Huddersfield Open Market
Drainage Design Strategy Report



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1.0 INTRODUCTION

1.1 General

Sanderson Watts Associates have been commissioned as Civil & Structural engineering design consultants for the proposed redevelopment of the existing Huddersfield Open Market, on behalf of Greig & Stephenson Architects and Kirklees Council.

The purpose of this document is to provide a general overview of the strategy adopted for the below ground foul & surface water drainage design.

1.2 Site Location

The existing site is located in Huddersfield city centre just east of Huddersfield Train Station and is the longstanding home of the Huddersfield historic Open Market.

The site is bounded by:

Brook Street to the North
Lord Street to the East
Byram Street to the West, and
Northumberland Street to the South

The proposed development falls within the administrative jurisdiction of Kirklees Council.

The site is referenced in Section 1.3, and a site location map is provided in **Figure 1**.

Item	Brief Description
Site name	Huddersfield Open Market
Site address and location	Brook Street, Huddersfield
Council Area	Kirklees Council
Grid Reference	OS: E 414522.4228 N 416998.1916
Lead Local Flood Authority (LLFA)	Kirklees Council

1.3 Existing Site

Historically the site was used as a mixture of residential, retail and industrial before the Grade II* listed market building was constructed between 1887 and 1889. The current site use is predominantly retail consisting of the main market and various cafes / shops in the surrounding streets.

The site is comprised of three distinct areas: -

- Market building itself
- Surrounding public realm area - for vehicular traffic and pedestrians, and,
- Existing hardstanding – comprising of existing car parking, refuse storage, and access to underground car park.



Figure 1 – *Aerial View of the Existing Site*

The existing topography is particularly steep, with longfalls approaching 5% heading north-east along both Brooke Street and Northumbria Street

The topographic survey identified approximately 4.5m of level change across the existing site, with the lowest level of approximately 80.5mAOD in the north-west corner 76mAOD in the northeast part of site.

1.4 Proposed Development

Huddersfield Open Market is a Grade II* listed market located to the north of Huddersfield town centre.

The project involves extensive refurbishment of the existing open market facilities comprising a permanent, secure, high quality structure to be sited within and around the listed 1888 Market building.

The outline scope of the proposed works include: -

- Market Building (2,500m2 approx)

Redevelopment of the internal market building and adjacent annexes, providing new food preparation areas and welfare facilities.

- Market yard area (3,191m2 approx)

Resurfacing and re-paving of existing hardstanding areas, minor relocation of kerb lines to reshape existing parking and refuse collection areas and allow for an open events area and provide storage facilities using semi-permeant shipping containers.

- Public Realm Area (2,206m2 approx)

Resurfacing of existing footway and carriageway adjacent to the Market Hall perimeter, provision of additional crossing points with tactile pavers and upstream gullies, renewal of lining and road markings.

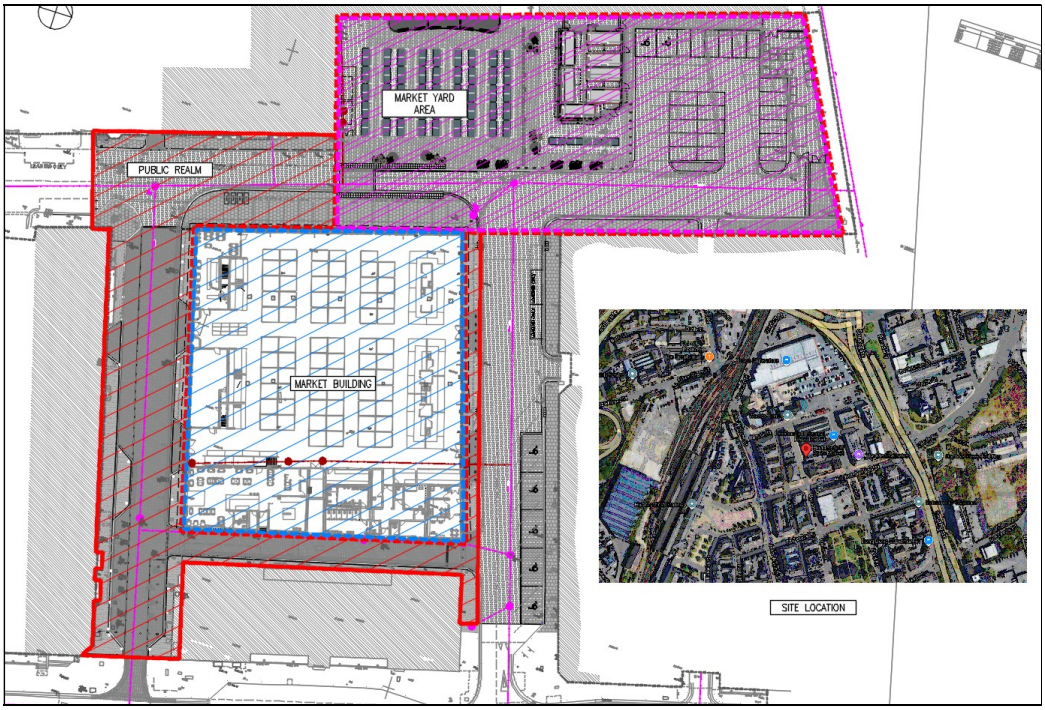


Figure 2 - *Aerial View of the Existing Site*

2.0 EXISTING DRAINAGE

2.1 Existing Surface Water Drainage Arrangements

Huddersfield Market site is currently classed as a brownfield site and comprises of several existing buildings and hard surfaced external areas.

Existing drainage and utilities drawing shows that the existing site is served by conventional pipe and gulley/channel network. A layout of surface and foul water drains, produced for Kirklees Council in December 2022, is shown in ***Figure 3***.

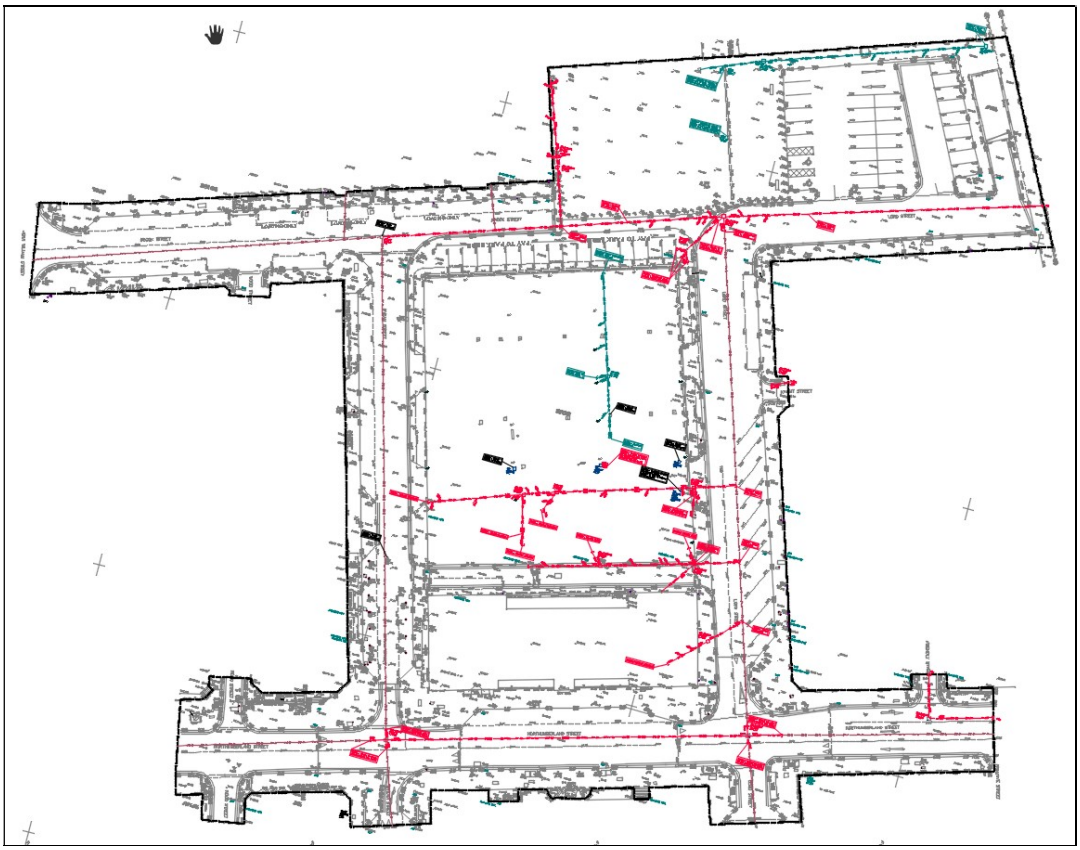


Figure 3 – *Existing Surface and Foul Water Drainage System Records*

A CCTV Drainage survey has been completed by SEP in December 2022, and exposed the layout and condition of existing surface, foul. And combined drainage. CCTV layout drawing is presented in Appendix B.

Yorkshire Water records indicate that there are existing public combined sewers currently serving the site. A large part of surface water from site is discharging into 225mm combined water branch running along Brook Street, with an additional combined sewer to the south of the market hall building, connection into the 225mm sewer running south along Lord Street.

2.2 Existing Foul Water Drainage Arrangements

Huddersfield Open Market is served by Yorkshire Waters public combined water sewers. Foul water is discharging into the existing combined 225mm public sewers discussed in the previous section and shown in Appendix B.

3.0 PROPOSED SURFACE WATER DRAINAGE MEASURES

3.1 Surface Water Drainage Hierarchy

The National Standards for Sustainable Drainage Systems (SuDS) dictate a priority list of surface water run-off destinations, stating the following:

> A 'SuDS approach' shall be adopted to address the management of surface water by the development and where it should be discharged. Runoff shall be treated as a resource and managed in a way that avoids negative impacts of the development on flood risk, the morphology and water quality of receiving waters and the associated ecology.
>
> Runoff from the development shall be discharged to the following final destinations, to the maximum extent practicable, in accordance with the below hierarchy:

- priority 1: collected for non-potable use
- priority 2: infiltrated to ground
- priority 3: discharged to an above ground surface water body
- priority 4: discharged to a surface water sewer, or another piped surface water drainage system
- priority 5: discharged to a combined sewer

Note 1: priority 1 is the highest priority and priority 5 is the lowest

3.2 Collected for Non-Potable Use

There are currently no proposals to amend the above ground surface water drainage on the roof of the existing market building and the existing structure has been deemed unsuitable to support the additional load of rainwater harvesting tanks for recycling water.

3.3 Infiltration

Wherever possible, surface water runoff should be managed at source by percolating to the ground, with only residual flows conveyed downstream for further storage or treatment, if required. However, infiltration potential is directly dependant on site soil characteristics and their winter rainfall acceptance potential, which is largely dependent on the underlying superficial deposits.

Review of underlying geology shown an underlying strata of clay, peat, sand and gravel, poorly sorted with large rocks and made ground, making infiltration into the ground unlikely to be feasible.

3.4 Existing Below Ground Conditions

The intrusive ground investigation report (Appendix D) confirms the prevailing ground conditions to comprise hard pavement cover overlying made ground deposits generally comprising sand and gravel locally interbedded / overlying reworked clay deposits extending to depths varying between 0.4mbgl > 1.5mbgl. The sequence thereafter continues in natural drift deposits comprising soft rapidly becoming firm then stiff brown boulder clay, locally overlain with medium dense brown silty fine and medium grained sands. The drift deposits extend to circa 14.9mbgl before continuing in bedrock comprising grey mudstone with occasional thin siltstone bands.

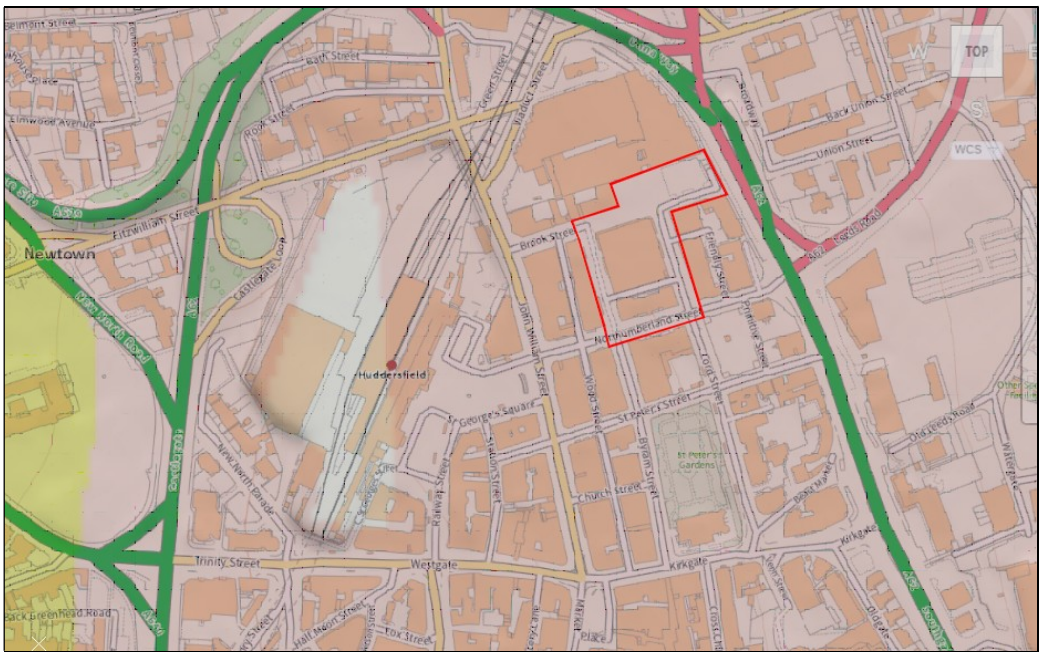


Figure 4 – *Superficial Deposits on Site (BGS)*

3.4.1 Lithological Description: Interbedded grey mudstone, siltstone and pale grey sandstone, commonly with mudstones containing marine fossils in the lower part, and more numerous and thicker coal seams in the upper part.

3.4.2 Definition of Lower Boundary: At the base of the dark grey, fissile mudstone of the Subcrenatum Marine Band with eponymous fossils, or at the base of the lowest coal of the coal-bearing sequence if this marker cannot be recognised. Typically, the formation rests conformably upon the Rossendale Formation (Millstone Grit Group).

3.4.3 Definition of Upper Boundary: At the base of the mudstone of the Vanderbeckei Marine Band with eponymous fossils. Glaciolacustrine, Mid Pleistocene deposits underneath the most of southern site extents are generally defined as Silt and clay, laminated, commonly rich in organic matter, locally with interbedded peat. Superficial deposits in the north western extents of site - Head–Clay, Silt, Sand and Gravel – are characterised as poorly sorted and poorly stratified, angular rock debris and/or clayey hillwash and soil creep. Oadby Member – Diamicton deposits in the north eastern extents of site largely comprise grey weathering brown firm-stiff clay with chalk and flint fragments.

3.4.4 Superficial Deposits: Head is poorly sorted and poorly stratified, angular rock debris and/or clayey hillwash and soil creep, mantling a hillslope and deposited by solifluction and gelifluction processes. Solifluction is the slow viscous downslope flow of waterlogged soil and other unsorted and unsaturated superficial deposits. The term gelifluction is restricted to the slow flow of fluidized superficial deposits during the thawing of seasonally frozen ground. The flow is initiated by meltwater from thawing ice lenses. Polymict deposit: comprises gravel, sand and clay depending on upslope source and distance from source. Locally with lenses of silt, clay or peat and organic material

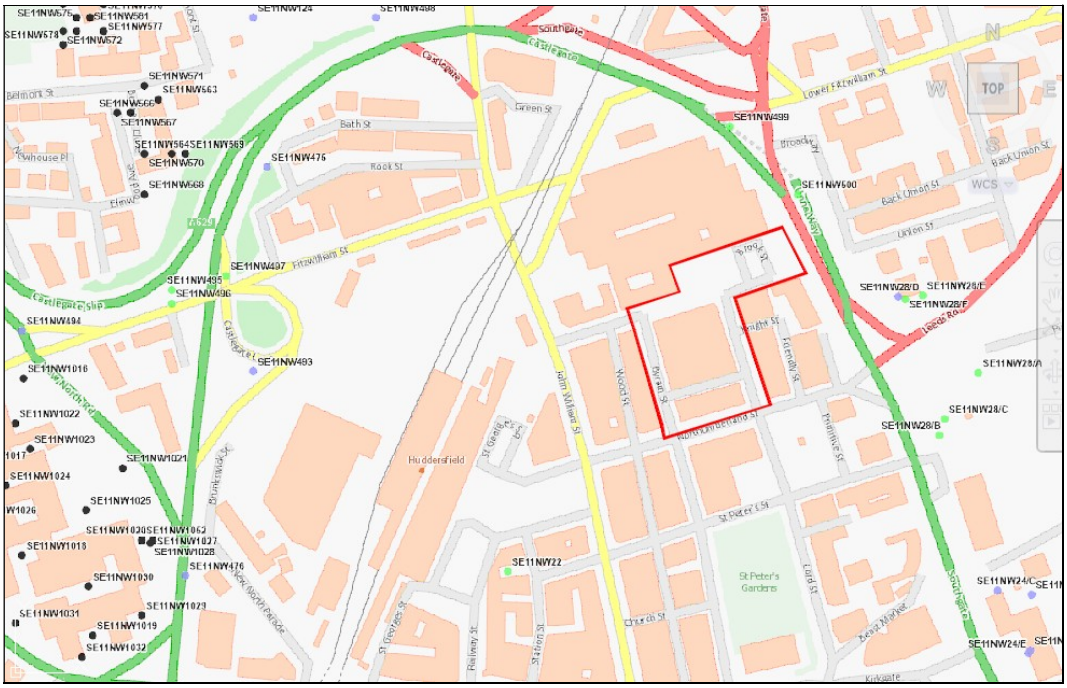


Figure 5 – *Borehole Locations (BGS)*

3.4.5 Existing Borehole Data

Borehole log data generally reveals stratigraphy consistent with that presented in BGS soil overview. Borehole SK71NW214 (Appendix C), which is the deeper of the two boreholes within Huddersfield Open Market site extents, shows the following superficial geology:

0.0m – 0.15m:	Sandstone setts
0.15m – 0.76m:	Yellow boulder clay
0.76m – 2.59m:	Brown boulder clay
2.29m – 3.81m:	Brown clay with thick shale
3.81m – 4.42m:	Black shale
4.42m – 12.5m:	Potential coal

3.5 Surface Water Body

The next alternative to infiltration is to discharge surface water runoff into a surface water body. Review of Huddersfield Open Market site and surrounding areas revealed that the site is situated in a densely built up urban environment with no open surface water bodies in close vicinity.

The nearest watercourse, the Broad Canal, is situated over 370m at the nearest point to site, and connection to it would not be feasible due to several densely built up third party sites in between.

3.6 Surface Water Sewers

Yorkshire Water sewer records indicate that there are no surface water or foul water sewers in the vicinity of the site. Existing surface and foul water discharge into Yorkshire Water combined sewers.

3.7 Combined Water Sewers

There are existing 300mm clay public combined water sewers running along both Lord Street and Bryon Street, collecting surface water from both the roof building and external hardstandings, together with the existing foul discharge from the Market Hall building.

The Market Yard area, to the north of the site, is collected by private drainage and discharges to another combined sewer, which appear to run along the verge of the adjacent A62 – Southgate.

3.8 Drainage Hierarchy Assessment

Hierarchy Option	Suitability Assessment	Reasons
Priority 1: Collection for non-potable use	x	Impractical due to nature of development and distance / elevation from surface water to greywater appliance
Priority 2: Infiltration	x	Cohesive underlying geology and densely built up site in urban environment
Priority 3: Discharge to a surface water body	x	No watercourses in close proximity to site
Priority 4: Discharge to a surface water sewer	x	No surface water sewers in the vicinity of site
Priority 5: Discharge to a combined water sewer	√	Discharge via existing surface water network – as current situation

Table 3 – *Surface Water Discharge Hierarchical Assessment Summary*

Discharge of surface water into a public combined water sewer is considered to be the only suitable option for both the surface water and foul water discharge, and is the proposed method of disposing of surface water runoff from site following refurbishment works, subject to approval from Kirklees LLFA and Yorkshire Water.

3.9 Existing and Proposed Flow Rates

The site has been previously developed and as such is a brownfield site.

3.9.1 Existing Impermeable Area

The overall site area is 8,025m^2 or 0.8 hectares, 100% of which is currently hard landscaped.

3.9.2 Proposed Impermeable Area

The proposed impermeable area remains unchanged as a result of the works.

To calculate the existing site runoff rate, The Modified Rational Method has been used, as recommended in the Wallingford Procedure. This method has been tested and shown to be accurate on urban catchments up to 150ha in areas with times of concentration up to 30 minutes.

The Modified Rational Method includes both volumetric run off coefficient (Cv) and dimensionless routing coefficient (Cr) within the rational method formula Q=2.78CiA, I is rainfall intensity, A is area in hectares and C = CvCr.

As detailed information on soil conditions are unknown, an average value of Cv is 0.75 and a recommended constant value of Cr is 1.30 have been used. As a result, C≈1, and hence as a result Q=2.78CiA is used:

Q=2.78CiA = 2.78 x 1 x 50mm/hr x 0.3ha = 44.2l/s

3.10 Proposed Surface Water Runoff Rate

Yorkshire Water have stipulated in their response to the pre-developer application (found in Appendix C) that, if it can be demonstrated that surface water discharge cannot be discharged in accordance with the surface water drainage hierarchy, then discharges to the public sewer will be the existing run-off volumes, with a 30% reduction.

Please see below for an extract of the initial response.

"If other methods of surface water disposal are not viable, curtilage surface water discharges to the public sewer will be restricted to the level of run-off - i.e. same rate of discharge - to that from the existing use of the site less a 30% reduction in the existing discharge. Any discharge of surface water from the site should discharge to similar points of connection to that of the existing use of the site."

As there are no proposed changes to the Market Hall building, and the scope of works for the public realm area has been reduced to surface dressing and repairs to the existing pavement and kerbing, retaining the existing drainage measures, inlet and discharge points, it is assumed that the existing surface water run-off will consider only that of the newly proposed changes in the market yard area.

This is subject to confirmation by Yorkshire Water and LLFA approval.

3.11 Climate Change

The National Planning Policy Framework (NPPF) requires climate change to be taken into account for all new drainage schemes when sizing required attenuation.

Updated climate change allowances were published by the Environment Agency in May 2022 to reflect the latest projections in UKCP Local (2.2km) and subsequent research 'Future-Drainage: Ensemble climate change rainfall estimates for sustainable drainage'.

New climate change guidance stipulates that when determining what allowance to apply under the new climate change allowances, two variables must be considered:

- Location and size of the drainage catchment
- Lifetime of the development

For small urbanised drainage catchments peak rainfall allowances should be applied. 100-year lifetime should now be applied for all other development types, unless the development has a time limited planning condition.

It is also anticipated that Huddersfield Open Market site will be operational after 2070 epoch, therefore the upper peak rainfall allowance of **40%** will be applied when modelling 1 in 100 year return period storm for attenuation calculation and exceedance event flood flow modelling, subject to confirmation by Yorkshire Water.

3.12 Urban Creep Allowance

It is considered that sewer capacity issues are compounded by the effects of urban creep, where permitted development add runoff to the drainage system that has not been originally allowed for. As a result, LLFAs may require a 10% urban creep allowance to be incorporated into sustainable drainage design, unless evidenced by the developer that urban creep is not applicable.

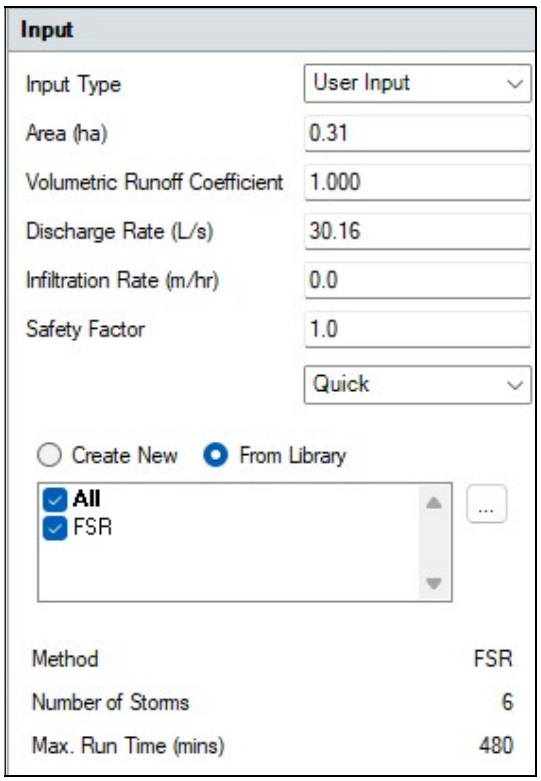
The consideration of urban creep should be assessed on a site by site basis but is limited to residential development only. Therefore, it can be confirmed that urban creep allowance should not be added to Huddersfield Open Market drainage calculations due to the fact that this is a commercial development with current and future development phases already taken into account when designing a sustainable drainage system, and no new impermeable areas are likely to be created that are not already incorporated into the design.

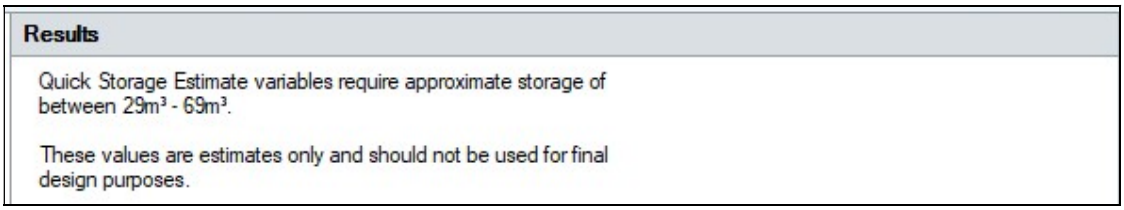
3.13 Attenuation Requirement

Section 3.10 details the flow rate restrictions imposed by Yorkshire Water – 30% betterment over existing brownfield run-off rates, together with the assumption (to be confirmed) that the area in question is that of the market yard area only.

Using the Modified Rational Method, detailed in section 3.9.2, we have calculated the existing surface water run-off rate from the market yard area to be 44.2l/s. Applying the 30% reduction in surface water discharge rate, stipulated by Yorkshire Water, gives a reduced flow rate of 0.31l/s.

The storage calculation, shown below, required a volume of between 29 and 69m^2 of attenuated storage (subject to detailed calculation), and is likely to be achieved by utilising oversized pipes in the Market Yard area, to store the excess volume before being released at a restricted rate by the proposed flow control device.





To be confirmed – dependant on response from Yorkshire Water Pre-development application.

3.14 Conventional Drainage System Design Principles

The surface water for the development site will be designed using the hydraulic design standard tables as produced by HR Wallingford in conjunction with rainfall intensity charts to give accurate calculations for Melton Mowbray area.

All drainage measures are bespoke and designed specifically for the site requirements.

All pipes in the surface water system will be sized and graded to ensure that the minimum self-cleansing velocities of 1.00m/s are achieved at full flow throughout the network.

The foul and surface water drainage systems shall be designed in accordance with Ofwat's Design and Construction Guidance Appendix C and generally in line with the following;

- BS 65:1991 Vitrified Clay pipes and fittings
- BS 5911 Pre-cast concrete pipe fittings and ancillary products
- BS 8000 Pt14 Code of Practice for below ground drainage
- BS 8010 Code of Practice for pipelines
- BS EN 295 Vitrified clay pipes and fittings and pipes for drains and sewers

- BS EN 752 Drains & Sewer Systems outside of buildings
- Building Regulations Part H

All underground pipes are to be PVC-U (to strength SN4) to facilitate ease and cost of installation.

All pipes in areas subject to vehicular traffic to have a minimum of 1200 cover. Where this cover depth cannot be achieved, concrete surround will be provided.

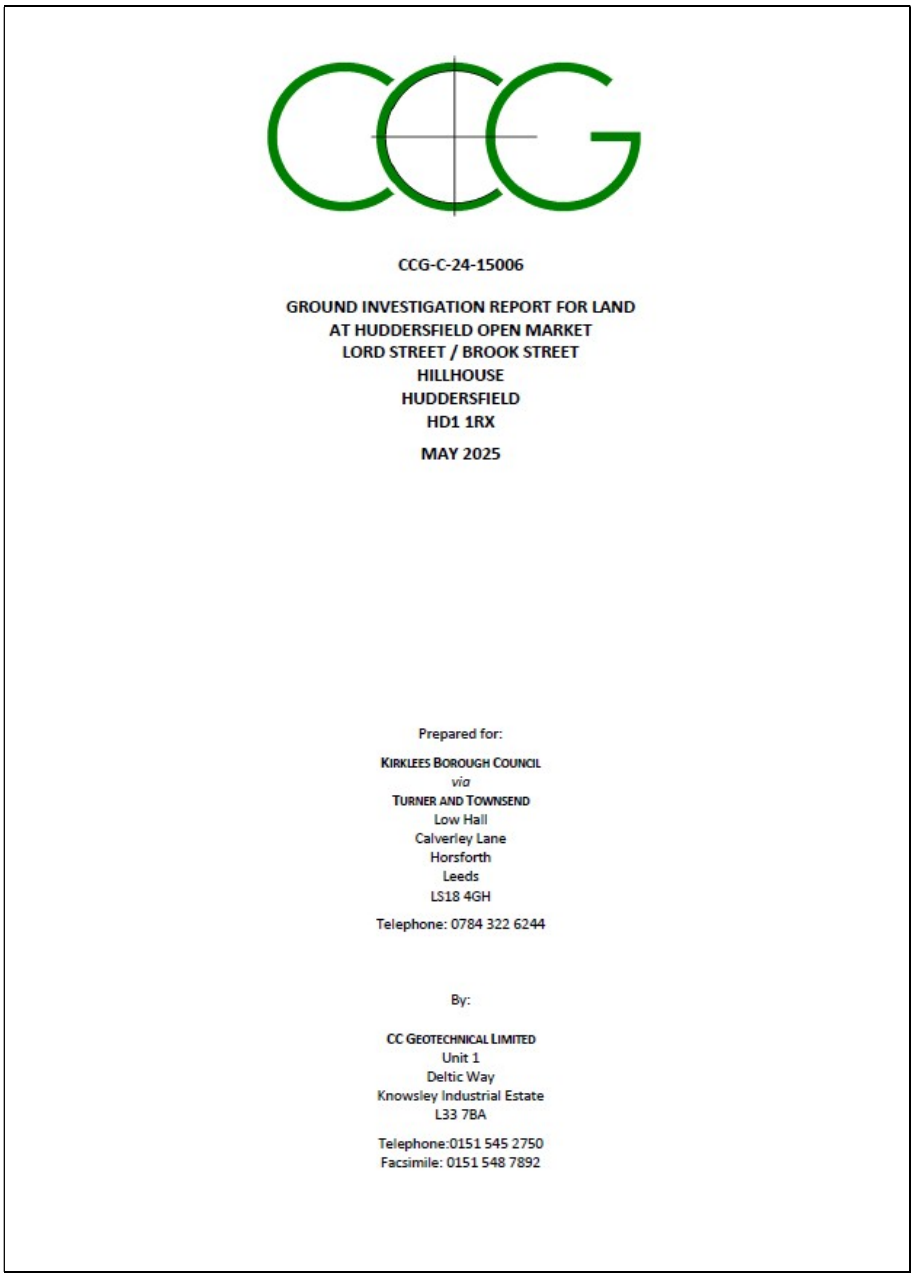
The Surface Water system has been designed under full pipe conditions to accept a 1 in 1 year design storm (i.e., without surcharging above pipe soffit).

3.15 Hydraulic Modelling

The NPPF suggests that drainage system should be designed to convey 1 in 30 year design storm without flooding (surcharge is allowed). For events with a return-period in excess of 30 years, surface flooding of open spaces such as landscaped areas or car parks is acceptable for short periods, but the layout and landscaping of the site should aim to route water away from any vulnerable property, and avoid creating hazards to access and egress routes. No flooding of property should occur as a result of a one in 100 year storm event (including an appropriate allowance for climate change).

Hydraulic will be undertaken once confirmation of permitted flow rates and discharge points has been received from Yorkshire Water. Calculation will be shown in APPENDIX D. BOREHOLE LOG DATA

For detailed information on the existing below ground strata, compiled from boreholes positioned across the site, please refer to the following document:



CCG-C-24-15006

GROUND INVESTIGATION REPORT FOR LAND
AT HUDDERSFIELD OPEN MARKET
LORD STREET / BROOK STREET
HILLHOUSE
HUDDERSFIELD
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MAY 2025

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APPENDIX E. HYDRAULIC MODELLING RESULTS

3.16 Pollution Control Measures

As the surface water from the finished site will consist mainly of rooftop drainage and public realm surface water, the requirement for pollution control measures is only envisaged for the surface water drainage runoff from the car parking areas.

All highway gullies will be equipped with traps for capture and removal of silt and other debris.

Foul discharge from the Market Hall will pass through a grease separator, prior to discharge into the combined sewer network.

3.17 Maintenance and Servicing

Drainage system and its components need to be inspected and maintained regularly to ensure that they operate correctly and efficiently. When not properly maintained, there is a risk that the components become overloaded during periods of prolonged heavy rainfall potentially resulting in localised flooding within the development.

Drainage within Huddersfield Open Market site boundary will remain private and be maintained by the owner. Recommendations for the maintenance of the SuDS components are detailed in this section.

A plan of routine inspection maintenance should be adopted and adhered to, to prevent inefficient operation or failure. The framework for future maintenance procedures will be designed for all components of the drainage system:

- Gravity fed rainwater pipe systems
- Trapped gullies and ACO channel drains
- Hard Surfaced Pavement areas

Framework Drainage System Maintenance Schedule has been included in **Appendix H**, and is also discussed below.

Roof water from the building collected into a **gravity fed roof drainage system** will require periodic inspection and de-silting of gutters and downspouts.

Surface water runoff from external paved areas is discharged into **trapped gullies and ACO channel drains**. Gullies and channels require periodic inspection and de-silting as required.

The pavement areas consist of existing public highways, hardstanding areas for use as car parks and refuse areas, and footways paved with Yorkstone pavers. These areas require periodic sweeping to remove silt and contaminants directly from the paved surfaces to avoid it becoming mobilised during rainfall events and transported into the drainage system via gullies and linear drains.

3.18 Flood Risk

3.18.1 Flood Policy

The National Planning Policy Framework (NPPF) suggests inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere.

Areas of low probability of flooding is land within Flood Zone 1 (FZ1). Areas at risk of flooding means land within Flood Zones 2 (FZ2) and 3 (FZ3); or land within Flood Zone 1 (FZ1) which has critical drainage problems and which has been notified to the local planning authority by the Environment Agency.

Flood risk means risk from all sources of flooding - including from rivers and the sea, directly from rainfall on the ground surface and rising groundwater, overwhelmed sewers and drainage systems, and from reservoirs, canals and lakes and other artificial sources.

3.18.2 Flood Zone

The Environment Agency (EA) have produced a Flood Map for this area, which indicate the whole of Huddersfield Open Market site falls within **Flood Zone 1 (FZ1)**, meaning it is an area with **very low (< 1 in 1,000 (<0.1%)) annual probability of flooding from rivers or the sea.**



Figure 6 – Flood Zone Map (EA)

The risk of flooding from rivers/surface water/reservoir maps have been produced by the Environment Agency on behalf of government, using information and input from Lead Local Flood Authorities. It has been developed producing maps that take local topography, weather patterns and historical data into account.

3.18.3 Flood Risk and Site Vulnerability

As the development is to be used for commercial purposes, in accordance with NPPF it is deemed to be 'Less Vulnerable'.

Flood Zone	Flood Risk Vulnerability Classification				
	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
1	✓	✓	✓	✓	✓
2	✓	Exception Test Required	✓	✓	✓
3a	Exception Test Required	x	Exception Test Required	✓	✓
3b	Exception Test Required	x	x	x	✓

Table 6 – *Flood Risk Vulnerability and Flood Zone Compatibility (NPPF Technical Guidance)*

As it lies in Flood Zone 1, it is considered to be appropriate and the sequential test is considered to be passed.

3.18.4 Flood Mitigation Measures

The site has no history of flooding issues; therefore, it is assumed that flood mitigation measures are not required. This has also been confirmed by the findings of the Flood Risk Assessment undertaken for the site as a whole.

4.0 FOUL DRAINAGE

4.1.1 Foul Loadings

The proposed development, within the market building itself, comprises of several new hot food stands, a bar/restaurant area, welfare facilities such as toilets, urinals, showers, wash basins, and cleaners sinks.

The calculated foul discharge rates are shown in the table below

Unit	No	DU	∑Du	√∑Du
WC (9 litre cistern)	17	2.5	42.5	6.5
Wash Basin	9	0.5	4.5	2.1
Kitchen/Cleaners sink	41	0.8	32.8	5.7
Gully	31	2.5	77.5	8.8
Shower (No Plug)	0	0.8	0	0.0
Urinal	4	0.5	2	1.4
	Total, ∑DU		**159.3**	24.6
	√∑DU		**12.6**	

Drainage discharge rates	
K=Frequency factor	0.7
∑Du=sum of discharge units	159.3
Qww (Flowrate) =	**8.83**

Peak Flow (l/s)	Pipe Size	Min Gradient	Notes
<1	75	1:40	
	100	1:40	
>1	75 (2.8 l max)	1:80	
	100 (6.3 l max)	1:80	* Min 1 WC

Table 7 - *Proposed Foul Loadings*

These discharge rates for both foul and surface water will be subject to agreement in principle with Yorkshire Water and Kirklees Council LLFA. The contractor shall also be required to submit a Section 106 application at the appropriate time for all new connections to Yorkshire Water assets.

The foul water system will be designed in accordance with BS EN 752-4. All pipes in the foul water system will need to be sized and graded to ensure that the minimum self-cleansing velocities of 0.75m/s are achieved at 1/3 flow throughout the network. For proposed foul water layout, refer to drawing 1036-SWA-00-XX-DR-D-501.

4.1.2 Pollution Control

The proposed foul drainage within the Market Hall building will be split to for two separate networks; one containing foul discharge from the hot food facilities, which discharges via a hydrocarbon interceptor (grease separator), and a second taking discharge from the toilets and other similar facilities, which will bypass the hydrocarbon separator and discharge directly into the existing combined sewer, adjacent to the site.

5.0 SUMMARY

For drainage purposes Huddersfield Open Market site is classed as previously developed brownfield site with existing drainage systems.

In order to satisfy the requirements of surface water drainage hierarchy in line with NPPF, options of recycling surface water runoff for non-potable use, discharging surface water runoff to ground (infiltration), discharge to a surface water body, surface water sewer and combined water sewer have been assessed.

It has been ascertained that due to cohesive underlying geology and densely built up site in urban environment, with no open surface water body in close vicinity, and no surface water drainage; the preferred drainage hierarchy option is to discharge into public combined sewers on Lord Street and Byron Street – as existing, and subject to approval from Yorkshire Water.

Proposed impermeable area of 0.31ha is less than the existing impermeable area. Modified Rational Method has been used to calculate existing surface water runoff rate of 44.2/s for the Market Yard area.

Surface water drainage system will be designed not to flood the site and for a 1 in 30 year design storm.

Surface and foul water sewers within Huddersfield Open Market site will be private and maintained by Kirklees Council.

The site sits entirely in Flood Zone 1 – low probability of flooding, and, as the overall site area is less than 1Ha, a flood risk assessment (FRA) is not required.

APPENDIX A. PROPOSED DRAINAGE LAYOUTS

This Drainage Strategy should be read in conjunction with the following drawings:

1036-SWA-00-XX-DR-D-500-P05 Proposed Surface Water Drainage Layout
1036-SWA-00-XX-DR-D-501-P09 Proposed Foul Water Drainage Strategy

APPENDIX B. DRAINAGE CCTV SURVEY

APPENDIX C. YORKSHIRE WATER DEVELOPER ENQUIRY RESPONSE

Huddersfield Open Market, Brook St, Huddersfield, HD1 1RY - Pre-Planning Sewerage Enquiry X010968 - (COMMERCIAL)

Thank you for your recent enquiry and remittance. Our official VAT receipt has been sent to you under separate cover. Please find enclosed a complimentary extract from the Statutory Sewer Map which indicates the recorded position of the public sewers. Please note that as of October 2011 and the private to public sewer transfer, there are many uncharted Yorkshire Water assets currently not shown on our records.

The following comments reflect our view, with regard to the public sewer network only, based on a 'desk top' study of the site and are valid for a maximum period of twelve months:

Foul Water

Development of the site should take place with separate systems for foul and surface water drainage. The separate system should preferably extend to the public sewer.

Foul water domestic waste can discharge to the 300 mm diameter public combined sewer recorded in Brook Street, crossing the site.

This permission is not an acceptance in respect to any planning conditions imposed under the Grant of Planning Permission.

Surface Water

The developer's attention is drawn to Requirement H3 of the Building Regulations 2010. This establishes a preferred hierarchy for surface water disposal. Consideration should firstly be given to discharge to soakaway, infiltration system and watercourse in that priority order.

Sustainable Drainage Systems (SuDS), for example the use of soakaways and/or permeable hardstanding etc, may be a suitable solution for surface water disposal appropriate in this situation. You are advised to seek comments on the suitability of SuDS in this instance from the appropriate authorities.

If other methods of surface water disposal are not viable, curtilage surface water discharges to the public sewer will be restricted to the level of run-off - i.e. same rate of discharge - to that from the existing use of the site less a 30% reduction in the existing discharge. Any discharge of surface water from the site should discharge to similar points of connection to that of the existing use of the site. You will need to demonstrate positive drainage, based on a 1 in 1 year storm, to the public sewer to Yorkshire Water by means of investigation and calculation carried out at your expense.

To do this, Yorkshire Water requires to see existing drainage layouts with pipe sizes, gradients, gullies, downpipes and connection points, measured impermeable areas of the present use of the site, along with the calculations that show the existing discharge rate from the site to the public sewer.

Other Observations

Any new connection to an existing public sewer will require the prior approval of Yorkshire Water. You may apply online or obtain an application form from our website (www.yorkshirewater.com/developers/sewerage/sewerage-connections/) or by telephoning 0345 120 84 82.

Under the provisions of section 111 of the Water Industry Act 1991 it is unlawful to pass into any public sewer (or into any drain or private sewer communicating with the public sewer network) any items likely to cause damage to the public sewer network or interfere with the free flow of its contents or affect the treatment and disposal of its contents. Amongst other things this includes fat, oil, nappies, bandages,

syringes, medicines, sanitary towels and incontinence pants. Contravention of the provisions of section 111 is a criminal offence.

An off-site foul and surface water sewer may be required which may be provided by the developer and considered for Code for Adoption under Section 104 of the Water Industry Act 1991. Please telephone 0345 120 84 82 for advice on sewer adoptions. Alternatively, the developer may in certain circumstances be able to requisition off-site sewers under Section 98 of the Water Industry Act 1991 for which an application must be made in writing. For further information, please telephone 0345 120 84 82.

Prospectively adoptable sewers and pumping stations must be designed and constructed in accordance with the Code for Adoption, pursuant to an agreement under Section 104 of the Water Industry Act 1991. We are happy to offer pre-development technical advice on any prospective sites that you would like to put forward for adoption, prior to submission of your adoption application.

An application to enter into a Section 104 agreement must be made in writing prior to any works commencing on site. Please contact our Sewer Adoption, Diversion and Requisition (telephone 0345 120 84 82) or email technical.sewerage@yorkshirewater.co.uk or visit - https://www.yorkshirewater.com/developers/sewerage/sewer-adoptions/ for further information.

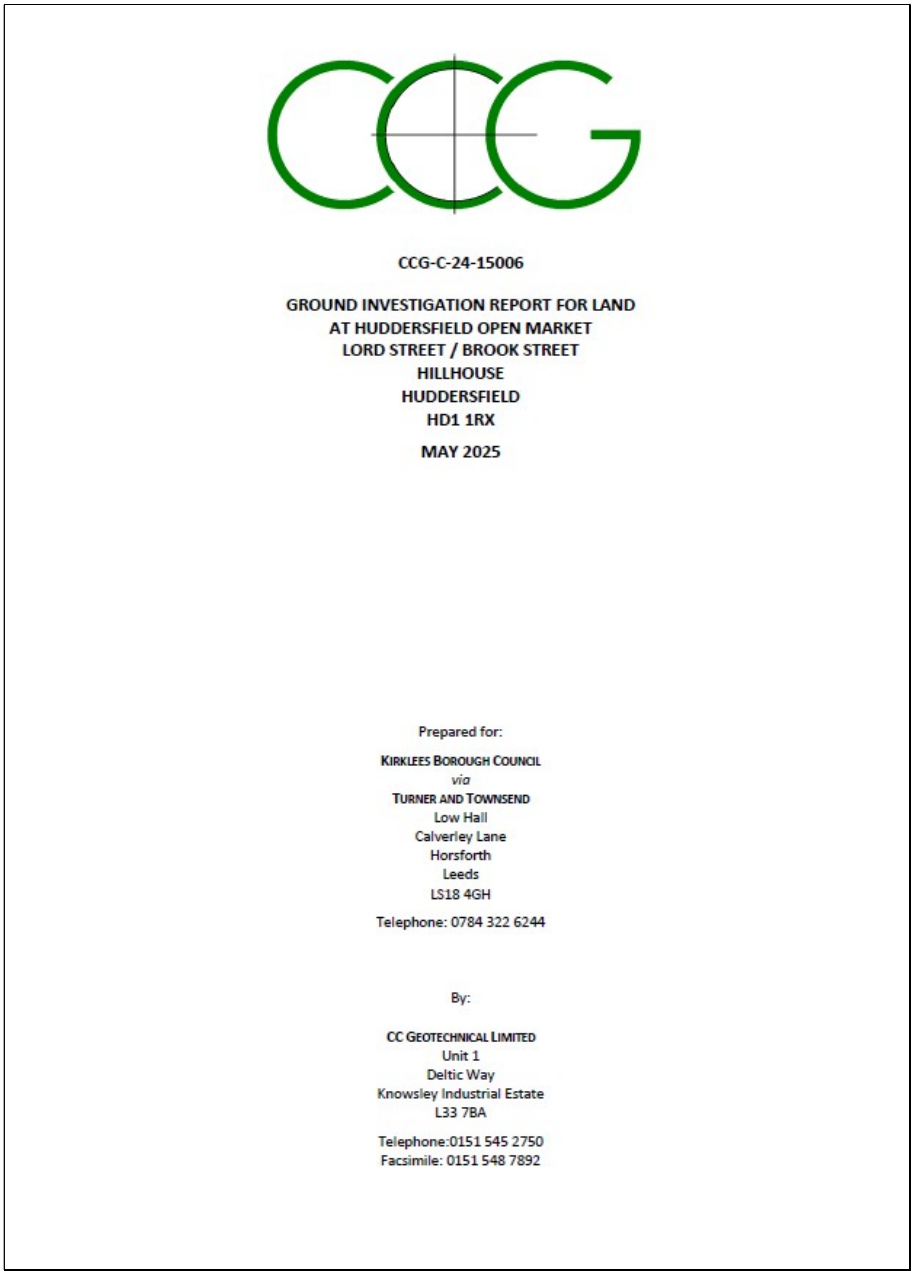
All the above comments are based upon the information and records available at the present time and are valid for a period of 12 months. The information contained in this letter together with that shown on any extract from the Statutory Sewer Map that may be enclosed is believed to be correct and is supplied in good faith. Please note that capacity in the public sewer network is not reserved for specific future development. It is used up on a 'first come, first served' basis. You should visit the site and establish the line and level of any public sewers affecting your proposals before the commencement of any design work.

Yours sincerely

George Mullaney
Town Planning Technician

APPENDIX D. BOREHOLE LOG DATA

For detailed information on the existing below ground strata, compiled from boreholes positioned across the site, please refer to the following document:



CCG-C-24-15006

GROUND INVESTIGATION REPORT FOR LAND
AT HUDDERSFIELD OPEN MARKET
LORD STREET / BROOK STREET
HILLHOUSE
HUDDERSFIELD
HD1 1RX

MAY 2025

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APPENDIX E. HYDRAULIC MODELLING RESULTS

To follow.