MCFC Project Taverna

Sustainable Drainage Strategy Statement

0165-CAL-XX-XX-RP-C-0002-P03

For : Manchester City Football Club

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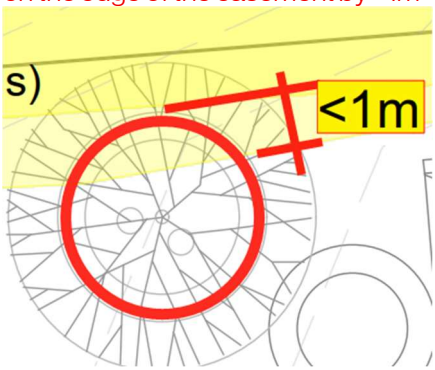
The P02 report revision has been prepared to specifically address the **LLFA** comments / requirements raised during the consultation period. The LLFA requested the below information is submitted for review and approval, prior to works commencing on site. Comments have been included in red to highlight where this has been addressed in this report for ease of reference:

Notwithstanding the details submitted on xxxxx, the development shall not commence until a scheme for the drainage of surface water from the new development has been submitted for approval in writing by the City Council as the Local Planning Authority. This shall include:

- *Progression through the drainage hierarchy must be evidence based and supported by site investigation including assessments of ground conditions and infiltration testing in accordance with BRE365. Proposals of attenuation should achieve half drain time within 24 hours. Refer to section 3.1 & Appendix 7. Refer to Appendix 4 (attenuation & half drain time)*
- *Where surface water is connected to the public sewer, agreement in principle from United Utilities is required that there is adequate spare capacity in the existing system taking future development requirements into account. An email of acceptance of proposed flows and/or new connection will suffice. Refer to Appendix 6*
- *Maximised integration of green SuDS components (utilising infiltration or attenuation) if practicable. Refer to section 3, specifically 3.2, 3.4 & Appendix 2*
- *Development must be limited to greenfield runoff up to a 1 in 100-year event, including climate change allowance. Refer to Section 3.3*
- *A finalised drainage layout showing all components, outfalls, levels and connectivity. This must also include the correct planning application boundary outline. Refer to Appendix 2, drawing 0201*
- *An existing and proposed impermeable areas drawing to accompany all discharge rate calculations. Refer to Appendix 2, drawing 0204*
- *Hydraulic calculations of the proposed drainage system, including all design parameters. Calculations must Include Critical Storm Events for the 1 in 2, 1 in 30 and 1 in 100 + 45% Climate Change. Results must demonstrate no surcharge for the 1 in 2, no flooding in the 1 in 30 and no flooding of buildings for the 1 in 100 + 45% Climate Change. Refer to Appendix 5*
- *Where a public sewer diversion is proposed, agreement in principle from United Utilities is required. An email of acceptance will suffice. N/A – no diversions proposed*
- *Where a public sewer build-over is proposed, agreement in principle from United Utilities is required. An email of acceptance will suffice. N/A – no build overs proposed*
- *Where an ordinary watercourse diversion is proposed, agreement in principle from Manchester City Council as Lead Local Flood Authority is required. An email of acceptance will suffice. N/A – No watercourse diversions proposed*
- *A blockage risk assessment must be undertaken as part of the drainage strategy to support proposed flows less than 5 l/s. N/A – flow rate is proposed at 5 l/s*
- *An assessment of surface water pollution risk in-line with CIRIA C753 and, where required, evidence of pollution control measures (preferably through SuDS) to treat surface water prior to discharge. Refer to Section 3.4*
- *A plan indicating surface water overland flow routes for extreme events to ensure flows are diverted away from existing and proposed buildings (including basements)* Refer to Appendix 2, drawing 0203

The P03 report revision has been prepared to specifically address the **United Utilities objections** raised during the consultation period. The objections raised are outlined below, with details of how these have been addressed highlighted in red, including reference to the relevant section in the report for ease of reference:

Following our review of the proposed site layout, we can confirm that the proposal is not acceptable to United Utilities as proposed features appear to be located above our sewer. Until such time as the applicant has resolved all concerns regarding the proximity of proposed development to our asset(s), our position is that we must ***OBJECT*** *to the proposal.* We consulted with United Utilities pre planning via predevelopment enquiry reference number 08296218 in respect to the required easements to the various existing drainage assets. A copy of the advice is included in Appendix 6.
To establish the accurate alignment of the sewer assets, the CSO sewer was surveyed using a laser survey, and the Combined sewers were CCTV surveyed with sonde, marked on the surface and topographically surveyed. The positions of these sewers and associated easements were plotted on the plan, and the building position strategically located to ensure the entirety of the building, and associated foundations sit outside of the easement zone. A copy of this overlay is included in Appendix 2 – drawing 0202. There are no other permanent features which are positioned within the easement – the easement sits entirely under external hardstanding areas consisting of public open space and an access road. There is a small tree planter indicated on the GA which sits on the edge of the easement by <1m – this is an above ground planter which is non-permanent movable feature



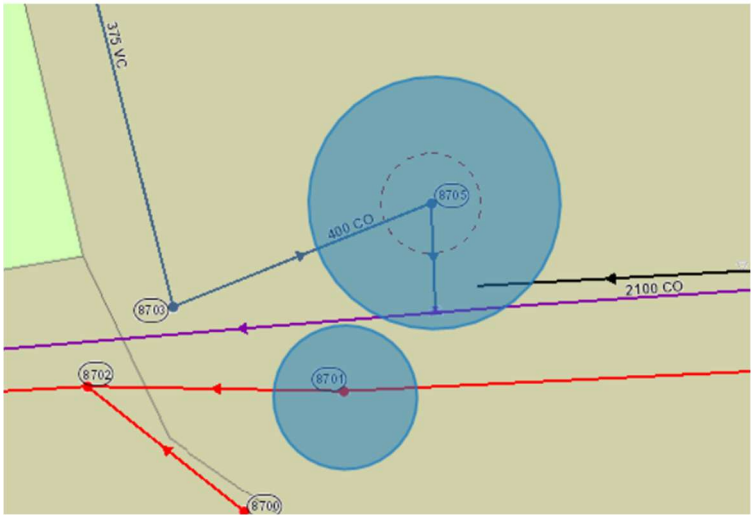
Following our review of the submitted drainage documents; Drainage Strategy Ref:0165-CAL-EX- 00-DR-C-0201-P02 , Dated 03/26, the drainage proposals are ***not*** *acceptable to United Utilities. This is because we have not seen robust evidence that that the drainage hierarchy has been thoroughly investigated and the proposals are not in line with the National Standards for Sustainable Drainage Systems (2025).*
The drainage proposals follow the hierarchy of surface water drainage, and the hierarchy has been explored in detail to establish a viable surface water connection from the site. Refer to section 3.1 for full detail. A summary is provided as follows:

- *Infiltration. The site has an industrial history and there is up to 5m of made ground with various levels of contamination present. In addition to this, it is then underlain by impermeable cohesive deposits to significant depth, then underlain by impermeable mudstone. Refer also to the site investigation extracts in Appendix 7.*

- *Watercourse. There are no natural watercourses in proximity to the site. The closest water feature is the man made canal, located north of the site. As per 3.1.3, a third party asset - the metrolink line runs between the site and the canal, and sits within a deep cutting between the two – i.e. the canal is topographically higher than the metrolink. In addition to this, the metrolink is formed from CFA piled wingwalls. A gravity connection is unviable into the canal, and a pumped connection would require drilling through the piled wingwalls & tunnelling under the metrolink line, then pumping flows vertically into the canal. This clearly indicates that a connection into watercourse is not viable.*

- *Surface water sewer. United Utilities have previously confirmed that they would accept a connection into their SW sewer network in the event that discharge measures further up the hierarchy are not viable. We are proposing a connection into a pre-existing private surface water sewer (which conveys significant ampounts of surface water flows from the wider Man City estate), that discharges into the United Utilities system slightly further down from the approved connection point*

The connection to the 2100mm overflow sewer is ***not*** *acceptable as this is for the CSO outfall and surface water should not be connected to this sewer. Refer to Appendix 6 for details of previous correspondence with United Utilities in regard to the surface water discharger from the site under reference number 08296218. As described above, we have investigated the hierarchy with regard to infiltration, and into the canal – both of these are deemed unviable. United Utilities confirmed as part of the development advice, that in the event the above is not viable, they would accept a connection into the 400dia SW sewer. It is noted that their proposed point of connection immediately discharges into the 2.1m dia CSO (see the extract below), therefore in effect suggesting that a connection into the 2.1m CSO sewer will be accepted.*
It is also noted that the existing wider site area currently and historically connects into the CSO, whilst the recent North Stand Development also connects into the CSO.



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1.0 INTRODUCTION

1.1 Background & Relevant Planning Policy / Guidance Documents

1.1.1 This report is prepared in support of the planning application for the construction of an immersive events space & associated external works.

1.1.2 This report has been prepared in accordance with the pro-forma guidance contained in:

- Greater Manchester's Sustainable Drainage Design Guide – December 2024
- New National Standards for Sustainable Urban Drainage Systems (SuDS) - July 2025
- Ciria C753 – The SUDS Manual – December 2015

1.2 Standards & Limitations

1.2.1 This report has been prepared solely for use by Manchester City Football Club.

1.2.2 It shall not be relied upon or transferred to any other party without the prior written authorisation of Calibre Consulting Engineers Ltd.

1.2.3 The findings and opinions in the report are based on information derived from a variety of different sources. Calibre Consulting Engineers Ltd do not accept any liability for the accuracy or otherwise of any information provided by third parties.

1.2.4 It should be noted that some of the aspects considered in this study may be subject to change with time. Therefore, if the development is delayed or postponed, consideration may need to be given to reviewing such issues to confirm that no changes have taken place, either at the site or within relevant legislation.

1.2.5 Further consultations with statutory bodies are likely as the scheme progresses. It should be noted that even where responses have been received from Regulators, these could be subject to change at a later date.

2.0 SUDS REQUIREMENTS

2.0.1 SuDS measures are required on the proposed development to comply with the Greater Manchester's Sustainable Drainage Design Guide, National Planning Policy Framework (NPPF), and have due regard to the National Standards for Sustainable Drainage Systems.

2.1 GM's SUDS Guide

2.1.1 The GM's SuDS guide has been prepared with the purpose of providing guidance on the design, delivery and maintenance of SuDS in the context of Greater Manchester. The purpose of the guide is to support the delivery of SuDS acoss the city and promote well considered holistic SuDS. The guide primarily focuses on retrofit solutions, though notes that the development of new streets and places should have regard to the principles of the guide, in conjunction with CIRIA C753 The SuDS Manual to inform drainage design.

2.1.2 The general SuDS Principles outlined in the guide are noted as follows:

2.1.3 **Four Pillars of SuDS:** The key principles for good SUDS design consisting of water quantity, water quality, amenity and biodiversity.

2.1.4 **SUDS Management Train:** The hierarchy of SUDS techniques to be implemented within the design including:

1. Prevention – preventing runoff and pollution where possible
2. Source control – controlling runoff at or very near to its source
3. Site control – Managing runoff within the site
4. Regional control – management of runoff within the locality

2.1.5 **Discharge hierarchy:** The hierarchy of discharge highlights the order of preference for surface water discharge. Each option should be fully explored and where it is deemed not possible, evidence should be provided to demonstrate this:

1. Discharge to the ground
2. Discharge to surface water body
3. Discharge to surface water sewer
4. Discharge to combined water sewer

2.1.6 In addition to the above, reference is made to CIRIA Report 'C753 – The SUDS Manual', specifically Chapters 4 and 26. This provides pollution indices for different uses, and mitigation indices for different SUDS features. The SUDs measures adopted shall ensure that mitigation indices equal or exceed the pollution indices to ensure sufficient water quality improvement has been achieved.

2.2 National Standards

2.2.1 In addition to the above noted design criteria, the National Standards for SuDS has been developed to provide information and guidance on the application of the design of surface water drainage systems on both greenfield and brownfield sites.

2.2.2 **Standard 1 – Runoff Destination:** The hierarchy of surface water discharge is to be followed, with surface water discharge destination following the highest priority system feasible. The 5No priority levels are as follows:

Priority 1: Collected for non potable use.

Priority 2: Infiltration to the ground

Priority 3: Discharger to an above ground surface water body

Priority 4: Discharge to surface water sewer

Priority 5: Discharge to combined sewer

2.2.3 **Standard 2: Management of everyday rainfall Interception): Volume Control:** A SuDS based approach is to be adopted on sites with a view to avoiding runoff for the first 5mm of rainfall for the majority of rainfall events

into the surrounding surface waters r piped drainage systems, where this is practical to achieve.

2.2.4 **Standard 3: Management of extreme rainfall & flooding:** A SuDS based approach to be implemented, with due allowances made for climate change and urban creep with a view to protecting the development from flooding, mitigating offsite flooding and protecting offsite infrastructure (surface water body of piped network) from damage. Designs must control runoff rates and volumes during major storm events (up to the 1% AEP) without increasing downstream flood risk and should use multiple, distributed SuDS components where practical rather than relying on a single storage feature. Flooding of buildings or critical access routes must not occur during the design storm.

2.2.5 **Standard 4: Water Quality:** A water-quality risk assessment is required to demonstrate how the implemented SuDS can prevent pollution of rivers, groundwater, and coastal waters. A “management train” of treatment stages should be used to match pollution risk from land uses, and the design must ensure good water quality in publicly visible SuDS features. Infiltration features must be safely separated from groundwater by at least 1 m, and higher-risk sites may require proprietary treatment or restrictions on infiltration.

2.2.6 **Standard 5: Amenity:** SuDS should enhance public amenity by contributing to attractive, multifunctional places that integrate water management with landscape design. Features should work with natural site characteristics, use vegetation where feasible, and support recreation, walking, cycling, and community enjoyment. Designs in public areas should also include safety measures and provide educational or interpretive information.

2.2.7 **Standard 6: Biodiversity:** SuDS should deliver biodiversity enhancement, creating or improving habitats and supporting local nature recovery. SuDS vegetation and habitat features should be resilient and self-sustaining.

2.2.8 **Standard 7: Design for construction, operation, maintenance, decommissioning & structural integrity:** SuDS to be designed for their full lifecycle, from construction through long-term operation to eventual

decommissioning. Developers must provide a clear maintenance plan, ensure safe access for maintenance, manage sediment and vegetation appropriately, and consider durability and structural integrity. Systems using pumps or proprietary components must minimise energy use and include monitoring and failure-response measures

2.2.9 It is noted that the principles as outlined in the GM's SuDS Guide are broadly aligned with the requirements outlined in the New National Standards for SuDS.

3.0 SUDS / DRAINAGE PROPOSALS

3.0.1 With reference to the documentation noted in section 1.0 and the specific requirements as outlined in section 2.0, the drainage strategy has been developed to meet these requirements as much as practically possible. Drainage & Levels Plans for the site is contained in Appendix 2, and the proposals and confirmation of compliance are noted as follows.

3.1 Standard 1

3.1.1 Priority 1: Given the expanse of roof area, intermittent usage of the events space along with the low water demand, measures such as rainwater harvesting are deemed unpractical for use at the site.

3.1.2 Priority 2: The development site is broadly flat with poor natural drainage characteristics. In addition to this, the site has been subject to various historic uses which has resulted in a significant depth of made ground below the site which is of a contaminative nature to depth. The site is subsequently underlain by significant depths of drift deposits of a cohesive nature of very low permeability, then underlain by impermeable mudstones to depth. The site is therefore deemed to be unsuitable for infiltration measures. Refer to site investigation extracts in Appendix 7.

3.1.3 Priority 3: There closest water body to the site is the Ashton Canal, circa 25m from the north site boundary. However, along the northern boundary of the site the existing Metrolink line runs east to west within a deep cutting. The base level of the cutting is 53m AOD, with the canal level at 56m AOD – accordingly there is no direct route hydraulically to connect the surface water into the canal, and such route would require passing through existing rail infrastructure. Accordingly discharge direct to watercourse is not viable.

3.1.4 Priority 4: Predevelopment liaison with United Utilities has been undertaken, and UU have stated that in the event that other discharges are not feasible, a connection would be accepted into the existing SW sewer to the west or the

development, (See Appendix 6) via a restricted flow rate of no more than 5 l/s. The sewer is circa 12m deep and subsequently connects onto the 2.1m dia surface water trunk main located circa 20m below ground level. Given the practicalities of connecting to a 12m deep sewer, an alternative route into the 2,1m dia sewer has been found utilising a connection via an existing 450dia private surface water sewer, which runs around the stadium . north stand extension and connects directly to the 2.1m dia sewer.

3.2 Standard 2

3.2.1 The constrained nature of development being predominantly of one large building with a limited amount of surrounding land within the red line boundary, in conjunction with the unsuitability of infiltration measures renders the 5mm rainfall criteria difficult to achieve in practice. However, SuDS features have been implemented in all areas where practically possible including: A filter drain incorporated along the edge of the proposed vehicle service road – using the 5:1 rule as stipulated in the simple index approach, a width of filter drain of 1m will provide sufficient interception storage to the 4.7m wide service road. An area of raingarden to the front of the building circa 90m2 provides interception to the connected areas of drainage channel and part of the roof.

3.3 Standard 3

3.3.1 The proposed development aims to reduce flows to below greenfield runoff rate. Greenfield runoff for the site is noted as 6.4 l/s (see attached calculation in Appendix 3). United Utilities have stated that a discharge rate to public sewer should not exceed 5 l/s. Therefore, by limiting to 5 l/s, the off site discharge rate is lower than the greenfield runoff rate for the site (and significantly lower than the existing brownfield uncontrolled discharger rate). A S106 application to United Utilities will be made in due course for the indirect connection into the 2.1m diameter SW culvert.

3.3.2 The drainage system has been designed to ensure that:

- There is no surcharge in the 1 in 2 year rainfall event.
- No flooding occurs in the 1 in 30 year event, enhanced for 40% climate change with all storage being provided below ground.
- No flooding occurs for the 1 in 100 year event, enhanced for 45% climate change. All attenuation storage is provided within the below ground storage tanks, piped network, filter drain and raingarden areas to a total volume of circa 260m3.

3.3.3 In extreme rainfall events (>1 in 100), exceedance routes generally trend towards the west towards private hardstanding, as per the current site arrangement. Refer to the overland flooding drawing contained in Appendix 2.

3.4 Standard 4

3.4.1 The SUDS treatment train has been developed addressing each different type of surface on the site, in line with specific criteria as set out in Ciria C753. The following extracts indicates the pollution hazard level and associated indices for different uses:

Pollution hazard indices for different land use classifications

Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydro-carbons
Residential roofs	Very low	0.2	0.2	0.05
Other roofs (typically commercial/ industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (eg hospitals, retail), all roads except low traffic roads and trunk roads/motorways[1]	Medium	0.7	0.6	0.7
Sites with heavy pollution (eg haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways[1]	High	0.8[2]	0.8[2]	0.9[2]

Ciria C753 Table 26.2

3.4.2 The **building roof** is confirmed as a Low pollution hazard, with pollution indices: TSS 0.3; Metals 0.2; Hydrocarbons 0.05.

3.4.3 **External hardstanding** areas are classed as Low pollution hazard, with pollution indices: TSS 0.5; Metals 0.4; Hydrocarbons 0.4.

3.4.4 Mitigation indices are also provided for different SUDS measures, for discharges to surface waters. Given discharge is to surface water sewer, it is assumed therefore that eventual discharge is to a surface water body:

Indicative SuDS mitigation indices for discharges to surface waters			
	Mitigation indices[1]		
Type of SuDS component	TSS	Metals	Hydrocarbons
Filter strip	0.4	0.4	0.5
Filter drain	0.4[2]	0.4	0.4
Swale	0.5	0.6	0.6
Bioretention system	0.8	0.8	0.8
Permeable pavement	0.7	0.6	0.7
Detention basin	0.5	0.5	0.6
Pond[4]	0.7[3]	0.7	0.5
Wetland	0.8[3]	0.8	0.8
Proprietary treatment systems[5,6]	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area.		

Ciria C753 table 26.3

3.4.5 In regard to the proprietary treatment systems, the proposed oil interceptor is the SPEL full retention separator which achieves mitigation indices as follows:

3.4.5.1 SPEL Interceptor

Mitigation Indices	TSS	Metals	Hydrocarbons
	0.8	0.6	0.9

SPEL SuDS Mitigaiton Criteria Achieved

3.4.6 In summary, the interceptor provides sufficient treatment to all hardstanding areas with mitigation indices exceeding pollution hazard indices for all areas. The introduction of additional upstream source control measures in the form

of a filter drain and raingarden will naturally provide even further treatment as part of a two tiered treatment solution.

3.5 Standard 5

3.5.1 The original development boundary consisted of 100% external hardstanding brownfield development, and this has now been reduced to incorporate soft landscaping, therefore reducing the overall hardstanding area. Within the soft landscaping SuDS features have been incorporated, thus offering increased amenity benefits by incorporating a landscaped drainage feature adjacent to the development.

3.6 Standard 6

The landscaping areas, including the SuDS elements incorporated within the layout replaces previous hardstanding, thus increasing the biodiversity in comparison to the predevelopment scenario. For further details refer to the Landscape Architects proposals.

3.7 Standard 7

3.7.1 The drainage system including SuDS features has been designed as a shallow simple network which is considered simple to construct and maintain thereafter. A SuDs management & maintenance strategy is contained in section 4.

4.0 SUDS MANAGEMENT & MAINTENANCE STRATEGY

4.1 The management and maintenance of the above noted SuDS measures to serve the proposed development is as follows:

4.2 None of the drainage or SuDS features are to be offered for adoption and therefore all of the proposed drainage including SuDS are to remain **private**.

4.3 All drainage is to remain under the responsibility of the applicant, who is the site owner and operator.

4.4 The maintenance activities required for the individual elements of the SUDS network are to follow the principles outlined in Ciria C753 section 32. A summary table extract is provided below which is the basis for formulating the maintenance strategy:

Operation and maintenance activity	SuDS component												
	Pond	Wetland	Detention basin	Infiltration basin	Soakaway	Infiltration trench	Filter drain	Modular storage	Pervious pavement	Swale/bioretention/ trees	Filter strip	Green roofs	Proprietary treatment systems
Regular maintenance													
Inspection	■	■	■	■	■	■	■	■	■	■	■	■	■
Litter and debris removal	■	■	■	■	□	■	■	□	■	■	■		□
Grass cutting	■	■	■	■	□	■	■	□	□	■	■		
Weed and invasive plant control	□	□	□	□		□	□		□		□	■	
Shrub management (including pruning)	□	□	□	□					□	□	□		
Shoreline vegetation management	■	■	□										
Aquatic vegetation management	■	■	□										
Occasional maintenance													
Sediment management[1]	■	■	■	■	■	■	■	■	■	■	■		■
Vegetation replacement	□	□	□	□						□	□	■	
Vacuum sweeping and brushing									■				
Remedial maintenance													
Structure rehabilitation /repair	□	□	□	□	□	□	□	□	□	□	□	□	
Infiltration surface reconditioning				□	□	□	□		□	□	□		

Key

■ will be required

□ may be required

Notes

1 Sediment should be collected and managed in pre-treatment systems, upstream of the main device.

Ciria C753 table 32.1

Further details for maintenance requirements for each element are provided as follows:

4.5 Filter Drains

The maintenance for filter drains is as follows:

Maintenance schedule	Required action	Frequency
Regular maintenance	Remove litter and debris	Monthly (or as required)
	Cut grass- to retain grass height within specified design range	Monthly (during growing season) or as required
	Manage other vegetation and remove nuisance plants	Monthly at start then as required
	Inspect filter strip surface to identify evidence of erosion, poor vegetation growth, compaction, ponding, sedimentation and contamination	Monthly at start then six monthly
	Insect silt accumulation rates and establish appropriate silt removal frequencies	Monthly at start then six monthly
Occasional maintenance	Re-seed area of poor vegetation growth, alter plant types to better suit conditions if required	As required or if bare soil is exposed over 10% or more of the filter strip area
Remedial actions	Repair erosion or other damage by re-turfing or re-seeding	As required
	Re-level uneven surfaces and reinstate design levels	As required
	Scarify & spike topsoil layer to improve infiltration performance, break up silt deposits and prevent compaction of the soil surface	As required
	Remove and dispose of oils or petrol residues using safe standard practices	As required

4.6 Bioretention system (rain gardens)

The maintenance for the bioretention strips / rain gardens is as follows:

Maintenance schedule	Required action	Frequency
Regular inspections	Inspect infiltration surfaces for silting and ponding, record de-watering time of the facility and assess standing water levels in underdrain to determine if maintenance is necessary	Quarterly
	Check operation of underdrains by inspection of flows after rain	Annually
	Assess plants for disease infection, poor growth, invasive species etc And replace as necessary	Quarterly
	Inspect inlets & outlets for blockage	Quarterly
Regular maintenance	Remove litter and surface debris and weeds	Quarterly (minimum)
	Replace any plants, to maintain planting density	As required
	Remove sediment, litter and debris build up from around inlets	Quarterly to biannually
Occasional maintenance	Infill any holes or scour in the filter medium, improve erosion protection if required	As required
	Repair minor accumulations of silt by raking away surface mulch, scarifying surface of medium and replacing mulch	As required
Remedial actions	Remove and replace filter medium and vegetation above	As required but likely to be >20 years

4.7 Proprietary treatment systems

The maintenance for proprietary treatment systems are typically as follows:

Maintenance Schedule	Required action	Frequency
Routine maintenance	Remove litter and debris & inspect for sediment, oil and grease accumulation	Six Monthly
	Change the filter media	As recommended by the manufacturer
	Remove sediment, oil, grease and floatables	As necessary – indicated by system inspections or immediately following a significant spill
Remedial actions	Replace malfunctioning parts or structures	As required
Monitoring	Inspect for evidence of poor operation	Six monthly

	Inspect filter media & establish appropriate replacement frequencies	Six monthly
	Inspect sediment accumulation rates and establish appropriate removal frequencies	Monthly during first half year of operation, then every six months

4.8 Flow Control

The maintenance for flow control devices are as follows:

Operation	**Frequency**
Inspect and identify any areas that are not operating correctly, if required take remedial actions	Monthly for three months then at six monthly intervals
Debris removal from catchment surface (where it may cause risk to performance)	Monthly
Check control chamber for blockage or silt, algae or other matter by jetting	As required, but at least four times a year
Remove sediment from upstream drainage network and sediment from within manhole by jetting	As required, but at least twice a year
Repair / check all inlets and control mechanics	As required
Inspect / check all inlets and control mechanics to ensure that they are operating as designed	Twice a year as a minimum and after severe storm events

4.9 In addition to the above noted maintenance requirements for proprietary treatment systems, attenuation storage systems and flow control devices, specific manufacturers literature shall be consulted to ascertain any additional maintenance requirements.

4.10 Other site maintenance activities which need to be undertaken are noted as follows:

4.11 Flood Routes A visual monthly inspection of flood routes should be made in order to check that routes are not blocked by new fences, walls, soil or other rubbish with removal undertaken as necessary.

4.12 Spillage – Emergency Action Most spillages on development sites are of compounds that do not pose a serious risk to the environment as they enter

the drainage system 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 the spillage should be isolated using soil, turf or fabric and outlet pipes from chambers downstream of the spillage blocked with bungs. Bungs for blocking pipes may be made by wrapping soil or turf in a plastic sheet or close woven fabric. The Environment Agency should be contacted immediately.

4.13 Linked and Further Maintenance The maintenance of the drainage network and SuDS features is to be linked with the landscape maintenance plan for the proposed development.

4.14 Maintenance Activities A log of all maintenance activities is to be kept and made available to the Local Planning Authority (LPA) and / or the Lead Local Flood Authority (LLFA) on request.

4.15 A typical maintenance log which should be completed for each SuDS feature / element is shown overleaf.

MAINTENANCE RECORD LOG

Refer to the Calibre Consulting SuDS maintenance Strategy section 4.0 contained within the Sustainable Drainage Strategy 0165-CAL-ZZ-ZZ-RP-C-1000 for details of required actions and frequencies for each SUDS feature type.

SUDS Component / location:_____

Date	Action taken	Comments	By (Signature)
e.g. 22/09/22	*e.g. Remove sediment from pre-treatment structures and / or internal forebays (e.g. upstream catchpits, gully pots)*	*e.g. All catchpits inspected, minor levels of silt accumulated to approx. 100mm depth since last clearance. Silt removed*	

5.0 FOUL WATER DRAINAGE PROPOSALS

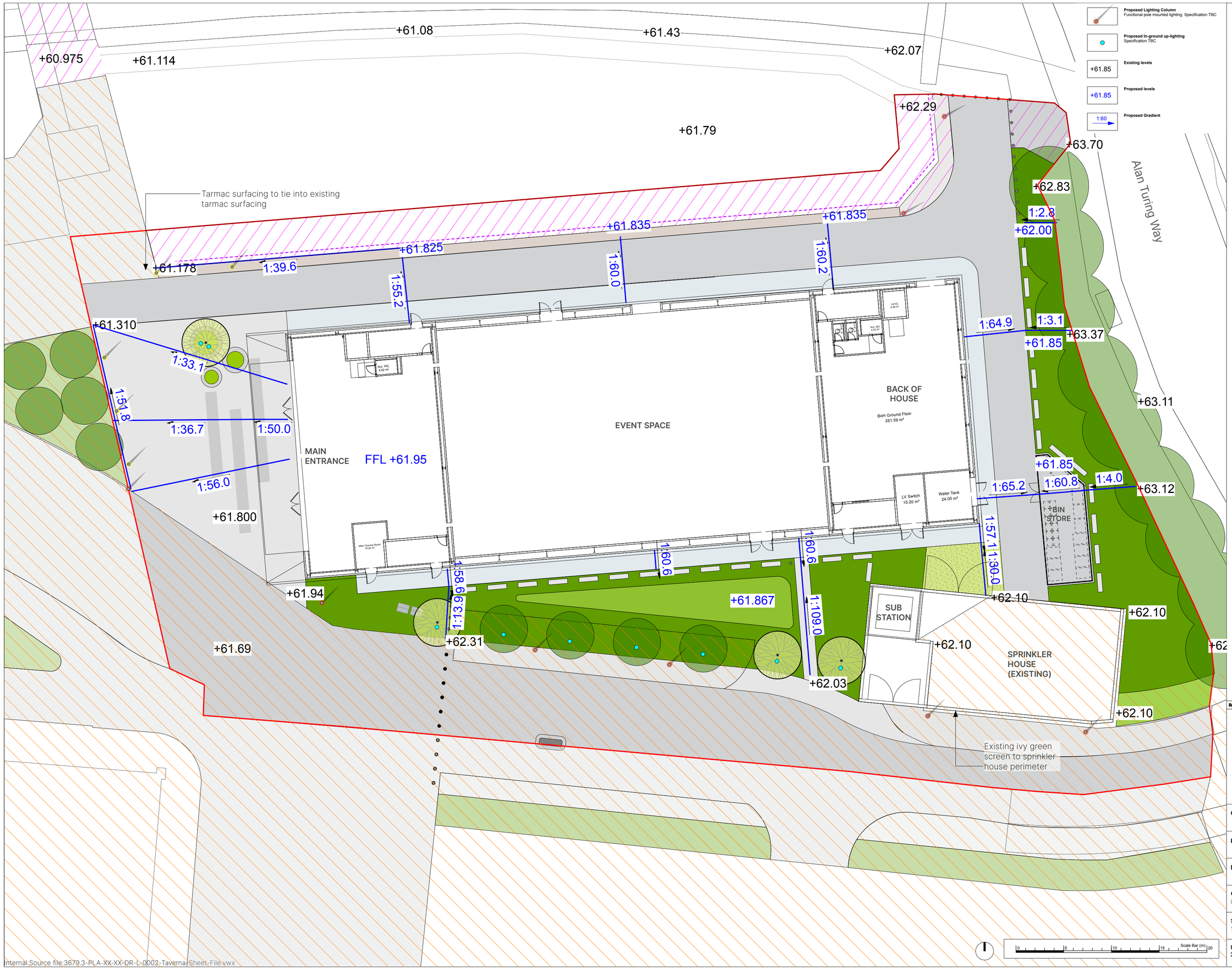
5.1 A number of combined water sewers are present within the vicinity of the site, in particular a 900dia brick sewer running west to east through the centre of the site, and a 900dia sewer running south to north just beyond the western boundary of the site.

5.2 A predevelopment enquiry has been progressed with United Utilities (refer to Appendix 6), who have confirmed that a post development foul water connection into the existing combined network is acceptable, with a preference for a connection into 8701 (east to west).

5.3 It is proposed to connect into this 900dia sewer, via an existing drainage connection which was installed as a temporary connection during previous construction works. This connection will be subject to a S106 application for being progressed with United Utilities in due course.

APPENDICES

Appendix 1 – Proposed Masterplan



Proposed Lighting Column
Functional pole mounted lighting. Specification TBC

Proposed In-ground up-lighting
Specification TBC

Existing levels
+61.85

Proposed levels
+61.85

Proposed Gradient
1:60

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NOTES:
1. Do not scale from this drawing.
2. Always work to noted dimensions.
3. All dimensions are in millimetres unless otherwise stated.
4. All setting out, levels and dimensions to be agreed on site.
5. The dimensions of all materials must be checked on site before being laid out.
6. This drawing must be read with the relevant specification clauses and detail drawings.
7. Order of construction and setting out to be agreed on site.

Key

Ornamental Planting
Mixed shrub, herbaceous perennial and ornamental grass planting (plant species to tie into existing North Stand works)
Notes: 300mm topsoil oveer 400mm subsoil

Rain Garden Planting
Rain garden suitable planting mix
Notes: 300mm topsoil oveer 400mm subsoil

Climbers
Tensile wire system with climbing plants to soften and screen the new substation enclosure. Twining climber species - final extent to be coordinated with substation ventilation requirements

Proposed Street tree
Semi-mature tree
20-25cm girth
Notes: 300mm topsoil over 600mm subsoil

Existing Tree

Surface Type 1
Insitu concrete with large format precast concrete banding to arrival plaza

Surface Type 2
Concrete block paving to footpath around the perimiter of the building. Specification to be in keeping with the North Stand development

Surface Type 3
Tarmac to access road to match existing surfacing on North Stand development.

Surface Type 4
Filter Drain along northern edge of access road to form part of the drainage strategy

Surface Type 5
Reinforced grass to sprinkler house access point

Large pre cast concrete planters
Placed in the arrival plaza, the raised concrete planters help soften the entrance facade and allow people to perch on the planter edge

Fixed Bollard
To form HVM line. Specification TBC

Fixed Concrete Block
Fixed concrete block with gabion cladding / artwork to improve appearance. To form HVM line. Specification TBC

Timber Post and rail fence
1.2m high to the northern edge of the access road
Product TBC

Bin Store
Steel frame with timber uprights and lockable gates.
Product TBC

Proposed Lighting Column
Column mounted projectors. Specification TBC

Area to Remain as Existing

Emerging Context Under North Stand Public Realm Works

Revision	Date	Description	Drawn	Apprvd.
P05	02/03/26	Incorporating Architects Comments	CB	SC
P04	27/02/26	Planning	CB	SPL
P03	30/01/26	Review and comment	CB	SPL
P02	28/01/26	For Review and Comment	CB	SPL
P01	22/01/226	For Review and Comment	CB	SPL

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Client Manchester City Football Club

Project Project Taverna

Drg Title Landscape General Arrangement

Created on	Created by	Approved by
09-01-26	CB	SPL

Scale	Size	Workstage
1:250	A2	Planning

Drg No. 3679.3-PLA-XX-XX-DR-L-0001
Suitability S2
Revision P05

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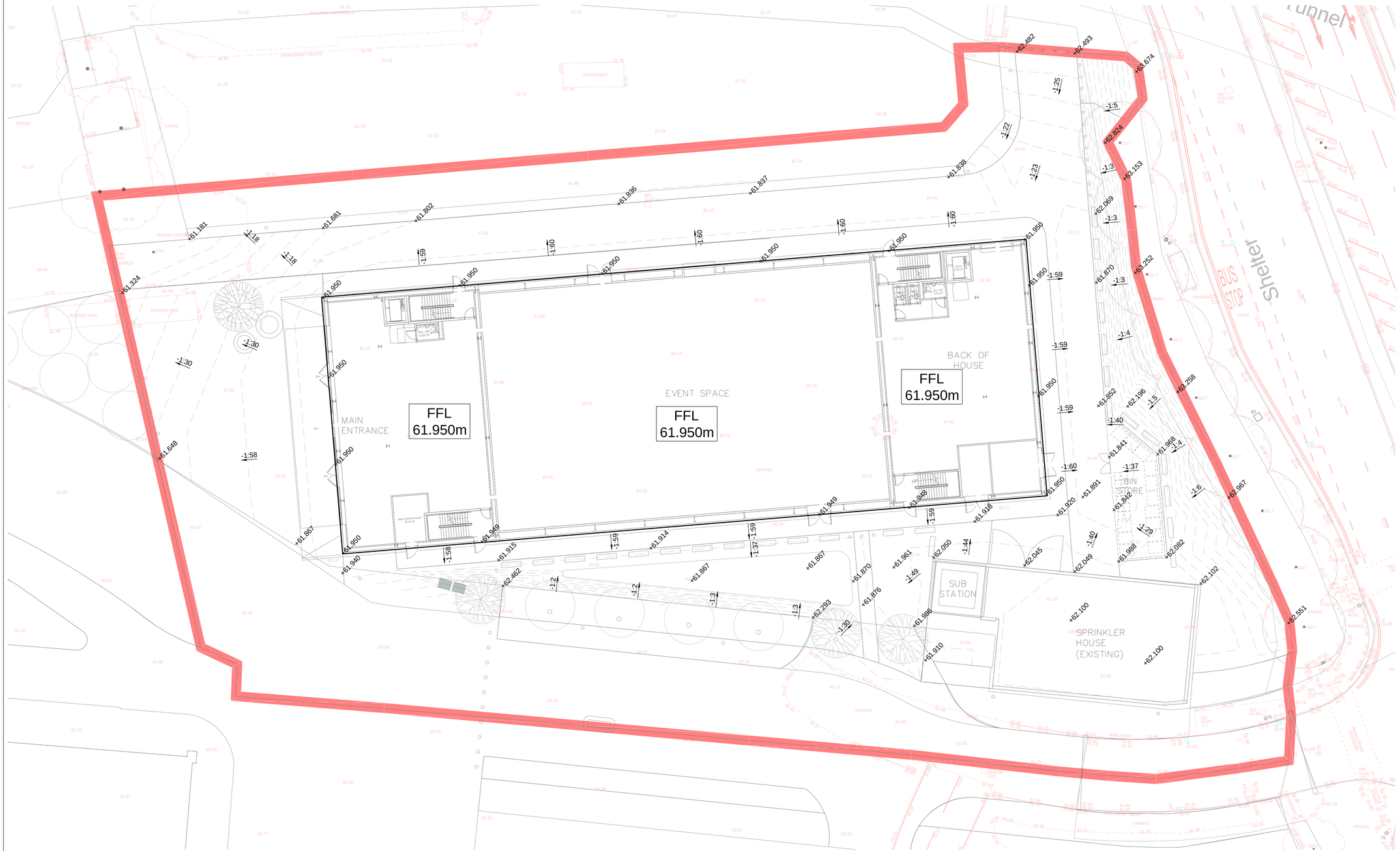
Appendix 2 –Drainage & Levels Plans

Levels GA Legend

+22.660	Proposed Spot Level
	Major Contour (0.5m)
	Minor Contour (0.1m)
-1:58	Direction & Gradient of Fall

Notes

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2. All levels shown are in metres unless noted otherwise
3. This drawing is to be read in conjunction with all relevant Architectural & Service Engineer drawings
4. Do not scale from this drawing. Figured dimensions to be worked to in all cases. If in doubt, contact the Engineer
5. CDM (2015) - This drawing is to be read in conjunction with the Designers Risk Assessment produced for the project



N

Rev	Date	Description	Drawn
P02	03/26	Updated masterplan	RH
P01	02/26	Preliminary issue	RH

Drawing Status:
PRELIMINARY

Contract:
PROJECT TAVERNA
MANCHESTER CITY FOOTBALL CLUB

Drawing Title:
EXTERNAL LEVELS GA

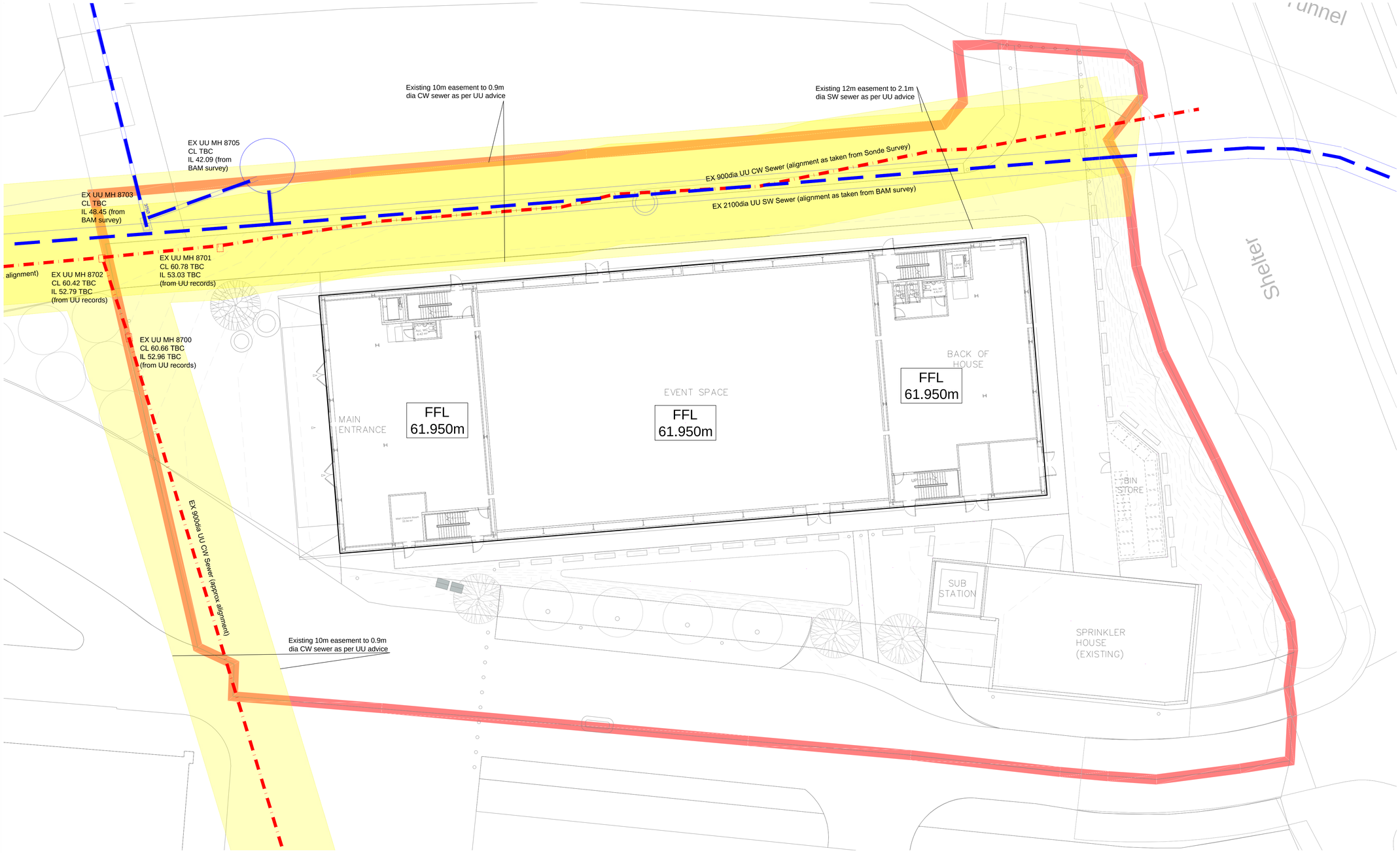
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1:200	(A1)	01/2026	RH	SB

Project	Origin	Zone	Level	Type	Role	Number	Rev'n
0165	CAL	EX	00	DR	C	0101	P01

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e: info@calibre-consulting.co.uk

Drainage Legend

- Existing CW UU sewer network
- Existing SW UU sewer network



Notes

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2. All levels shown are in metres unless noted otherwise
3. This drawing is to be read in conjunction with all relevant Architectural & Service Engineer drawings
4. Do not scale from this drawing. Figured dimensions to be worked to in all cases. If in doubt, contact the Engineer
5. CDM (2015) - This drawing is to be read in conjunction with the Designers Risk Assessment produced for the project

N

Rev	Date	Description	Drawn
P02	03/26	Updated following sonde survey	RH
P01	02/26	Preliminary issue	RH

Drawing Status:
PRELIMINARY

Contract:
PROJECT TAVERNA
MANCHESTER CITY FOOTBALL CLUB

Drawing Title:
EXISTING DRAINAGE GA

Scales		Date	Drawn	Checked
1:200	(A1)	01/2026	RH	SB

Project	Origin	Zone	Level	Type	Role	Number	Rev'n
0165	CAL	EX	00	DR	C	0202	P02

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Drainage Legend

- Existing CW UU sewer network
- Existing SW UU sewer network
- Proposed FW sewers
- Proposed SW sewers
- Fxx - Proposed FW manholes
- Sxx - Proposed SW manholes
- SICxx - Proposed SW inspection chambers
- Drainage Channels
- RWP - assumed rainwater pipes
- SVP - Assumed foul pop ups

SW DRAINAGE STRATEGY:

The SW drainage proposal is to discharge into the existing UU 2.1m dia SW Sewer at a restricted flow rate of 5 l/s, as agreed with UU.

Attenuation is generally provided within the below ground storage crates. Storage is to be provided for the 1 in 100 year event, plus 45% climate change.

The design opposite assumes that roads and drainage will remain unadopted / private.

The design opposite is considered preliminary and subject to further detailed design. RWP positions have been assumed, final positions to be established at detailed design.

Final connection into the 2.1m dia sewer is to be via an existing private surface water 450dia sewer as indicated.

SUDS STRATEGY:

Given the constrained nature of the site, substantial open SuDS features are unfeasible, specifically for accommodating attenuaiton storage. However, SuDS have been implemented in areas where possible including: Raingarden to south of the b uilding with drainage channels and rainwater pipes connected.
Filter drain along the north boundary along the service road.

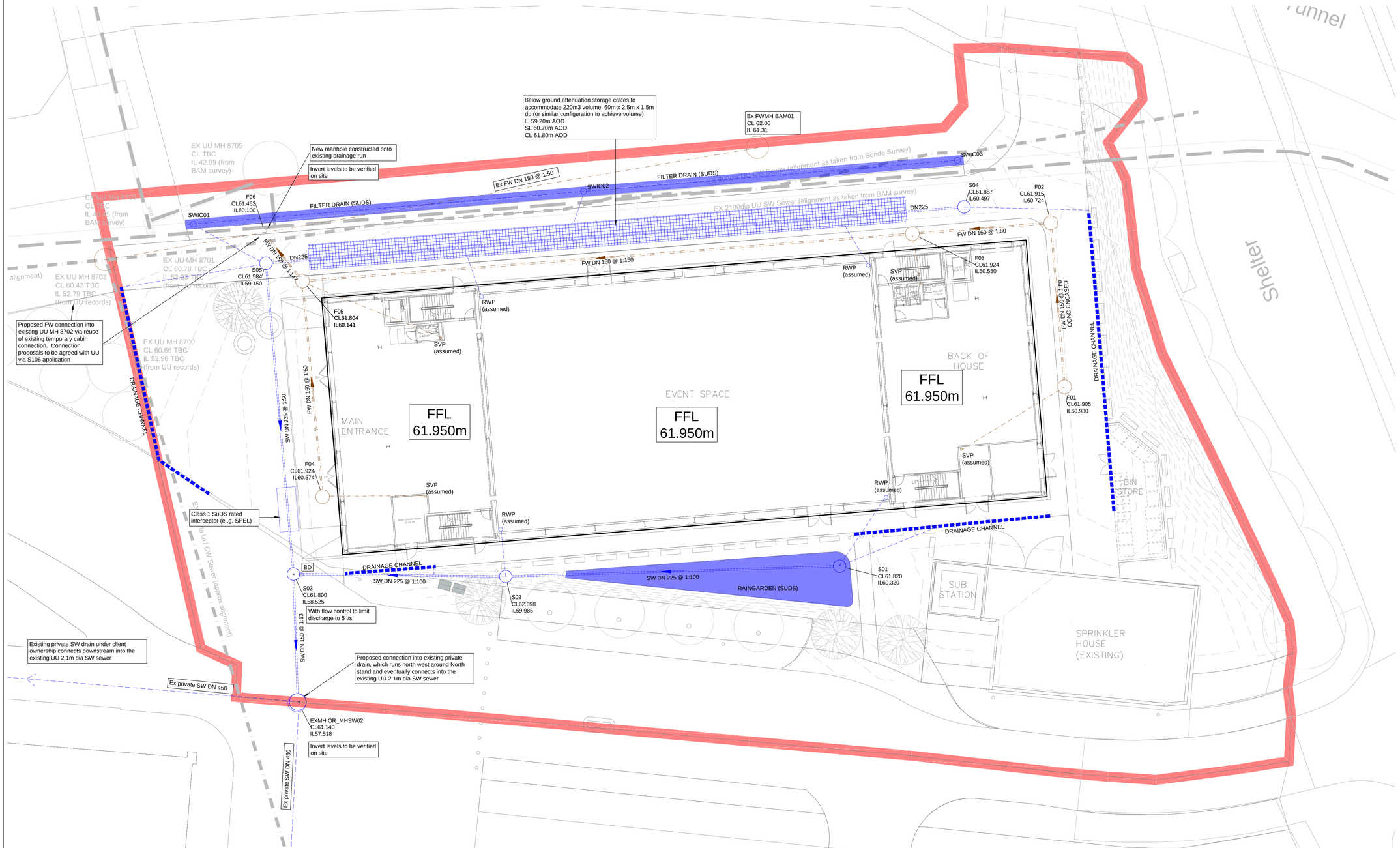
Final layout and strategy is subject to agreement with the LLFA & UU.

FW DRAINAGE STRATEGY

Foul water pop ups are indicative only at this stage and to be developed during detailed design.

Proposals opposite are indicative to demonstrate a gravity network discharging into the existing UU combined water network at MH 8702.

Final connection is proposed to be taken onto an exiting 150dia connection previously installed as a temporary drain connection - connection proposals to be agreed with UU via a S106 application.



Notes

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5. CDM (2015) - This drawing is to be read in conjunction with the Designers Risk Assessment produced for the project

General Drainage Notes:

1. All SW drainage pipes may be of rigid clayware, or alternatively PVCu (E.g. wavin twinwall or polysewer) up to 375mmØ and concrete from 450mmØ, with the agreement of the adopting authority.
2. Inspection chambers to be min 450mm Ø 'non-man entry' PPIC's.
3. All pipes to run soffits level.
4. For adoptable drainage pipes with less than 1.2m cover in roads, and 0.9m in fields, concrete surround required.
5. All work to be carried out in accordance with the following documents: (a) - Civil Engineering Specification for the Water Industry 7th Edition, 2011. (b) - United Utilities adoptable standards
6. A minimum pipe velocity of 1.0 m/s to be achieved to all SW pipes.
7. FW Sewers are to provide 0.75 m/s velocity at one third design flow.
8. All SW dragouts & gully connections to be 150mm dia UNO.
9. All FW dragouts to be 150m dia @ 1:80 UNO.
10. All drainage is to comply with the requirements of BS EN 752.
11. All pipe runs below buildings to be concrete encased.
12. All drains to be laid accurately to line and level in strict accordance with the manufacturers recommendations.
13. To be read in conjunction with the Calibre standard drainage details.

Rev	Date	Description	Drawn
P02	03/26	Updated masterplan	RH
P01	02/26	Preliminary issue	RH

Drawing Status:
PRELIMINARY

Contract:
PROJECT TAVERNA
MANCHESTER CITY FOOTBALL CLUB

Drawing Title:
SCHEMATIC DRAINAGE GA

Scales		Date	Drawn	Checked
1:200	(A1)	01/2026	RH	SB

Project	Origin	Zone	Level	Type	Role	Number	Rev'n
0165	CAL	EX	00	DR	C	0201	P02

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OVERLAND FLOODING:

Drawing opposite indicates the overland flood routes of the site post development. Flood routes are those which would occur in an extreme rainfall event, classed as any event exceeding the maximum design event of 1 in 100 years + 45% climate change.

Overland flooding is directed away from the building on all elevations towards the perimeter, then flowing toward the surrounding private hardstanding within the wider development, which trends north westwards.



Notes

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2. All levels shown are in metres unless noted otherwise
3. This drawing is to be read in conjunction with all relevant Architectural & Service Engineer drawings
4. Do not scale from this drawing. Figured dimensions to be worked to in all cases. If in doubt, contact the Engineer
5. CDM (2015) - This drawing is to be read in conjunction with the Designers Risk Assessment produced for the project

N

Rev	Date	Description	Drawn
P01	02/26	Preliminary issue	RH

Drawing Status:
PRELIMINARY

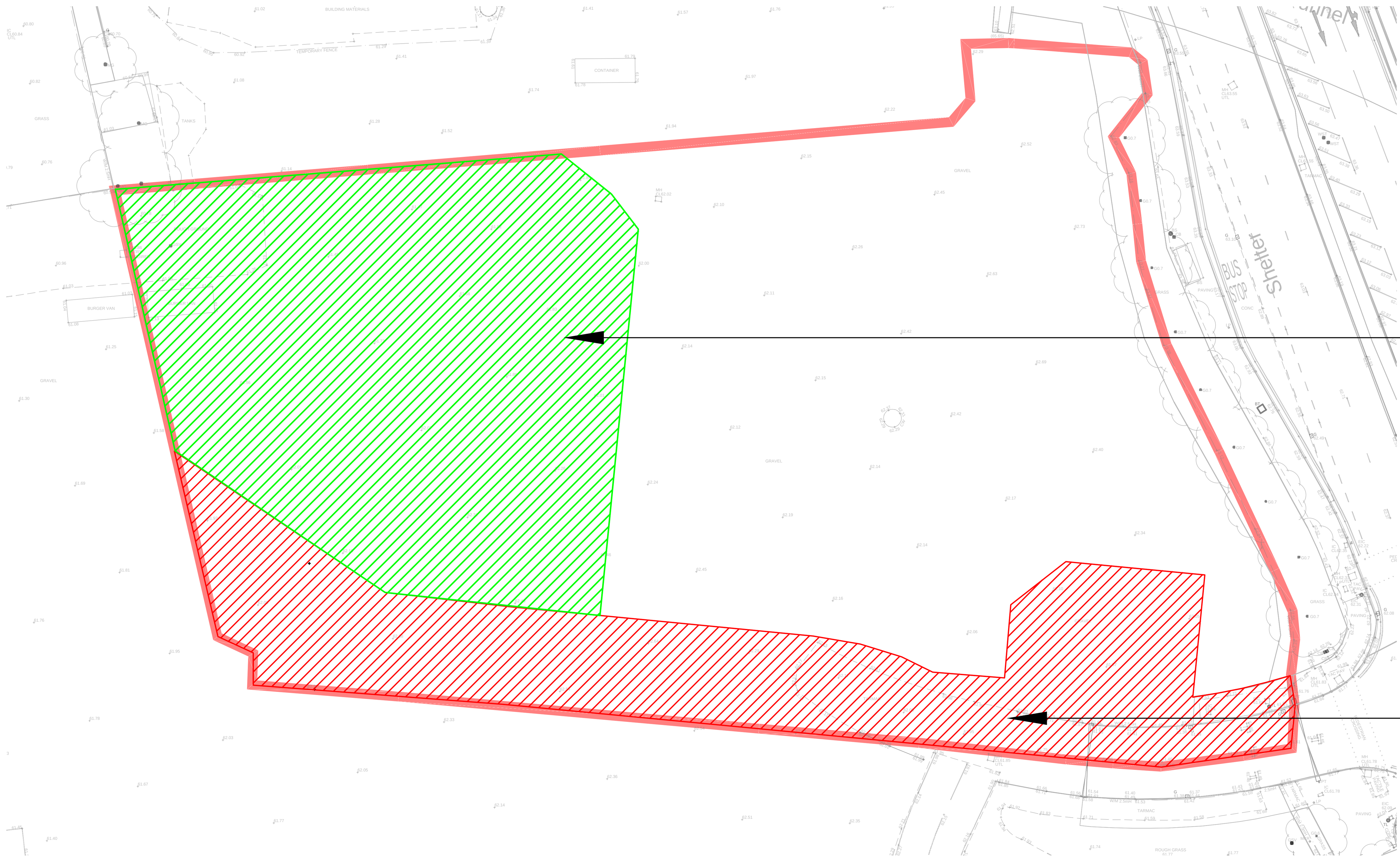
Contract:
PROJECT TAVERNA
MANCHESTER CITY FOOTBALL CLUB

Drawing Title:
OVERLAND FLOODING GA
(EXTREME EVENTS)

Scales		Date	Drawn	Checked
1:200	(A1)	01/2026	RH	SB

Project	Origin	Zone	Level	Type	Role	Number	Rev'n
0165	CAL	EX	00	DR	C	0203	P02

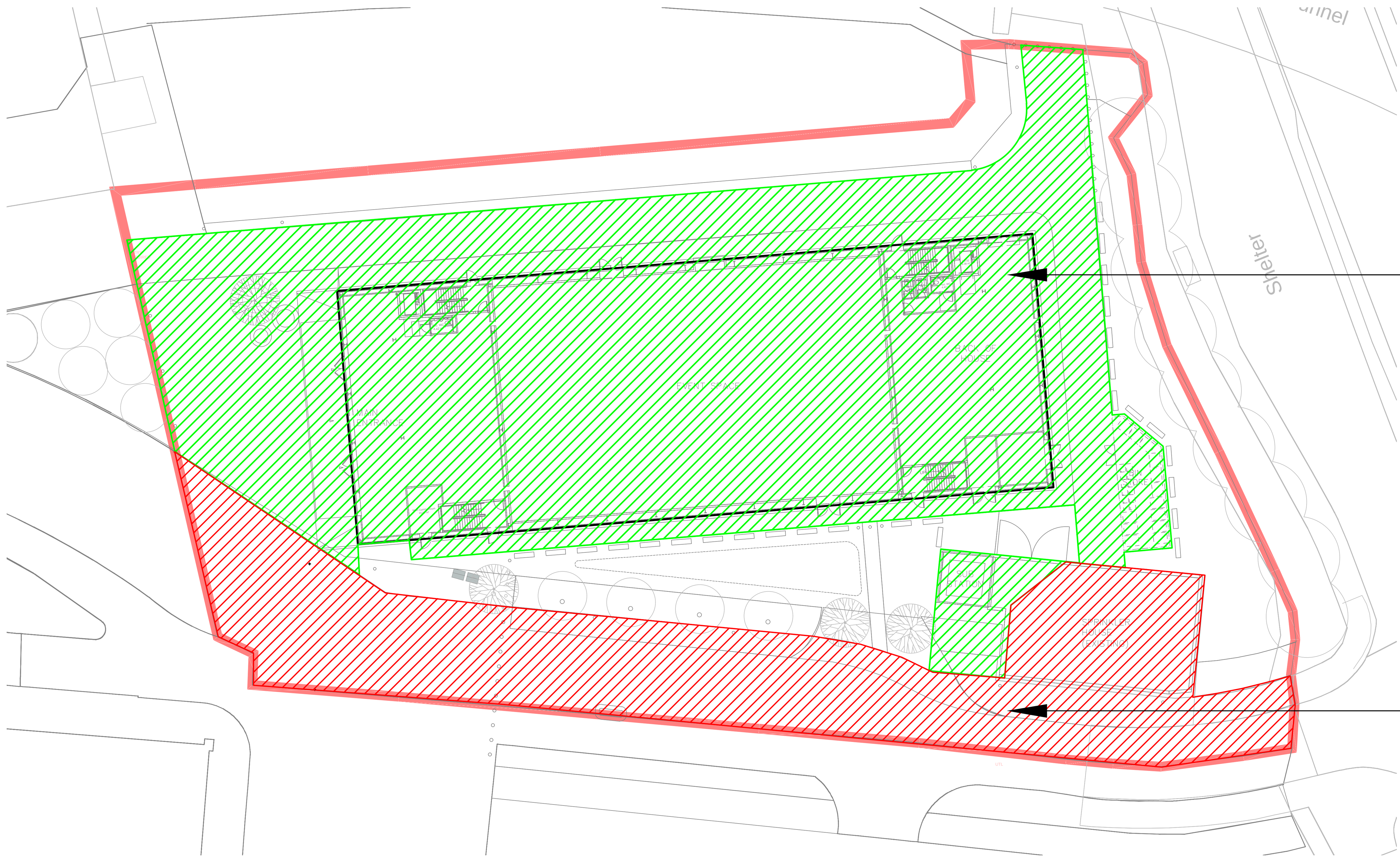
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Denotes existing hardstanding area to be grubbed up / removed - 1889m2.
Remainder of existing site is compacted hardcore

Denotes existing / proposed hardstanding not included in calculation (existing extent of access road & sprinkler tank to be retained) - 1317m2

EXISTING / PREDEVELOPMENT



Denotes extent of new drained impermeable areas - 3,300m2
Remainder of site area is soft landscaping

Denotes existing / proposed hardstanding not included in calculation (existing extent of access road & sprinkler tank to be retained) - 1317m2

PROPOSED / POSTDEVELOPMENT

Notes

1. All dimensions are in millimetres unless noted otherwise
2. All levels shown are in metres unless noted otherwise
3. This drawing is to be read in conjunction with all relevant Architectural & Service Engineer drawings
4. Do not scale from this drawing. Figured dimensions to be worked to in all cases. If in doubt, contact the Engineer
5. CDM (2015) - This drawing is to be read in conjunction with the Designers Risk Assessment produced for the project

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Rev	Date	Description	Drawn
P01	05/26	Preliminary issue	RH

Drawing Status:
PRELIMINARY

Contract:
PROJECT TAVERNA
MANCHESTER CITY FOOTBALL CLUB

Drawing Title:
IMPERMEABLE AREA PLAN
(PRE & POST DEVELOPMENT)

Scales		Date	Drawn	Checked
1:400	(A1)	05/2026	RH	SB

Project	Origin	Zone	Level	Type	Role	Number	Rev'n
0165	CAL	EX	00	DR	C	0204	P01

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Appendix 3 – Greenfield Runoff Calculation

Greenfield runoff rate estimation tool

www.uksuds.com | Greenfield runoff rate estimation tool (https://www.uksuds.com/)

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	04/03/2026
Calculated by	Rory Harris
Reference	
Model version	2.2.3

Location

Site name	Project Taverna
Site location	East Manchester



Site easting (British National Grid)	386937
Site northing (British National Grid)	398732

Site details

Total site area (ha)	0.63 ha

Greenfield runoff

Method

Method	FEH statistical (2025)

FEH statistical (2025)

	My value		Map value
SAAR9120 (mm)	1108 mm		
BFIHOST19scaled	0.39		
QMed-QBar conversion	1.075		1.075
QMed (l/s)	6 l/s		
QBar (FEH statistical 2025) (l/s)	6.4 l/s		

Growth curve factors

	My value		Map value
Hydrological region	10		10
1 year growth factor	0.87		
2 year growth factor	0.93		
10 year growth factor	1.38		
30 year growth factor	1.7		
100 year growth factor	2.08		
200 year growth factor	2.37		

Results

Method	FEH statistical (2025)
Flow rate 1 year (l/s)	5.6 l/s
Flow rate 2 year (l/s)	6.0 l/s
Flow rate 10 years (l/s)	8.8 l/s
Flow rate 30 years (l/s)	10.9 l/s
Flow rate 100 years (l/s)	13.3 l/s
Flow rate 200 years (l/s)	15.2 l/s

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent 'zero' figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.2.3) developed by HR Wallingford and available at uksuds.com (https://www.uksuds.com/). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at uksuds.com/terms-conditions (https://www.uksuds.com/terms-conditions). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

Appendix 4 – Attenuation Calculations

Summary of Results for 100 year Return Period (+45%)

Half Drain Time : 524 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	0.644	0.644	0.0	4.0	4.0	167.4	O K
30 min Summer	0.735	0.735	0.0	4.3	4.3	191.1	Flood Risk
60 min Summer	0.830	0.830	0.0	4.5	4.5	215.8	Flood Risk
120 min Summer	0.918	0.918	0.0	4.8	4.8	238.7	Flood Risk
180 min Summer	0.959	0.959	0.0	4.9	4.9	249.2	Flood Risk
240 min Summer	0.977	0.977	0.0	4.9	4.9	254.1	Flood Risk
360 min Summer	0.983	0.983	0.0	4.9	4.9	255.5	Flood Risk
480 min Summer	0.973	0.973	0.0	4.9	4.9	252.9	Flood Risk
600 min Summer	0.962	0.962	0.0	4.9	4.9	250.0	Flood Risk
720 min Summer	0.949	0.949	0.0	4.9	4.9	246.7	Flood Risk
960 min Summer	0.938	0.938	0.0	4.8	4.8	244.0	Flood Risk
1440 min Summer	0.903	0.903	0.0	4.7	4.7	234.7	Flood Risk
2160 min Summer	0.841	0.841	0.0	4.6	4.6	218.6	Flood Risk
2880 min Summer	0.779	0.779	0.0	4.4	4.4	202.6	Flood Risk
4320 min Summer	0.636	0.636	0.0	4.0	4.0	165.3	O K
5760 min Summer	0.520	0.520	0.0	3.6	3.6	135.1	O K
7200 min Summer	0.422	0.422	0.0	3.6	3.6	109.6	O K
8640 min Summer	0.327	0.327	0.0	3.6	3.6	85.1	O K
10080 min Summer	0.214	0.214	0.0	3.6	3.6	55.6	O K
15 min Winter	0.644	0.644	0.0	4.0	4.0	167.4	O K
30 min Winter	0.735	0.735	0.0	4.3	4.3	191.2	Flood Risk
60 min Winter	0.831	0.831	0.0	4.5	4.5	216.0	Flood Risk

Storm Event	Rain (mm/hr)	Time-Peak (mins)
15 min Summer	203.369	22
30 min Summer	117.356	37
60 min Summer	67.722	66
120 min Summer	39.080	124
180 min Summer	28.332	184
240 min Summer	22.551	242
360 min Summer	16.349	360
480 min Summer	13.014	412
600 min Summer	10.902	474
720 min Summer	9.434	536
960 min Summer	7.629	672
1440 min Summer	5.656	952
2160 min Summer	4.193	1364
2880 min Summer	3.391	1764
4320 min Summer	2.436	2556
5760 min Summer	1.927	3344
7200 min Summer	1.606	4112
8640 min Summer	1.385	4848
10080 min Summer	1.221	5440
15 min Winter	203.369	22
30 min Winter	117.356	36
60 min Winter	67.722	66

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Summary of Results for 100 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
120 min Winter	0.921	0.921	0.0	4.8	4.8	239.4	Flood Risk
180 min Winter	0.963	0.963	0.0	4.9	4.9	250.4	Flood Risk
240 min Winter	0.983	0.983	0.0	4.9	4.9	255.7	Flood Risk
360 min Winter	0.993	0.993	0.0	5.0	5.0	258.1	Flood Risk
480 min Winter	0.981	0.981	0.0	4.9	4.9	255.1	Flood Risk
600 min Winter	0.965	0.965	0.0	4.9	4.9	250.9	Flood Risk
720 min Winter	0.950	0.950	0.0	4.9	4.9	247.0	Flood Risk
960 min Winter	0.931	0.931	0.0	4.8	4.8	242.2	Flood Risk
1440 min Winter	0.875	0.875	0.0	4.7	4.7	227.4	Flood Risk
2160 min Winter	0.780	0.780	0.0	4.4	4.4	202.7	Flood Risk
2880 min Winter	0.690	0.690	0.0	4.1	4.1	179.4	O K
4320 min Winter	0.503	0.503	0.0	3.6	3.6	130.7	O K
5760 min Winter	0.331	0.331	0.0	3.6	3.6	86.2	O K
7200 min Winter	0.157	0.157	0.0	3.6	3.6	40.8	O K
8640 min Winter	0.128	0.128	0.0	3.2	3.2	33.2	O K
10080 min Winter	0.114	0.114	0.0	2.9	2.9	29.5	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
120 min Winter	39.080	122
180 min Winter	28.332	180
240 min Winter	22.551	236
360 min Winter	16.349	348
480 min Winter	13.014	450
600 min Winter	10.902	484
720 min Winter	9.434	558
960 min Winter	7.629	714
1440 min Winter	5.656	1016
2160 min Winter	4.193	1456
2880 min Winter	3.391	1880
4320 min Winter	2.436	2724
5760 min Winter	1.927	3568
7200 min Winter	1.606	3824
8640 min Winter	1.385	4488
10080 min Winter	1.221	5144

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Appendix 5 – Detailed Drainage Calculations

Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	k (mm)	HYD SECT	DIA (mm)
2.000	33.452	0.335	100.0	0.050	10.00	0.600	o	225
2.001	21.265	0.213	99.8	0.050	0.00	0.600	o	225
3.000	70.089	1.347	52.0	0.110	5.00	0.600	o	225
3.001	31.199	0.625	49.9	0.120	0.00	0.600	o	225
2.002	12.773	1.007	12.7	0.000	0.00	0.600	o	225

PN	US/MH Name	US/CL (m)	US/IL (m)	US C.Depth (m)	DS/CL (m)	DS/IL (m)	DS C.Depth (m)	Ctrl	US/MH (mm)
2.000	S01	61.820	60.320	1.275	62.098	59.985	1.888		1050
2.001	S02	62.098	59.985	1.888	61.800	59.772	1.803		1200
3.000	S04	61.887	60.497	1.165	61.584	59.150	2.209		1200
3.001	S05	61.584	59.150	2.209	61.800	58.525	3.050		1500
2.002	S03	61.800	58.525	3.050	61.140	57.518	3.397	Hydro-Brake®	1200

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
S01	61.820	1.500	Open Manhole	1050	2.000	60.320	225				
S02	62.098	2.113	Open Manhole	1200	2.001	59.985	225	2.000	59.985	225	
S04	61.887	1.390	Open Manhole	1200	3.000	60.497	225				
S05	61.584	2.434	Open Manhole	1500	3.001	59.150	225	3.000	59.150	225	
S03	61.800	3.275	Open Manhole	1200	2.002	58.525	225	2.001	59.772	225	124
								3.001	58.525	225	
OR_MHSW02	61.140	3.622	Open Manhole	1200		OUTFALL		2.002	57.518	225	

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
2.000	o	225	S01	61.820	60.320	1.275	Open Manhole	1050
2.001	o	225	S02	62.098	59.985	1.888	Open Manhole	1200
3.000	o	225	S04	61.887	60.497	1.165	Open Manhole	1200
3.001	o	225	S05	61.584	59.150	2.209	Open Manhole	1500
2.002	o	225	S03	61.800	58.525	3.050	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
2.000	33.452	100.0	S02	62.098	59.985	1.888	Open Manhole	1200
2.001	21.265	99.8	S03	61.800	59.772	1.803	Open Manhole	1200
3.000	70.089	52.0	S05	61.584	59.150	2.209	Open Manhole	1500
3.001	31.199	49.9	S03	61.800	58.525	3.050	Open Manhole	1200
2.002	12.773	12.7	OR_MHSW02	61.140	57.518	3.397	Open Manhole	1200

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
2.002	OR_MHSW02	61.140	57.518	0.000	1200	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	1.000	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Storage Structures	3
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
Return Period (years)	30
Site Location GB 386100 398350 SJ 86100 98350	

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Synthetic Rainfall Details

C (1km)	-0.027
D1 (1km)	0.331
D2 (1km)	0.386
D3 (1km)	0.309
E (1km)	0.303
F (1km)	2.450
Summer Storms	Yes
Winter Storms	No
Cv (Summer)	1.000
Cv (Winter)	1.000
Storm Duration (mins)	30

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Online Controls for Storm

Hydro-Brake® Manhole: S03, DS/PN: 2.002, Volume (m³): 5.7

Design Head (m) 2.175 Hydro-Brake® Type Md4 Invert Level (m) 58.525
Design Flow (l/s) 5.0 Diameter (mm) 65

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	1.8	1.200	3.6	3.000	5.7	7.000	8.7
0.200	1.9	1.400	3.9	3.500	6.2	7.500	9.0
0.300	1.8	1.600	4.2	4.000	6.6	8.000	9.3
0.400	2.1	1.800	4.4	4.500	7.0	8.500	9.6
0.500	2.3	2.000	4.7	5.000	7.4	9.000	9.9
0.600	2.6	2.200	4.9	5.500	7.7	9.500	10.1
0.800	2.9	2.400	5.1	6.000	8.1		
1.000	3.3	2.600	5.3	6.500	8.4		

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Storage Structures for Storm

Bio-Retention Area Manhole: S01, DS/PN: 2.000

Invert Level (m) 60.470 Porosity 0.30

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	0.0	0.500	0.0	0.501	31.5	1.350	31.5

Filter Drain Manhole: S04, DS/PN: 3.000

Infiltration Coefficient Base (m/hr)	0.00000	Trench Length (m)	35.0
Infiltration Coefficient Side (m/hr)	0.00000	Pipe Diameter (m)	0.150
Safety Factor	2.0	Pipe Depth above Invert (m)	0.000
Porosity	0.30	Slope (1:X)	0.0
Invert Level (m)	60.600	Cap Volume Depth (m)	1.200
Trench Width (m)	0.8	Cap Infiltration Depth (m)	0.000

Complex Manhole: S05, DS/PN: 3.001

Filter Drain

Infiltration Coefficient Base (m/hr)	0.00000	Trench Length (m)	40.0
Infiltration Coefficient Side (m/hr)	0.00000	Pipe Diameter (m)	0.150
Safety Factor	2.0	Pipe Depth above Invert (m)	0.000
Porosity	0.30	Slope (1:X)	0.0
Invert Level (m)	59.418	Cap Volume Depth (m)	1.250
Trench Width (m)	0.8	Cap Infiltration Depth (m)	0.000

Cellular Storage

Invert Level (m) 59.200 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	150.0	0.0	1.501	0.0	0.0
1.500	150.0	0.0			

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	2, 30, 100
Climate Change (%)	0, 40, 45

PN	Storm	Return Period	Climate Change	First X Surcharge	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
2.000	15 Winter	2	0%	100/15 Summer				
2.001	15 Summer	2	0%	30/15 Summer				
3.000	15 Summer	2	0%	30/15 Summer				
3.001	120 Winter	2	0%	2/30 Summer				
2.002	180 Winter	2	0%	2/15 Summer				

PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
2.000	S01	60.376	-0.169	0.000	0.14	0.0	6.8	OK
2.001	S02	60.073	-0.137	0.000	0.32	0.0	15.2	OK
3.000	S04	60.587	-0.135	0.000	0.33	0.0	22.9	OK
3.001	S05	59.448	0.073	0.000	0.05	0.0	3.6	SURCHARGED
2.002	S03	59.532	0.782	0.000	0.02	0.0	3.2	SURCHARGED

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	2, 30, 100
Climate Change (%)	0, 40, 45

PN	Storm	Return Period	Climate Change	First X Surcharge	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
2.000	15 Winter	30	+40%	100/15 Summer				
2.001	15 Summer	30	+40%	30/15 Summer				
3.000	15 Summer	30	+40%	30/15 Summer				
3.001	240 Winter	30	+40%	2/30 Summer				
2.002	240 Winter	30	+40%	2/15 Summer				

PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
2.000	S01	60.431	-0.114	0.000	0.49	0.0	23.8	OK
2.001	S02	60.338	0.128	0.000	1.26	0.0	59.9	SURCHARGED
3.000	S04	60.834	0.112	0.000	0.96	0.0	67.3	SURCHARGED
3.001	S05	60.196	0.821	0.000	0.07	0.0	4.9	SURCHARGED
2.002	S03	60.319	1.569	0.000	0.03	0.0	4.3	SURCHARGED

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	2, 30, 100
Climate Change (%)	0, 40, 45

PN	Storm	Return Period	Climate Change	First X Surcharge	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
2.000	15 Summer	100	+45%	100/15 Summer				
2.001	15 Summer	100	+45%	30/15 Summer				
3.000	15 Summer	100	+45%	30/15 Summer				
3.001	240 Winter	100	+45%	2/30 Summer				
2.002	240 Winter	100	+45%	2/15 Summer				

PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
2.000	S01	61.085	0.540	0.000	0.93	0.0	45.4	SURCHARGED
2.001	S02	61.027	0.817	0.000	1.69	0.0	80.0	SURCHARGED
3.000	S04	61.673	0.951	0.000	1.15	0.0	80.3	FLOOD RISK
3.001	S05	60.724	1.349	0.000	0.10	0.0	6.9	SURCHARGED
2.002	S03	60.715	1.965	0.000	0.04	0.0	4.9	SURCHARGED

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Appendix 6 – United Utilities Correspondence

Rory Harris

From: seweradoptions@uuplc.co.uk
Sent: 31 October 2025 14:07
To: Rory Harris
Subject: RE: Ref - 08296218 - Land Adjacent to Etihad Campus

Good Afternoon Rory,

Thank you for your email.

There are no formal easements for the sewers crossing your development. Due to the critical nature of these sewers, UU asks for the that structures are built outside of the below areas. However Easement Local Practice applies.

400mm combined sewer recorded at 8.4m deep - 8m (4m from centreline)
2100mm CSO recorded at 8m deep – 12m (6m from centreline)
400mm surface water sewer assumed 8m deep – 8m (4m from centreline)
900mm combined sewer recorded at 8m deep – 10m (5m from centreline)

Thanks

Steve

United Utilities
Water for the North West

[redacted]
Developer Engineer
Developer Services
[redacted]
unitedutilities.com

If you have received a great service today why not tell us?
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Please note that I am out of the office on Thursdays with limited access to email. I will look to reply to your email on my return. Alternatively, you can contact our Customer Care Team via email or phone - wastewaterdeveloperservices@uuplc.co.uk/0345 072 6067

---------- Original Message ----------
From: seweradoptions@uuplc.co.uk [seweradoptions@uuplc.co.uk]
Sent: 30/10/2025 08:10
To: [redacted]
Subject: Ref - 08296218 - Land Adjacent to Etihad Campus

Good Morning

Your enquiry has been logged and sent to our engineer Gulshan Seetulparsad. His contact number is [redacted]

[redacted]. Our service Level agreement is to respond to you within 10 working days.

Many thanks

[redacted]
Customer Advisor Advanced
Developer Services & Metering
Customer Services
T: 0345 026 8989 option 4
unitedutilities.com

If you feel you have received a good service from myself, please can you take two minutes to fill in the survey below. This will be much appreciated

Visit: *https://unitedutilities.thewowawards.co.uk/nominate*

---------- Original Message ----------
From: Rory Harris [redacted]]
Sent: 29/10/2025 20:36
To: seweradoptions@uuplc.co.uk
Subject: Re: PDE Response - Land Adjacent to Etihad Campus - 08296218

Good evening Gulshan,

Many thanks for the response. We acknowledge the comments made in regard to the build over.

In order that we can plan the development accordingly, please can you confirm if there is a specific formal easement in place for any of these sewers and if so please could you confirm the relevant widths?

If there are no specific easements in place i assume that the standard easements in line with the 'Easement Local Practice' will therefore apply?

Thanks in advance

Rory Harris
Director
MEng (Hons) CEng MIStructE
Calibre Consulting Engineers Ltd.

[redacted]
Visit our website
Connect with me on Linkedin
Suite 423, Peter House, Manchester, M1 5AN

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From: seweradoptions@uuplc.co.uk <seweradoptions@uuplc.co.uk>
Sent: Wednesday, October 22, 2025 10:59:29 AM
To: Rory Harris <[redacted]
Subject: PDE Response - Land Adjacent to Etihad Campus - 08296218

Good Morning Rory

Thank you for your submission.

Please find attached my Pre-Development Enquiry Response. Please note that this needs to be read in conjunction with the Pre-Development Guidance.

United Utilities' policy has changed on build-overs agreements. We do not allow new structures to enter into a build-over agreement. Please find the pre-development enquiry response to that effect.

If I can be of further support with this case do get in touch.

Thank you for understanding.

Kind Regards

Gulshan

United Utilities
Water for the North West

[redacted]
Developer Engineer (Greater Manchester Area)
Developer Services & Metering
Customer Services
T: 01925 429092
unitedutilities.com

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WASTEWATER PRE-DEVELOPMENT ENQUIRY

United Utilities
Water for the North West

United Utilities Grasmere House, 2nd Floor
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP

22/10/2025

Dear **Rory Harris,**

Pre-Development Enquiry for **Land Adjacent to Ethihad Campus, Manchester** UU Reference Number: **08296218**

We have assessed your application based on the information provided. This pre-development advice on your drainage strategy will be valid for 12 months. Your strategy will need review by other authorities as part of the planning process. We advise conducting necessary site investigations to confirm viability of your proposals.

Modelled Flood Risk

I can confirm that we do not have modelled flood risk within the vicinity of the proposed development.

Please note that our modelling data is indicative, and only representative of the 1:100year storm event.

Please see **comment 2** of the attached guidance sheet

Asset Protection

The asset(s) on site are critical assets, any diversion would need to be carried out by United Utilities with all costs borne by the Developer. This would add a lengthy lead in time and additional costs which should be considered before finalising any build programme. We would recommend re-designing the site around this asset where possible.

United Utilities currently has a stance of not accepting any build-over agreements from new structures. Noting that the lifespan of the structure is more than 6 months, it cannot be considered a temporary installation. Compounding, on the criticality of the wastewater assets on site a build-over agreement will not be acceptable.

Please see **comment 3** of the attached guidance sheet and **Working Near Our Pipelines Guidance document**

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 900mm diameter public combined sewer within your proposed development at an unrestricted rate.

WASTEWATER PRE-DEVELOPMENT ENQUIRY

Manhole reference SJ86988701, **Grid reference** x:386,876 y:398,735

Please see the images at the end of this letter for clarification

Surface Water

Follow the National Planning Policy Guidance drainage hierarchy and Provide evidence for discounting higher options before considering public sewer discharge. Consult the Lead Local Flood Authority regarding surface water concerns.

Please see comment **4** within the guidance sheet

Infiltration

Please see comment **4** within the guidance sheet

Waterbody

If an evidence-based assessment has been carried out and confirms that infiltration is not feasible, we recommend that you contact the Lead Local Flood Authority and/or Environment Agency to discuss a point of discharge to the **Ashton Canal** located 50m North of the proposed site.

We would encourage you to engage with any third-party landowner and riparian owner to agree access and discharge rights to the water body if this is not in your ownership.

Public Sewer

United Utilities will consider a connection to the 400mm diameter public surface water within the proposed site at a pass forward flow to be agreed by the Lead Local Flood Authority. United Utilities requests that any agreed rate does not exceed 5l/s.

Manhole reference SJ86988705, **Grid reference** x: 386867 y: 398739

Please see images at the end of this letter for clarification

Site Images

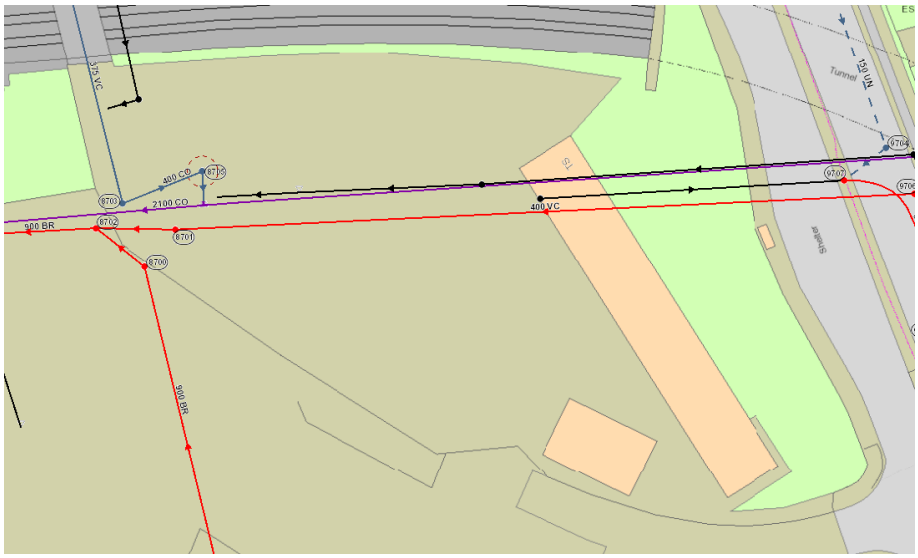


Figure 1 Site Extents

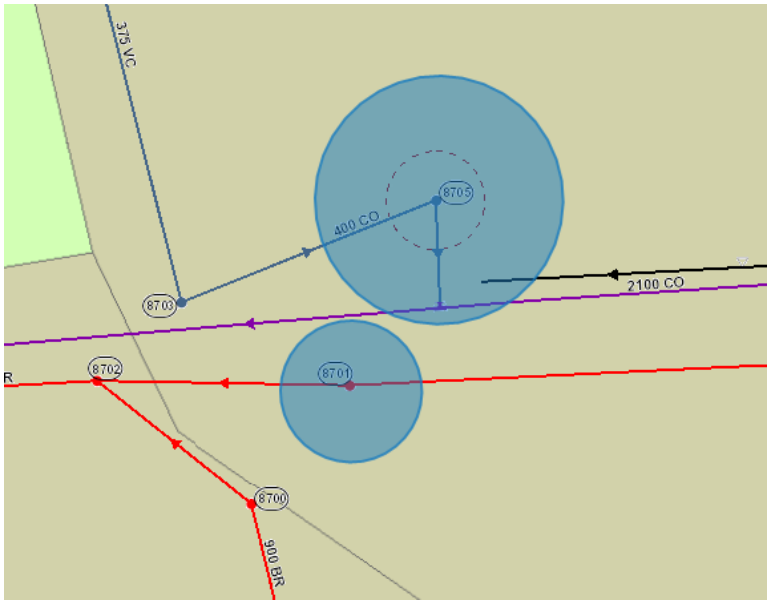


Figure 2 Recommended points of connection

Kind Regards

[redacted]
Developer Engineer (Greater Manchester Area)
Developer Services & Metering
Customer Services
T: 01925 429092
unitedutilities.com

Appendix 7 – Site Investigation Extracts

3.0 FINDINGS

3.1 Ground Conditions

The site currently consists of a gravel surfaced car park in the eastern section and a site compound in the western site section separated by an asphalt road, predominantly utilised for pedestrian access. The site topography is consistent at c. 62.00m AOD with a gentle slope to the west. Figure 4, below, shows elevations across the site based on LIDAR data:

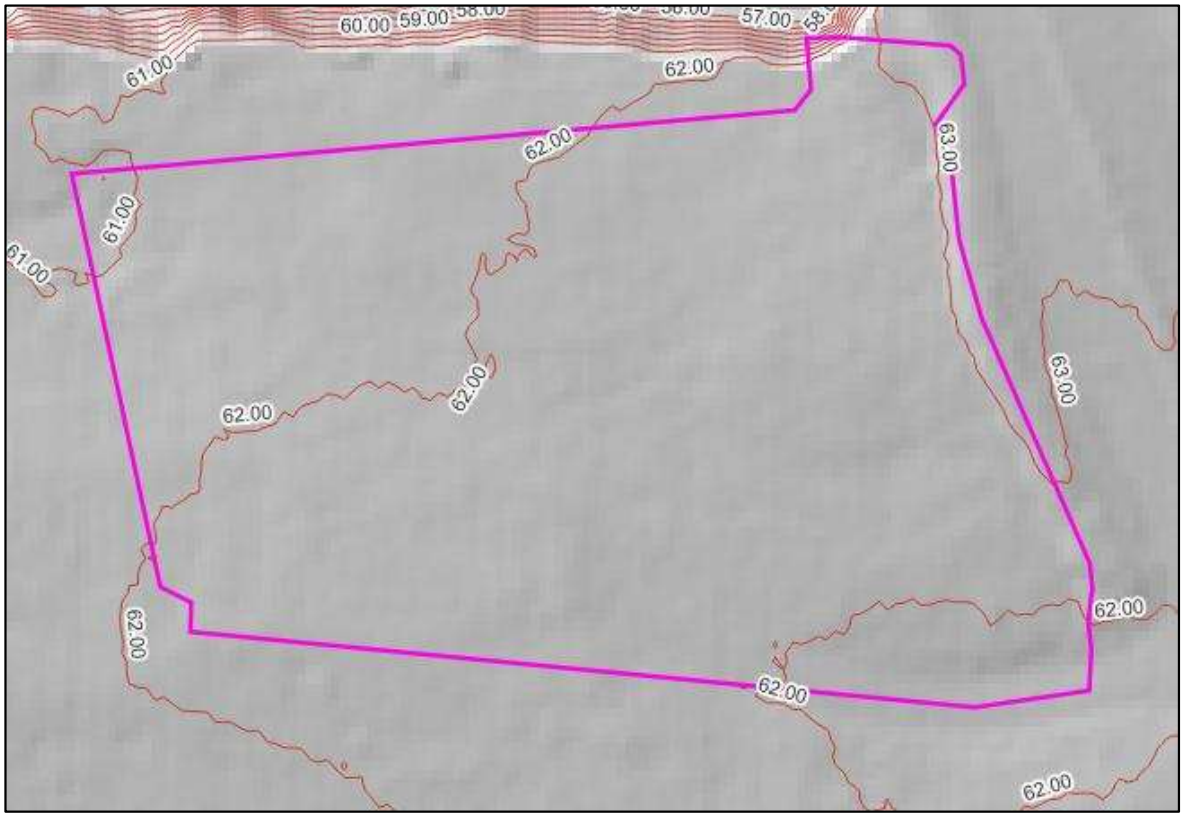


Figure 4: Site location plan showing current site elevations based on LIDAR data

The typical ground conditions encountered across the site are as follows:

- **Made Ground** comprising asphalt (in the road only) to a depth of 0.10m to 0.15m bgl (62.00m to 61.72m AOD), underlain by:
- **Made Ground** comprising dark greyish brown, very gravelly, slightly clayey to clayey fine to coarse SAND to a depth of 2.30m to at least 3.10m (59.73m to 59.03m AOD), underlain by:

- **Glacial Till** comprising stiff to very stiff, light brown, slightly gravelly, slightly sandy CLAY to depths of between 15.00m to 15.80m bgl (47.05m to 46.30m AOD), underlain by:
- **Pennine Upper Coal Measures** comprising weathered MUDSTONE. During cable percussion drilling, this material was recovered as very stiff, grey, slightly gravelly CLAY to a depth of at least 16.91m bgl (45.19m AOD).

Images of the typical Made ground, Glacial Till and Pennine Upper Coal Measures deposits are shown below:



Figure 5: Typical Made Ground encountered in TP301 (left), typical Glacial Till encountered in TP305 (centre) and Pennine Upper Coal Measures in CP302 (right).

3.1.1 Notable Exceptions

The following notable exceptions to the aforementioned typical ground conditions were recorded:

- **Made Ground** comprising stiff, light brown, slightly gravelly, slightly sandy CLAY was encountered in CP302 only from 3.00m to 4.00m bgl (59.05m to 58.05m AOD).
- **Made Ground** comprising soft, black, slightly sandy, gravelly CLAY and dark grey, very sandy, silty GRAVEL with a mild to strong hydrocarbon odour and sheen was encountered within TP303, TP304 and TP309 from 2.60m and 4.40m bgl (59.52m and 57.72m AOD).

3.2 Visual and Olfactory Contamination Findings

During the intrusive investigation works, the soils were examined carefully for both visual and olfactory evidence of contamination.

3.2.1 Infilled Canal

Trial pits TP303, TP304, TP309 and TP312 were undertaken within the extents of the historical infilled canal in order to identify and delineate this feature. During this delineation exercise, a mild to strong hydrocarbon odour and sheen was noted in the Made Ground deposits between 2.60m and 4.40m bgl (59.52m and 57.72m AOD).

Any evidence of hydrocarbon impact and in-situ Photo Ionisation Detector (PID) test results are summarised below:

Location	Depth (m bgl)	Evidence	PID
TP303	1.20	Mild hydrocarbon odour	0.20 ppm at 1.20m bgl
	2.90	Slight hydrocarbon sheen	2.10 ppm at 2.90m bgl
	3.00 – 4.20	Mild hydrocarbon odour and sheen	1.20 ppm at 3.20m bgl 2.30 ppm at 4.20m bgl
TP304	2.70	Mild hydrocarbon odour	2.60 ppm at 2.70m bgl
	4.00 – 4.40	Mild hydrocarbon odour and sheen	12.00 ppm at 4.10m bgl
TP309	2.30	Slight hydrocarbon odour	-
	2.70 – 4.00	Strong hydrocarbon odour and sheen	24.30 ppm at 2.90m bgl 64.00 ppm at 3.60m bgl
TP312	2.40	Slight hydrocarbon odour	-

Figure 6, below, shows the locations of the trial pits in relation to the infilled canal based on the 1893 historical OS map.

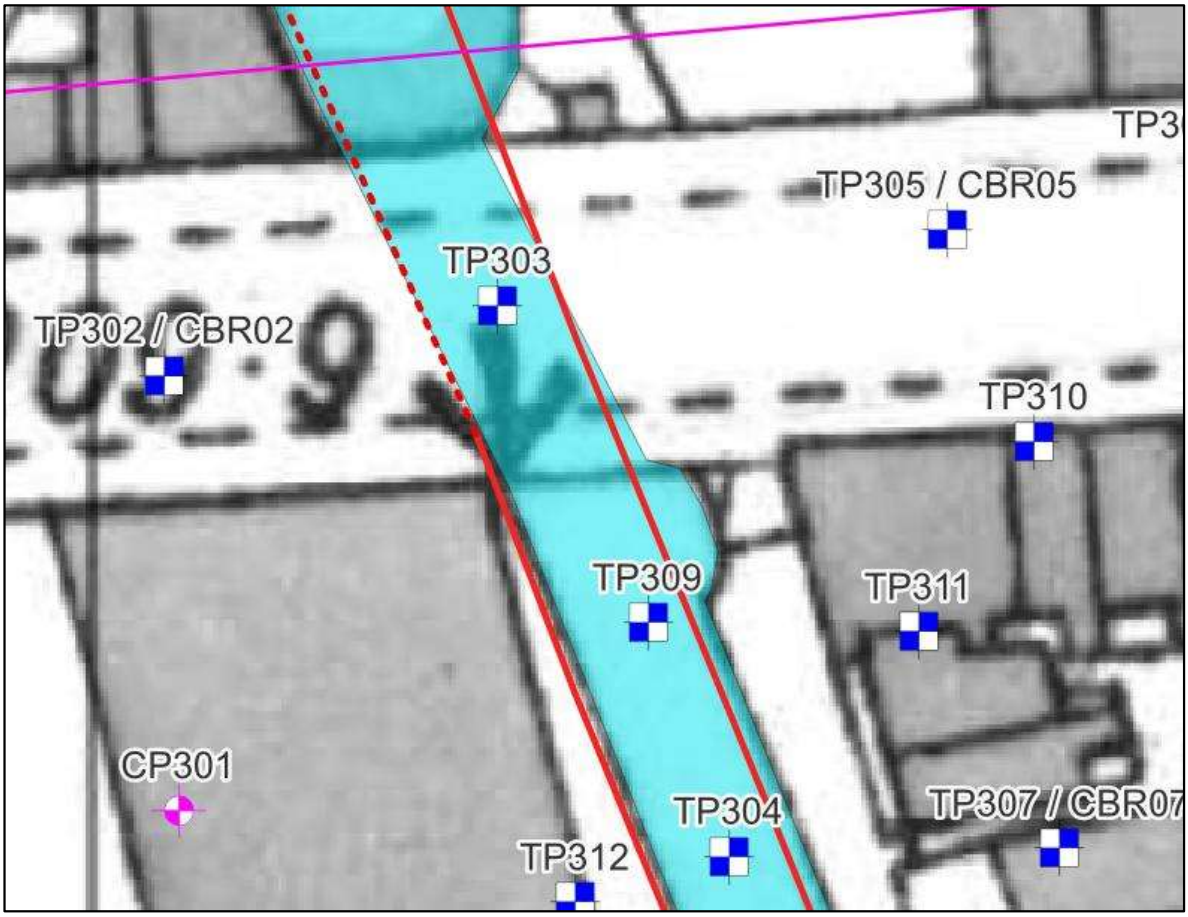


Figure 6: Locations of exploratory holes targeting the historical infilled canal overlain onto the 1893 historical OS map. The location of the canal on the historical map is shown in blue. Extents measured during ground investigation are shown with red lines and inferred extents are shown with a dashed red line.

Evidence of TPH impact was noted to be the strongest in TP309 and significantly weaker in TP304 and TP303. Representative samples were taken from these deposits and sent for chemical laboratory testing to confirm contaminant concentrations. Chemical testing results are included in Appendix 8 and summarised in Section 3.7. Photographs of the recovered material in which strong odours and sheens were recorded are included below as Figure 7:



Figure 7: Photographs of Made Ground where strong hydrocarbon odours and sheens were recorded (TP303, left and TP309, right)

Evidence of TPH impact recorded during the ground investigation and the PID test results are included on the trial pit logs in Appendix 3.

3.3 Water Strikes

No water strikes were recorded within the underlying natural strata. Perched water strikes were recorded within Made Ground deposits and are summarised below:

Exploratory Hole	Depth (m bgl) *(m AOD)*	Comments
TP310	0.70 *(61.42)*	-
TP305	0.80 *(61.25)*	-
CP302	0.80 *(61.25)*	Water level 0.50m bgl (61.55m AOD) after 5 minutes
TP309	2.30 *(59.81)*	-
TP304	2.30 *(59.82)*	-
TP303	3.10 *(58.85)*	-

Water strikes are detailed on the exploratory hole logs contained in Appendices 3 to 5.

3.4 Conceptual Ground Model

The findings of the Phase 2 ground investigation works have been used to create a conceptual ground model of the site. The model illustrates the typical ground conditions outlined in Section 3.1 as well as the deeper Made Ground encountered in the infilled canal. An extract of the conceptual ground model is included below as Figure 8 and presented in Appendix 2:

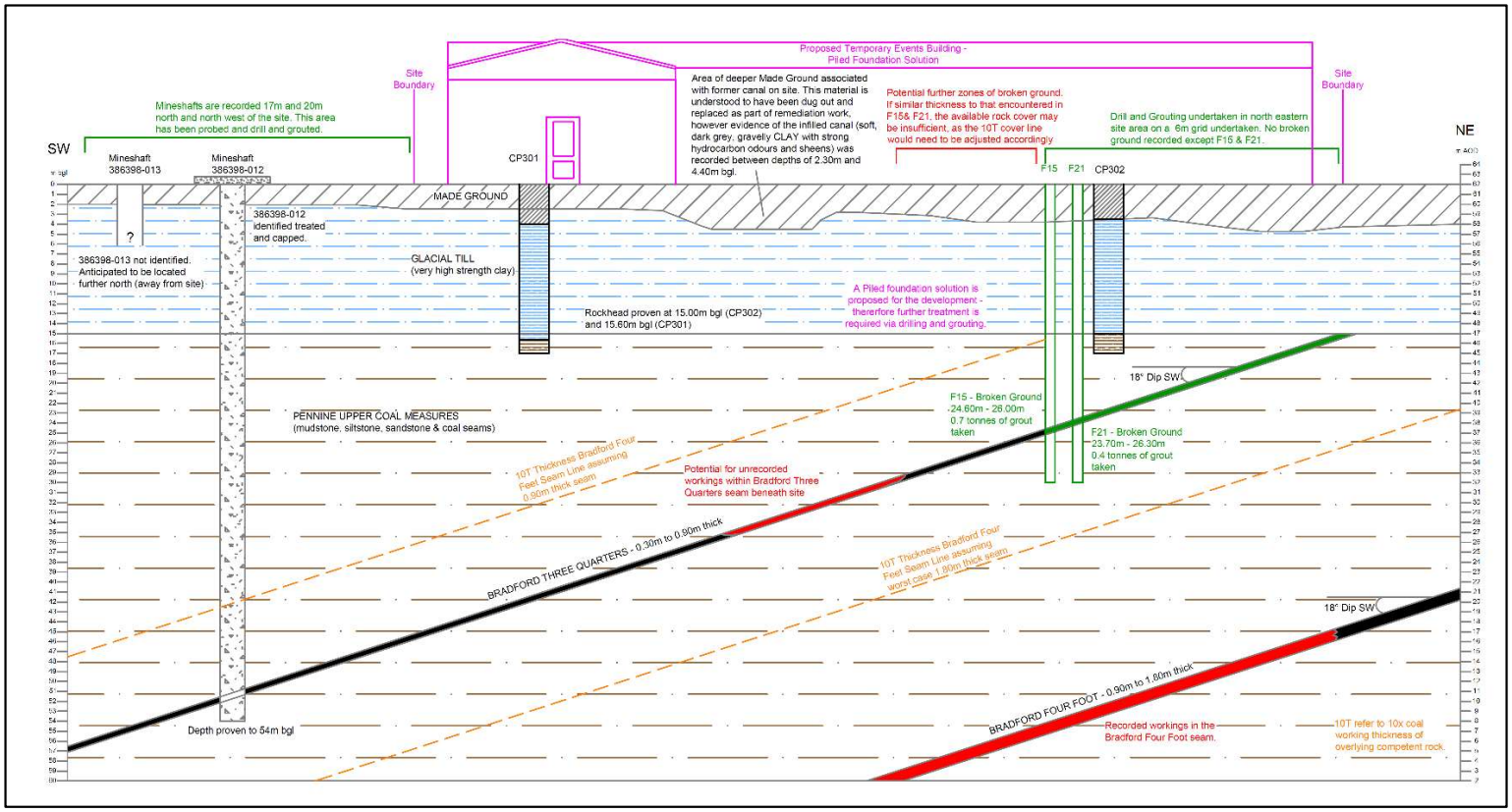


Figure 8: Extract of the conceptual ground model for the site.

Borehole Log

CP301

Sheet 1 of 2

Hole Type	Easting	Northing	Ground Level (m)	Scale
IP+CP	386903.39	398719.27	62.10	1:50

Project Name	Project No.	Start Date	End Date
MCFC	4490	2026-04-01	2026-04-02

Client
Manchester City Football Club

Consultant
IGE Consulting

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.00-0.50	B		62.00	(0.10) 0.10		Asphalt [MADE GROUND]
		0.50-1.00	B					Dark brown very gravelly clayey fine to coarse SAND. Gravel is very angular to subrounded fine to coarse of red brick, ceramic, limestone and sandstone [MADE GROUND]
		1.20	SPT	N=26 (1,2/1,3,7,15)		(1.90)		
		1.20-1.65	D					
		2.00	SPT	N=7 (1,1/2,1,2,2)	60.10	2.00		Stiff brown slightly gravelly sandy CLAY. Gravel is very angular to subrounded fine to coarse of red brick, concrete, ceramic, limestone and sandstone [MADE GROUND]
		2.00-2.45	D, B			(1.00)		
		3.00	SPT	N=20 (2,3/3,5,6,6)	59.10	3.00		Very stiff light brown mottled light grey slightly gravelly slightly sandy CLAY. Gravel is subangular to well rounded fine to medium of mudstone, sandstone and coal [GLACIAL TILL]
		3.00-3.45	D, B					
		4.00-4.45	U100	Blows: 30, Recovery: 100%				
		5.00	SPT	N=21 (3,3/4,4,6,7)				
		5.00-5.45	D, B					
		6.00-6.45	U100	Blows: 31, Recovery: 100%				
		7.50	SPT	N=13 (2,2/3,3,3,4)		(12.80)		
		7.50-7.95	D, B					
		9.00-9.45	U100	Blows: 25, Recovery: 100%				

Continued on next page

Remarks
Terminated at target depth. No water strike

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Insulated Hand Tools	LG
1.20 - 16.91m	CP	Dando 2000	LG

Checked By: LM

Created using Pebble Geo

Borehole Log

CP301

Sheet 2 of 2

Hole Type	Easting	Northing	Ground Level (m)	Scale
IP+CP	386903.39	398719.27	62.10	1:50
Project Name		**Project No.**	**Start Date**	**End Date**
MCFC		4490	2026-04-01	2026-04-02

Client
Manchester City Football Club

Consultant
IGE Consulting

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
								As previous page.
		10.50 10.50-10.95	SPT D, B	N=31 (5,6/7,7,8,9)				
		12.00-12.45	U100	Blows: 37, Recovery: 100%				
		13.50 13.50-13.95	SPT D, B	N=34 (6,6/7,8,9,10)				
		15.00-15.45	U100	Blows: 50, Recovery: 90%				
					46.30	15.80		
		16.00-16.50	B					Weathered MUDSTONE. Recovered as: Very stiff grey slightly gravelly CLAY. Gravel is very angular to subrounded fine to coarse [PENNINE UPPER COAL MEASURES]
						(1.11)		
		16.50	SPT	N=50 for 275mm (12,13/13,14,13,10 for 50mm)				
		16.50-16.91	D		45.19	16.91		*End of Borehole at 16.91m*

Remarks
Terminated at target depth. No water strike

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Insulated Hand Tools	LG
1.20 - 16.91m	CP	Dando 2000	LG

Checked By: LM

Borehole Log

CP301

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
IP+CP	386903.39	398719.27	62.10	1:50

Project Name	Project No.	Start Date	End Date
MCFC	4490	2026-04-01	2026-04-02

Client	Consultant	Contractor
Manchester City Football Club	IGE Consulting	

Hole Diameter

Base Depth (m)	Hole Diameter (mm)	Remarks
3.00	200	
16.91	150	

Casing Diameter

Base Depth (m)	Casing Diameter (mm)	Remarks
3.00	200	
9.00	150	

Drilling Progress

Depth (m)	Casing Depth (m)	Water Level (m)	Date and Time	Remarks
0.00	0.00	Dry	2026-04-01T10:00	Start of borehole
0.00	0.00	Dry	2026-04-02T09:00	End of borehole
16.91	9.00	Dry	2026-04-01T16:30	End of shift
16.91	9.00	Dry	2026-04-02T08:00	Start of shift

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)	1.20	Dry	AR3734	69	N=26 (1,2/1,3,7,15)
2.00 (S)	2.00	Dry	AR3734	69	N=7 (1,1/2,1,2,2)
3.00 (S)	3.00	Dry	AR3734	69	N=20 (2,3/3,5,6,6)
5.00 (S)	5.00	Dry	AR3734	69	N=21 (3,3/4,4,6,7)
7.50 (S)	7.50	Dry	AR3734	69	N=13 (2,2/3,3,3,4)
10.50 (S)	9.00	Dry	AR3734	69	N=31 (5,6/7,7,8,9)
13.50 (S)	9.00	Dry	AR3734	69	N=34 (6,6/7,8,9,10)
16.50 (S)	9.00	Dry	AR3734	69	N=50 for 275mm (12,13/13,14,13,10 for 50mm)

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	B		
	B		
	D		
	D		
	B		
	D		
	B		
	U100		
	D		
	B		
	U100		
	D		
	B		
	U100		
	D		
	B		
	U100		
	D		
	B		
	U100		
	B		
	D		

Remarks
Terminated at target depth. No water strike

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Insulated Hand Tools	LG
1.20 - 16.91m	CP	Dando 2000	LG

Checked By: LM

Borehole Log

CP302

Sheet 1 of 2

Hole Type	Easting	Northing	Ground Level (m)	Scale
IP+CP	386946.09	398730.23	62.05	1:50
Project Name		**Project No.**	**Start Date**	**End Date**
MCFC		4490	2026-03-31	2026-04-01

Client
Manchester City Football Club

Consultant
IGE Consulting

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		0.00-0.50	B					Dark greyish brown gravelly slightly clayey fine to coarse SAND with medium cobble content. Gravel is very angular to subrounded fine to coarse of red brick, concrete, metal, clinker, limestone and sandstone [MADE GROUND]
	▼	0.50-1.00	B					*Becoming grey very silty no longer clayey (0.50m)*
		1.20	SPT	N=50 for 255mm (9,12/13,15,15,7 for 30mm)				
		1.20-1.65	D, B			(3.00)		
		2.00	SPT	N=50 for 145mm (15,10/25,25 for 70mm)				
		2.00-2.45	D, B					
		3.00-3.45	U100	Blows: 26, Recovery: 80%	59.05	3.00		Stiff brown slightly gravelly slightly sandy CLAY. Gravel is very angular to well rounded fine to coarse of red brick and mudstone [MADE GROUND]
						(1.00)		
		4.00	SPT	N=12 (1,2/3,3,3,3)	58.05	4.00		Stiff greyish brown slightly gravelly slightly sandy CLAY. Gravel is subrounded to rounded fine to coarse of mudstone and sandstone [GLACIAL TILL]
		4.00-4.45	D, B					
		5.00-5.45	U100	Blows: 22, Recovery: 100%				
		6.00	SPT	N=12 (2,2/3,3,3,3)				
		6.00-6.45	D, B					
						(11.00)		
		7.50-7.95	U100	Blows: 29, Recovery: 100%				
		9.00	SPT	N=24 (3,4/5,6,6,7)				
		9.00-9.45	D, B					
								Continued on next page

Remarks
Terminated at target depth

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Insulated Hand Tools	LG
1.20 - 16.83m	CP	Dando 2000	LG

Checked By: LM

Borehole Log

CP302
Sheet 2 of 2

Hole Type	Easting	Northing	Ground Level (m)	Scale
IP+CP	386946.09	398730.23	62.05	1:50
Project Name		**Project No.**	**Start Date**	**End Date**
MCFC		4490	2026-03-31	2026-04-01

Client
Manchester City Football Club

Consultant
IGE Consulting

Contractor

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
		10.50-10.95	U100	Blows: 34, Recovery: 100%				
		12.00	SPT	N=24 (3,4/4,6,7,7)				*Becoming very stiff (12.00m)*
		12.00-12.45	D, B					
		13.50-13.95	U100	Blows: 18, Recovery: 100%				
		15.00	SPT	N=50 for 295mm (12,10/12,13,13,12 for 70mm)	47.05	15.00		Weathered MUDSTONE. Recovered as: Very stiff grey slightly gravelly CLAY. Gravel is very angular to angular fine to coarse [PENNINE UPPER COAL MEASURES]
		15.00-15.45	D, B			(1.83)		
		16.50	SPT	N=50 for 180mm (10,15/16,24,8 for 30mm)				
		16.50-16.83	D		45.22	16.83		*End of Borehole at 16.83m*

10.5 11.0 11.5 12.0 12.5 13.0 13.5 14.0 14.5 15.0 15.5 16.0 16.5 17.0 17.5 18.0 18.5 19.0 19.5 20.0

Remarks
Terminated at target depth

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Insulated Hand Tools	LG
1.20 - 16.83m	CP	Dando 2000	LG

Checked By: LM

Borehole Log

CP302

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
IP+CP	386946.09	398730.23	62.05	1:50
Project Name		**Project No.**	**Start Date**	**End Date**
MCFC		4490	2026-03-31	2026-04-01

Client	Consultant	Contractor
Manchester City Football Club	IGE Consulting	

Hole Diameter

Base Depth (m)	Hole Diameter (mm)	Remarks
3.00	200	
16.83	150	

Casing Diameter

Base Depth (m)	Casing Diameter (mm)	Remarks
3.00	200	
10.50	150	

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks
0.80	1.50		2026-03-31	

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
0.80	0.50	5	

Drilling Progress

Depth (m)	Casing Depth (m)	Water Level (m)	Date and Time	Remarks
0.00	0.00	Dry	2026-03-31T09:00	Start of borehole
0.00	0.00	Dry	2026-03-31T09:00	End of borehole
16.83	10.50	Dry	2026-03-31T16:30	End of shift
16.83	10.50	Dry	2026-03-31T07:30	Start of shift

SPT - Details

Top Depth (m) (Type)	Casing Depth (m)	Water Depth (m)	Hammer Serial No.	Energy Ratio (%)	Results
1.20 (S)	1.20	1.00	AR3734	69	N=50 for 255mm (9,12/13,15,15,7 for 30mm)
2.00 (S)	2.00	Dry	AR3734	69	N=50 for 145mm (15,10/25,25 for 70mm)
4.00 (S)	3.00	Dry	AR3734	69	N=12 (1,2/3,3,3,3)
6.00 (S)	6.00	Dry	AR3734	69	N=12 (2,2/3,3,3,3)
9.00 (S)	9.00	Dry	AR3734	69	N=24 (3,4/5,6,6,7)
12.00 (S)	10.50	Dry	AR3734	69	N=24 (3,4/4,6,7,7)
15.00 (S)	10.50	Dry	AR3734	69	N=50 for 295mm (12,10/12,13,13,12 for 70mm)
16.50 (S)	10.50	Dry	AR3734	69	N=50 for 180mm (10,15/16,24,8 for 30mm)

Continued on next page

Remarks
Terminated at target depth

Method, Plant, Stability, Dimensions **Logger**

0.00 - 1.20m	IP	Insulated Hand Tools	LG
1.20 - 16.83m	CP	Dando 2000	LG

Checked By: LM

Borehole Log

CP302

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
IP+CP	386946.09	398730.23	62.05	1:50

Project Name	Project No.	Start Date	End Date
MCFC	4490	2026-03-31	2026-04-01

Client
Manchester City Football Club

Consultant
IGE Consulting

Contractor

Sample Details

Sample ID	Type	Water Level (m)	Remarks
	B		
	B		
	D		
	B		
	D		
	B		
	U100		
	D		
	B		
	U100		
	D		
	B		
	U100		
	D		
	B		
	U100		
	D		
	B		
	U100		
	D		
	B		
	D		

Remarks
Terminated at target depth

Method, Plant, Stability, Dimensions

			Logger
0.00 - 1.20m	IP	Insulated Hand Tools	LG
1.20 - 16.83m	CP	Dando 2000	LG

Checked By: LM