



BURY INTERCHANGE

PHASE 1 – SOUTHERN ACCESS FOOTBRIDGE & METROLINK PLATFORM DRAINAGE CONDITION DISCHARGE REPORT

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1. INTRODUCTION

1.1 Purpose of this Report

This Drainage Condition Discharge Report has been prepared on behalf of Willmott Dixon and Transport for Greater Manchester in relation to Phase 1 of the redevelopment of Bury Interchange.

The Phase 1 works comprise the construction of the Southern Access Footbridge and associated improvements to the existing Metrolink platforms, together with the accessible route through Pyramid Park and associated engineering, landscaping and drainage works.

A Flood Risk Assessment and Drainage Strategy were previously prepared in support of the planning application. The Drainage Strategy, reference 16012-REN-BRY-XXX-T-CE-100002 Rev P02, dated March 2025, established the principles of the proposed surface water and foul drainage arrangements.

This report has been prepared specifically to provide the detailed drainage information required to discharge Condition 6 of planning permission 71834.

The drainage design has developed since submission of the planning application as detailed design, site investigation and coordination with the proposed structural works have progressed. This report therefore supersedes the drainage proposals contained within the March 2025 Drainage Strategy where specifically identified.

In particular:

- the existing Metrolink drainage network is to remain in use, subject only to local diversion works;
- the existing Union Square drainage network is to remain in use, with the existing attenuation tank locally reconfigured to coordinate with the proposed bridge structure;
- the existing attenuation tank adjacent to 3KP/ Premier Inn will not receive runoff from any additional development catchment;
- a new dedicated drainage system is proposed for the additional Union Square catchment; and;
- a separate new drainage system is proposed for the Pyramid Park works.

1.2 Condition 6

Condition 6 states:

Prior to the commencement of development (except demolition and site clearance), details of a sustainable surface water drainage scheme and a foul water drainage scheme shall be submitted to and approved in writing by the Local Planning Authority. The drainage schemes must include:

- (i) An investigation of the hierarchy of drainage options in the National Planning Practice Guidance (or any subsequent amendment thereof). This investigation shall include evidence of an assessment of ground conditions and the potential for infiltration of surface water in accordance with BRE365;
- (ii) A restricted rate of discharge of surface water agreed with the local planning authority (if it is agreed that infiltration is discounted by the investigations);
- (iii) levels of the proposed drainage systems including proposed ground and finished floor levels in AOD;
- (iv) Incorporate mitigation measures to manage the risk of sewer surcharge where applicable; and
- (v) Full details of any proposed reconfiguration of the attenuation tank adjacent to 3KP / Premier Inn, including updated capacity assessment

The scheme shall be in accordance with the principles outlined in the "Phase 1 -Southern Access Footbridge & Metrolink Platform Flood Risk Assessment", must be based on the hierarchy of drainage options in the National Planning Practice Guidance and be designed in accordance with the Non-Statutory Technical Standards for Sustainable Drainage Systems (March 2015) or subsequent revisions of it. This must include assessment of potential SuDS options for surface water drainage with appropriate calculations and test results to support the chosen solution.

Design details should comply with guidance contained in the Greater Manchester's Sustainable Drainage Design Guide, March 25. Consultation with United Utilities should be undertaken to assess mitigations to reduce impacts on the combined sewer system which the system ultimately outfalls to.

Prior to occupation of the proposed development, the drainage schemes shall be completed in accordance with the approved details and retained thereafter for the lifetime of the development.

Reason. To promote sustainable development, secure proper drainage and to manage the risk of flooding and pollution pursuant to PfE Policy JP-S4 and chapter 14 - Meeting the challenge of climate change, flooding and coastal change of the NPPF.

Since determination of the planning application, the national drainage standards and the National Planning Policy Framework have been updated. The drainage proposals have therefore been reviewed against the current National Standards for Sustainable Drainage Systems and current National Planning Policy Framework, in addition to the specific requirements of Condition 6.

1.3 Condition Compliance Summary

Condition 6 requirement	Report Response
(i) Investigation of the drainage hierarchy, including assessment of ground conditions and BRE365 infiltration potential	Section 4 and Appendix G
(ii) Restricted rate of surface water discharge where infiltration is discounted	Section 5 & Appendix F & H
(iii) Proposed drainage system levels, including proposed ground and finished floor levels in AOD	Appendix D & E
(iv) Mitigation measures to manage the risk of sewer surcharge where applicable	Section 7 & Appendix J
(v) Full details of the attenuation tank reconfiguration adjacent to 3KP / Premier Inn, including updated capacity assessment	Section 8 and Appendix E & K

Table 1.3 – Condition Compliance Summary Table

2. SITE & DEVELOPMENT

2.1 Site Description

The application site comprises three principal areas:

- Knowsley Place / Union Square to the west of the Metrolink;
- the existing Metrolink corridor and platforms; and
- Pyramid Park to the east.

Knowsley Place/Union Square comprises existing hard and soft landscaped areas associated with the Premier Inn development.

The existing Metrolink platforms and associated tracks pass through the central part of the site.

Pyramid Park comprises an area of previously undeveloped land to the east of the Metrolink corridor.

Refer to Appendix A for topographical survey

2.2 Existing Drainage

United Utilities asset records identify combined sewer infrastructure passing beneath and adjacent to the Metrolink corridor.

Drainage surveys have identified separate private foul and surface water drainage networks serving the existing Union Square/Premier Inn development. The existing surface water system incorporates below-ground attenuation and a flow-control arrangement prior to discharge to the downstream sewer network.

An existing drainage network also serves the Metrolink platform and track infrastructure.

No formal existing drainage system was identified within Pyramid Park.

Refer to Appendix B for United Utilities sewer records

Refer to Appendix C for utility and drainage Survey

2.3 Proposed Development

The proposed works include:

- construction of the Southern Access Footbridge;
- improvements to the Metrolink platforms;
- infilling of the existing underpass;
- provision of new vertical circulation;
- creation of an accessible route through Pyramid Park;
- engineering and re-profiling works within Pyramid Park; and
- associated drainage, landscaping and infrastructure works.

Refer to Appendix D for Proposed Development Plans

3. SURFACE WATER DRAINAGE NETWORK OVERVIEW

For the purposes of this report, the drainage proposals have been divided into four individual networks, as summarised below:

Network	Description	Status
1	Existing Metrolink track drainage	Existing and retained, with local diversion
2	Existing Union Square/Premier Inn drainage	Existing and retained, including local tank reconfiguration
3	New Union Square surface water drainage	New
4	New Pyramid Park surface water drainage	New

Table 3.1 – Surface Water Drainage Network Overview

Refer to Appendix E for Below Ground Drainage Drawings

Refer to Appendix F for Surface Water Drainage Calculations

3.1 Network 1 – Existing Metrolink Track Drainage

The existing Metrolink drainage system is to be retained as part of the development.

Local diversion works are required due to the abandonment of the existing pump station to facilitate the new bridge. These works do not materially alter:

- the existing contributing drainage catchment;
- the ultimate point of discharge;
- the existing runoff volume; or
- the existing discharge rate.

Network 1 is therefore not subject to a new attenuation or discharge-rate assessment within this report.

The diverted drainage will maintain the hydraulic function of the existing system.

3.2 Network 2 – Existing Union Square / Premier Inn Drainage

The existing surface water drainage network serving the Premier Inn and associated Union Square catchment is also to be retained.

The network includes an existing below-ground attenuation tank and associated restricted discharge arrangement.

The proposed structural works conflict locally with the existing attenuation tank. The tank is therefore to be reconfigured solely to avoid the proposed structure.

No additional development catchment will be connected to the existing Premier Inn drainage system.

Accordingly, the proposed works will not alter:

- the existing contributing catchment;
- the ultimate point of discharge;
- the existing runoff volume; or

- the existing discharge rate.

The reconfiguration of the attenuation tank is considered separately in Section 5.3 in direct response to Condition 6(v).

3.3 Network 3 – New Union Square Drainage

A new dedicated surface water drainage network is proposed to serve the additional impermeable area created by the proposed development within Union Square.

The proposed drained area is approximately 0.021 ha.

Runoff will be collected by a dedicated new drainage system and attenuated within a below-ground attenuation tank prior to controlled discharge.

Network 3 will be hydraulically separate from the existing Premier Inn surface water system and will not utilise storage within the existing Premier Inn attenuation tank.

3.4 Network 4 – New Pyramid Park Drainage

A new dedicated drainage network is proposed within Pyramid Park.

The overall proposed impermeable drainage catchment is approximately 0.050 ha.

Of this area, approximately 0.036 ha will comprise lined permeable paving.

The permeable pavement is proposed as a lined system and will therefore provide source control, conveyance and water-quality benefits but will not discharge by infiltration to the underlying ground.

Runoff generated from the wider Pyramid Park catchment will be conveyed to a dedicated below-ground attenuation tank before being discharged at a restricted rate.

4. SURFACE WATER DRAINAGE HIERARCHY

4.1 Drainage Hierarchy

The runoff destination hierarchy has been assessed in accordance with current national planning guidance and the National Standards for Sustainable Drainage Systems.

The hierarchy requires runoff destinations to be considered in the following order:

- 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

A lower-priority destination should only be adopted where higher-priority destinations are not reasonably practicable.

Rainwater Collection and Reuse

The proposed development includes the construction of a footbridge and access associated with a Metrolink platform and therefore there is limited to no non-potable water demand. Due to the lack of demand a rainwater harvesting system cannot be confidently relied upon to consistently attenuate surface water runoff from the site, and thus any benefit to the capacity of the surface water network will not be considered as part of this drainage strategy.

Infiltration to Ground

Site-specific ground investigation has been undertaken to assess the infiltration potential of the site.

Within Union Square BRE 365 infiltration testing has not been undertaken as existing ground investigation information confirms approximately 5.7 m of Made Ground overlying cohesive clay. Infiltration within Made Ground would not provide a reliable basis for long-term drainage design and may introduce ground stability or contamination risks, while the underlying clay is expected to have low permeability and lies at an impractical depth for conventional infiltration SuDS. On this basis, there is no suitable natural permeable stratum at a practicable depth and further BRE 365 testing is considered disproportionate and unlikely to demonstrate a viable infiltration solution.

BRE365 infiltration testing undertaken within Pyramid Park has failed to demonstrate sufficient infiltration potential to support disposal of surface water runoff to ground.

In addition to the poor infiltration characteristics, the proposed permeable paving within Pyramid Park forms part of an engineered slope. The pavement is therefore required to operate as a lined system to prevent uncontrolled infiltration into the engineered earthworks.

On this basis, infiltration is not considered to provide a viable final runoff destination for the development.

The BRE365 test results and associated ground investigation information are included within Appendix G.

Surface Water Body

The River Irwell is located approximately 675 m west of the site.

A direct connection would require drainage infrastructure to cross third-party land and intervening developed infrastructure and is not considered reasonably practicable.

The previous Drainage Strategy also identified a recorded surface water drain/culvert within Market Street associated with a historical water feature within Pyramid Park. No viable receiving surface water body or suitable outfall has been established.

Discharge to an above-ground surface water body has therefore been discounted.

Surface Water Sewer

United Utilities asset information identifies surface water infrastructure within the vicinity of the site. However, the identified system ultimately becomes part of the combined sewer network downstream. The previous Drainage Strategy therefore identified the combined sewer as the ultimate receiving system.

Combined Sewer

Having discounted or utilised higher-priority runoff destinations where reasonably practicable, residual surface water runoff from Networks 3 and 4 is proposed to discharge at restricted rates to the existing sewer network which ultimately forms part of the United Utilities combined sewer system.

The proposed runoff rates are considered in Section 5.

5. SURFACE WATER DISCHARGE RATE ASSESSMENT

5.1 Greenfield Run-Off Rates

The greenfield QBAR run-off rate of the development site has been calculated as 11.6 l/s/ha

Refer to Appendix H for greenfield run-off calculation

5.2 Proposed Surface Water Discharge Rates and Volume

The non-Statutory Technical Standards for Sustainable Drainage Systems (2025) state, the peak allowable discharge rate from the development to surface waters or sewers for the 50% AEP event shall be limited to the equivalent 50% AEP greenfield runoff rate, or 3 l/s/ha, whichever is the greater.

Where the volume of runoff discharged from the development to surface waters or sewers for the 1% AEP, 6-hour rainfall event is greater than the volume of greenfield runoff for the same rainfall event, the peak allowable discharge rate from the development for the 1% AEP event shall be limited to the 50% AEP greenfield runoff rate or 3l/s/ha, whichever is the greater.

Where the volume of runoff discharged from the development to surface waters or sewers for the 1% AEP, 6-hour rainfall event is less than or equivalent to the volume of greenfield runoff for the same event, the peak allowable discharge rate from the development for the 1% AEP event shall be limited to the 1% AEP greenfield runoff rate or 3l/s/ha, whichever is the greater.

The increase in impermeable area of the site from the existing will result in an increase in runoff volume for the 1% AEP, 6-hour rainfall event. It is therefore proposed that the discharge rate from site is restricted to the greatest of the equivalent 50% AEP greenfield runoff rate, or 3 l/s/ha.

As set out within the Bury Council SFRA, developments should aim to restrict the runoff rate from site to greenfield run-off rate where feasible

Policy JP-S 5 of the recently adopted Places for Everyone Joint Development Plan expects developments to manage surface water runoff through sustainable drainage systems and as close to source as possible (unless demonstrably inappropriate) so as to not exceed greenfield run-off rates or alternative rates specified in district local plans, such as those identified for areas with critical drainage issues.

It is not considered feasible to restrict the flow rate to Q_{BAR} due to the associated blockage risk it would pose. To manage this blockage risk any flow control orifice size shall be no less than 50mm.

It is also not considered feasible to reduce the discharge volume to greenfield volume or provide long term storage for the additional runoff volume over the Greenfield volume. This is due to the low infiltration rates and the limited space available over the site to provide long term storage.

Network	Description	Catchment Area (ha)	QBAR (l/s)	Proposed Discharge Rate (l/s)
3	Union Square	0.021	0.24	1.4
4	Pyramid Park	0.050	0.58	0.9

Table 5.1 – Surface Water Discharge Rate Summary

6. ATTENUATION AND SUDS ASSESSMENT

6.1 Attenuation requirements

The proposed development results in circa 0.050 ha of external landscaping to Pyramid Park and 0.021 ha to Union Square.

Due to the nature of the development, urban creep has not been considered as it is unlikely that the percentage of impermeable area will increase during the lifetime of the development.

The post development discharge rates will include for an increase in the rainfall intensity of 40% and 45% for the 3.3% and 1% annual exceedance probability (AEP) respectively, to allow for climate change as is consistent with a design life of the development of 100 years, as outlined by the National Planning Practice Framework (NPPF).

6.2 Sustainable Urban Drainage Assessment

Table 4.1 below provides a summary of typical SuDS techniques outlined within CIRIA guide 753 SuDS manual. Potential SuDS components have been reviewed having regard to:

- the constrained urban and operational Metrolink environment;
- extensive existing infrastructure;
- existing and proposed utilities;
- engineered slopes and retaining structures;
- poor infiltration characteristics;
- available land;
- maintenance requirements; and
- operational safety requirements.

Based on a review of the suitability of the SuDS techniques it is proposed that the development incorporates the following:

SUDS Technique	Description	Suitability for Development Sites	
Rainwater Harvesting	Collection of rainwater run-off for use	Development has no water demand	✗
Soft Landscaping	Grassed areas that allow direct infiltration of rainwater	Soft landscaping will be utilised to limit the impermeable area	✓
Filter Drains	Granular filled Linear drains / soakaway with either granular fill and perforated pipe, or dense vegetation that treat runoff from adjacent impermeable areas	Not suitable due to known ground conditions	✗
Swales	Shallow landscape channel that can infiltrate or convey runoff.	Not suitable due to known ground conditions	✗
Infiltration Basins	Depressions in the ground designed to store and infiltration runoff to the ground. Can be landscaped to provide amenity value.	Not suitable due to known ground conditions and limited space	✗
Wet Ponds	Basins with permanent pool of water providing water quality treatment, wildlife, and amenity benefit. Designed to provide temporary storage for additional runoff.	Not suitable due to known ground conditions and limited space	✗

Extended Detention Basins	Dry basins that are designed to temporarily store runoff providing water quality treatment.	Not suitable due to known ground conditions and limited space	✗
Constructed Wetland	Ponds and shallow wetland areas with vegetation to improve pollution removal and enhance wildlife habitat.	Not suitable due to known ground conditions and limited space	✗
Porous Paving	Granular build-up beneath permeable paving systems that can be used to either store runoff (lined system) and increase time of concentration or allow percolation into the ground.	Suitable as part of the pavement build up to convey and treat run-off	✓
Trees Pits	Managed permeable paving systems around tree pits that can be used to either store runoff (lined system) and increase time of concentration or allow percolation into the ground.	Not suitable due to conflict between ramp and retaining wall	✗
Soakaways	Infiltration device to temporarily store runoff and allow it to percolate into the ground.	Not suitable due to known ground conditions	✗
Green Roof	Vegetated roof area that reduces runoff and increases time of concentration.	N/A	✗
Blue Roof	Roof area designed to store and reduce peak runoff rates during intense storms.	N/A	✗
Underground Storage	Attenuation structures installed below ground to provide runoff storage.	Suitable	✓

✗ Not suitable

? Potentially suitable subject to further investigation

✓ Suitable

Table 6.1 – SuDS Techniques & Suitability for Development Site

6.3 Water Quality Assessment

Water quality is generally affected by frequent rainfall events, 1 in 1-year events or less. To assess the water quality consideration will be given to the guidance with CIRIA Guide C753 The SuDS Manual. The pollution hazard levels for different land uses are presented in the table below.

Land Use	Pollution Hazard Level	Total Suspended Solids	Metals	Hydro-carbons
Residential Roofs	Very Low	0.2	0.2	0.05
Other roofs (typically commercial/ industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking within infrequent change (eg schools, offices) ie <300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car	Medium	0.7	0.6	0.7

parking with frequent change (eg hospitals, retail), all roads except low traffic roads and trunk roads/motorways				
Site with heavy pollution (eg haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), site where chemical and other fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured, industrial sites; trunk roads and motorways	High	0.8	0.8	0.9

Table 6.2 – Pollution Hazard Levels

The surface water run-off from the development will be from the pedestrian bridge, ramp and union square landscaping. This results in a low pollution hazard level.

Discharge of surface water to the receiving combined water sewer requires no treatment stages due to the low pollution hazard level. However, the use of SuDS, catchpits and silt traps will provide sufficient treatment.

6.4 SuDS Maintenance and Management Plan

In order to ensure the ongoing functioning of the below ground drainage networks a suitable maintenance strategy is to be adopted to ensure the drainage network is cleaned regularly and the routine maintenance and cleansing regime should be documented.

The following operation and maintenance requirements for the SuDS features incorporated into the development are to be adopted by the maintenance company. These requirements are general and have been extracted from the CIRA Guide C753.

The Main Contractor delivering the development is to update the general requirements to reflect the product specific requirements of the as installed proprietary SuDS and incorporate these into the Operation & Maintenance manual for the building. A Verification Report, including photographic evidence, to demonstrate that the drainage has been constructed as per the design drawings. As-built drawings should be supplied by the Main Contractor where the construction of the drainage varies from the design drawings.

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attenuation to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment
Occasional Maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than sprays	As required - once per year on less frequently used pavements

Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the paving	As required
	Remedial works to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10-15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection	Monthly for three month after installation
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48 hours after large storms in first 6 months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

Table 6.3 - Operation and Maintenance requirements for Pervious Pavements (Table 20.15 'The SuDS Manual C753)

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, outlets, 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 tanks for sediment build-up and remove if necessary	Every 5 years or as required

Table 6.4 - Operation and Maintenance requirements for Attenuation Storage Tanks (Table 21.3 'The SuDS Manual C753)

7. SEWER SURCHARGE MITIGATION

In lieu of modelled surcharged levels from United Utilities the proposed drainage networks have been assessed against a 1m surcharge above the outfall level.

The assessment confirms that the drainage systems retain sufficient resilience to prevent unacceptable flooding where the receiving sewer is temporarily surcharged.

Refer to Appendix J for supporting calculations

8. EXISTING ATTENUATION TANK ASSESSMENT

8.1 Existing Arrangement

The existing surface water drainage system serving the Premier Inn and associated Union Square catchment includes a below-ground attenuation tank and flow-control arrangement.

The attenuation tank provides storage prior to restricted discharge to the downstream drainage system.

The planning-stage Drainage Strategy proposed increasing the tank volume to accommodate additional development runoff.

The drainage strategy has subsequently been revised and the additional Union Square development catchment will now be served by a completely separate drainage network, referred to within this report as Network 3.

Consequently, no additional surface water runoff will be directed to the Premier Inn attenuation tank.

Survey investigations have confirmed that the existing attenuation tank clashes with the proposed bridge abutment and therefore requires relocating and reconfiguring in order to facilitate the proposed development.

The proposed reconfiguration does not represent an enlargement of the drainage catchment or a change to the hydraulic design criteria of the existing system.

Refer to Appendix K for details of the existing attenuation tank including drawings and surveys. This confirms that the existing attenuation volume is 125m³ and discharge rate is restricted to 4l/s.

8.2 Proposed Arrangement

The reconfiguration has been developed to provide an effective storage capacity equivalent to or greater than the existing attenuation tank and to limit the discharge rate to the previously restricted rate.

Due to the site constraints and to aid buildability it is proposed that the existing attenuation tank is replaced with 3no. 3.6m diameter manholes. Based on a 1.2m freeboard to ensure the upstream network is not surcharged the manholes will provide approximately 127m³ of storage. The final manhole will include a vortex flow control that will restrict the discharge rate to 4l/s. The system will connect and discharge to the same location as the existing attenuation tank.

Refer to Appendix E for the Below Ground Drainage Drawing showing the reconfiguration proposals.

Refer to Appendix L for correspondence from TfGM that the principle of relocating the attenuation tank is being actively discussed with the asset owner and that they have no initial concerns regarding this.

9. FOUL WATER DRAINAGE NETWORK OVERVIEW

New foul drainage is required to serve the proposed welfare facilities associated with the Metrolink platform.

The proposed facilities include toilets and a cleaner's sink.

Foul water will be conveyed by a dedicated foul drainage system to Pyramid Park before discharging to the United Utilities sewer network.

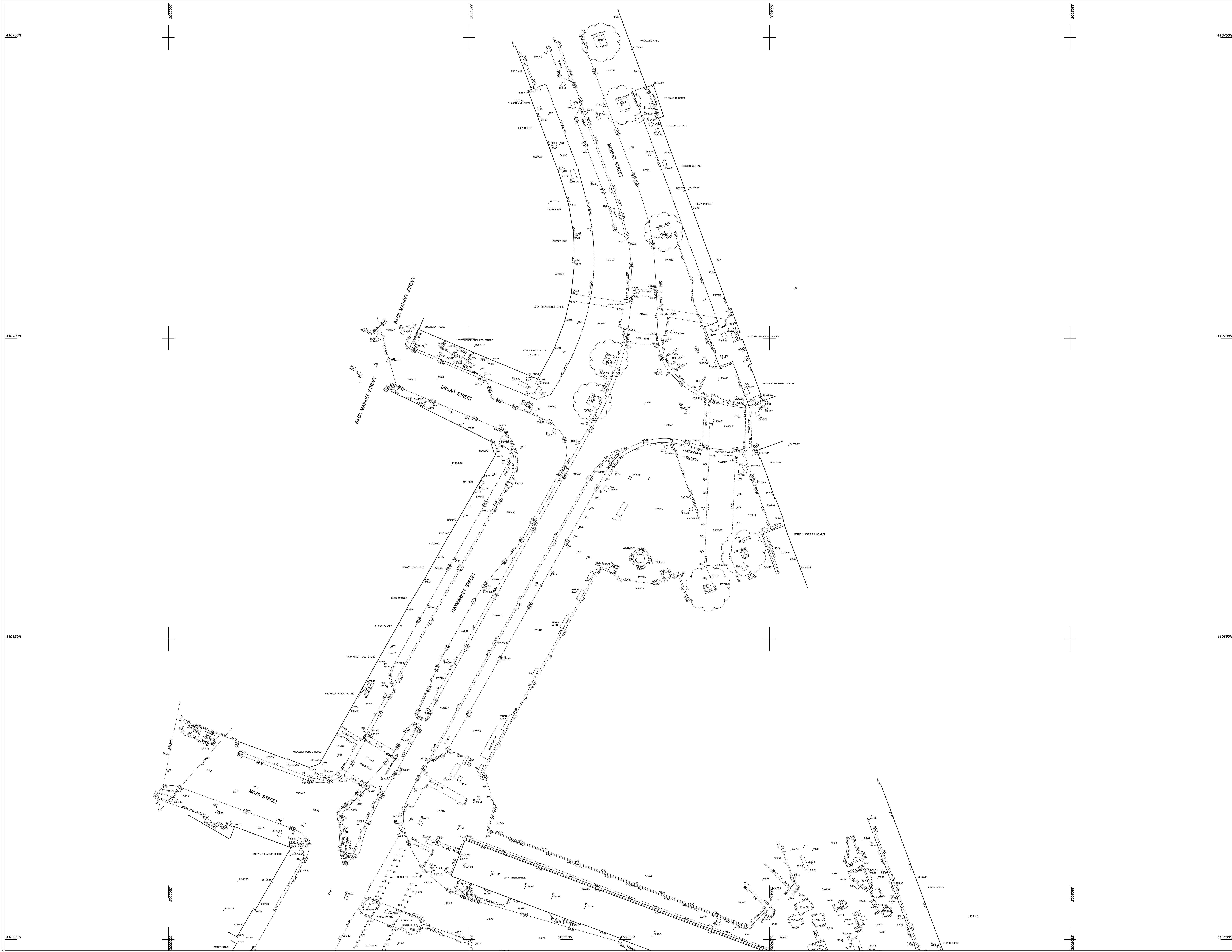
The foul drainage network will remain separate from the proposed surface water systems upstream of the final connection.

The foul system has been designed in accordance with:

- Building Regulations Approved Document H;
- BS EN 752; and
- applicable Water UK/Sewer Sector Guidance.

Refer to Appendix E for Below Ground Drainage Drawings

APPENDIX A TOPOGRAPHICAL SURVEY



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PLAN GRID NORTH

The National Grid (2015) is used for all coordinates.

LEGEND

AB	AB	AB	AB
BB	BB	BB	BB
CB	CB	CB	CB
DB	DB	DB	DB
EB	EB	EB	EB
FB	FB	FB	FB
GB	GB	GB	GB
HB	HB	HB	HB
IB	IB	IB	IB
JB	JB	JB	JB
KB	KB	KB	KB
LB	LB	LB	LB
MB	MB	MB	MB
NB	NB	NB	NB
OB	OB	OB	OB
PB	PB	PB	PB
QB	QB	QB	QB
RB	RB	RB	RB
SB	SB	SB	SB
TB	TB	TB	TB
UB	UB	UB	UB
VB	VB	VB	VB
WB	WB	WB	WB
XB	XB	XB	XB
YB	YB	YB	YB
ZB	ZB	ZB	ZB
AB	AB	AB	AB
BB	BB	BB	BB
CB	CB	CB	CB
DB	DB	DB	DB
EB	EB	EB	EB
FB	FB	FB	FB
GB	GB	GB	GB
HB	HB	HB	HB
IB	IB	IB	IB
JB	JB	JB	JB
KB	KB	KB	KB
LB	LB	LB	LB
MB	MB	MB	MB
NB	NB	NB	NB
OB	OB	OB	OB
PB	PB	PB	PB
QB	QB	QB	QB
RB	RB	RB	RB
SB	SB	SB	SB
TB	TB	TB	TB
UB	UB	UB	UB
VB	VB	VB	VB
WB	WB	WB	WB
XB	XB	XB	XB
YB	YB	YB	YB
ZB	ZB	ZB	ZB

NOTES

All levels are to O.D. (British Datum). Established using network RTK.
Survey points are on a plane local grid, oriented to National Grid.
Using Survey Control established from Ordnance Survey (OS) 1:25K.

SURVEY STATIONS			
Name	Easting	Northing	Height
SP1	300000.00	410750.00	84.100
SP2	300000.00	410750.00	84.100
SP3	300000.00	410750.00	84.100
SP4	300000.00	410750.00	84.100
SP5	300000.00	410750.00	84.100
SP6	300000.00	410750.00	84.100
SP7	300000.00	410750.00	84.100
SP8	300000.00	410750.00	84.100
SP9	300000.00	410750.00	84.100
SP10	300000.00	410750.00	84.100
SP11	300000.00	410750.00	84.100
SP12	300000.00	410750.00	84.100
SP13	300000.00	410750.00	84.100
SP14	300000.00	410750.00	84.100
SP15	300000.00	410750.00	84.100
SP16	300000.00	410750.00	84.100
SP17	300000.00	410750.00	84.100
SP18	300000.00	410750.00	84.100
SP19	300000.00	410750.00	84.100
SP20	300000.00	410750.00	84.100

SCALE BAR

0 2m 4m 8m 12m 16m

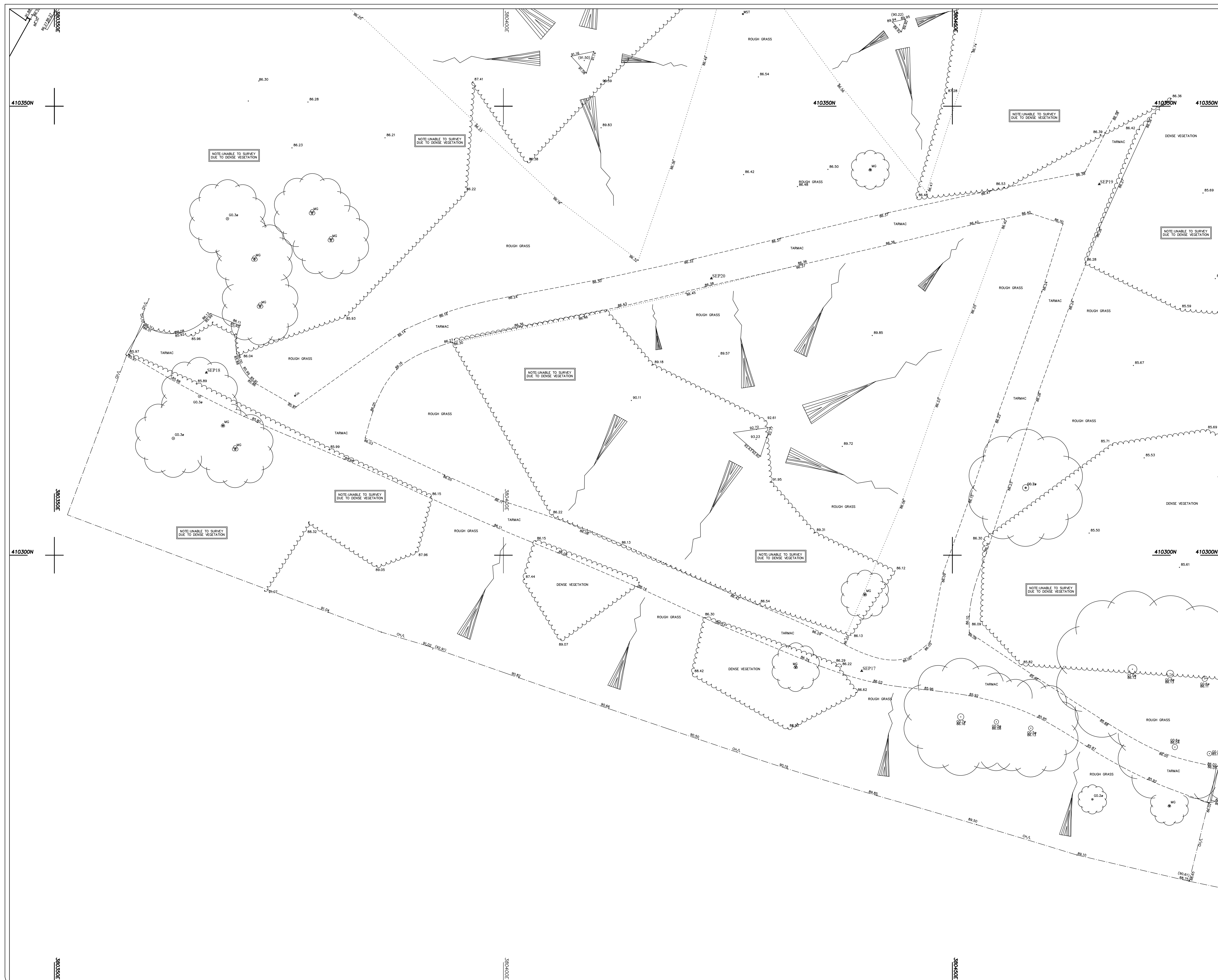
REV	DATE	DESCRIPTION
A	01/25	Additional detail in previously inaccessible areas on Sheet 4 & 5

SURVEY & ENGINEERING PROJECTS

Client:
Wilmar Dwan Construction Ltd (Ockham)
Hollwood Business Centre
Albert Mill
Ockham
Surrey
GU24 0LH

Project Title:
Topographical Survey of Land at:
Bury Interchange
Haymarket Street
Bury
BL9 0AY
16012-SEP-22-ZZZ-D/M-15-000002

Surveyed D.B.H.K.M.L.	Drawn S.Flanagan	Checked R.Critchley
Scale 1:200	Date Nov 24	Drawing Ref. 1
		Size A0
		Rev A



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PLAN GRID NORTH

File Name: 16012-SEP-777-777-D-TS-000002-Topographic2D.dwg

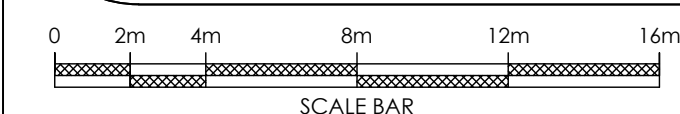
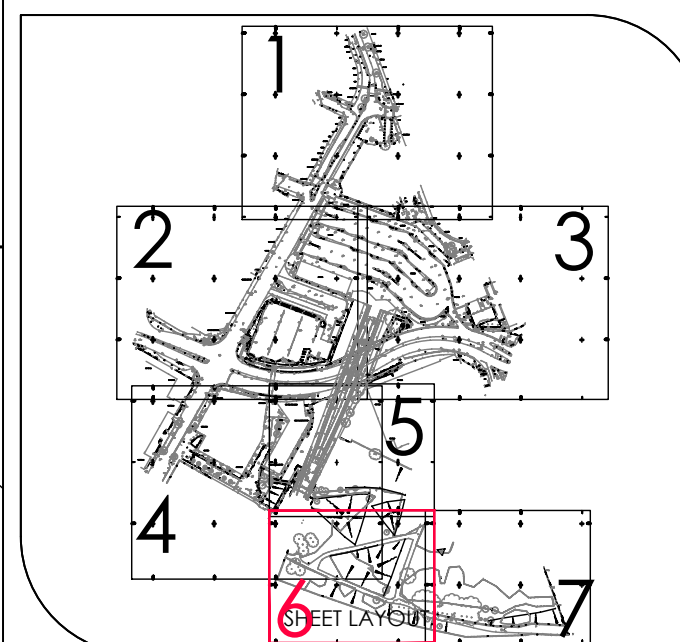
LEGEND

[illegible]

NOTES

All levels relate to O.S (Newlyn) Datum, Established using network RTK.
Survey plotted on a plane local grid, orientated to National Grid
using Survey control established from baseline SEP1, SEP2

Survey STATIONS			
Name	Easting	Northing	Height
SEPI1	380661.667	416048.450	94.188
SEPI2	380655.093	416045.069	95.032
SEPI3	380630.778	416045.334	94.941
SEPI4	380320.311	416045.134	94.811
SEPI5	380535.839	416045.177	94.941
SEPI6	380700.021	416045.395	94.941
SEPI7	380338.537	416045.930	93.871
SEPI8	380447.289	416082.325	93.871
SEPI9	380446.182	416050.274	93.871
SEPI10	380645.092	416056.566	93.871
SEPI11	380511.463	416056.779	93.871
SEPI12	380562.267	416058.201	93.871
SEPI13	380569.648	416058.783	93.871
SEPI14	380562.662	416059.614	92.956
SEPI15	380562.662	416059.614	92.956
SEPI16	380643.002	416074.293	86.048
SEPI17	380539.903	416074.293	86.048
SEPI18	380646.933	416074.293	86.048
SEPI19	380646.933	416074.293	86.048
SEPI20	380646.933	416074.293	86.048
SEPI21	380646.933	416074.293	86.048
SEPI22	380646.933	416074.293	86.048
SEPI23	380646.933	416074.293	86.048
SEPI24	380646.933	416074.293	86.048
SEPI25	380646.933	416074.293	86.048
SEPI26	380646.933	416074.293	86.048
SEPI27	380646.933	416074.293	86.048
SEPI28	380646.933	416074.293	86.048
SEPI29	380646.933	416074.293	86.048
SEPI30	380646.933	416074.293	86.048
SEPI31	380646.933	416074.293	86.048
SEPI32	380646.933	416074.293	86.048
SEPI33	380646.933	416074.293	86.048
SEPI34	380646.933	416074.293	86.048
SEPI35	380646.933	416074.293	86.048
SEPI36	380646.933	416074.293	86.048
SEPI37	380646.933	416074.293	86.048
SEPI38	380646.933	416074.293	86.048
SEPI39	380646.933	416074.293	86.048
SEPI40	380646.933	416074.293	86.048
SEPI41	380646.933	416074.293	86.048
SEPI42	380646.933	416074.293	86.048
SEPI43	380646.933	416074.293	86.048
SEPI44	380646.933	416074.293	86.048
SEPI45	380646.933	416074.293	86.048
SEPI46	380646.933	416074.293	86.048
SEPI47	380646.933	416074.293	86.048
SEPI48	380646.933	416074.293	86.048
SEPI49	380646.933	416074.293	86.048
SEPI50	380646.933	416074.293	86.048
SEPI51	380646.933	416074.293	86.048
SEPI52	380646.933	416074.293	86.048
SEPI53	380646.933	416074.293	86.048
SEPI54	380646.933	416074.293	86.048
SEPI55	380646.933	416074.293	86.048
SEPI56	380646.933	416074.293	86.048
SEPI57	380646.933	416074.293	86.048
SEPI58	380646.933	416074.293	86.048
SEPI59	380646.933	416074.293	86.048
SEPI60	380646.933	416074.293	86.048
SEPI61	380646.933	416074.293	86.048
SEPI62	380646.933	416074.293	86.048
SEPI63	380646.933	416074.293	86.048
SEPI64	380646.933	416074.293	86.048
SEPI65	380646.933	416074.293	86.048
SEPI66	380646.933	416074.293	86.048
SEPI67	380646.933	416074.293	86.048
SEPI68	380646.933	416074.293	86.048
SEPI69	380646.933	416074.293	86.048
SEPI70	380646.933	416074.293	86.048
SEPI71	380646.933	416074.293	86.048
SEPI72	380646.933	416074.293	86.048
SEPI73	380646.933	416074.293	86.048
SEPI74	380646.933	416074.293	86.048
SEPI75	380646.933	416074.293	86.048
SEPI76	380646.933	416074.293	86.048
SEPI77	380646.933	416074.293	86.048
SEPI78	380646.933	416074.293	86.048
SEPI79	380646.933	416074.293	86.048
SEPI80	380646.933	416074.293	86.048
SEPI81	380646.933	416074.293	86.048
SEPI82	380646.933	416074.293	86.048
SEPI83	380646.933	416074.293	86.048
SEPI84	380646.933	416074.293	86.048
SEPI85	380646.933	416074.293	86.048
SEPI86	380646.933	416074.293	86.048
SEPI87	380646.933	416074.293	86.048
SEPI88	380646.933	416074.293	86.048
SEPI89	380646.933	416074.293	86.048
SEPI90	380646.933	416074.293	86.048
SEPI91	380646.933	416074.293	86.048
SEPI92	380646.933	416074.293	86.048
SEPI93	380646.933	416074.293	86.048
SEPI94	380646.933	416074.293	86.048
SEPI95	380646.933	416074.293	86.048
SEPI96	380646.933	416074.293	86.048
SEPI97	380646.933	416074.293	86.048
SEPI98	380646.933	416074.293	86.048
SEPI99	380646.933	416074.293	86.048
SEPI100	380646.933	416074.293	86.048



REV	DATE	DESCRIPTION
A	01/25	Additional detail in previously inaccessible areas on Sheet 4 & 6



Client
Willmott Dixon Construction Ltd (Oldham)
Hollinwood Business Centre
Albert Mill
Albert Street
Oldham
OL8 3QL

Project Title
Topographical Survey of Land at:
Bury Interchange
Haymarket Street
Bury
BL9 0AY
16012-SEP-ZZZ-ZZZ-D/M-TS-000002

Surveyed D.B.H.K.M.L		Drawn S.Flanagan		Checked R.Critchley	
Scale 1:200	Date Nov 24	Drawing Ref. 14012-SEP-222-222-0-75-000002	No. 6	Size A1	Rev A