and Attenuation storage tanks	
Maintenance Options	23

Quality Assurance Record

Contributors for Townsend Water Engineering Limited:

Name	Role
Charles Townsend	Director
Alice Osborne	Engineering Assistant

Document Status and Revision History:

Version	Date	Author	Reviewer	Authoriser	Status / Comment
1	13/11/2023	C. Townsend	C. Townsend	C. Townsend	1 st Issue
2	22/03/2024	C.Townsend	C.Townsend	C.Townsend	2 nd Issue
3	14/06/2024	A.Osborne	C.Townsend	C.Townsend	3 nd Issue
4	08/08/24	C.Townsend	C.Townsend	C.Townsend	4 th Issue

Limitation of Liability and Use

The work described in this report was undertaken for the party or parties stated; for the purpose or purposes stated; to the time and budget constraints stated. No liability is accepted for use by other parties or for other purposes, or unreasonably beyond the terms and parameters of its commission and its delivery to normal professional standards.

1. INTRODUCTION

1.1 Purpose of this Report

Townsend Water Engineering Ltd. has been appointed by Gareth Ujvari at *Bellway Homes* (Manchester) for a Flood Risk Assessment (FRA) for a development of 88 houses at Pitsford Road, Manchester, M40 8QX. This report has been prepared in support of the planning permission for the aforementioned development.

The report is based on the available flood risk information for the site detailed in Section 1.2 and prepared in accordance with the planning policy requirements set out in Section 1.3. The scope of the FRA is consistent with the 'Site Specific Flood Risk Assessment Checklist' from the *National Planning Policy Framework (NPPF)* and *accompanying Planning Practice Guidance (PPG)*:

<https://www.gov.uk/guidance/flood-risk-and-coastal-change#Site-Specific-Flood-Risk-Assessment-checklist-section>

1.2 Sources of Information and Consultation

This Report has been informed by:

- Existing Site Plan drawings and respective topographic plan delivered by *Bellway*;
- *BGS* website <http://mapapps.bgs.ac.uk/geologyofbritain/home.html?mode=boreholes>;
- Defra Magic Map <https://magic.defra.gov.uk/magicmap.aspx>;
- *Cranfield University* Soil Mapping <http://www.landis.org.uk/soilscapes/>;
- The *EA* online flood maps;
- <https://flood-map-for-planning.service.gov.uk/>;
- [Hidden Manchester Map | A map of the tunnels, rivers, mines & subterranean spaces that make up Hidden Manchester. \(hidden-manchester.org.uk\)](https://hidden-manchester.org.uk/);
- *EP3 'Phase II Geoenvironmental Site Assessment Land at Pitsford Road, Miles Platting'* Reference:16-148-R2-1 Date: January 2023; and
- <https://flood-warning-information.service.gov.uk/long-term-flood-risk/>.

1.3 Policy Context

This report has been prepared in accordance with the relevant national, regional and local planning policy and statutory guidance as follows:

- National policy contained within the *National Planning Policy Framework (NPPF)* dated December 2023, issued by Communities and Local Government with reference to Section 14 'Meeting the challenge of climate change, flooding and coastal change'; and
- The *NPPF Planning Practice Guidance (PPG)* released in March 2014 ('Flood Risk and Coastal Change' section) and updated in February 2016 to incorporate the *EA* 'Flood Risk Assessments: Climate Change Allowances' guidance.

1.4 Structure of this Report

The Report has been prepared based on the following structure:

- Section 2 refers to spatial planning considerations by reference to the proposed land use, flood zoning and *NPPF* vulnerability;
- Section 3 presents the assessment of existing flood risk at the site;
- Section 4 presents the proposed development and findings of flooding;
- Section 5 presents the drainage strategy; and

- Section 6 provides a summary of the assessments.

Additional Appendices are provided that deal with the following:

- Appendix A Topographical Survey; and
- Appendix B *Lees Roxborough* Drainage Strategy.

2. SPATIAL PLANNING CONSIDERATION

2.1 Location and Background

The location of the proposed development site is shown in Figure 1 and Figure 2, with location details found in Table 1. The site is located at Pitsford Road, Manchester, M40 8QX (Grid Ref: 386156, 400180). (Table 1: Site Details)

The development involves the building of 88 houses with associated car parking and roads. The entire development site is approximately 2.87ha. The existing site is a greenfield site; a forested area.

The site is surrounded by residential areas to the North and West, and industrial areas to the East and South. *Pitsford Road* is to the North as well as *Trimley Avenue*. There is a railway line running along the sites' Southern boundary. To the West of the site is *Queens Road*. The site is accessed from *Queen Road*. Please see Figure 1 and Figure 2 indicating these features.

Table 1: Site Details

Reference	Value
OS X (Eastings)	386156
OS Y (Northings)	400180
Nearest Post Code	M40 8QX
Nat. Grid	SD861001

Grid reference details taken from the site <https://www.streetmap.co.uk/>



Figure 1: Site Location (Source: Bing Map)

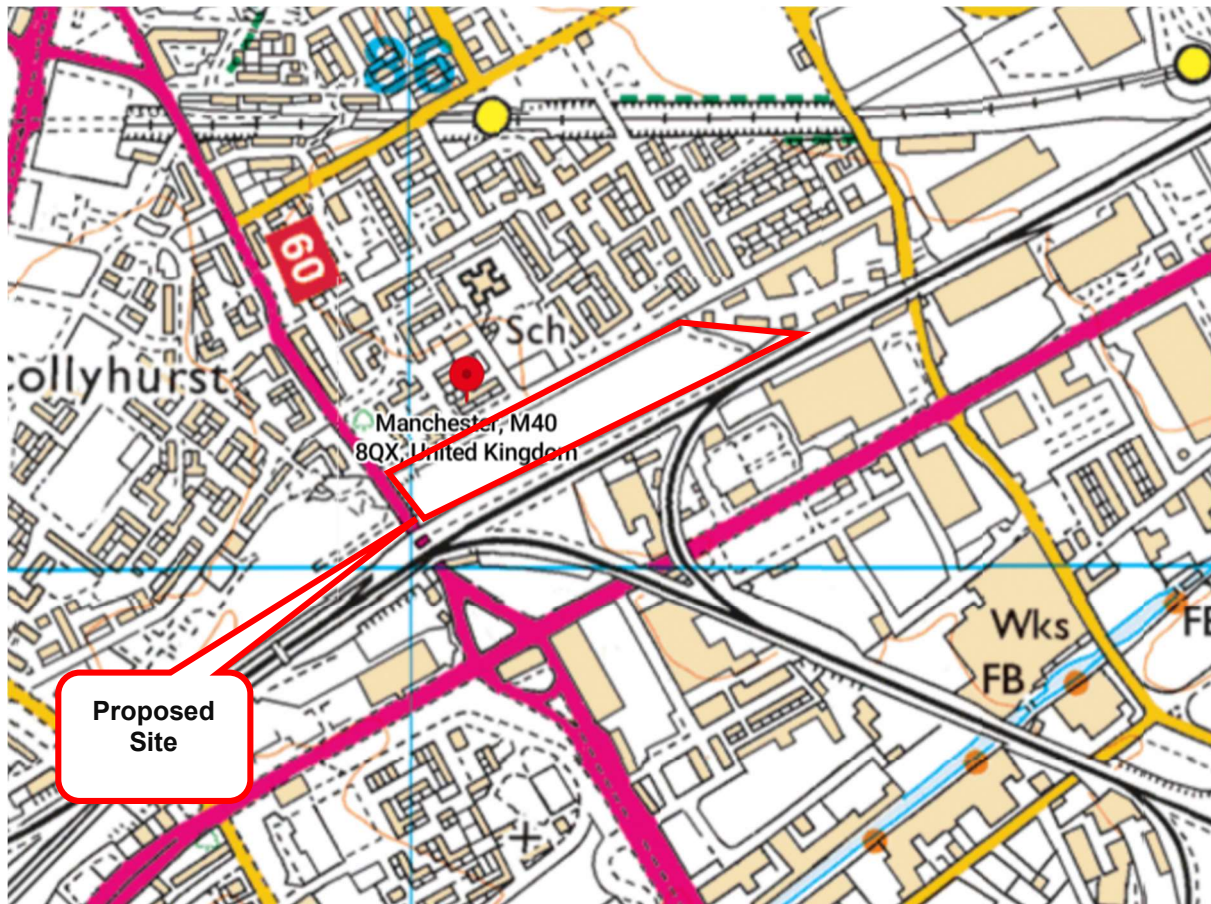


Figure 2: OS View of the Site (Source: Bing Maps)

2.2 Topography

The existing ground elevations on site is shown in the topographic drawing (Appendix A) It indicates that the site is uneven with high ground bounded to the north-east and low located to the south-west. The lowest level is 66.125mAOD in the south-west. The highest level in the north-east corner is 70.647mAOD.

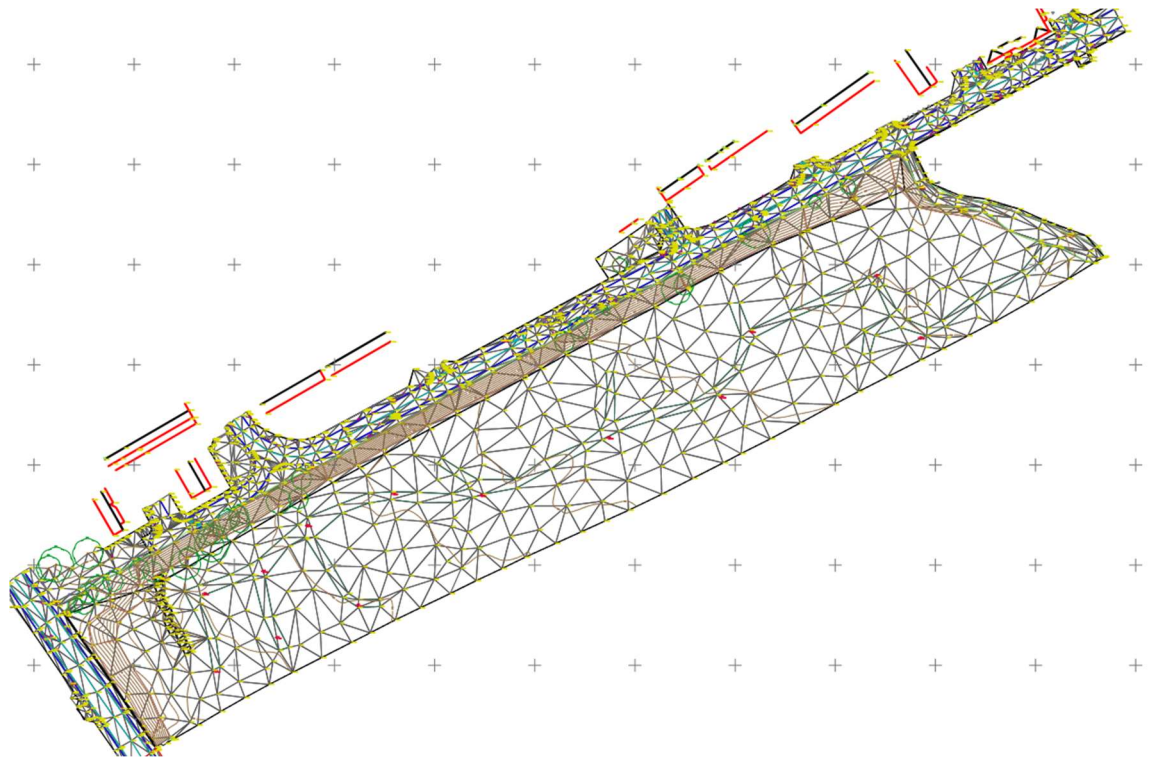


Figure 3: Topographical Survey

2.3 Geology and Soil

The geology at the site has been obtained from the *British Geological Survey (BGS)* website, *Soilscapes* and the *EP3* geo-environmental report.

The bedrock geology at the site is described as '*Pennine Middle Coal Measures Formation - Mudstone, siltstone and sandstone*' on *BGS Geology Viewer*. The superficial deposits are till. Please see Figure 4 below.

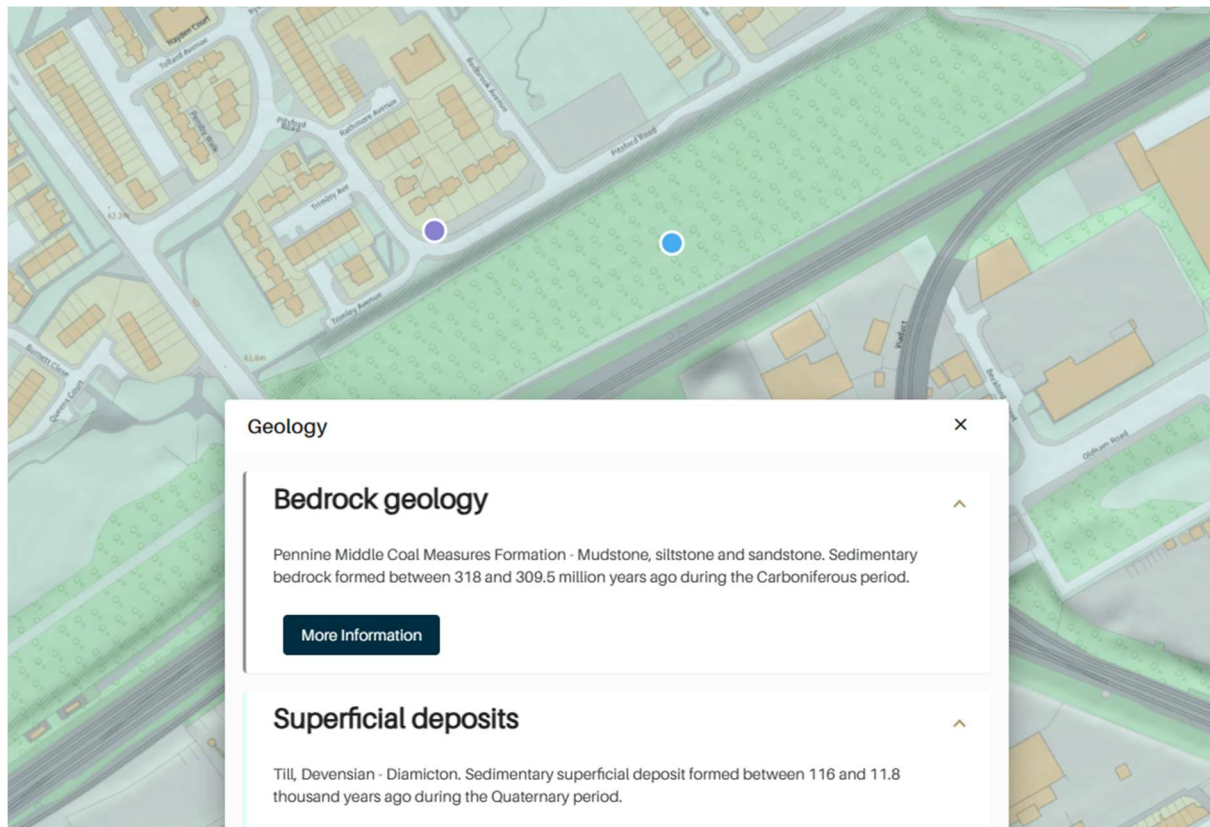


Figure 4: Bedrock underneath the Site (Source: BGS Bedrock Geology Mapping)

Soils at the site are described on the *Cranfield University* 'Soilscapes' website mostly as '*Slowly permeable seasonally wet acid loamy and clayey soils*' with impeded drainage (Figure 5). This suggests that the site is likely to be unsuitable for infiltration.

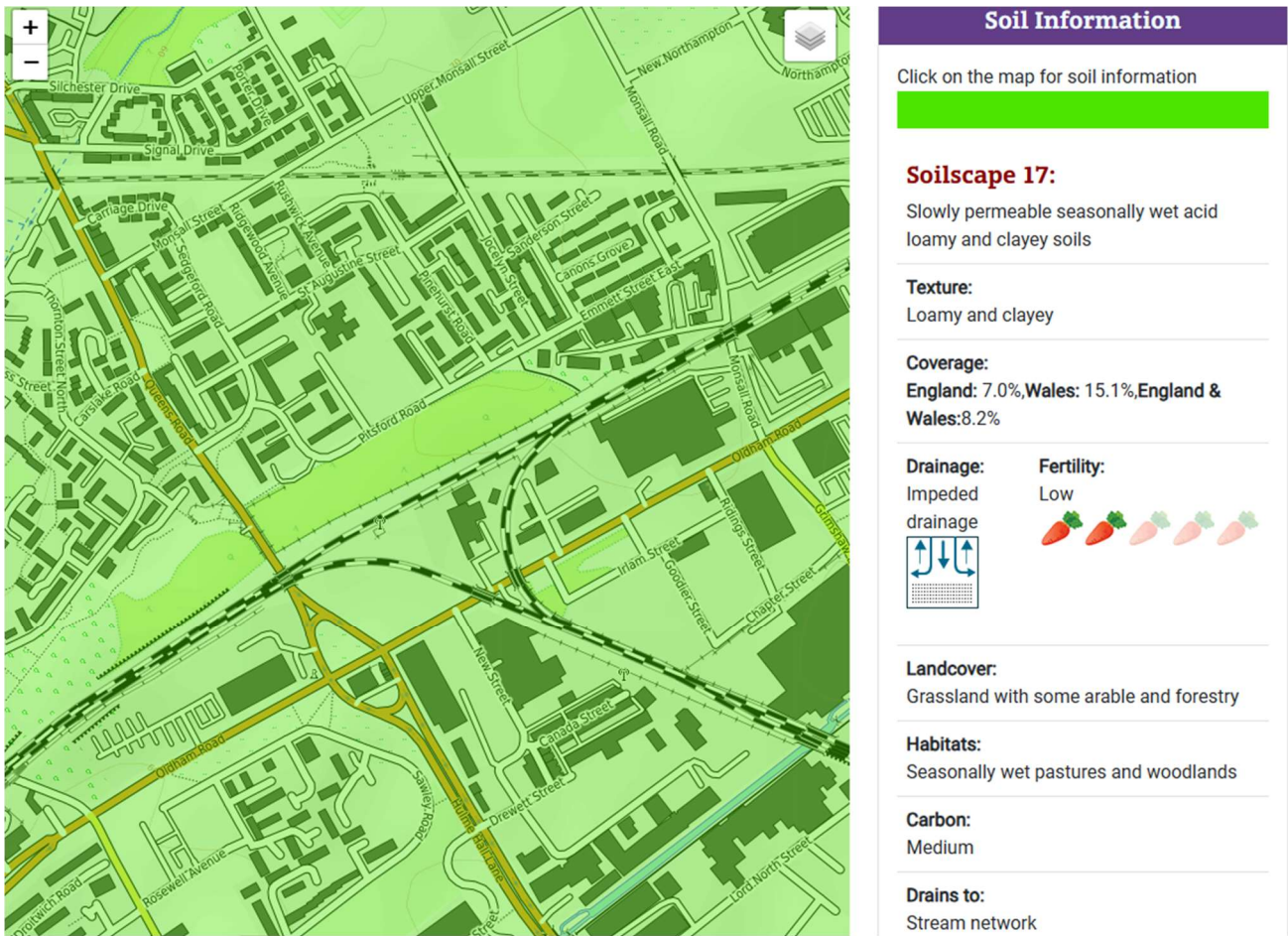


Figure 5: Soil Map of the Site (Source: Cranfield University Soil Mapping)

On 2nd November 2022, EP3 carried out 5 infiltration tests at the site. Although 4 of the tests were successful, infiltration is not recommended at this site due to the made ground throughout the site. Please see an extract of EP3's 'Phase II Geoenvironmental Site Assessment Land at Pitsford Road, Miles Platting Reference:16-148-R2-1 Date: January 2023' below in Figure 6.

3.11. SOIL INFILTRATION

In-situ BRE 365 Soakaway tests were undertaken over a 48 hour period within trial pits completed as SA101-SA105.

The results are presented in Table 3.9 below and the test certificates are included within Appendix IX.

TABLE 3.9 BRE365 SOAKAWAY TESTING RESULTS

LOCATION	DEPTH (m)	MATERIAL	TEST NO.	SOIL INFILTRATION RATE (m/s)
TP101/SA101	2.00	Made Ground	Test No.1	7.18E-06
TP102/SA102	2.00	Made Ground	Test No.1	2.85E-06
TP103/SA103	2.30	Made Ground	Test No.1	8.12E-06
TP104/SA104	1.20	Made Ground	Test No.1	2.13E-05
TP116/SA105	2.35	Made Ground	Test No.1	N/A

The Made Ground and underlying soils are predominantly cohesive in nature with areas of inconsistent sand layers/bands present in the Made Ground. Five soakaway tests have been completed as part of the intrusive site investigation.

One location SA105 did not demonstrate soakaway potential and over the 24hr monitoring period and did not fall below the effective storage depths. Whereas the other 4 locations demonstrated significant permeability, in some cases allowing up to 1.04×10^{-5} infiltration rate.

All locations were completed in the Made Ground soils (due to the depth of this stratum) and generally exhibited the properties of a granular material (as per the engineer's description). It is likely however that the head of water percolated through the infilled granular materials to Pitsford Road level. Soakaway tests have been completed in the upper 2.50m of material, where the site is cut these may no longer be representative of the materials in which the drainage will sit and further testing may be required. However, the application of soakaway drainage will ultimately be dependent on the specific requirements of the development. All soakaways should be designed in accordance with BRE Special Digest 365 – *Soakaway Design*.

The presence of contamination throughout the Made Ground will ultimately preclude the usage of soakaway drainage onsite.

Figure 6: EP3 Report Infiltration Test Results

Due to the clay soils, impeded drainage and the presence of contamination throughout the Made Ground, infiltration is not recommended at this site.

2.4 Flood Zone

The existing site is within a Flood Zone 1 please see Figure 7. Flood Zone 1 is an area at risk of fluvial flooding above the 1 in 1000 year event. This suggest the site is at low risk of fluvial flooding.

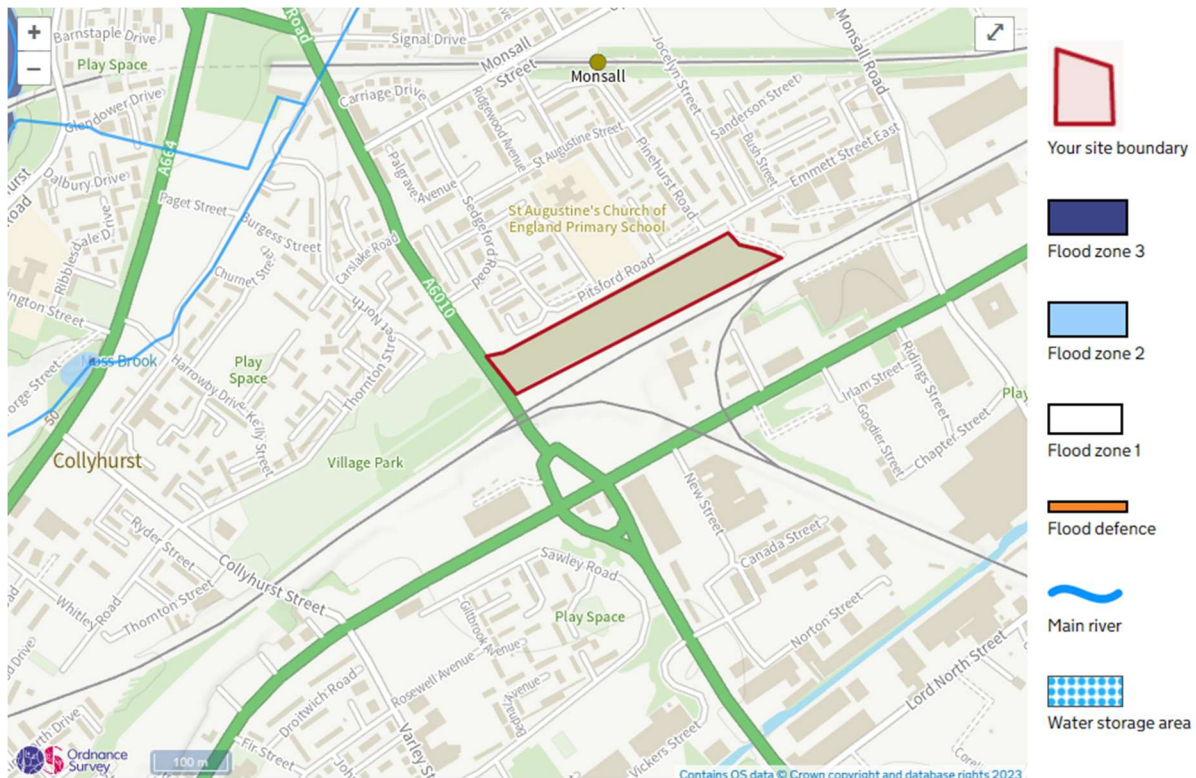


Figure 7: Flood Risk Maps

2.5 NPPF Vulnerability

The development will be classed as 'More Vulnerable' under the *NPPF* vulnerability classification (Table 2). The flood risk vulnerability and flood zone compatibility are displayed in Table 3: Flood Risk Vulnerability and flood zone compatibility (Source: *NPPF* Technical Guide). As noted in Section 2.4, the site is within Flood Zone 1 according to the *EA* flood risk map for planning.

Table 2: Flood Risk Vulnerability Classification (Source: *NPPF* Technical Guide)

More vulnerable (MV)
Hospitals, residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels
Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.
Non-residential uses for health services, nurseries and educational establishments.
Landfill and sites used for waste management facilities for hazardous waste ⁶ .
Sites used for holiday or short let caravans and camping, subject to a specific warning and evacuation plan. ⁷

Table 3: Flood Risk Vulnerability and flood zone compatibility (Source: *NPPF* Technical Guide)

Flood Zone	Definition	Essential Infrastructure	Water compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
1	$T > 1,000$	✓	✓	✓	✓	✓
2	$100 < T_{fluv} < 1,000$ $200 < T_{tidal} < 1,000$	✓	✓	Exc. Test	✓	✓
3a	$T_{fluv} < 100$ $T_{tidal} < 200$	Exc. Test	✓	✗	Exc. Test	✓
3b (Functional floodplain)	$T_{fluv} < 20$	Exc. Test	✓	✗	✗	✗

As the site is within a Flood Zone 1 and more vulnerable, the proposed development passes the sequential test and does not require exception test.

2.6 Climate Change Allowances for Peak Rainfall Intensity

The Environment Agency and NPPF require a consideration of the impacts of climate change in Flood Risk Assessments (FRA). In May 2022, the Environment Agency updated the climate change allowances required in Flood Risk Assessments (Environment Agency, 2022); this advice updates previous climate change allowances to support the NPPF (DCLG, 2012). The rainfall guidance recommends a progressive increase, reaching 45% for the 'Upper End' allowance by 2070 in this area. This allowance would be recommended for this proposed development, which is classified as 'More Vulnerable' and has been taken to have a 100-year design life. The 45% climate change allowance is based on the 90th percentile, meaning that there is a 90% chance that rainfall will not increase by more than the 45% increment. Please see Figure 8 below.

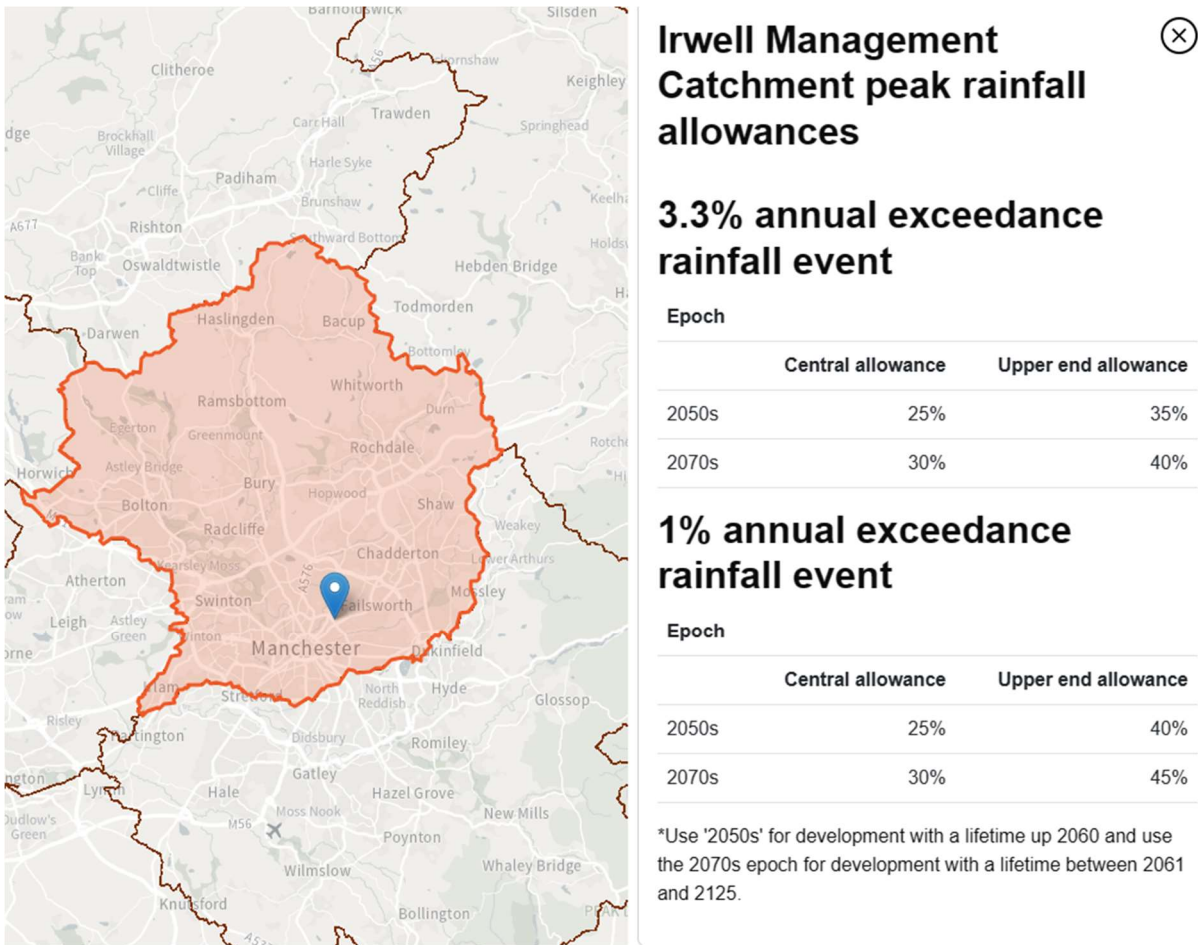


Figure 8: Peak Rainfall Allowances for Climate Change

3. FLOOD HAZARD FOR EXISTING SITE

3.1 Source of Flood Risk

Flood sources and their possibilities described below. Please note, due to the time constraints, no consultation with the statutory bodies has been undertaken. It is recommended that consultation is undertaken with them before planning.

3.1.1 Flood Risk from Fluvial Sources

The proposed development is situated within a Flood Zone 1 (area of low flood risk); therefore, it is at low risk of flooding. Please see figure 7 for the flood risk map indicating the low risk of flooding on the site.

3.1.2 Surface Water

The EA surface flood extents and flood depths (Figure 9: 1% AEP Surface Water Depth (Source: EA Open Dataset)) have been obtained from the EA open dataset. The majority of the development site is in the very low risk zone (i.e., less than 0.1% AEP). The northern and western boundary of site are at medium risk, area at risk of flooding between the 1% and the 3.3% AEP with flood depths of 0.15m ~ 0.9m (Figure 9: 1% AEP Surface Water Depth (Source: EA Open Dataset)).

Surface flooding risk is Very low at the site.

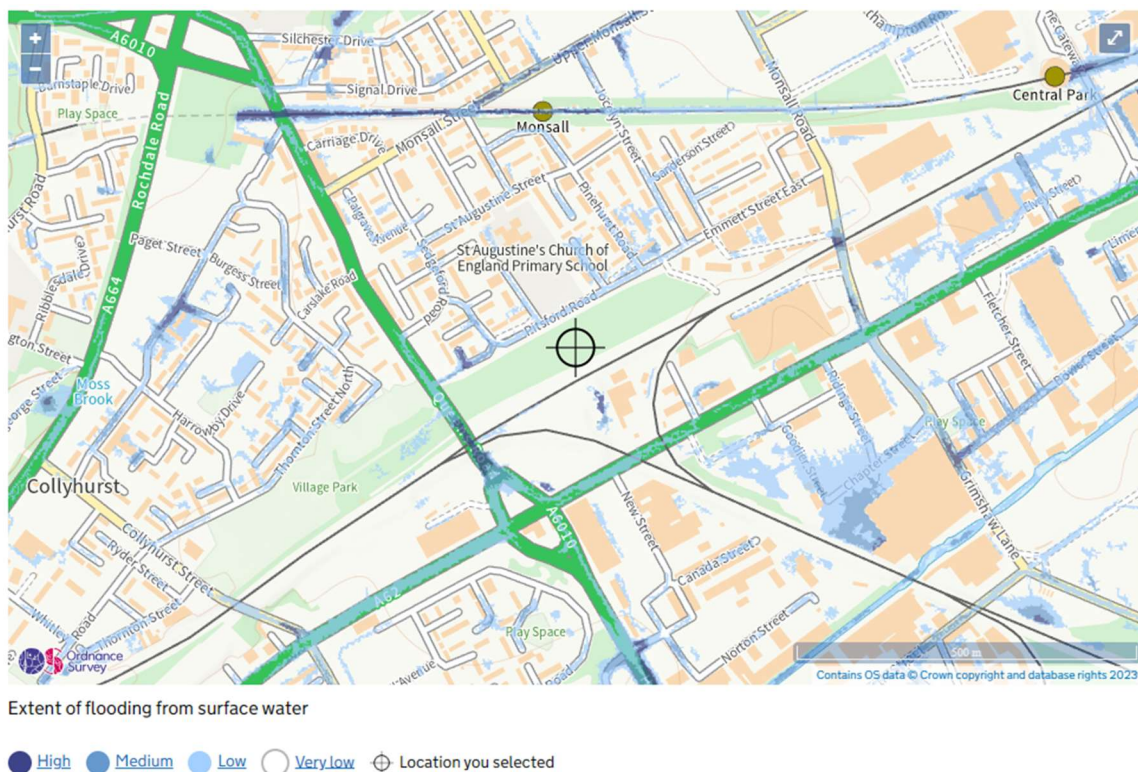
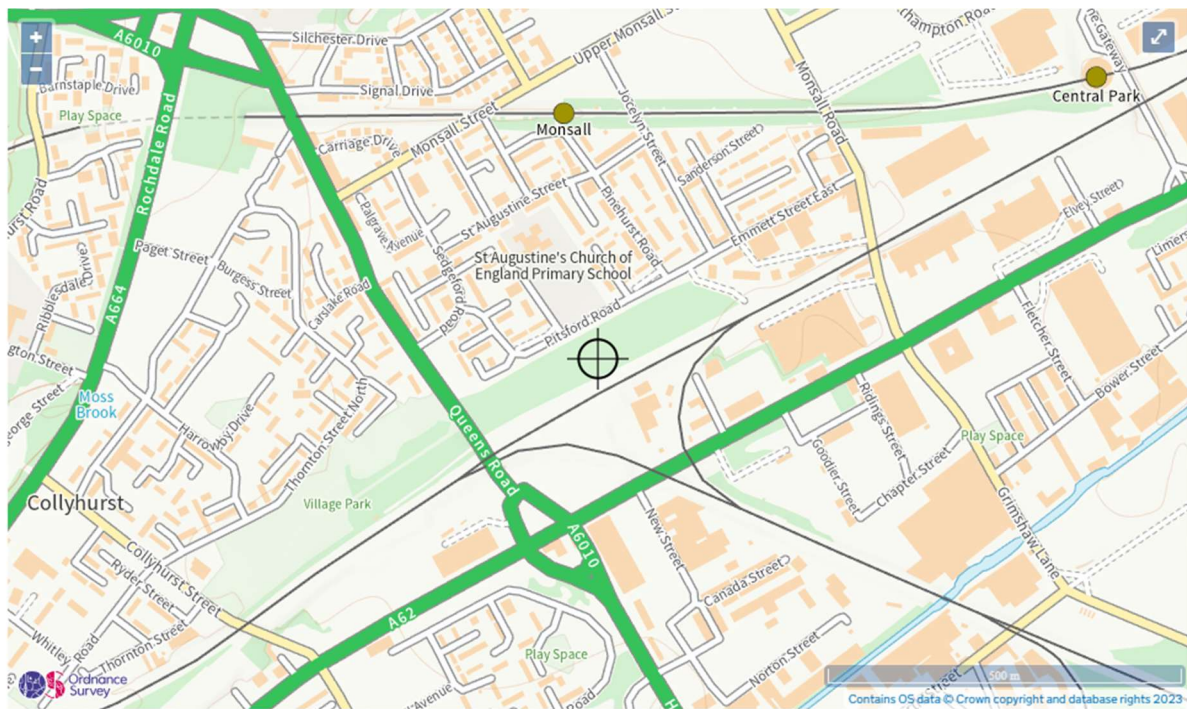


Figure 9: 1% AEP Surface Water Depth (Source: EA Open Dataset)

3.1.3 Flood Risk from Reservoir /Canals / Other Artificial Sources

The EA Extent of Flooding from Reservoirs map (Figure 10:Extent of Flooding from Reservoirs (Source; EA Flood Warning Information Service)), shows that the site is not within potential risk of flooding in the event of a breach from large reservoirs. Therefore, the risk of flooding from reservoirs is believed to be low.

There is no flood risk from canals or other artificial sources as there are no canals or artificial sources within the vicinity of the site.



Maximum extent of flooding from reservoirs:

● when river levels are normal ● when there is also flooding from rivers ⊕ Location you selected

Figure 10:Extent of Flooding from Reservoirs (Source; EA Flood Warning Information Service)

3.1.4 Flood Risk from Groundwater

On 2nd and 3rd of November 2022, EP3 carried out groundwater testing at the site. Please see an extract of the geo-environmental report's findings below:

4.6.1. GROUNDWATER

Five of the ten monitoring wells have been recorded as dry during the preliminary stages of the ground gas / water monitoring. The wells that have been noted to be dry are WS101, WS105, WS106, WS107 and WS110.

Within remaining monitoring wells, groundwater levels were observed to rise slightly over the monitoring period, however, due to the predominantly low permeability cohesive drift stratum, it is likely that water levels are representative of surface water collecting within the standpipes and not a true representation of groundwater.

Figure 11: EP3 Geoenvironmental Report Extract

Therefore, it is believed the risk of groundwater flooding is low for this site. However, as the site has been artificially raised and levelled to facilitate the construction of historical railway sidings by up to 5m higher, if the finished site levels are lowered, it is recommended further groundwater testing is carried out to test the underlying ground.

3.1.5 Flood Risk from Sewers

The proposed site has no sewers crossing it, therefore, the existing flood risk from the sewers is believed to be low.

4. ASSESSMENT OF FLOOD RISK FOR PROPOSED DEVELOPMENT

4.1 Development Proposals

It is proposed to create a residential development as shown on the indicative masterplan Figure 12. The development will be of 88 houses. Each plot will have a private driveway constructed from impermeable materials, with shared access roads.

The area of the site is 2.87ha according to the client drawing. The nett area is 2.18ha.



Figure 12: Proposed Site (Source: Client)

4.2 Fluvial Flood Management

The site is within a Flood Zone 1. There is no known history of flooding on the development.

The risk of flooding from surface water flooding is low.

4.3 Groundwater Flooding

According to *EP3's* Geo-environmental report, the risk of groundwater flooding to the site is low.

However, as the site was artificially raised by up to 5m to accommodate the railway, if the final ground levels are lowered, groundwater testing should be undertaken again.

Therefore, the risk of groundwater flooding is currently low.

4.4 Infrastructure Flooding

There is no infrastructure in the area, therefore, it is believed that there is a low risk of infrastructure flooding.

5. DRAINAGE STRATEGY

5.1 Existing Drainage Arrangements

5.1.1 Surface Water

The existing site is a greenfield site and is believed to drain to *Pitsford Road* in the North via Manhole 1. This was visually confirmed on site; however, a CCTV survey should be undertaken to confirm this.

It is also recommended that when the CCTV survey is undertaken, the sewer on *Pitsford Road* is confirmed to be a combined sewer.

5.2 Infiltration Rates

It is considered that infiltration is not feasible as the ground contaminated, with clay ground beneath that. Therefore, it is not recommended that infiltration is used.

5.3 Run-off

5.4 Surface Water Drainage Strategy

5.4.1 Hierarchy of Discharge

Surface water should drain in accordance with the following hierarchy of discharge, which is shown below:

1. Infiltration (into the ground);
2. To a Watercourse (a River, brook, ditch etc);
3. A public sewer or surface water pipe;
4. A highway drain; and
5. A combined sewer.

As detailed in Section 2.3 and 4.2, infiltration is not feasible at this site.

Townsend Water Engineering undertook a site visit on 8th November 2023, during this site visit no evidence of a watercourse was found within the vicinity of the site, therefore, we cannot drain to a watercourse.

There is a *United Utilities* sewer in *Trimley Avenue*. The site will drain to the *United Utilities (UU)* sewer in the road. The discharge will be 15l/s. *UU* have agreed that it is acceptable to drain to the *Trimley Avenue* sewer. Please see appendix C

Therefore, the site will drain to the *UU* sewer in *Trimley Avenue*, and all lower discharge hierarchy options will be discounted.

5.4.2 Sizing of SUDS Features

As discussed in section 4.1 of this report, the proposed impermeable surface area of the dwellings and associated features is 2.25ha. Infiltration and open SUDS systems have been discounted due to the ground conditions. The storage will be held in oversized pipes up to and including the 1 in 100 year event plus 45% climate change.

The discharge will be restricted to 15l/s discharge rates via a Hydrobreak up to and including the 1 in 100 year event plus climate change.

Please see appendix D for the drainage strategy.

5.4.3 Maintenance Plan

Structures which manage surface water runoff require little maintenance, however a regular maintenance schedule e.g., after heavy rainfall, should be established by the site owners to reduce the risk of blockage within the drainage system and ensure the design remains in good working order. It is proposed to offer this up for adoption:

Table 4: Operation and Maintenance Requirements for pipes and Attenuation storage tanks Maintenance Options

TABLE 21.3	Operation and maintenance requirements for attenuation storage tanks		
	Maintenance schedule	Required action	Typical frequency
Regular maintenance		Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, then annually
		Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
		For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary.	Annually
		Remove sediment from pre-treatment structures and/or internal forebays	Annually, or as required
Remedial actions		Repair/rehabilitate inlets, outlet, overflows and vents	As required
Monitoring		Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually
		Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required

6. SUMMARY & CONCLUSIONS

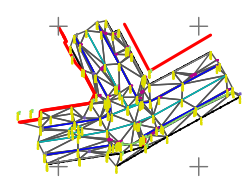
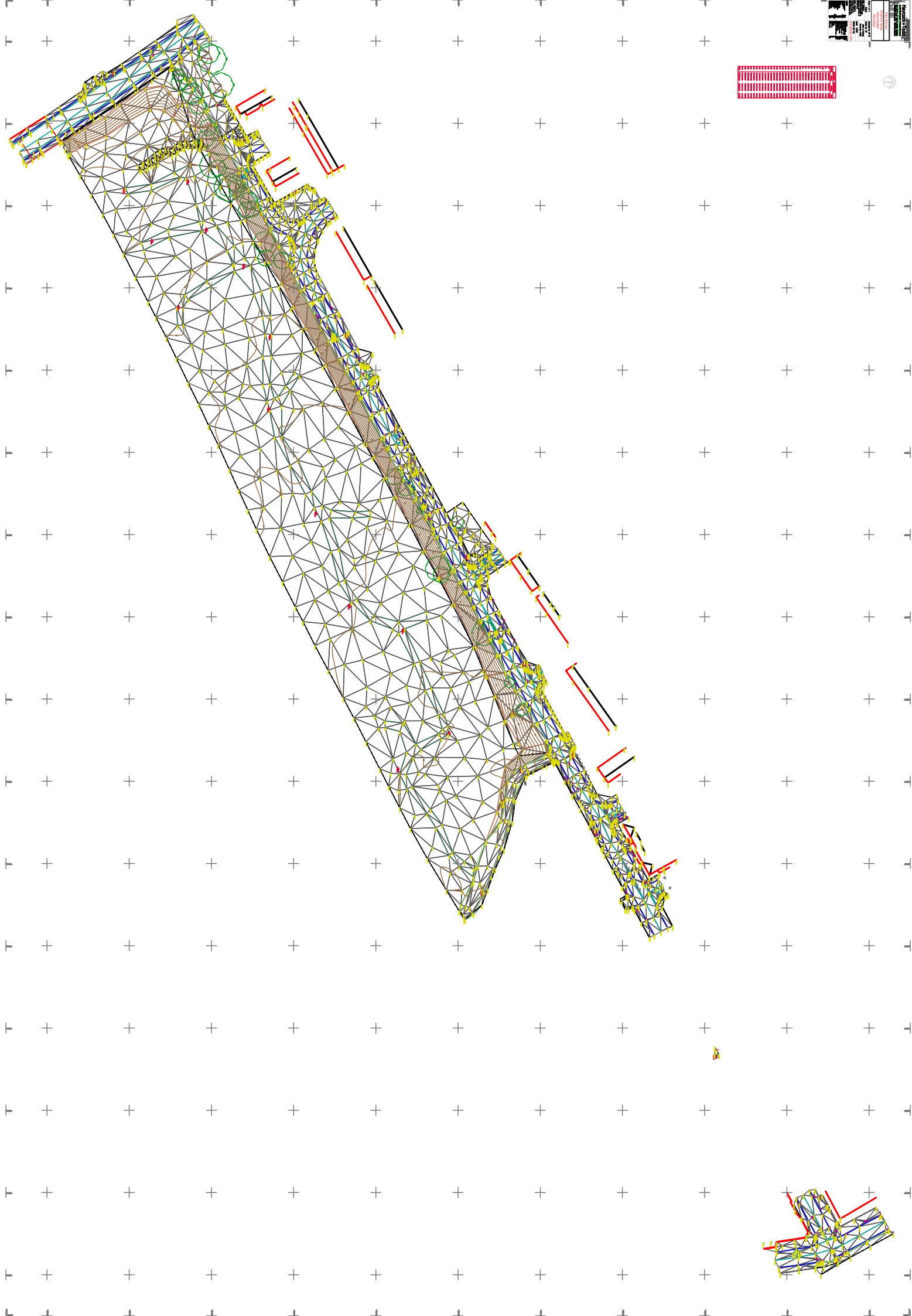
A summary of the main conclusions for the FRA is presented below:

- Development proposals are for a development for 88 houses at Pitsford Road, Manchester, M40 8QX;
- The development site is approximately 2.87ha. The developable area is 2.25ha;
- The proposed development passes the sequential test as it is in a Flood Zone 1;
- The site is within a Flood Zone 1; area at low risk of fluvial flooding;
- There is no known historical flooding on the site;
- The site is at low risk of all other sources of flooding (surface water, reservoirs, infrastructure, and sewers);
- It is believed that groundwater flooding is low, however, if levels are changed, then the site may be at risk of groundwater flooding;
- Infiltration is not feasible due to the site being contaminated, clay soils and impeded drainage at the site;
- The site will drain to the *United Utilities* sewer in *Trimley Avenue*.
- The discharge will be set at 15l/s. This has been confirmed by United Utilities.
- The proposed development will have storage up to and including the 1 in 100 year event plus climate change of 45%. The attenuation is likely to be oversized pipes.

7. REFERENCES

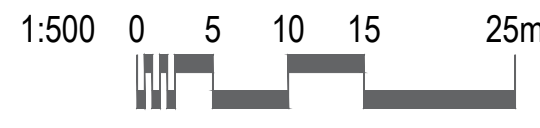
Author	Date	Title/Description
Department for Communities and Local Government	Mar 2012	Technical Guidance to the National Planning Policy Framework
Ministry of Housing, Communities and Local Government.	Dec 2023	National Planning Policy Framework

Appendix A: Topographical Survey



Appendix B: Proposed Layout

Disclaimer:
Do not scale from this drawing.
All contractors must visit the site and be responsible for taking and checking dimensions.
All construction information should be taken from figures dimensions only.
Any discrepancies between drawings, specifications and site conditions must be brought to the attention of the supervising officer.
This drawing is for planning purposes only. It is not intended to be used for construction purposes. Whilst all reasonable efforts are used to ensure drawings are accurate, Aspire Planning and Design Ltd accept no responsibility or liability for any reliance placed on, or use made of, this site by anyone for purposes other than those stated above.



PITSFORD ROAD, MANCHESTER

ACCOMMODATION SCHEDULE							
Name	Ref	Bed	Storey	Unit No's	Unit ft²	ft²	Total
Open Market Dwellings							
Cartwright	CW 4B	4	2.5	14	1248		17472
Scrivenor	SC 4B	4	2	3	1214		3642
Mason	MA 3B	3	2	19	1056		20064
Lymmer	LY 3B	3	2	21	985		20685
Tentlerer	TE 3B	3	2	1	989		989
Tailor(Manc V)	TA 3B	3	2	18	937		16866
Saller	SA 2B	2	2	12	767		9204
Total:		88 Units		88922 ft²			
Gross Site Area:		2.87 ha		7.09 ac			
Site Statistics:							
SSR		0.16 ha		0.40 ac			
POS inc SS		0.53 ha		1.31 ac			
Nett Site Area:		2.18 ha		5.39 ac			
Gross Density:		30.66 Un/ha		12.41 Un/ac			
Nett Density:		40.37 Un/ha		16.34 Un/ac			
Gross Footage:		2878.44 m²/ha		12538.49 m²/ac			
Nett Footage:		3789.51 m²/ha		16507.09 ft²/ac			
*Note - All Areas Approx. Abbreviations Ac = Acres ha = Hectares ft² = Square Feet m² = square Un = units Metres SSR = Single Sided Road POS = Public Open Space Det = Detached Apt = Apartment Int = Integral Sol = Single Dou = Double							



1:500

05.06.24

MP

1:500

Rev

Date

Description

Rev

Date

Description

Bellway

PITSFORD ROAD MANCHESTER

PLANNING LAYOUT

Drawn by

MP

Checked by

-

Date

05.06.24

Status

PRELIMINARY

Scale @ A3

1:500

Job no.

BHM282

Dwg no.

PL01

Rev.

A

Aspire Planning & Design Limited

The Sleam Mill, Sleam Mill Street, Chester, CH3 5AN

01244 886644

info@aspd.co.uk

www.aspd.co.uk

architectural

masterplanning

urban design

This drawing is the copyright of Aspire Planning & Design Ltd and shall not be altered, copied, photographed or reproduced in any way without the written authority of Aspire Planning & Design Ltd.

Appendix C: Confirmation of the discharge from United Utilities.

John Lees

From: seweradoptions@uuplc.co.uk
Sent: 08 November 2023 15:20
To: John Lees
Subject: UU REF 04891419 – WW PDE – Pitsford Road, Manchester

6710/5.1

Good Afternoon John,

Thank you for your WW PDE enquiry, please see our response below:

UU REF 04891419 – WW PDE – Pitsford Road, Manchester

Foul Water

Foul flow from this site will be allowed to drain into the public combined sewer system as shown on your sketch.

Surface Water

All surface water flow from the proposed development should drain in-line with the drainage hierarchy, as outlined in Paragraph 80, (Reference ID: 7-080-20150323), of the National Planning Practice Guidance. We also recommend you prioritise the use of multi-functional sustainable drainage systems for the management of surface water in accordance with national planning policy.

Generally, the aim should be to discharge surface run off as high up the following hierarchy of drainage options as reasonably practicable.

This is outlined as follows, in order of priority:

1. **into the ground (infiltration);**
2. **to a surface waterbody;**
3. **to a surface water sewer or highway drain;**
4. **to a combined sewer.**

For guidance, The **North West SuDS Pro-Forma** provides information on the appropriate evidence required at each stage of the hierarchy, to demonstrate how each level has been discounted.

The Lead Local Flood Authority has responsibility for all surface water drainage concerns and their input to your proposal is critical. You should also consider whether it is necessary to discuss your proposal with the Environment Agency, or Internal Drainage Board (if operating in your area).

The Local Planning Authority are the determining authority for any application for planning permission and the appropriate authority for determining cost viability of a proposed drainage scheme, such assessments are outside of the jurisdiction of United Utilities.

Should a connection to the combined sewer be required I can confirm a maximum pass forward flow rate of 15 l/s would be permitted to the combined sewer as indicated on your sketch.

Regards

Anthony

Appendix D: Lees Roxburgh Drainage Strategy

Lees Roxburgh

The Genesis Centre
Science Park South
Birchwood WA3 7BH

6710-Pitsford Road
Preliminary Critical
Simulations

Date 01/01/0001
File SWS REDESIGN 12.06.24.MDX

Designed by LR
Checked by

Innovyze

Network 2019.1

Page 0



Existing Network Details for SWS REDESIGNED 12.06.24.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	k (mm)	HYD SECT	DIA (mm)	Section Type
1.000	25.067	0.063	400.0	0.081	5.00	0.600	o 1500		Pipe/Conduit
1.001	46.811	0.117	400.0	0.114	0.00	0.600	o 1500		Pipe/Conduit
1.002	49.665	0.124	400.0	0.205	0.00	0.600	o 1500		Pipe/Conduit
1.003	20.295	0.051	400.0	0.122	0.00	0.600	o 1500		Pipe/Conduit
1.004	58.640	0.147	400.0	0.098	0.00	0.600	o 1500		Pipe/Conduit
1.005	27.999	0.070	400.0	0.122	0.00	0.600	o 1500		Pipe/Conduit
2.000	32.464	0.081	400.8	0.179	5.00	0.600	o 1500		Pipe/Conduit
1.006	51.289	0.128	400.7	0.052	0.00	0.600	o 1500		Pipe/Conduit
1.007	18.672	0.047	400.0	0.022	0.00	0.600	o 1500		Pipe/Conduit
1.008	50.960	0.784	65.0	0.184	0.00	0.600	o 225		Pipe/Conduit
1.009	15.874	0.756	21.0	0.000	0.00	0.600	o 225		Pipe/Conduit
1.010	35.499	0.089	400.0	0.156	0.00	0.600	o 1200		Pipe/Conduit
1.011	10.806	0.027	400.0	0.000	0.00	0.600	o 1200		Pipe/Conduit
1.012	16.959	0.042	400.0	0.105	0.00	0.600	o 1200		Pipe/Conduit
1.013	7.379	0.030	245.0	0.017	0.00	0.600	o 300		Pipe/Conduit
1.014	6.288	0.048	130.0	0.000	0.00	0.600	o 300		Pipe/Conduit

PN	US/MH Name	US/CL (m)	US/IL (m)	US C.Depth (m)	DS/CL (m)	DS/IL (m)	DS C.Depth (m)	Ctrl	US/MH (mm)
1.000	1	70.293	65.358	3.435	70.208	65.295	3.413		2400
1.001	2	70.208	65.295	3.413	69.743	65.178	3.065		2400
1.002	3	69.743	65.178	3.065	69.324	65.054	2.770		2400
1.003	4	69.324	65.054	2.770	68.992	65.003	2.489		2400
1.004	5	68.992	65.003	2.489	68.511	64.857	2.154		2400
1.005	6	68.511	64.857	2.154	68.225	64.787	1.938		2400
2.000	7	68.788	64.868	2.420	68.225	64.787	1.938		2400
1.006	8	68.225	64.787	1.938	67.635	64.659	1.476		2700
1.007	9	67.635	64.659	1.476	67.802	64.612	1.690		2400
1.008	10	67.802	64.612	2.965	66.277	63.828	2.224	Hydro-Brake®	2700
1.009	11	66.277	63.828	2.224	65.248	63.072	1.951		2400
1.010	12	65.248	59.199	4.849	62.898	59.110	2.588		2400
1.011	13	62.898	59.110	2.588	62.194	59.083	1.911		2400
1.012	14	62.194	59.083	1.911	61.441	59.041	1.200		2400
1.013	15	61.441	59.041	2.100	61.926	59.011	2.615	Hydro-Brake®	3000
1.014	16	61.926	59.011	2.615	61.727	58.962	2.465		1200

©1982-2019 Innovyze

Lees Roxburgh		Page 2
The Genesis Centre Science Park South Birchwood WA3 7BH	6710-Pitsford Road Preliminary Critical Simulations	
Date 01/01/0001	Designed by LR	
File SWS REDESIGN 12.06.24.MDX	Checked by	
Innovyze		Network 2019.1

Online Controls for SWS REDESIGNED 12.06.24.SWS

Hydro-Brake® Optimum Manhole: 10, DS/PN: 1.008, Volume (m³): 46.8

Unit Reference	MD-SHE-0121-1040-3000-1040
Design Head (m)	3.000
Design Flow (l/s)	10.4
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	121
Invert Level (m)	64.612
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	3.000	10.4	Kick-Flo®	1.079	6.4
Flush-Flo™	0.526	8.1	Mean Flow over Head Range	-	8.0

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	4.3	1.200	6.8	3.000	10.4	7.000	15.5
0.200	7.0	1.400	7.3	3.500	11.2	7.500	16.1
0.300	7.7	1.600	7.7	4.000	11.9	8.000	16.6
0.400	8.0	1.800	8.2	4.500	12.6	8.500	17.1
0.500	8.1	2.000	8.6	5.000	13.2	9.000	17.5
0.600	8.1	2.200	9.0	5.500	13.9	9.500	18.0
0.800	7.8	2.400	9.3	6.000	14.4		
1.000	7.0	2.600	9.7	6.500	15.0		

Hydro-Brake® Optimum Manhole: 15, DS/PN: 1.013, Volume (m³): 33.1

Unit Reference	MD-SHE-0154-1500-2400-1500
Design Head (m)	2.400
Design Flow (l/s)	15.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	154

©1982-2019 Innovyze

Lees Roxburgh		Page 3					
The Genesis Centre Science Park South Birchwood WA3 7BH	6710-Pitsford Road Preliminary Critical Simulations						
Date 01/01/0001	Designed by LR						
File SWS REDESIGN 12.06.24.MDX	Checked by						
Innovyze	Network 2019.1						
<u>Hydro-Brake® Optimum Manhole: 15, DS/PN: 1.013, Volume (m³): 33.1</u>							
Invert Level (m) 59.041							
Minimum Outlet Pipe Diameter (mm) 225							
Suggested Manhole Diameter (mm) 1500							
Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)		
Design Point (Calculated)	2.400	15.0	Kick-Flo®	1.376	11.5		
Flush-Flo™	0.673	14.6	Mean Flow over Head Range	-	12.9		
The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated							
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.5	1.200	13.2	3.000	16.7	7.000	25.0
0.200	11.7	1.400	11.6	3.500	17.9	7.500	25.9
0.300	13.1	1.600	12.4	4.000	19.1	8.000	26.7
0.400	13.9	1.800	13.1	4.500	20.2	8.500	27.5
0.500	14.4	2.000	13.7	5.000	21.3	9.000	28.2
0.600	14.6	2.200	14.4	5.500	22.3	9.500	29.0
0.800	14.5	2.400	15.0	6.000	23.2		
1.000	14.1	2.600	15.6	6.500	24.1		
©1982-2019 Innovyze							