

Huyton Town Centre Regeneration

Drainage Strategy (Enabling Works)

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date **21/11/2023**

Contents

1	Executive Summary	5
2	Introduction	6
2.1	Appointment and Brief	6
2.2	Limitations	6
3	Existing Site	7
3.1	Site Location and Description	7
3.2	Topography and Existing Levels	8
3.3	Geology	8
3.4	Flood Risk	9
3.5	Existing Drainage	10
3.5.1	Public Drainage	10
3.5.2	Private Drainage	12
3.6	Watercourses	13
3.7	Consultation	13
4	Proposed Development	14
5	Proposed Surface Water Drainage Strategy	15
5.1	Drainage Hierarchy	15
5.2	SuDS Selection	15
5.3	Surface Water Drainage Strategy	16
5.4	Designing for Exceedance	17
5.5	SuDs Operation and Maintenance	18
6	Proposed Foul Water Drainage Strategy	20
6.1	General	20
	Appendix A Existing Drainage Plan	21
	Appendix B Proposed Drainage Strategy Plan	22

Glossary

Term	Definition
BH	Buro Happold
KMBC	Knowsley Metropolitan Borough Council
EA	Environmental Agency
UU	United Utilities
LLFA	Lead Local Flood Authority
SuDS	Sustainable Drainage Systems
MH	Manhole
m AOD	Metres Above Ordnance Datum.
m bgl	Metres below ground level
Greenfield	Land which has not been previously developed.
Groundwater	Water present within underground strata known as aquifers.
Discharge	The rate of flow of water measured in terms of volume per unit time.
Attenuation	A method to reduce a flood peak to prevent flooding, often utilising temporary storage, but increasing the duration of the flow.

1 Executive Summary

This Drainage Strategy Report has been prepared in support of an Enabling Works planning application associated with the proposed regeneration of Huyton Town Centre in Huyton, Liverpool, L36 9GD.

This report is to be read in conjunction with the Phase 1 Desk Study Report and Remediation Strategy Report also prepared in support of the planning application.

The drainage strategy has been developed in accordance with Part H of the Building Regulations and 'The SuDS Manual' (CIRIA C753). The drainage strategy accompanying this planning application relates to the demolition phase of the works only (ie the 'Enabling Works').

Pre-application enquiries to UU and KMBC (in their capacity as the LLFA) have been made to outline the proposed works and to obtain any comments or requirements they wish to make with respect to flood risk and drainage at the site.

The development will have separate systems for surface and foul water. Subject to site constraints, surface water will discharge to the existing public sewers within Archway Road and Westmorland Road, utilising the existing outfalls from the site. The drainage strategy is designed to ensure on-site flood risk is managed and there is no increase in off-site flood risk as a result of the demolition.

The site is currently largely impermeable, with car parking and buildings covering the majority of the site. The surface water runoff rate is likely to be reduced as a result of the demolition works due to the unmade rubble finish offering additional voids at the ground surface and increasing the overall permeability of the site. Runoff from the development post-demolition is proposed to be captured by a number of filter drains and discharged into the existing drainage network and will replicate existing catchment areas to ensure the capacity of downstream drainage networks are not compromised. The use of filter drains will also provide the necessary treatment to capture any suspended solids within the runoff before discharging into the existing drainage network,

The proposed enabling works will not introduce any additional foul water discharges from the development and there is, therefore, no requirement for additional foul water provision.

Any existing drainage networks passing through the site serving upstream areas that will continue to discharge flows will be retained or otherwise diverted as part of the enabling works.

Future development of the site is currently expected to occur within 1-2 years of the enabling works. Details of the regeneration work are to be submitted as part of a separate detailed planning application. The associated Drainage Strategy will look to achieve a fully compliant design for the long-term use and operation of the site, including a sustainable drainage system which further reduces surface water discharge rates up to the critical 100-year design storm event with appropriate allowances for climate change.

2 Introduction

2.1 Appointment and Brief

This drainage strategy has been prepared in support of the Enabling Works planning application associated with the proposed regeneration of Huyton Town Centre. This report is to be read in conjunction with the Phase 1 Desk Study Report, Remediation Strategy Report and all other documentation submitted in support of the planning application.

This Report will review and document the following;

- Overview of existing drainage systems;
- Site constraints; and
- Proposed surface and foul water drainage strategy.

2.2 Limitations

This report is based on the interpretation and assessment of data provided by third parties. It should be noted that the detailed design of the drainage and associated Sustainable Drainage Systems (SuDS) features for the site has not been finalised and the assumptions and information presented herein are subject to design development and outcomes from consultation with relative authorities. Operation and maintenance of all SuDS (including proprietary systems) will need to be considered once the proposed development has been finalised with all specific information being presented to those responsible for the maintenance of the facility. Buro Happold cannot be held responsible for the accuracy of third-party data or the conclusions that come from this information or as a result of changes arising from the developing design. The conclusions and findings of this report may change if the proposed development is amended or updated after the date of publishing.

3 Existing Site

3.1 Site Location and Description

The site is located in Huyton Town Centre, Liverpool, L36 9GD, at National Grid Reference (NGR) 344180, 390840. The site is bound by Archway Road to the north-west, Civic Way to the south-west, Westmorland Road to the south-east and commercial premises off Derby Road to the east. The site is approximately 2.9 hectares and is partly within Source Protection Zone 3.

The site is primarily characterised by the presence of civic buildings and hardstanding car parking areas and with occasional pockets of introduced shrubbery, amenity grassland, and scattered groups of trees. The office buildings include the eight storey Municipal Building, adjacent 'Computer Centre' and Huyton Library. A notable feature of the Site is the Huyton Civic Memorial (non-listed).

Access across the site is generally open and unrestricted with some pedestrian access to the north and east and vehicle access to the south, west and north-east.

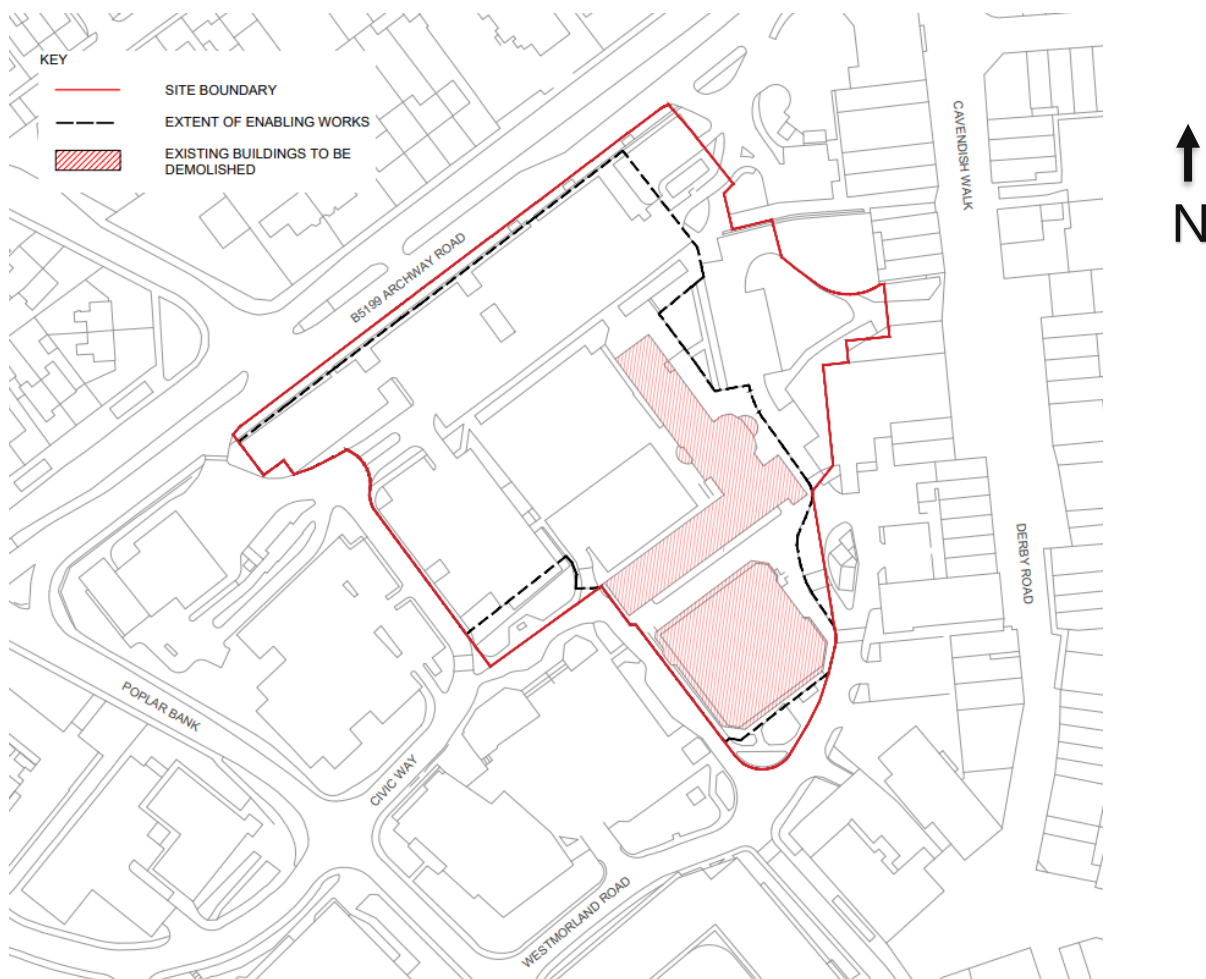


Figure 3.1 Site Boundary

3.2 Topography and Existing Levels

The highest point is located southeast of the site near Westmorland Road with an approximate elevation of +37.5m AOD. The site generally slopes in a WNW (west north westerly) direction falling towards the filling station on Archway Road to a low point of approximately +32.9m AOD, with a resultant average gradient of around 1:40.

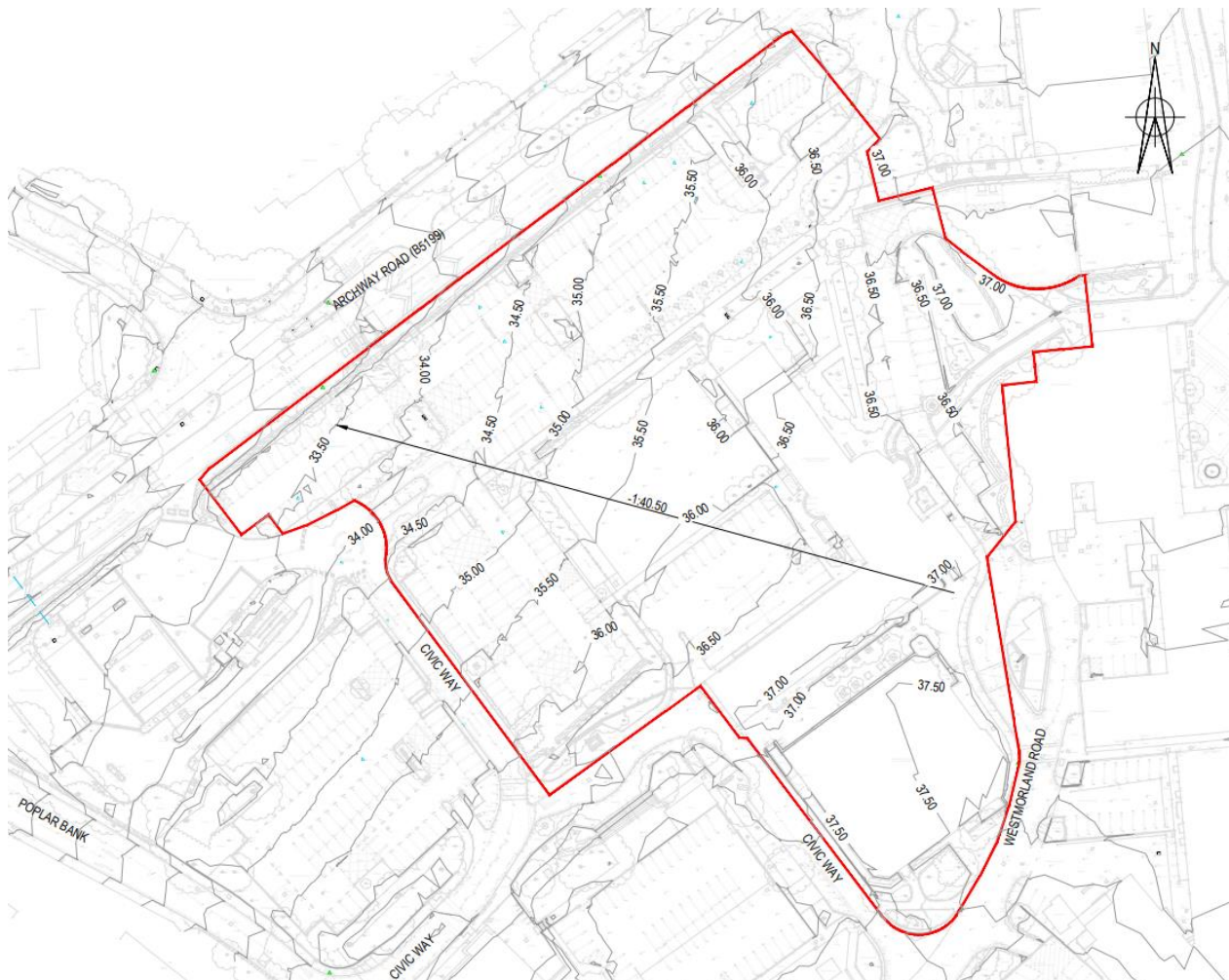


Figure 3.2 Site Topography

3.3 Geology

The ground conditions comprise of Made Ground which was encountered across the majority of the boreholes, typically around 1m, extending to 1.30m in some instances. Underlying the Made Ground is till consisting of clay or sand. Till was typically found to a thickness approximately 1-4.0m, where thicker Till deposits were encountered towards the southern end of the site.

3.4 Flood Risk

The development site lies within Flood Zone 1 (low risk) with less than a 1 in 1000-year annual probability of flooding from fluvial or tidal sources. The site is also considered to be at a very low risk of surface water flooding, although, small areas of the site are shown to have low-high risk of flooding. These areas of flooding are isolated and small in scale, representing localised depressions in the topography and do not form part of a wider overland flow route which originates from outside of the site. The overall risk of surface water flooding is therefore considered to be very low.

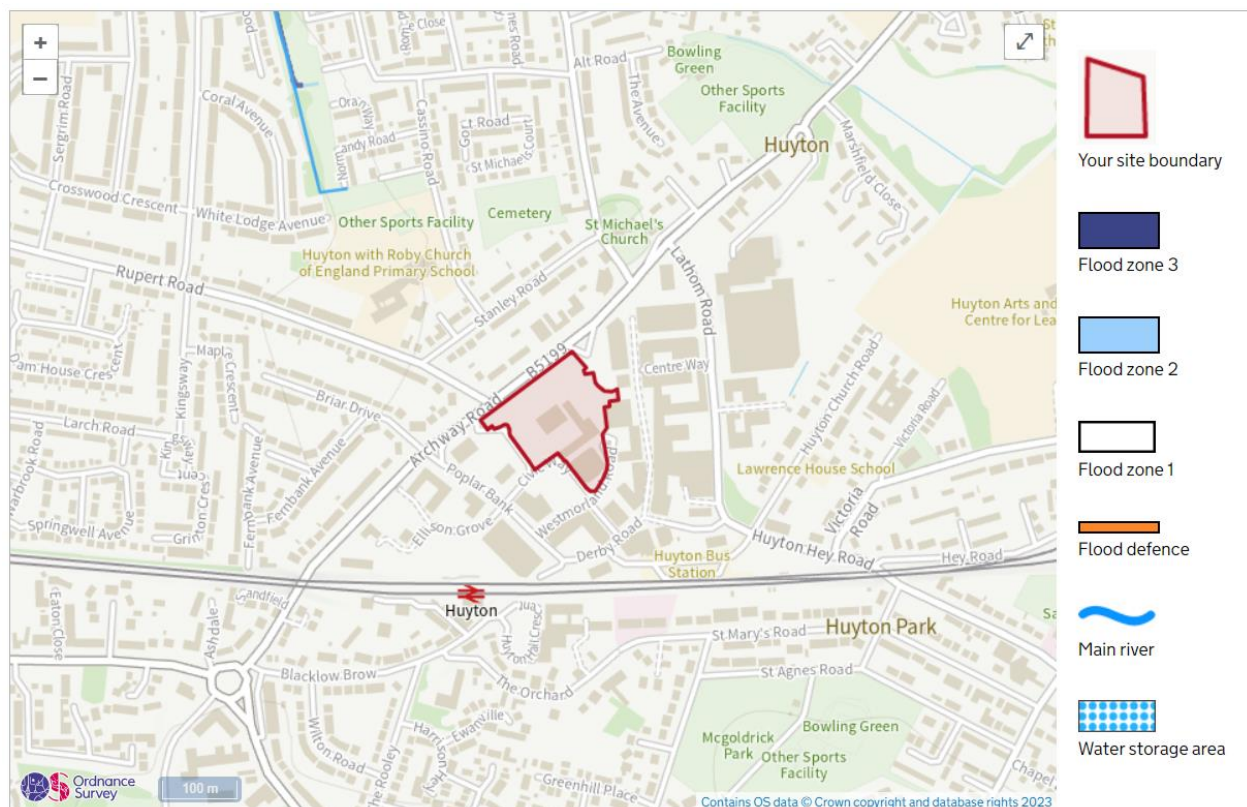


Figure 3.3 EA Fluvial Flood Risk Map

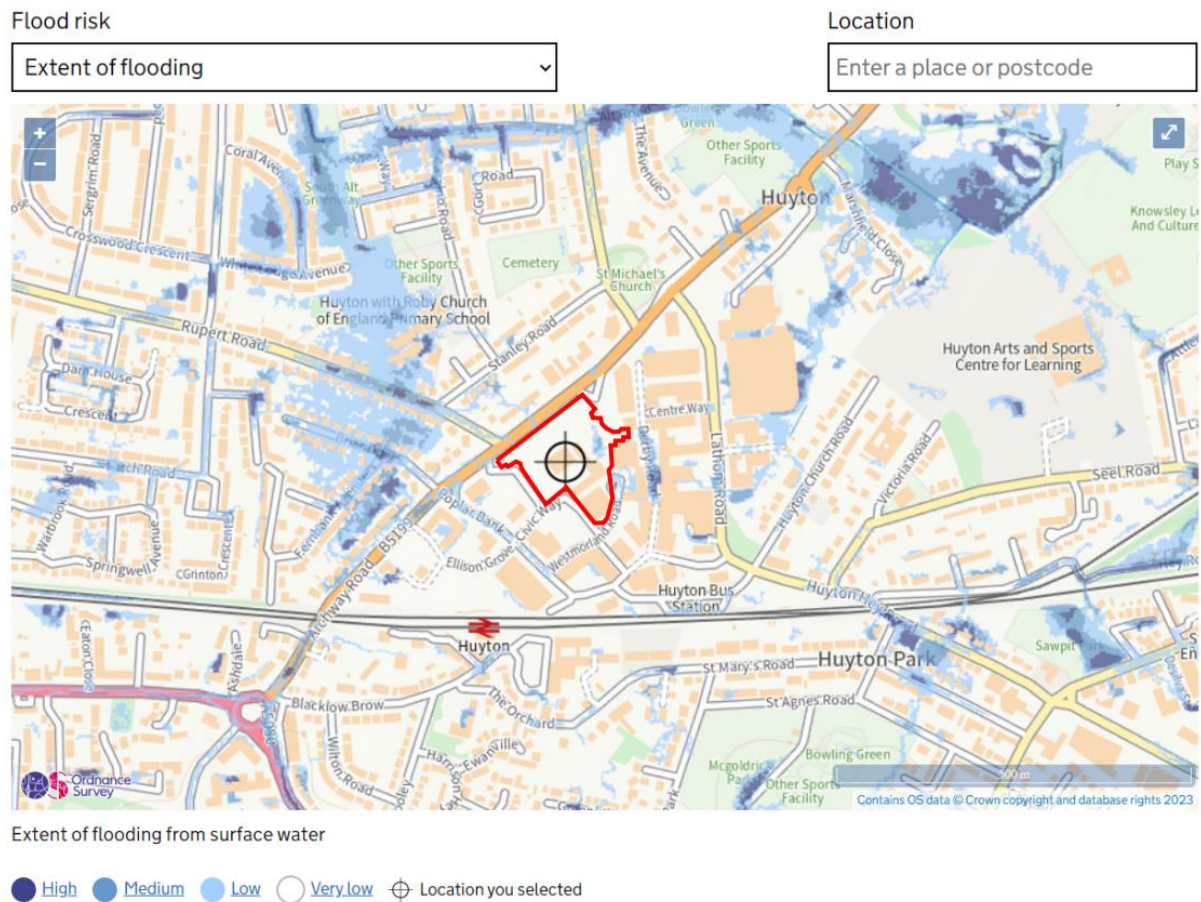


Figure 3.4 EA Surface Water Flood Map

3.5 Existing Drainage

3.5.1 Public Drainage

Record information obtained from United Utilities indicates that an extensive network of public sewers is located adjacent to the site. The following primary systems are shown to be present:

- A 225mm diameter combined sewer running in a south-westerly direction beneath Archway Road. The sewer is shown to increase to 825mm and continues to run in a south-westerly direction within Archway Road.
- A 225mm diameter combined sewer running in a north-westerly direction beneath Poplar Bank road before discharging into the 825mm combined sewer within Archway Road.
- A 300mm diameter surface water sewer running parallel to the combined sewer, in a south-westerly direction, beneath Archway Road. The sewer is shown to progressively increase in size to 375mm, 450mm and 525mm and continues to run in a south-westerly direction beneath Archway Road.
- A 225mm diameter surface water sewer running in a south-westerly direction beneath Westmorland Road. The sewer then diverts right in a north-westerly direction beneath Poplar Bank road, running parallel to the

combined sewer. The sewer is shown to increase to 300mm diameter and continues in a north-westerly direction before discharging into the 450mm surface water sewer beneath Archway Road.

- A 100mm diameter surface water sewer running in a south-westerly direction beneath Westmorland Road before diverting left in a south-easterly direction beneath Griffith's Road.
- A 150mm diameter surface water sewer running a north-westerly direction beneath Westmorland Road. The sewer then diverts right in a north-easterly direction and ultimately discharges into a 525mm surface water sewer within Lathom Road.
- A 225mm diameter foul water sewer running in a north-easterly direction beneath Westmorland Road before diverting east into Derby Road adjacent to Lansdowne Way.
- An unsized foul water sewer running in a northerly direction beneath Westmorland Road before diverting north-east beneath Sherbourne Square and ultimately discharging into a 300mm foul water sewer within Lathom Road.

A plan of the public sewers in the vicinity of the site is provided in Figure 3.5.



Figure 3.5 Unites Utilities Public Sewer Records

3.5.2 Private Drainage

Topographical and utility survey information gathered at the site indicates the existing site is served by a private network of foul and surface water drains. The identified drainage systems are outlined below and are presented on drawing 0051610-BHE-XX-XX-DR-C-3100 Existing Drainage Plan;

- Three 150mm diameter surface water drains run parallel to each other below the existing car park located at the northern boundary. These drains run in a south-westerly direction and are shown to collect flows from the existing gullies located within the car park. The drains increase to 225mm diameter before discharging into the public surface water sewer MH0803 located within Archway Road.
- A 150mm diameter surface water drain within the existing car park to the east of Civic Way is shown to flow in a north-westerly direction before increasing to 225mm diameter and diverting left in a south-westerly direction. The drain is shown to discharge into the public surface water sewer MH0803 located in Archway Road.
- A 150mm diameter surface water drain, located in the grassed area in the centre of the site, flows in a south-westerly direction before diverting right in a north-westerly direction. The pipe then increases to 225mm diameter where it then passes through a network of manholes before discharging into the public surface water sewer MH0803 located in Archway Road.
- A 150mm diameter surface water drain, located in the grassed area in the centre of the site, flows in a north-easterly direction before diverting left in a north-westerly direction. The pipe then increases to 225mm diameter where it then passes through a network of manholes before discharging into the public surface water sewer MH0803 located in Archway Road.
- A series of 100mm diameter surface water pipes collecting flows from the Municipal Building and adjoining Annexe. Secondary pipes connect to the primary drain which is shown to flow in a north-easterly direction before discharging into the public surface water sewer MH2807, located within the car park area off Westmorland Road.
- A 100mm diameter surface water drain running in a southerly direction before discharging into the public surface water sewer MH2807, located within the car park area off Westmorland Road.
- A series of 100mm diameter secondary surface water pipes collect flows from the Computer Centre and flow in a north-westerly direction. The pipes then connect to the primary drain which runs in a north-easterly direction before discharging into the public surface water sewer MH2811, located within Westmorland Road.
- A series of secondary 100mm diameter foul water pipes collect flows from the Municipal Building before connecting into the primary run and increasing to 150mm diameter. This is shown to generally flow in a north-westerly direction, through the existing car park and discharging to the combined sewer MH1901 located within Archway Road.
- A series of secondary 100mm diameter foul water pipes collect flows from the Annexe and Computer Centre before connecting into the primary run and increasing to 150mm diameter. This is shown to flow in a north-easterly direction before discharging into the combined sewer MH2805 located within Westmorland Road.

3.6 Watercourses

There is no presence of any watercourses that have been identified within the vicinity of the site. The closest charted watercourse to the site is the River Alt, which is approximately 435m to the north of the site at the closest point.

3.7 Consultation

KMBC

Pre-application consultation has been carried out with the Local Planning Authority (LPA) with reference to this Enabling Works application. The LPA has confirmed that a Drainage Strategy is required to support the application, to identify any drainage-related risks associated with the proposed works and to outline appropriate mitigation measures.

Pre-application advice has also been received from the LLFA (Lead Local Flood Authority) which outlines a series of elements which are to be considered as part of any development across the site. These elements broadly require the production of a sustainable drainage strategy which is designed to limit runoff to the equivalent greenfield runoff rate, up to the 100-year critical storm event, including a 40% allowance for climate change.

Future development of the site is currently expected to occur within 1-2 years of the enabling works and details of the regeneration work are to be submitted as part of a separate detailed planning application. The associated Drainage Strategy will strive to achieve a fully compliant design for the long-term use and operation of the site, including a sustainable drainage systems which provide the required reduction in surface water discharge rates up to the critical 100-year design storm event with appropriate allowances for climate change.

United Utilities

As the site currently discharges all foul and surface water to the existing public sewer network, UU has been consulted with details of the proposed works. UU has raised no concerns with regard to the general proposals, but requested reassurance that their assets will be protected, and all necessary pollution prevention measures detailed, ahead of the works taking place.

The contractor is to ensure that a CCTV survey is carried out, before and after the works are carried out, to validate the condition of existing points of connection to the public sewer network. No public sewers are to be directly impacted by the works and, therefore, there is no requirement for abandonments or diversions of United Utilities apparatus.

With regard to asset protection, the associated risk to UU assets is currently considered to be negligible due to the proximity of UU apparatus to the works. Notwithstanding this, it is recommended that the contractor's method statement acknowledges and identifies the presence of public drainage apparatus and proposes any necessary protection measures.

With regard to pollution prevention, this drainage strategy identifies the likely sources of pollution and a means of mitigating this risk for the Enabling Works phase. Notwithstanding this, and similar to above, it is recommended that the contractor's method statement acknowledges the risk of pollution to UU drainage assets during the works, and either adopts the proposals set out within the Drainage Strategy or proposes a suitable alternative.

4 Proposed Development

The Enabling and Engineering Works comprises of demolition of the Municipal Building and Computer Building; existing car parks and hardstanding, removal of trees, ground reprofiling and remediation, installation and diversion of below ground infrastructure, formation of a temporary car park, installation of security hoarding and associated works

The Enabling Works takes on a phased approach in which demolition works will only be carried out within the boundary as shown in Figure 4.1. A temporary car park will be constructed as part of the enabling works, on the site of the existing Computer Centre and Annexe, which will create space for 49 standard parking bays and four disabled parking bays. A new junction will be formed off from Civic Way to enable access and egress. The car park will be constructed from site won open-graded stone from demolition and introduce small areas of tarmac to delineate parking spaces.

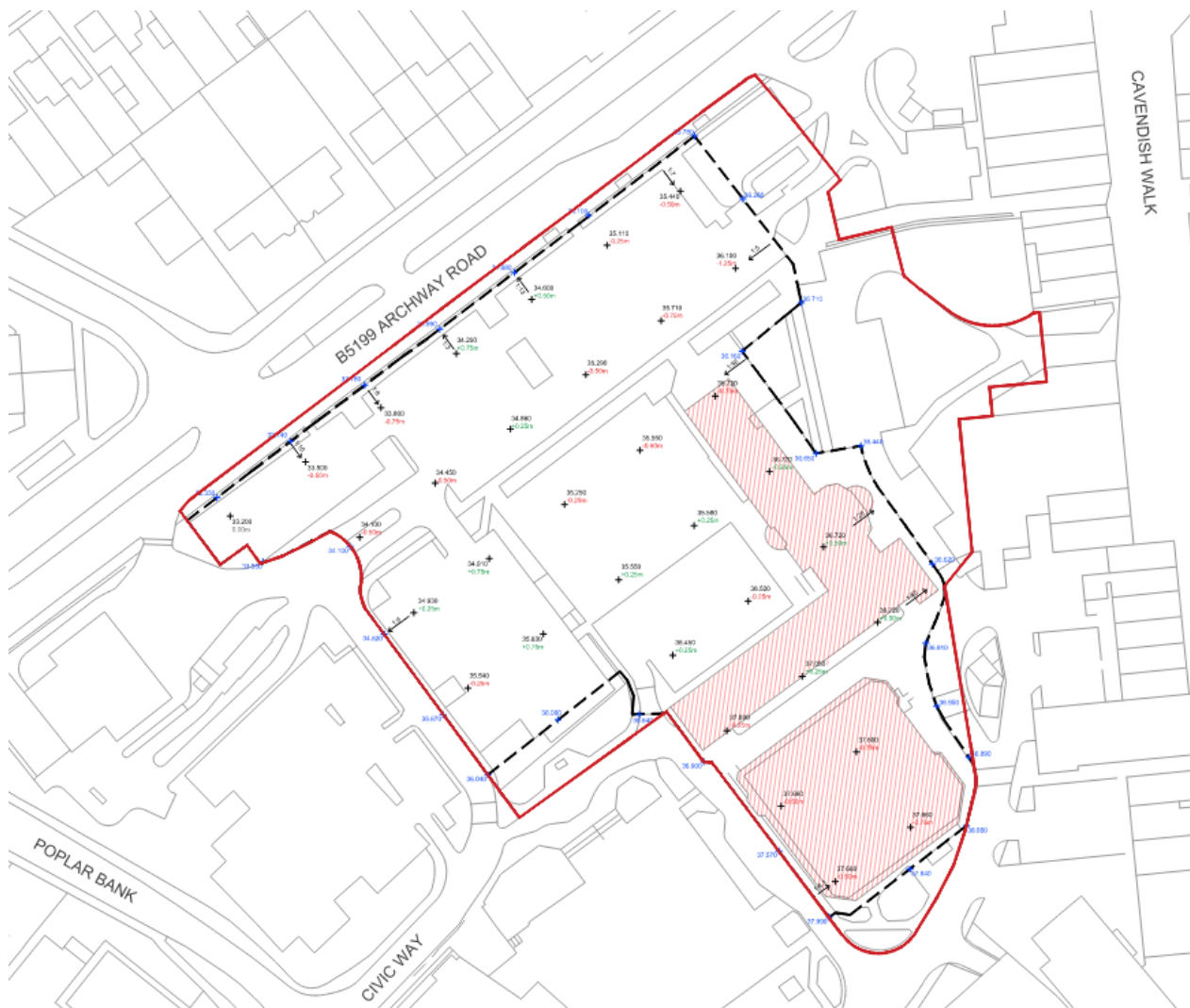


Figure 4.1 Proposed Development

5 Proposed Surface Water Drainage Strategy

5.1 Drainage Hierarchy

The Building Regulations Approved Document Part H (Drainage and Waste Disposal) and National Planning Practice Guidance specifies a hierarchy for the disposal of surface water which should be adhered to as part of any surface water drainage design. This hierarchy, which is echoed within the Technical Guidance from KMBC and the National Planning Practice Guidance, states the surface water should be discharged as follows:

1. To an adequate soakaway or some other adequate infiltration system; or, where that is not practicable,
2. A watercourse; or, where that is not practicable,
3. A surface water sewer; or, where that is not practicable,
4. A combined sewer.

Two BRE365 soakaway tests were carried out at the site, the first within the grassed area adjacent to the KMBC car park, and the second in the west of Archway Road car park. The results were largely inconclusive as the water did not infiltrate at a rate sufficient enough to reach 25% water volume over 240 minutes and an infiltration rate was not possible to obtain. The ground is therefore considered to be effectively impermeable and the discharge of surface water via soakaway is not considered feasible.

The nearest watercourse to the site is the River Alt, an urban river, which is located approximately 435m to the north of the site at the nearest point. Due to the distance between the river and the proposed development, and the significant difficulties in routing a new sewer within the densely developed area, this option is not considered practical.

It is therefore proposed to discharge surface water from the development to the existing public sewer network that serves the existing site.

5.2 SuDS Selection

The Sustainable Drainage Systems (SuDS) approach essentially involves the slowing down of surface water runoff from a development to manage on-site and downstream flood risk, as well as providing water quality improvements. This can generally be achieved by harvesting, infiltrating, slowing, storing and conveying runoff via a variety of techniques, as opposed to the historical and more traditional method of sole reliance on below ground pipework.

The variety of SuDS techniques available are generally not all appropriate for every development, and the selection depends on the characteristics of the site including permeability of the underlying ground, spatial constraints, land use and topography.

As outlined elsewhere within this report, a more detailed planning application will be issued with the permanent drainage proposals for the site at a later date. Further SuDS techniques are anticipated to be appropriate for the permanent works and these will be investigated, to help limit discharge to greenfield runoff rates and provide attenuation for the 100-year storm, in line with LLFA and UU requirements.

With regard to the Enabling Works planning application only, the following SuDS measures are considered appropriate.

Filter Drains

Filter drains are shallow trenches filled with stone/gravel that create temporary subsurface storage for the attenuation, conveyance and filtration of surface water runoff. Filter drains can help to manage peak flows by naturally limiting rates of conveyance through the filter medium, and also by providing attenuation storage which fills when the rate of flow at the outlet is controlled.

Filter drains are considered to be the most appropriate technique to provide attenuation, minimise flood risk and collect and treat runoff from the development post-demolition. Due to the level difference and gradients across the site, filter drains will effectively collect runoff and route flow to existing outfalls.

In addition, due to the short-lived nature of the Enabling Works phase, and the need to control sediment wash-off from the flattened site, it is thought to be more appropriate to provide a filter drain solution when compared to other SuDS techniques.

Swales

Swales are shallow, flat bottomed, vegetated open channels designed to convey, treat and often attenuate surface water runoff. They are often used to drain roads, paths or car parks, where it is convenient to collect distributed inflow of runoff, or as a means of conveying runoff on the surface which enhancing corridors or other open space. Swales can have a variety of profiles, can be uniform or non-uniform, and can incorporate a range of different planting strategies, be depending upon the site characteristics and system objectives.

Swales can replace conventional pipework as a means of conveying runoff, and the use of adjacent filter strips and/or flow spreaders can also remove the need for kerbs and gullies.

The standard swale channel is broad and shallow and covered by vegetation, usually grass, to slow the water – facilitating sedimentation, filtration through the root zone and soil matrix, evapotranspiration and infiltration into the underlying soil.

5.3 Surface Water Drainage Strategy

The site is currently largely impermeable, with car parking and buildings covering the majority of the site. The proposed works will see the clearance of the site, including demolition of existing buildings and car parks, abandonment and diversion of existing utilities, and changes to finished ground levels in order to provide a series of future development platforms. These works are to be carried out in readiness for the implementation of future regeneration proposals, the details of which will be the subject of a separate detailed (or hybrid) planning application.

Following site clearance works, surface water runoff rates will not increase and are likely to be reduced when compared with the existing site. This is because the characteristics of the finished ground will change from impermeable tarmac, concrete and rooftop etc, and replaced with unbound stone or recycled aggregate. This will offer additional void space at the ground surface and will increase the overall permeability of the site.

The main drainage-related risks associated with the proposals are considered to be;

1. Removal of existing drainage apparatus during demolition works resulting in uncontrolled overland runoff from the site; and
2. Suspended sediment entrained within site runoff originating from the unbound ground surface.

In order to mitigate the above risks, runoff from the development, post-demolition, is proposed to be captured by a series of filter drains and discharged into the existing drainage networks. Existing catchment areas to each outfall will be maintained to ensure the capacity of downstream sewers are not compromised. This will ensure there is no release of uncontrolled runoff across the site and downstream areas will not be impacted by the proposed works. Drainage of the temporary car park will adopt a similar approach, and will be constructed to achieve suitable gradients in order to direct surface water runoff to filter drains located at the perimeter .

The use of filter drains will also provide the necessary treatment to capture any suspended solids within the runoff before discharging into the existing drainage network. It is also anticipated that the finished ground surface material will be clean washed stone or recycled aggregate, thereby minimising any sources of sediment that could be mobilised by surface water runoff.

The contractor is to ensure that a CCTV survey is carried out, before and after the works are carried out, to validate the condition of existing points of connection to the public sewer network. No public sewers are to be directly impacted by the works and, therefore, there is no requirement for abandonments or diversions of United Utilities apparatus.

This drainage strategy will support a phased demolition as it provides the flexibility to implement localised working areas across the site, each utilising connections to the existing drainage network. The proposed drainage strategy is presented on drawing 0051610-BHE-XX-XX-DR-C-3101 Proposed Drainage Strategy Plan, and represents the final condition of the site assuming all proposed Enabling Works activities are fully executed.

5.4 Designing for Exceedance

As previously discussed within the report, there are no exceedance flow pathways that have been identified across the existing site that need to be retained.

The proposed drainage strategy aims to retain the existing drainage regime across the site with regard to existing outfall locations. Although the method of collecting runoff from the surface will change (ie from rooftops and road gullies to the proposed filter drains) this is not expected to affect the frequency or consequence of an exceedance event occurring.

In order to prepare the proposed development platforms, the proposed enabling works activities will see changes to the finished ground levels across the site. As the proposed level changes are relatively subtle, and the general quantum and direction of fall across the site will be retained, there will be negligible impact on exceedance flows. Please refer to Figure 5.1.

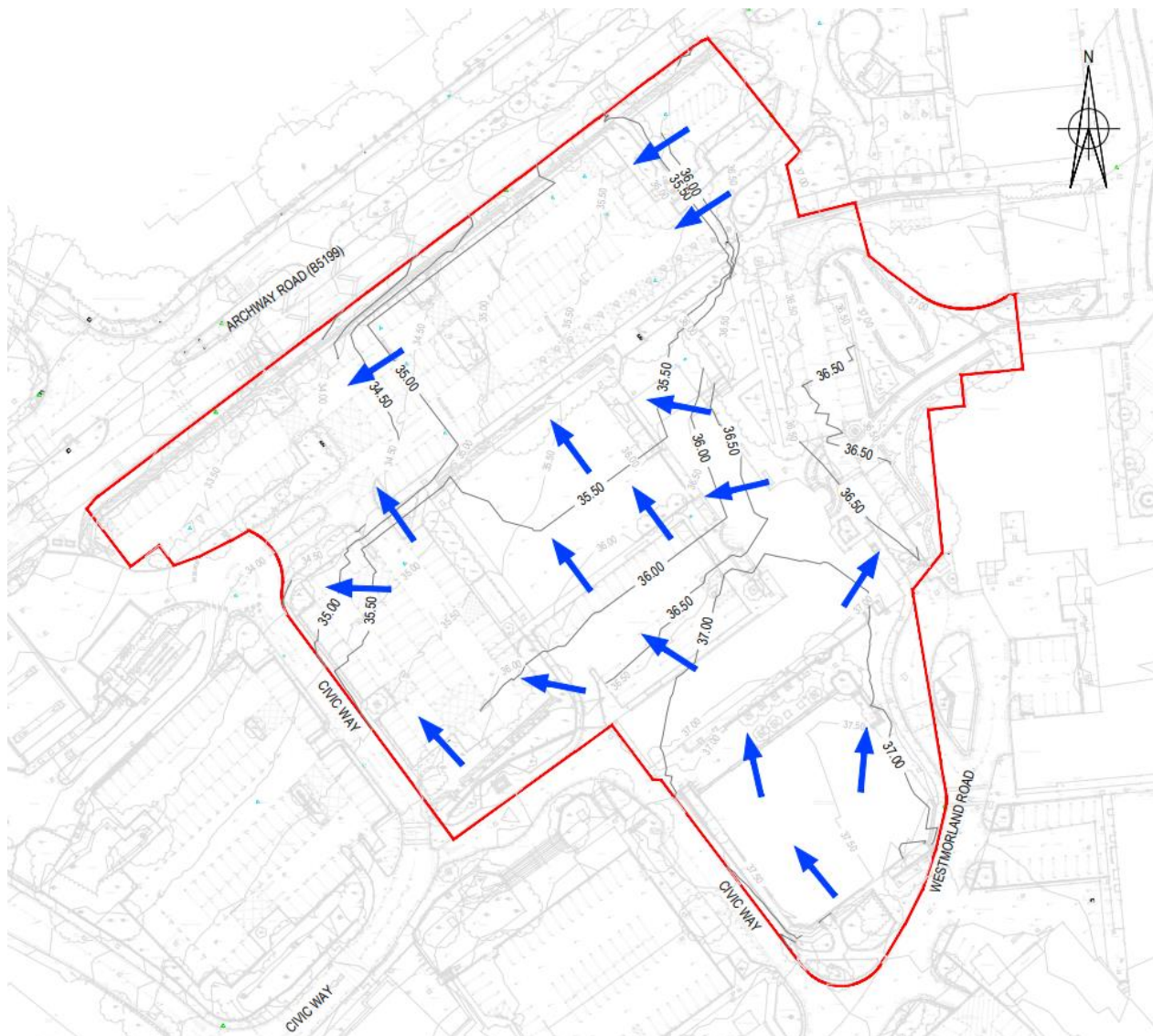


Figure 5.1 Exceedance Flow Routes

5.5 SuDs Operation and Maintenance

Regular maintenance of the sustainable drainage system is essential to maintain its performance. An Operation and Maintenance Manual will be prepared in accordance with the CIRIA guidance C753 section 32. This manual will be collated during the detailed design stage and will be implemented until such time as the permanent works are constructed and the associated drainage system is operational.

All drainage, including SuDS features, will remain within the ownership and responsibility of the developer.

Table 5—1 SuDS Maintenance Manual

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

6 Proposed Foul Water Drainage Strategy

6.1 General

As there are no new buildings to be constructed as part of the Enabling Works activities, there will be no requirement for new foul water infrastructure across the site. The demolition of existing buildings will see a reduction in foul water flows and the localised abandonment of existing infrastructure.

Subject to the proposed phasing of the Enabling Works, it may be necessary to retain drainage infrastructure serving existing buildings which are to be demolished at a later date. The proposed drainage strategy ensures that no drainage will be abandoned until the upstream system is proven to no longer receive flows.

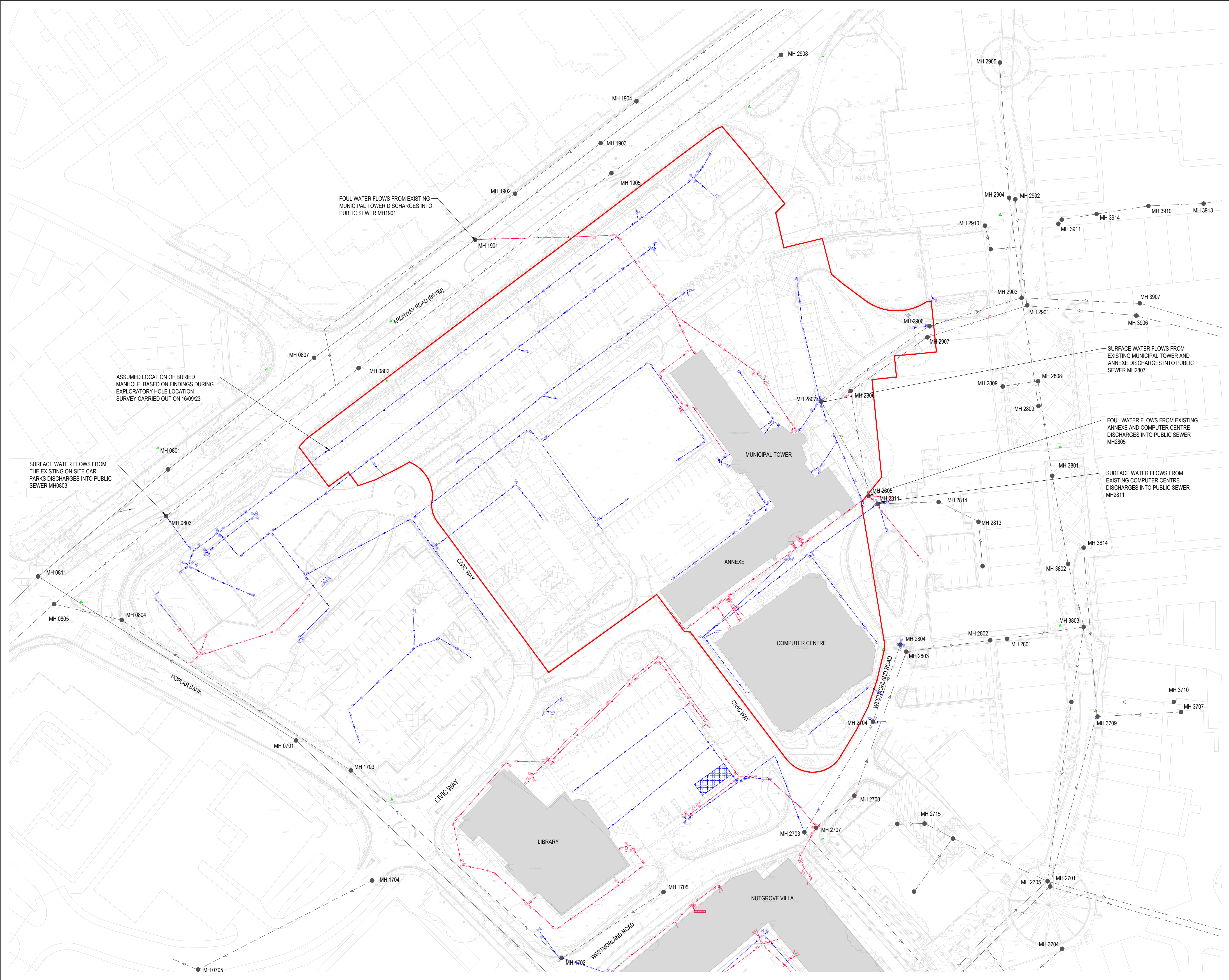
It may be necessary to construct localised and temporary foul water drainage diversions to enable the phased implementation of the Enabling Works activities. This is most likely to occur where the Municipal Tower is to be retained and foul water flows from the building need to be retained. The foul water drainage strategy therefore allows for a diversion of the foul water drain serving the Municipal Tower, which would otherwise be impacted by the creation of the HQ construction platform. The diversion is contained within the site boundary and retains the existing outfall to the public sewer within Archway Road.

The contractor is to ensure that a CCTV survey is carried out, before and after the works are completed, to validate the condition of existing points of connection to the public sewer network. No public sewers are to be directly impacted by the works and, therefore, there is no requirement for abandonments or diversions of United Utilities apparatus.

With regard to asset protection, the associated risk to UU assets is currently considered to be negligible due to the proximity of UU apparatus to the works. Notwithstanding this, it is recommended that the contractor's method statement acknowledges and identifies the presence of public drainage apparatus and proposes any necessary protection measures.

Please refer to drawing 0051610-BHE-XX-XX-DR-C-3101 Proposed Drainage Strategy Plan.

Appendix A Existing Drainage Plan



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NOTES:

- THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS AND SPECIFICATIONS.
- DRAWINGS BASED ON THE FOLLOWING BACKGROUND INFORMATION:
 - TOPOGRAPHICAL & GPR SURVEY AS PER SURVEY OPERATIONS DRAWING 23F247, RECEIVED 27/09/23
 - UNITED UTILITIES SEWER RECORDS
 - KNOWSLEY COUNCIL PROPOSED TENDER PLAN DRAWING 002, DATED 12/05/21, HIGHLIGHTING THE EXISTING DRAINAGE WITHIN THE LIBRARY CAR PARK.
- THE COMPLETENESS OF THE UNDERGROUND SERVICE INFORMATION CANNOT BE GUARANTEED AND THEREFORE OTHER SERVICES MAY EXIST.
- ALL DIMENSIONS ARE IN METERS UNLESS STATED OTHERWISE

KEY

- SITE BOUNDARY
- — EXISTING PUBLIC COMBINED SEWER
- - - - EXISTING PUBLIC FOUL WATER SEWER
- - - - EXISTING PUBLIC SURFACE WATER SEWER
- FW → FW EXISTING PRIVATE FOUL WATER DRAIN
- SW → SW EXISTING PRIVATE SURFACE WATER DRAIN

FOUL WATER FLOWS FROM EXISTING MUNICIPAL TOWER DISCHARGES INTO PUBLIC SEWER MH1901

FOUL WATER FLOWS FROM EXISTING ANNEXE AND COMPUTER CENTRE DISCHARGES INTO PUBLIC SEWER MH2805

FOUL WATER FLOWS FROM EXISTING MUNICIPAL TOWER AND ANNEXE DISCHARGES INTO PUBLIC SEWER MH2807

FOUL WATER FLOWS FROM EXISTING COMPUTER CENTRE DISCHARGES INTO PUBLIC SEWER MH2811

SURFACE WATER FLOWS FROM THE EXISTING ON-SITE CAR PARKS DISCHARGES INTO PUBLIC SEWER MH0803

ASSUMED LOCATION OF BURIED MANHOLE, BASED ON FINDINGS DURING EXPLORATORY HOLE LOCATION SURVEY CARRIED OUT ON 16/09/23

SURFACE WATER FLOWS FROM EXISTING MUNICIPAL TOWER AND ANNEXE DISCHARGES INTO PUBLIC SEWER MH2807

SURFACE WATER FLOWS FROM EXISTING COMPUTER CENTRE DISCHARGES INTO PUBLIC SEWER MH2811

P0 PRELIMINARY ISSUE		21/11/23		LD	AD	AD
Rev	Description	Date	Iss'd	Rev'd	App'd	

PLANNING

Project Stage

INFORMATION

Status of Drawing

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Client

Genrō Kajima Regeneration Limited

Architect

NA

Project

Huyton Town Centre Regeneration

Orig Title

Existing Drainage Plan

Job No.

0051610

Scale

A1

1:500

Drawn/Designed By.

LD

Checked By.

AD

Approved By.

AD

Drawing No.

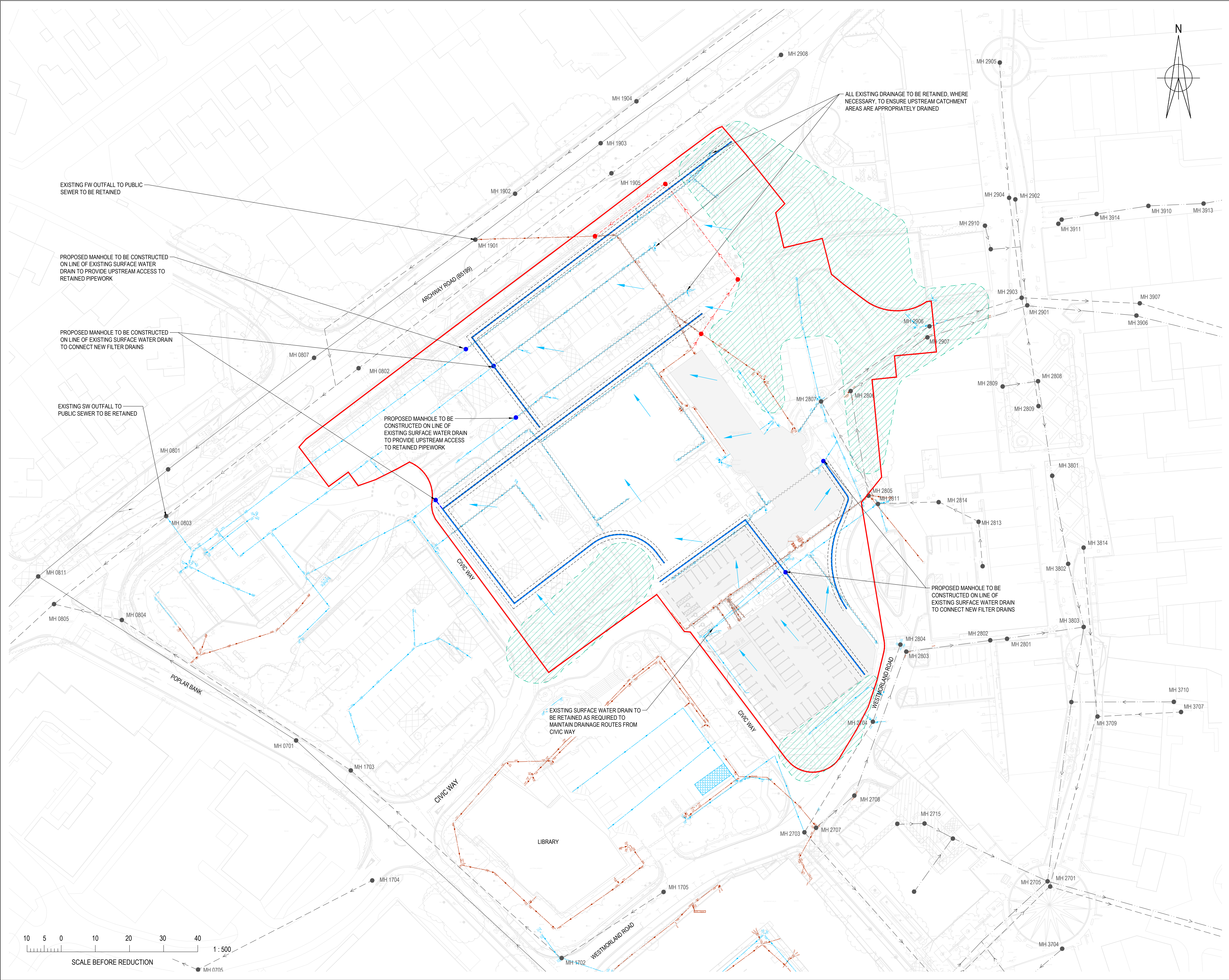
0051610-BHE-DR-C-3100

Revision

P0

Level 0051610-BHE-DR-C-3100 Existing Drainage Plan

Appendix B Proposed Drainage Strategy Plan



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DO NOT SCALE THIS DRAWING.

HEALTH AND SAFETY INFORMATION
IN ADDITION TO THE HAZARD RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING:
CONSTRUCTION

MAINTENANCE/CLEANING/OPERATION

DECOMMISSIONING/DEMOLITION

NOTES
1. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS AND SPECIFICATIONS.
2. DRAWINGS BASED ON THE FOLLOWING BACKGROUND INFORMATION:
• TOPOGRAPHICAL & GPR SURVEY AS PER SURVEY OPERATIONS DRAWING 23F247, RECEIVED 27/09/23
• UNITED UTILITIES SEWER RECORDS
• KNOWSLEY COUNCIL PROPOSED TENDER PLAN DRAWING 002, DATED 12/05/21 HIGHLIGHTING THE EXISTING DRAINAGE WITHIN THE LIBRARY CAR PARK.
3. THE COMPLETENESS OF THE UNDERGROUND SERVICE INFORMATION CANNOT BE GUARANTEED AND THEREFORE OTHER SERVICES MAY EXIST.
4. THE PROPOSED DRAINAGE STRATEGY SHOWN ON THIS DRAWING IS INDICATIVE AND FOR ILLUSTRATION PURPOSES ONLY.
5. SUBJECT TO THE FINAL FINISHED GROUND LEVELS THE EXACT SIZE AND LOCATION OF ALL FILTER DRAINS MAY BE SUBJECT TO CHANGE.
6. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH BURO HAPPOLD DRAINAGE STRATEGY REPORT 0051610-BHE-XX-XX-RP-C-0001

KEY
SITE BOUNDARY
PROPOSED LEVEL CONTOURS
PROPOSED FILTER DRAIN
PROPOSED SURFACE WATER DRAIN
PROPOSED FOUL WATER DRAIN
EXISTING PUBLIC COMBINED SEWER
EXISTING PUBLIC FOUL WATER SEWER
EXISTING PUBLIC SURFACE WATER SEWER
EXISTING PRIVATE FOUL WATER DRAIN
EXISTING PRIVATE SURFACE WATER DRAIN
EXISTING DRAIN TO BE ABANDONED
TREE ROOT PROTECTION AREA
BUILDINGS TO BE DEMOLISHED
DIRECTION OF SURFACE WATER RUNOFF POST DEMOLITION
EXTENT OF PROPOSED TEMPORARY CAR PARK

P02 ISSUED FOR INFORMATION 21.11.2023 LD AD AD
P01 ISSUED FOR INFORMATION 17.07.2023 LD AD AD

Rev	Description	Date	Iss'd	Rev'd	App'd
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PLANNING
Project Stage

INFORMATION
Status of Drawing

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Client: Genrō Kajima Regeneration Limited
Architect: NA
Project: **Hyuton Town Centre Regeneration**
Orig Title: Enabling Works
Proposed Drainage Strategy Plan

Job No. 0051610	Scale: A1 1:500	
Drawn/Designed By: LD	Checked By: AD	Approved By: AD
Drawing No. 0051610-BHE-DR-C-3101	Revision P02	

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