



Drainage Strategy

Tesco Car Park, Parrs Wood Lane, East Didsbury

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Version History

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The report is written in the context of the development proposals submitted to Apex Consulting Engineers by the Client as part of the appointment. Any changes to the development proposals may necessitate significant revisions to this report.

Revision	Date	Notes	Prepared by	Checked by	Approved by
001	30/11/2021	First Issue	G. Boden	D. Burrows	M. Quinn
002	09/12/2021	Updated to comments	D. Burrows	G. Boden	M. Quinn
003	28/01/2022	Updated to suit revised site layout	G. Boden	M. Quinn	W. Ballance
004	20/01/2026	Updated to suit latest S.I information	B. Mincher	G. Boden	W. Ballance

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1.0 Introduction

This report is prepared in accordance with instructions from Dandara Living to support a full planning application to Manchester City Council (MCC) for the redevelopment of part of the existing Tesco car park, comprising erection of a 6 storey residential building (Use Class C3) comprising 75 new homes together with ground floor flexible community space, car parking, cycle parking as well as landscaping, highways and other associated works at Parrs Wood Lane, East Didsbury, Manchester, M20 5NP.

2.0 Scope and Objectives

The purpose of the report is to determine the means of collection and discharge of the foul and surface water from the proposed development and to ensure the volume of surface water runoff from the development is reduced, therefore, reducing flood risk elsewhere. The report will also consider the use and efficiency of Sustainable Drainage Systems (SuDS) and how they can be potentially implemented on the site.

3.0 Planning Policy and Guidance

National Planning Policy Framework (NPPF) and Planning Practice Guidance (PPG)

The National Planning Policy Framework (NPPF) and its associated technical guidance (replacing PPS25 in 2012) sets out the Government's planning policies for England and how these are expected to be applied. The purpose of the policy is to contribute to the achievement of sustainable development and states that priority should be given to sustainable drainage and discusses the impact of new development on flood risk. The NPPF maintains strong policy on avoiding and managing flood risk, based on local planning authorities preparing local plans and deciding planning applications and granting planning permissions.

Strategic Flood Risk Assessment Level (SFRA) 2: Manchester City, Salford City and Trafford Councils (2011)

The Level 2 SFRA provides a detailed assessment of all known sources of flooding that may affect existing and future development across Manchester, Salford and Trafford. The SFRA recommends appropriate land uses that will not unduly place people or property at risk of flooding and possible flood mitigation measures that may be incorporated into the development.

Manchester's Local Development Framework Core Strategy (2012)

The Planning and Compulsory Purchase Act 2004 and National Planning Policy Framework (NPPF) require local planning authorities to prepare a development plan setting out a spatial strategy and policies for the use and development of land within their administrative area.

Manchester City Council adopted its Local Development Framework Core Strategy in 2012. While a number of policies have since been superseded by Places for Everyone Joint Development Plan Document (adopted 2024), several policies remain relevant and continue to form part of the statutory development plan.

The following Core Strategy policies are relevant to this drainage strategy:

- Policy EN8 - Adaptation to Climate Change
- Policy EN9 - Green Infrastructure
- Policy EN15 - Biodiversity and Geological Conservation
- Policy EN17 - Water Quality

Places for Everyone Joint Development Plan (2024)

Places for Everyone is a Joint Development Plan Document prepared by the Greater Manchester Combined Authority and adopted by Manchester City Council in 2024. It now forms part of the statutory development plan and replaces a number of previously adopted local plan policies, including those relating to flood risk and surface water drainage.

The following Places for Everyone policies are relevant to this drainage strategy:

- Policy JP-C3 – Climate Change Mitigation and Adaption
- Policy JP-G5 – Flood Risk and sustainable Drainage
- Policy JP-G1 – A Green Infrastructure Network
- Policy JP-G9 – Green and Blue Infrastructure

Manchester City Council's Local Flood Risk Management Strategy (LFRMS)

The MCC LFRMS, published in 2014, aims to ensure that local flood risk is properly managed by using the full range of options in a co-ordinated way by achieving the following objectives:

- Reduce the likelihood, severity and consequences of flooding from Ordinary Watercourses, from Groundwater, and from Surface Water Runoff.
- Seek opportunities to improve water quality and biodiversity through flood risk management activities.

4.0 Site Description

4.1 Location

The existing site area is approximately 0.24ha in size and comprises a triangular shaped parcel of developed land located approximately 7km south of Manchester City Centre at Parrs Wood Lane, East Didsbury. The site is currently occupied by an existing car park used for the Tesco Superstore located north of the site. Immediately north of the site is the main car park for the Tesco. The site is bound to the east and south by the A34 Kingsway and Parrs Wood Lane with an existing clock tower located adjacent the site boundary. To the west of the site lies the existing Tesco access off Parrs Wood Lane with the Styal Line Railway beyond.

The National grid reference (NGR) for the approximate centre of the site is SJ854904. A location plan is included within Appendix A.

4.2 Topography

Site ground levels are generally flat with the highest level at +38.70m AOD located at the south of the site and +3.22m AOD in the west. The site has a varied gradient with an existing retaining wall at the south which delineates the site with Parrs Wood Lane at an approximate level difference of 1.5m. A topographical survey is included within Appendix C.

4.3 Watercourses

The nearest receiving watercourse is the River Mersey, a main river approximately 593m to the south of the site.

4.4 Existing Sewerage

According to the United Utilities sewer records included within Appendix D, there is a 1200mm brick combined sewer within Kingsway which runs in a southerly direction. This sewer then turns in an easterly direction along Parrs Wood Lane south of the site. The records also show a 225mm diameter combined sewer within Parrs Wood Lane which runs parallel adjacent the 1200mm trunk sewer.

The topographical survey included within Appendix C indicates there is some of existing private drainage within the existing Tesco car park and access. A utilities and CCTV survey will be required and the detailed design stage to identify the routes of the existing onsite services. It is assumed all existing drainage within the site boundary serves the car park only.

4.5 Geology

According to the British Geological Survey (BGS) Geology of Britain Viewer, the site is underlain by Chester Formation sandstone (pebbly / gravelly) bedrock, overlain by Glaciofluvial Sheet Deposits (Devensian sand and gravel) as superficial deposits. DEFRA MAGIC mapping indicates the presence of slowly permeable,

seasonally wet, acid loamy and clayey soils across the site. The site is located within a Secondary A Aquifer and is identified as having medium groundwater vulnerability.

Site specific Ground Investigation (GI) works have been undertaken in support of this drainage strategy, as documented in the Ground Investigation Report ref. 2333-002-002 prepared by Westlakes Environmental (23 May 2024), which generally corroborates the published BGS mapping.

The GI identified Made Ground beneath the site, underlain by natural Glaciofluvial deposits comprising predominantly medium dense to dense sands and gravels, locally interbedded with silty sandy and gravelly clays, extending to depths of up to approximately 12.8m below ground level (bgl). The underlying Chester Formation bedrock was encountered beneath the superficial deposits as completely weathered to weathered red-brown sandstone, typically between approximately 10.8m and 13.8m bgl, consistent with BGS records.

Perched and shallow groundwater was encountered during the GI, with groundwater levels recorded from approximately 1.6m bgl within the Made Ground and superficial deposits, and up to approximately 7.0m bgl within boreholes installed into the upper bedrock. These groundwater conditions, together with the presence of the interbedded clayey strata, indicate poor infiltration characteristics across the site.

The GI also identified the presence of hydrocarbon contamination within Made Ground, superficial soils and shallow groundwater, with limited detections within the underlying bedrock. As a result, risks to controlled water are assessed as moderate to high, and infiltration-based drainage solutions could result in the mobilisation of contaminants.

On the basis of the above, and supported by the findings of the ground investigation, soakaway drainage and other infiltration-based SuDS are not considered feasible or appropriate at this location.

4.6 Proposed Development

The proposal includes the redevelopment of the site for the Erection of a 6-storey residential building (Use Class C3) comprising 75 new homes together with ground floor flexible community space, car parking, cycle parking as well as landscaping, highways and other associated works.

The new building will comprise a plan area of approximately 1406m² (approximately 58% of the total site area). Externally, there will be a mixture of hard and soft landscaping and associated car parking. The proposed site layout is shown in Appendix B.

5.0 Foul Sewerage Proposals

5.1 Design Guidance

The foul drainage system will be designed in accordance with the following documents:

- BS EN 752:2008 Drain and sewer systems outside buildings
- BS EN 10256-2:2000 Gravity drainage systems inside buildings
- Building Regulations Part H: Drainage and waste disposal

In the event that sewers are to be adopted, the design will conform to guidance provided in the latest Water UK Design and Construction Guidance (DCG) Code for Adoption.

5.2 Foul Strategy

The foul sewerage for the proposed development will consist of a new dedicated below ground foul drainage network that will collect the foul water from the proposed development. The preferred method of foul disposal is discharge to the 1200mm combined sewer within Parrs Wood Lane as feedback from a pre-development enquiry from United Utilities. The preferred connection type will be a saddle connection onto the existing sewer. An upstream and downstream manhole depth is required to confirm the connection level from the development.

5.3 Proposed Foul Flows

The foul drainage system has been sized based on the British Water Code of Practice flows and loads (see figure 5.3.1), where residential accommodation states 150 litres flow rate per person per day.

Table of Loadings for Sewage Treatment Systems			
Per person / activity / day (unless otherwise specified)	FLOW	BOD	Ammonia
	(Litres)	(Grams)	as N
DOMESTIC DWELLINGS			
(Grams)			
Standard residential	150	60	8
Mobile home type caravans with full services	150	60	8

Figure 5.3.1: British Water Code of Practice, Flows and Loads - 4

The calculation assumes all bed spaces are to have full occupancy as per the accommodation schedule shown within Appendix F. Therefore, the development has capacity to accommodate a maximum of 205 people. Based on all rooms at full occupancy, a peak foul discharge rate of 4.27 l/s will be generated with an average of 0.71 l/s/day. Refer to Appendix F for the foul flow calculation.

6.0 Surface Water Proposals

6.1 Design Guidance

The surface water drainage system will be designed in accordance with the following documents:

- BS EN 752:2008 Drain and sewer systems outside buildings
- BS EN 10256-2:2000 Gravity drainage systems inside buildings
- Building Regulations Part H: Drainage and waste disposal
- CIRIA C522 document 'Sustainable Drainage Systems – Design Manual for England and Wales'
- CIRIA C753 document 'The SuDS Manual'
- National Standards for Sustainable Drainage Systems

In the event that sewers are to be adopted, the design will conform to guidance provided in the latest Water UK Design and Construction Guidance (DCG) Code for Adoption.

6.2 Discharge Hierarchy

There are five possible options to discharge the surface water runoff in accordance with the hierarchy defined within the National Standards for SuDS.

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

1. Rainwater re-use

Rainwater harvesting for non-potable use has been considered but is not proposed. The development has limited and intermittent non-potable water demand, resulting in poor system efficiency and negligible potable water savings. In addition, rainwater harvesting systems introduce ongoing maintenance, operational, and water quality risks, with no suitable long-term management arrangement identified. When assessed on a whole-life basis, the cost and carbon impacts are disproportionate to the limited benefit. The drainage strategy objectives are fully met through the proposed SuDS measures and water-efficient fittings, and rainwater harvesting is therefore not considered necessary or appropriate for this development.

2. Infiltration

Desk Study information, including BGS mapping, identifies Glaciofluvial Sheet Deposits comprising sand and gravel, which in isolation could be considered potentially suitable for infiltration.

However, site specific Ground Investigation works have since been undertaken and demonstrate that infiltration-based drainage is not feasible at this location. The GI identified variable Made Ground, interbedded clayey horizons within the superficial deposits, and shallow ground water level encountered from approximately 1.6m below ground level. These conditions significantly restrict infiltration potential and limit the achievable depth and effectiveness of soakaway structures.

In addition, the site is located within a Secondary A Aquifer with medium groundwater vulnerability, and the GI identified the presence of hydrocarbon contamination with Made Ground, superficial soils and shallow groundwater. The use of infiltration drainage could result in the mobilisation of contaminants and increased risk to controlled waters.

On the basis of the above, and supported by the findings of the Ground Investigation, infiltration techniques such as soakaways are not considered appropriate, and infiltration testing in accordance with BRE Digest 365 has therefore not been pursued. Alternative surface water management measures have been developed in accordance with the drainage hierarchy.

3. Surface Water Body

The nearest receiving watercourse is the River Mersey located approximately 600m to the west of the site. This is considered impractical and uneconomical to install a new public network within the surrounding roads of the site. The costs and disruption associated with this outweighs the benefits of discharging surface water to other alternative sources, therefore has not been considered within the outfall options for the site.

4. Surface water sewer or another piped drainage system

The sewer records do not identify a public surface water sewer in reasonable proximity to the site. It is assumed there is no separate highway drainage system in place and the adjacent highways drain to the combined sewer. This option is therefore not deemed feasible for the disposal of surface water.

5. Combined Sewer

There are existing combined public sewers located adjacent to the site within Parrs Wood Lane. In the absence of a viable infiltration solution, it is proposed that surface water runoff from the development will discharge to the existing 1200mm diameter combined sewer, subject to agreement with United Utilities.

The proposed discharge will be via a single combined lateral connection from the site, with runoff attenuated on site and restricted to ensure there is no increase in flood risk elsewhere.

6.3 Pre and Post Development Discharge Rates

The pre-development surface water runoff rates have been calculated using Causeway Flow modelling software. The existing site has impermeable area of approximately 0.22ha, and the resulting discharge rates for the pre-development site have been summarised in the table below:

Return Period	Existing Runoff (l/s)
2 year	3.4
30 year	8.4
100 year	10.4

Table 6.3.1: Summary of the Existing Runoff

The proposed surface water discharge rates from the site have been developed in accordance with the requirements of Manchester's Local Development Framework Core Strategy (2012) and recently adopted Places for Everyone (PfE) planning policies, which collectively seek to ensure development minimises flood risk and improves upon the existing runoff rates.

For brownfield site such as this, Manchester policy required a 50% reduction in surface water runoff compared to existing discharge rates. The existing pre-development discharge rates for this site have been summarised in table 6.3.1.

In the absence of a CCTV and utility survey to confirm connectivity to the existing combined sewer network in accordance with United Utilities policy new connections must discharge surface water at greenfield runoff rates. The greenfield runoff rates have been summarised in table 6.3.2.

Return Period	Greenfield Runoff Rate (l/s)
2 year	0.9
30 year	2.1
100 year	2.6

Table 6.3.2: Summary of the Greenfield Rates

However, achieving these low flow rates would require an orifice smaller than the 50mm minimum recommended by water authorities. Orifices below this size present a significantly increased risk of blockage, which could lead to flooding both on and off site.

To mitigate this risk, a minimum 50mm orifice diameter is proposed. This corresponding to a practical controlled discharge rate of a maximum of 1.6 l/s for all storm events. Post-development rates have been summarised in table 6.3.3.

Return Period	Post-Development Rate (l/s)
2 year	1.0
30 year	1.0
100 year + 40% CC	1.5

Table 6.3.3: Summary of the Post-Development Rates

This approach achieves an approximate 85% betterment when compared to the existing rate generated for the 1 in 100-year storm event while significantly reducing the blockage risk and therefore flood risk to this development and surrounding area.

Therefore, in consideration of the above, it is proposed that the allowable discharge rate is increased from the calculated greenfield rate to a practical maximum of 1.6 l/s.

6.4 Sustainable Drainage Systems (SuDS)

Surface water runoff should be controlled as near to its source as possible through a sustainable drainage approach to surface water management. SuDS are an approach to managing surface water runoff which seeks to mimic natural drainage systems and retain water on or near the site. SuDS offer significant advantages over conventional piped drainage systems in reducing flood risk by attenuating the rate and quantity of surface water run-off from a site, promoting groundwater recharge, and improving water quality and, amenity and ecological value.

Manchester City Council's and Trafford Council's Sustainability Appraisal have a flood risk objective to 'reduce the impacts of climate change', with the sub-objective to minimise risk of flooding and increase use of SUDS'.

It is necessary to identify the most appropriate method of controlling and discharging surface water. The SuDS techniques in Table 6.4.1 below assesses suitability for the proposed development using the selection process defined in CIRIA C753 The SuDS Manual.

SuDS Category	SuDS Technique	Viability	Explanation
Infiltration/Filtration	Infiltration Trenches	✗	Due to the nature of the ground conditions, the use of infiltration systems is unfeasible.
	Infiltration Basins	✗	Not considered appropriate due to the volume requirements and nature of the development.
	Soakaways	✗	Due to the nature of the ground conditions, the use of infiltration systems is unfeasible.
	Bioretention/Filter Strips	✗	Due to the nature of the ground conditions, the use of infiltration systems is unfeasible.
Source Control	Green Roof/Living wall	✓	A green roof is proposed for the site. This will mimic the natural environment by managing rainfall at source, gradually releasing rainwater whilst providing amenity and biodiversity to the development.
	Permeable Paving	✓	There is an option to use permeable paving within the car parking areas. If soakaways are proven unfeasible then a 'Type C' non-infiltration system could be used for storage and treatment.
	Rainwater Harvesting	✗	There is no significant demand for non-potable water on site throughout its design life.
Conveyance	Swales	✗	Not considered appropriate due to the nature of the development with limited space to provide the benefits of a swale.
	Filter Drains	✗	Not considered appropriate due to the nature of the development with limited space to provide the benefits of a filter drain.
	Rain Gardens/Tree Pits/Rills	✓	The use of bioretention areas such as rain gardens and tree pits could be utilised on site. Additional SuDS planting techniques such as this will be confirmed at detailed design.
Retention/Detention	Detention Basin/Retention Pond	✗	Not considered appropriate due to the volume requirements and nature of the development.
	Geo-cellular Storage	✓	Geo-cellular storage is proposed for the site to accommodate the attenuation volume required from the soakaway.

Table 6.4.1: Summary of the SuDS options appraisal

6.5 Peak Volume Control

In restricting the flows from the development site there will be a requirement to provide attenuation. The attenuation will be designed to maintain operation on the system during all critical storm events to accommodate flows up to and including the 1 in 100-year event with a climate change allowance of 40%.

The attenuation volume requirements have been calculated using Causeway Flow software. The total volumes for each storm event have been summarised in table 6.5.1 and detailed calculations are included within Appendix F.

Return Period	Attenuation Volume (m ³)
2 year	47
30 year	119
100 year + 40% CC	233

Table 6.5.1: Summary of the Attenuation Volumes

6.6 Water Quality

Although the drainage principles proposed will conform to the basic level of treatment control as a minimum by using more traditional techniques such as silt traps, additional SuDS features can provide another treatment stage.

Green Roof: The water quality benefits of a green roof are associated with the removal of sediment and buoyant materials, but levels of nutrients, heavy metals, toxic materials, and oxygen-demanding materials may also be significantly reduced.

Permeable Paving: Pollutants can be retained on the surface of permeable pavements (especially where there is little or no fall), before being carried through to the laying course and sub-base layers during a rainfall event, where they can be trapped and degraded over time. CIRIA, the leading body in the research for SuDS, states that 60-95% of suspended solids and 70-90% of hydrocarbons can be removed by permeable pavements in this way. The development proposals have capacity to accommodate permeable paving within the car parking bays. This option will be explored at the detailed design stage.

As per the CIRIA SuDS Manual Table 4.3 the pollution hazard level for residential roofs is considered 'Very low' and the pollution hazard level for the rest of the site is considered 'Low'. The treatment provided can be considered adequate on this site and exceeds the pollution hazard indices for suspended solids, metals and hydrocarbons.

6.7 Approvals

At the detailed design stage, a Section 106 application will be made to United Utilities under the Water Industry Act 1991 for consent to discharge surface (and foul) water drainage from the proposed development to the public sewerage system.

A pre-development enquiry has been made to United Utilities to examine the availability of the public sewers. In summary, United Utilities will consider a connection to the 1200mm diameter public combined sewer within Parrs Wood Lane located south of the proposed site (if agreed by the Lead Local Flood Authority), if evidence can be demonstrated the preferred methods within the hierarchy are proven unfeasible. However, it is recommended another is submitted given the date of the original enquiry.

All relevant authorities will be kept informed regarding the design of the proposed drainage system. It is standard practice for detailed drainage design to be subject to the approval of the local planning authority subsequent to the grant of planning permission and this will be sought from Manchester City Council at the appropriate time.

7.0 Exceedance Events

7.1 Managing Exceedance

Below ground conveyance such as pipes cannot be built large enough for all types of extreme storm events. As a result, there will be times when surface water runoff will exceed the capacity of sewer networks. This can occur when the receiving drainage system becomes overloaded or when the outfall is restricted due to flood levels in the receiving water. The drainage system will be designed to cater for the following storm events:

- No surcharging in the 1 in 1 year rainfall event
- No flooding in the 1 in 30 year rainfall event
- No flooding (or minimal and contained on site) in the 1 in 100 year rainfall event plus a climate change allowance of 40%.

The drainage system will ensure that so far as is reasonably practicable, flows resulting from rainfall in excess of a 1 in 100 year rainfall event are managed in conveyance routes that minimise the risks to people and property.

7.2 Pathways and Conveyance

The proposed habitable rooms at ground floor level are approximately 1m higher than the external ground level with the non-residential units (car park and plant rooms) at a level similar to existing ground. The residential units at ground floor will provide a FFL of 39.300m AOD, which in turn raises the building further above existing ground levels. The topography of the proposed site ensures the more vulnerable areas are not at risk from an exceedance event, where, surface pathways will be linked together in the same way a conventional drainage system works to effectively convey these flows. The proposed pathways will have sufficient draining gradients towards landscaping and car parking areas.

8.0 Conclusions

Surface water drainage for the proposed development has been designed in accordance with national and local planning policy, including the NPPF, Planning Practice Guidance, the Manchester Local Flood Risk Management Strategy, and the adopted Places for Everyone Joint Development Plan.

Infiltration-based drainage solutions have been fully considered in accordance with the surface water drainage hierarchy. However, site-specific Ground Investigation works have confirmed that the presence of shallow groundwater, interbedded clayey strata, and hydrocarbon contamination within the Made Ground and superficial deposits. These conditions present a risk to controlled waters and significantly limit infiltration potential. On this basis, infiltration drainage techniques, including soakaways, are not considered feasible or appropriate for this site.

In the absence of a viable infiltration solution, surface water runoff from the development will be attenuated on site and discharged to the existing 1200mm diameter public combined sewer within Parrs Wood Lane, subject to approval from United Utilities and the Lead Local Flood Authority. Discharge will be controlled via a vortex flow control device with a minimum orifice size of 50mm to limit flows to a practical maximum of 1.6 l/s for all storm events.

This discharge rate represents an approximate 85% reduction compared to the existing runoff rate for the 1 in 100-year storm events and provides a significant betterment over pre-development conditions, while reducing the risk of blockage associated with smaller orifice sizes.

On site attenuation will be provided via geo-cellular storage sized to accommodate the critical 1 in 100-year storm event with a 40% allowance for climate change. The drainage system has been designed to ensure no flooding occurs during the 1 in 30-year storm event and that any exceedance during more extreme events is safely managed on site without risk to buildings or the surrounding area.

Foul water drainage from the proposed development will discharge to the existing 1200mm diameter public combined sewer within Parrs Wood Lane. A sewer survey will be undertaken at the detailed design stage to confirm the connection level and finalise the proposed connection arrangement.

The drainage strategy incorporates appropriate Sustainable Urban Drainage System (SuDS) feature, including a green roof and attenuation storage, to manage runoff at source, improve water quality, and provide biodiversity and amenity benefits.

With regard to drainage, the site is considered suitable for the proposed development. Subject to the implementation of this Drainage Strategy and the necessary approvals, the development can be safely occupied and adequately drained, while achieving a reduction in flood risk compared to existing conditions.



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Appendix A – Location Plan

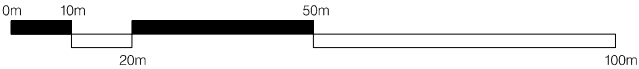


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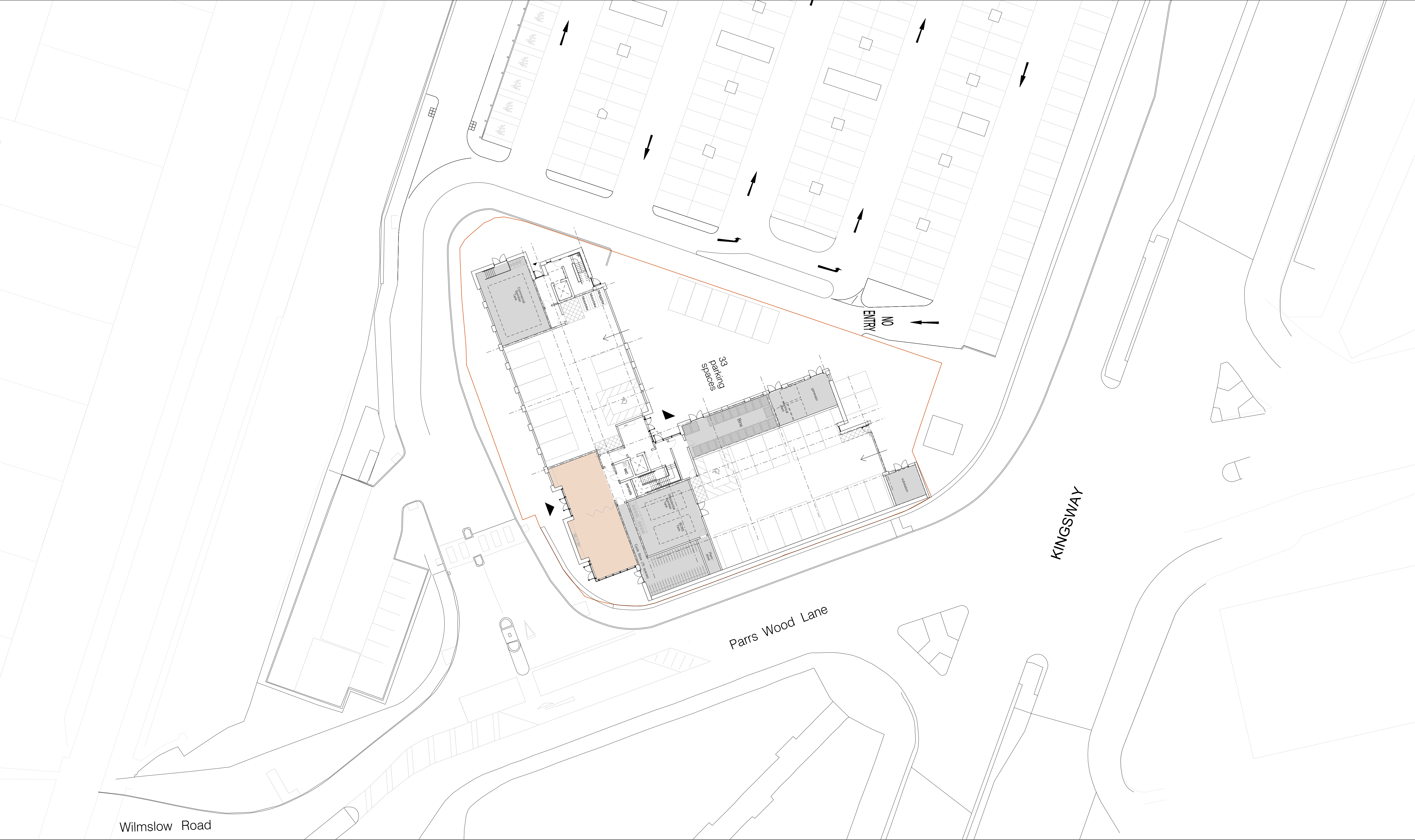
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revisions + notes:

DO NOT SCALE
Work to annotated dimensions only.
Read drawing in conjunction with relevant specification,
Structural Engineers' and Services Engineers' drawings.
Confirm all dimensions before commencement of any
work on site or fabrication.



client: DANDARA		date: SEPTEMBER 2021	
project: TESCO PARRS WOOD, DIDSbury		scales: 1:1250 at A3	drawn by: NW
title: Site Location Plan		drawing number: L(—)900	
status: PLANNING		job number: 0629	revisions: —



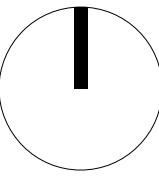
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revisions + notes:
REV. A 2012/2021
REV. B 11/01/2022

Filter Lane Added
Client information update

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work on site or fabrication.



client:
DANDARA

date:
SEPTEMBER 2021

project:
TESCO
PARRS WOOD, DIDSbury

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RC

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Site Location Plan_Proposed

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Appendix B – Proposed Site Plans



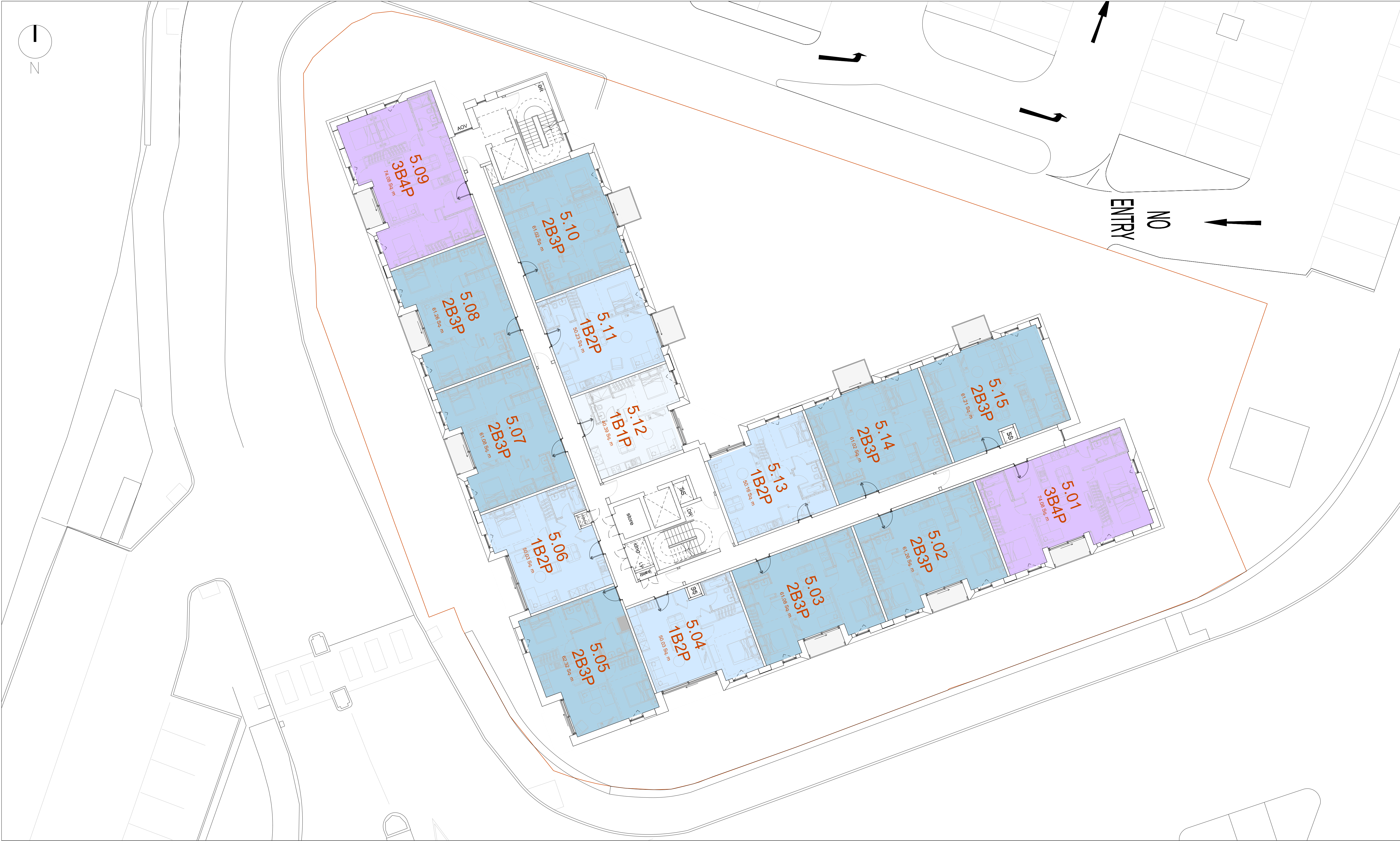
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REV. A	15/07/2021	AMENDED EXTERIOR WALL WINDOWS AND BALCONIES
REV. B	30/07/2021	AMENDED PLAN
REV. C	28/10/2021	Massing Update
REV. D	05/11/2021	Consultant information update

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- 1B1P
- 1B2P
- 2B3P
- 3B4P

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project: Didsbury, Parris Wood		scale: 1:125 at A1	drawn by: NW
title: FIRST FLOOR PLAN		drawing number: L(-)001	
status: PLANNING		job number: 0629	revision: D



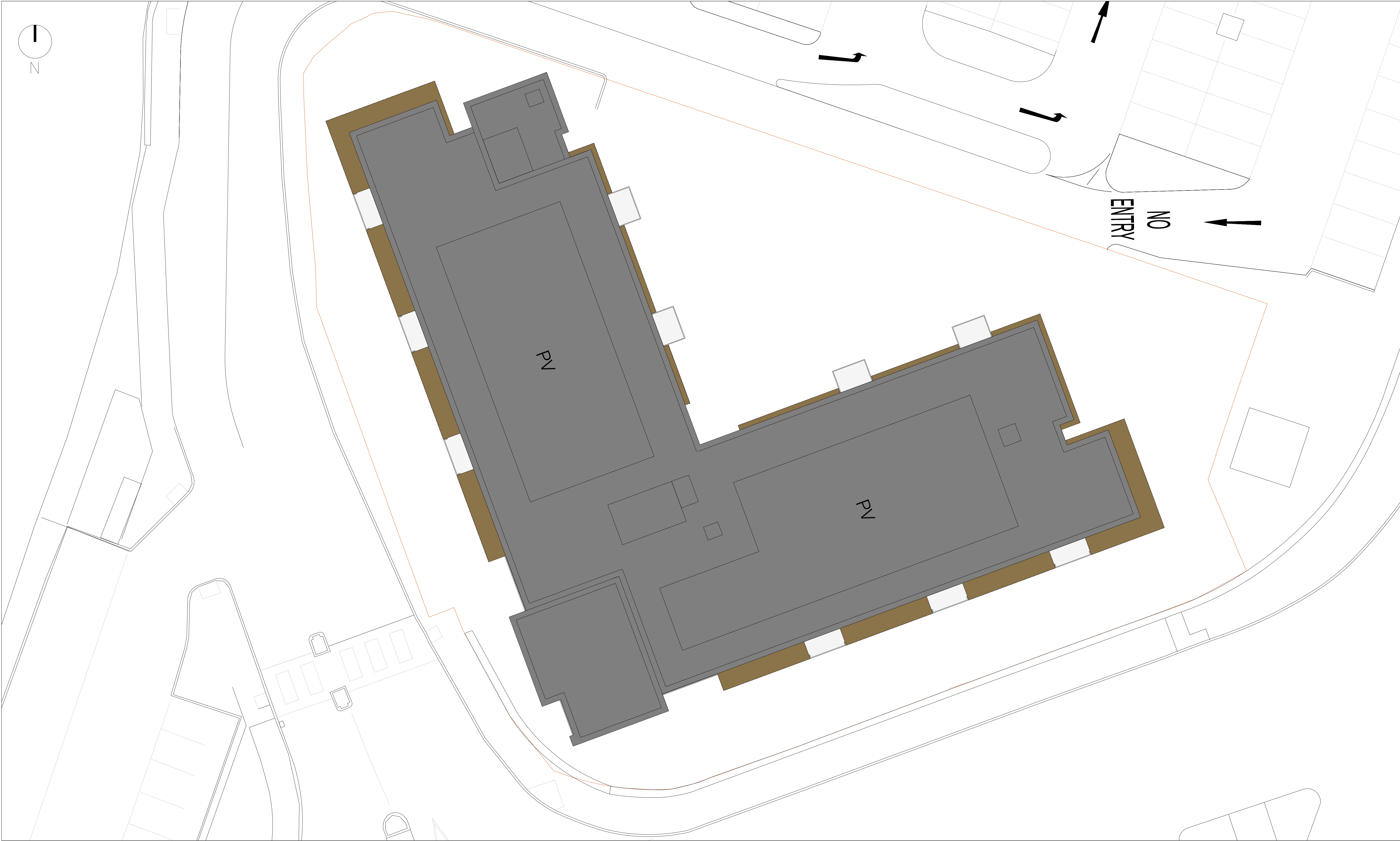
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SQI Studios
1 Kelso Place
Manchester M15 4LE
t: +44(0)161 832 9842
e: mail@hoddandpartners.com
w: www.hoddandpartners.com

revisions + notes:
REV. A 30/07/2021 AMENDED PLAN (previously level 6)
REV. B 28/10/2021 Massing Update (previously level 6)
REV. C 07/12/2021 Substation new position (previously level 6)
REV. D 11/01/2022 Client information update

DO NOT SCALE
Work to annotated dimensions only.
Read drawing in conjunction with relevant specification,
Structural Engineers' and Services Engineers' drawings.
Confirm all dimensions before commencement of any
work on site or fabrication.

- 1B1P
- 1B2P
- 2B3P
- 3B4P

client: Dandara	date: NOVEMBER 2021	
project: Didsbury, Parris Wood	scale: 1:125 at A1	drawn by: NW
title: FIFTH FLOOR PLAN	drawing number: L(—)005	
status: PLANNING	job number: 0629	revision: D



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Confirm all dimensions before commencement of any
work on site or fabrication.

revisions + notes:

REV. A 07/12/2021 Substation new position
REV. B 11/01/2022 Client information update

client:

Dandara

date:

NOVEMBER 2021

project:

Didsbury, Parris Wood

scale:

1:125 at A1

drawn by:

NW

title:

ROOF PLAN

drawing number:

L(—)00R

status:

PLANNING

job number:

0629

revision:

B



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DO NOT SCALE
Work to annotated dimensions only.
Read drawing in conjunction with relevant specification,
Structural Engineers' and Services Engineers' drawings.
Confirm all dimensions before commencement of any
work on site or fabrication.

revisions + notes:
REV. A 28/10/2021 Massing Update
REV. B 05/11/2021 Consultant information update
REV. C 30/11/2021 Client information update
REV. D 15/12/2021 Client information update

client: Dandara	date: SEPTEMBER 2021	
project: Didsbury, Parris Wood	scale: 1:100 at A1	drawn by: RC
title: South Elevation	drawing number: L(-)212	
status: PLANNING	job number: 0629	revision: D

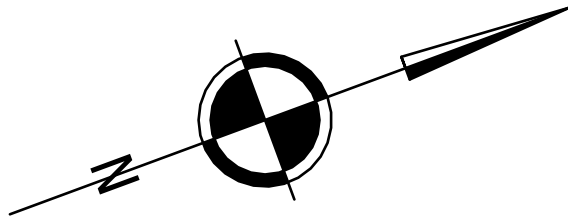
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Appendix C – Topographical Survey

Provisional

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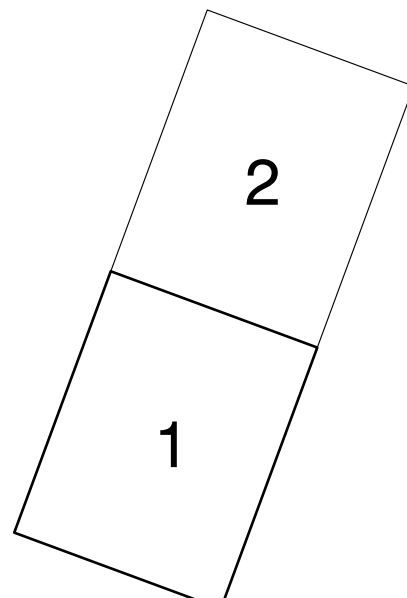
Note:

The survey is plotted on a plane local Grid. Orientation to National Grid.
All levels relate to Ordnance Datum, achieved using the OS National GPS Network.

Survey Control Markers established for Mapping purposes only and should not be used for Construction without the written approval of Survey Operations Ltd.

SURVEY STATIONS			
Name	Easting	Northing	Height
S01	385426.47	390471.51	38.36
S02	385444.78	390575.64	38.10
S03	385471.92	390567.00	38.45
S04	385495.61	390566.64	38.17
S05	385525.53	390566.28	38.28
S06	385496.50	390463.17	38.43
S07	385467.79	390475.50	38.42
S02A	385478.12	390646.77	38.02
S02A1	385496.21	390662.19	38.18
S02A2	385505.51	390657.66	37.87
S02A3	385507.67	390636.87	38.25
S02A4	385456.19	390602.02	37.95
S07A	385510.78	390479.68	40.53
S07B	385489.73	390467.59	39.99
S07C	385442.25	390452.35	38.75
S07D	385407.01	390432.14	38.23

Sheet Layout



Survey
OPERATIONS

Smith Street, Skelmersdale, Lancs. WN8 8LN
Tel: 01695 725662 Fax: 01695 51816
Email: mail@survops.co.uk - www.survops.co.uk

Client

Hodder & Partners

Drawing Title

Topographical Survey of Land at:

Tesco East Didsbury

Manchester

Sheet 1 of 2

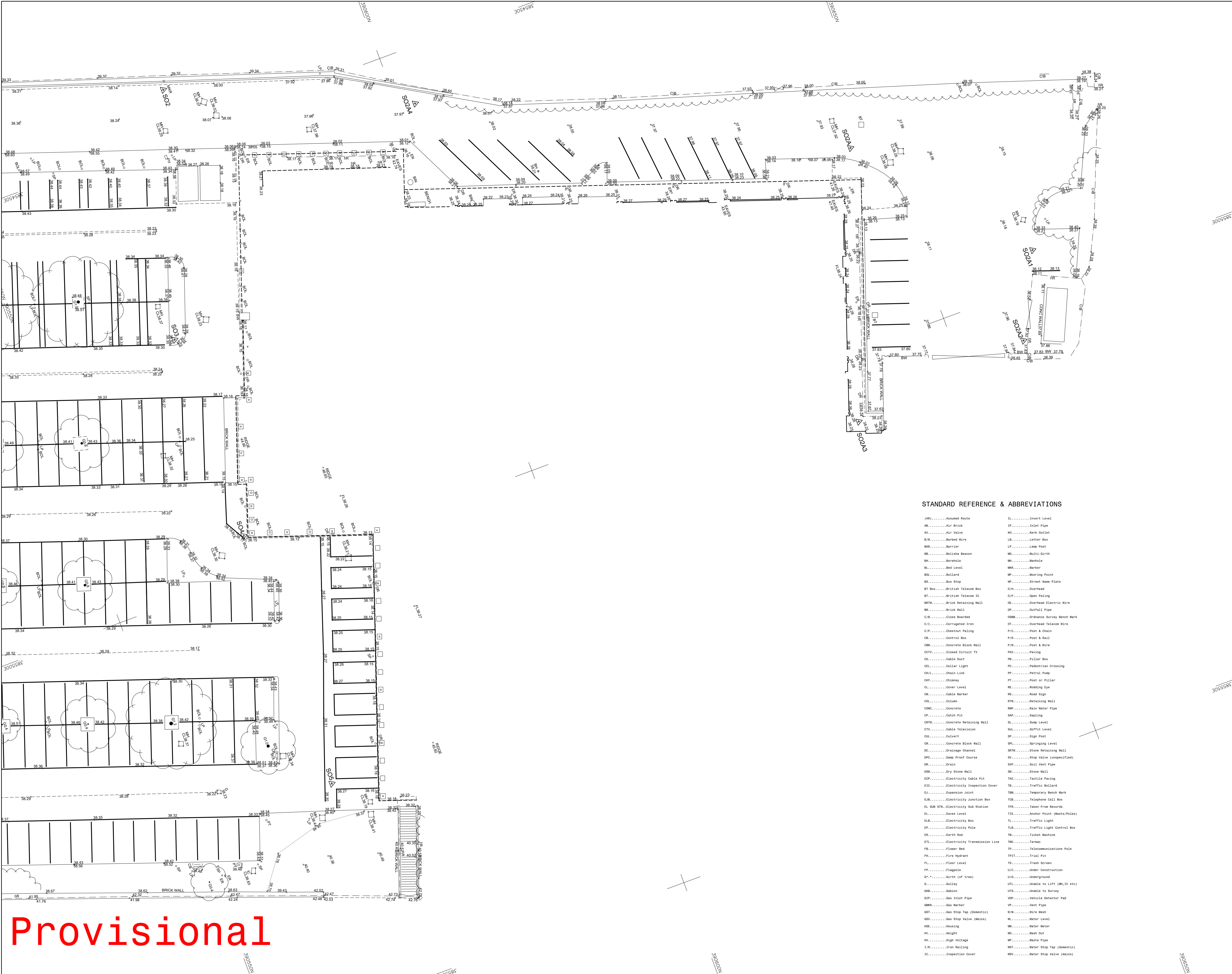
Scale(s)	1:200	Surveyor	TW/SB
Date	Jan 20	Drawn	OKS
Job Number	19L120	Checked	888

Sheet Size & Drg Number & Revision

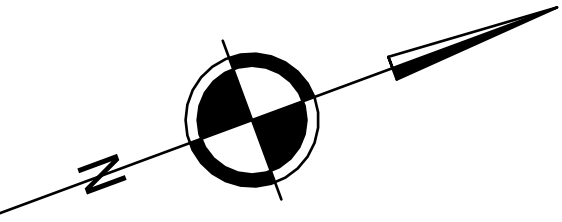
A1 19L120/001

STANDARD REFERENCE & ABBREVIATIONS

(AR).....Assumed Route	IL.....Invert Level
AB.....Air Brick	IP.....Inlet Pipe
AV.....Air Valve	KO.....Kerb Outlet
B/W.....Barbed Wire	LB.....Letter Box
BAR.....Barrier	LP.....Lamp Post
BB.....Belisha Beacon	MU.....Multi-Girth
BN.....Borehole	MN.....Manhole
BL.....Bed Level	MW.....Murrer
BL.....Bollard	MP.....Mooring Point
BS.....Bus Stop	NP.....Street Name Plate
BT Box.....British Telecom Box	O/H.....Overhead
BT.....British Telecom IC	O/P.....Open Paving
BRW.....Brick Retaining Wall	OE.....Overhead Electric Wire
BR.....Brick Wall	OP.....Outfall Pipe
C/B.....Close Boarded	OSBM.....Ordnance Survey Bench Mark
C/I.....Corrugated Iron	OT.....Overhead Telecom Wire
C/P.....Cesspool Piling	P.....Post & Chain
CB.....Control Box	P/W.....Post & Wall
CBW.....Concrete Block Wall	P/W.....Post & Wire
CCTV.....Closed Circuit TV	PAW.....Paving
CD.....Cable Duct	PB.....Pillar Box
CEL.....Cellar Light	PC.....Pedestrian Crossing
CHL.....Chain Link	PP.....Petrol Pump
CH.....Chimney	PT.....Post or Pillar
CL.....Cover Level	RE.....Roding Eye
CM.....Cable Marker	RS.....Rear Step
COL.....Column	RW.....Retaining Wall
CONC.....Concrete	RWP.....Rain Water Pipe
CP.....Catch Pit	SAP.....Sapling
CRW.....Concrete Retaining Wall	SL.....Sump Level
CTV.....Cable Television	SoL.....Soffit Level
CU.....Culvert	SP.....Sign Post
CM.....Concrete Block Wall	SPH.....Springing Level
DC.....Drainage Channel	SRW.....Stone Retaining Wall
DSC.....Damp Proof Course	SV.....Stop Valve (unspecified)
DR.....Drain	SVP.....Soil Vent Pipe
DSW.....Dry Stone Wall	SW.....Stone Wall
ECP.....Electricity Cable Pit	TAD.....Tactile Paving
EIC.....Electricity Inspection Cover	TB.....Traffic Bollard
EJ.....Expansion Joint	TBM.....Temporary Bench Mark
EJB.....Electricity Junction Box	TCH.....Telephone Call Box
EL SUB STN.....Electricity Sub Station	TFH.....Taken From Records
EL.....Eaves Level	TIE.....Tie Point (Masts/Poles)
EM.....Erector Post	TL.....Traffic Light
EP.....Electricity Pole	TLB.....Traffic Light Control Box
ER.....Earth Rod	TM.....Ticket Machine
ETL.....Electricity Transmission Line	TMO.....Tarmac
FB.....Flower Bed	TP.....Telecommunications Pole
FR.....Fire Hydrant	TPIT.....Trial Pit
FL.....Floor Level	TS.....Trash Screen
FP.....Flagpole	U/C.....Under Construction
G*.....Girth (of tree)	UG.....Underground
G.....Gully	UTL.....Unable to Lift (HM,IC etc)
GAB.....Gabion	UTB.....Unable to Survey
GIP.....Gas Inlet Pipe	VDP.....Vehicle Detector Pad
GMK.....Gas Marker	VP.....Vent Pipe
GST.....Gas Stop Tap (Domestic)	W/M.....Wire Mesh
GSV.....Gas Stop Valve (Mains)	WL.....Water Level
HSE.....Housing	WM.....Water Meter
HT.....Height	WO.....Wash Out
HV.....High Voltage	WP.....Waste Pipe
I.R.....Iron Railing	WST.....Water Stop Tap (domestic)
IC.....Inspection Cover	WSV.....Water Stop Valve (mains)



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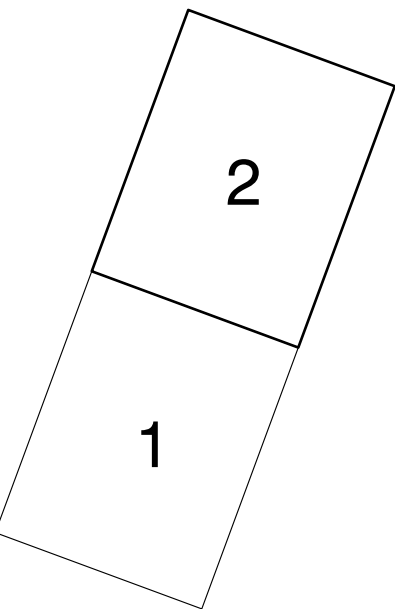


Note:
The survey is plotted on a plane local
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S07A	385510.78	390479.68
S07B	385489.73	390467.59
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S07D	385407.01	390432.14

Sheet Layout



Smith Street, Skelmersdale, Lancs. WN8 8LN
Tel: 01695 725662 Fax: 01695 51816
Email: mail@survops.co.uk - www.survops.co.uk

Client Hodder & Partners	
Drawing Title Topographical Survey of Land at: Tesco East Didsbury Manchester Sheet 2 of 2	
Scale(s) 1:200	Surveyor TW/SB
Date Jan 20	Drawn OKS
Job Number 19L120	Checked 888
Sheet Size & Drg Number & Revision A1 19L120/002	

Appendix D – Existing Sewer Records

Apex Consulting Engineers

Unit 3
Unit 3 Acres Hill Business Park, Apex Consulting
Engineers
Sheffield, South Yorkshire
S9 4LR

FAO:

How to contact us:

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

Telephone: 0370 7510101

E-mail: propertysearches@uuplc.co.uk

Your Ref: Tesco Car Park
Our Ref: UUPS-ORD-297208
Date: 17/06/2021

Dear Sirs

Location: Tesco Car Park Parrs Wood Lane, Didsbury, M20 5NP

I acknowledge with thanks your request dated 11/06/2021 for information on the location of our services.

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

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

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

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

If you have any queries regarding this matter please [contact us](#).

Yours Faithfully,



Karen McCormack
Property Searches Manager

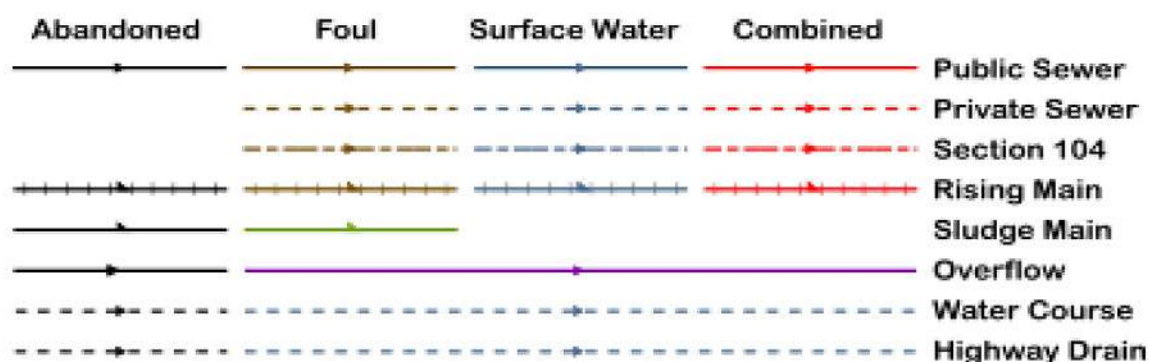
TERMS AND CONDITIONS - WASTEWATER AND WATER DISTRIBUTION PLANS

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

TERMS AND CONDITIONS:

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

Wastewater Symbolology



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

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



SEWER RECORDS

Address or Site Reference

Tesco Car Park Parrs Wood Lane,
Didsbury,
M20 5NP

Scale: 1:2500
Date: 17/06/2021

Printed by: Property Searches

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

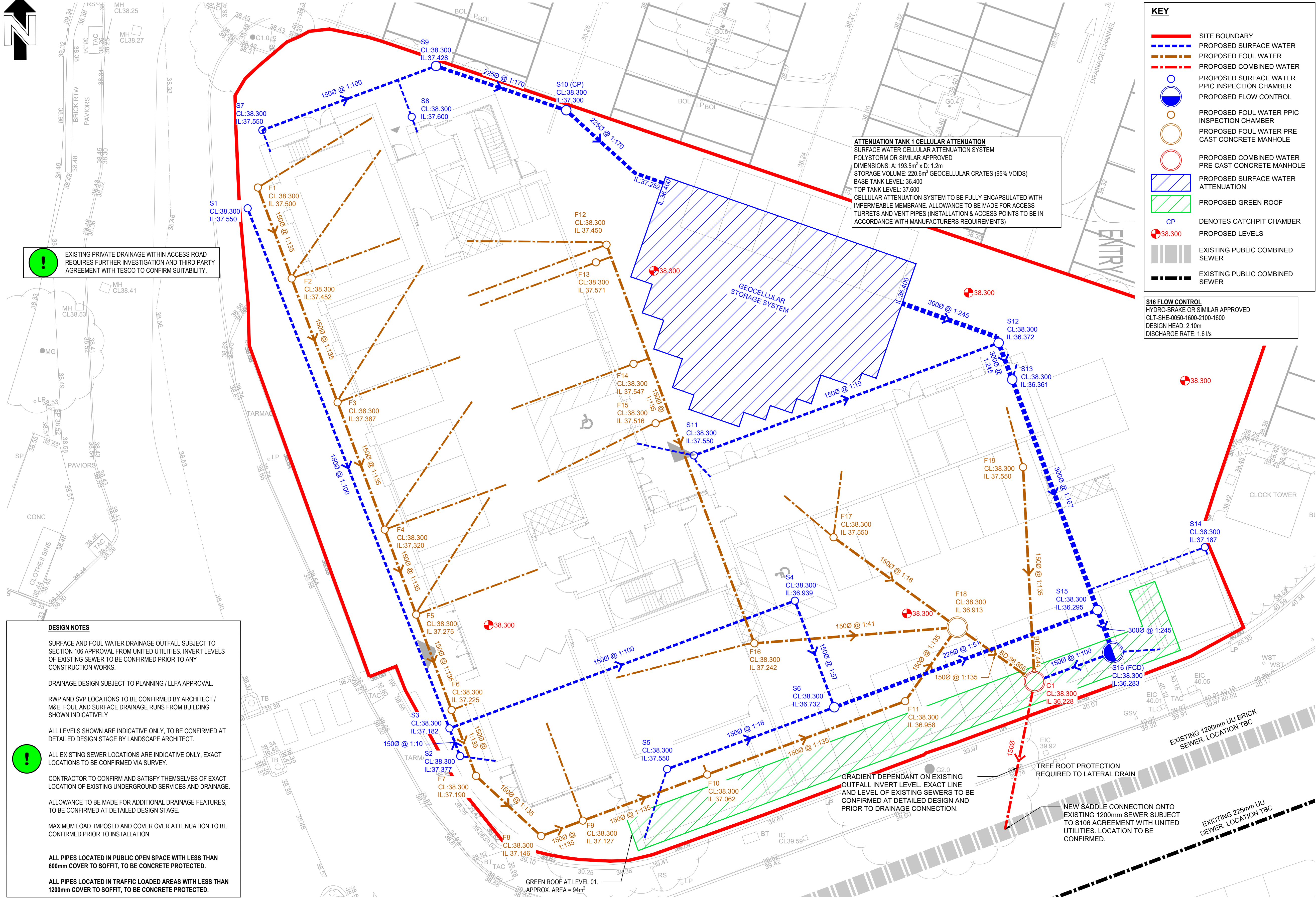
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Document Title: Drainage Strategy Report
Document No.: 1023-ACE-ZZ-XX-RP-C-1001
Revision: 004
Date: January 2026

Appendix E – Drainage Drawings



ATTENUATION TANK 1 CELLULAR ATTENUATION
SURFACE WATER CELLULAR ATTENUATION SYSTEM
POLYSTORM OR SIMILAR APPROVED
DIMENSIONS: A: 193.5m² x D: 1.2m
STORAGE VOLUME: 220.6m³ GEOCELLULAR CRATES (95% VOIDS)
BASE TANK LEVEL: 36.400
TOP TANK LEVEL: 37.600
CELLULAR ATTENUATION SYSTEM TO BE FULLY ENCAPSULATED WITH IMPERMEABLE MEMBRANE. ALLOWANCE TO BE MADE FOR ACCESS TURRETS AND VENT PIPES (INSTALLATION & ACCESS POINTS TO BE IN ACCORDANCE WITH MANUFACTURERS REQUIREMENTS)

KEY

- SITE BOUNDARY
- PROPOSED SURFACE WATER
- PROPOSED FOUL WATER
- PROPOSED COMBINED WATER
- PROPOSED SURFACE WATER PPIC INSPECTION CHAMBER
- PROPOSED FLOW CONTROL
- PROPOSED FOUL WATER PPIC INSPECTION CHAMBER
- PROPOSED FOUL WATER PRE CAST CONCRETE MANHOLE
- PROPOSED COMBINED WATER PRE CAST CONCRETE MANHOLE
- PROPOSED SURFACE WATER ATTENUATION
- PROPOSED GREEN ROOF
- CP DENOTES CATCHPIT CHAMBER
- PROPOSED LEVELS
- EXISTING PUBLIC COMBINED SEWER
- EXISTING PUBLIC COMBINED SEWER

S16 FLOW CONTROL
HYDRO-BRAKE OR SIMILAR APPROVED
CLT-SHE-0050-1600-2100-1600
DESIGN HEAD: 2.10m
DISCHARGE RATE: 1.6 l/s

EXISTING PRIVATE DRAINAGE WITHIN ACCESS ROAD
REQUIRES FURTHER INVESTIGATION AND THIRD PARTY AGREEMENT WITH TESCO TO CONFIRM SUITABILITY.

DESIGN NOTES

SURFACE AND FOUL WATER DRAINAGE OUTFALL SUBJECT TO SECTION 106 APPROVAL FROM UNITED UTILITIES. INVERT LEVELS OF EXISTING SEWER TO BE CONFIRMED PRIOR TO ANY CONSTRUCTION WORKS.

DRAINAGE DESIGN SUBJECT TO PLANNING / LLFA APPROVAL.

RWP AND SVP LOCATIONS TO BE CONFIRMED BY ARCHITECT / M&E. FOUL AND SURFACE DRAINAGE RUNS FROM BUILDING SHOWN INDICATIVELY

ALL LEVELS SHOWN ARE INDICATIVE ONLY, TO BE CONFIRMED AT DETAILED DESIGN STAGE BY LANDSCAPE ARCHITECT.

ALL EXISTING SEWER LOCATIONS ARE INDICATIVE ONLY, EXACT LOCATIONS TO BE CONFIRMED VIA SURVEY.

CONTRACTOR TO CONFIRM AND SATISFY THEMSELVES OF EXACT LOCATION OF EXISTING UNDERGROUND SERVICES AND DRAINAGE.

ALLOWANCE TO BE MADE FOR ADDITIONAL DRAINAGE FEATURES, TO BE CONFIRMED AT DETAILED DESIGN STAGE.

MAXIMUM LOAD IMPOSED AND COVER OVER ATTENUATION TO BE CONFIRMED PRIOR TO INSTALLATION.

ALL PIPES LOCATED IN PUBLIC OPEN SPACE WITH LESS THAN 600mm COVER TO SOFFIT, TO BE CONCRETE PROTECTED.

ALL PIPES LOCATED IN TRAFFIC LOADED AREAS WITH LESS THAN 1200mm COVER TO SOFFIT, TO BE CONCRETE PROTECTED.

DRAINAGE NOTES:

- ALL WORKS TO BE CONDUCTED IN STRICT ACCORDANCE WITH SPECIFICATION OF THE LOCAL AUTHORITY & BS EN 752:2017.
- ALL PIPE RUNS NEAR BUILDINGS TO COMPLY WITH THE LATEST BUILDING REGULATIONS PART H1. WHERE A PIPE IS WITHIN 1m OF A FOUNDATION THE TRENCH SHALL BE FILLED WITH CLASS GEN3 CONCRETE UP TO THE LOWEST LEVEL OF THE FOUNDATION. WHERE THE TRENCH IS FURTHER THAN 1m FROM THE FOUNDATION, THE TRENCH SHALL BE FILLED WITH CLASS GEN3 CONCRETE TO A LEVEL BELOW THE LOWEST LEVEL FOR THE FOUNDATION EQUAL TO THE DISTANCE FROM THE FOUNDATION LESS 150mm. IN BOTH CASES THE PIPE SHALL BE BEDDED AND SURROUNDED IN 150mm THICK CLASS GEN3 CONCRETE.
- WHERE PIPES, EXTERNAL TO THE STRUCTURES, HAVE A DEPTH TO SOFFIT FROM GROUND LEVEL OF LESS THAN 600mm THEY SHALL HAVE A CLASS GEN3 CONCRETE ENCASEMENT (150mm THICK).
- WHERE A PIPE, UNDER A CARRIAGEWAY, HAS A DEPTH OF COVER OF LESS THAN 1.2m THE PIPE SHALL BE LAID IN A CLASS 2 BEDDING.

- WHERE PIPES ARE BEDDED AND SURROUNDED IN CONCRETE, FLEXIBLE JOINTS SHOULD BE PROVIDED. COMPRESSIBLE BOARDS (FIBREBOARD OR POLYSTYRENE) SHALL BE PROVIDED AT A MAXIMUM OF 8m CENTRES (COINCIDING WITH PIPE JOINTS). THE BOARDS SHALL BE PRE-CUT TO PIPE DIAMETER AND TO A HEIGHT AND WIDTH EQUAL TO THE CONCRETE CROSS SECTION. A BOARD THICKNESS OF 18mm FOR PIPES UP TO 450mm NOMINAL DIAMETER AND 36mm FOR PIPES OVER 450mm NOMINAL DIAMETER.
- ALL PRIVATE BUILDING DRAINAGE SHALL BE CONSTRUCTED IN STRICT ACCORDANCE WITH BS EN 752:2017.
- UNLESS OTHERWISE SPECIFIED, BUILDING DRAINAGE TO BE 150mm INTERNAL DIAMETER.
- MINIMUM GRADIENT FOR Ø100mm SURFACE DRAINAGE PIPES IS 1:60, AND Ø150mm IS 1:100 U.N.O.

- MINIMUM GRADIENTS FOR FOUL DRAINAGE PIPES: Ø100mm: 1:40 WHERE FLOW IS LESS THAN 1L/S, OR WHERE NO WCS ARE CONNECTED. Ø100mm: 1:80 WHERE FLOW IS 1L/S OR GREATER, OR WHERE AT LEAST 1NO. WC IS CONNECTED. Ø150mm: 1:135 WHERE FLOW IS LESS THAN 5L/S, OR WHERE UP TO 5NO. WCS ARE CONNECTED. Ø150mm: 1:150 WHERE FLOW IS 5L/S OR GREATER, OR WHERE 5NO. OR MORE WCS ARE CONNECTED.
- Ø450mm PPIC'S TO HAVE A Ø150mm TO Ø225mm REDUCER FOR ALL OUTFALL CONNECTIONS TO A Ø225mm PIPE. NO Ø225mm PIPES TO CONNECT AS INLETS TO Ø450 PPIC'S, Ø600 PPIC'S TO BE USED IN THIS OCCURRENCE.
- ALL GULLIES NOT CONNECTED TO INSPECTION CHAMBERS ARE TO BE RODDABLE.
- ALL GULLY CONNECTIONS OTHER THAN THOSE AT MANHOLES TO BE MADE VIA 'Y' JUNCTIONS.
- GULLIES COINCIDENT WITH PEDESTRIAN/ DRIVE CROSSINGS TO HAVE PEDESTRIAN TYPE GULLY COVERS.

- ALL ROAD GULLY CONNECTIONS TO BE 150mm DIAMETER AND ANY GULLY CONNECTIONS SUBJECT TO TRAFFIC LOADING TO HAVE CLASS 2 BEDDING & 20 SURROUND.
- ALL STUB STACKS TO BE FITTED WITH AIR ADMITTANCE VALVES WHERE BRANCH DRAIN EXCEEDS 12m EXCEPT AT THE HEAD OF THE RUN. SOIL VENT PIPES LOCATED AT THE HEAD OF A RUN TO BE INSTALLED WITH ROOF TILE VENT.
- ALL CONNECTIONS TO BE MADE FROM SOFFIT TO SOFFIT UNLESS WERE NOTED OTHERWISE.
- ALL MANHOLES SHALL BE WATERTIGHT.
- TRENCH TEMPORARY FORMWORK IS REQUIRED TO ALL EXCAVATIONS EXCEEDING 1.2m DEPTH TO PROVIDE ADEQUATE SUPPORT AND STABILITY AT ALL TIMES.
- SEWERS ARE TO BE CONSTRUCTED IN SINGLE SECTIONS BETWEEN MANHOLES ONLY. TRENCHES TO BE BACKFILLED PRIOR TO EXCAVATING

THE SUCCEEDING SEWER RUN.

- ALL CONCRETE AND CONCRETE PRODUCTS TO BE IN ACCORDANCE WITH BRE SPECIAL DIGEST 1 FOR SULPHATES.
- WHERE SEWER OR DRAINS ARE TO BE ABANDONED THEY SHALL BE REMOVED OR FILLED BY GROUTING IN ACCORDANCE WITH THE CIVIL ENGINEER SPECIFICATION FOR THE WATER INDUSTRY 7TH EDITION, CLAUSE S.23.
- EXTERNAL RAIN WATER PIPES TO HAVE ACCESS POINTS 1m ABOVE GROUND LEVEL. (REFER TO DETAIL WITHIN CONSTRUCTION DETAILS).
- ALL RWP, SVP AND SS LOCATIONS TO HAVE ABOVE GROUND RODDABLE ACCESS POINTS BY M&E, WHERE POSSIBLE.
- ALL DRAINAGE TO BE CCTV SURVEYED FOLLOWING CONSTRUCTION.
- REFER TO SPECIFICATION FOR DETAILS OF PIPE BEDDING BENEATH / ADJACENT TO FLOOR SLAB & FOUNDATIONS.

- THE CONTRACTOR SHALL CHECK ALL EXISTING MANHOLE INVERT LEVELS PRIOR TO THE COMMENCEMENT OF ANY DRAINAGE WORKS AND REPORT HIS FINDINGS BACK TO THE ENGINEER IN WRITING.
- WHERE PROPOSED DRAINAGE PIPE WORK RUNS ARE IN CLOSE PROXIMITY TO THE NEW FOUNDATIONS, THE CONTRACTOR SHALL ALLOW FOR EXTENDING THE DEPTH OF NEW FOUNDATIONS IN LEAN MIX CONCRETE DOWN TO THE PROPOSED PIPE BEDDING LEVEL, EXCLUDING WHERE SITE HAS PILED FOUNDATIONS
- ALL FOUL DRAINAGE RUNS TO BE 1000 UNLESS NOTED OTHERWISE. FLOOR GULLY CONNECTIONS TO BE 1000.
- MANHOLES LOCATED WITHIN BLOCK PAVING OR NATURAL STONE WILL REQUIRE A RECESSED COVER.
- WHERE INTERNAL RWPS/SVPS BRANCH INTO PIPEWORK UNDER BUILDING, ABOVE GROUND RODDING ACCESS TO BE PROVIDED.
- ALL CHAMBERS/MANHOLES LOCATED WITHIN THE PROPOSED BUILDING TO BE CONSTRUCTED WITH DOUBLE SEALED COVERS.

Notes

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECTS, ENGINEERS AND SPECIALISTS DRAWINGS TOGETHER WITH THE APPROPRIATE SPECIFICATIONS.
- IT IS THE CONTRACTORS RESPONSIBILITY TO CHECK ALL DIMENSIONS ON SITE. DIMENSIONS MUST NOT BE SCALED FROM THIS DRAWING. ANY DISCREPANCIES TO BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ARCHITECT IN WRITING.
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
- ALL LEVELS ARE IN METRES, UNLESS NOTED OTHERWISE.

GENERAL NOTES:

- THE WORKS SHALL BE IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS, NATIONAL BUILDING SPECIFICATION (NBS) BUILDING REGULATIONS PART H & VOLUME 1 OF THE MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS DRAWINGS, ARCHITECTS DRAWINGS, MECHANICAL AND ELECTRICAL DRAWINGS AND SPECIFICATIONS.
- THE LOCATION, LINE & LEVEL OF ALL KNOWN EXISTING BURIED SERVICE MAINS AND DRAINAGE PIPEWORK INDICATED ON THE DRAWINGS ARE APPROXIMATE AND FOR GUIDANCE PURPOSES ONLY. IT IS THE CONTRACTORS RESPONSIBILITY TO DETERMINE THEIR EXACT LINE & LEVEL, BY WAY OF HAND EXCAVATED TRIAL PITS, PRIOR TO THE COMMENCEMENT OF ANY EXCAVATION WORKS ON SITE. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO MAINTAIN THE STRUCTURAL INTEGRITY OF ALL ABOVE AND BELOW GROUND SERVICE MAINS / DRAINAGE INSTALLATIONS.
- THE CONTRACTOR MUST COMPLY WITH ALL CURRENT LEGISLATION RELATING TO HEALTH & SAFETY.
- THE MAIN CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF ALL TEMPORARY WORKS, AND IS ALSO RESPONSIBLE FOR THE SAFE MAINTENANCE AND STABILITY OF EXISTING BUILDINGS AT ALL TIMES.
- THE MAIN CONTRACTOR IS RESPONSIBLE FOR THE MITIGATION OF ALL OCCURRENCES OF GROUND WATER DURING THE CONSTRUCTION PERIOD.
- THE CONTRACTOR SHALL MAKE ALLOWANCE FOR RAISING / LOWERING ALL EXISTING ACCESS COVERS & FRAMES TO SUIT NEW FINISHED LEVELS.
- CONTRACTOR TO CONFIRM THE CONDITION OF THE EXISTING PIPES BEFORE REUSE. ANY PIPES THAT ARE BROKEN SHOULD BE LINED, REPAIRED OR REPLACED. ANY PIPES THAT ARE BLOCKED SHOULD BE CLEARED.
- ALL SOFT / HARD PAVED AREAS AFFECTED BY THE WORKS SHALL BE FULLY REINSTATED UPON COMPLETION OF THE WORKS. ALL SURFACE MARKINGS DAMAGED BY THE WORKS SHALL BE FULLY REINSTATED.
- ALL SURPLUS EXCAVATED MATERIAL SHALL BE DISPOSED OF OFF SITE.
- ALL LEVELS ARE TO ORDNANCE DATUM.

P04	08.01.26	BM	DESIGN AMENDED TO SUIT LATEST S.I INFORMATION.	GB
P03	28.01.21	DAB	CHAMBER NUMBERS AND SITE BOUNDARY COLOUR AMENDED	GB
P02	30.11.21	DAB	RE-DESIGN OF DRAINAGE TO SUIT NEW ARCHITECTS LAYOUT	GB
P01	06.10.21	GB	FIRST ISSUE	LF
Rev	Date	By	Description	Appd

PRELIMINARY



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Client



Architect

HODDER + PARTNERS

Project

**TESCO
PARRS WOOD LANE,
DIDSBURY**

Title

DRAINAGE STRATEGY

Scale

1:125 @A1

Date

OCTOBER 2021

Drawn

GB

Checked

LF

Revision

P04

1023-ACE-ZZ-XX-DR-C-8000

Appendix F – Drainage Calculations

**Design Settings**

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.500
CV	1.000	Preferred Cover Depth (m)	0.600
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	200.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
S1	0.022	5.00	38.300	450	385434.823	390502.294	0.750
S2	0.018	5.00	38.300	450	385448.856	390466.123	0.923
S3	0.000		38.300	450	385448.145	390467.954	1.118
S4	0.000		38.300	450	385470.951	390476.382	1.361
S5	0.020	5.00	38.300	450	385462.512	390465.266	0.750
S6	0.000	5.00	38.300	450	385473.552	390469.345	1.568
S7	0.036	5.00	38.300	450	385435.798	390507.456	0.750
S9	0.040	5.00	38.300	600	385447.257	390511.692	0.947
S10 (CP)	0.019	5.00	38.300	600	385455.856	390508.769	1.000
TANK INLET	0.000	5.00	38.300		385462.269	390503.962	1.900
TANK OUTLET	0.000		38.300		385478.021	390496.029	1.900
S11	0.040	5.00	38.300	450	385464.283	390485.978	0.750
S12	0.028	5.00	38.300	600	385484.401	390493.412	1.928
S13	0.034	5.00	38.300	600	385485.298	390490.986	1.939
S15	0.000		38.300	600	385490.923	390475.765	2.005
S16 (FCD)	0.020	5.00	38.300	1200	385491.953	390472.977	2.017
C1	0.000		38.300	1200	385486.770	390471.039	2.072

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	36.834	100.0	150	Circular	38.300	37.550	0.600	38.300	37.182	0.968
2.000	1.964	10.1	150	Circular	38.300	37.377	0.773	38.300	37.182	0.968
1.002	24.313	100.0	150	Circular	38.300	37.182	0.968	38.300	36.939	1.211
1.003	7.502	56.8	150	Circular	38.300	36.939	1.211	38.300	36.807	1.343
3.000	11.769	15.8	150	Circular	38.300	37.550	0.600	38.300	36.807	1.343
1.004	18.519	51.2	225	Circular	38.300	36.732	1.343	38.300	36.370	1.705
4.000	12.217	100.0	150	Circular	38.300	37.550	0.600	38.300	37.428	0.722
4.001	9.082	170.0	225	Circular	38.300	37.353	0.722	38.300	37.300	0.775

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S1	450	Manhole	Adoptable	S3	450	Manhole	Adoptable
2.000	S2	450	Manhole	Adoptable	S3	450	Manhole	Adoptable
1.002	S3	450	Manhole	Adoptable	S4	450	Manhole	Adoptable
1.003	S4	450	Manhole	Adoptable	S6	450	Manhole	Adoptable
3.000	S5	450	Manhole	Adoptable	S6	450	Manhole	Adoptable
1.004	S6	450	Manhole	Adoptable	S15	600	Manhole	Adoptable
4.000	S7	450	Manhole	Adoptable	S9	600	Manhole	Adoptable
4.001	S9	600	Manhole	Adoptable	S10 (CP)	600	Manhole	Adoptable

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
4.002	8.015	167.0	225	Circular	38.300	37.300	0.775	38.300	37.252	0.823
4.003	17.637	0.0	300	Circular	38.300	36.400	1.600	38.300	36.400	1.600
4.004	6.896	245.0	300	Circular	38.300	36.400	1.600	38.300	36.372	1.628
5.000	21.448	20.9	150	Circular	38.300	37.550	0.600	38.300	36.522	1.628
4.005	2.587	245.0	300	Circular	38.300	36.372	1.628	38.300	36.361	1.639
4.006	16.227	245.0	300	Circular	38.300	36.361	1.639	38.300	36.295	1.705
1.005	2.972	245.0	300	Circular	38.300	36.295	1.705	38.300	36.283	1.717
1.009	5.533	100.0	150	Circular	38.300	36.283	1.867	38.300	36.228	1.922

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
4.002	S10 (CP)	600	Manhole	Adoptable	TANK INLET		Junction	
4.003	TANK INLET		Junction		TANK OUTLET		Junction	
4.004	TANK OUTLET		Junction		S12	600	Manhole	Adoptable
5.000	S11	450	Manhole	Adoptable	S12	600	Manhole	Adoptable
4.005	S12	600	Manhole	Adoptable	S13	600	Manhole	Adoptable
4.006	S13	600	Manhole	Adoptable	S15	600	Manhole	Adoptable
1.005	S15	600	Manhole	Adoptable	S16 (FCD)	1200	Manhole	Adoptable
1.009	S16 (FCD)	1200	Manhole	Adoptable	C1	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
S1	385434.823	390502.294	38.300	0.750	450	 0	0	1.000	37.550	150
S2	385448.856	390466.123	38.300	0.923	450	 0	0	2.000	37.377	150
S3	385448.145	390467.954	38.300	1.118	450	 0	1	2.000	37.182	150
							2	1.000	37.182	150
S4	385470.951	390476.382	38.300	1.361	450	 0	1	1.002	36.939	150
							0	1.003	36.939	150
S5	385462.512	390465.266	38.300	0.750	450	 0	0	3.000	37.550	150
S6	385473.552	390469.345	38.300	1.568	450	 0	1	3.000	36.807	150
							2	1.003	36.807	150
S7	385435.798	390507.456	38.300	0.750	450	 0	0	1.004	36.732	225
							0	4.000	37.550	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S9	385447.257	390511.692	38.300	0.947	600		1 4.000	37.428	150
							0 4.001	37.353	225
S10 (CP)	385455.856	390508.769	38.300	1.000	600		1 4.001	37.300	225
							0 4.002	37.300	225
TANK INLET	385462.269	390503.962	38.300	1.900			1 4.002	37.252	225
							0 4.003	36.400	300
TANK OUTLET	385478.021	390496.029	38.300	1.900			1 4.003	36.400	300
							0 4.004	36.400	300
S11	385464.283	390485.978	38.300	0.750	450		0 5.000	37.550	150
S12	385484.401	390493.412	38.300	1.928	600		1 5.000	36.522	150
							2 4.004	36.372	300
							0 4.005	36.372	300
S13	385485.298	390490.986	38.300	1.939	600		1 4.005	36.361	300
							0 4.006	36.361	300
S15	385490.923	390475.765	38.300	2.005	600		1 4.006	36.295	300
							2 1.004	36.370	225
							0 1.005	36.295	300
S16 (FCD)	385491.953	390472.977	38.300	2.017	1200		1 1.005	36.283	300
							0 1.009	36.283	150
C1	385486.770	390471.039	38.300	2.072	1200		1 1.009	36.228	150

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Starting Level (m)
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s) x
Summer CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume x
Winter CV	1.000	Additional Storage (m³/ha)	0.0	

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	



Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	40	0	0

Node S16 (FCD) Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	36.283	Product Number	CTL-SHE-0050-1600-2100-1600
Design Depth (m)	2.100	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.6	Min Node Diameter (mm)	1200

Node TANK OUTLET Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	36.400
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	193.5	193.5	1.200	193.5	252.7	1.201	0.0	252.7

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1	10	37.596	0.046	3.7	0.0073	0.0000	OK
15 minute summer	S2	10	37.401	0.024	3.0	0.0037	0.0000	OK
15 minute summer	S3	11	37.247	0.065	6.6	0.0104	0.0000	OK
15 minute summer	S4	11	36.997	0.058	6.6	0.0092	0.0000	OK
15 minute summer	S5	10	37.579	0.029	3.4	0.0045	0.0000	OK
15 minute summer	S6	11	36.788	0.056	9.8	0.0088	0.0000	OK
15 minute summer	S7	10	37.613	0.063	6.1	0.0101	0.0000	OK
15 minute summer	S9	10	37.450	0.097	12.8	0.0275	0.0000	OK
15 minute summer	S10 (CP)	10	37.402	0.102	16.0	0.0289	0.0000	OK
600 minute summer	TANK INLET	555	36.630	0.230	2.6	0.0000	0.0000	OK
600 minute summer	TANK OUTLET	555	36.630	0.230	6.1	42.2529	0.0000	OK
15 minute summer	S11	10	37.593	0.043	6.8	0.0069	0.0000	OK
600 minute summer	S12	555	36.630	0.258	3.6	0.0730	0.0000	OK
600 minute summer	S13	555	36.630	0.269	1.8	0.0761	0.0000	OK
600 minute summer	S15	555	36.630	0.335	1.6	0.0948	0.0000	SURCHARGED
600 minute summer	S16 (FCD)	555	36.630	0.347	1.0	0.3923	0.0000	SURCHARGED
15 minute winter	C1	13	36.252	0.024	1.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S1	1.000	S3	3.6	0.613	0.205	0.2190	
15 minute summer	S2	2.000	S3	3.0	0.842	0.053	0.0089	
15 minute summer	S3	1.002	S4	6.6	0.962	0.370	0.1659	
15 minute summer	S4	1.003	S6	6.6	1.098	0.279	0.0450	
15 minute summer	S5	3.000	S6	3.4	1.474	0.075	0.0270	
15 minute summer	S6	1.004	S15	9.8	0.558	0.135	0.3805	
15 minute summer	S7	4.000	S9	6.0	0.884	0.340	0.0834	
15 minute summer	S9	4.001	S10 (CP)	12.8	0.753	0.321	0.1540	
15 minute summer	S10 (CP)	4.002	TANK INLET	15.8	0.934	0.395	0.1360	
600 minute summer	TANK INLET	4.003	TANK OUTLET	2.5	0.194	0.036	1.0217	
600 minute summer	TANK OUTLET	4.004	S12	-3.6	-0.161	-0.051	0.4219	
15 minute summer	S11	5.000	S12	6.7	1.638	0.172	0.0883	
600 minute summer	S12	4.005	S13	-1.7	0.225	-0.024	0.1695	
600 minute summer	S13	4.006	S15	1.0	0.078	0.014	1.1115	
600 minute summer	S15	1.005	S16 (FCD)	1.0	0.050	0.014	0.2093	
600 minute summer	S16 (FCD)	1.009	C1	1.0	0.529	0.055	0.0103	44.9

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.34%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1	10	37.627	0.077	9.5	0.0123	0.0000	OK
15 minute summer	S2	10	37.417	0.040	7.8	0.0064	0.0000	OK
15 minute summer	S3	11	37.306	0.124	17.2	0.0198	0.0000	OK
15 minute summer	S4	11	37.045	0.106	16.9	0.0169	0.0000	OK
15 minute summer	S5	10	37.597	0.047	8.7	0.0074	0.0000	OK
960 minute winter	S6	930	37.008	0.276	1.6	0.0439	0.0000	SURCHARGED
15 minute summer	S7	10	37.670	0.120	15.6	0.0191	0.0000	OK
15 minute summer	S9	10	37.544	0.191	32.8	0.0540	0.0000	OK
15 minute summer	S10 (CP)	10	37.490	0.190	40.8	0.0537	0.0000	OK
960 minute winter	TANK INLET	930	37.008	0.608	2.6	0.0000	0.0000	SURCHARGED
960 minute winter	TANK OUTLET	930	37.008	0.608	6.3	111.7723	0.0000	SURCHARGED
15 minute summer	S11	10	37.620	0.070	17.3	0.0111	0.0000	OK
960 minute winter	S12	930	37.008	0.636	3.8	0.1800	0.0000	SURCHARGED
960 minute winter	S13	930	37.008	0.647	2.1	0.1831	0.0000	SURCHARGED
960 minute winter	S15	930	37.008	0.713	1.6	0.2018	0.0000	SURCHARGED
960 minute winter	S16 (FCD)	930	37.008	0.725	1.0	0.8200	0.0000	SURCHARGED
60 minute winter	C1	25	36.252	0.024	1.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S1	1.000	S3	9.4	0.762	0.529	0.4545	
15 minute summer	S2	2.000	S3	7.8	0.939	0.139	0.0190	
15 minute summer	S3	1.002	S4	16.9	1.164	0.954	0.3524	
15 minute summer	S4	1.003	S6	17.0	1.360	0.720	0.0937	
15 minute summer	S5	3.000	S6	8.7	1.914	0.193	0.0533	
960 minute winter	S6	1.004	S15	1.6	0.451	0.022	0.7365	
15 minute summer	S7	4.000	S9	15.5	1.065	0.873	0.1816	
15 minute summer	S9	4.001	S10 (CP)	32.6	0.909	0.819	0.3253	
15 minute summer	S10 (CP)	4.002	TANK INLET	40.5	1.194	1.010	0.2713	
960 minute winter	TANK INLET	4.003	TANK OUTLET	2.6	0.381	0.036	1.2420	
960 minute winter	TANK OUTLET	4.004	S12	-3.8	-0.076	-0.053	0.4856	
15 minute summer	S11	5.000	S12	17.2	1.931	0.440	0.2264	
960 minute winter	S12	4.005	S13	-2.1	0.227	-0.029	0.1822	
960 minute winter	S13	4.006	S15	-1.2	0.184	-0.017	1.1427	
960 minute winter	S15	1.005	S16 (FCD)	1.0	0.076	0.014	0.2093	
960 minute winter	S16 (FCD)	1.009	C1	1.0	0.529	0.055	0.0103	65.2

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 98.64%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	S1	1320	38.219	0.669	0.8	0.1063	0.0000	FLOOD RISK
1440 minute winter	S2	1320	38.219	0.842	0.6	0.1338	0.0000	FLOOD RISK
1440 minute winter	S3	1320	38.219	1.037	1.4	0.1648	0.0000	FLOOD RISK
1440 minute winter	S4	1320	38.219	1.280	1.4	0.2034	0.0000	FLOOD RISK
1440 minute winter	S5	1320	38.219	0.669	0.7	0.1063	0.0000	FLOOD RISK
1440 minute winter	S6	1320	38.219	1.486	2.1	0.2364	0.0000	FLOOD RISK
1440 minute winter	S7	1320	38.219	0.669	1.3	0.1063	0.0000	FLOOD RISK
1440 minute winter	S9	1320	38.219	0.866	2.7	0.2449	0.0000	FLOOD RISK
1440 minute winter	S10 (CP)	1320	38.219	0.919	3.4	0.2599	0.0000	FLOOD RISK
1440 minute winter	TANK INLET	1320	38.219	1.819	8.0	0.0000	0.0000	FLOOD RISK
1440 minute winter	TANK OUTLET	1320	38.219	1.819	8.4	220.6819	0.0000	FLOOD RISK
1440 minute winter	S11	1320	38.219	0.669	1.4	0.1063	0.0000	FLOOD RISK
1440 minute winter	S12	1320	38.219	1.847	5.2	0.5226	0.0000	FLOOD RISK
1440 minute winter	S13	1320	38.219	1.858	2.9	0.5257	0.0000	FLOOD RISK
1440 minute winter	S15	1320	38.218	1.923	2.0	0.5443	0.0000	FLOOD RISK
1440 minute winter	S16 (FCD)	1320	38.218	1.935	1.5	2.1890	0.0000	FLOOD RISK
1440 minute winter	C1	1320	36.258	0.030	1.5	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	S1	1.000	S3	0.8	0.414	0.045	0.6485	
1440 minute winter	S2	2.000	S3	0.6	0.442	0.011	0.0346	
1440 minute winter	S3	1.002	S4	1.4	0.647	0.079	0.4280	
1440 minute winter	S4	1.003	S6	1.4	0.690	0.059	0.1321	
1440 minute winter	S5	3.000	S6	0.7	0.885	0.016	0.2072	
1440 minute winter	S6	1.004	S15	2.0	0.440	0.028	0.7365	
1440 minute winter	S7	4.000	S9	1.3	0.582	0.073	0.2151	
1440 minute winter	S9	4.001	S10 (CP)	2.7	0.512	0.068	0.3612	
1440 minute winter	S10 (CP)	4.002	TANK INLET	5.5	0.613	0.136	0.3188	
1440 minute winter	TANK INLET	4.003	TANK OUTLET	3.4	0.330	0.047	1.2420	
1440 minute winter	TANK OUTLET	4.004	S12	-5.2	-0.074	-0.073	0.4856	
1440 minute winter	S11	5.000	S12	1.4	0.763	0.036	0.3776	
1440 minute winter	S12	4.005	S13	-2.8	0.194	-0.040	0.1822	
1440 minute winter	S13	4.006	S15	-1.7	0.068	-0.024	1.1427	
1440 minute winter	S15	1.005	S16 (FCD)	1.4	0.050	0.020	0.2093	
1440 minute winter	S16 (FCD)	1.009	C1	1.5	0.600	0.086	0.0142	114.6

**Design Settings**

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.500
CV	1.000	Preferred Cover Depth (m)	0.600
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	200.0		

Simulation Settings

Rainfall Methodology	FEH-22	Skip Steady State	x	2 year (l/s)	3.4
Rainfall Events	Singular	Drain Down Time (mins)	240	30 year (l/s)	8.4
Summer CV	1.000	Additional Storage (m³/ha)	0.0	100 year (l/s)	10.4
Winter CV	1.000	Starting Level (m)		Check Discharge Volume	x
Analysis Speed	Detailed	Check Discharge Rate(s)	✓		

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	40	0	0

Pre-development Discharge Rate

Site Makeup	Brownfield	Time of Concentration (mins)	5.00
Brownfield Method	MRM	Betterment (%)	0
Contributing Area (ha)	0.244	Q 2 year (l/s)	3.4
PIMP (%)	90	Q 30 year (l/s)	8.4
CV	1.000	Q 100 year (l/s)	10.4

0629 Parrs Wood, East Didsbury						<div>Note: Area measures are in accordance with the RICS' Code of Measuring Practice 6th Edition. All areas and tallies are subject to standard construction tolerances and design development.</div>	
accommodation schedule							
16/12/2021							
		1B1P	1B2P	2B3P	3B4P	units per floor	
	0	0	0	0	0	0	
	1	1	4	8	2	15	
	2	1	4	8	2	15	
	3	1	4	8	2	15	
	4	1	4	8	2	15	
	5	1	4	8	2	15	
mix		7%	27%	53%	13%		
sub total		5	20	40	10	75	
block total		75					
NIA includes columns and servicing risers in flat.				m ² ft ²			
	Total NIA		4531		48775		
	Total GIA		6123		65903		
	NIA/GIA		74%				

Calculation of flowrate (using using British Water Code of Practice - Flows and Loads - 3

Proposed:	No.	Flow rate (l/day)	Total (l/day)
Rooms	205	150	61500
Bar drinkers	0	0	0
Non luxury meals	0	0	0
Staff - full time	0	0	0
Staff - part ime	0	0	0
Laundry	off-site		
Domestic washing machines	0	800	0
	Total		61500 l/day
		$Q_{\text{average}} =$	0.71 l/s
		$Q_{\text{peak}} =$	4.270833333 l/s

Appendix G – United Utilities Correspondence

George Boden

From: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Sent: 19 October 2021 13:49
To: George Boden; Wastewater Developer Services
Cc: Alex Field
Subject: PDE 4200044097 TESCO PARRS WOOD LANE, DIDSBURY M20 5NP

Follow Up Flag: Follow up
Flag Status: Completed

Good afternoon George,

Pre Development Enquiry for: TESCO PARRS WOOD LANE, DIDSBURY M20 5NP UU Reference Number : 4200044097

For future reference we now have a new wastewater pre-development enquiry form designed to be easier and more user friendly which is available on our website via the following link:

<https://www.unitedutilities.com/builders-developers/larger-developments/pre-development/wastewater-pre-dev/>

We have carried out an assessment of your application which is based on the information provided. This pre-development advice on your drainage strategy will be valid for 12 months. Your drainage strategy will need to be reviewed by other competent authorities as part of the planning process, and we advise that you carry out the necessary site investigations to confirm the viability of your proposals.

If your investigations require access to our public sewer network, we ask that you contact our network engineers with a request for an access certificate via our main contact telephone number 0345 3723223 or refer to the link below:

<https://www.unitedutilities.com/builders-developers/working-near-our-assets/>

Foul Water

Foul flow from this site will be allowed to drain into the public foul water/combined sewer system.

Our preferred point of discharge would be to the 1200mm diameter public combined sewer within Parrs Wood Lane located to the south of your proposed development at an unrestricted rate. If you propose to use the existing foul drainage network on site, we would require this network to be fully surveyed and its capacity understood as well as its final downstream connection to the public sewer. It is not clear how the anticipated rate of 5.08l/s has been calculated and does seem high- please could you clarify further. The Pre-dev form states 88 dwellings and the full bed occupancy is 244 persons. Could you confirm this development use – i.e. hotel or apartments?

If you are able to identify an alternative, more suitable point of discharge, we request that you contact us at your earliest convenience so that we can assess suitability.

In accordance with our infrastructure plans we may ask you to change your point of connection. Therefore please contact us when you are ready to formalise your drainage proposals, we would suggest before you submit for Full Planning.

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.

Infiltration

Surface water runoff generated from this development should discharge to the ground via infiltration system where feasible.

A detailed evidence based feasibility assessment must be carried out in line with Chapter 25 of the CIRIA SuDS Manual 2015 to determine whether infiltration is a suitable method of surface water disposal.

Particular attention must be paid to Ground Water Source Protection Zones to ensure that the risk of pollution to these valuable resources is not compromised. Details can be obtained from the government website:

<https://www.gov.uk/guidance/groundwater-source-protection-zones-spzs#find-groundwater-spzs>

If your site is in a Groundwater Source Protection Zone, you should have regard to the Environment Agency's approach to Groundwater Protection. Information on this is available via the link below:

<https://www.gov.uk/government/publications/groundwater-protection-position-statements>

Please note that such a location could have implications for the principle of your development and the need for additional mitigating measures to protect the groundwater environment and public water supply in the detailed design of your site.

Waterbody

It is understood there are no waterbodies to drain to within the vicinity of your site.

Highway Drainage

If an evidence based assessment has been carried out and confirms that infiltration is not feasible, we recommend that you investigate the possibility of draining surface water to the highway drain where this ultimately discharges to a watercourse, by contacting the relevant Highway Authority.

Public Sewer

In accordance with the hierarchy of drainage options within the National Planning Practice Guidance, both discharge to ground via infiltration and discharge to a waterbody should be discounted prior to consideration of discharging surface water to the public sewer system. Evidence should be provided to demonstrate how these have been discounted, as outlined in the North West SuDS pro-forma.

Once evidence is provided as outlined above, United Utilities will consider a connection to the 1200mm diameter public combined sewer within Parrs Wood Lane located south of the proposed site at a pass forward flow to be agreed by the Lead Local Flood Authority. United Utilities request that any agreed rate is based on greenfield or a betterment rate in line with local authority guidelines (subject to evidence and assessment of existing positive drainage from the existing site). Please provide further information on your anticipated surface water discharge rate (calculations and plans etc.) if other more sustainable methods of discharge, as discussed above, are evidenced to be unfeasible.

As a Water Company, we have no obligation to accept highway drainage into our public sewer network. However, should your proposals include runoff from highways, we would request that consideration is given to SuDS components that deliver source control are incorporated within the design of the scheme to reduce the volume and frequency of discharges of these flows to the public sewer.

Levels

For low-lying sites, (where the ground level of the site or the level of a basement is below the ground level at the point where the drainage connects to the public sewer), care should be taken to ensure that the property is not at increased risk of flooding. If these circumstances exist, we recommend that you contact us to discuss further. It could affect the detailed design of your site and result in the need to incorporate appropriate mitigating measures in your drainage scheme.

Land drainage / Overland flows / track drainage

United Utilities have no obligation, and furthermore we do not accept land drainage, overland flows or track drainage into the public sewerage network under any circumstances

Sewer Adoptions

It is not known if you intend to put the sewers forward for adoption (including any SuDS components that can come within the meaning of a sewer). Therefore I include the information below for your reference.

United Utilities assess adoption applications based on the current Design & Construction Guidance and local practices which have now replaced 'Sewers For Adoption 6th Edition'.

We recommend that you submit a pre design assessment to the sewer adoption mailbox (SewerAdoptions@uuplc.co.uk) stating pre design assessment in the title

Please refer to links below to obtain further guidance:

<https://www.unitedutilities.com/builders-developers/larger-developments/wastewater/sewer-adoptions/>

Site drainage must be designed in accordance with Building Regulations, National Planning Policy, and local flood authority guidelines, we would recommend that you speak and make suitable agreements with the relevant statutory bodies.

If you intend to put forward your wastewater assets for adoption by United Utilities, the proposed detail design will be subject to a technical appraisal by an Adoption Engineer as we need to be sure that the proposals meets the requirements set out in the Design & Construction Guidance. The proposed design should give consideration to long term operability and give United Utilities a safe and cost effective proposal for the lifetime of the assets. In these cases, we strongly recommend that no construction commences until the detailed drainage design, submitted as part of the Section 104 application, has been assessed and accepted in writing by United Utilities. Any work carried out

prior to the technical assessment being approved is done entirely at the developer's own risk and could be subject to change.

SuDS

If your development proposal incorporates any SuDS component(s) which interact with a sewer network you plan on offering for adoption to United Utilities; contact should be made with our technical team at your earliest convenience, please complete the 'Section 104 pre-application form : ' and include as much relevant detail as you can. These discussions can help prevent delays later in the development process.

Section 104 Pre application form (1b)

As per the sewerage sector guidance, all SuDS should be designed in accordance with the standards within the Design & construction guidance & the CIRIA SuDS manual (C753)

Codes For Adoption

The new Codes for Adoption are outlined on the Water UK Website. The link below takes you to their webpage:

<https://www.water.org.uk/technical-guidance/developers-services/codes-for-adoption/>

A free copy of the new Design & Construction Guidance can be downloaded via the link below:

<https://www.water.org.uk/wp-content/uploads/2020/03/SSG-App-C-Des-Con-Guide-v-2-100320-C.pdf>

Existing Wastewater Assets Crossing the Site

We have reviewed our records and can confirm that there does not appear to be any charted public sewers located within the boundary of proposed development. However, due to the accuracy of the records and the public sewer transfer legislation in 2011, not all public sewers are shown on our records so we would ask that you proceed with caution and carry out your own site investigation works. If any uncharted sewers are identified while carrying out your works we would ask that you contact United Utilities at the earliest opportunity so that we can offer guidance and update our records.

Existing Water Assets Crossing the Site

It is the developer responsibility to identify utilities on-site. Where clean water assets are shown on our records, we recommend that you contact our Water Pre-Development Team, via the following email address:

DeveloperServicesWater@uuplc.co.uk. Further information for this service can be found on our website via the link below:

<https://www.unitedutilities.com/builders-developers/larger-developments/pre-development/water-pre-dev/>

Connection Application

Although we may discuss and agree discharge points and rates in principle, please be aware that you will have to apply for a formal sewer connection. This is so that we can assess the method of construction, Health & Safety requirements and to ultimately inspect the connection when it is made. Details of the application process and the form itself can be obtained from our website by following the link below:

<https://www.unitedutilities.com/builders-developers/larger-developments/wastewater/sewer-connections/>

We recommend that the detailed design should confirm the locations of all utilities in the area and ensure that any proposed drainage solution considers routing and clash checks where required.

Appendix H – Operation and Maintenance Plan



Document Title: Operations and Maintenance Plan
 Document No.: 1023-ACE-ZZ-XX-RP-C-1002
 Revision: 002
 Date: 2026/01/08

Parrs Wood – Operations and Maintenance Plan

1.0 General Information			
Site ID	Parrs Wood Lane, East Didsbury, Manchester, M20 5NP		
Site location and co-ordinates (GIS if appropriate)	X: 385467, Y: 390478		
Elements forming the SuDS scheme	Green Roof, Geo-cellular Tank, Vortex Flow Control Device, Catchpit		
Inspection frequency	12 monthly		
Authorities	Manchester City Council United Utilities		
Type of development	Residential	Drawing Reference(s):	1023-ACE-ZZ-XX-DR-C-8000
Responsible party for maintenance of SuDS features	To be confirmed		

2.0 Inspection Checklist				Inspection Date		Inspection Date		
				Details	Y/N	Action Required	Date Completed	
General Inspection								
Is there any evidence of erosion, channelling, ponding (where not desirable) or other poor hydraulic performance?								
Is there any evidence of accidental spillages, oils, poor water quality, odours, nuisance insects?								
Have any health and safety risks been identified to either the public or maintenance operatives?								
Is there any deterioration in the surface of permeable or porous surfaces (e.g. rutting, spreading of blocks or signs of ponding water)?								

Inspection Checklist	Inspection Date				Inspection Date			
	Details	Y/N	Action Required	Date Completed	Details	Y/N	Action Required	Date Completed
Silt/Sediment Accumulation								
Is there any sediment accumulation at inlets (or other defined accumulation zones such as the surface of filter drains or infiltration basins and within proprietary devices)?								
If yes, state depth (mm) and extent Is removal required?								
If yes, state waste disposal requirements and confirm all waste management requirements have been complied with (consult Environment Agency or SEPA).								
Is surface clogging visible (potentially problematic where water has to soak into the underlying construction or ground)?								
System Blockages/Litter Build Up								
Is there evidence of litter accumulation in the system?								
If yes, is this a blockage risk?								
Is there any evidence of any other clogging/blockage of outlets or drainage paths?								

Inspection Checklist	Inspection Date				Inspection Date			
	Details	Y/N	Action Required	Date Completed	Details	Y/N	Action Required	Date Completed
Infrastructure								
Are any check dams or weirs in good condition?								
Is there evidence of any accidental damage to the system (e.g. wheel ruts?)								
Is there any evidence of cross connections or other unauthorised inflows?								
Is there any evidence of tampering with the flow control?								
Is there any evidence of tampering with the Attenuation Systems?								
Are gullies/channels/kerb drainage clear of debris/detritus?								
Are there any other matters that could affect the performance of the system in relation to the design objectives for hydraulic, water quality, biodiversity, and visual aspects? (Specify)								
Other Observations								
Information appended (e.g. photos)								



Document Title: Operations and Maintenance Plan
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Inspection Checklist	Inspection Date				Inspection Date			
	Details	Y/N	Action Required	Date Completed	Details	Y/N	Action Required	Date Completed
Suitability of Current Maintenance Regime								
1. Continue as current								
2. Increase maintenance								
3. Decrease maintenance								
Next Inspection								
Proposed date for next inspection								



Document Title: Operations and Maintenance Plan
 Document No.: 1023-ACE-ZZ-XX-RP-C-1002
 Revision: 002
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3.0 Maintenance Specification		Frequency
	Regular Maintenance	
1	Litter management	
1.1	Pick up all litter in SuDS and Landscape areas and remove from site	12 visits monthly
2	Grass Maintenance	
2.1	Mow all grass verges, paths and amenity at 35-50mm with 75mm max. Leaving grass in situ	As required or monthly
3	Hard Surfaces	
3.1	Sweep all paving regularly. Sweep and suction brush paving in autumn after leaf fall.	1 visit
	Occasional Tasks	
4	Inspection and Control Chambers	
4.1	Annual inspection, remove silt and check free flow	1 visit
	Remedial Work	
5	Inspect SuDS system regularly to check for damage or failure. Undertake remedial work as required.	As required

4.0 Sustainable Drainage Maintenance Specification				
1.0	General Requirements		Frequency	
	Maintenance activities comprise: <ul style="list-style-type: none">Regular maintenanceOccasional tasksRemedial work			
	Generally: <ul style="list-style-type: none">Litter – collect all litter or other debris and remove from site at each site visit.Avoid – use of weedkillers and pesticides to prevent chemical pollution. De-icing agents wherever possible to allow bio-remediation of pollutants in permeable surfaces.Protect – all permeable, porous and infiltration surfaces from silt, sand, mulch and other fine particles.Exclusions – maintenance of pumps, etc.		Monthly	
Drainage/SuDS Component		Regular Maintenance	Frequency	Remedial Work
2.0 GEO-CELLULAR, CONTROLS, PUMPS AND INSPECTION CHAMBERS <u>NOTES</u> Inlets and outlets structures must be free from obstruction at all times. Flow control structures to be accessible and easy to maintain. Refer to manufacturers maintenance guide for any		<ul style="list-style-type: none">Inspect and identify any areas that are not operating correctly. If required, take remedial action.Debris removal from catchment surface (where it may cause risks to performance).	Monthly for 3 months, then annually Monthly Annually	Repair any physical damage if necessary and allow for jetting if blockages/silt build-up found.

4.0 Sustainable Drainage Maintenance Specification			
specific guidance relating to the drainage systems i.e. attenuation and pump systems.	<ul style="list-style-type: none"> Inspect all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed Remove sediment from pre-treatment structures (e.g. upstream silt-traps or vortex flow control upstream) and geo-cellular system where required. Inspect and document the presence of wildlife. Survey inside of tank for sediment build-up and remove if necessary All drainage to be CCTV surveyed following construction 	<p>Annually and after leaf fall in Autumn/heavy storm events</p> <p>Annually</p> <p>Every 5 years or as required</p> <p>Following construction</p>	
Drainage/SuDS Component	Regular Maintenance	Frequency	Remedial Work
3.0 Planting and existing vegetation	Amenity Grass Mow all grass verges, paths and amenity grass at 3550mm with 75mm max. All cuttings to remain in situ.	When Required	Replace trees and shrubs which fail in the first five years after planting.
Ornamental Trees - All ornamental planting to be			

4.0 Sustainable Drainage Maintenance Specification			
<p>kept weed free and pruned using secateurs to keep the shrubs to an agreed and reasonable size.</p> <p>Native Trees and Shrubs – All native planting to be allowed to grow freely removing overhanging branches as required.</p>	<p>Rough grass Mow at 75-100mm but not to exceed 150mm. All cuttings to wildlife piles.</p>		<p>Carry out tree surgery as necessary.</p>
	<p>Ornamental tree & shrub planting. Weed all shrub beds as detailed spec as necessary. Cut back planting from lights, paths and visibility sight lines in late autumn and as necessary. Cut hedges slightly tapered back from base with flat top at specified height. Do not mulch planting adjacent to permeable/porous paving surfaces. Remove stakes and ties from trees when no longer needed for support and within 3 years of planting. Protect from strimmer damage and remove competitive growth until well established.</p>		
	<p>Native trees & shrub planting. Prune to shape in year 1. Protect trees from strimmer</p>		

4.0 Sustainable Drainage Maintenance Specification			
	<p>damage and remove competitive growth until well established. Remove stakes and ties from trees when no longer needed for support and within 3 years from planting.</p> <p>Existing trees. Check existing trees for safety.</p>		
Drainage/SuDS Component	Regular Maintenance	Frequency	Remedial Work
4.0 GREEN ROOFS	<ul style="list-style-type: none"> Inspect all components including soil substrate, vegetation, drains, irrigation systems (if applicable), membranes and roof structure for proper operation, integrity of waterproofing and structural stability. Inspect soil substrate for evidence of erosion channels and identify any sediment sources. 	<p>Annually and after severe storms.</p> <p>Annually and after severe storms.</p>	<p>If erosion channels are evident, these should be stabilised with extra soil substrate similar to the original material, and sources of erosion damage should be identified and controlled.</p> <p>If drain inlet has settled, cracked or moved, investigate and repair as appropriate.</p>

4.0 Sustainable Drainage Maintenance Specification			
	<ul style="list-style-type: none"> Inspect drain inlets to ensure unrestricted runoff from the drainage layer to the conveyance or roof drain system. 	Annually and after severe storms.	
	<ul style="list-style-type: none"> Inspect underside of roof for evidence of leakage. 	Annually and after severe storms.	
	<ul style="list-style-type: none"> Remove debris and litter to prevent clogging of inlet drains and interference with plant growth. 	Six monthly and annually or as required.	
	<ul style="list-style-type: none"> During establishment (i.e. year one), replace dead plants as required. 	Monthly (but usually responsibility of manufacturer).	
	<ul style="list-style-type: none"> Post establishment, replace dead plants as required (where >5% of coverage). 	Annually (in autumn).	

4.0 Sustainable Drainage Maintenance Specification			
	<ul style="list-style-type: none"> Remove fallen leaves and debris from deciduous plant foliage. Remove nuisance and invasive vegetation, including weeds. Mow grasses, prune shrubs and manage other planting (if appropriate) as required – clippings should be removed and not allowed to accumulate. 	<p>Six monthly or as required.</p> <p>Six monthly or as required.</p> <p>Six monthly or as required.</p>	
Drainage/SuDS Component	Regular Maintenance	Frequency	Remedial Work
5.0 Attenuation Storage Tanks	<ul style="list-style-type: none"> Inspect and identify any areas that are not operating correctly. If required, take remedial action. Remove debris from the catchment surface (where 	Monthly for 3 months, then annually.	Repair/rehabilitate inlets, outlet, overflows and vents.

4.0 Sustainable Drainage Maintenance Specification			
	<p>it may cause risks to performance).</p> <ul style="list-style-type: none"> 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. Remove sediment from pre-treatment structures and/or internal forebays. Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed. 	<p>Monthly.</p> <p>Annually.</p> <p>Annually, or as required.</p> <p>Annually.</p>	

4.0 Sustainable Drainage Maintenance Specification			
	<ul style="list-style-type: none"> Survey inside of tank for sediment build-up and remove if necessary. 	Every 5 years or as required.	

5.0 Spillage – Emergency Action

Most spillages on development sites are of compounds that do not pose a serious risk to the environment if they enter the drainage in a slow and controlled manner with time available for natural breakdown in a treatment system. Therefore, small spillages of oil, milk or other known organic substances should be removed where possible using soak mats as recommended by the Environment Agency with residual spillage allowed to bio-remediate in the drainage system.

In the event of a serious spillage, either by volume or of unknown or toxic compounds, then isolate the spillage with soil, turf or fabric and block outlet pipes from chamber(s) downstream of the spillage with a bung(s). (A bung for blocking pipes may be made by wrapping soil or turf in a plastic sheet or close woven fabric.). Contact the Environment Agency immediately.



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