



BDP Civil and Structural Engineering Group

August 2022

Drainage Maintenance Schedule Report

Belle Vue Co-op Academy, Manchester

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Author

Niamh Cullen
Graduate Civil Engineer

Signature

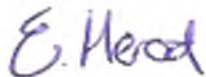


Date 11.08.2022

Approved

Elanna Herod
Senior Civil Engineer

Signature



Date 11.08.2022

This report is prepared for the sole benefit of Sir Robert McAlpine (SRM).

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1.0 Introduction and Overview

1.1 Appointment and Brief

This report has been developed to describe the maintenance requirements for each drainage component involved in the proposed new Belle Vue Co-op Academy school located off Hyde Road, Manchester.

1.2 Proposed Development

The site is located on Hyde Road, east of Manchester city centre, M12 5AL. The National Grid reference (NGR) of the approximate centre of the site is 387642, 396247. The site is located in Flood Zone 1 on the Environment Agency Flood Map, defined as having a low probability of fluvial flooding. It is proposed that the development will be drained via a separate foul and surface water drainage network.

The existing site is brownfield comprising of an existing car parking and Showcase Cinema Manchester building with dense vegetation in the west of the site. The planning application site area is 5.3 hectares (ha).

The existing site levels vary approximately between 59.700m to 61.700m AOD. Generally, the eastern side of the site is higher than the western, with the lowest levels at the south of the site.

The proposed development comprises the construction of a new school building including sports hall and classrooms, sports pitches, MUGA pitches, outdoor social spaces and car parks.

The proposed levels for the site aim to maintain existing levels at the perimeter of the site. The lowest levels are to the north of the site (59.600m AOD) and the highest levels are to the south of the site (61.995m AOD). The proposed school building lies at a level of 60.750m AOD.

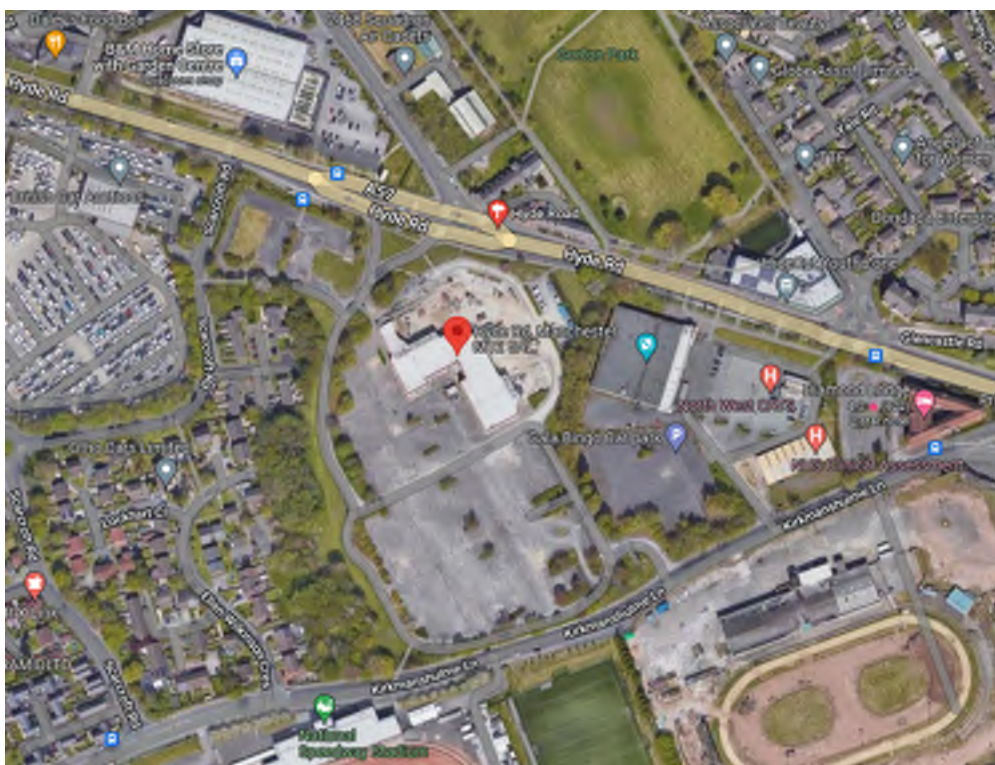


Figure 1.1: Site Location

1.3 Objective of Strategy

The objective of the strategy is to provide information and present maintenance schedules relating to the maintainable drainage assets. This includes:

- Private drainage: General below ground drainage including pipework, manholes, channels, road gullies, inspection chambers etc.
- Attenuation tank
- Permeable pavements
- Inlets, outlets, controls and inspection chambers
- Drainage channels, filter drains and gullies

These components have been incorporated into the wider drainage strategy, which has been designed in accordance with the National Planning Policy Framework and current best practice guidance.

2.0 Outline Drainage Strategy

2.1 Existing Drainage

United Utilities sewer records indicate existing sewers within the highways surrounding the site including Scarcroft Road, Bracewell Close and Ellen Wilkinson Crescent. The sewers are separate surface and foul water networks that discharge towards the east of the site. There are also combined sewers running along Hyde Road and Kirkmanshulme Lane.

United Utilities are responsible for the management and maintenance of their assets, which include the surrounding public sewers and existing sewer crossing the site.

A full utility survey of the site was undertaken by Site Vision Surveys Limited on 06/07/2020. This survey indicates the site is positively drained via separate surface and foul water networks. The surface water runoff is generated from the existing car park and road surfaces as well as the existing building roof. The drainage systems are conventional with no attenuation on site. At least four interceptors have been identified by the survey.

There are two surface water outfalls to the public sewer located in Ellen Wilkinson Crescent and one foul water outfall also connecting to the public sewer in Ellen Wilkinson Crescent.

2.2 Proposed Surface and Foul Water Drainage

It is proposed to install new separate surface and foul water drainage systems to serve the proposed new development. It is proposed to connect the new foul water drainage into an existing foul water manhole to the west of the site which then connects to the existing foul water sewer network in Ellen Wilkinson Crescent.

The new surface water drainage discharges into a new manhole to be built on the existing 450mm diameter surface water sewer to the west of the site. This sewer also connects to the existing network within Ellen Wilkinson Crescent.

This report is to be read in conjunction with the Flood Risk Assessment & Outline Drainage Strategy Report produced by BDP in January 2021. In addition, the latest construction drainage drawings (009433-BDP-01-ZZ-DR-C-520001-C12, 009433-BDP-01-ZZ-DR-C-520002-C13 and 009433-BDP-01-ZZ-DR-C-520003-C13) can be found in Appendix B.

3.0 Policy and Guidance

In carrying out our assessment and preparing this report, regard has been taken of the provisions of the development plan and a range of other material considerations.

3.1 Flood and Water Management Act 2010

This strategy has been prepared using information provided by the regulatory bodies and third parties for the development. The regulatory bodies and third parties will be contacted to obtain their views and recommendations. The design and drainage strategy, if required, will then be updated with any updated information received from the regulatory bodies or third parties.

The Flood and Water Management Act 2010 received Royal Assent on 8th April 2010. This Act provides duties on the Environment Agency, Local Authorities, Developers and other bodies to manage flood risks. The Act has significant planning and design implications for Developers.

The main areas affecting Developers are:

- Lead Local Flood Authority (LLFA) may adopt sustainable urban drainage systems (SUDS). The LLFA may be either a Unitary or County Council;
- Approval fees and non-performance bonds to be standardised;
- National Standard for SUDS designing, constructing, operating and maintaining drainage for surface run off 2011. This guidance emphasises the preference for surface SUDS features and the need to incorporate green corridors into the masterplan;
- Changes to the rights to connect to sewers will restrict automatic connection rights to only Section 104 sewer schemes or approved SUDS schemes constructed to a new national sewer or new SUDS standard respectively;
- Two options for the SUDS approval process. Either directly to the SUDS Approval Body or as a combined application to the Planning Authority as part of the Planning Application.

3.2 The Building Regulations 2010: Drainage and Waste Disposal Approved Document H

The Building Regulations 2010 are government approved legislation documents that cover the construction and extension of buildings. Approved Document H offers guidance on drainage including foul and surface water and rainwater, and sanitary waste disposal, including sewage structures and their maintenance. Appendix H2 discusses the maintenance of wastewater treatment systems and cesspools.

3.3 CIRIA Guidance

CIRIA offers a series of guidance documents including The SuDS Manual (C753) which covers the design, construction and maintenance of Sustainable Drainage Systems (SuDS) to assist with their effective implementation within both new and existing developments.

4.0 Maintainable Regimes

The proposed development includes a variety of assets that require specific maintenance regimes. The drainage system should undergo regular inspection and maintenance to ensure performance to the design standard is continued. Asset specific maintenance regimes are found below.

4.1 Maintenance of Private Drainage

It is understood that the proposed drainage will be under private ownership i.e. not be adopted by United Utilities and form part of the public sewer network. Inspection and maintenance of the private drainage would therefore be undertaken by the school's maintenance provider and therefore, it is their responsibility for ensuring that the private drainage maintenance regime is implemented at the site.

Surface water and foul water drainage pipework will be designed to be self-cleansing, in accordance with BS EN 752 and as such maintenance should only be required if a fault or a blockage occurs. Private drainage will be maintained by the developer and public sewerage by the sewerage undertaker (United Utilities).

The drainage network, including above ground drainage features, chambers and associated pipework, should be inspected and cleaned every 5 years as a minimum as outlined in the tables below. Drains should be inspected via CCTV survey which will identify any defects or damage to the pipe. Defects may include pipe deformation, root ingress, joint displacement, cracking and/or pipe collapse and a number of remedial options are available including jetting, pipe rodding, pipe flailing, lining, patch repairs and or full pipe / manhole replacement.

4.2 General Below Ground Drainage

The below ground drainage network has been designed in accordance with the requirements of Part H of the Building Regulations. All main runs have either rodding eyes, manholes or inspection chambers at the head of the run and at all changes of direction to provide access to rod or jet the main pipework.

Where possible, connections from stacks or channels have been made directly to these manholes or inspection chambers to allow the connection to be rodded or jetted from the downstream end. Where this is not possible, each stack has been detailed to have access provided just above floor to allow the connection to be rodded or jetted from the upstream end. Similarly, the channels have a rodding access provided within their body allowing the pipework to be rodded or jetted from the channel outlet downstream.

Silt trap/catchpit manholes have been provided upstream of the attenuation tank to prevent the ingress of silts into the drainage network and impairing the performance of the system.

The table below summaries the essential maintenance regime for the below ground drainage pipework, manholes and channels.

Maintenance schedule	Required action	Recorded frequency
Regular maintenance	Inspect and identify areas that are not operating correctly. If required, take remedial action.	Monthly for the first three months then six-

Maintenance schedule	Required action	Recorded frequency
	Remove sediment from pre-treatment structures (e. g. filter drains, gullies, channels, silt traps).	monthly. Six-monthly or as required.
Occasional maintenance	Debris removal from catchment surface where this may cause risks to performance.	Monthly.
Remedial actions	Repair / rehabilitation of inlets, outlets, overflows and vents.	As required.
Monitoring	Inspect all manholes, inspection chambers, inlets, outlets, overflows and vents to ensure they are in good condition and operating as designed.	Annually and after large storms. CCTV surveys of the pipework may be required to ascertain conditions.

4.3 Maintenance of SuDS

SuDS systems require a separate approach to maintenance from conventional drainage systems. Unlike conventional drainage systems, when problems occur with SuDS features most can generally be remedied using standard landscaping practice. In accordance with CIRIA C753 'The SuDS Manual', owners of developments with SuDS should be provided with an owner's manual which should include the following:

- Location of all SuDS techniques in a site
- Brief summary of how the techniques work, their purpose and how they can be damaged
- Maintenance requirements (a maintenance plan) and a maintenance record
- Explanation of the consequences of not carrying out the maintenance that is specified
- Identification of areas where certain activities are prohibited (for example stockpiling materials on pervious surfaces)
- An action plan for dealing with accidental spillages
- Advice on what to do if alterations are to be made to a development, if service companies undertake excavations or other similar works carried out that could affect the SuDS.

The SuDS manual separates maintenance activities into three categories:

- Regular maintenance consisting of basic tasks done on a frequent and predictable schedule, including vegetation management, litter and debris removal and inspections
- Occasional maintenance comprising tasks that are likely to be required periodically, but on a much less frequent and predictable basis than the routing tasks.
- Remedial maintenance comprising intermittent tasks that may be required to rectify faults associated with the system, although the likelihood of faults can be minimised by good design. Where remedial work is found to be necessary, it is likely to be due to site-specific characteristics of unforeseen events, and as such timings are difficult to predict. Remedial maintenance items can comprise items such as

Table 4.1 summarises the maintenance activities associated with each SuDS component. Those highlighted in orange in the table are the SuDS activities proposed for this scheme. A detailed maintenance plan of each SuDS component can be seen in the following sub-sections.

O & M Activity	SUDS Component												
	Pond	Wetland	Detention Basin	Infiltration Basin	Soakaway	Infiltration Trench	Filter Trench	Modular Storage	Pervious Pavement	Swale / Bio-retention / Green Roofs	Filter Strip	Sand Filter	Pre-treatment Systems
Regular Maintenance													
Inspection	●	●	●	●	●	●	●	●	●	●	●	●	●
Litter / Debris Removal	●	●	●	●	○	●	●	○	●	●	●	●	●
Grass Cutting	●	●	●	●	○	●	●	○	○	●	●	○	○
Weed / Invasive Plant Control	○	○	○	○		○	○		○	○	○	○	○
Shrub Management	○	○	○	○					○	○	○		○
Shoreline Vegetation Management	●	●	○										○
Aquatic Vegetation Management	●	●	○										○
Occasional Maintenance													
Sediment Management	●	●	●	●	●	●	●	●	●	●	●	●	●
Vegetation / Plant Replacement	○	○	○	○						○	○		○
Vacuum Sweeping and Brushing									●				
Remedial Maintenance													
Structure Rehabilitation / Repair	○	○	○	○	○	○	○	○	○	○	○	○	○
Infiltration Surface Reconditioning				○	○	○	○	○	○	○	○	○	

● Will be required

○ May be required

4.4 Attenuation Tank

Calculations have been undertaken to determine the total storage volume required for storm events up to and included the 100-year plus an allowance for climate change. It is proposed that the attenuation tank is 12m x 11m x 1.6m deep providing storage of approximately 201m³. A Wavin Aquacell Core-R Geocellular attenuation tank or equivalent approved has been proposed.

Please refer to Appendix E which includes the manufacturer specific information for essential maintenance of Wavin Aquacell.

4.5 Permeable Pavements

Permeable pavements have been proposed for the MUGA pitches and the carparking areas. A Permavoid rainwater diffuser unit has been specified with connection to a catchpit chamber. The specific manufacturer maintenance information for Permavoid can be found in Appendix E. The table below summaries the essential maintenance regime for permeable pavements.

Maintenance schedule	Required action	Recorded frequency
Regular maintenance	Brush regularly and remove sweepings from all hard surfaces. Cleaning of surfaces.	Monthly or as required.
Occasional maintenance	Brush and vacuum surface to prevent silt blockage and enhance design life.	Annually, as required or as per manufacturer recommendations.
Remedial actions	Monitor effectiveness of permeable pavement. When water does not infiltrate immediately advise Client of possible need for reinstatement of top layers or specialist cleaning. Remedial work to any depressions, rutting and cracked / broken surfaces considered detrimental to the structural performance or hazard to users. Recent experience suggests jet washing and suction cleaning will substantially reinstate pavement to 90% efficiency.	As required As required As required
Monitoring	Initial inspection Inspect silt accumulation rates and establish appropriate brushing frequencies Monitor inspection chambers	Every 3 months or after large storms. Annually Annually

4.6 Sports England Pitches

The proposed development includes pitches which are to be constructed to Sports England standards. The Sports England Design Guidance Note, found in Appendix E, includes the recommended regime for maintaining the drainage infrastructure.

4.7 Filter Drains

Filter drains have been proposed across the site particularly surrounding the school building. The CIRIA SuDS Manual 2015 outlines recommended operation and maintenance requirements for filter drains which have been summarised below.

Maintenance schedule	Required action	Recorded frequency
Regular maintenance	Remove litter (including leaf litter) and debris from filter drain surface, access chambers and pre-treatment devices. Inspect filter drain surface, inlet/outlet pipework and control systems for blockages, clogging, standing water and structural damage. Inspect pre-treatment systems, inlets and perforated pipework for silt accumulation, and establish appropriate silt removal frequencies. Remove sediment from pre-treatment devices.	Monthly or as required. Monthly. Six monthly. Six monthly, or as required.
Occasional maintenance	Remove or control tree roots where they are encroaching the sides of the filter drain, using recommended methods (e.g. NJUG, 2007 or BS 3998:2010). At locations with high pollution loads, remove surface geotextile and replace, and wash or replace overlying filter medium. Clear perforated pipework of blockages.	As required. Five yearly, or as required. As required.

4.8 Inlets, Outlets, Controls and Inspection Chambers

The table below summaries the essential maintenance regime for inlets, outlets, controls and inspection chambers.

Maintenance schedule	Required action	Recorded frequency
Regular maintenance	Inlets, outlets and surface control structures: Inspect surface structures removing obstructions and silt as necessary. Check there is no physical damage. Trim vegetation 1m min. surround to structures and keep hard aprons free from silt and debris. Inspection chambers and below ground control chambers: Remove cover and inspect ensuring water is flowing freely and that the exit route for water is	Monthly or as required. Monthly. Annually.

Maintenance schedule	Required action	Recorded frequency
	unobstructed. Remove debris and silt. Undertake inspection after leaf fall in autumn.	
Occasional maintenance	Check topsoil levels are 20mm above edges of baskets and chambers to avoid mower damage.	As necessary.
Monitoring	Initial inspection Monitor inspection chambers	Every 3 months or after large storms. Annually.

4.9 Drainage Channels

ACO or Hauraton channels are suggested to be used in the proposed development. Manufacturer specific information regarding the maintenance of these can be found in Appendix E.

4.10 Flow Controls

A flow control chamber with integral Hydrobrake has been proposed following the attenuation tank to control the release of storm water before it discharges into the existing sewer. Maintenance of the Hydrobrake is dependent on the site, the size and characteristics of the flow control, the nature of the influent and any physical characteristics of any control chamber. Manufacturer specific information regarding the maintenance of this can be obtained from the relevant manufacturer.

A SEL Environmental Flow Control fitted with an orifice plate is located downstream of the Sports England and MUGA pitches to restrict the discharge. Manufacturer specific information regarding the maintenance of this device can be found in Appendix E.

4.11 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. Small spillages of contaminants can be removed using soak mats as recommended by the Environment Agency with the residuals spillages allowed to bio-remediate into the drainage system.

In the event of a serious spillage of either volume, unknown or toxic substances then the spillage should be isolated with soil, turf or fabric and all outlet pipes blocked from chambers downstream of the spillage with a bung. In this scenario the Environment Agency should be contacted immediately.

4.12 Maintenance of Public Sewers

The surrounding public sewers and the sewer crossing the site are the responsibility of United Utilities and they will be responsible for the management and maintenance of their assets.

5.0 Conclusion

The proposed development comprises the construction of a new school building, sports pitches, outdoor social spaces and car parks off Hyde Road, Manchester.

The existing sewer which runs through the proposed site is the responsibility of United Utilities, as well as the surround public sewers. UU will be responsible for the management and maintenance of these assets.

The proposed private drainage outlined in this report is the responsibility of the school's maintenance provider and they are responsible for the management and maintenance of these assets in accordance with the guidance provided within this document.

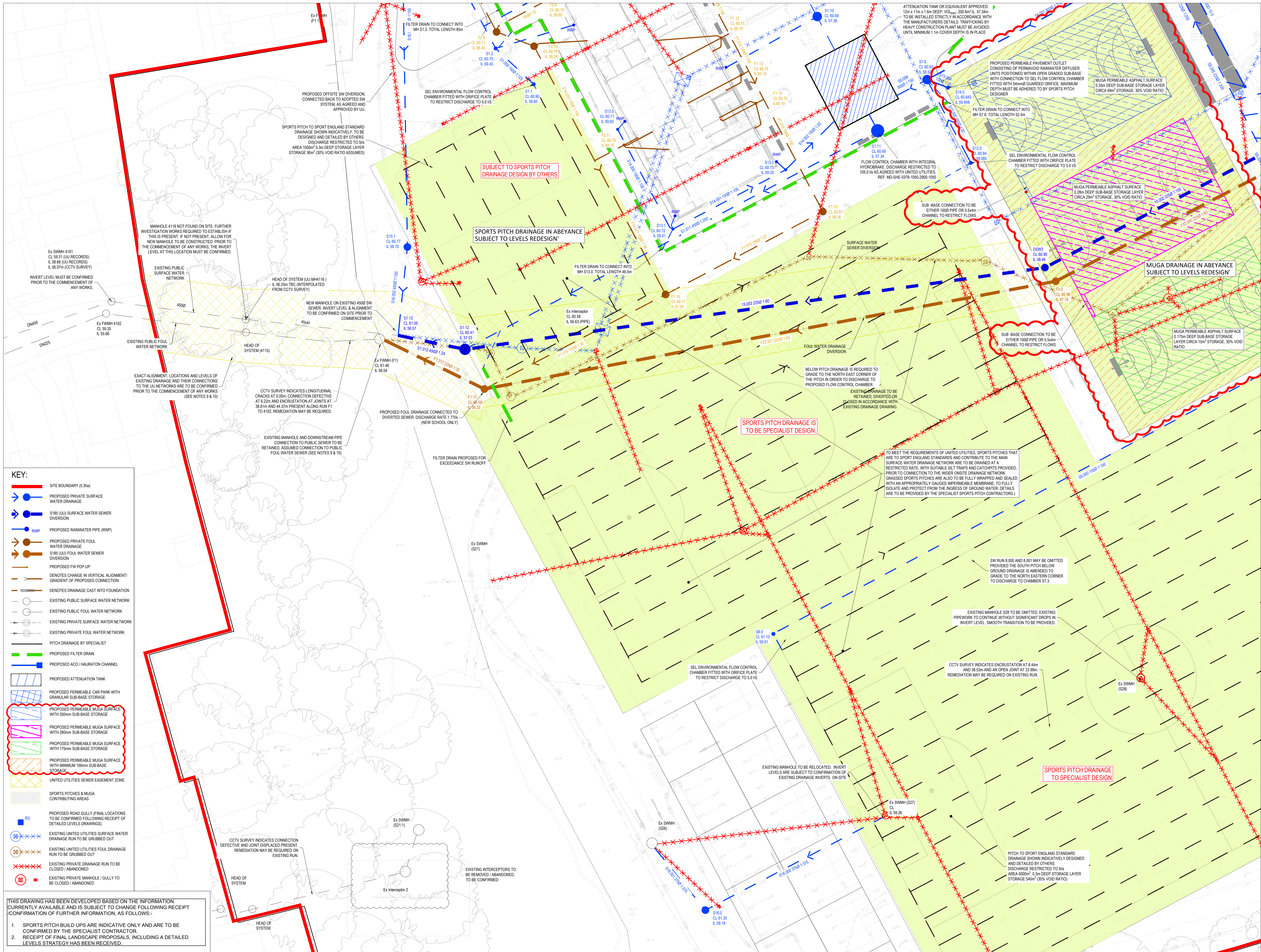
Appendix A

Site Location Plan



Appendix B

Drainage General Arrangement Plans



BUILDING DESIGN PARTNERSHIP SHALL HAVE NO RESPONSIBILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN FOR THAT WHICH IT WAS PREPARED AND ISSUED. ALL DIMENSIONS SHOULD BE CHECKED ON SITE. DO NOT SCALE FROM THIS DRAWING. ANY DRAWING ERRORS OR OMISSIONS SHOULD BE BROUGHT TO THE ATTENTION OF BUILDING DESIGN PARTNERSHIP AT THE ADDRESS SHOWN BELOW.

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ARCHITECTS, ENGINEERS AND SPECIALIST DRAWINGS AND SPECIFICATIONS.

2. THIS DRAWING IS BASED ON:

- TOPOGRAPHICAL SURVEY DWS FILE REF: 2020101-001 TO 004 DATED JULY 2020 BY SURVEY OPERATIONS
- FULL UTILITIES SURVEY DWS FILE REF: 0620ARC-13319 DATED 06/07/2020 BY SITE VISION SURVEYS
- UNITED UTILITIES RECORD MAP: LU/RE/ UUPS-ORD-17565 DATED 23/07/2020 (PPF)

3. BEFORE STARTING ANY WORKS, CONTRACTOR TO CHECK INVERT LEVELS AND POSITIONS OF EXISTING DRAINAGE, SEWERS, INSPECTIONS CHAMBERS AND MANHOLES. AGAINST INFORMATION SHOWN ON THIS DRAWING. ENGINEER TO BE INFORMED IF FOUND DIFFERENT TO NOTED.

4. ROCKER PIPES ARE TO BE PROVIDED AT ALL CONCRETE CASED INTERFACES.

5. EXTERNAL DRAINAGE OUTSIDE BUILDING FOOTPRINT: CLASS 2 CONCRETE SURROUND TO BE PROVIDED FOR PIPES WITH COVER LESS THAN 1.2m ABOVE THE CROWN OF THE PIPE FOR ROADS AND 0.8m FOR SOFT AND PEDESTRIAN AREAS ONLY AND UNDER ALL FOUNDATIONS AND WHERE PIPES LAID WITHIN 1m OF FOUNDATIONS.

6. CONNECTIONS TO EXISTING PUBLIC SEWER IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY AND IN CONJUNCTION WITH ALL RELEVANT BRITISH STANDARDS. LEVELS, ESPECIALLY WHERE NEW MANHOLES ON EXISTING RUNS OR NEW CONNECTIONS TO EXISTING MANHOLES ARE PROVIDED, ARE TO BE CONFIRMED PRIOR TO THE COMMENCEMENT OF ANY WORKS ON SITE.

7. DRAWING TO BE READ IN CONJUNCTION WITH EXISTING DRAINAGE DRAWING 00433-BDP-01-ZZ-DR-C-520010.

8. ALL DRAINAGE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY AND IN CONJUNCTION WITH ALL RELEVANT BRITISH STANDARDS. LEVELS, ESPECIALLY WHERE NEW MANHOLES ON EXISTING RUNS OR NEW CONNECTIONS TO EXISTING MANHOLES ARE PROVIDED, ARE TO BE CONFIRMED PRIOR TO THE COMMENCEMENT OF ANY WORKS ON SITE.

9. ACCESS COVERS AND FRAMES SHALL COMPLY WITH THE LOADINGS SPECIFIED AND TO BS EN 124 AND KITEMARKED OR IF ACCEPTED OTHERWISE, ALL DRAINAGE PIPES SHALL BE LANDSCAPE ARCHITECT FINISHES TO ALL NON-ASPHALT EXTERIORS.

10. THE PROPOSED BUILDING OUTLINES SHOWN ON THIS DRAWING ARE FOR INFORMATION ONLY. REFER TO ARCHITECTS PLANS FOR PRECISE LOCATION SETTING OUT INFORMATION AND DETAILS.

11. FOR SETTING OUT DIMENSIONS OF SWS, SVPs, RWPs, FLOOR GULLY & OTHER DRAINAGE POP UP LOCATIONS, REFER TO ARCHITECTS OR MECHANICAL & ELECTRICAL ENGINEERS DRAWINGS.

12. ALL DRAINAGE PREWORK SHALL BE 100MM DIAMETER FOULED AND 150MM FOR SURFACE WATER UNLESS NOTED OTHERWISE. ALL DRAINAGE PREWORK SHALL BE LAID SLOTTED TO SLOTTED UNLESS OTHERWISE STATED.

13. ALL UNDERSLAB DRAINAGE SHALL BE LAID AT GRADIENTS OF 1:80 MIN FOR FOULED PREWORK AND 1:100 MIN FOR SURFACE WATER UNLESS NOTED OTHERWISE. ALL UNDERSLAB DRAINAGE SHALL BE CLEAR OF FOUNDATIONS UNLESS SHOWN OTHERWISE. USE OF SHORT/ LONG RADIUS BENDS IS ACCEPTABLE PROVIDED THEY ARE KEPT TO A MINIMUM AND USED WHERE UNAVOIDABLE.

14. AT LEAST ONE SOIL PIPE AT THE HEAD OF EACH FOUL RUN SHALL BE VENTED TO THE ATMOSPHERE. ALL RAINWATER PIPES SHALL HAVE ABOVE GROUND ROOFING ACCESS.

15. COVER LEVELS SHOWN ON THIS DRAWING ARE APPROXIMATE AND SHALL BE ADJUSTED TO SUIT FINISHED PAVEMENT LEVELS ON SITE BY CONTRACTOR. COVERS SHALL BE ORIENTATED TO SUIT PAVEMENT FINISHES WHERE APPROPRIATE.

16. ALL PRIVATE DRAINAGE PREWORK FOR FOUL AND SURFACE WATER SYSTEMS HAVE BEEN DESIGNED ON THE BASIS OF UPVC TO BS EN 1401-1, UNLESS NOTED OTHERWISE.

17. CONCRETE ENCASUREMENT OF THE PIPEWORK SHALL BE REQUIRED WHERE THE VERTICAL CLEARANCE BETWEEN TWO PIPES CROSSING IS LESS THAN 300MM.

18. WHERE NEW DRAINAGE IS SITUATED WITHIN 5 METRES OF NEW OR EXISTING TREES THE PIPEWORK SHALL BE ENCASED IN CONCRETE TO REDUCE THE RISK OF ROOT INGRESS.

19. ALL DRAINAGE CONNECTING TO THE PUBLIC SEWER NETWORK SHALL NOT COMMENCE UNTIL RECEIPT OF THE APPROVAL FROM THE DRAINAGE AUTHORITY AND SHALL COMPLY WITH REQUIREMENTS USING VITRIFIED CLAY PIPEWORK TO BS EN 252 WITH PLAIN SLEEVES OR SOCKETED FLEXIBLE JOINTS SUBJECT TO THEIR APPROVAL.

20. UPON COMPLETION ALL NEW DRAINAGE INSTALLATION TOGETHER WITH ANY EXISTING DRAINAGE RETAINED SHALL BE JETTED AND CCTV SURVEYED UPON COMPLETION. CONTRACTOR TO ENSURE THAT THE DRAINAGE SYSTEM IS FULLY OPERATIONAL, FREE OF EXCESS DEBRIS/SILT AND ALL IDENTIFIED FAULTS RECTIFIED.

NO	REVISION	DATE	BY	CHKD	DATE
C13	Revised drainage for MUGA Pitches	EH	DN	27/07/22	
C12	Drainage channel details added and location amended	EH	DN	15/07/22	
C11	Drainage layout revised to suit new levels design and updated landscape CA	EH	DN	11/07/22	
C10	Pipes S16.000 and S16.001 and MHS16 revised	EH	DN	25/05/22	
C09	Location of pitch manholes revised and Manhole S8.1 removed	NC	EH	28/04/22	
C08	CLS amended to suit revised level strategy	EMM	DN	17/02/22	
C07	Storage, Flow Controls and SW levels	EMM	DN	26.10.21	
C06	Below slab drainage updated	ARJ	EMM	17.09.21	
C05	S13 added	ARJ	EMM	12.09.21	
C04	Foul drainage & cover levels updated	ARJ	DN	09.09.21	
C03	F1.17, F1.18 & Key Legend updated	ARJ	DN	08.09.21	
C02	Minor corrections	ARJ	DN	23/07/21	
C01	Issued for Construction	ARJ	DN	14/07/21	

11 Duke Street
PO BOX 85
Piccadilly Basin
Manchester
M60 3JA
United Kingdom
T +44 (0)161 828 2200
www.bdp.com

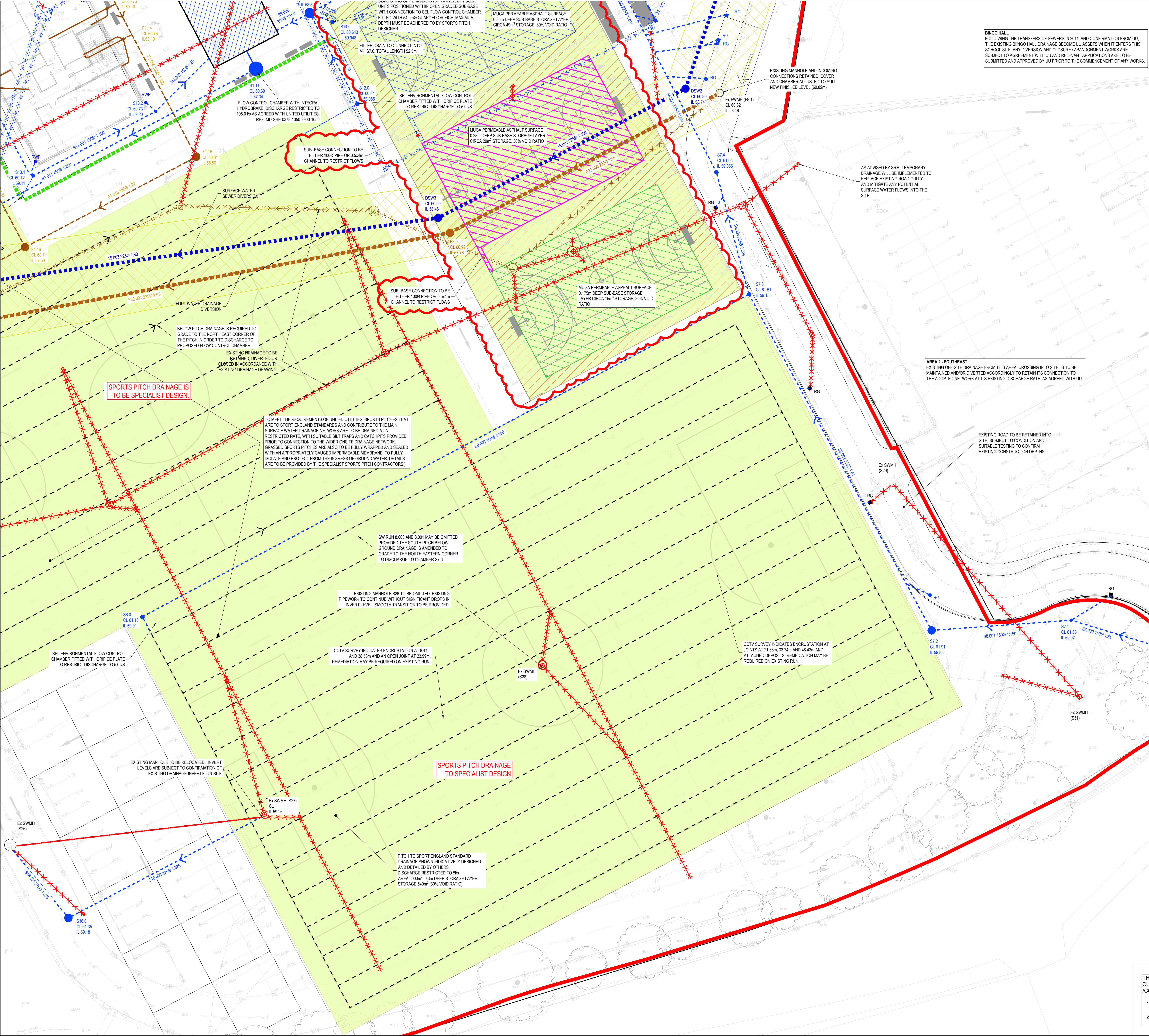
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BELLE VUE CO-OP ACADEMY

PROJECT NO	PROJECT NAME	SCALE	DATE
P3001502	COMMERCIAL IN CONFIDENCE	1:200 @ A0	07/04/21

SITE WIDE DRAINAGE STRATEGY
GENERAL ARRANGEMENT
SHEET 2 OF 3

NO	REVISION	DATE	BY	CHKD	DATE
009433-BDP-01-ZZ-DR-C-520002					C13



KEY:

- SITE BOUNDARY (5.3m)
- PROPOSED PRIVATE SURFACE WATER DRAINAGE
- S185 (U) SURFACE WATER SEWER DIVERSION
- RWP
- PROPOSED PRIVATE FOUL WATER DRAINAGE
- S185 (U) FOUL WATER SEWER DIVERSION
- PROPOSED FW POP-UP
- DENOTES CHANGE IN VERTICAL ALIGNMENT/ GRADIENT OF PROPOSED CONNECTION
- DENOTES DRAINAGE CAST INTO FOUNDATION
- EXISTING PUBLIC SURFACE WATER NETWORK
- EXISTING PUBLIC FOUL WATER NETWORK
- EXISTING PRIVATE SURFACE WATER NETWORK
- PITCH DRAINAGE BY SPECIALIST
- PROPOSED FILTER DRAIN
- PROPOSED ACC / HAURATON CHANNEL
- PROPOSED ATTENUATION TANK
- PROPOSED PERMEABLE CAR PARK WITH GRANULAR SUB-BASE STORAGE
- PROPOSED PERMEABLE MUGA SURFACE WITH 300mm SUB-BASE STORAGE
- PROPOSED PERMEABLE MUGA SURFACE WITH 200mm SUB-BASE STORAGE
- PROPOSED PERMEABLE MUGA SURFACE WITH 175mm SUB-BASE STORAGE
- PROPOSED PERMEABLE MUGA SURFACE WITH MINIMUM 100mm SUB-BASE STORAGE
- UNITED UTILITIES SEWER EASEMENT ZONE
- SPORTS PITCHES & MUGA CONTRIBUTING AREAS
- RG
- EXISTING UNITED UTILITIES SURFACE WATER DRAINAGE RUN TO BE GRUBBED OUT
- EXISTING UNITED UTILITIES FOUL DRAINAGE RUN TO BE GRUBBED OUT
- EXISTING PRIVATE DRAINAGE RUN TO BE CLOSED / ABANDONED
- EXISTING PRIVATE MANHOLE / GULLY TO BE CLOSED / ABANDONED

BUILDING DESIGN PARTNERSHIP SHALL HAVE NO RESPONSIBILITY FOR ANY USE MADE OF THIS DOCUMENT OTHER THAN THAT FOR WHICH IT WAS PREPARED AND ISSUED. ALL DIMENSIONS SHOULD BE CHECKED ON SITE. DO NOT SCALE FROM THIS DRAWING. ANY DRAWING ERRORS OR DIVERGENCES SHOULD BE BROUGHT TO THE ATTENTION OF BUILDING DESIGN PARTNERSHIP AT THE ADDRESS SHOWN BELOW.

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ARCHITECTS, ENGINEERS AND SPECIALIST DRAWINGS AND SPECIFICATIONS.

2. THIS DRAWING IS BASED ON:

- TOPOGRAPHICAL SURVEY DWS FILE REF: 20201510-001 TO 004 DATED JULY 2020 BY SURVEY OPERATIONS
- FULL UTILITIES SURVEY DWS FILE REF: 0620-ARC-13319 DATED 06/07/2020 BY SITE VISION SURVEYS
- UNITED UTILITIES RECORD MAP (U) REF: UUPS-ORD-175605 DATED 23/07/2020 (PDF)

3. BEFORE STARTING ANY WORKS, CONTRACTOR TO CHECK INVERT LEVELS AND POSITIONS OF EXISTING DRAINAGE, SEWERS, INSPECTIONS CHAMBERS AND MANHOLES AGAINST INFORMATION SHOWN ON DRAWING. ENGINEER TO BE INFORMED IF FOUND DIFFERENT TO NOTED.

4. ROCKER PIPES ARE TO BE PROVIDED AT ALL CONCRETE CASED INTERFACES.

5. EXTERNAL DRAINAGE OUTSIDE BUILDING FOOTPRINT: CLASS 2 CONCRETE SURROUND TO BE PROVIDED FOR PIPES WITH COVER LESS THAN 1.2m ABOVE THE CROWN OF THE PIPE FOR ROADS AND 0.8m FOR SOFT AND PEDESTRIAN AREAS ONLY AND UNDER ALL FOUNDATIONS AND WHERE PIPES LAID WITHIN 1m OF FOUNDATIONS.

6. CONNECTIONS TO EXISTING PUBLIC SEWER IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY AND IN CONJUNCTION WITH ALL RELEVANT BRITISH STANDARDS. COVER OF EXISTING SEWERS FOR ADOPTION 7TH EDITION AND ADDENDUMS AS APPROPRIATE. ALL DRAINAGE SHALL COMPLY WITH THE TYPICAL DRAINAGE CONSTRUCTION DETAILS AND THE REQUIREMENTS OF BS EN 752.

7. DRAWING TO BE READ IN CONJUNCTION WITH EXISTING DRAINAGE DRAWING 009433-BDP-01-ZZ-DR-C-520010.

8. ALL DRAINAGE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY AND IN CONJUNCTION WITH ALL RELEVANT BRITISH STANDARDS. COVER OF EXISTING SEWERS FOR ADOPTION 7TH EDITION AND ADDENDUMS AS APPROPRIATE. ALL DRAINAGE SHALL COMPLY WITH THE TYPICAL DRAINAGE CONSTRUCTION DETAILS AND THE REQUIREMENTS OF BS EN 752.

9. ACCESS COVERS AND FRAMES SHALL COMPLY WITH THE LOADINGS SPECIFIED AND TO BS EN 124 AND KITEMARKED OR IF RECESSED COVERS ARE SPECIFIED THEN IN ACCORDANCE WITH FACTA ASSOCIATION EQUIVALENT. ALLOW FOR RECESSED MANHOLE COVERS TO ACCEPT LANDSCAPE ARCHITECT DESIGNER'S DETAILS.

10. THE PROPOSED BUILDING OUTLINES SHOWN ON THIS DRAWING ARE FOR INFORMATION ONLY. REFER TO ARCHITECTS PLANS FOR PRECISE LOCATION SETTING OUT INFORMATION AND DETAILS.

11. FOR SETTING OUT DIMENSIONS OF SWS, SVPS, RWPS, FLOOR GULLY & OTHER DRAINAGE POP UP LOCATIONS, REFER TO ARCHITECTS OR MECHANICAL & ELECTRICAL ENGINEERS DRAWINGS.

12. ALL DRAINAGE PREWORK SHOWN SHALL BE 100mm DIAMETER FOR FOUL AND 150mm FOR SURFACE WATER UNLESS NOTED OTHERWISE. ALL DRAINAGE PREWORK SHALL BE LAID SLOTT TO SLOTT UNLESS OTHERWISE STATED.

13. ALL UNDERSLAB DRAINAGE SHALL BE LAID AT GRADIENTS OF 1:80 MIN FOR FOUL PREWORK AND 1:100 MIN FOR SURFACE WATER UNLESS NOTED OTHERWISE. ALL UNDERSLAB DRAINAGE SHALL BE CLEAR OF FOUNDATIONS UNLESS SHOWN OTHERWISE. USE OF SHORTY LONG RADIUS BENDS IS ACCEPTABLE PROVIDED THEY ARE KEPT TO A MINIMUM AND USED WHERE UNAVOIDABLE.

14. AT LEAST ONE SOIL PIPE AT THE HEAD OF EACH FOUL RUN SHALL BE VENTED TO THE ATMOSPHERE. ALL RAINWATER PIPES SHALL HAVE ABOVE GROUND ROOFING ACCESS.

15. COVER LEVELS SHOWN ON THIS DRAWING ARE APPROXIMATE AND SHALL BE ADJUSTED TO SUIT FINISHED PAVEMENT LEVELS ON SITE BY CONTRACTOR. COVERS SHALL BE ORIENTATED TO SUIT PAVEMENT FINISHES WHERE APPROPRIATE.

16. ALL PRIVATE DRAINAGE PREWORK FOR FOUL AND SURFACE WATER SYSTEMS HAVE BEEN DESIGNED ON THE BASIS OF UPVC TO BS EN 1401-1, UNLESS NOTED OTHERWISE.

17. CONCRETE ENCASEMENT OF THE PIPEWORK SHALL BE REQUIRED WHERE THE VERTICAL CLEARANCE BETWEEN TWO PIPES CROSSING IS LESS THAN 300mm.

18. WHERE NEW DRAINAGE IS SITUATED WITHIN 5 METRES OF NEW OR EXISTING TREES THE PIPEWORK SHALL BE ENCASED IN CONCRETE TO REDUCE THE RISK OF ROOT INGRESS.

19. ALL DRAINAGE CONNECTING TO THE PUBLIC SEWER NETWORK SHALL NOT COMMENCE UNTIL RECEIPT OF THE APPROVAL FROM THE DRAINAGE AUTHORITY AND SHALL COMPLY WITH REQUIREMENTS USING VITRIFIED CLAY PIPEWORK TO BS EN 295 WITH PLAN SLEEVED OR SOCKETED FLEXIBLE JOINTS SUBJECT TO THEIR APPROVAL.

20. UPON COMPLETION ALL NEW DRAINAGE INSTALLATION TOGETHER WITH ANY EXISTING DRAINAGE RETAINED SHALL BE SETTED AND CCTV SURVEYED UPON COMPLETION. CONTRACTOR TO ENSURE THAT THE DRAINAGE SYSTEM IS FULLY OPERATIONAL, FREE OF EXCESS DEBRIS/SILT AND ALL IDENTIFIED FAULTS RECTIFIED.

REVISION	DESCRIPTION	DATE	BY	CHECKED	DATE
C13	Revised drainage for MUGA Pitches	EH	DN	27/07/22	
C12	Drainage channel details added and location amended	EH	DN	15/07/22	
C11	Drainage layout revised to suit new levels design and updated landscape CA	EH	DN	11/07/22	
C10	Pipes S16.000 and S16.001 and MH156 revised	EH	DN	25/05/22	
C09	Location of pitch manholes revised and Manhole S8.1 removed	NC	EH	28/04/22	
C08	CLS amended to suit revised level strategy	EMM	DN	17/02/22	
C07	Storage, Flow Controls and SW levels	EMM	DN	26.10.21	
C06	Below slab drainage updated	ARJ	EMM	17.09.21	
C05	S13 added	ARJ	EMM	12.09.21	
C04	Foul drainage & cover levels updated	ARJ	DN	09.09.21	
C03	F1.17, F1.18 & Key Legend updated	ARJ	DN	08.08.21	
C02	Minor corrections	ARJ	DN	23/07/21	
C01	Issued for Construction	ARJ	DN	14/07/21	

11 Duke Street
PO BOX 85
Piccadilly Basin
Manchester
M60 3JA
United Kingdom
T +44 (0)161 828 2200
www.bdp.com

BELLE VUE CO-OP ACADEMY

P3001502 COMMERCIAL IN CONFIDENCE

SITE WIDE DRAINAGE STRATEGY
GENERAL ARRANGEMENT
SHEET 3 OF 3

009433-BDP-01-ZZ-DR-C-520003

C12

THIS DRAWING HAS BEEN DEVELOPED BASED ON THE INFORMATION CURRENTLY AVAILABLE AND IS SUBJECT TO CHANGE FOLLOWING RECEIPT / CONFIRMATION OF FURTHER INFORMATION, AS FOLLOWS:-

- SPORTS PITCH BUILD UPS ARE INDICATIVE ONLY AND ARE TO BE CONFIRMED BY THE SPECIALIST CONTRACTOR.
- RECEIPT OF FINAL LANDSCAPE PROPOSALS, INCLUDING A DETAILED LEVELS STRATEGY HAS BEEN RECEIVED.