

Alberton House, Manchester

Flood Risk Assessment and Drainage Strategy

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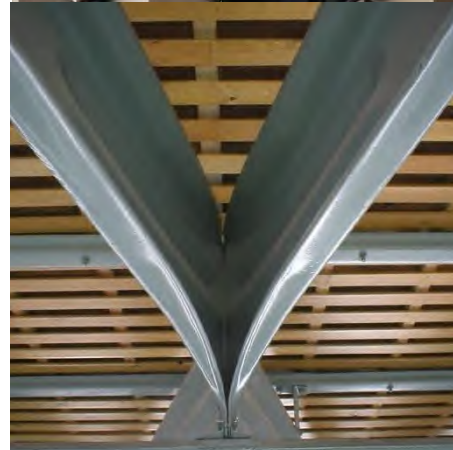
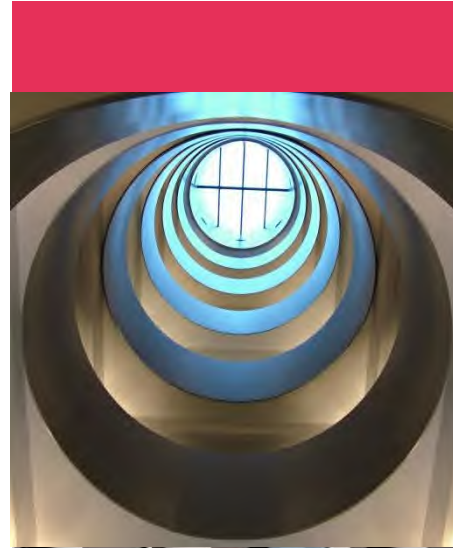
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Site Address: Alberton House, 30 St Marys Parsonage, M3 2WJ, Manchester

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Control Sheet

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1.0 Introduction

1.1 Project Background

- 1.1.1 Curtins was appointed by Bruntwood RB Ltd to provide a Flood Risk Assessment (FRA) and Drainage Strategy (DS) for the proposed development of the existing Alberton House, located on St Marys Parsonage, Manchester M3 2WJ. The site is centred around Grid Reference 383483, 398424.
- 1.1.2 The FRA provides information on the nature of flood risk at the site, following Government guidance with regards to development and flood risk. The FRA outlines the drainage requirements for the proposed site, with regards to relevant standards, guidance, and good practice.
- 1.1.3 The report is based on currently available information and preliminary discussions.
- 1.1.4 Proposals contained or forming part of this report represent the design intent and may be subject to alteration or adjustment in completing the detailed design for this project. Where such adjustments are undertaken as part of the detailed design and are deemed a material deviation from the intent contained in this document, prior approval shall be obtained from the relevant authority in advance of commencing such works.
- 1.1.5 Where the proposed works to which this report refers are undertaken more than twelve months following the issue of this report, Curtins shall reserve the right to re-validate the findings and conclusions by undertaking appropriate further investigations at no cost to Curtins.

1.2 Scope of Assessment

- 1.2.1 The assessment is to be undertaken in accordance with the standing advice and requirements of the Environment Agency (EA) for Flood Risk Assessments as outlined in the Communities and Local Governments Planning Policy Guidance to the National Planning Policy Framework (NPPF).
- 1.2.2 The assessment will:
 - Investigate all potential risks of flooding to the site,
 - Consider the impact the development may have elsewhere with regards to flooding,
 - Consider proposals to mitigate any potential risk of flooding determined to be present; and
 - Consider foul and surface water drainage proposals to mitigate flood risk from the site.
- 1.2.3 The Site lies within the Manchester Conurbation Core Critical Drainage Area (as identified in the Manchester, Salford and Trafford Level 2 Hybrid SFRA).
- 1.2.4 The total site area is approximately 0.235 hectares and following scrutiny of the UK Government Flood Map for Planning it has been identified that the existing site lies within Flood Zone 1, with the Northern boundary of the site located within Flood Zone 3 indicating that the probability of flooding from rivers or

sea (not taking into account flood defences or climate change) is high. Since the site is in a Critical Drainage Area and within Flood Zone 3, a Flood Risk Assessment is required to support a planning application also taking into consideration the management of surface water run-off.

1.2.5 In April 2015, the Government made changes to the National Planning Policy Framework which made Sustainable Urban Drainage Systems (SuDS) a material consideration in the determination of planning applications for 'major' developments.

1.2.6 A Drainage Strategy will therefore be required as part of the Full Planning Application for the development, as the development is considered to be 'major' development by the Town and Country Planning (Development Management Procedure) (England) Order 2015.

1.2.7 This FRA reviews the following information:

- Environment Agency flood maps for rivers and sea flooding.
- UK Government Long Term Flood Risk Information for surface water flooding and reservoir flooding.
- Manchester City, Salford City and Trafford Councils Level 1 Hybrid Strategic Flood Risk Assessment (SFRA) published in March 2010.
- Manchester City, Salford City and Trafford Councils Level 2 Hybrid SFRA, User Guide, Final, dated May 2010.
- Manchester City, Salford City and Trafford Councils Level 2 Hybrid Strategic Flood Risk Assessment (SFRA) published in March 2011.
- Preliminary Flood Risk Assessment (PFRA) for Manchester County Council dated May 2011.
- Environment Agency Model Data from Manchester Ship Cana 2018 Study.
- United Utilities Public Sewer Records dated October 2021.
- Manchester City Council SuDS Requirements for New Developments.
- Topographical Survey carried out by West Coast Geomatics, dated January 2022.
- Phase 1 Desk Study carried out by Curtins dated October 2021.
- Phase 2 Desktop Study carried out by Curtins dated October 2021.
- Utility Survey carried out by Team Drainage, dated August 2021.
- CCTV Drainage Survey carried out by Team Drainage, dated August 2021.
- GPR Survey carried out by West Coast Geomatics, dated July 2021.

1.3 Proposed Development

- 1.3.1 The development is expected to comprise *Demolition of existing building and erection of a 19 storey (basement, ground including mezzanine, plus 18) building comprising ground floor food and beverage (Use Class E, Sui Generis), 16 floors of office (Class E), and two floors of wellness centre (Sui Generis) including ancillary food and beverage (Use Class E), landscaping, highways and other associated works.*
- 1.3.2 The proposals are to maintain an offset from the existing river wall along the northern boundary and the existing banking to be maintained it is current profile.
- 1.3.3 The Proposed Site Layout, Site Levels and Site section drawings are enclosed in *Appendix A*.

2.0 Existing Site Details

2.1 History and Current Use

- 2.1.1 The Site is located to the north-west of St Mary's Parsonage, in the north-west of Manchester city centre.
- 2.1.2 The Site is currently brownfield land which includes a Part 12, part 4 storey office building with basement car park (20 spaces) and is located along St Mary's Parsonage. The external space to the west of the building is currently a public access route 'Trinity Way' to the existing Trinity Bridge. Refer to Figure 1 for the site location.
- 2.1.3 Vehicular access to the Site is currently via the eastern boundary at two locations. Access at the southern corner of the site is provided into the basement via an access ramp where car parking is provided which extends under the footprint of the 13-storey section. Access to the eastern corner of the site provides access to a small area of car parking at ground level within an under-croft area to the building.
- 2.1.4 The Site is irregular in shape and is surrounded by other commercial and employment uses to the south-east and south-west, with an office block (Cardinal House) to the north-east. The River Irwell lies on the north-west boundary of the site. Further to the north-west and across the river lies Salford Central train station. The area within the vicinity of the site is comprised by a mix of residential and commercial units.
- 2.1.5 The area proposed for development is entirely brownfield, with earliest historic map (1840's) showing the site was developed with a copper and brass works in the north of the site with Albert Street splitting the site from a gas works encroaching the south of the site. By 1891; the metal works was no longer shown, and the north of the site appears to be used for warehouse buildings later identified for yarn and cork. The gas works was also demolished at this time and a police station constructed on the southern part of the site. The police station was demolished on the southern boundary by 1938 and by 1948 the warehouses are marked as Ruins after WWII. The site fully re-developed with Alberton House buildings by 1973 with associated carparking areas. The site remains in a similar lay out to the present day.
- 2.1.6 The surrounding area is re-developed with Albert Bridge House immediately west of the site by 1962. By 1980's, almost all industrial land use surrounding the site is re-developed for commercial businesses, office space and multistorey carparking. By 1996, Trinity Bridge was constructed within 10m northwest of the site.



Figure 1: Aerial Photograph (© Google 2021)

2.2 Existing Watercourses and Other Waterbodies

- 2.2.1 No above ground watercourses have been identified within the proposed site.
- 2.2.2 The River Irwell is located along the north-western boundary of the site.
- 2.2.3 The River Medlock is located approximately 225m south-east of the site.
- 2.2.4 The Bridgewater Canal is located approximately 280m south-east of the site
- 2.2.5 A data screening was obtained from Manchester City Council Lead Local Flood Authority (LLFA), and this confirmed that there are no known assets on the site. The data screen correspondence is enclosed in *Appendix G* with the correspondence from the LLFA.

2.3 Existing Drainage

- 2.3.1 The public sewer records have been obtained for the development site, an extract is shown in Figure 2 and the records are enclosed in *Appendix B*.



Figure 2: United Utilities Public Sewer Record (extract)

- 2.3.2 The public sewer records indicate that there are no public sewers located inside the site boundary:
- 2.3.3 The public sewer records indicate that the following public sewers are located within the vicinity of the site:
- A 300mm combined public sewer is located East of the development site, within St Mary's Parsonage and appears to flow to the South. Based on the sewer record information it appears that the sewer connects with another public combined sewer at Bridge Street.
 - South of the site along Bridge Street there are two public combined sewers, the northern line is a 525mm pipe and the southern is a 480x770mm. Both flow to the west and join the main combined sewer at Gartside Street.
- 2.3.4 There are further public sewers identified on the public sewer records within the wider vicinity of the site, but these are not considered relevant to the scheme.
- 2.3.5 A GPR Utilities Survey has been carried out and is enclosed in *Appendix C*.
- 2.3.6 A CCTV Drainage Survey has also been carried out and is enclosed in *Appendix C*.
- 2.3.7 The GPR Survey and CCTV Survey indicates that there is a surface water outfall from the building into the River Irwell, close to the western corner of the existing building. This outfall serves the majority of the existing building footprint.

- 2.3.8 There is also evidence that some of the external drainage to the eastern elevation of the building appears to discharge north towards Cardinal House.
- 2.3.9 There appears to be a single foul outfall from the building from the southern corner which discharges into the public sewer in St Mary's Parsonage.
- 2.3.10 It should be noted that a GPR and CCTV Survey has not been undertaken within the public realm space/Trinity Bridge Approach to the west of the proposed building and further surveys will be required to determine existing drainage outfalls and potential services constraints to this area.

2.4 Topography

- 2.4.1 A topographical survey has been carried out on the proposed site, and is enclosed in *Appendix C*.
- 2.4.2 It is noted that along the building interface with the river, ground levels have not been surveyed along the existing banking from the building due to limited access. Levels shown on the drawing represent the building overhang situated above the river banking.

Building Area

- 2.4.3 The topography indicates that ground levels are relatively flat where the ground level car parking and access into the ground floor of the building is located. Levels in these areas are at approximately 33.6-33.8m AoD. However, there are various retained landscape elements to the eastern boundary where ground levels are at approximately 34.3m AoD.
- 2.4.4 The existing basement level is at approximately 30.64m AoD, and access into the basement is provided by an external service ramp, which adjoins from St Marys Parsonage at the southern corner of the site. Ground levels at St Marys Parsonage are at approximately 33.30m AoD.
- 2.4.5 As noted above, there are limited levels along the northern boundary at the interface with the river wall due to limited access, however, where levels have been obtained, it indicates that the river wall is at approximately 25.70m AoD and that the existing banking behind the wall slopes up to the building at approximately 28m AoD.
- 2.4.6 An extract of the levels is highlighted in Figure 3.

Public Realm Area

- 2.4.7 The topography falls from south-east to north-west, from access at St Marys Parsonage to the entrance to the Trinity Bridge.
- 2.4.8 At St Marys Parsonage, ground levels are at approximately 33.39m AoD and at the entrance to Trinity Bridge, ground levels are at approximately 33.13m AoD.

- 2.5.1 BGS map records do not indicate the presence of Made Ground on site, however given the various phases of development including industrial previous land uses on site a thickness of Made Ground is anticipated.
- 2.5.2 No superficial deposits are recorded by the BGS and the site is underlain by the Chester Formation (sandstone), recorded as fine to coarse grained sandstone with pebble beds recorded in subordinate strata.
- 2.5.3 The site is not located within a Source Protection Zone.
- 2.5.4 The BGS Report is enclosed in *Appendix E*.

3.0 Development and Flood Risk

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

- 3.1.1 In July 2021, the Department of Communities and Local Government published the National Planning Policy framework document (NPPF) and the Planning Practice Guidance was published in March 2014 and updated in August 2021; which provides guidance on how flood risk should be assessed during the planning and development process.

Table 1: (Extract from Planning Practice Guidance) Flood Zone Classifications

These Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defences. They are shown on the Environment Agency's Flood Map for Planning (River and Sea @), available on the Environment Agency's web site, as indicated in the table below.

Flood Zone	Definition
Zone 1 Low Probability	Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map) - all land outside Zones 2 and 3)
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or Land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)
Zone 3b The Functional Floodplain	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

Table 2: (Extract from Planning Practice Guidance) Flood Risk Vulnerability Classification

Essential Infrastructure • Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk. • Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations, and water treatment works that need to remain operational in times of flood. • Wind turbines.
Highly Vulnerable • Police and ambulance stations, fire stations and command centres, telecommunications installations required to be operational during flooding. • Emergency dispersal points. • Basement dwellings. • Caravans, mobile homes and park homes intended for permanent residential use. • Installations requiring hazardous substances (unless) (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or waterside locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as 'Essential Infrastructure').
More Vulnerable • Hospitals. • Residential institutions such as residential care homes, children's homes, social services homes, prisons and hospitals. • Buildings used for dwelling houses (student halls in residence, drinking establishments, nightclubs and hotels). • Non-residential uses for health services, nurseries and educational establishments. • Landfill and sites used for waste management facilities for hazardous waste. • Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.

Less Vulnerable

- Police, ambulance and fire stations which are **not** required to be operational during flooding.
- Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'More Vulnerable' class; and assembly and leisure.
- Land and buildings used for agriculture and forestry.
- Waste treatment (except landfill* and hazardous waste facilities).
- Minerals working and processing (except for sand and gravel working).
- Water treatment works which do not need to remain operational during times of flood.
- Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place.

Water-Compatible Development

- Flood control infrastructure.
- Water transmission infrastructure and pumping stations.
- Sewage transmission infrastructure and pumping stations.
- Sand and gravel working.
- Docks, marinas and wharves.
- Navigation facilities.
- Ministry of Defence defence installations.
- Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location.
- Water-based recreation (excluding sleeping accommodation).
- Lifeguard and coastguard stations.
- Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms.
- Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.

Table 3: (Extract from Planning Practice Guidance) Flood Risk Vulnerability and Flood Zone Compatibility

Flood Zone	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	✓	Exception Test required	✓	✓
Zone 3b †	Exception Test required †	✓	✓	✓	✓

Key:

- ✓ Development is appropriate
- ✗ Development should not be permitted

Notes to Table 3:

- This table does not show the application of the Sequential Test which should be applied first to guide development to Flood Zone 1, then Zone 2, and then Zone 3, nor does it reflect the need to avoid flood risk from sources other than rivers and the sea.
- The Sequential and Exception Tests do not need to be applied to minor developments and changes of use, except for a change of use that involves ramming or rafting site, or to a mobile home or park home site.
- Some developments may contain different elements of vulnerability and the highest vulnerability category should be used, unless the development is considered in its component parts.

† In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.

In Flood Zone 3b functional floodplain essential infrastructure that has to be there and has passed the Exception Test, and water compatible uses, should be designed and constructed to:

- remain operational and safe for users in times of flood;
- result in no net loss of floodplain storage;
- not impede water flows and not increase flood risk elsewhere.

3.2 Site Specific NPPF Flood Risk Categorisation

- 3.2.1 To assess the NPPF flood risk classification for the site, the first step was to inspect the UK Government web based 'Flood Map for Planning' which is used to inform planning of a site's Flood Zone(s) and the probability of flooding from rivers or sea (not taking into account the presence of flood defences or climate change). However, the web based 'Long Term Flood Risk Assessment for Locations in England' should also be used to identify the long-term flood risks from rivers and seas, surface water and reservoirs.
- 3.2.2 The Flood Map for Planning report is enclosed in *Appendix D*, and it can be seen that the pre-development site and the surrounding area is located in an area classified as Flood Zone 1 (low probability of flooding from rivers or sea) with the Northern boundary of the site located within Flood Zone 3.

3.3 Site Specific Flood Zone Compatibility

- 3.3.1 The proposals for the development site are likely to fall within the following categories:
- Office Buildings and private carpark
- 3.3.2 These types of development are classed as 'Less Vulnerable' development in the Flood Risk Vulnerability Classification, as per Table 2.
- 3.3.3 The site is partially located within Flood Zone 3, for which 'Less Vulnerable' development is deemed to be appropriate, and neither the sequential nor the exception test is required (refer to the Flood Zone compatibility table in the NPPF technical guidance).

4.0 Hydrological Assessment

4.1 Sources of Flood Risk

- 4.1.1 This study assesses the risk from different types of flooding to the development and the risk of flooding from the development, taking into consideration climate change, as well as how flood risks should be managed. The approach to assessing flood risk at the development site was informed by the requirements of NPPF in conjunction with the client and Environment Agency requirements.

4.2 Fluvial Flooding (Rivers and Streams)

- 4.2.1 Flooding to the site from rivers and sea is indicated below in Figure 3, taken from the UK Government's Long Term Flood Risk Information.



Figure 3: Long Term Flood Risk Assessment Map – Flood Risk from Rivers or Sea (© Crown Copyright)

- 4.2.2 Figure 3 shows that the site is mostly located in Flood Zone 1 with the North Boundary located within Flood Zone 3.

- 4.2.3 Associated with the River Irwell on the north-western boundary and has a 3.3% chance of fluvial flooding each year with the remaining areas considered at low risk of fluvial flooding (less than 1% chance of flooding in each year).
- 4.2.4 The Manchester Ship Canal/River Irwell is designated as hydraulically controlled under the ownership of the Manchester Ship Canal Company and Peel Energy as 'Main River' shown by the dark blue line. The flood risk zoning relates to the site's proximity and the inundation extents is likely due to the fact that banks in these locations are generally lower than the surrounding area.
- 4.2.5 Due to the Flood Zone designation identified on the Environment Agency maps, the predicted flood levels were obtained from the Environment Agency to determine the more accurate extents of the Flood Zones.
- 4.2.6 The Environment Agency data provided refers to the application of updated climate change allowances for peak river flows for catchments across the UK in February 2016, however further updates were released in 2021. Figure 4 demonstrates the climate change allowances released in 2021.

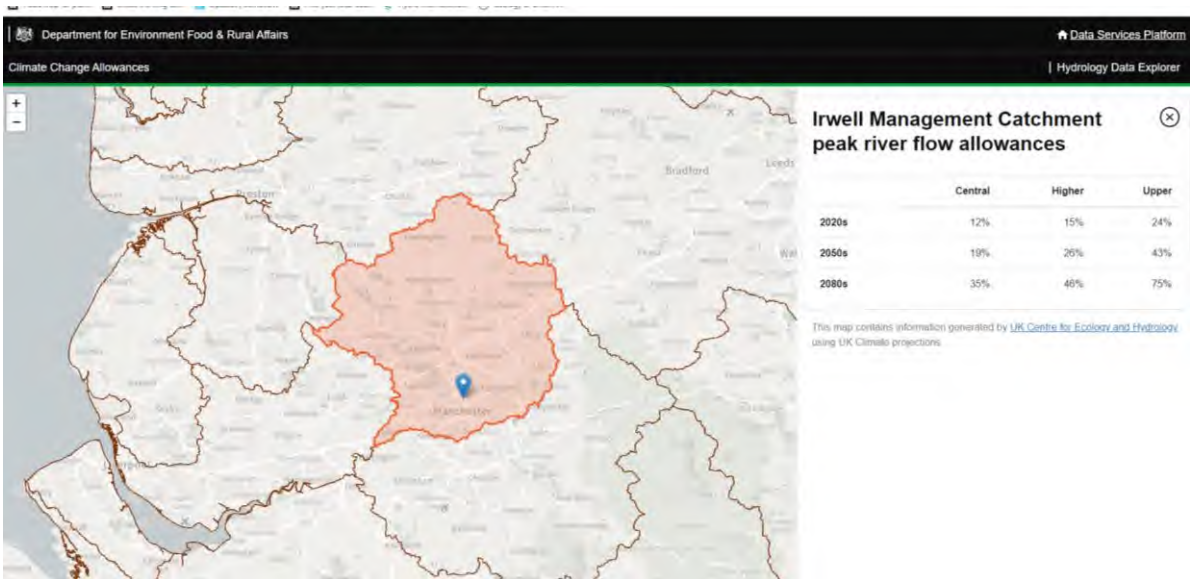


Figure 4 (Extract Environment Agency Climate Change Mapping) Peak River Flow climate change allowances Irwell catchment

- 4.2.7 Based on the 'Less Vulnerable' land use assuming a design life in excess of 50 years; the central allowance should be assessed; +35%, however the upper end allowance; +75% should also be considered as the residual risk.
- 4.2.8 It is noted that consultations began prior to the climate change allowance increase and therefore all correspondence has been based on assessment of +35% and +70% scenario's, which were the requirements under the 2016 climate change allowances.

4.2.9 The Environment Agency current flood data is from the Manchester Ship Canal Study (2018) Refer to Table 4 for the summary of the levels. The Environment Agency Flood Map and Flood Level Data for this Study is enclosed in *Appendix F*.

Map	Node Reference	1 in 100 Year	1 in 100 Year + 35%cc	1 in 100 Year + 70%cc	1 in 1000 Year	1 in 1000 Year Gate Failure
3	Ea013_0251_IRWZ01_1515	25.08	25.73	26.95	27.25	27.30

Table 4 Environment Agency Flood Levels

4.2.10 Model measurements are recorded at 3 nodes (labelled 1 through 5) on the Environment Agency Detailed Flood Map provided. The flood levels at node 3 are considered most relevant to the site and the flood levels and flows at this node have been used to estimate the flood levels across the site.

4.2.11 The Flood Levels across the site have been assessed against the Topographical Survey and in summary:

- The existing ground floor of the building is at approximately 33.6-33.8m AoD, levels around the building are generally at a similar level. **This is above all events up to and including the 1 in 1000 year + gate failure scenario indicating that the existing ground floor lies within Flood Zone 1.**
- The existing basement level is at approximately 30.64m AoD, and access into the basement is provided by an external service ramp, which adjoins from St Marys Parsonage at the southern corner of the site. Ground levels at St Marys Parsonage are at approximately 33.30m AoD. **This is above all events up to and including the 1 in 1000 year + gate failure scenario indicating that the existing basement lies within Flood Zone 1.**
- There are limited levels along the northern boundary at the interface with the river wall due to limited access, however, where levels have been obtained, it indicates that the river wall is at approximately 25.70m AoD and that the existing banking behind the wall slopes up to the building at approximately 28m AoD. **This is above all events up to and including the 1 in 100-year scenario indicating that the existing banking lies within Flood Zone 2 but the extents do not interface with the existing building line.**
- The public realm ground levels are at approximately 33.39m AoD and at the entrance to Trinity Bridge, ground levels are at approximately 33.13m AoD. **This is above all events up to and including the 1 in 1000 year + gate failure scenario indicating that the existing public realm lies within Flood Zone 1.**

4.2.12 The Flood Levels across the site have been assessed against the proposed development levels and in summary:

- The proposed ground floor of the building is at approximately 33.64m AoD, levels around the building are generally at a similar level. **This is above all events up to and including the 1 in 1000 year + gate failure scenario indicating that the existing ground floor lies within Flood Zone 1 and is 6.34m above the 1 in 1000 year + gate failure scenario.**
- The proposed basement level is at approximately 29.140m AoD. **This is above all events up to and including the 1 in 1000 year + gate failure scenario indicating that the proposed basement lies within Flood Zone 1 and is 1.84m above the 1 in 1000 year + gate failure scenario.**
- As the existing banking lies within the extents of flooding, proposals to the banking are to maintain as existing levels to maintain flood volume capacity. Levels are limited along the northern boundary at the interface with the river wall due to limited access, however, where levels have been obtained, it indicates that the river wall is at approximately 25.70m AoD and that the existing banking behind the wall slopes up to the building at approximately 28m AoD. **This is above all events up to and including the 1 in 100-year scenario indicating that the existing banking to be maintained lies within Flood Zone 2.**
- The public realm proposed ground levels are being locally reworked at the terrace interface with Alberton House, however levels will tie into existing levels at approximately 33.39m AoD on St Marys Parsonage and at the entrance to Trinity Bridge at approximately 33.13m AoD. **This is above all events up to and including the 1 in 1000 year + gate failure scenario indicating that the existing public realm lies within Flood Zone 1.**

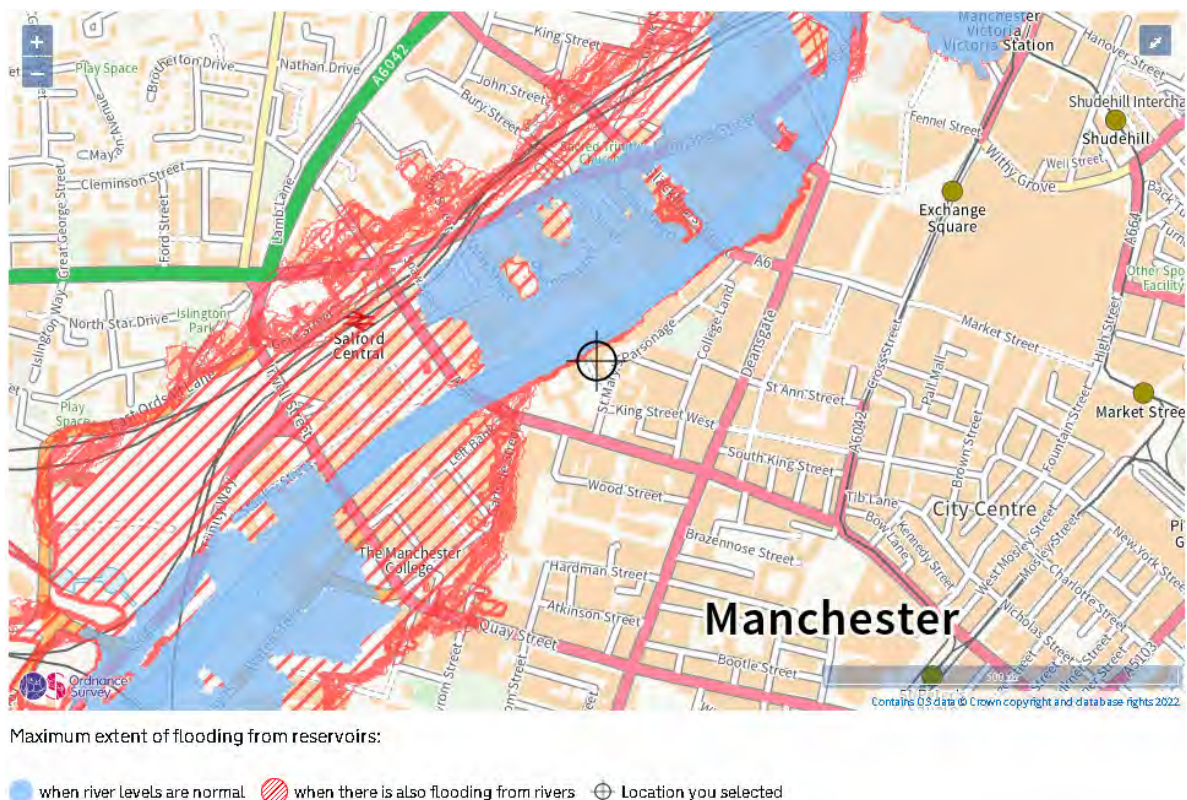
4.2.13 The fluvial flood risk to the site is therefore considered **low**, with the exception of the existing banking which will be retained to existing levels, therefore mitigation Measures are detailed in Section 5.

4.3 Tidal Flooding (Coastal or Estuarine)

- 4.3.1 There is currently no flood risk identified on the Environment Agency flood maps for the site and it is therefore regarded to be at **low** risk from tidal flooding.

4.4 Reservoir Flooding

- 4.4.1 Reservoir flooding is extremely unlikely to happen and there has been no loss of life in the UK from reservoir flooding since 1925. The Environment Agency is the enforcement authority and ensures that reservoirs are inspected regularly, and essential safety work is carried out.
- 4.4.2 The Long-Term Flood Risk Assessment (Flood Risk from Reservoirs) map shows the largest area that might be flooded if a reservoir were to fail and release the water it holds (see Figure 5). Since this is a prediction of a worst-case scenario, it is very low risk that a reservoir flood would be this large.
- 4.4.3 The extents of flooding due to reservoir breach in the vicinity of the site is shown in Figure 5. It can be seen that there is the potential for the flood extents to partially reach the site. Levels of reservoir flooding is not available, however on the basis it follows the same extents as the fluvial risk at the site it is therefore considered to be **low** risk.



4.5 Canal Flooding

- 4.5.1 The nearest canal to the site is the Bridgewater located approximately 240m south-east of the site boundary.
- 4.5.2 The canals are identified in the SFRA as not generally posing a direct flood risk as they are a controlled water body. Therefore, the residual risk of canal flooding is usually associated with lower probability events such as overtopping and/or the breaching of embankments.
- 4.5.3 The Manchester SFRA identifies areas within the Canal Hazard Breach zones. The site is not located within the extent of the breach therefore based on the above information; it is considered that there is **low** risk of canal flooding to the site.

4.6 Groundwater Flooding

- 4.6.1 The site is not shown to be within an area at risk of groundwater flooding according to the groundwater flooding map shown within the Manchester, Salford and Trafford SFRA.
- 4.6.2 As there are basement levels proposed, there is an elevated risk of groundwater flooding to the current status of the site and requires careful consideration.
- 4.6.3 A summary of the Site Investigation has been detailed in the following sections.
- 4.6.4 No groundwater was recorded in any of the window sample boreholes during drilling and due to the use of water flush during rotary cored drilling, groundwater was unable to be monitored during the investigation as any water strikes would be masked.
- 4.6.5 Six rounds of groundwater monitoring have been undertaken between 10th February and 13th April 2022, the results of which are presented in Table 5.

Borehole Ref.	Installation Strata	Response Zone m bgl	Depth, m bgl (m AOD)					
			10/02/22	24/02/22	09/03/22	25/03/22	08/4/22	13/04/22
RH01	Sandstone Bedrock	12.00 – 18.00	-. ¹	-. ¹	10.96 (19.65)	10.99 (19.62)	10.62 (19.99)	10.83 (19.78)
WS02	MADE GROUND	1.00 – 3.00	Dry	3.00 (29.72)	Dry	Dry	Dry	Dry
WS03	MADE GROUND	0.50 – 2.00	Dry	Dry	Dry	Dry	Dry	Dry
WS04	MADE GROUND	1.00 – 3.00	Dry	Dry	Dry	Dry	Dry	Dry

¹ Borehole bung was stuck, and water levels could not be monitored.

Table 5 – Groundwater Monitoring Results

- 4.6.6 Based upon groundwater elevations and the underlying geology, the following considerations are given to the underlying groundwater regime:

- 4.6.7 A groundwater table appears to be present below the site within the Chester Formation sandstone at an elevation range of between 19.62m and 19.99m AOD with minimal variation recorded. This is likely representative of the Principal aquifer and may be in hydraulic connectivity with the River Irwell.
- 4.6.8 All shallow window sample wells were recorded as dry (during the SI and on return monitoring) with the exception of a minimal volume at the base in WS02 on visit 2 likely to represent perched groundwater through granular made ground horizons.
- 4.6.9 WS03 and WS04 were undertaken within the existing basement installed with a monitoring well to a depth of around 28.70m and 27.69m AOD respectively, this is below the proposed basement level of 29.140m AOD.
- 4.6.10 Given the minimal volumes of groundwater recorded at shallow depth beneath the site including beneath the existing basement, and given the depth identified to the Principal Aquifer, it is considered unlikely that the proposals for the new basement will have considerable impact to the groundwater regime beneath the site. This should be confirmed following post demolition ground investigations which will further characterise the groundwater regime for the site.
- 4.6.11 Given the depth of the groundwater, risk of groundwater flooding is considered **low** risk.

4.7 Public Sewers or Highway Drainage Flooding (Infrastructure Failure)

- 4.7.1 There are no highway drains recorded within the site. It is likely that there will be localised highway drainage surrounding the site (such as gullies and connections).
- 4.7.2 United Utilities and Manchester City Council have not provided any records of flooding to the site or the vicinity.
- 4.7.3 Providing United Utilities and Manchester City Council maintain their drainage assets within and in the vicinity of the site, the risk of flooding to the proposed development site from public sewers or highway drainage is considered as **low**.

4.8 Surface Water Flooding to the site

- 4.8.1 Surface water flooding can be caused when rainwater during extreme rainfall events does not drain away through the normal drainage system or soak into the ground with flooding occurring, principally from manholes and gullies. Surcharging sewers can result in overland flows which if originating at a higher elevation than a development site can potentially pose a flood risk.
- 4.8.2 From the UK Government's Flood Risk from Surface Water (extent of flooding) map;
- Where a site is located in a dark blue shaded zone, this indicates that the site is at high risk of flooding, where flooding occurs as a result of rainfall with a greater than 1 in 30 (3.3%) chance in any given year.

- Where a site is located in a mid-blue shaded zone, this indicates that the site is at medium risk of flooding, where flooding occurs as a result of rainfall of between 1 in 100 (1%) and 1 in 30 (3.3%) chance in any given year.
- Where a site is located in a light blue shaded zone, this indicates that the site is at low risk of flooding, where flooding occurs as a result of rainfall of between 1 in 1000 (0.1%) and 1 in 100 (1%) chance in any given year.
- Where a site is located in a clear (unshaded) area; this indicates that the site is at very low risk of flooding, where flooding occurs as a result of rainfall with less than 1 in 1000 (0.1%) chance in any given year.

4.8.3 The extent of flooding to the site from surface water is indicated in Figure 6 and it can be seen that the site is located mostly in an area classified as being at 'Very Low' risk of flooding from surface water.

4.8.4 There is an area at 'Low Risk' of flooding from surface water adjacent to the north-east of the site, running from St Mary's Parsonage to the carpark access road. This occurs most likely due to localised low points with little drainage provision within the public highway.

4.8.5 Considering the above information, the risk of surface water flooding to the site is considered low. The area around the site is also generally identified as being at very low risk from surface water flooding, whilst surface water run-off from the site would follow the topography around the site directing surface water towards the River Irwell. Therefore, the usual mechanisms by which surface water could pose a risk to the site (i.e. overland flow) are restricted. However, there are specific mitigation measures to mitigate against surface water flooding from outside to the site carpark, which are detailed in chapter 5.



Figure 6: Risk of Flooding from Surface Water - Extent of Flooding

4.9 Surface Water Flooding from the site

- 4.9.1 Developers are responsible for ensuring that new development does not increase the flood risk elsewhere. Where new development is proposed, the proposed surface water drainage network shall be designed to not flood for the critical 1 in 30-year storm event and flood water generated up to the critical 1 in 100-year plus climate change storm event shall be constrained within areas on site so as not to cause damage to buildings, essential services or adjoining developments and services.
- 4.9.2 Although the development proposals do not indicate a significant change to the impermeable areas on the site, the development has the potential to increase flood risk where additional run-off from proposed roads, paved areas and building roofs are discharged freely into the downstream drainage network. It is therefore encouraged to propose permeable areas, landscaping areas and incorporate sustainable drainage features utilising infiltration or attenuation where possible.
- 4.9.3 The SFRA places the site within the Manchester Conurbation Core Critical Drainage Area (CDA). CDAs generally have local flooding problems associated with drainage and are particularly sensitive to an increase in the rate of surface water run-off and/or volume from new development. Specific drainage requirements are necessary in these areas to help reduce local flood risk. The Lead Local Flood Authority (LLFA) usually require that surface water discharge from new developments on brownfield

sites must meet a 50% betterment or more, and that this must be calculated from the existing impermeable area of the site / capacity of the existing outfall from the site.

- 4.9.4 An assessment of the proposed surface flows is carried out within the drainage strategy within section 6 of this report.

4.10 Historical Flooding

- 4.10.1 Manchester City Council have been contacted to provide details of any historic flooding information / data for the site, and they have confirmed that they do not have record of any historic flooding in this location.
- 4.10.2 A Pre-Development Enquiry has been submitted to United Utilities, requesting information of any historic public sewer flooding events within the vicinity of the site. No historic flooding has been identified in their response.
- 4.10.3 The Environment Agency has confirmed that they have no records of flooding affecting the site. However, this does not mean flooding has not occurred in the past or that it will not flood in future.

4.11 Summary of Flood Risk

- 4.11.1 From the evidence collated and subsequent negotiations the main types of flooding that may apply to the proposed development site are as follows:
- Fluvial flooding – isolated to the existing river banking
 - Surface water flooding to the site (residual risk); and
 - Surface water flooding to the site (potential).

5.0 Mitigation

5.1 Fluvial Flood Mitigation

- 5.1.1 The site is shown by the Environment Agency Flood Map for Planning to be in the majority, Flood Zone 1 and partially within Flood Zone 3. However, when reviewing the Flood Levels with the existing and proposed topography, the extents of Flood Zone 2 encroach into the riverside banking only. The effects of climate change on the 1% event would also extend into the riverside banking essentially extending Flood Zone 3 in future.
- 5.1.2 Table 3: Flood Risk Vulnerability and Flood Zone 'Compatibility' shows Less Vulnerable development in Flood Zone 1 as appropriate. The riverside banking would be considered water compatible and is considered appropriate within Flood Zone 2 and 3 in future.

Flood Compensation

- 5.1.3 Where development is proposed within areas predicated to be within Flood Zone 3a (flooding during the 1% scenario), development should ensure that the volume of flood water entering the site in the predevelopment state can be provided post-development on a 'like for like', 'level for level' basis (and should be provided within the development site where possible). However, as the site is considered as within Flood Zones 1 and 2, with levels along the river walkway being maintained, Flood Compensation is not considered necessary.

Floor Levels

- 5.1.4 Proposed building levels and access routes should be set at a minimum of the 1 in 1000-year level +gate failure scenario (27.30m AoD) to ensure the flood zone 1 extents is maintained through the development life. The current proposals this report is based on meets and exceeds the flood level by 1.84m as minimum building levels are set at 29.140m AoD. No further mitigation is therefore required.
- 5.1.5 Although proposals are to maintain the riverside banking as existing, the nature of the development will likely require the banking to be excavated during construction and therefore temporary health and safety measures will be required to ensure the safe working area during construction. It is recommended that a Construction and Environmental Management Plan (CEMP) should include as a minimum; the evacuation procedures, safe refuge locations, evacuation/safe refuge routes, responsible personnel, flood warning codes and emergency services contact details.

Riverside Access

- 5.1.6 Advice from the Environment Agency suggested that an access strip of 3-4m should be incorporated along the river wall for future access for maintenance where possible. We have explored this with the design team and the following issues were raised:

- There is no current access provision on the section.
- No vehicular access is available from beyond Alberton House as there are steps adjacent to the north-east corner of the site.
- Access provision would require an access strip to be located above the water levels to prevent Maintenance operatives working under the predicted water level, however a raised walkway would reduce current floodplain storage capacity.
- Access would need to be secure to prevent unauthorised use/security and safety concerns which would limit access.
- River wall would require potential further works to provide enhanced walkway.

5.1.7 On this basis, redevelopment of the riverside banking has been proposed and levels are to be maintained as existing post development.

5.2 Reservoir Flood Mitigation

5.2.1 It can be seen that the site is located within the edge of the extents of flooding due to reservoir breach.

5.2.2 Based on the proposed recommendations to raise ground level to provide mitigation from fluvial flood risk, the likelihood and extent of flooding by reservoir failure impacting on the site has been significantly reduced.

5.2.3 Since the likelihood of a reservoir breach ever occurring is extremely unlikely, providing that the reservoir asset owners conduct appropriate maintenance and regular inspections, the site is considered to be at low risk of flooding from reservoirs.

5.3 Surface Water Flooding to the site Mitigation

5.3.1 The UK Government Long Term Flood Risk Assessment surface water flood maps indicate that the site is at very low risk of surface water flooding. However, the site topography is likely to be reprofiled as part of the development proposals, and the site is located within a CDA. Therefore, measures outlined in this section are recommended in order to ensure that the risk of surface water flooding to the post-development site shall not be increased.

5.3.2 Existing footway levels along the outside perimeter of the site are determined by the highway authority. It is recommended that these levels should be maintained, in order that surface water shall fall away from the site boundary and into the highway gullies. It is assumed that the highway drainage will be subject to the local highway authority regular drainage maintenance schedule.

5.3.3 Section 4.8 of the report confirms that the risk of surface water flooding to the site is considered low. The area around the site is also generally identified as being at very low risk from surface water flooding. To ensure that the 'very low' risk can be maintained through development it is recommended that proposed external ground levels across the site should fall away from the proposed buildings in a

manner which does not create low points where water might collect unintentionally. This will ensure that any surface water will not flow towards the proposed buildings. The proposed surface water drainage network shall be designed to accommodate flows generated from within the site.

- 5.3.4 Providing the above measures are implemented, the flooding risk to the development site from surface water is therefore considered **low** post development.

5.4 Surface Water Flooding from the site Mitigation

- 5.4.1 Developers are responsible for ensuring that new development does not increase the flood risk elsewhere. Any new development site drainage should be designed in accordance with current best practice to provide adequate capacity not to flood for the critical 1 in 30-year storm event and flood water generated from up to the critical 1 in 100-year plus climate change storm event shall be constrained within the areas on site so not to cause damage to buildings, essential services or adjoining developments & services.
- 5.4.2 In February 2016, the Environment Agency released updated climate change allowances for peak rainfall intensities which should be applied to new developments. Table 6 demonstrates the climate change allowances with central and upper end allowances being considered.
- 5.4.3 Based on the nature of the development, a lifespan in excess of 60 years is anticipated. Therefore, the potential climate change allowance for 2070-2115 ranges between 20% for the central allowance and 40% for the upper end allowance. As such, an allowance of 40% for climate change on peak rainfall intensity will be included in calculations.

Table 6: (Extract Environment Agency Guidance) Peak Rainfall Intensity Allowance in small and urban catchments

Applies across all of England	Total potential change anticipated for the '2020s' (2015 to 2039)	Total potential change anticipated for the '2050s' (2040 to 2069)	Total potential change anticipated for the '2080s' (2070 to 2115)
Upper end	10%	20%	40%
Central	5%	10%	20%

- 5.4.4 In following the standard hierarchy of drainage solutions, consideration should firstly be given to the discharge of surface water runoff by sustainable methods such as infiltration.
- 5.4.5 Section 6 reviews the surface water discharge options, and it is proposed that the surface water will discharge to the River Irwell (under agreement with Peel).

- 5.4.6 To minimise localised flooding within the site, the drainage design should ensure that gullies, drainage channels and drains are all suitably sized to accommodate peak storm flows. Also, all inlet features should have suitably sized sumps to catch silts and should be subject to a documented routine maintenance and cleansing regime.
- 5.4.7 Flood water exceedance routes should be identified, both on and off site.
- 5.4.8 For any sustainable drainage systems employed in the development, an appropriate management and maintenance plan for the sustainable drainage system for the lifetime of the development should be submitted which should include:
- Any arrangements for adoption by an appropriate public body or statutory undertaker, management and maintenance by a Residents' Management Company
 - Arrangements concerning appropriate funding mechanisms for its on-going maintenance of all elements of the sustainable drainage system (i.e. inspections, regular maintenance)
 - Means of access for maintenance and easements where applicable
- 5.4.9 Assuming that the proposed drainage system is designed to provide adequate capacity, and that the private and adopted sewers will be maintained by their adopted authority, it can be assumed risk of flood from blockage or overloading is minimal.
- 5.4.10 The final design of the drainage networks shall be in accordance with the legislation set by the Environment Agency, Manchester City Council, United Utilities and Peel/the Manchester Ship Canal Company.

6.0 Drainage Strategy

6.1 Existing Drainage

- 6.1.1 The public sewer records have been obtained for the development site, and are enclosed in *Appendix B*.
- 6.1.2 There are no public sewer recorded within the site and the following sewers are recorded within the vicinity of the site:
- A 300mm combined public sewer is located East of the development site, within St Mary's Parsonage and appears to flow to the South. Based on the sewer record information it appears that the sewer connects with another public combined sewer at Bridge Street.
 - South of the site along Bridge Street there are two public combined sewers, the northern line is a 525mm pipe and the southern is a 480x770mm. Both flow to the west and join the main combined sewer at Gartside Street.
- 6.1.3 A GPR Utilities Survey has been carried out and is enclosed in *Appendix C*.
- 6.1.4 A CCTV Drainage Survey has also been carried out and is enclosed in *Appendix C*.
- 6.1.5 The GPR Survey and CCTV Survey indicates that there is a surface water outfall from the building into the River Irwell, close to the western corner of the existing building. This outfall serves the majority of the existing building footprint.
- 6.1.6 There is also evidence that some of the external drainage to the eastern elevation of the building appears to discharge north towards Cardinal House.
- 6.1.7 There appears to be a single foul outfall from the building from the southern corner which discharges into the public sewer in St Mary's Parsonage.
- 6.1.8 It should be noted that a GPR and CCTV Survey has not been undertaken within the public realm space/Trinity Bridge Approach to the west of the proposed building and further surveys will be required to determine existing drainage outfalls and potential services constraints to this area.

6.2 Proposed Foul Water Drainage

- 6.2.1 A separate foul and surface water system is proposed.
- 6.2.2 Initially, the intention was to utilise the existing foul outfall from site, however based on the current basement extents, the existing outfall manhole clashes with the proposed pile positions. A new outfall is therefore proposed into the public sewer in St Mary's Parsonage.

- 6.2.3 The invert level of the main sewer in St Marys Parsonage at the existing outfall connection point is unknown, however the upstream manhole on the public sewer line (UU reference MH5402) has an invert level of 28.300. The existing lateral outfall connection from site has an invert level of 31.950.
- 6.2.4 As the basement FFL is at 29.140, it is unlikely that a gravity solution is possible from the basement level foul drainage system and advice from United Utilities is that basement drainage should be pumped to avoid back surcharge or a surcharged outfall restricting outflows.
- 6.2.5 On this basis, it is therefore proposed to:
- Discharge all foul drainage required at basement level to a pumping chamber and the discharged to a pump break chamber prior to discharging by gravity into the main public sewer.
 - Discharge all foul drainage from ground floor level and above to a pipe system suspended below the ground floor slab and connected to the pump break chamber utilising the same gravity outfall noted above. The M&E Engineer has advised that the majority of ground floor level drainage and above is connected to the suspended pipe system, with the exception of the Kitchen facility at ground floor level, which will be discharged to the basement pumped system.
- 6.2.6 The proposed outfall flow rates are not yet confirmed, ground floor level total discharge is not yet confirmed, and pump inflow is not yet finalised. Flows will need to be agreed with United Utilities once known.
- 6.2.7 In accordance with Building Regulations Part H, it will be necessary to provide storage to accommodate 24-hour inflow to allow for a disruption in service. At this stage an approximate provision of storage volume of **36.4m³** has been provided, however it is noted that volumes are likely to be lower as a worst-case use of facilities have been assumed due to the unknown requirements however this provides some flexibility to accept discharge from the Kitchen sited at ground level which currently has an unknown arrangement.
- 6.2.8 Current estimated volumes are based on the British water COP chapter 3 water usage rates, based on occupancy numbers using the basement facilities. The usage is assumed as:
- **24 No. Showers** – 40l/use, 3 uses/hour, 12 hours/day = **34,560 litres (34.6m³)**
 - **5 No. Toilets** – 10l/use, 3 uses/hour, 12 hours/day = **1,800 litres (1.8m³)**
- 6.2.9 United Utilities have confirmed in their pre-development enquiry response that their preferred point of discharge would be to the 300mm combined public sewer in St Marys Parsonage at an unrestricted discharge rate. Refer to the United Utilities correspondence enclosed in *Appendix H*.

- 6.2.10 It is assumed that the site will remain under a single ownership, therefore sewers cannot be offered for adoption by United Utilities. Connection(s) to the public sewer network will be subject to a Section 106 Agreement with United Utilities
- 6.2.11 The proposed drainage strategy is enclosed in *Appendix K*.

6.3 Proposed Surface Water Drainage

- 6.3.1 Any new development site drainage should be designed in accordance with current best practice to provide adequate capacity not to flood for the critical 1 in 30-year storm event and flood water generated for up to the critical 1 in 100-year plus climate change storm event shall be constrained within the areas on site so not to cause damage to buildings, essential services or adjoining developments and services.
- 6.3.2 In following the standard hierarchy of drainage solutions, consideration should firstly be given to the discharge of surface water runoff by sustainable methods such as infiltration.

Infiltration

- 6.3.3 Made Ground is likely to be present to a significant depth, based on the historic use of the site and based on the extent of the building footprint, infiltration is therefore not considered to be a viable solution.

Watercourse

- 6.3.4 The River Irwell is located along the northern boundary of the site and evidence suggests that there is an existing outfall from the site. Discharge to the River Irwell is therefore considered the most viable solution.

Surface Water Sewer

- 6.3.5 There are no surface water sewers identified within the vicinity of the site and discharge to a watercourse is considered a more environmentally sustainable discharge solution.

Combined Water sewer

- 6.3.6 There are various existing combined public sewers within the vicinity of the development site, however discharge to a watercourse is considered a more environmentally sustainable discharge solution.
- 6.3.7 Table 7 summarises the options for surface water disposal:

Table 7: Surface Water Disposal

Surface Water Disposal	Potential	Description
Infiltration	X	Made Ground is likely to be present to a significant depth, based on the historic use of the site therefore, infiltration is not considered to be a viable solution.
Watercourse	✓	Discharge to watercourse is considered to be a viable option.
Surface Water Public Sewer	X	There are no surface water sewers identified within the vicinity of the site.
Combined Public Sewer	✓	There are various existing combined public sewers within the vicinity of the development site, therefore connection to the existing combined public sewer system is considered viable, however discharge to watercourse is more environmentally sustainable.

6.3.8 Therefore, surface water will. discharge to the River Irwell subject to agreement with Peel (Manchester Ship Canal Company).

6.3.9 Consultations have been held with Peel and they confirm that they currently require discharge into the River Irwell to:

- The discharge at the outlet must not interfere with the passage of vessels. The calculations must show that the transverse velocity from the discharge pipe is acceptable to MSCCL. The maximum velocity should be in the range 1.5 to 3.0 m/s (with a target of 2.0 m/s) for the 1 in 30-year event.
- Any pipe outlet through the canal wall, at or above water level, should be provided with a flap valve.

6.3.10 Correspondence with Peel is enclosed in *Appendix J*.

6.3.11 The SFRA places the site within the Manchester Conurbation Core Critical Drainage Area (CDA). CDAs generally have local flooding problems associated with drainage and are particularly sensitive to an increase in the rate of surface water runoff and/or volume from new development. Specific drainage requirements are required in these areas to help reduce local flood risk. The LLFA usually require that surface water discharge from new developments on brownfield sites must meet a 50% betterment or

more, and that this must be calculated from the existing impermeable area of the site / capacity of the existing outfall from the site.

6.3.12 For sites, which are located within a CDA, the following guidance is provided in the SFRA User Guide:

- Development should aim for a minimum reduction in surface water runoff rates of 50% for Brownfield sites, with an aim of reducing runoff to Greenfield rates up to a 1 in 100-year storm event, considering climate change.

6.3.13 We have calculated existing flows from the building area (0.14ha) using the Wallingford Modified rational method and the results are below:

- 1:1 year rainfall event = 5.8l/s
- 1:30 year rainfall event = 14.3l/s
- 1:100-year rainfall event = 18.7l/s

6.3.14 Taking the existing flows generated from the building area of the site, and applying a 50% reduction in flows in line with existing planning policies, the proposed discharge rate for the redeveloped areas are as follows;

- 1:1 year rainfall event = 2.9* l/s
- 1:30 year rainfall event = 7.2 l/s
- 1:100-year rainfall event = 9.4 l/s

*We proposed to increase to 5 l/s to reduce the risk of blockage due to the small orifice required.

6.3.15 The existing public realm area has not been surveyed however there is evidence that this area is drained to a single channel along the northern boundary at the interface with the Trinity Bridge. We therefore propose to discharge this area via a separate outfall from the building at a maximum of 5 l/s. It is proposed to utilise the existing channel outfall; where confirmed as suitable, otherwise a new outfall will be required.

6.3.16 Based on the low variance in flow rates, a complex control offering variable flow rates is unlikely to provide a significant benefit on attenuation, therefore we have proposed to use a single flow control at each outfall. Currently flows are less than noted above and currently discharge:

Table 8: Current flows discharging based on single outlet throttle (flow control)

Building	Flow	Public Realm	Flow	Total
1 Year	4.8 l/s	1 Year	3.6 l/s	8.4 l/s
30 Year	5 l/s	30 Year	4.9 l/s	9.9 l/s
100 Year +40%cc	6.1 l/s	100 Year +40%cc	5 l/s	11.1 l/s

6.3.17 Manchester LLFA have advised that discharge should be agreed with Peel and confirmed once known existing discharge rates are confirmed. It is noted that during consultations, the public realm area was not part of the proposals and therefore this area was assessed post discussions and separated given the separate ownership and separate existing outfalls present.

6.3.18 The Manchester LLFA correspondence is enclosed in *Appendix G*.

6.4 Sustainable Drainage Considerations

6.4.1 In accordance with the National Planning Policy Framework (NPPF) a sustainable drainage system (SuDS) should be provided unless demonstrated to be inappropriate. The following options have been considered for the site:

Infiltration Systems:

6.4.2 Systems such as infiltration trenches and soakaways were considered as part of the surface water management strategy however, the ground conditions indicate significant depths of made ground across the site. Therefore, infiltration systems are not considered suitable for the site.

Green/Blue roofs:

6.4.3 Green/Blue roofs were considered for the site. It is not possible to cover the entire roof area with a green or blue roof, however currently a blue roof is proposed at Roof Level 17. Which enables the roof level to be used as terracing with storage below.

6.4.4 As the blue roof element does not provide biodiversity benefits that a green roof offers there are proposals to introduce various landscaped features at roof level which includes various trees and shrubs. The proposed landscaping elements at level 17 is enclosed in *Appendix L*.

Swales, Wetlands and Attenuation Ponds:

6.4.5 Due to the nature of the site and the limited space available, pre-treatment steps and retention systems such as swales, wetlands and ponds are not considered suitable for the site due to their space requirements.

Permeable Paving

6.4.6 There is limited external space on site and proposals to the public realm areas are largely retaining existing features or consist of sacrificial elements. Ground levels within the public realm area are also sloping which would generally not work effectively with a porous construction.

Rain Gardens and Drained Soft Landscaping

6.4.7 There is limited external space on site and proposals to the public realm areas are largely retaining existing features or consist of sacrificial elements. There are some areas of soft landscaping, however

ground levels within the public realm area are also sloping which would generally not work effectively with surface level source control features.

Greywater Recycling

Currently the M&E proposals are to utilise collection and re-use of the swimming pool backwash which will be used for WC flushing only. Estimated volumes are 25,200 litres per week. Although this does not impact on rainwater volume collection, the result of reusing the backwash water will reduce the discharge to the combined sewer system which in turn will benefit from a wider flood risk perspective.

SuDS Conclusion

6.4.8 The development is proposing to include:

- Blue roof with landscaped features at Level 17
- Greywater Recycling
- Localised soft landscaping within the public realm

6.4.9 A consultation meeting was held with Manchester LLFA on the 14th May to discuss the above SuDS approach and the proposals were positively received and concluded that the solutions presented a benefit in terms of discharge volume reduction and bio-diversity benefits.

6.4.10 In addition to the sustainable drainage features, attenuation measures will be required to accommodate the necessary volumes generated up to the 100 year +40%cc event.

6.4.11 Attenuation volumes are estimated at 50m³ in the building drainage system and 10m³ in the public realm drainage system which will be provided within a below ground tank and oversized pipework. The drainage systems have currently been modelled excluding any provision of the blue roof and landscaping proposed at level 17 and therefore once designs are finalised the required below ground storage is likely to reduce.

6.4.12 Surface water run-off from hard paved areas at risk of contamination should receive water quality treatment. Sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, or used are consider high hazard in terms of contamination. Figure 7 illustrates the pollution hazard indices for different land use classifications from The CIRIA SuDS Manual C753 (2015).

Figure 7: Pollution Hazard Indices for Land Use Classification (Table 26.2 the CIRIA SuDS Manual 2015)

TABLE 26.2 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 0.6 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

6.4.13 Figure 8 illustrates the SuDS Component mitigation indices from The CIRIA SuDS Manual C753 (2015).

Figure 8: Indicative SuDS Mitigation Indices (Table 26.3 the CIRIA SuDS Manual 2015)

TABLE 26.3 Indicative SuDS mitigation indices for discharges to surface waters			
Type of SuDS component	Mitigation indices ¹		
	TSS	Metals	Hydrocarbons
Filter strip	0.4	0.4	0.5
Filter drain	0.4 ²	0.4	0.4
Swale	0.5	0.5	0.6
Bioretention system	0.6	0.6	0.6
Permeable pavement	0.7	0.6	0.7
Detention basin	0.4	0.4	0.4
Pond ³	0.7 ⁴	0.7	0.6
Wetland	0.8 ²	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.		

Notes:

1. SuDS components only deliver these indices if they follow design guidance with respect to hydraulic and treatment set out in the relevant technical component bulletin.
2. Filter drains can remove coarse sediments, but their use for this purpose will have significant implications with respect to maintenance requirements, and this should be taken into account in the design and Maintenance Plan.
3. Ponds and wetlands can remove coarse sediments, but their use for this purpose will have significant implications with respect to the maintenance requirements and amenity value of the system. Sediment should normally be removed upstream unless they are specifically designed to retain sediment in a separate part of the component, where it cannot easily migrate to the main body of water.
4. Where a pond is not specifically designed to provide significantly enhanced treatment, it should be considered as having the same mitigation indices as a pond.
5. See Chapter 14 for approaches to demonstrate product performance. A British Water/Environment Agency assessment code of practice is currently under development that will allow manufacturers to complete an agreed test protocol for systems intended to treat contaminated surface water runoff. Full details can be found at: <http://myart.cawwat.gov.uk/>
6. SEP4 only considers proprietary treatment systems as appropriate in exceptional circumstances where other types of SuDS components are not practicable. Proprietary treatment systems may also be considered appropriate for existing sites that are being improved where there is a requirement to retrofit treatment. SEP4 (2014) also provided a flowchart with a summary of the selection suitability of a proprietary system.

- 6.4.14 The selection of treatment should ensure that the SuDS mitigation component index (Figure 8) exceeds the pollution hazard index (Figure 7). Treatment could be provided using a combination of sustainable methods. Where two stages of treatment are required, the second stage of treatment should account for reduced performance due to lower inflows; therefore 0.7 (mitigation index) should be used.
- 6.4.15 The proposed development is not likely to require treatment systems given that the proposals are largely building or pedestrian areas, however the proposals for pollution protection should be agreed with Manchester City Council.
- 6.4.16 The Proposed Drainage Strategy is enclosed in *Appendix K*.
- 6.4.17 The final design of the drainage networks shall be in accordance with the legislation set by the Environment Agency, Manchester City Council, Peel and United Utilities.

6.5 Maintenance

- 6.5.1 A suitable maintenance strategy should be adopted to ensure the drainage network is cleaned regularly and the routine maintenance and cleansing regime should be documented.
- 6.5.2 It is recommended that the drainage system is inspected as a minimum twice a year, with the system also being inspected after any major storm event. Significant sediment deposition is likely in areas used for storage, so a post clean-up operation may be required including the removal of litter, vegetation, sewerage debris and larger objects.
- 6.5.3 A management company may be required for maintenance of attenuation facilities.

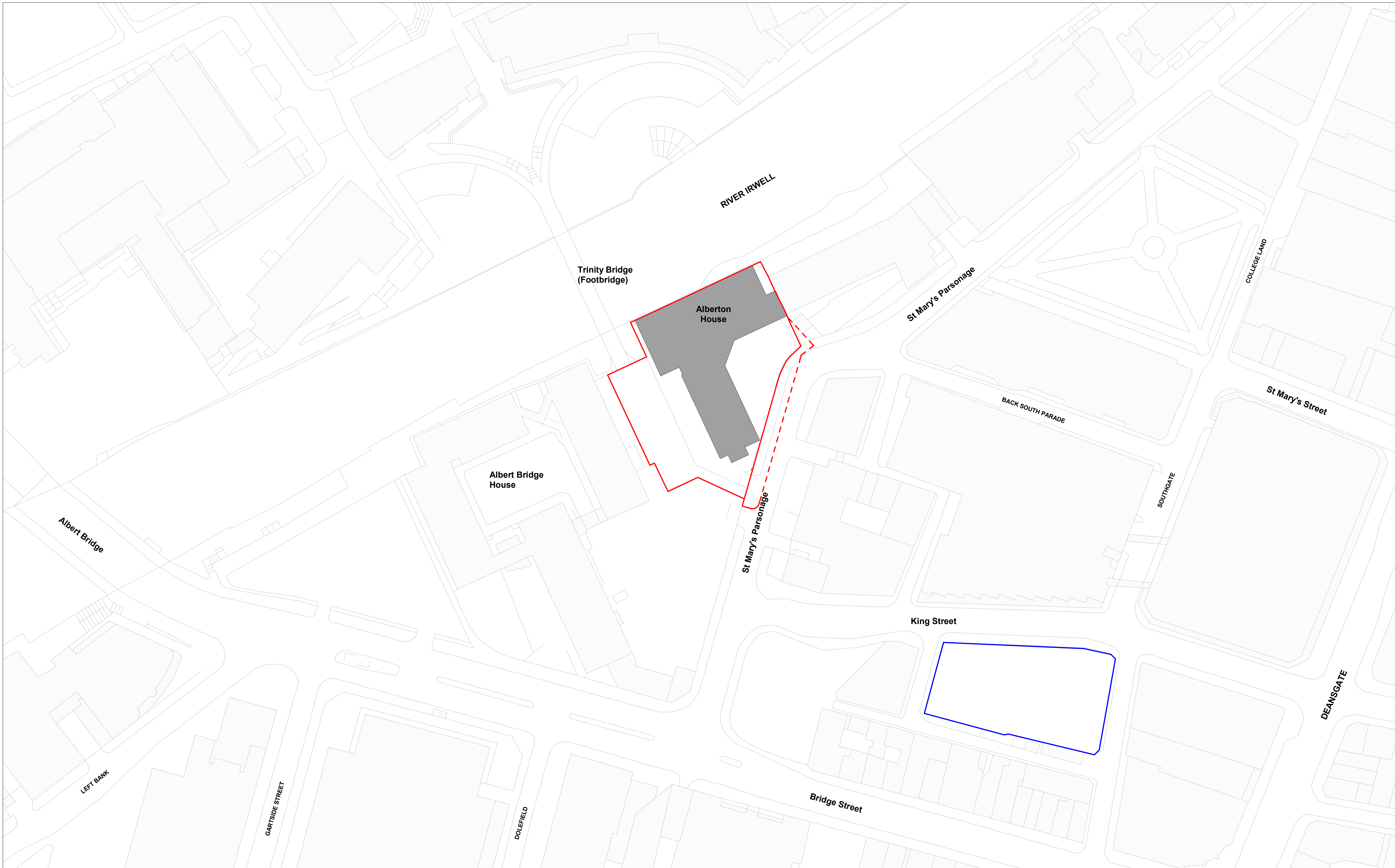
Appendix A

Redline Boundary Plan

Proposed Landscaping Layout

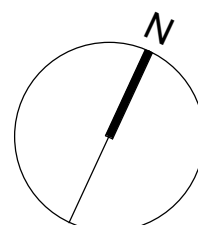
Proposed Levels Layout

Proposed Site Section



Keyplan

North



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Key

-  Alberton House Planning Application Boundary
-  Applicant's Ownership outside application
-  Extent of highways works to be delivered via s278 in association with this development

P02	Town Planning	24.06.22	DH	DNB	Project Code	Originator	Zone	Level	Type	Role	Class	Number
P01	Town Planning	17.06.22	WW	DNB								
No.	Revision	Date	Initial	Chk'd	ALBH - EPR- ZZ- XX - TP - A - 01-0112							

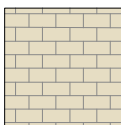


KEY

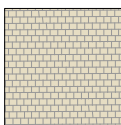
BOUNDARIES

PLANNING BOUNDARY

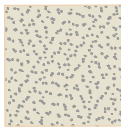
HARDWORKS



Yorkstone Flags [REF: P1]
Material: Yorkstone flags
Colour: Buff, to match existing
Size: Tbc following site survey
Finish: 50% shot blasted, 50% wire sawn
Bond: Random stretcher, flexibly laid



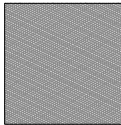
Yorkstone Sets [REF: P2]
Material: Yorkstone sets
Colour: Buff, to match existing
Size: W150mm x Lrandom 150-300mm x D75mm
Finish: 50% shot blasted, 50% wire sawn
Bond: Random stretcher, rigidly laid
Notes: 8-12mm joints to allow paving to turn corners



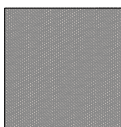
Loose aggregate (to tree surrounds) [REF: P3]
Material: loose aggregate
Size: 80mm depth
Colour: Buff 'Scandinavian'
Manufacturer: Leeson Polyurethanes
Notes: Sacrificial, used as surface finish around existing tree.



Coloured Tarmac [REF: P4]
Material: tarmac
Colour: Natural Quartzite
Manufacturer: Tarmac Utilicolour
Notes: Sacrificial, to engineers specification



Granite building edge trim [REF: P5]
Material: Granite
Colour: Natural Quartzite
Size: W60mm x L80mm x D80mm
Finish: Cropped sides, natural finish
Bond: Stack, flexibly laid
Manufacturer: Hardscape Ltd



Granite building edge trim [REF: P6]
Material: Granite
Colour: Azul noche
Size: W60mm x L80mm x D80mm
Finish: Cropped sides, flamed face
Bond: Stack, flexibly laid
Manufacturer: Hardscape Ltd



Corduroy tactile paving [REF: P7]
Material: Granite
Colour: Azul noche
Size: W400mm x L400mm x D75mm
Finish: Fine picked
Manufacturer: Hardscape Ltd
Notes: To top and bottom of steps



Corduroy tactile paving [REF: P8]
Material: Concrete
Colour: Natural
Size: W400mm x L400mm x H50mm
Manufacturer: Marshalls
Notes: To bottom of ground floor terrace steps

SOFTWORKS



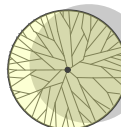
Amenity Planting
Planting mix to be developed at RIBA Stage 04



Sacrificial Boundary Planting
Planting mix to be developed at RIBA Stage 04



TREE - PROPOSED STANDARD



TREE - EXISTING RETAINED

STREET FURNITURE



Tree Grille [REF: F1a]
Material: Galvanised steel
Size: 1590 x 1590 mm
Manufacturer: Logic street furniture
Notes: 500mm diameter inner aperture



Fixed bollard [REF: F12a]
Material: Stainless Steel
Product: Excalibur Security Fixed Bollard
Finish: Brushed
Size: 125mm diameter, 900mm height
Supplier: ATG or Similar



Granite Cylinders [REF: F2]
Material: Granite
Colour: Azul Noche
Finish: Honed
Size: 600 x 450 mm
Manufacturer: Hardscape
Notes: Mechanically fixed



Bespoke cycle stands [REF: F4]
Material: Blackened steel with timber top detail
Colour: Black & natural
Size: TBC
Notes: Local fabricator to be sourced.



Terraced Seating [REF: F5]
Size: Varies
Material: Granite topped with timber
Colour: Scottish Green Schist
Finish: Fine picked
Notes: Subject to further design development, to include arm rests and anti skate detail



Free Standing Tables & Chairs [REF: F6]
Material: Powder coated steel
Supplier: Fermob or similar and approved

Product: Bistro Table (2 Person) [REF: 6a]
Size: 740mm (h) x 960mm (diameter)
Product: Bistro Chair
Size: 820mm (h) x 420mm (w) 420mm (w)

Product: Bistro Table (4 Person) [REF: 6b]
Size: 740mm (h) x 1170mm(l) x 770mm (w)
Product: Bistro Chair
Size: 820mm (h) x 420mm (w) 420mm (w)

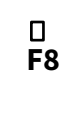
Number and Colour: 7 Bistro Table (2 Person), 5 Bistro Table (4 Person), 34 Bistro Chairs in total;

7no. Bistro Tables (2 Person) in Anthracite
14no. Bistro Chairs in Anthracite

5no. Bistro Tables (4 Person) in Ice Mint
20no. Bistro Chairs in Ice Mint



Handrail [REF: F7]
Material: Blackened steel & hardwood timber bespoke
Finish: Steel: lacquered, Hardwood: oiled
Notes: Handrail 850mm above ground line off step nosing, protruding 300mm beyond top and bottom step nosing



Recycling Bins [REF: F8]
Size: tbc
Notes: Bin housing to contain 240L bins.

EXTERNAL STEPS & WALLS



Step Type 1 [REF: ST1]
Material: Granite
Colour: Gris Cadalso Step and Azul Noche nosing
Size: W:600 x L400mm x D150mm
Finish: Bush hammered with contrasting nosing
Manufacturer: Hardscape Ltd
Notes: 400mm tread, 50mm overlap between step units, bottom step unit 200mm depth, L&R end unit specials



Retaining Wall [REF: W1]
Material: Granite clad retaining wall
Colour: Gris Cadalso
Finish: Fine picked
Notes: Underlit glass balustrade included. Subject to further design development. To engineer's design



Granite Clad Planters [REF: W1a]
Material: Granite
Colour: Gris Cadalso
Finish: Fine picked
Size: Varies
Manufacturer: Hardscape



Retaining Wall [REF: W2]
Material: Exposed aggregate concrete wall
Notes: Sacrificial, to engineers design.



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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.

P01	17.06.22	For Planning	JC	RM
Revision	Date	Description	Drawn	Apprvd.

Plantit I.E. Limited
E: info@plantit-ie.com W: plantit-ie.com
MANCHESTER
2 Back Grafton St., Altrincham, WA14 1DY
T: 0161 928 9281
LONDON
Unit 6 Waterside, 44-48 Wharf Road, London, N1 7UX
T: 0207 253 5678
LIVERPOOL
Tempest 5.3, 12 Tithebarn Street, Liverpool, L2 2DT
T: 0151 363 1230

Client Bruntwood

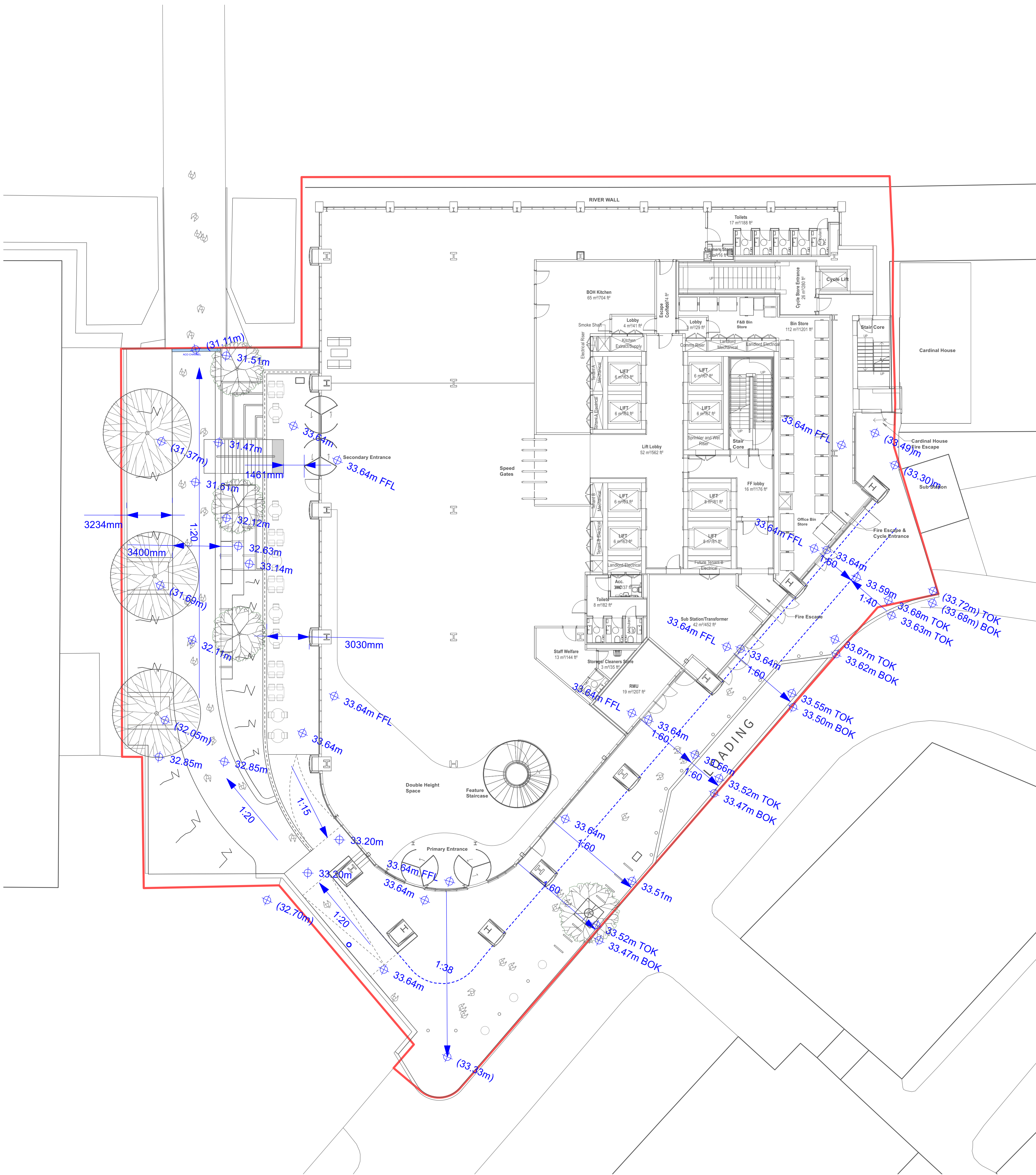
Project Alberton House

Drg Title Landscape GA - Ground Floor

Created on	Created by	Approved by
17-01-22	JC	RM

Scale	Size	Workstage
1:150	A1	Planning

Drg No.	Suitability	Revision
2805-PLA-GF-XX-DR-L-0001	S3	P03



KEY

BOUNDARIES

PLANNING BOUNDARY

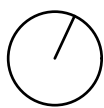
LEVELS & DRAINAGE

31.84m PROPOSED LEVELS

31.84m PROPOSED LEVELS

PROPOSED BRICKSLOT DRAIN

PROPOSED ACO CHANNEL



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Revision	Date	Description	Drawn	Apprvd.

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T: 0151 363 1230

Client Bruntwood

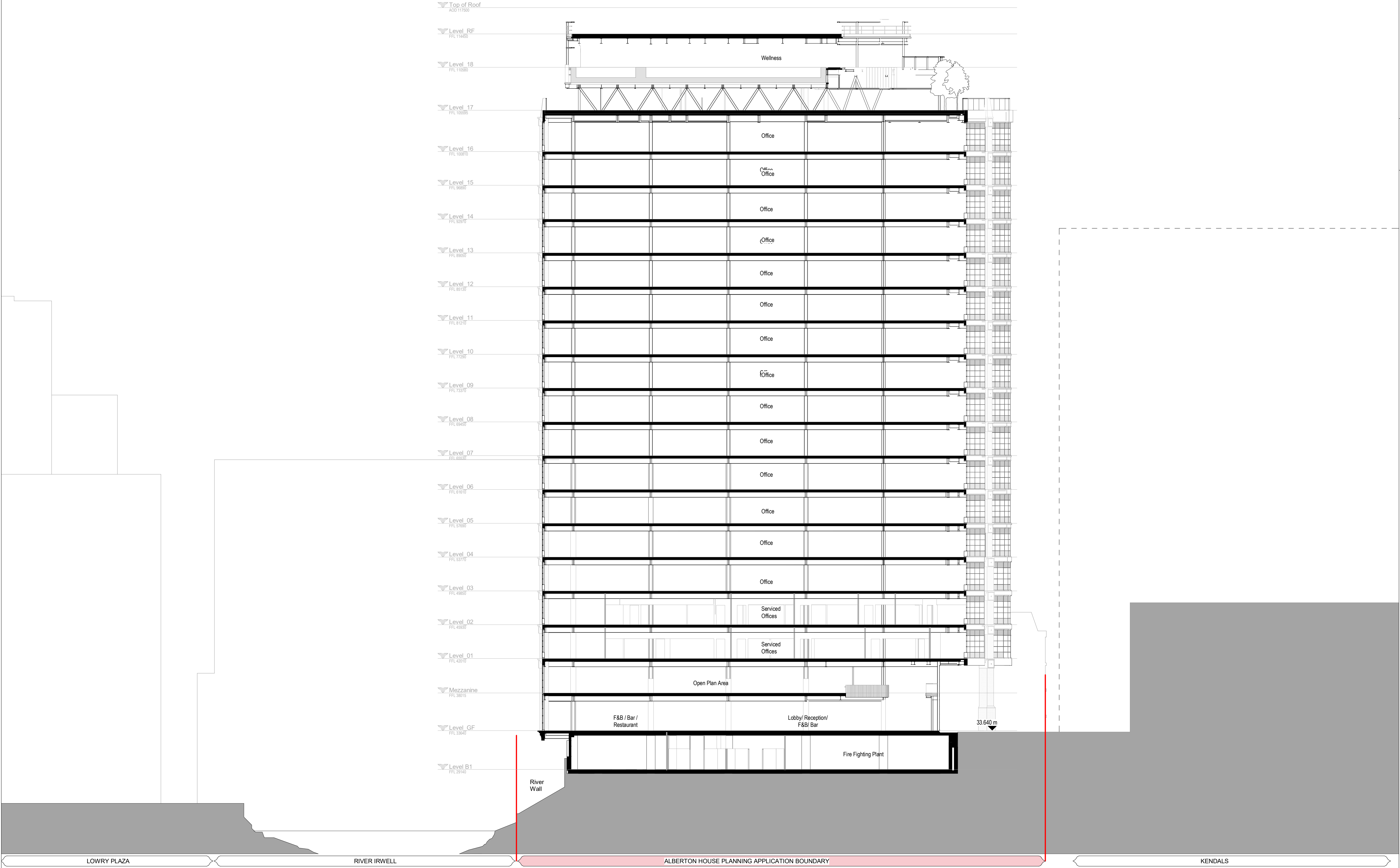
Project Alberton House

Drg Title Levels & Drainage

Created on	Created by	Approved by
17-01-22	JC	RM

Scale	Size	Workstage
1:150	A1	Planning

Drg No.	Suitability	Revision
2805-PLA-GF-XX-DR-L-3000	S3	P01



LOWRY PLAZA

RIVER IRWELL

ALBERTON HOUSE PLANNING APPLICATION BOUNDARY

KENDALS

Keyplan

North

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P02	Town Planning	24.06.22	DH	DNB
P01	Town Planning	17.06.22	WW	DNB
No.	Revision	Date	Initial	Chk'd

EPR Architects

Alberton House
St Mary's Parsonage, Manchester

Site Boundary Section

Scale @A1
1 : 200

Status
Planning

Suitability
S2

Revision
P02

Project Code
ALBH - EPR - ZZ - XX - TP - A - 01-0123

Originator
Zone
Level
Type
Rate
Class
Number

Appendix B

Public Sewer Records

Curtins Consulting Ltd

**51-55
Tithebarn Street,
Liverpool,
L2 2SB**

FAO:

How to contact us:

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

Telephone: 0370 7510101

E-mail: propertysearches@uuplc.co.uk

**Your Ref: ICMA560 Alberton House B077764
Our Ref: UUPS-ORD-332736
Date: 07/10/2021**

Dear Sirs

**Location: BRUNTWOOD 2000 ALPHA PORTFOLIO LTD 30 ALBERTON HOUSE ST. MARYS
PARSONAGE, MANCHESTER, M3 2WJ**

I acknowledge with thanks your request dated 06/10/2021 for information on the location of our services.

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

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

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

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

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

Yours Faithfully,



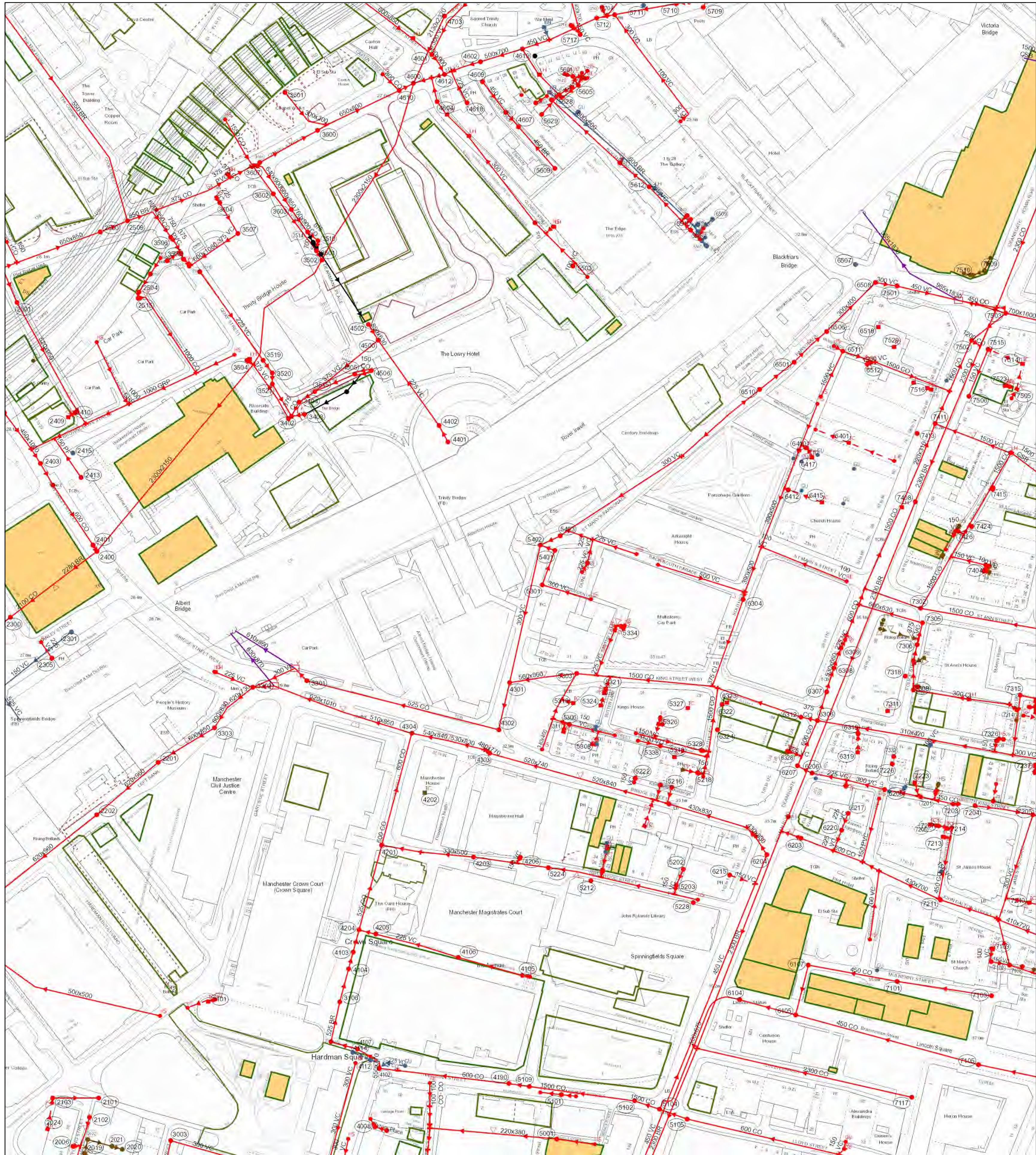
Karen McCormack
Property Searches Manager

TERMS AND CONDITIONS - WASTEWATER AND WATER DISTRIBUTION PLANS

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

TERMS AND CONDITIONS:

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



Refno	Cover	Func	Invert	Size x	Size y	Shape	Mat	Length	Grad
2106	30.8	CO	26.88	525	525	BR	BR	18.97662	1 in 90
5628		CO	0	850	850	BR	BR	32.5925	
2509		CO	0	850	850	BR	BR	14.86007	
7404		CO	0	150	150	VC	VC	19.72096	
7515		CO	0	375	375	VC	VC	28.14859	
3403		CO	0	375	375	VC	VC	7.260943	
7510		FO	0	150	150	VC	VC	4.836473	
4106		CO	0	150	150	VC	VC	47.43575	
7326		CO	0	150	150	VC	VC	6.118659	
5328		CO	0	150	150	VC	VC	4.231395	
2021		CO	0	100	100	VC	VC	5.741253	
5222	30.9	CO	26.19	100	100	VC	VC	2.496542	1 in 147
4204		CO	0	525	525	VC	VC	48.45895	
2516		CO	0	150	150	VC	VC	11.74318	
4203		CO	0	150	150	VC	VC	20.31742	
7410		CO	0	100	100	VC	VC	3.514048	
2015		CO	0	150	150	VC	VC	4.037094	
4401		CO	0	225	225	VC	VC	10.29593	
5109		CO	0	1500	1500	CO	CO	11.48039	
4601	27.55	CO	21.78	800	800	BR	BR	6.403124	1 in 0
5206		CO	0	225	225	VC	VC	8.826272	
6215		CO	0	150	150	VC	VC	14.89822	1 in 1
2103		CO	0	150	150	VC	VC	25.4521	
4008		CO	0	225	225	VC	VC	4.595639	
2500	27.98	CO	25.28	650	650	BR	BR	16.15549	
5626		CO	0	150	150	VC	VC	7.106777	
2714	27.59	CO	0	150	150	VC	VC	3.600561	
4618		CO	0	225	225	VC	VC	19.29995	
7109		CO	0	100	100	VC	VC	7.270552	
4007	30.8	CO	26.29	525	525	VC	VC	6.993542	1 in 127
4103		CO	0	100	100	VC	VC	12.68628	
5628	28.33	CO	22.83	100	100	VC	VC	5.070491	
2401		CO	0	600	600	VC	VC	2.634958	
2019		CO	0	100	100	VC	VC	7.788029	
7333		CO	0	150	150	VC	VC	0.5852811	
4104	30.8	CO	26.47	150	150	VC	VC	8.909722	1 in 53
4205	30.9	CO	27.84	225	225	VC	VC	9.446328	1 in 189
6200		CO	0	225	225	VC	VC	12.30985	
3105	30.9	CO	26.97	525	525	BR	BR	22.208	1 in 78
2022		CO	0	100	100	VC	VC	13.29294	
2504		CO	0	150	150	VC	VC	3.6825	
3302	29.15	CO	23.35	620	620	BR	BR	18.17771	
6217		CO	0	225	225	VC	VC	9.95762	
5308		CO	0	225	225	VC	VC	7.159462	
5101		CO	0	225	225	VC	VC	11.71893	
5710	27.35	CO	22.22	450	450	VC	VC	34.52535	1 in 691
5218		CO	0	150	150	VC	VC	8.800745	
5216		CO	0	225	225	VC	VC	9.2409	
2305		CO	0	225	225	VC	VC	16.52254	
5712	27.8	CO	22.18	450	450	VC	VC	28.65564	
2413		CO	0	150	150	VC	VC	26.15279	
4105		CO	0	225	225	VC	VC	36.7216	
7509		FO	0	150	150	VC	VC	6.819644	
3402		CO	0	375	375	VC	VC	2.128614	
4114		SW	0	525	525	CO	CO	10.53954	
5905	26.61	SW	23.18	225	225	VC	VC	7.071068	
2301		SW	0	150	150	VC	VC	51.22499	
7308	36.39	CO	30.99	375	375	BR	BR	41.62415	1 in 67
5224		CO	0	330	330	VC	VC	41.62415	
4502	26.7	CO	23.51	890	890	VC	VC	10.20827	1 in 17
3303	29.28	CO	23.33	600	600	BR	BR	17.40286	
2202	27.41	CO	23.07	620	620	BR	BR	74.02702	
7204	30.37	CO	23.41	450	450	BR	BR	11.58215	1 in 78
5229	33	CO	28.29	600	600	VC	VC	3.336105	
4610	13.81	CO	6.08	650	650	VC	VC	8.944272	1 in 1
7501	34.54	CO	24.73	450	450	VC	VC	34.75901	
6105	35.65	CO	31.64	450	450	VC	VC	32.11074	1 in 803
4612		CO	0	375	375	VC	VC	7.28011	
7302	36.54	CO	28.47	1500	1500	CO	CO	99.47864	
7201	36.08	CO	30.06	300	300	VC	VC	20.35986	
3600		CO	0	650	650	BR	BR	50.11413	1 in 84
4101	30.9	CO	26.07	525	525	VC	VC	10.54418	1 in 634
3502	27	CO	16.31	2300	2300	VC	VC	209.019	
4904	26.84	CO	21.6	300	300	VC	VC	13.34166	
7315	36.56	CO	32.64	300	300	BR	BR	16.12452	
3506	27.02	CO	0	950	950	CO	CO	8.602325	
7204	36.37	CO	33.41	450	450	VC	VC	16.12452	
6104	35.31	CO	22.7	500	500	BR	BR	84.45654	1 in 254
4302	32.79	CO	26.99	525	525	VC	VC	109.3946	
7306	36.52	CO	30.52	375	375	VC	VC	12.36932	1 in 206
3604	27.37	CO	24.85	375	375	VC	VC	19.72308	1 in 90
6207	35.66	CO	31.53	600	600	VC	VC	27.31364	1 in 67
6208	35.97	CO	32.75	300	300	VC	VC	20.81553	1 in 50
5301	33.38	CO	32.3	300	300	VC	VC	20.24946	1 in 32
7314	36.91	CO	32.86	225	225	VC	VC	5	
4301	33.01	CO	27.17	525	525	VC	VC	28.8333	1 in 167
7503		CO	0	1500	1500	CO	CO	24.20744	
4809	27.31	CO	0	450	450	VC	VC	21.4093	
6312	35.69	CO	30.65	1500	1500	CO	CO	46.70318	
4902		CO	0	500	500	VC	VC	10.44031	
4102	30.9	CO	27.43	550	550	BR	BR	2.55528	
3602	27.25	CO	21.19	1200	1200	MAR	MAR	39.48927	1 in 35
7207		CO	0	150	150	VC	VC	4.9638	
7502	36.25	CO	25.01	1200	1200	VC	VC	5.839562	
5401	33.67	CO	31.14	225	225	VC	VC	5.44403	1 in 95
6504	26.53	SW	26.18	150	150	VC	VC	4.101243	1 in 4
7406	36.06	CO	22.1	2300	2300	BR	BR	167.5527	1 in 625
3301	30.19	CO	24.27	525	525	VC	VC	9.50098	1 in 48
5201	35	CO	27.36	520	520	BR	BR	50.90977	1 in 73
7102		CO	0	150	150	VC	VC	10.23929	
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3501	30.98	CO	20.07	1500	1500	VC	VC	5.888037	
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4506	26.72	CO	23.98	150	150	VC	VC	10.22719	1 in 4
3603	27.24	CO	21.3	750	750	BR	BR	15.30029	1 in 65
7302	22.27	CO	0	375	375	CO	CO	8.783005	
7302	36.54	CO	0	1500	1500	VC	VC	107.2179	
4206		CO	0	150	150	VC	VC	3.661984	
4703	27.98	CO	16.8	1150	1150	BR	BR	40.71855	1 in 814
3401		CO	0	375	375	VC	VC	41.21183	
7424		CO	0	23.12	150	VC	VC	1.63088	
3514	27.06	CO	23.12	150	150	VC	VC	7.55012	1 in 94
5405	34.35	CO	0	225	225	VC	VC	13.34166	
3515	26.41	CO	20.87	375	375	VC	VC	10.47995	1 in 105
3519	26.3	CO	0	225	225	VC	VC	8.602325	
3501	1.78	CO	31.73	375	375	VC	VC	20.72058	
5507	26.56	SW	25.18	150	150	VC	VC	2.828427	
3602	26.37	CO	16.68	375	375	VC	VC	4.1376	
3003	29	CO	23.4	500	500	VC	VC	41.97618	
6509		SW	0	939	939	CO	CO	10.62262	
3607	27.09	CO	24.37	375	375	VC	VC	14.4222	
7205	36.7	CO	32.99	300	300	VC	VC	61.03383	1 in 2
4506	26.72	CO	23.98	150	150	VC	VC	8.969533	
5403	33.63	CO	28.42	300	300	VC	VC	12.08305	1 in 81
5503	26.74	CO	25.26	100	100	VC	VC	2.23698	
2006	28.55	CO	26.22	150	150	VC	VC	4	
5709	27.23	CO	24.28	150	150	VC	VC	7.615773	
7101	35.72	CO	31.06	450	450	VC	VC	46.81966	1 in 66
4500	26.75	CO	22.9	375	375	VC	VC	45.03725	1 in 71
6501	35.35	CO	26.37	300	300	VC	VC	12.72762	
5609	26.61	CO	24	450	450	BR	BR	30.4795	
5608	26.32	CO	16.68	375	375	VC	VC	51.66234	
5211		CO	0	150	150	VC	VC	0.6806747	
4600	27.62	CO	18.75	2300	2300	VC	VC	110.3698	1 in 252
6508	34.1	CO	24.8	300	300	VC	VC	12.6553	1 in 243
7103	36.51	CO	33.81	450	450	BR	BR	52.61179	1 in 74
7503		CO	0	650	650	BR	BR	13.61417	
6304	35.8	CO	31.34	375	375	CI	CI	50.92151	
2400	29.37	CO	25.64	2390	2390	VC	VC	30.23207	
6204	35.52	CO	28.3	450	450	VC	VC	9.435981	1 in 66
5502	26.94	CO	22.84	300	300	VC	VC	96.17917	
2102	28.41	CO	25.48	460	460	BR	BR	8.246211	
5303	33.64	CO	28.4	1500	1500	VC	VC	18.11077	1 in 44
7334		CO	0	150	150	VC	VC	2.025999	
7426		CO	0	150	150	VC	VC	4.539907	
7211	37.01	CO	30.72	150	150	BR	BR	37.57659	
5908	28.32	CO	24.31	225	225	VC	VC	6.954919	
5612	27.09	CO	22.75	225	225	VC	VC	20.81553	
6410		CO	0	300	300	VC	VC	57.17316	
5605	27.25	CO	23.5	300	30				

Appendix C

Topographical Survey

Underground Utility Survey

CCTV Drainage Survey (Layout)

[illegible]

General Legend:

• Tree (0.35M/14)	 STNX	Survey Station	 OSBW/TSM
 Gate	 Hedge	 Borehole	 Tidal Pit

	-E/X-	-N/Y-	-H/Z-
STN3	383497.489	398381.973	33.391
STN4	383511.568	398426.135	33.831

Sheet Layout:

A0

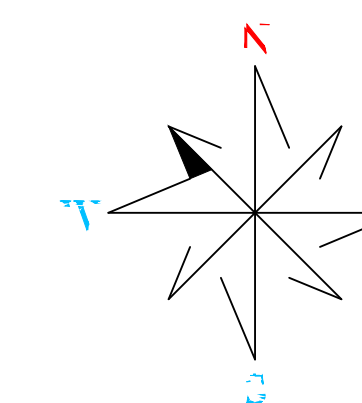
Disclaimer - West Coast Geomatics Limited 2022:

This survey has been produced with its accuracy commensurate with the indicated scale and should only be used for its original intended purpose. Any scaling should only be undertaken using a stable media print produced using the original data. Responsibility is accepted to any third party for the whole or part of its contents. Data remains in the ownership of West Coast Geomatics Limited. Any discrepancy between this survey and any other information should be reported to West Coast Geomatics Limited.

Additional Notes

This drawing is to be read in conjunction with:

WCG 21-1611-AS-6	[Basement Floor Internal Measured Survey]
WCG 21-1611-AS-7	[Ground Floor Internal Measured Survey]
WCG 21-1611-AS-1F	[First Floor Internal Measured Survey]
WCG 21-1611-AS-2F	[Second Floor Internal Measured Survey]
WCG 21-1611-AS-3F	[Third Floor Internal Measured Survey]
WCG 21-1611-AS-4F	[Fourth Floor Internal Measured Survey]
WCG 21-1611-AS-5F	[Fifth Floor Internal Measured Survey]
WCG 21-1611-AS-6F	[Sixth Floor Internal Measured Survey]
WCG 21-1611-AS-7F	[Seventh Floor Internal Measured Survey]
WCG 21-1611-AS-8F	[Eighth Floor Internal Measured Survey]
WCG 21-1611-AS-9F	[Ninth Floor Internal Measured Survey]
WCG 21-1611-AS-10F	[Tenth Floor Internal Measured Survey]
WCG 21-1611-AS-11F	[Eleventh Floor Internal Measured Survey]
WCG 21-1611-1P	[Floor Plans]
WCG 21-1611-ELV	[Elevation Survey]
WCG 21-1611-1T	[Topographical Survey]



0.00 2.00 4.00 6.00 8.00 10.00

Amendments:

LAND & MEASURED BUILDING SURVEYORS

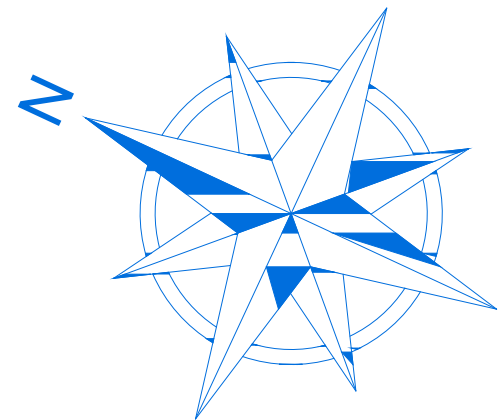
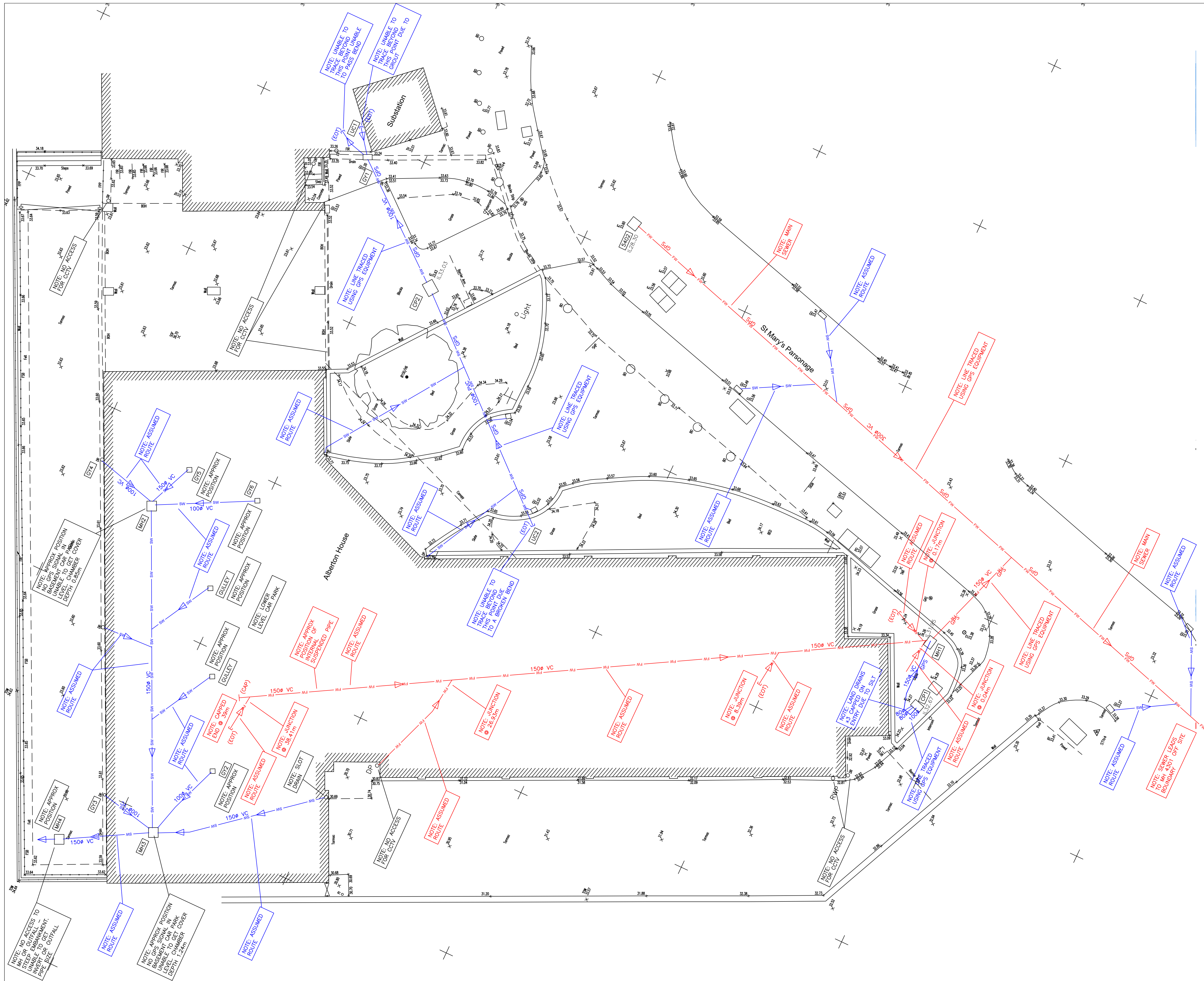
<u>Address:</u>	<u>Contact details:</u>
Suites 3 & 4 Orchard House	Tel: +44 [0] 1704 840 93
Hesall Business Centre	Email: info@wcgeo.co.uk
Lancashire	Web: www.wcgeo.co.uk
L39 8RG	

Client:
Bruntwood

Drawing Title: **Topographical Survey**

Alberton House
30 St Marys Parsonage
Manchester - M3 2WJ

Surveyed:	JJD	Document No.	WCG 21-1712-T-1:1
Processed:	JJD	Plotted Scale:	ISO_A0_@_1:100
Checked & QA:	SN	Date of Issue	January 2022



Peel House, 2nd Floor
Peel Road, Pimbo,
Skelmersdale.
WN8 9PT
Tel. 01695 768 714
WWW.teamdrainageuk.com

Survey Notes

Grid - Local
Levels - Local

Drainage Key:

Foul Water Sewer — FW —
Storm Water Sewer — SW —
Combined Water Sewer — CS —
Taken from Records
Survey Boundary
End of Trace (EOT)
Cap End (CAP)

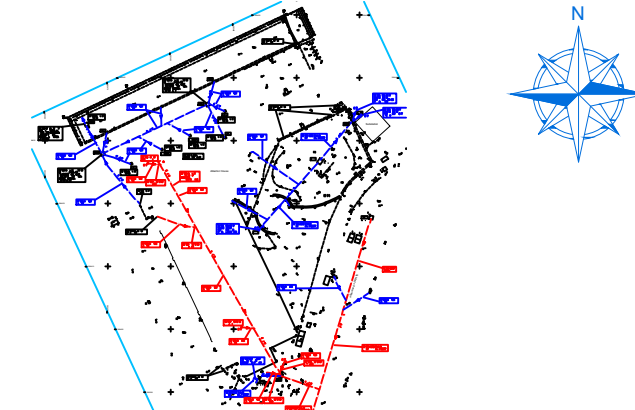
Assumed Route:

Foul Water Sewer — FW — ASSUMED
Storm Water Sewer — SW — ASSUMED
Combined Water Sewer — CS — ASSUMED

Geo Positioning:

Foul Water Sewer — FW — GPS
Storm Water Sewer — SW — GPS
Combined Water Sewer — CS — GPS

Site Plan



Client Name

Curtlins
Merchant Exchange
Manchester
M1 5WG

Project Name

Alberton House
30 St. Marys Parsonage
Manchester
M3 2WJ

Drawing Title

Drainage Survey

Drawing No.

TDUK260821

Sheet No.

01

Revision

-

Drawn

AA

Date

26/08/2021

Checked

SS

Scale

1:100

Appendix D

Environment Agency Flood map for Planning Report

Flood map for planning

Your reference
Alberton Hous

Location (easting/northing)
383484/398428

Created
7 Jul 2021 16:36

Your selected location is in flood zone 1, an area with a low probability of flooding.

This means:

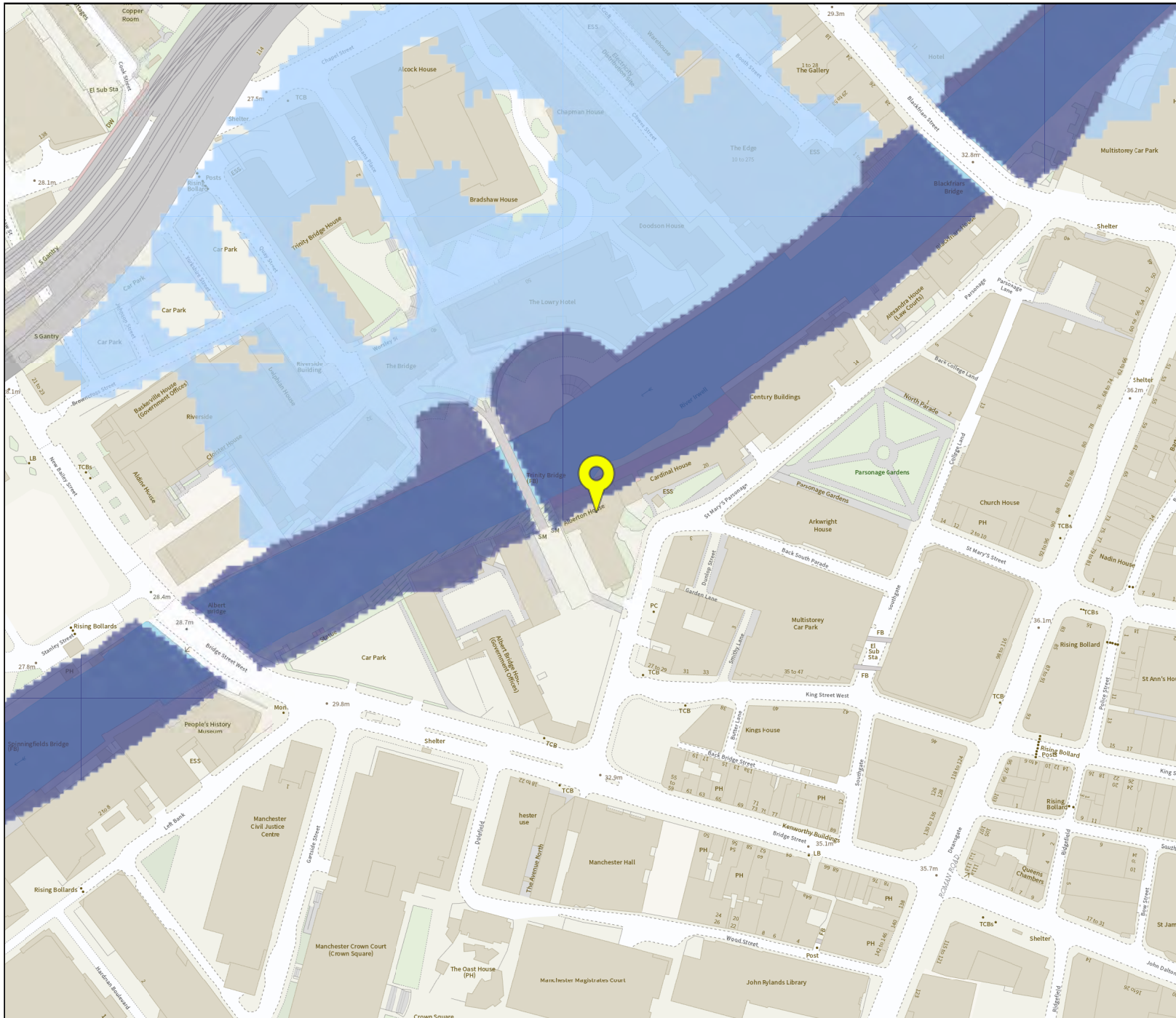
- you don't need to do a flood risk assessment if your development is smaller than 1 hectare and not affected by other sources of flooding
- you may need to do a flood risk assessment if your development is larger than 1 hectare or affected by other sources of flooding or in an area with critical drainage problems

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

The Open Government Licence sets out the terms and conditions for using government data.
<https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>



Flood map for planning

Your reference
Alberton Hous

Location (easting/northing)
383484/398428

Scale
1:2500

Created
7 Jul 2021 16:36

-  Selected point
-  Flood zone 3
-  Flood zone 3: areas benefitting from flood defences
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Flood storage area


0 20 40 60m

Appendix E

BGS Infiltration Report

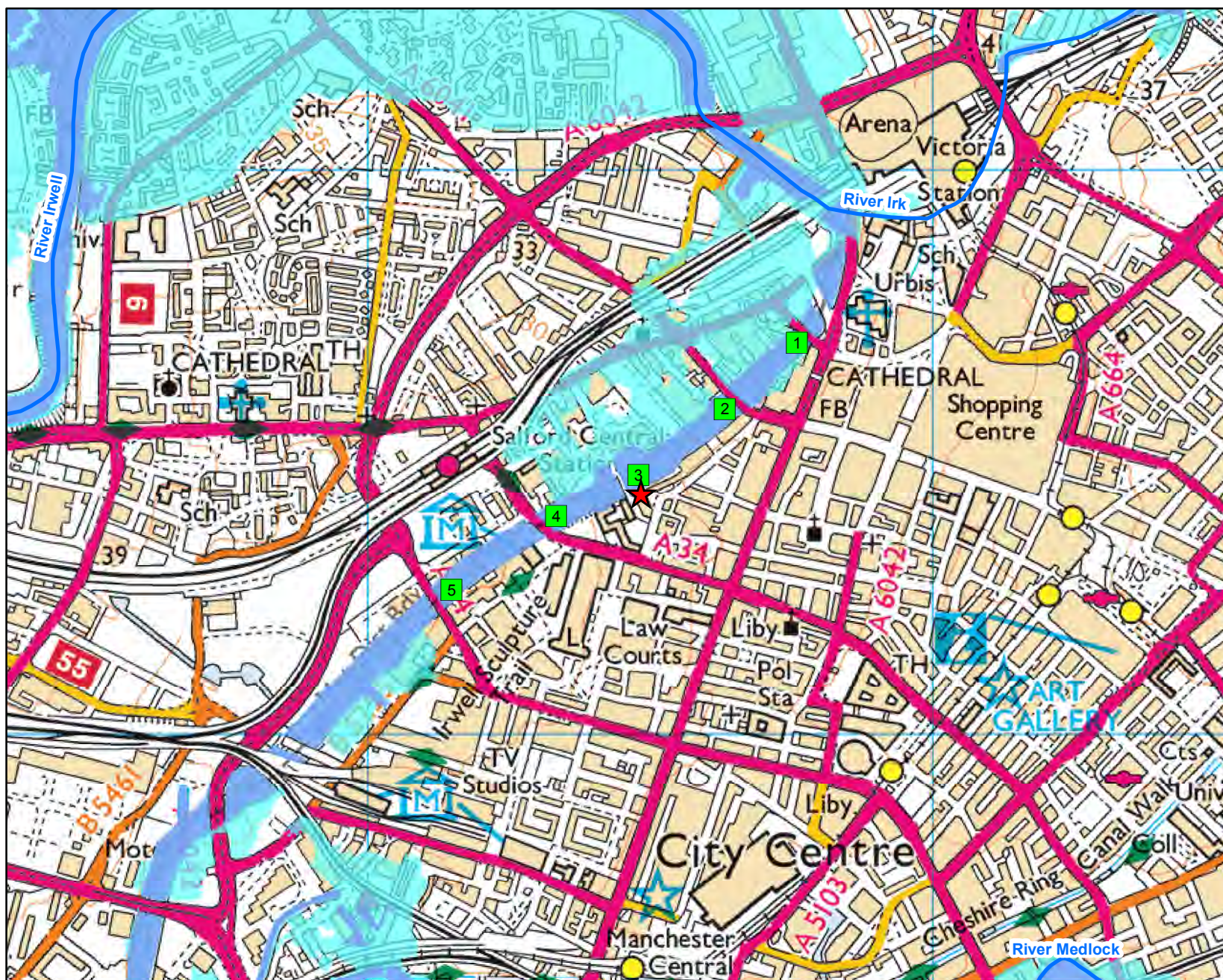
Appendix F

Environment Agency Correspondence

Environment Agency Flood Model Node Map

Environment Agency Flood Model Levels

Detailed Flood Map centred on St Mary's Parsonage, Manchester, M3 2WJ. Created on 12/07/2021 [GMMC224794AB]



1:10,001



Legend

- ★ Site Location
- Model Measurements
- Main River
- Flood Zone 3
- Flood Zone 2

					Model run is representative of present conditions and all gates are operational as per the agreed automated protocol. Maximum gate opening height is set to 3.05m. This run is the same as used in the flood map products.											Model run is representative of a single gate failure at Latchford gate C.	Model run is representative of a single gate failure on every set of sluice structures at Latchford .	
Map Reference	Model Node Reference	Easting	Northing	Data	20 % AEP (1 in 5 year)	10 % AEP (1 in 10 year)	4 % AEP (1 in 25 year)	2 % AEP (1 in 50 year)	1.33 % AEP (1 in 75 year)	1 % AEP (1 in 100 year)	1 % AEP (1 in 100 year) + 30% increase in flow	1 % AEP (1 in 100 year) + 35% increase in flow	1 % AEP (1 in 100 year) + 70% increase in flow	0.5 % AEP (1 in 200 year)	0.1 % AEP (1 in 1000 year)	1 % AEP (1 in 100 year)	1 % AEP (1 in 100 year)	0.1 % AEP (1 in 1000 year)
1	ea013_0251_IRW201_1926	383759	398695	Modelled Water Level (m aodN)	24.09	24.40	24.82	25.06	25.21	25.40	25.92	26.03	27.18	25.79	27.45	25.40	25.40	27.49
				Modelled Flow (cumecs)	310.05	351.12	411.02	444.92	466.21	495.34	572.95	588.67	742.00	552.48	760.74	495.34	495.34	758.82
2	ea013_0251_IRW201_1756	383633	398575	Modelled Water Level (m aodN)	23.89	24.19	24.61	24.84	24.99	25.19	25.70	25.81	26.98	25.57	27.27	25.19	25.19	27.32
				Modelled Flow (cumecs)	310.09	351.17	411.08	444.99	466.27	495.41	573.03	588.76	742.02	552.58	760.91	495.41	495.41	758.69
3	ea013_0251_IRW201_1515	383480	398466	Modelled Water Level (m aodN)	23.73	24.03	24.47	24.72	24.87	25.08	25.62	25.73	26.95	25.48	27.25	25.08	25.08	27.30
				Modelled Flow (cumecs)	310.15	351.24	411.17	445.09	466.39	495.53	573.16	588.91	738.51	552.74	758.14	495.53	495.53	754.44
4	ea013_0251_IRW201_1361	383337	398376	Modelled Water Level (m aodN)	23.74	24.03	24.46	24.69	24.84	25.03	25.55	25.65	26.81	25.42	27.10	25.03	25.03	27.14
				Modelled Flow (cumecs)	310.19	351.28	411.22	445.16	466.46	495.60	573.24	588.99	744.53	552.84	773.13	495.60	495.60	770.10
5	ea013_0251_IRW201_1128	383153	398262	Modelled Water Level (m aodN)	23.40	23.67	24.04	24.26	24.38	24.55	24.97	25.05	26.02	24.87	26.28	24.55	24.55	26.31
				Modelled Flow (cumecs)	310.25	351.35	411.30	445.27	466.57	495.71	573.36	589.13	744.57	552.99	773.43	495.71	495.71	770.29

Model data taken from Manchester Ship Canal 2018 Study

AEP - Annual Exceedence Probability

m aodN - metres above ordnance datum Newlyn

cumecs - cubic metres per second

Notes: *Climate Change Scenario - 30%, 35% and 70% increases in flow calculated for the 2080's (2070 - 2115). Please see <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances> for more information regarding the new climate change guidance. The location of the site and the type (vulnerability) of development determine the climate change allowances to consider in any flood risk assessment.

For the Manchester Ship Canal Model, we provide the following three scenarios:

1. Normal Operation: All sluice gates operate automatically to maintain a navigable ponded water level upstream of each set of sluice gates. During times of high flow the gates are opened automatically to allow excess water pass downstream. During extreme conditions the sluice gates can be manually overridden to extend the opening heights.
2. Latchford 1 Gate Closed Scenario: This scenario represents a single operational sluice gate at Latchford Locks fixed closed. Therefore, only operational movements from 2 active sluice gates.The model setup removes the gate from PID controller setup and an IED file is used to define the sluice gate as fixed in the closed position.
3. Latchford 3 Gates Closed Scenario: This scenario has been defined as the removal of operational rules at all three sluice gates at Latchford Locks, thus, all gates are fixed in the closed position resulting in no regulation of upstream water levels. The model setup removes each of the gates from PID controller setup and an IED file is used to define sluice gates fixed in the closed position.

Chloé Grimsley

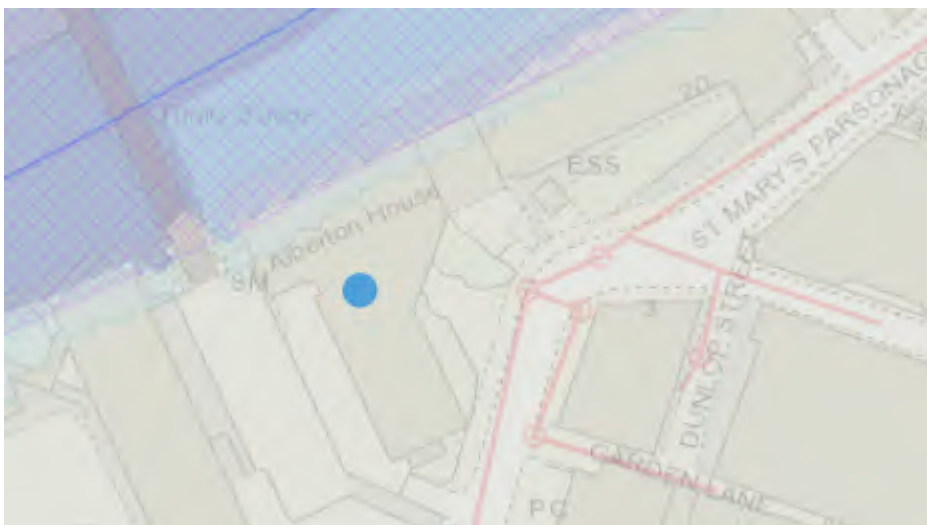
From: Davies, Andy <Andy.Davies1@environment-agency.gov.uk>
Sent: 16 July 2021 14:32
To: Chloé Grimsley
Subject: RE: Re: 210709/ND04 Alberton House, 30 St Mary's Parsonage, Manchester

Follow Up Flag: Follow up
Flag Status: Completed

Afternoon Chloé,

I hope that you're well and apologies for the delay in reply. Unfortunately we are currently under significant resource pressure which is impacting upon response times.

Further to your request below I've done a quick check over the details that we hold for the area.



Grid Ref: SJ8348998413

To answer your questions:

- **The River Irwell does not appear to be classified as 'Main River' along this section – Is this correct? Is it managed by Peel?**

The River Irwell in the vicinity of Alberton House is not designated as 'Main River'. It is classified as "Other Watercourse" and therefore is not with direct jurisdiction of the EA. However, it is worth noting that this stretch of the Irwell is still classified as a WFD Waterbody (GB112069061452). Regulation 33 of The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 places a duty on each public body, including local authorities, to 'have regard to' RBMPs must not authorise a project which may jeopardise a WFD, its status or ability to attain status betterment.

It should also be noted that area of Alberton House bordering the site is situated within Flood Zone 2/3 and therefore in accordance with National Planning Policy Framework (NPPF) will require the preparation of a Flood Risk Assessment. For more information on FRA preparation refer to: <https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications>

I would advise approaching Peel and/or Lead Local Flood Authority (the responsible authority for this stretch of the Irwell) directly in order to understand any management or interests held.

- **Is the River Wall riparian ownership?**

For this matter and more widely I would advise referring to the following gov.uk page: <https://www.gov.uk/guidance/owning-a-watercourse>. I would advise that the deed for the property/ land is checked.

Normally you will be the riparian owner for a stretch of watercourse that runs on or under your land or on the boundary of your land, up to its centre. The deeds for your property or land should tell you if this is not the case.

As above we would advise you contact the Lead Local Flood Authority to confirm whether the designation of the river wall and whether it's considered by the authority to be a Flood Defence Asset. Please refer to the above gov.uk page information on what to do in these instances.

- **Will the EA require any access provision to the river/river wall?**

As this stretch of the Irwell is not designated Main River, the LLFA will be the primary authority for determining any access provisions / requirements. However, we would more generally advise that where possible a 3-4 metre access strip is retained between the River and built development. This access strip will provide working space for any emergency repairs / works needed. Where possible we would also advise that this access strip includes vehicular access. Failure to provision an adequate buffer may create otherwise avoidable challenges for the development and is in the interest of all parties to ensure any issues can be resolved easily.

- **Are there any EA approvals required building in proximity the River Wall?**

A flood risk activity permit will not be required for this proposal. You should contact the council or internal drainage board to check if you need land drainage consent. For further guidance see: <https://www.gov.uk/guidance/flood-risk-activities-environmental-permits>

- **Any further environmental considerations.**

Any works within vicinity of the River Irwell should follow and relevant best practice and guidance. Various EA guidance can be viewed at: <https://www.gov.uk/government/organisations/environment-agency/services-information>. If there are any further planning related matters you wish to discuss then please let me know.

Kind regards,

Andy

Andy Davies

Planning Advisor & Strategic Project Specialist, Sustainable Places Team | Greater Manchester, Merseyside, Cheshire

Environment Agency | Richard Fairclough House, Knutsford Road, Latchford, Warrington WA4 1HT

Email: SPPlanning.RFH@environment-agency.gov.uk

Mobile: 0739 379 8325



From: Chloé Grimsley [<mailto:Chloe.Grimley@curtins.com>]

Sent: 08 July 2021 13:31

To: Enquiries, Unit <enquiries@environment-agency.gov.uk>

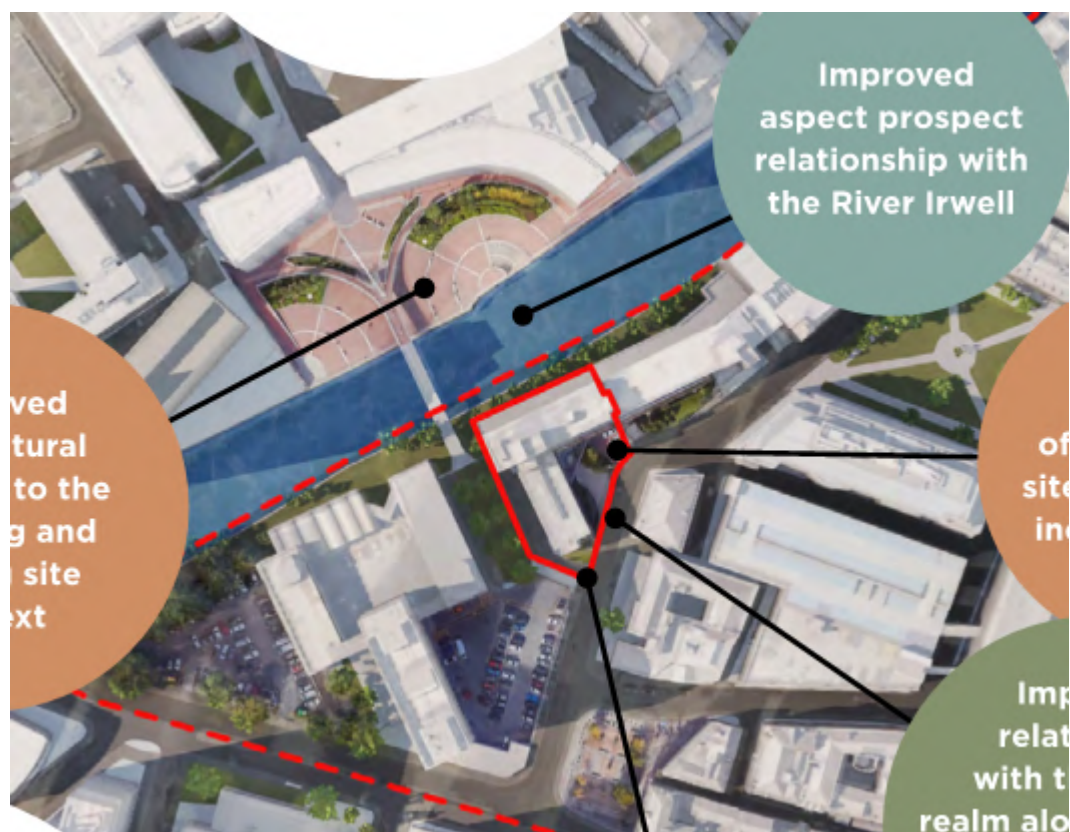
Subject: Re: 210709/ND04 Alberton House, 30 St Mary's Parsonage, Manchester

Importance: High

Dear Sir/Madam,

We are currently reviewing a potential development site at Alberton House, located on St Marys Parsonage, Manchester with the River Irwell to the rear of the existing site along the northern boundary – please see below:

Site Address:
Alberton House,
30 St Mary's Parsonage,
Manchester
M3 2WJ





I have attached a preliminary opinion request, and I have separately requested the flood levels for the River Irwell from the EA data request team.

Please could you review and provide confirmation for the following:

- The River Irwell does not appear to be classified as 'Main River' along this section – Is this correct? Is it managed by Peel?
- Is the River Wall riparian ownership?
- Will the EA require any access provision to the river/river wall?
- Are there any EA approvals required building in proximity the River Wall?
- Any further environmental considerations.

If you require any further information, please let me know.

Kind Regards,
Chloé

Chloé Grimsley
Principal Engineer
T. 0161 236 2394
chloe.grimsley@curtins.com

Merchant Exchange
17-19 Whitworth Street West
Manchester M1 5WG



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Appendix G

Manchester LLFA Correspondence

Data Screening Mapping

Chloé Grimsley

From: Flood Risk Management <floodriskmanagement@manchester.gov.uk>
Sent: 26 October 2021 13:55
To: Chloé Grimsley
Subject: RE: Alberton House, Manchester

Hi Chloe,

No problem.

For the groundwater monitoring, I would like to see a methodology which accurately identifies the maximum extent of the groundwater table (at its highest level), this would typically be within the later winter months following prolonged periods of heavy rainfall.

Kind Regards,

Oliver

Oliver Timmins
Engineer (Flood Risk Management)
Mobile: 07814082200
Email: oliver.timmins@manchester.gov.uk

Lead Local Flood Authority
Highways
Growth & Development and Neighbourhoods Directorate
Manchester City Council
PO Box 532 Town Hall
Manchester
M60 2LA

Web: <http://www.manchester.gov.uk>

From: Chloé Grimsley <Chloe.Grimmsley@curtins.com>
Sent: 26 October 2021 13:19
To: Flood Risk Management <floodriskmanagement@manchester.gov.uk>
Subject: RE: Alberton House, Manchester

Hi Oliver,

I'm all good, I hope you are well too.

Thanks for your quick response, we will review comments with the client team. Is there any specific groundwater monitoring (frequency/duration) you would require?

We will prepare a model of the existing network to confirm discharge rates as soon as we can, I have also submitted the proposals to Peel who have agreed the discharge in principle.

Kind Regards,
Chloé

Chloé Grimsley Principal Engineer
Curtins

From: Flood Risk Management <floodriskmanagement@manchester.gov.uk>

Sent: 26 October 2021 13:07

To: Chloé Grimsley <Chloe.Grimmsley@curtins.com>

Subject: RE: Alberton House, Manchester

Hi Chloe,

I hope you are well.

Thanks for the email.

Firstly I would highlight that as the site is shown to be partly within a Flood Zone 3 the Environment Agency are likely to comment on any future planning application for this site.

In regards to the finish floor levels, if the most up to date EA flood level data is being used and the site (including the basement) is shown to be above the 1 in 1000 year event, then in principle we would have no issues with the proposed finished floor level as long as there is no flooding to the basement during the predicted 1 in 1000 year flood event and that the proposed works do not affect the structural integrity of the existing river bank. **However**, this being said, as the BGS GeoReport shows a relatively shallow ground water table, we would recommend that this is considered when designing/confirming the basement finished floor levels – the level of the proposed basement should be positioned so that the new basement level is suitably above the groundwater table ensuring there is no displacement of the groundwater table which could negatively impact on surrounding areas. On this basis we would expect to see groundwater monitoring on site before the basement finished floor level is confirmed.

Secondly, in regards to the proposed discharge rates, we would need to see the calculations of how the discharge rates were calculated before confirming that these are acceptable. As the site has been identified as positively draining, we would expect the existing network to be modelled appropriately to give a more accurate discharge rate. Again we would need to see a break down of the proposed discharge rate calculations before agreeing to complex flow control requirements.

In regards to your other queries please see my responses below:

- If a new connection is required through the river wall, would MCC Land Drainage Consent be required? [This would not be required, we would recommend that all new outfalls to the River at this location are discussed with Peel.](#)
- Please advise if any additional approvals are deemed necessary – if applicable - for working in proximity to the existing river wall. [I would recommend getting in contact with the Environment Agency and Peel to discuss this.](#)
- Please confirm any known historic flood events at or in the vicinity of the site. [We have no records of flooding on the site or in the vicinity of the site](#)

I hope the above assists with your investigations.

Thanks,

Oliver

Oliver Timmins
Engineer (Flood Risk Management)
Mobile: 07814082200
Email: oliver.timmins@manchester.gov.uk

Lead Local Flood Authority

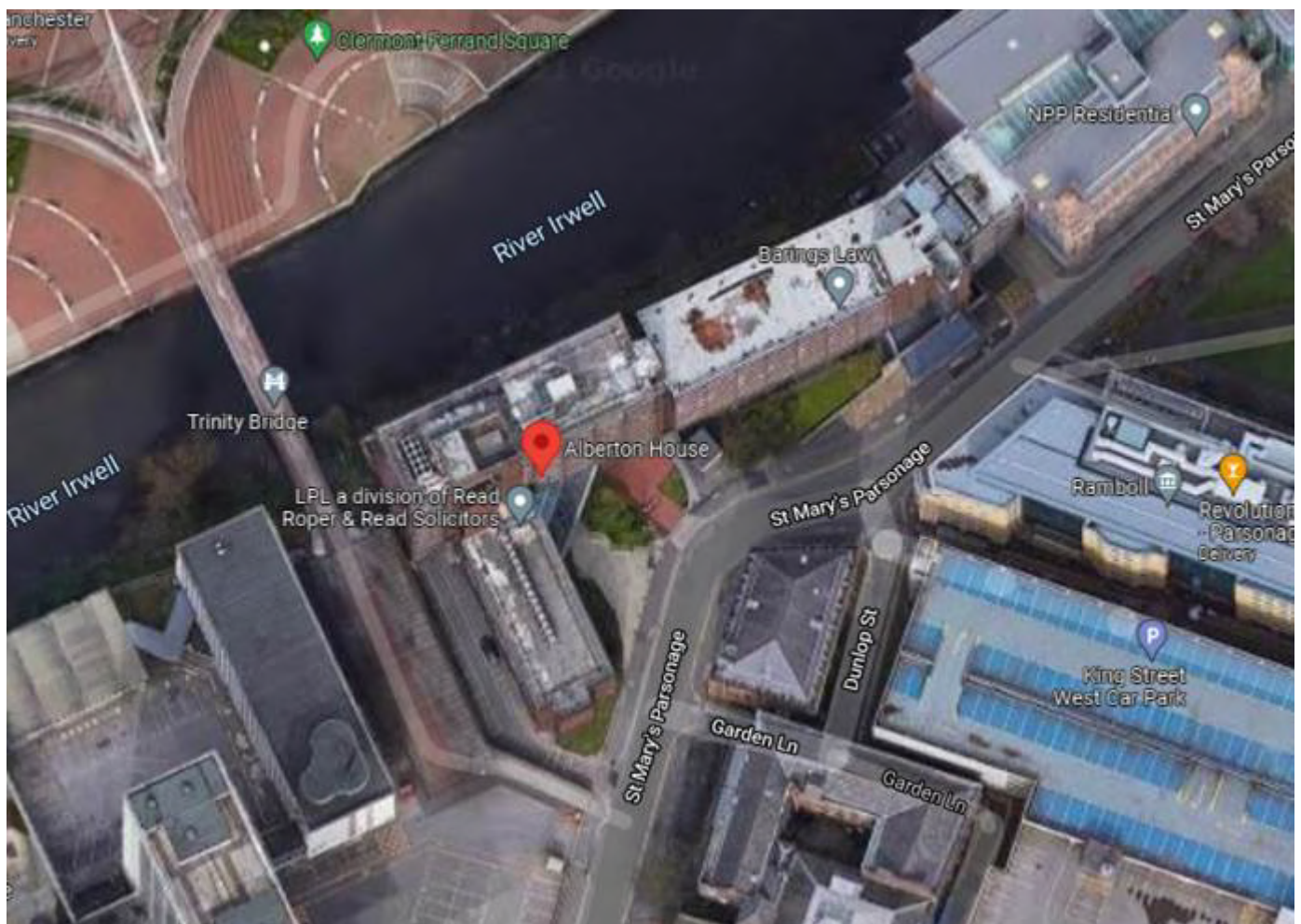
Highways
Growth & Development and Neighbourhoods Directorate
Manchester City Council
PO Box 532 Town Hall
Manchester
M60 2LA

Web: <http://www.manchester.gov.uk>

From: Chloé Grimsley <Chloe.Grimley@curtins.com>
Sent: 15 October 2021 09:52
To: Flood Risk Management <floodriskmanagement@manchester.gov.uk>
Subject: Alberton House, Manchester

Good Morning,

We are currently producing an FRA and drainage strategy for a site (Alberton House) located on St Marys Parsonage, Manchester, M3 2WJ (NGR – X:383484, Y:398427) – Please see location plan below and redline plan attached:

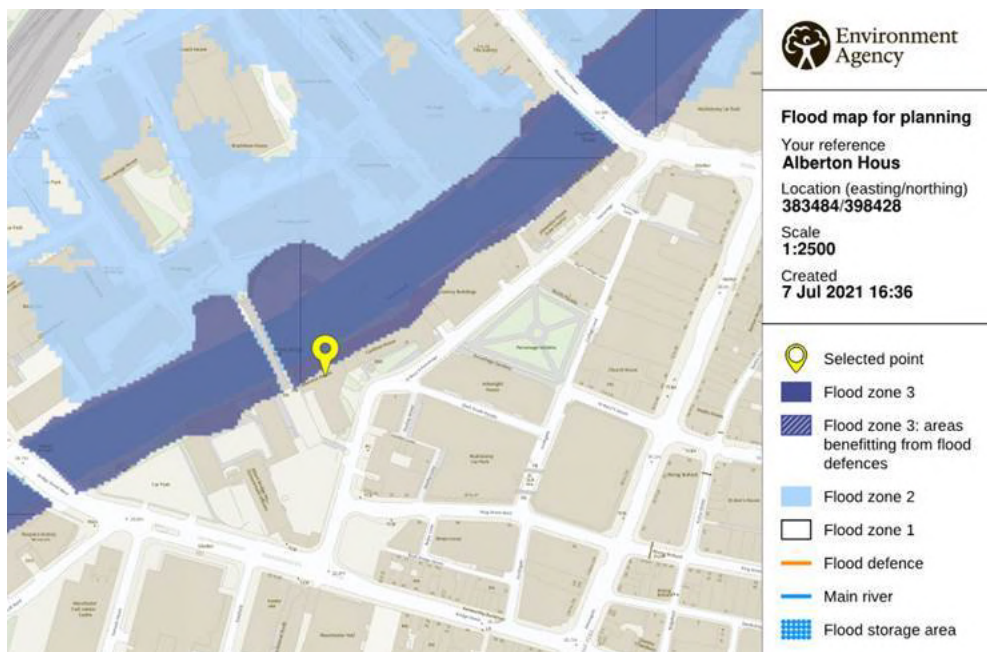


The scheme proposals are to demolish the existing building and construct a new 19 Storey plus basement building for Commercial (office) use.

Flood Risk

The plot is approximately 0.16 hectares and located within Flood Zone 1 with the northern boundary of the site located within Flood Zone 3.

A Flood Risk Assessment will therefore be prepared to support the planning application.



We have however reviewed the EA flood Data available for the River adjacent to the site. The Flood Levels are based on the current flood data is from the Manchester Ship Canal Study (2018). Refer to Table below for the summary of the levels.

Environment Agency Flood Model Mapping



Environment Agency Flood Levels

Map Ref	Node Reference	1 in 100 Year	1 in 100 Year + 35%cc	1 in 100 Year + 70%cc	1 in 1000 Year	1 in 1000 Year Gate Failure
3	Ea013_0251_IRWZ01_1515	25.08	25.73	26.95	27.25	27.30

Model measurements are recorded at 3 nodes (labelled 1 through 5) on the Environment Agency Detailed Flood Map provided. The flood levels at node 3 are considered most relevant to the site and the flood levels and flows at this node have been used to estimate the flood levels across the site.

The anticipated flood levels provided by the Environment Agency have been reviewed with the existing site topography. The existing ground floor of the building is at approximately 33.7m AoD, levels around the building are generally at a similar level. The general ground slopes north-east to south-west with the levels to the eastern corner

at approximately 33.7m, south 33.3m, north 33.7m and west 33.6m. The basement level is at approximately 30.64m AoD which can be accessed from St Mary Parsonage, which slopes down from 33.3m to 30.6m externally to the building.

Based on the above, the existing site is therefore considered entirely within Flood Zone 1, with existing basement levels at 30.64m AoD being in excess of the 1 in 1000 Year flood level with gate failure sensitivity check imposed by approximately 3 metres.

The proposed basement level finished floor level is 29.340m AoD, which is lower than the current basement level, however this is approximately 2.04m above the anticipated 1 in 1000 Year flood level with gate failure scenario. On this basis the proposed development would maintain its Flood Zone 1 classification and be considered at low risk of fluvial flooding.

Please could you confirm if you are happy with our assessment and classification that the site is within Flood Zone 1.

Surface Water Drainage

As the scheme is still in the early stage's infiltration testing is yet to be undertaken within the site, however, reviewing BGS information infiltration is considered unsuitable for this site. Using SoilScape maps the ground conditions are shown to be free draining slightly acid sandy soils with a naturally high water table (<3m). It is therefore assumed the ground is not going to be suitable for infiltrating SUDs. Further site investigation works will confirm if infiltration is feasible.

The site is located adjacent to the River Irwell, therefore discharging to a water course is feasible – we are currently in discussions with the Peel regarding discharge to the watercourse.

Following a site walk over and review of the CCTV survey, it is evident that surface water is positively draining to the River Irwell. It appears that there are three existing surface water outfalls:

- Surface Water Outfall 1 – this is a 150mm pipe which discharges north-west towards the River Irwell.
- Surface Water Outfall 2 – this is a 100mm pipe which discharges north-east towards Cardinal House and appears to discharge below this building.
- Surface Water Outfall 3 – This is a 150mm pipe which discharges south-east towards the public sewer in St Marys Parsonage (combined with the foul outfall).

We have calculated existing flows from the site (0.14ha) using the Wallingford Modified rational method and the results are below;

1:1 year rainfall event = 5.8l/s

1:30 year rainfall event = 14.3l/s

1:100 year rainfall event = 18.7l/s

Taking the existing flows generated from the full site and applying a 50% reduction in flows in line with existing planning policies, the proposed discharge rate for the redeveloped areas are as follows;

1:1 year rainfall event = 2.9* l/s

1:30 year rainfall event = 7.2 l/s

1:100 year rainfall event = 9.4 l/s

*We suggest increasing to 5 l/s to reduce the risk of blockage due to the small orifice required.

In order to achieve the above flow restrictions, a complex flow control device would be located within the last chamber prior to discharging to the River Irwell. As these flows are relatively small, should you be happy to accept a single flow discharge rate, for storms up to and including 1 in 100 year plus 40% climate change, we propose this to be 9.4l/s, please advise if you are happy with the above, or if you would like a complex control restricting flows for each of the 1, 30 and 100 year return periods?

The maximum discharge rate for the whole development for storms up to and including 1 in 100 year plus climate change is 9.4 l/s.

We are also in discussion with Peel regarding acceptable discharge rates and velocities.

Please could you confirm if the above proposal would be acceptable?

Please could you also confirm the following:

- If a new connection is required through the river wall, would MCC Land Drainage Consent be required?
- Please advise if any additional approvals are deemed necessary – if applicable - for working in proximity to the existing river wall.
- Please confirm any known historic flood events at or in the vicinity of the site.
- Please confirm if there any known flood risk concerns to the site.

I have attached the following information:

- Redline Boundary
- Ground Floor Plan
- Basement Plan
- Existing Drainage CCTV Survey drawing
- BGS Report

If you require any further information please let me know.

Kind Regards,
Chloé

Chloé Grimsley
Principal Engineer
T. 0161 236 2394
chloe.grimsley@curtins.com

Merchant Exchange
17-19 Whitworth Street West
Manchester M1 5WG



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Chloé Grimsley

From: Flood Risk Management <floodriskmanagement@manchester.gov.uk>
Sent: 09 February 2022 14:10
To: Chloé Grimsley
Cc: Angela Leckie
Subject: RE: Alberton House - Flood Risk Consultant
Attachments: ASSET_REGREC_export090222.pdf

Hi Chloé,

Thank you for your reply.

Good to see you have obtained the pre-app advice on the flood risk.

Regarding the culvert checks, we would generally advise submitting a data screening request directly to us. This enables us to check our statutory asset register for assets that may be a risk to your site. The asset register is 'live' so is more up to date than the SFRA, being updated when culverts are discovered for example. It also includes unpublished data, such as the 1984 drainage survey drawings. I've attached a data screen for your site in this instance. Should you require one in future projects, the cost is £150 & can be arranged by contacting us at any time.

Your data screen does not show any known assets on your site, however there are outfalls indicated close by on the 1984 survey. These are shown as '>' symbols pointing to the river wall, often with the diameter written inside the triangle. We would recommend the river wall adjacent to the site is checked for outfalls that could affect the site as part of the project, and that in the event any are discovered, the assets are surveyed to determine their classification, extent and condition, and that the proposed masterplan takes account of them.

Hope this is helpful to your project.

Kind Regards,
Laura

From: Chloé Grimsley <Chloe.Grimmsley@curtins.com>
Sent: 27 January 2022 17:23
To: Flood Risk Management <floodriskmanagement@manchester.gov.uk>
Cc: Angela Leckie <angela.leckie@manchester.gov.uk>; chulbert@deloitte.co.uk
Subject: RE: Alberton House - Flood Risk Consultant

Hi Laura,

Thank you for your comments below.

I previously made a pre-app enquiry – please see attached for information.

In response to your comments below:

[sequential/exception tests & flood zone vulnerability/compatibility table](#)

We have completed an assessment of flood levels – noted in the attached which confirms the site is within Flood Zone 1.

[secondly that there can be culverted watercourses beneath the sites which connect to the larger watercourse.](#)

I have reviewed the SFRA mapping and there are no known assets or historic watercourses identified. We haven't identified evidence of existing culverts on site from the GPR, CCTV Surveys undertaken, but we acknowledge that

they may not always identify assets which are deep or have no access points on site. Access to the riverside is also limited so evidence of existing outfalls is limited.

Kind Regards,
Chloé

Chloé Grimsley Principal Engineer
Curtins
T. 0161 236 2394 | chloe.grimsley@curtins.com

From: Flood Risk Management <floodriskmanagement@manchester.gov.uk>
Sent: 27 January 2022 17:03
To: Chloé Grimsley <Chloe.Grimmsley@curtins.com>
Cc: Angela Leckie <angela.leckie@manchester.gov.uk>; chulbert@deloitte.co.uk
Subject: RE: Alberton House - Flood Risk Consultant

Good afternoon Chloé,

I hope you are well, I am making contact regarding the below thread and the possible need for pre-application advice for the 'Alberton House' site, which I presume is post code M3 2WJ.

We do not currently have any information on the location or proposals, however I thought best to touch base and provide an outline advisory at this stage in case you are underway with the project -

With the proposals along larger watercourses like the Irwell, we tend to find 2 issues, firstly that the masterplans do not comply with the sequential/exception tests & flood zone vulnerability/compatibility table, secondly that there can be culverted watercourses beneath the sites which connect to the larger watercourse.

These are broad comments as I'm not sure what the proposal entails, however they are the two most recurrent issues on riverbank schemes.

Should you wish to approach us for more detailed comments on the proposal, or our data screening service which would include a check for culvert data, you are welcome to do so at any point.

Kind Regards,
Laura

Laura Peacock MESci(Geol) MCIWEM
Flood Risk Engineer – LLFA
Highways Service,
Growth and Neighbourhoods Directorate
Manchester City Council
PO Box 532
Town Hall
Manchester
M60 2LA
Web: <http://www.manchester.gov.uk>

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From: Kieran Geoghegan <Kieran.Geoghegan@curtins.com>

Sent: 24 January 2022 15:41

To: Angela Leckie <angela.leckie@manchester.gov.uk>; Hulbert, Cerys <chulbert@deloitte.co.uk>

Cc: Britton, Ed <edbritton@deloitte.co.uk>; Musab Ainekar <Musab.Ainekar@curtins.com>

Subject: RE: Alberton House - Flood Risk Consultant

Cerys , Angela,

Our civil drainage team doing the FRA will be Chloé Grimsley Chloe.Grimmsley@curtins.com (or delegated to one of her junior colleagues) .

Many thanks

Kieran Geoghegan Principal Engineer

Curtins

T. 0161 236 2394 | M. 07515064690 | kieran.geoghegan@curtins.com

From: Hulbert, Cerys <chulbert@deloitte.co.uk>

Sent: 24 January 2022 14:55

To: Angela Leckie <angela.leckie@manchester.gov.uk>

Cc: Britton, Ed <edbritton@deloitte.co.uk>; Kieran Geoghegan <Kieran.Geoghegan@curtins.com>; Musab Ainekar <Musab.Ainekar@curtins.com>

Subject: Alberton House - Flood Risk Consultant

Hi Angela,

Thank you for your time last Friday morning to discuss the emerging proposals for Alberton House.

During the meeting you suggested that we should engage with the Council's flood risk team, particularly Laura Peacock, regarding the proposed development at Alberton House. As such, we have copied in the appointed flood risk consultant (Curtins) to this email and hoped you would be able to connect them with Laura to discuss the proposals and flood risk considerations.

If you need anything further from us, please do let me know.

Kind regards

Cerys

Cerys Hulbert

Pronouns: she / her / hers

Senior Planner | FA - Real Assets Advisory | Deloitte LLP

1 New Street Square, London, EC4A 3HQ

D: +44 20 7007 1347 | M: +44 77 7582 4980

chulbert@deloitte.co.uk | www.deloitte.co.uk

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LLFA DATA SCREEN

Address/Site Ref:
Alberton House, M3 2WJ

Our Ref: **N/A**

Author: Manchester City Council LLFA

Date: 09/02/2022

Scale: 1:2,000

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

0 12.5 25 50
Meters



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Appendix H

United Utilities Correspondence

Chloé Grimsley

From: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Sent: 01 November 2021 10:11
To: Chloé Grimsley
Cc: Wastewater Developer Services
Subject: Pre Development Enquiry for: PDE CA28 Alberton House, Man, M3 2WJ UU
Reference Number : 4200044487

Follow Up Flag: Follow up
Flag Status: Completed

Good morning, Chloé

Pre Development Enquiry for: PDE CA28 Alberton House, Man, M3 2WJ UU Reference Number : 4200044487

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

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

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

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

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

Foul Water

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

Our preferred point of discharge would be to the 300mm diameter public combined sewer within St Mary's Parsonage located to the East of your proposed development at an unrestricted rate.

We do not object to the proposal of basement level foul discharging via a pumped solution if required.

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

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

Surface Water

All surface water flow from the proposed development should drain in-line with the drainage hierarchy, as outlined in Paragraph 80, (Reference ID: 7-080-20150323), of the National Planning Practice Guidance. We also recommend

you prioritise the use of multi-functional sustainable drainage systems for the management of surface water in accordance with national planning policy.

Generally, the aim should be to discharge surface run off as high up the following hierarchy of drainage options as reasonably practicable.

This is outlined as follows, in order of priority:

- 1. into the ground (infiltration);**
- 2. to a surface waterbody;**
- 3. to a surface water sewer or highway drain;**
- 4. to a combined sewer.**

For guidance, The **North West SuDS Pro-Forma** provides information on the appropriate evidence required at each stage of the hierarchy, to demonstrate how each level has been discounted.

The Lead Local Flood Authority has responsibility for all surface water drainage concerns and their input to your proposal is critical. You should also consider whether it is necessary to discuss your proposal with the Environment Agency, or Internal Drainage Board (if operating in your area).

The Local Planning Authority are the determining authority for any application for planning permission and the appropriate authority for determining cost viability of a proposed drainage scheme, such assessments are outside of the jurisdiction of United Utilities.

Infiltration

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

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

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

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

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

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

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

Waterbody

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 River Irwell located North of the proposed site.

We would encourage you to identify and 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.

Highway Drainage

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

Public Sewer

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

Once evidence is provided as outlined above, United Utilities will consider a connection to the 300mm diameter public combined sewer within St Mary's Parsonage located East of the proposed site at a pass forward flow to be agreed by the Lead Local Flood Authority. United Utilities request that any agreed rate does not exceed 6.2l/s.

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

Levels

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

Land drainage / Overland flows / track drainage

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

Existing Wastewater Assets Crossing the Site

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

Existing Water Assets Crossing the Site

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

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

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

Historical Flooding

We have no records of historical flooding of the proposed site, or in the immediate vicinity caused by severe weather or hydraulic inadequacy.

Connection Application

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

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

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

If we can be of any further assistance please don't hesitate to contact us further.

Kind regards,



Gary Jaundrell
Assistant Developer Engineer
Developer Services & Metering
Customer Services
T: 07388 715 589
[unitedutilities.com](https://www.unitedutilities.com)

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Coronavirus

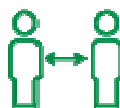
Prevent the spread



Wash your
hands



Disinfect
common surfaces



Practise social
distancing



FEVER +
COUGH

Stay home if you
have symptoms

[Click for our message to customers](#)

From: Chloé Grimsley [mailto:Chloe.Grimley@curtins.com]

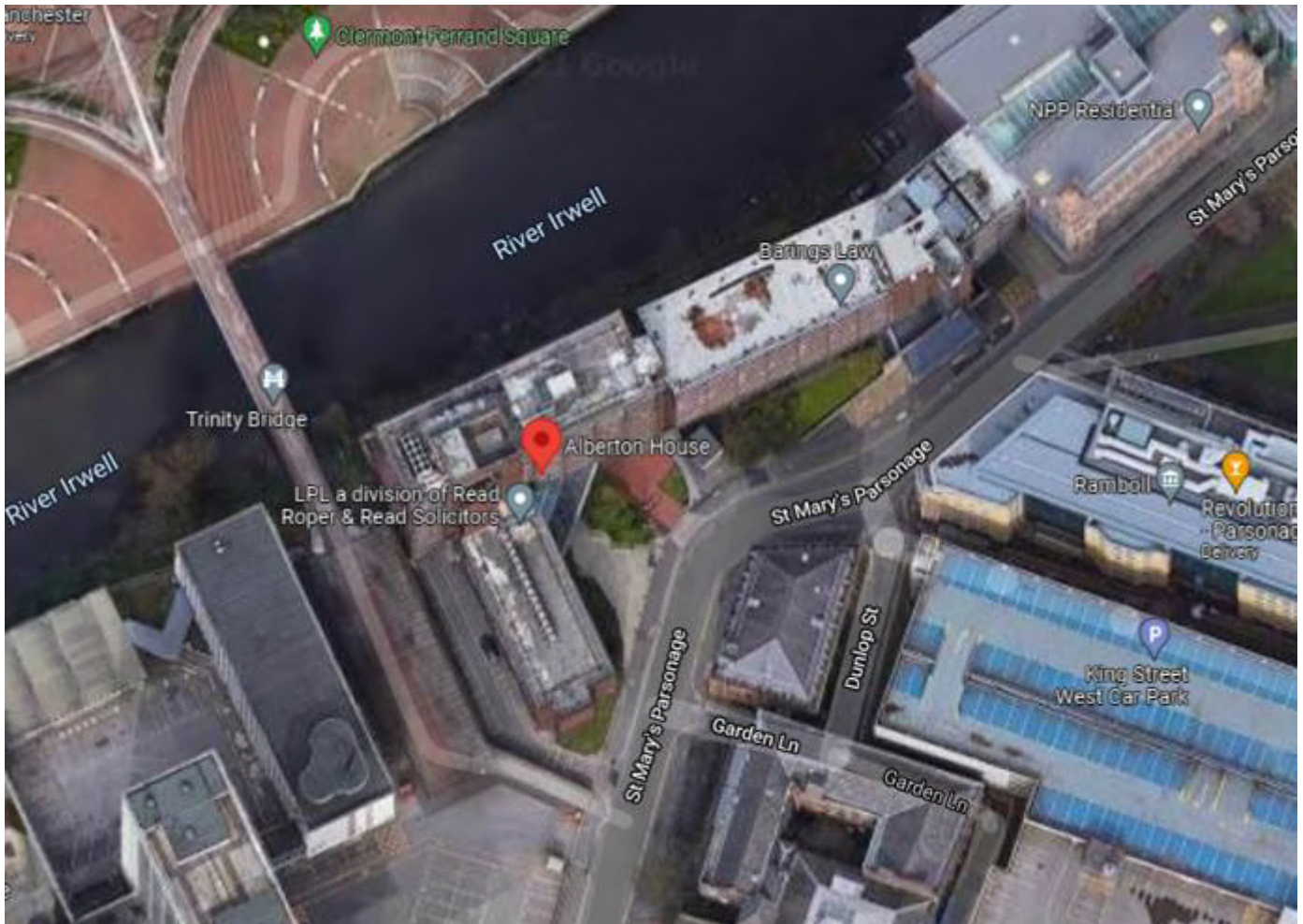
Sent: 21 October 2021 08:18

To: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>

Subject: Alorton House, Manchester

Good Morning Sir/Madam,

We are currently producing an FRA and drainage strategy for a site (Alberton House) located on St Marys Parsonage, Manchester, M3 2WJ (NGR – X:383484, Y:398427) – Please see location plan below and redline plan attached:



The scheme proposals are to demolish the existing building and construct a new 19 Storey plus basement building for Commercial (office) use.

Surface Water Drainage

As the scheme is still in the early stage's infiltration testing is yet to be undertaken within the site, however, reviewing BGS information infiltration is considered unsuitable for this site. Using SoilScape maps the ground conditions are shown to be free draining slightly acid sandy soils with a naturally high water table (<3m). It is therefore assumed the ground is not going to be suitable for infiltrating SUDs. Further site investigation works will confirm if infiltration is feasible.

The site is located adjacent to the River Irwell, therefore discharging to a water course is feasible – we are currently in discussions with the Peel regarding discharge to the watercourse.

Therefore on this basis we assume that connection to the public system for surface water is unlikely.

Foul Drainage

We have obtained the public sewer asset maps for the site and there are no recorded public sewers on site. The CCTV Survey also doesn't indicate any unmapped public assets.

The sewer records indicate that there is a 300mm combined public sewer within St Marys Parsonage highway, which is located to the South-East of the development site and flows in South-West direction towards Bridge Street. The existing CCTV Drainage survey indicates that the existing foul drainage from Alberton house and some existing surface water discharge to the public sewer in St Marys Parsonage.

For the proposed Foul Drainage we propose the following:

- The proposed foul drainage from ground floor level and above is proposed to be collected and discharged via pipework suspended below the ground floor slab and discharged to the surrounding public sewer network by gravity. The existing connection from site will be utilised where possible.
- It is proposed that any requirements for drainage within the basement area will discharge to a pump chamber and pumped up to the gravity system serving the ground floor drainage prior to discharge off site.
- Assessment for discharging by gravity from the basement will be considered once internal drainage is confirmed. Existing invert levels from the survey currently suggest that the existing public sewer in St Mary Parsonage is at approximately 28.3m and therefore discharge by gravity may be a possibility, however, this may increase the surcharge risk to the basement drainage. Therefore, at this stage it is proposed that basement drainage will be separately drained from the ground floor areas and pumped externally.

Please could you confirm if the above approach is acceptable to United Utilities?

Please could you also confirm the following:

- Please confirm any known historic flood events at or in the vicinity of the site.
- Please confirm if there any known flood risk concerns to the site.

I have attached the following information:

- Redline Boundary
- Ground Floor Plan
- Basement Plan
- Existing Drainage CCTV Survey drawing
- BGS Report

If you require any further information please let me know.

Kind Regards,
Chloé

Chloé Grimsley
Principal Engineer
T. 0161 236 2394
chloe.grimsley@curtins.com



Merchant Exchange
17-19 Whitworth Street West
Manchester M1 5WG



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Appendix J

Peel L&P Correspondence

Chloé Grimsley

From: Neil Adair <nadair@peellandp.co.uk>
Sent: 15 October 2021 15:02
To: Chloé Grimsley
Subject: RE: Alberton House, Manchester

Good Afternoon Chloé,

Thank you for your e-mail and information.

Those discharge rates look fine & acceptable.

With regards to the discharge velocities, MSCCL's usual position on these are:

- The discharge at the outlet must not interfere with the passage of vessels. The calculations must show that the transverse velocity from the discharge pipe is acceptable to MSCCL. The maximum velocity should be in the range 1.5 to 3.0 m/s (with a target of 2.0 m/s) for the 1 in 30 year event.
- Any pipe outlet through the canal wall, at or above water level, should be provided with a flap valve.

Generally speaking, if works are taking place that will lead to anything oversailing any part of the water, then these will need to be licenced by MSCCL. We can discuss further when you have more details of the proposals.

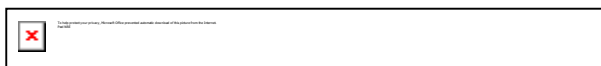
Any new outfalls will need to be covered by a Licence agreement for the outfalls and ongoing discharge.

Please let me know if you need any further information.

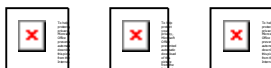
Kind Regards

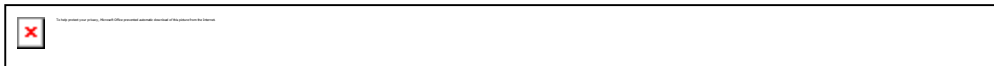
Neil

Neil Adair
Senior Asset Manager - Peel NRE
Peel L&P



0161 629 8353
07825 513 990
nadair@peellandp.co.uk
peellandp.co.uk





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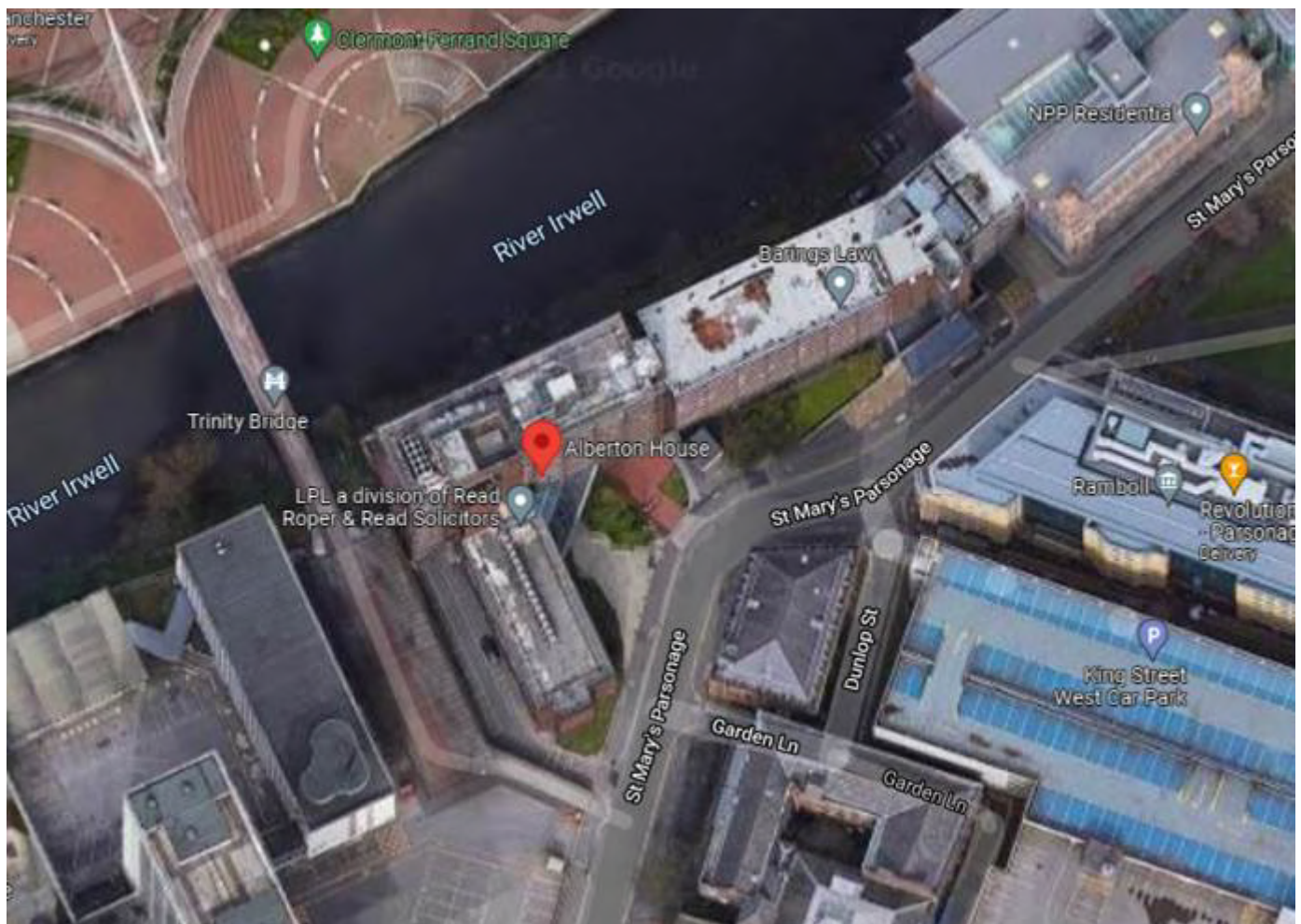
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From: Chloé Grimsley <Chloe.Grimmsley@curtins.com>
Sent: 15 October 2021 10:20
To: Neil Adair <nadair@peellandp.co.uk>
Subject: Alberton House, Manchester

CAUTION - This email originated from outside of the organisation. Please check you recognise both the sender's name and email address to ensure the content is safe, and be careful with any embedded links and attachments

Good Morning Neil,

We are currently producing an FRA and drainage strategy for a proposed development site (Alberton House) located on St Marys Parsonage, Manchester, M3 2WJ (NGR – X:383484, Y:398427) – Please see location plan below and redline plan attached:



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We have calculated existing flows from the site (0.14ha) using the Wallingford Modified rational method and the results are below;

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Taking the existing flows generated from the full site and applying a 50% reduction in flows in line with existing planning policies, the proposed discharge rate for the redeveloped areas are as follows;

1:1 year rainfall event = 2.9* l/s

1:30 year rainfall event = 7.2 l/s

1:100 year rainfall event = 9.4 l/s

*We suggest increasing to 5 l/s to reduce the risk of blockage due to the small orifice required.

The maximum discharge rate for the whole development for storms up to and including 1 in 100 year plus climate change is 9.4 l/s.

Please could you confirm if you would accept the proposed flows and any maximum velocities for the outfall discharge?

Please could you also confirm the following:

- Would any formal approval for constructing a new outfall be required (existing outfalls may be unsuitable for reuse due to levels of the basement reducing in comparison to current basement levels).
- Please advise if any additional approvals are deemed necessary – if applicable - for working in proximity to the existing river wall.

I have attached the following information:

- Redline Boundary
- Ground Floor Plan
- Basement Plan
- Existing Drainage CCTV Survey drawing
- BGS Report

If you require any further information please let me know.

Kind Regards,
Chloé

Chloé Grimsley
Principal Engineer
T. 0161 236 2394
chloe.grimsley@curtins.com

Merchant Exchange
17-19 Whitworth Street West
Manchester M1 5WG



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Chloé Grimsley

From: Neil Adair <nadair@peellandp.co.uk>
Sent: 11 April 2022 09:39
To: Chloé Grimsley
Subject: RE: Alberton House, Manchester

Good Morning Chloe,

Further to my e-mail below, I've not heard back from the Marine Team and they have confirmed the following:

'As the navigation authority for this section of the Irwell, we would be interested in modifications to the bank as they could modify the flow in the area and possibly lead to problems with navigation and the potential for increased siltation.

We do not have any access requirements for maintenance'

Please let me know if you need anything further at this stage.

Kind Regards

Neil

Neil Adair

Senior Asset Manager - Peel NRE

Peel L&P



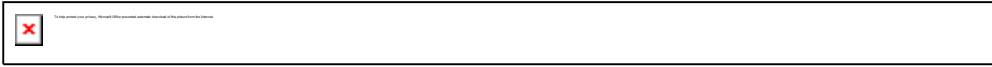
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From: Neil Adair
Sent: 06 April 2022 14:45
To: Chloé Grimsley <Chloe.Grimmsley@curtins.com>
Subject: RE: Alberton House, Manchester

Hi Chloé,

Thank you for your e-mail.

Peel / Manchester Ship Canal Company (MSCC) do not own any of the river bank or land behind it around this location.

MSCC shouldn't need access as they don't own the bank and don't have the obligation to maintain the bank, that would sit with land owner. I will double check your questions with the Marine team at Peel Ports / Manchester Ship Canal Company and let you know when they respond.

Kind Regards

Neil

From: Chloé Grimsley <Chloe.Grimmsley@curtins.com>
Sent: 06 April 2022 09:12
To: Neil Adair <nadair@peellandp.co.uk>
Subject: RE: Alberton House, Manchester

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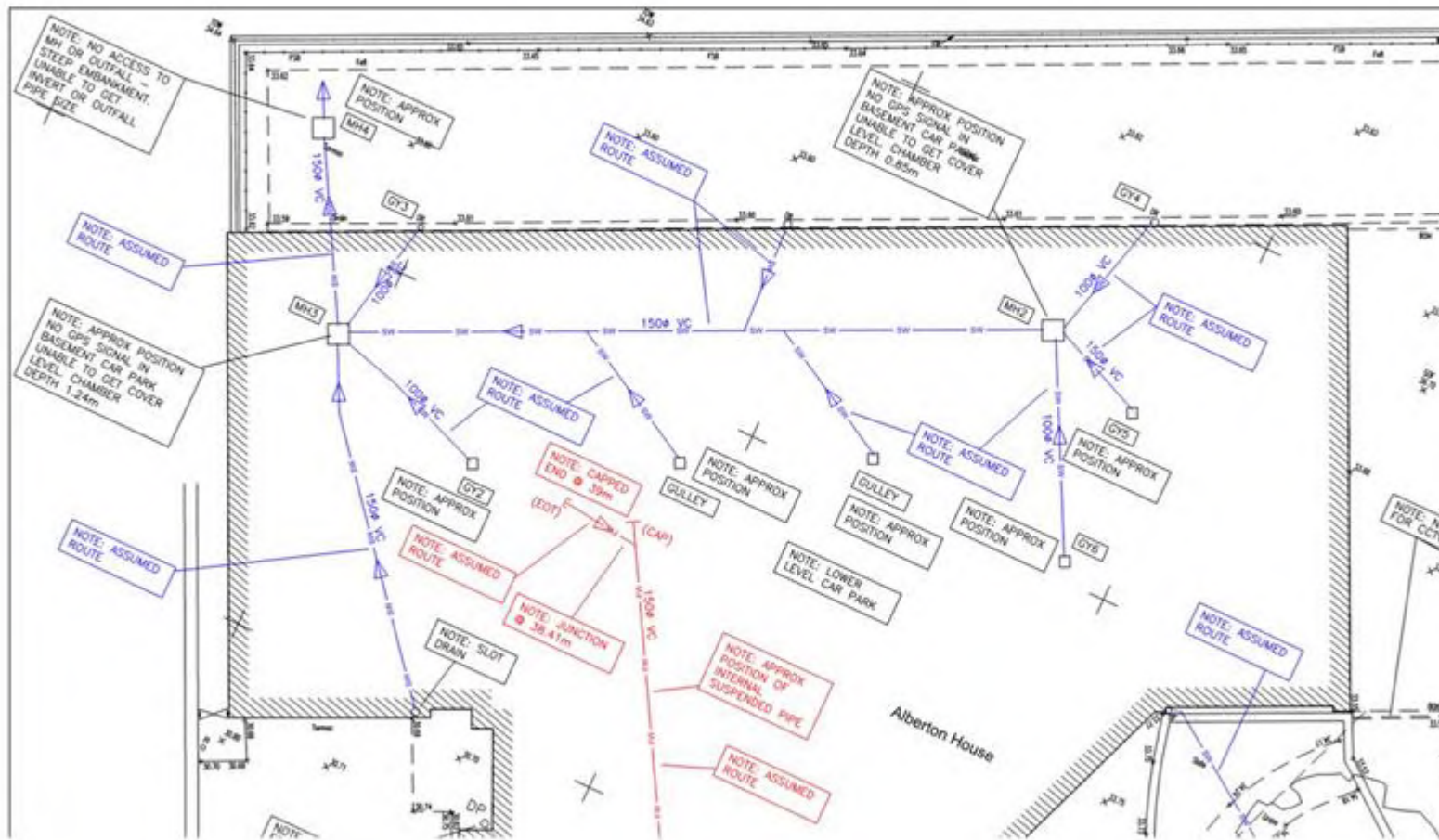
Good Morning Neil,

Further to our previous correspondence in relation to the above site, we have some further queries which have come to light as we have been progressing with the concept design for the drainage.

I have attached the proposed extent of works for information.

At present, access to the riverside is limited however we are aware there is an existing surface water outfall to the river from the building, but its condition is unknown. See image below showing indicative outfall.

We are therefore currently assuming that a new outfall will be required until we can prove the existing outfall is suitable.



Where a new discharge is required, we will need to agree this with yourselves based on the parameters set out in your email below, however please can you advise if Peel own the river wall and if so the extent of ownership behind the wall?

The title plans only show ownership up to the wall and doesn't extend to the river centreline.

I have attached some photographs, these are taken from the bridge west of the building - as you can see from the photographs, there is a banking which slopes down from the building face to the river wall and the upper floors of the building oversail the banking slope.

Based on river flood levels we have obtained from the EA, the water is likely to extend partly up the banking slope during a 1 in 1000-year event, therefore we would assume this banking forms part of the river channel? And any changes to this banking would need agreement from Peel?

If the banking behind the wall is not part of Peel ownership, please could you advise if Peel would require any access requirements to behind the wall i.e for maintenance.

Kind Regards,
Chloé

Chloé Grimsley Principal Engineer

Curtins

T. [0161 236 2394](tel:01612362394) | chloe.grimsley@curtins.com

From: Neil Adair <nadair@peellandp.co.uk>

Sent: 15 October 2021 15:02

To: Chloé Grimsley <Chloe.Grimmsley@curtins.com>

Subject: RE: Alberton House, Manchester

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Please let me know if you need any further information.

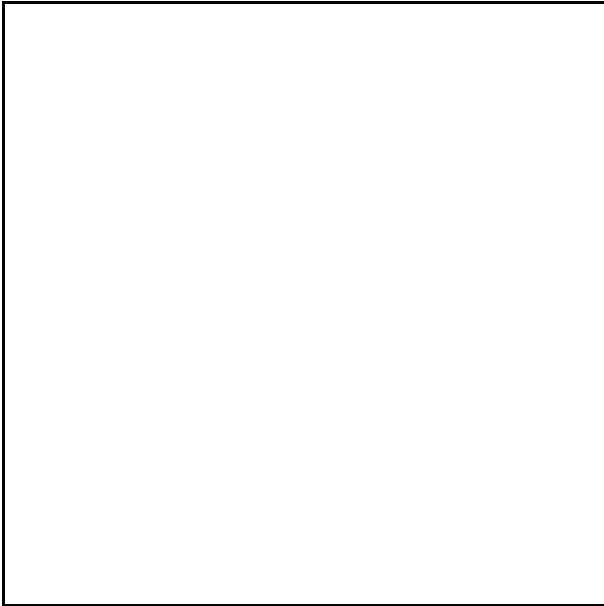
Kind Regards

Neil

Neil Adair

Senior Asset Manager - Peel NRE

Peel L&P

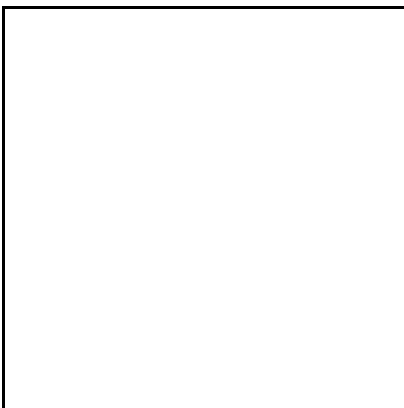
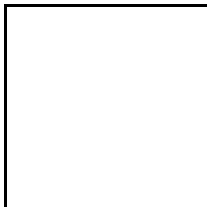
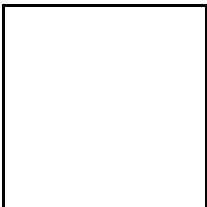


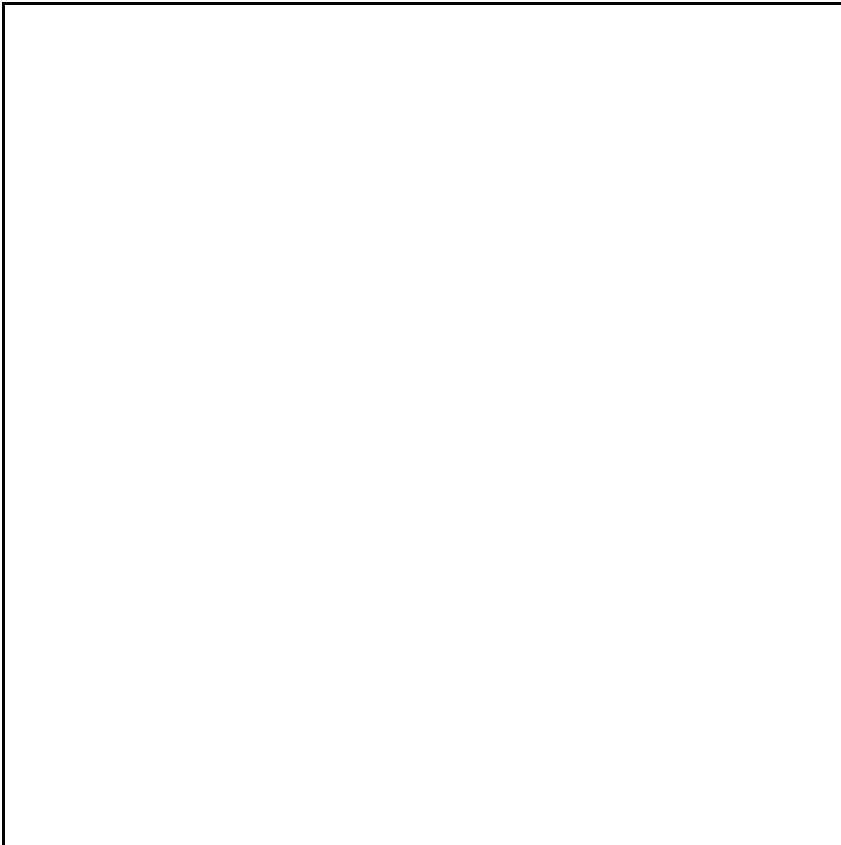
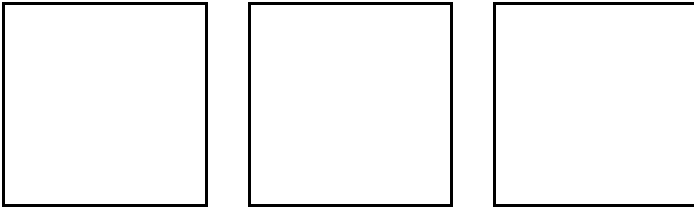
0161 629 8353

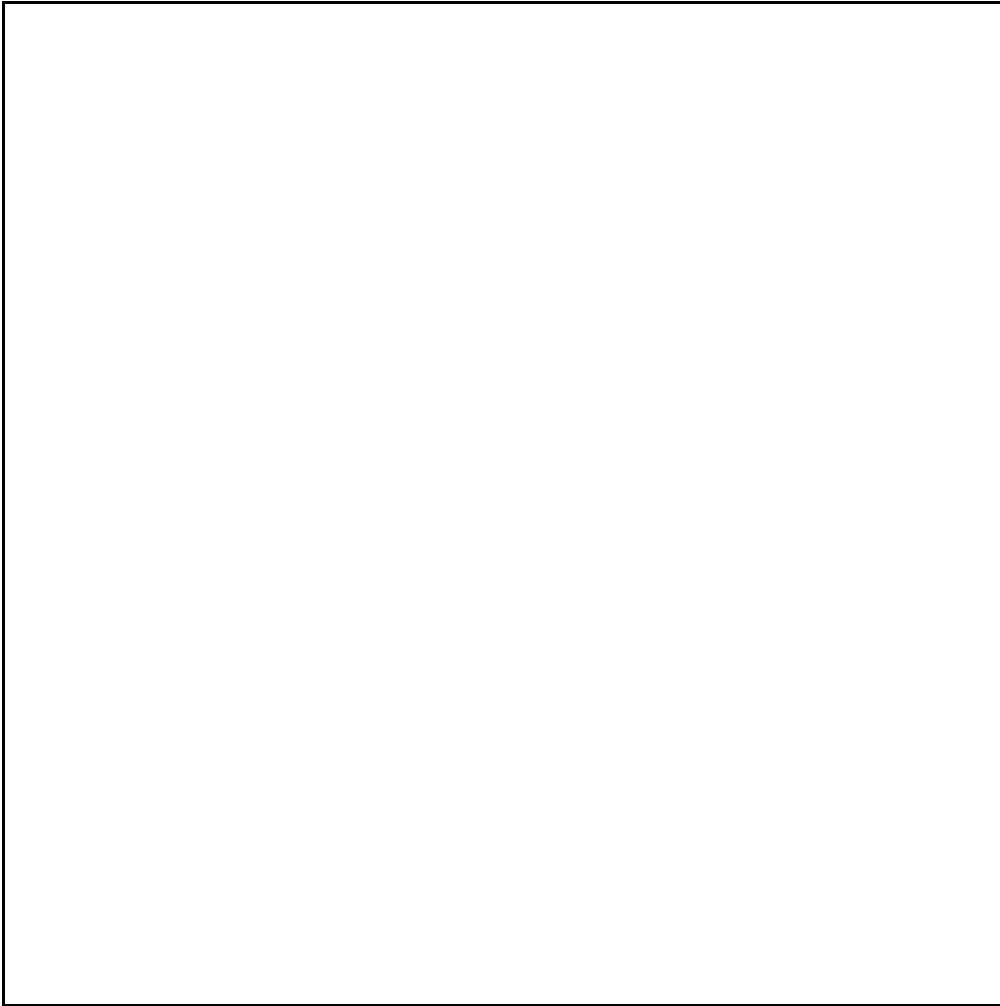
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 Principal Engineer
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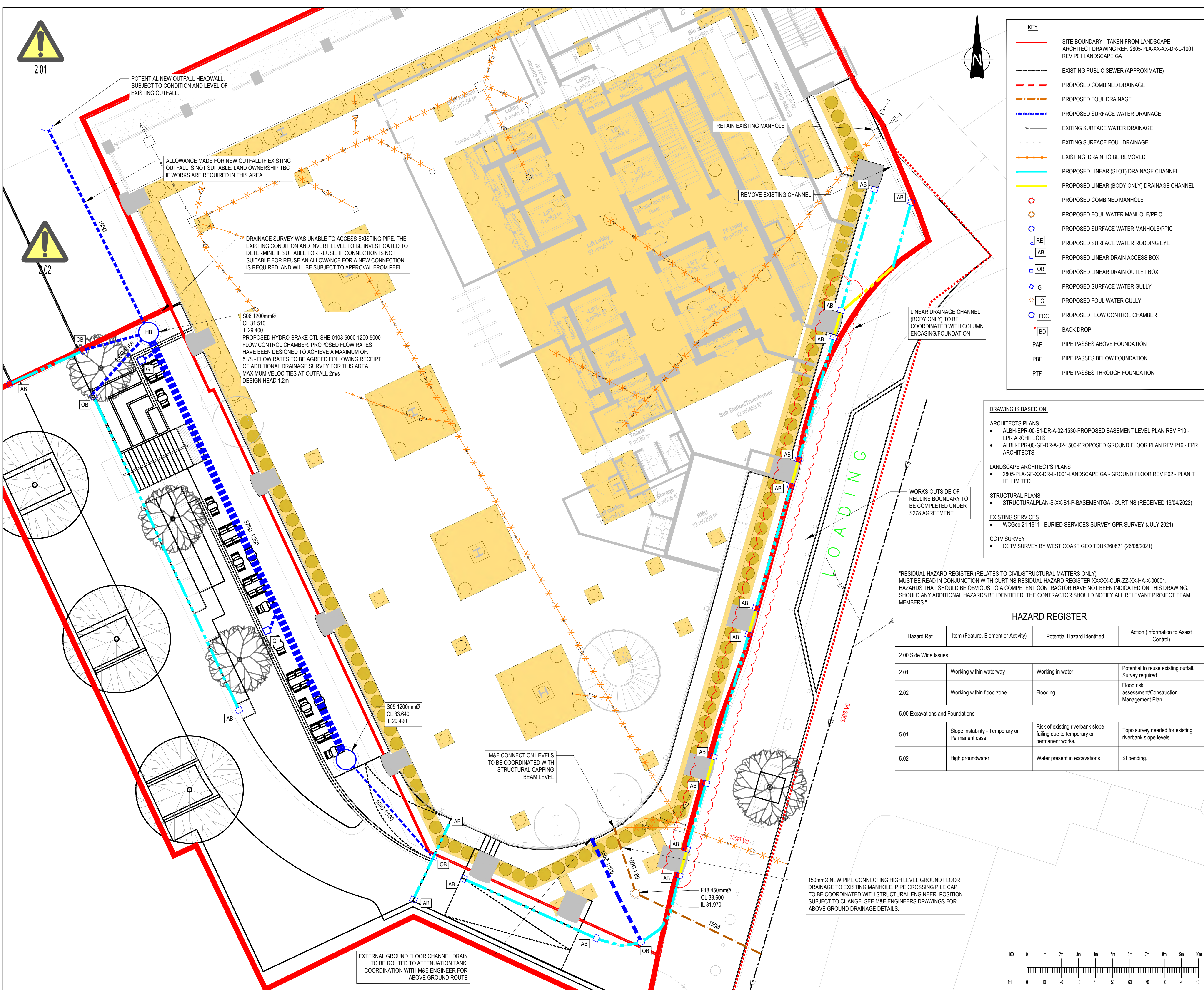
Appendix K

Proposed Drainage Layout – Basement

Proposed Drainage Layout – Ground Floor

Proposed Surface Water Calculations – Basement Outfall (Building)

Proposed Surface Water Calculations – Ground Floor Outfall (Public Realm)



KEY	
—	SITE BOUNDARY - TAKEN FROM LANDSCAPE ARCHITECT DRAWING REF: 2805-PLA-XX-XX-DR-L-1001 REV P01 LANDSCAPE GA
---	EXISTING PUBLIC SEWER (APPROXIMATE)
- - -	PROPOSED COMBINED DRAINAGE
- - -	PROPOSED FOUL DRAINAGE
- - -	PROPOSED SURFACE WATER DRAINAGE
---	EXISTING SURFACE WATER DRAINAGE
---	EXISTING SURFACE FOUL DRAINAGE
x x x	EXISTING DRAIN TO BE REMOVED
---	PROPOSED LINEAR (SLOT) DRAINAGE CHANNEL
---	PROPOSED LINEAR (BODY ONLY) DRAINAGE CHANNEL
○	PROPOSED COMBINED MANHOLE
○	PROPOSED FOUL WATER MANHOLE/PPIC
○	PROPOSED SURFACE WATER MANHOLE/PPIC
○ RE	PROPOSED SURFACE WATER RODDING EYE
□ AB	PROPOSED LINEAR DRAIN ACCESS BOX
□ OB	PROPOSED LINEAR DRAIN OUTLET BOX
◇ G	PROPOSED SURFACE WATER GULLY
◇ FG	PROPOSED FOUL WATER GULLY
○ FCC	PROPOSED FLOW CONTROL CHAMBER
■ BD	BACK DROP
PAF	PIPE PASSES ABOVE FOUNDATION
PBF	PIPE PASSES BELOW FOUNDATION
PTF	PIPE PASSES THROUGH FOUNDATION

- DRAWING IS BASED ON:
- ARCHITECTS PLANS
- ALBH-EPR-00-B1-DR-A-02-1530-PROPOSED BASEMENT LEVEL PLAN REV P10 - EPR ARCHITECTS
 - ALBH-EPR-00-GF-DR-A-02-1500-PROPOSED GROUND FLOOR PLAN REV P16 - EPR ARCHITECTS
- LANDSCAPE ARCHITECT'S PLANS
- 2805-PLA-GF-XX-DR-L-1001-LANDSCAPE GA - GROUND FLOOR REV P02 - PLANIT I.E. LIMITED
- STRUCTURAL PLANS
- STRUCTURAL PLAN-S-XX-B1-P-BASEMENTGA - CURTINS (RECEIVED 19/04/2022)
- EXISTING SERVICES
- WGeo 21-1611 - BURIED SERVICES SURVEY GPR SURVEY (JULY 2021)
- CCTV SURVEY
- CCTV SURVEY BY WEST COAST GEO TDUK260821 (26/08/2021)

"RESIDUAL HAZARD REGISTER (RELATES TO CIVIL/STRUCTURAL MATTERS ONLY) MUST BE READ IN CONJUNCTION WITH CURTINS RESIDUAL HAZARD REGISTER XXXXX-CUR-ZZ-XX-HA-X-00001. HAZARDS THAT SHOULD BE OBVIOUS TO A COMPETENT CONTRACTOR HAVE NOT BEEN INDICATED ON THIS DRAWING. SHOULD ANY ADDITIONAL HAZARDS BE IDENTIFIED, THE CONTRACTOR SHOULD NOTIFY ALL RELEVANT PROJECT TEAM MEMBERS."

HAZARD REGISTER			
Hazard Ref.	Item (Feature, Element or Activity)	Potential Hazard Identified	Action (Information to Assist Control)
2.00 Side Wide Issues			
2.01	Working within waterway	Working in water	Potential to reuse existing outfall. Survey required
2.02	Working within flood zone	Flooding	Flood risk assessment/Construction Management Plan
5.00 Excavations and Foundations			
5.01	Slope instability - Temporary or Permanent case.	Risk of existing riverbank slope failing due to temporary or permanent works.	Topo survey needed for existing riverbank slope levels.
5.02	High groundwater	Water present in excavations	SI pending.

- GENERAL NOTES:
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
 - DESIGN BASED ON TOPOGRAPHICAL SURVEY AND CCTV SURVEY INFORMATION AVAILABLE AT THE TIME OF DESIGN.
 - ALL EXISTING SEWERS, CONNECTIONS, PIPE SIZES AND INVERT LEVELS TO BE CONFIRMED BY CONTRACTOR PRIOR TO COMMENCEMENT OF WORKS TO ENSURE CONNECTIVITY. ANY VARIANCE FROM THE INFORMATION SHOWN SHOULD BE REPORTED TO THE ENGINEER FOR REVIEW.
 - DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
 - REFER TO DRAWING ALBH-CUR-XX-XX-DR-C-92530_GENERAL DRAINAGE NOTES.

P02	STAGE 3 ISSUE	25/04/22	LK	CG
P01	DRAFT STAGE 3 ISSUE	04/04/22	LK	CG
Rev:	Description:	Date:	By:	Chkd:



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Status: **SUITABLE FOR INFORMATION** **S2**

Project: **ALBERTON HOUSE**

Dwg Title: **PROPOSED GROUND FLOOR DRAINAGE LAYOUT**

Drawn By	Designed By	Checked By
LK	LK	CG
Date	22/03/22	Scales @ A1
1:100		

Project No - Originator - Function - Spatial - Form - Discipline - Number	Revision
077764 - CUR - XX - 00 - DR - C - 92501	P02

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	40	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	18.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.358	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.075	5.00	29.140	450	383488.965	398418.801	0.930
2	0.075	5.00	29.140	450	383484.258	398429.111	1.062
3			29.140	1200	383473.098	398426.132	1.700
4			29.140	1500	383471.746	398429.229	1.717
5			29.140	1200	383466.608	398432.521	1.744

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	1	2	11.334	0.600	28.210	28.153	0.057	200.0	225	5.21	50.0
1.001	2	3	11.551	0.600	28.078	28.020	0.058	200.0	300	5.38	50.0
1.002	3	4	3.379	0.600	27.440	27.423	0.017	200.0	225	5.44	50.0
1.003	4	5	6.102	0.600	27.427	27.396	0.031	200.0	150	5.58	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
1.000	0.921	36.6	14.2	0.705	0.762	0.075	0.0
1.001	1.108	78.3	28.5	0.762	0.820	0.150	0.0
1.002	0.921	36.6	28.5	1.475	1.492	0.150	0.0
1.003	0.707	12.5	28.5	1.563	1.594	0.150	0.0

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	11.334	200.0	225	Circular	29.140	28.210	0.705	29.140	28.153	0.762
1.001	11.551	200.0	300	Circular	29.140	28.078	0.762	29.140	28.020	0.820
1.002	3.379	200.0	225	Circular	29.140	27.440	1.475	29.140	27.423	1.492
1.003	6.102	200.0	150	Circular	29.140	27.427	1.563	29.140	27.396	1.594

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1	450	Manhole	Adoptable	2	450	Manhole	Adoptable
1.001	2	450	Manhole	Adoptable	3	1200	Manhole	Adoptable
1.002	3	1200	Manhole	Adoptable	4	1500	Manhole	Adoptable
1.003	4	1500	Manhole	Adoptable	5	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
1	383488.965	398418.801	29.140	0.930	450		0	1.000	28.210
2	383484.258	398429.111	29.140	1.062	450		1	1.000	28.153
3	383473.098	398426.132	29.140	1.700	1200		1	1.001	28.078
4	383471.746	398429.229	29.140	1.717	1500		1	1.002	27.440
5	383466.608	398432.521	29.140	1.744	1200		1	1.003	27.423

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	18.000	Drain Down Time (mins)	240
Ratio-R	0.358	Additional Storage (m³/ha)	20.0
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	40	0	0

Node 4 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	27.427	Product Number	CTL-SHE-0112-5000-0500-5000
Design Depth (m)	0.500	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	5.0	Min Node Diameter (mm)	1200

Results for 1 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	28.290	0.080	9.1	0.1409	0.0000	OK
15 minute winter	2	10	28.181	0.103	18.0	0.1624	0.0000	OK
60 minute winter	3	43	27.552	0.112	9.8	7.1126	0.0000	OK
60 minute winter	4	43	27.551	0.128	4.8	0.2255	0.0000	OK
15 minute summer	5	1	27.396	0.000	3.8	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	8.9	0.742	0.244	0.1365	
15 minute winter	2	1.001	3	17.8	0.872	0.227	0.2362	
60 minute winter	3	1.002	4	4.8	0.277	0.132	0.0725	
60 minute winter	4	Hydro-Brake®	5	4.8				14.1

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	28.346	0.136	22.4	0.2412	0.0000	OK
15 minute winter	2	10	28.254	0.176	44.4	0.2763	0.0000	OK
60 minute winter	3	53	27.792	0.352	23.8	22.3448	0.0000	SURCHARGED
60 minute winter	4	53	27.791	0.368	5.6	0.6505	0.0000	SURCHARGED
15 minute summer	5	1	27.396	0.000	5.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	22.0	0.930	0.601	0.2684	
15 minute winter	2	1.001	3	43.8	1.090	0.560	0.4650	
60 minute winter	3	1.002	4	5.6	0.340	0.152	0.1344	
60 minute winter	4	Hydro-Brake®	5	5.0				34.5

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	28.440	0.230	40.4	0.4068	0.0000	SURCHARGED
15 minute winter	2	10	28.348	0.270	80.0	0.4243	0.0000	OK
120 minute winter	3	96	28.196	0.756	27.4	48.0257	0.0000	SURCHARGED
120 minute winter	4	96	28.195	0.772	6.2	1.3639	0.0000	SURCHARGED
15 minute summer	5	1	27.396	0.000	5.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	39.7	1.033	1.084	0.4327	
15 minute winter	2	1.001	3	78.9	1.283	1.008	0.7044	
120 minute winter	3	1.002	4	6.2	0.335	0.168	0.1344	
120 minute winter	4	Hydro-Brake®	5	6.1				78.8

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	40	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	18.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.358	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.017	5.00	33.640	1200	383478.051	398396.553	4.149
3	0.018	5.00	31.110	1200	383466.557	398421.433	1.710
3_OUT			30.500	1200	383460.741	398433.217	1.231

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.001	3	3_OUT	13.141	0.600	29.400	29.269	0.131	100.3	150	5.66	50.0
1.000	1	3	27.407	0.600	29.491	29.400	0.091	300.0	375	5.44	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
1.001	1.003	17.7	6.6	1.560	1.081	0.035	0.0
1.000	1.041	114.9	3.2	3.774	1.335	0.017	0.0

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.001	13.141	100.3	150	Circular	31.110	29.400	1.560	30.500	29.269	1.081
1.000	27.407	300.0	375	Circular	33.640	29.491	3.774	31.110	29.400	1.335

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.001	3	1200	Manhole	Adoptable	3_OUT	1200	Manhole	Adoptable
1.000	1	1200	Manhole	Adoptable	3	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
1	383478.051	398396.553	33.640	4.149	1200				
						0	1.000	29.491	375
3	383466.557	398421.433	31.110	1.710	1200		1	1.000	29.400
						0	1.001	29.400	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
3_OUT	383460.741	398433.217	30.500	1.231	1200	1	1.001	29.269	150



Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	18.000	Drain Down Time (mins)	240
Ratio-R	0.358	Additional Storage (m³/ha)	20.0
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	40	0	0

Node 3 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	29.400	Product Number	CTL-SHE-0103-5000-1200-5000
Design Depth (m)	1.200	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	5.0	Min Node Diameter (mm)	1200

Results for 1 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	11	29.525	0.034	2.1	0.0411	0.0000	OK
15 minute winter	3	12	29.504	0.104	4.2	0.1389	0.0000	OK
15 minute summer	3_OUT	1	29.269	0.000	3.4	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	3	2.0	0.172	0.017	0.4011	
15 minute winter	3	Hydro-Brake®	3_OUT	3.6				2.0

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	14	29.644	0.153	5.1	0.1858	0.0000	OK
15 minute winter	3	13	29.638	0.238	9.0	0.3189	0.0000	SURCHARGED
15 minute summer	3_OUT	1	29.269	0.000	4.8	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	3	4.7	0.192	0.041	1.5700	
15 minute winter	3	Hydro-Brake®	3_OUT	4.9				4.8

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	1	25	30.450	0.959	7.2	1.1633	0.0000	SURCHARGED
30 minute winter	3	25	30.450	1.050	9.8	1.4080	0.0000	SURCHARGED
15 minute summer	3_OUT	1	29.269	0.000	5.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute winter	1	1.000	3	3.4	0.182	0.030	3.0229	
30 minute winter	3	Hydro-Brake®	3_OUT	5.0				11.7

Appendix L

Proposed Landscape Layout Roof Terraces

Proposed Raised Planters GA Roof Terraces

Proposed Landscape Details Roof Terraces



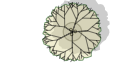
SOFTWORKS



Planting Mix - Evergreen & Herbaceous Shrubs
- 5L pot at 5 per m2, to include bark mulch layer.
- To include evergreen, native and non-native beneficial species



Proposed Multi Stem Trees
1.m Clear multi-stem. Min 5 branches
Refer to Tree schedule



Proposed Multi Stem Trees in Pots
1.m Clear multi-stem. Min 5 branches
Refer to Tree schedule

Tree Schedule					
Abr.	Species	Size	Height	Pot Size	Quantity
MULTI STEM TREES					
Am	Amelanchier Lamarckii	2 - 2.5m	Multi Stem	Container Grown	9
Bn 'MS'	Betula nigra	2m	Multi Stem	Container Grown	9
Bp 'MS'	Betula pendula	2m	Multi Stem	Container Grown	8
Sv (ML)	Syringa vulgaris 'Mme Lemoine'	1.5m	Multi Stem	Container Grown	8
Ca	Corylus avellana	1.5m	Multi Stem	Container Grown	8



Amelanchier Lamarckii



Syringa vulgaris (Mme Lemoine)



Corylus avellana



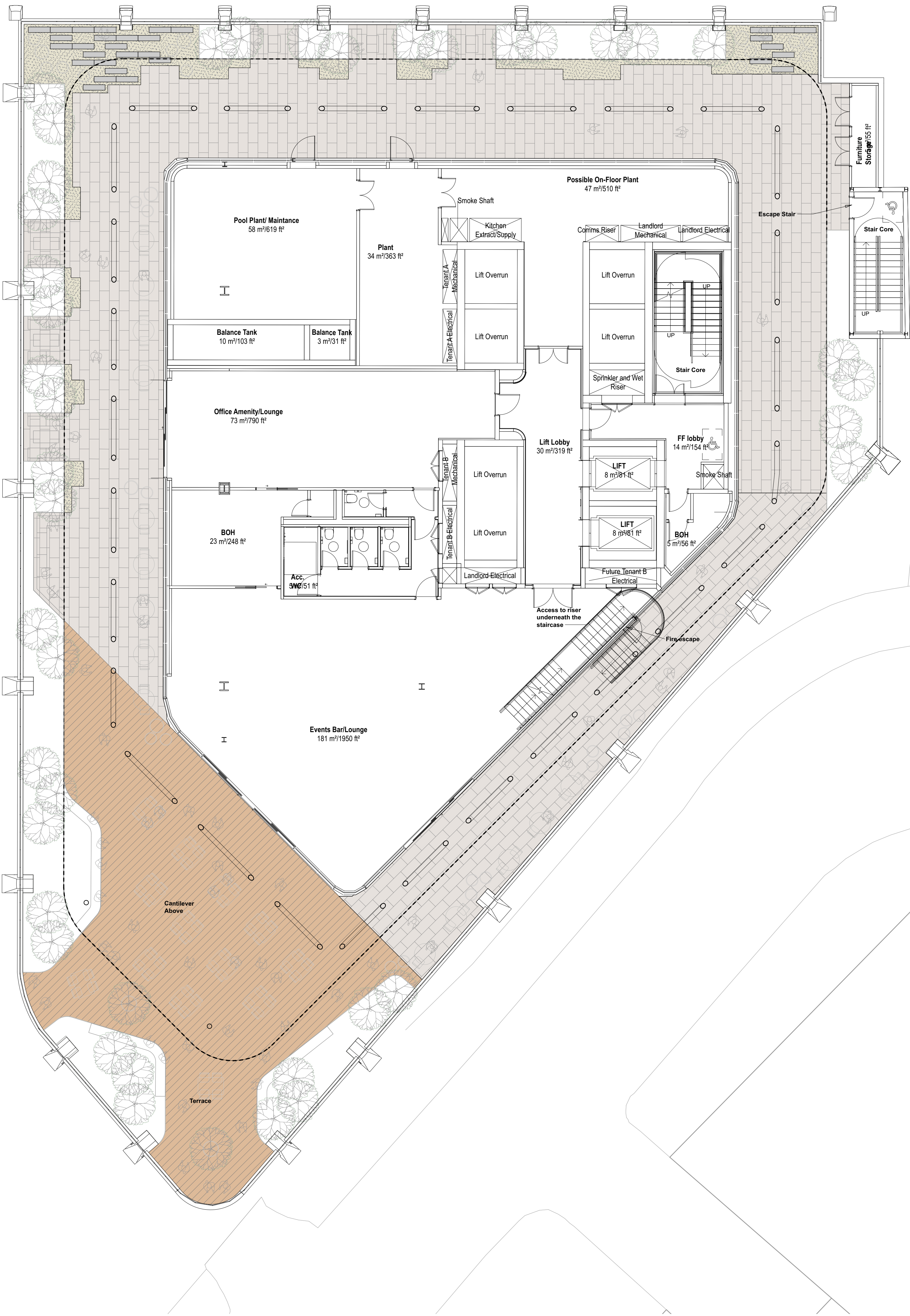
Betula pendula



Betula nigra

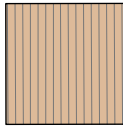
				Client Bruntwood		Planit I.E. Limited E: info@planit-ie.com W: planit-ie.com MANCHESTER 2 Back Grafton St., Altrincham, WA14 1DY T: 0161 928 9281 LONDON Unit 6 Waterside, 44-48 Wharf Road, London, N1 7UX T: 0207 253 5678 LIVERPOOL Tempest 5.3, 12 Tithebarn Street, Liverpool, L2 2DT T: 0151 363 1230 Ⓒ THIS DRAWING IS COPYRIGHT PROTECTED AND MAY NOT BE REPRODUCED IN WHOLE OR PART WITHOUT WRITTEN AUTHORITY FROM THE OWNER.
				Project Alberton House		
				Drg Title Softworks - Roof Terrace		
Created on 01-03-22		Created by JC		Approved by FF		
Scale 1:100		Size A1		Workstage Planning		
Drg No. 2805-PLA-RT-XX-DR-L-0004		Suitability S3		Revision P01		
P01	17.06.22	For Planning		JC	RM	
	Date	Description	Drawn	Apprvd.		

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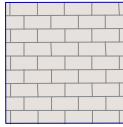


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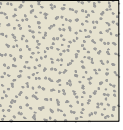
HARDWORKS



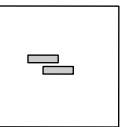
Composite Deck [REF: D1]
Material: Enhanced Grain Millboard
Composite Decking.
Colour: 'Smoked Oak'
Size: W176 x L3600 x H32mm
Manufacturer: Millboard Ltd or similar approved.
Notes: Laid on a Millboard Plas Pro Subframe System & Millboard Duolift Joist Cradle with Self Levelling Joint and 1 Riser - forms 1:80 fall.



Concrete Flag Paving [REF: P9]
Material: Concrete Flags
Colour: 'Cream' Andover Textured Paving.
Size: 450 x 450 x 50 (l x w x t)
Manufacturer: Charcon Industries or similar approved.
Notes: Laid on Marshalls MF2 adjustable pedestals to manufacturer's recommendations. Number, product and spacings subject to further development.



Loose Gravel [REF: P10]
Material: Angular Gravel Inlay
Size: 10mm (115mm depth)
Colour: TBC
Manufacturer: TBC
Notes: To be fixed in place with Vuba 'Easishield' Stone Binder or equal approved.



Granite Paving Slabs [REF: P11]
Material: Granite
Unit Size: 250 x 900 x 75 (l x w x t)
Colour: Azul Noche.
Manufacturer: By Hardscape Ltd or equal approved.
Notes:

Client Bruntwood

Project Alberton House

Drg Title Hardworks - Roof Terrace

Created on 01-03-22 Created by JC Approved by FF

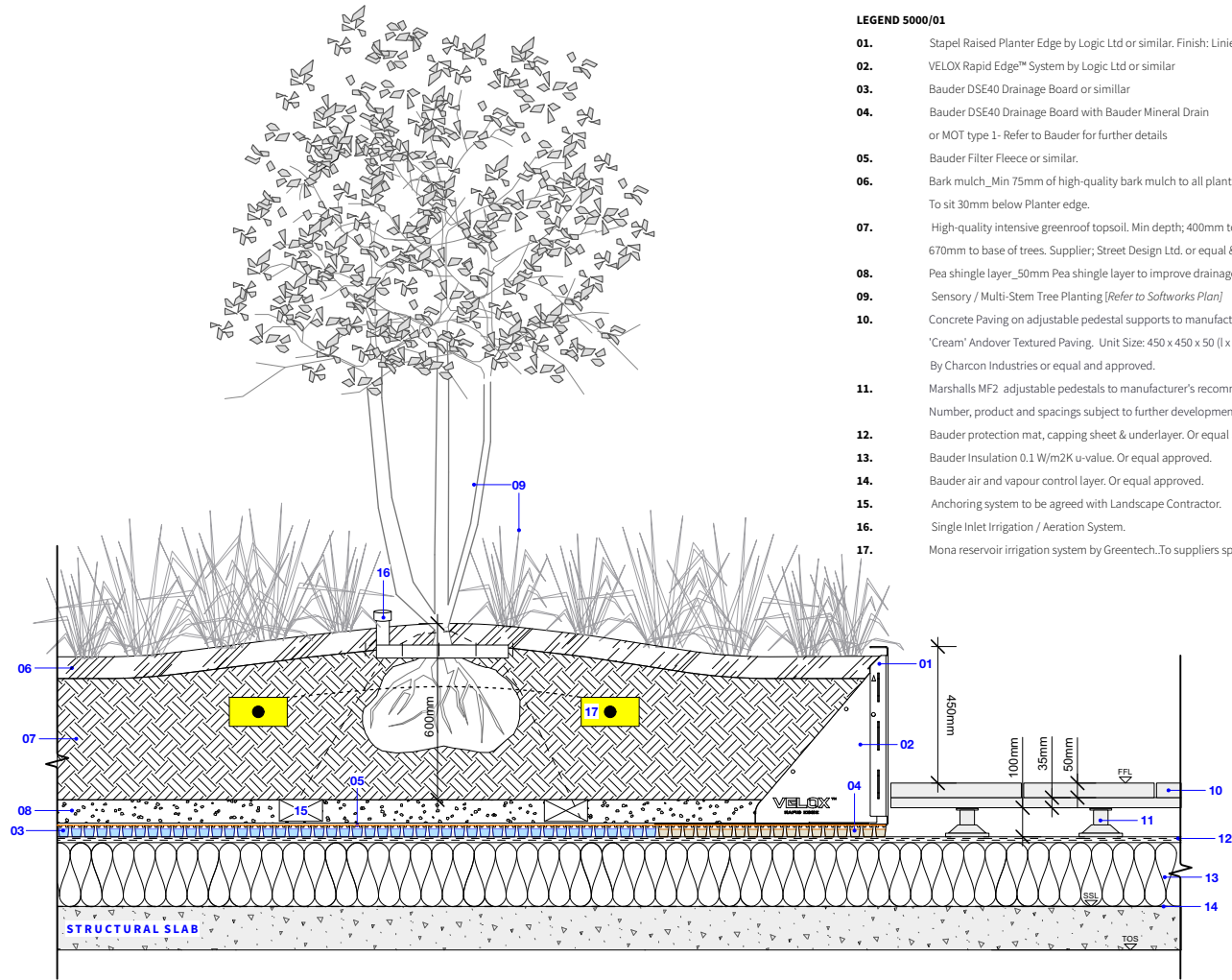
Scale 1:100 Size A1 Workstage Planning

Drg No. 2805-PLA-RT-XX-DR-L-1000 Suitability S3 Revision P01

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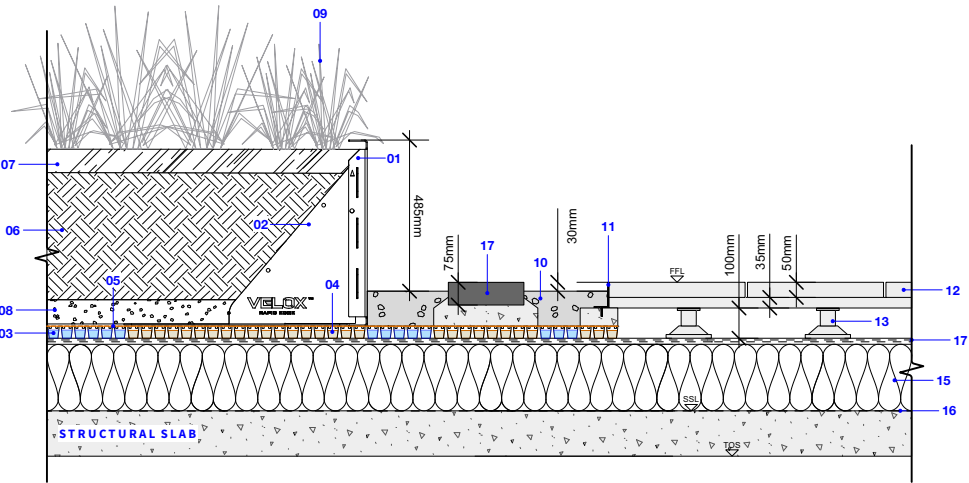
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P01 17.06.22 For Planning JC RM
Date Description Drawn Apprvd.



- LEGEND 5000/01**
01. Stapel Raised Planter Edge by Logic Ltd or similar. Finish: Linier.
 02. VELOX Rapid Edge™ System by Logic Ltd or similar
 03. Bauder DSE40 Drainage Board or similarr
 04. Bauder DSE40 Drainage Board with Bauder Mineral Drain
or MOT type 1- Refer to Bauder for further details
 05. Bauder Filter Fleece or similar.
 06. Bark mulch_Min 75mm of high-quality bark mulch to all planting beds & tree pits.
To sit 30mm below Planter edge.
 07. High-quality intensive greenroof topsoil. Min depth; 400mm to planting beds,
670mm to base of trees. Supplier; Street Design Ltd. or equal & approved.
 08. Pea shingle layer_50mm Pea shingle layer to improve drainage. No fines.
 09. Sensory / Multi-Stem Tree Planting [Refer to Softworks Plan]
 10. Concrete Paving on adjustable pedestal supports to manufacturers recommendations.
'Cream' Andover Textured Paving. Unit Size: 450 x 450 x 50 (l x w x t)
By Charcon Industries or equal and approved.
 11. Marshalls MF2 adjustable pedestals to manufacturer's recommendations.
Number, product and spacings subject to further development.
 12. Bauder protection mat, capping sheet & underlayer. Or equal approved.
 13. Bauder Insulation 0.1 W/m2K u-value. Or equal approved.
 14. Bauder air and vapour control layer. Or equal approved.
 15. Anchoring system to be agreed with Landscape Contractor.
 16. Single Inlet Irrigation / Aeration System.
 17. Mona reservoir irrigation system by Greentech.To suppliers specification.

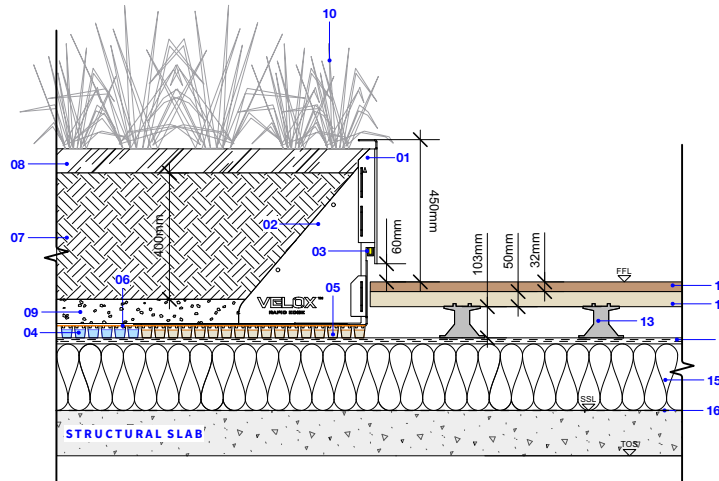
5000 01 (above) Section: Steel Planter & Concrete Paving Detail
Scale: 1:25



- LEGEND 5000/03**
01. Stapel Raised Planter Edge by Logic Ltd or similar. Finish: Linier.
 02. VELOX Rapid Edge™ System by Logic Ltd or similar.
 03. Bauder DSE40 Drainage Board or similarr
 04. Bauder DSE40 Drainage Board with Bauder Mineral Drain
or MOT type 1- Refer to Bauder for further details
 05. Bauder Filter Fleece or similar.
 06. High-quality intensive greenroof topsoil. Min depth; 400mm to planting beds,
670mm to base of trees. Supplier; Street Design Ltd. or equal & approved.
 07. Bark mulch_Min 75mm of high-quality bark mulch to all planting beds & tree pits.
To sit 30mm below Planter edge.
 08. Pea shingle layer_50mm Pea shingle layer to improve drainage. No fines.
 09. Sensory Planting [Refer to Softworks Plan]
 10. Angular gravel inlay - Size: 10mm. To be fixed in place with Vuba 'Eashold' Stone Binder or equal approved.
50mm Perforated Aluminium Edging Laid Flush. On concrete footing.
 11. 'ExcelEdge RoofEdge' or similar approved.
 12. Concrete Paving on adjustable pedestal supports to manufacturers recommendations.
'Cream' Andover Textured Paving. Unit Size: 450 x 450 x 50 (l x w x t)
By Charcon Industries or equal and approved.
 13. Marshalls MF2 adjustable pedestals to manufacturer's recommendations.
Number, product and spacings subject to further development.
 14. Bauder protection mat, capping sheet & underlayer. Or equal approved.
 15. Bauder Insulation 0.1 W/m2K u-value. Or equal approved.
 16. Bauder air and vapour control layer. Or equal approved.
 17. Granite paving slab. Colour: Azul Noche. Unit Size: 250 x 900 x 75 (l x w x t). By Hardscape Ltd or equal approved.

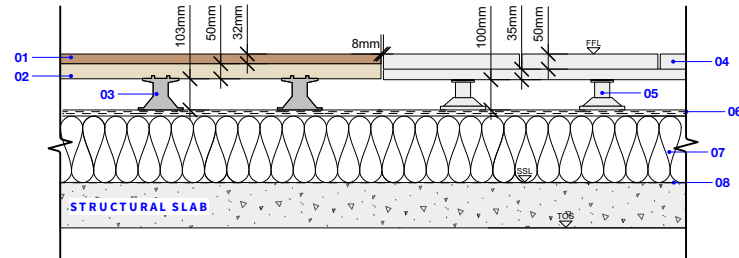
5000 03 (above) Section: Steel Planter, Nida Gravel & Concrete Paving Detail
Scale: 1:25

- LEGEND 5000/02**
01. Stapel Raised Planter Edge by Logic Ltd or similar. Finish: Linier.
 02. VELOX Rapid Edge™ System by Logic Ltd or similar.
 03. Recessed LED linear light. To Logic Ltd recommendation/specification.
 04. Bauder DSE40 Drainage Board or similar
 05. Bauder DSE40 Drainage Board with Bauder Mineral Drain
or MOT type 1- Refer to Bauder for further details
 06. Bauder Filter Fleece or similar.
 07. High-quality intensive greenroof topsoil. Min depth; 400mm to planting beds,
670mm to base of trees. Supplier; Street Design Ltd. or equal & approved.
 08. Bark mulch_Min 75mm of high-quality bark mulch to all planting beds & tree pits.
To sit 30mm below Planter edge.
 09. Pea shingle layer_50mm Pea shingle layer to improve drainage. No fines.
 10. Sensory Planting [Refer to Softworks Plan]
 11. 'Smoked Oak' Enhanced Grain Millboard Composite Decking. Or equal approved. [W176 x L3600 x H32mm]
 12. Millboard Plas Pro Subframe System. Or equal approved.
 13. Millboard Duolift Joist Cradle with Self Levelling Joint and 1 Riser - forms 1:80 fall. Or equal approved.
 14. Bauder protection mat, capping sheet & underlayer. Or equal approved.
 15. Bauder Insulation 0.1 W/m2K u-value. Or equal approved.
 16. Bauder air and vapour control layer. Or equal approved.



5000 02 (above) Section: Steel Planter & Composite Deck Detail
Scale: 1:25

- LEGEND 5000/04**
01. 'Smoked Oak' Enhanced Grain Millboard Composite Decking. Or equal approved. [W176 x L3600 x H32mm]
 02. Millboard Plas Pro Subframe System. Or equal approved.
 03. Millboard Duolift Joist Cradle with Self Levelling Joint and 1 Riser - forms 1:80 fall. Or equal approved.
 04. Concrete Paving on adjustable pedestal supports to manufacturers recommendations.
'Cream' Andover Textured Paving. Unit Size: 450 x 450 x 50 (l x w x t)
By Charcon Industries or equal and approved.
 05. Marshalls MF2 adjustable pedestals to manufacturer's recommendations.
Number, product and spacings subject to further development.
 06. Bauder DSE40 Drainage Board or similarr
 07. Bauder DSE40 Drainage Board with Bauder Mineral Drain
or MOT type 1- Refer to Bauder for further details
 08. Bauder Filter Fleece or similar.



5000 04 (above) Section: Composite Deck & Concrete Paving Detail
Scale: 1:25

- 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.

LOCATION PLAN

KEY

P01	29-04-22	For Information	JC	FF
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Revision	Date	Description	Drawn	Apprvd.
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Client Bruntwood

Project Alberton House

Dwg Title Roof Terrace: Typical Terrace Details

Created on 29-04-22 Created by JC

Scale 1:25 Stage 03

Dwg No. 2805-PLA-RT-XX-DR-L-5000 Suitability S1 Revision P01

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