Land bound by John Dalton St, Ridgefield, Bow Street and South King Street, Manchester

Detailed Drainage Strategy

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Client Name: The Island Site (General Partner) Ltd

Site Address: Land bound by John Dalton Street, Ridgefield, Bow Street and South King Street, 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 The Island Site (General Partner) Ltd to provide a Drainage Strategy for the proposed development at Land bound by John Dalton Street, Ridgefield, Bow Street and South King Street, Manchester.

1.1.2 The report provides information on the nature of flood risk at the site and follows Government guidance regarding development and flood risk.

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 total site area is approximately 0.13 hectares (redline boundary to be confirmed) and following scrutiny of the Environment Agency flood maps it has been identified that the site lies within Flood Zone 1. As the site area is smaller than 1ha and the site is within a Flood Zone 1, a Flood Risk Assessment is therefore not required to support a planning application.

1.2.3 The assessment will:

- Investigate all potential risks of flooding to the site,
- Consider foul & surface water drainage proposals for the proposed development.

1.2.4 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.

1.2.5 A Drainage Strategy will therefore be required as part of the Planning Application for the development, as the site is considered to be 'major' development by the Town and Country Planning Order 2015.

1.2.6 This Drainage Strategy reviews the following information:

- Environment Agency flood maps for rivers and sea flooding.
- UK Government Flood Warning Information Service maps 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.
- Manchester City Council SuDS Requirements for New Developments.
- United Utilities Public Sewer Records Extract.
- CCTV Drainage Survey by Layer Surveys dated March 2020.

1.3 Proposed Development

1.3.1 The development is expected to comprise the following:

The erection of a 10-storey office (Use Class E(g)) development, with flexible Use Class E development at the basement and ground floor levels

1.3.2 The Proposed Building and Redline Layout, Proposed Basement Floor (GA) and the Proposed Ground Floor (GA) Layouts are enclosed in *Appendix A.*

2.0 Existing Site Details

2.1 History and Current Use

2.1.1 The site is located within Manchester City Centre, on John Dalton Street. The site comprises a rectangular block of buildings bound by John Dalton Street to the south, South King Street to the north, Bow Street to the east and Ridgefield to the west (see Figure 1). Three existing buildings are located within the site boundary comprising:

- Old Colony House (25,968 sq ft), a vacant 7 storey building comprising office accommodation with a vacant former restaurant at ground floor level. The building fronts onto South King Street.
- 5 Ridgefield (11,748 sq ft), a 3-storey building comprising a former restaurant use at basement and ground floor level and vacant offices at first and second floors. The site fronts onto Ridgefield and Bow Street; and,
- Grange House (17,309 sq ft), a 6-storey building comprising ground floor retail/restaurant/office use with vacant upper floors formerly in office use. The building fronts onto John Dalton Street.

Figure 1: Aerial Photograph (© Google 2020)

2.2 Existing Watercourses and Other Waterbodies

2.2.1 No above ground watercourses have been identified within the proposed site or immediately adjacent to the site.

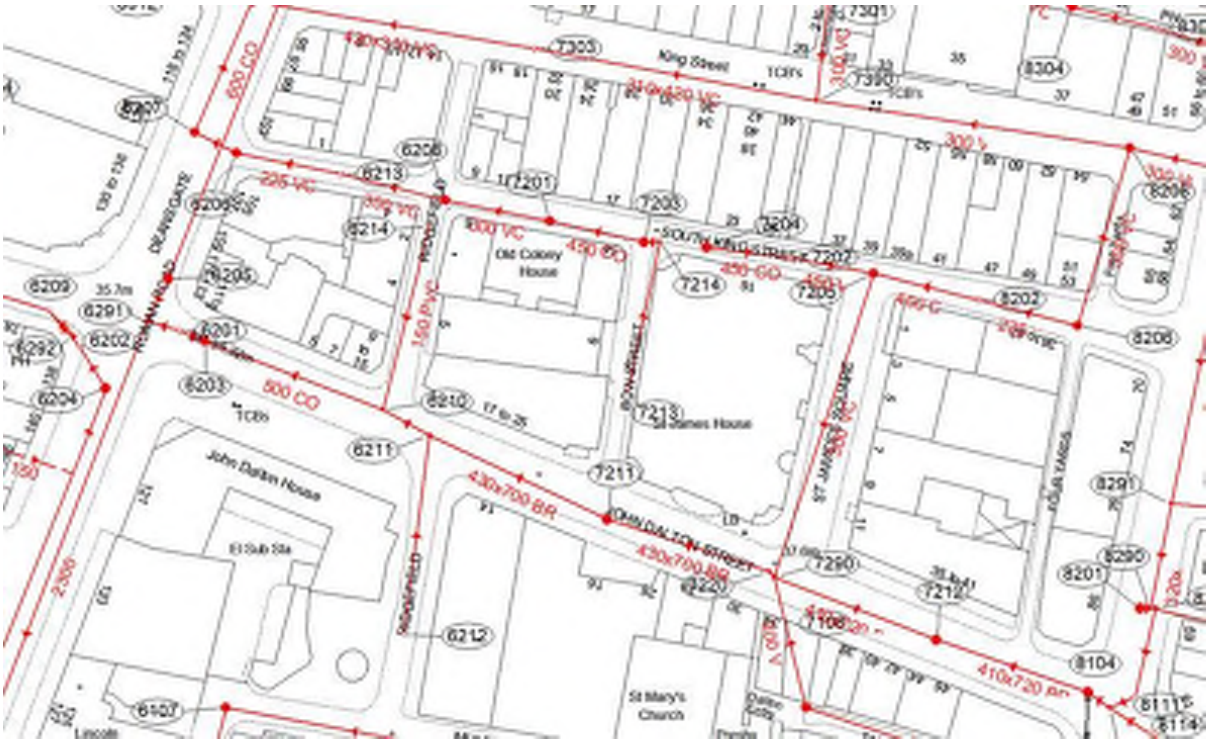
2.2.2 The nearest watercourse to the site is the River Irwell approximately 280m north-west of the site.

2.2.3 The Strategic Flood Risk Assessment also identifies that there is a lost watercourse known as located approximately 400m east of the site and flows in a southerly direction.

2.3 Existing Drainage

2.3.1 An extract from the public sewer records has been obtained for the development site and is shown in Figure 2.

Figure 2: United Utilities Public Sewer Record (extract)



2.3.2 The public sewer records indicate that there are no recorded public sewers located within the development site boundary.

2.3.3 The following public sewers are recorded within the vicinity of the site:

- There is a combined water sewer flowing south to north along Bow Street (east of the site). This sewer connects to a 450mm diameter combined sewer within South King Street, which flows in a westerly direction to the north of the site.
- There is a 150mm diameter surface water sewer flowing north to south within Ridgefield (west of the site).
- There is a 430x700mm brick combined sewer flowing in a westerly direction within John Dalton Street (south of the site).

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 CCTV Drainage Survey has been completed to confirm the existing drainage within the site and to confirm the existing outfalls and public sewers surrounding the site. The survey confirms the location, route, size, depth, condition of the existing drainage and the survey is enclosed in *Appendix C*.

2.3.6 The CCTV Drainage Survey confirms that there is a combined drainage system, and there are 4 No. Outfalls from the site (3No. 150mm connections into the combined public sewer in Bow Street and 1No. 150mm connection into John Dalton Street).

2.4 Topography

2.4.1 A topographical survey and measured building survey have been completed at the site and the drawings are included in *Appendix B.*

2.4.2 The site appears to fall generally in a south-east to north-west direction. Levels on site vary between approximately 36.03m and 37.33m AoD, although this is based a ground floor finished level. The existing basement levels are generally at 33.03m and 34.35m AoD.

2.5 Geology

2.5.1 The British Geological Survey (BGS) map confirms that the superficial deposits are listed as Glaciofluvial Sheet Deposits, Devensian as Sand and Gravel.

2.5.2 The bedrock geology is described as Cheshire Formation – Sandstone, however the nearby boreholes available on the BGS online mapping suggest that the primary material identified is fill over clay.

2.5.3 The site is not located within a Groundwater Source Protection Zone.

3.0 Development and Flood Risk

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

3.1.1 In February 2019, 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 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 (Rivers 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 consent. (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 water-side 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 hostels. • Buildings used for dwelling houses, student halls of 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 Zones	**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 to a caravan, camping or chalet 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 seas (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 whole site is classified as within Flood Zone 1.

3.2.3 Further site-specific review of the flood risk to the site is provided in section 4.

3.3 Site Specific Flood Zone Compatibility

3.3.1 The proposal for the development site is likely to fall within the following category of 'Less Vulnerable' in accordance with the Flood Risk Vulnerability Classification (Table 2).

3.3.2 The site is located within Flood Zone 1 for which a 'Less Vulnerable' development is deemed to be appropriate.

3.4 Sequential Test

3.4.1 The site is categorised as a 'Less Vulnerable' development (shown in table 2) and is within Flood Zone 1 therefore the sequential test is not required to be applied (see table 3).

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.

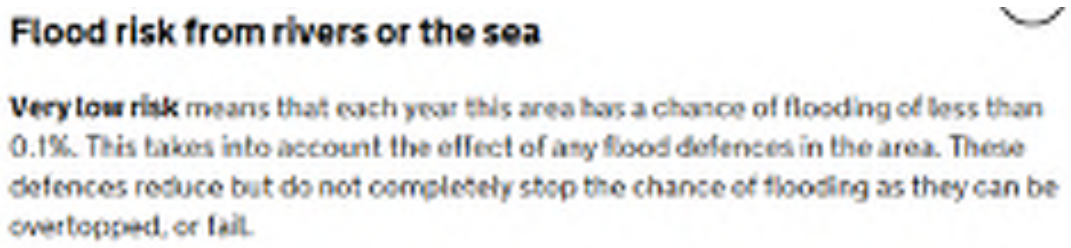
4.2 Fluvial Flooding (Rivers and Streams)

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 It can be seen that the entire area of the site is at a 'Very Low' risk of fluvial flooding. The site is not shown to be in an area which benefits from flood defences. The site has less than a 0.1% chance of fluvial flooding each year. Therefore, the proposed site is considered to be at a very low residual risk from fluvial flooding.

Figure 4: Long Term Flood Risk Assessment (Detailed Information) – Flood Risk from Rivers or Sea (© Crown Copyright)



4.3 Tidal Flooding (Coastal or Estuarine)

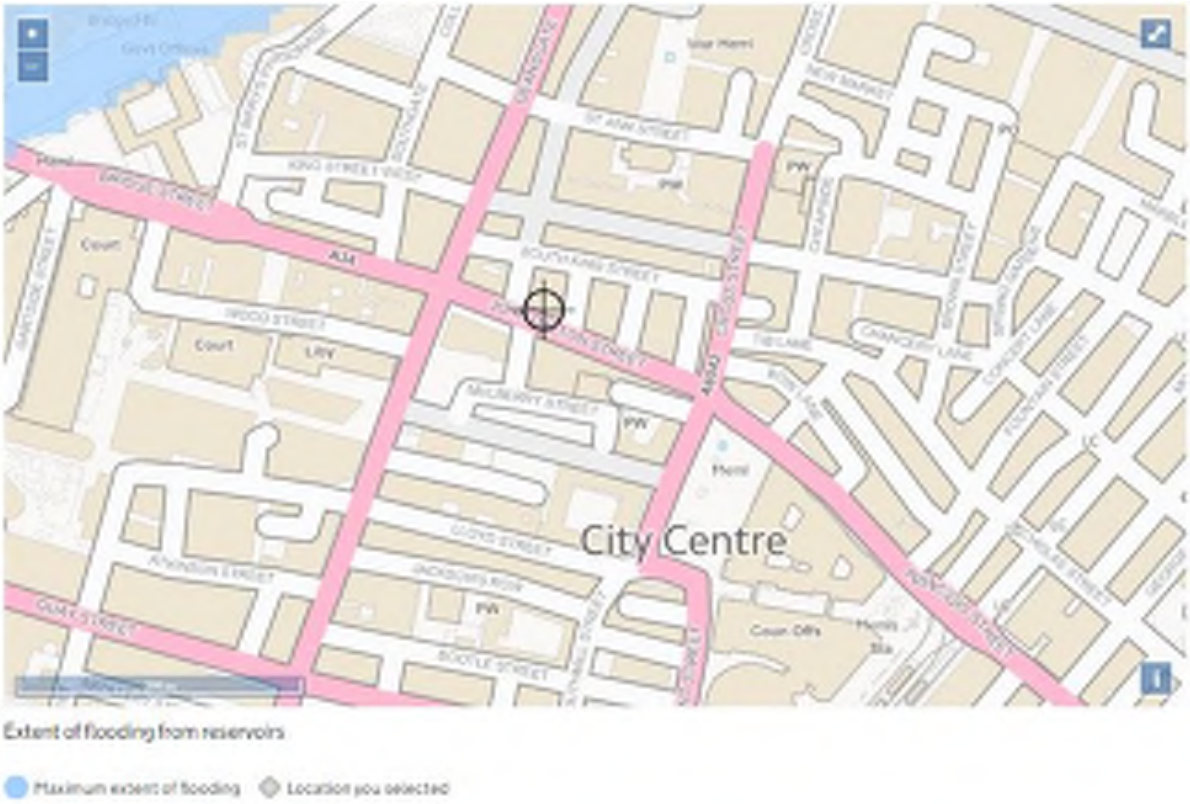
4.3.1 There is currently no flood risk identified on the Environment Agency flood maps for the site and it is therefore regarded to be at low risk from tidal flooding.

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).

Figure 5: Long Term Flood Risk Assessment Map – Flood Risk from Reservoirs (© Crown Copyright)



4.4.3 The site is located outside of the area that could be affected by reservoir flooding; therefore, the site is regarded to be at low risk from reservoir flooding.

4.5 Canal Flooding

4.5.1 The nearest canal to the site is the Rochdale Canal which is located approximately 700m south of the site.

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 Given the above information, it is considered that there is low risk of canal flooding to the site.

4.6 Groundwater Flooding

4.6.1 According to the Manchester, Salford and Trafford SFRA, there are no known reports of groundwater flooding in the Manchester, Trafford and Salford authorities.

4.6.2 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.

4.6.3 At the time this report was written no intrusive ground investigation works had taken place or been published; therefore, site specific depths have not been confirmed. The results of this investigation will need to be reviewed as part of the detailed drainage design.

4.6.4 Based on the current information it is assumed that the site is at a low risk of groundwater flooding. However, it is recommended that external ground levels across the site should fall away from the proposed buildings and ensure that the creation of low points is avoided (other than those used intentionally for drainage features) in order that in the unlikely event of groundwater flooding, the flood water is safely routed away from the buildings on site.

4.6.5 Providing the above mitigation measures were imposed, the risk from groundwater flooding would therefore be considered low post development, however it is recommended that ground water levels are monitored during any site investigation works.

4.7 Public Sewers or Highway Drainage Flooding (Infrastructure Failure)

4.7.1 There are no highway drains recorded within the site.

4.7.2 It is likely that there will be localised highway drainage surrounding the site (such as gullies and connections).

4.7.3 There are no public sewers recorded within the site. There are public sewers in the surrounding highways to the site.

4.7.4 United Utilities and Manchester City Council have not provided any records of flooding to the site or the vicinity.

4.7.5 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

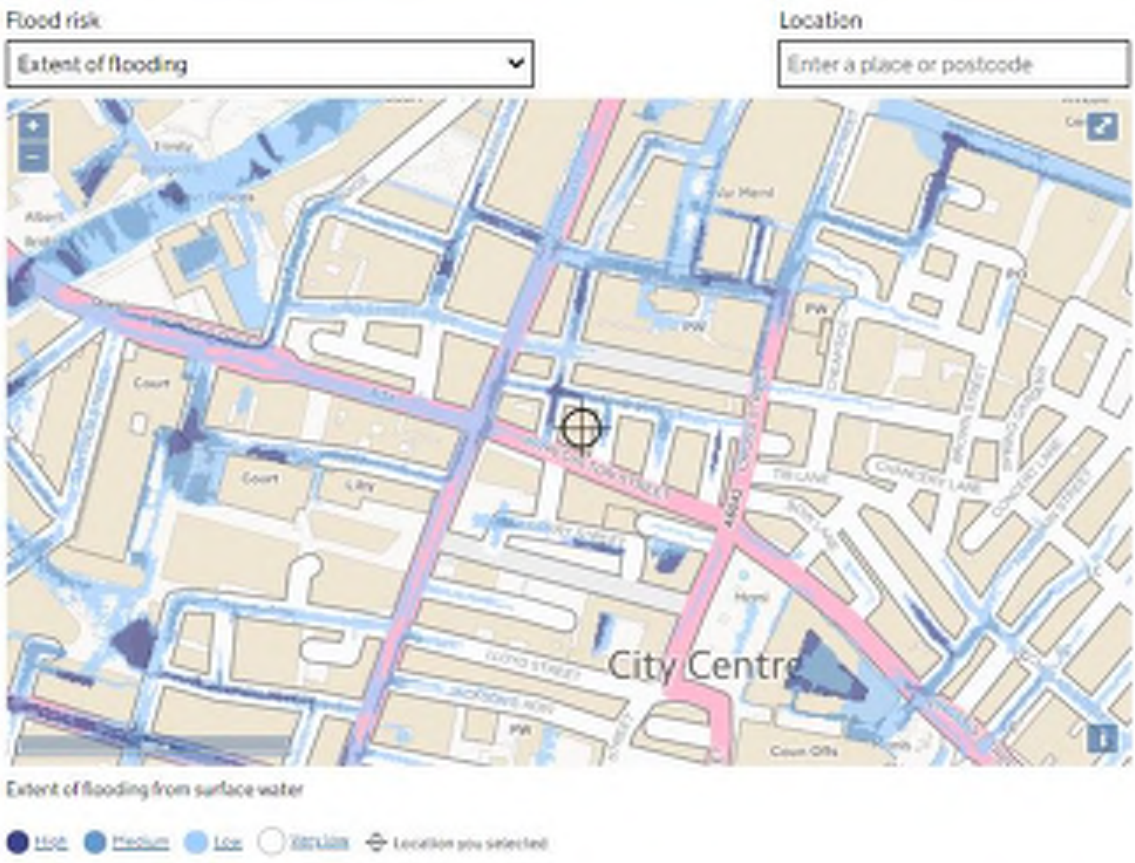
4.8.1 Surface water flooding can be caused when rainwater during extreme rainfall events does not drain away through the normal drainage system or soak into the ground with flooding occurring, principally from manholes and gullies. Surcharging sewers can result in overland flows which if originating 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 majority of the site is identified as being at a 'very low' risk of flooding from surface water. The surrounding highways are generally considered at 'medium' risk of flooding from surface water.

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



4.8.4 To mitigate this risk, external ground levels across the site should fall away from the proposed buildings and ensure that the creation of low points is avoided (other than those used intentionally for drainage features) and so the flood water is safely routed away from the buildings on site.

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

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 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 An assessment of the proposed surface flows is carried out within the drainage strategy within section 5 of this report.

4.10 Historical Flooding

4.10.1 United Utilities and Manchester City Council have not provided any records of flooding to the site or the vicinity.

5.0 Drainage Strategy

5.1 Existing Drainage

5.1.1 The public sewer records indicate that there are no recorded public sewers located within the development site boundary.

5.1.2 The following public sewers are recorded within the vicinity of the site:

- There is a combined water sewer flowing south to north along Bow Street (east of the site). This sewer connects to a 450mm/225mm diameter combined sewer within South King Street, which flows in a westerly direction to the north of the site.
- There is a 150mm diameter surface water sewer flowing north to south within Ridgefield (west of the site).
- There is a 430x700mm brick combined sewer flowing in a westerly direction within John Dalton Street (south of the site).

5.1.3 A CCTV Drainage Survey has been completed to confirm the location, route, size, depth, condition, of the surrounding public sewer network. The survey information is enclosed in *Appendix B*.

5.1.4 The survey confirms that there is a combined drainage system, and there are 4 No. Outfalls from the site (3No. 150mm connections into the combined public sewer in Bow Street and 1No. 150mm connection into John Dalton Street).

5.1.5 The existing drainage is located at basement level, and ground levels within the basement appear to be lower than existing levels, therefore existing drainage serving the site will need to be removed. It is unlikely that existing connections can be reused on the basis the basement requires a contiguous piled wall. New outfalls are therefore proposed.

5.2 Proposed Foul Water Drainage

5.2.1 A separate foul and surface water system is proposed.

5.2.2 The proposed foul drainage from ground floor level and above will be collected and discharged via suspended pipework and discharged to the surrounding public sewer network by gravity. Currently there are three outfalls indicated at this level – 2 outfall to the public sewer in South King Street and 1 outfall into the public sewer in Bow Street. The proposed outfall locations will be subject to confirmation of internal requirements.

5.2.3 The CCTV Drainage survey confirms that the sewer in South King Street is approximately 3.14m deep and the sewer in Bow Street is approximately 4.58m deep and therefore is deep enough to accept connections.

5.2.4 Foul drainage required within the basement area will be required to be pumped off site to the public sewer system. Currently drainage from the basement is proposed to discharge to a pumping chamber within the surface water attenuation tank room with a rising main routed to the northern elevation. The rising main will then terminate externally and connect to the public sewer in South King Street.

5.2.5 Based on the British water COP chapter 3, water usage rates, pumped volumes will be based on occupancy numbers using the basement facilities. The following assumptions have been made:

- shower, toilet and change facility based on cyclist use - 35no. showers per day. cycle storage has a capacity for approx. 35;
- assuming full use and all shower (am only) water use 40l/ use.

  volume = 1,400 litres (1.4m3)
- Toilets: assuming use as per showers (35) water use 10l/ use.

  volume = 350 litres (0.35m3).

5.2.6 The peak flow rate for the development has been calculated based on the 'Design and Construction Guidance for foul and surface water sewers' Sewerage Sector Guidance Appendix C.

5.2.7 The commercial element of the development is based on the sum of the domestic design flow and the trade effluent design flow. However, in the absence of appropriate information, 0.6 litres per second per hectare of developable land for the domestic element and 0.5 litres per second per hectare for normal industry is assumed. The peak foul discharge is therefore estimated at 1.32l/s based on 1.2ha of commercial space (ground level – level 9).

5.2.8 The total foul peak flow from the development is therefore estimated at 1.32 l/s plus the flows to be pumped from the basement subject to an acceptable rate from United Utilities.

5.2.9 United Utilities have confirmed in their pre-development enquiry response that foul water flows from the development can be accommodated within the public combined sewer within Bow Street, with alterative connection points being considered, it is therefore recommended that exact discharge locations are reviewed with United Utilities once internal arrangements or drainage are confirmed. Refer to the United Utilities correspondence enclosed in *Appendix E.*

5.2.10 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

5.2.11 The proposed drainage strategy is enclosed in *Appendix F*.

5.3 Proposed Surface Water Drainage

5.3.1 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.

5.3.2 In February 2016, the Environment Agency released updated climate change allowances for peak rainfall intensities which should be applied to new developments. Table 4 demonstrates the climate change allowances with central and upper end allowances being considered.

5.3.3 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 20% for climate change on peak rainfall intensity will be included in calculations, however the 40% allowance will also be considered.

Table 4: (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%

5.3.4 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.

Infiltration

5.3.5 A Phase 2 Intrusive Site Investigation has not yet been carried out at the site, however given the site has had previous use, it is likely that the development will contain depths of made ground. The superficial deposits are listed as Devensian Till and the underlying strata is described as comprising Chester Formation, i.e. Sandstone. Nearby boreholes available on the BGS online mapping suggest that the primary material identified is fill over clay and, on this basis, it is assumed that infiltration will be unlikely.

5.3.6 The existing site is occupied by building across the extents of the development boundary, and proposals are to construct a new building to the extents of the boundary, therefore infiltration would be unviable

on the basis that there are no areas within the site to accommodate infiltration with foundations outside of the infiltration zone. Therefore, an infiltration-based discharge is considered unviable.

Watercourse

5.3.7 The nearest watercourse to the site is the River Irwell approximately 280m north-west of the site. To drain to this watercourse would not be feasible due to the distance from the site and the requirement to cross third party land.

Surface Water Sewer

5.3.8 There are no surface water sewers in the vicinity of the site, therefore discharge to a surface water sewer is unviable.

Combined Water sewer

5.3.9 There are various combined sewers in the vicinity of the site. The site is proposed to drain to the UU surface water network and therefore no surface water will flow directly from the site into the public combined sewers located within the close vicinity from the development.

5.3.10 There are various combined water public sewers surrounding the development site and the existing drainage system on site discharges to the public sewers within Bow Street and John Dalton Street.

5.3.11 Therefore, it is proposed to discharge to the combined sewer system for surface water drainage.

5.3.12 Table 5 summarises the options for surface water disposal.

Table 5: Surface Water Disposal

Surface Water Disposal	Potential	Description
Infiltration	✗	It is assumed that the site will not be suitable for infiltration SuDS.
Watercourse	✗	The River Irwell is located 280m west of the site. A new connection to the watercourse is not considered a viable option as it would have to pass through third-party land.
Surface Water Public Sewer	✗	There are no surface water public sewers in the vicinity of the site.
Combined Public Sewer	✓	There are various combined water sewers in the vicinity of the site therefore outfalls are proposed to be

		connected to the surrounding combined public sewer system.

5.3.13 The existing site is currently 100% impermeable, draining to the existing combined public sewer system and therefore considered brownfield. To determine the existing site discharge rates from the site and confirm the existing outfalls to the public sewer system, a Drainage CCTV Survey was undertaken.

5.3.14 The survey confirms that there are 4 No. Outfalls from the site (3No. 150mm connections into the combined public sewer in Bow Street and 1No. 150mm connection into John Dalton Street). Unfortunately, rainwater pipes were not easily identified from general stacks above ground and so the detailed arrangement above ground is unclear in terms of the catchments draining to each downpipe and the outfall this discharged to. There was also limited access to the outfall into John Dalton Street due to a trap on the outfall. Therefore, to approximate the likely existing discharge from the site, we have assumed a 150mm pipe network at a gradient of 1 in 100, accepting 100% flows from the plot catchment of 0.13 Ha and modelled within Micro-Drainage.

5.3.15 The existing flow rates are estimated as:

- 1 Year = 15.6 l/s
- 30 Year = 30 l/s
- 100 Year = 36.3 l/s

5.3.16 We therefore proposed reduce flow by 50% to achieve a maximum of the following flows:

- 1 Year = 7.8 l/s
- 30 Year = 15 l/s
- 100 Year = 18.15 l/s

5.3.17 Manchester Lead Local Flood Authority (LLFA) have been consulted regarding discharge rates (see Appendix E). They have confirmed that the above discharge rates would be acceptable subject to agreement with United Utilities.

5.3.18 United Utilities have been consulted and they have confirmed that the maximum permitted flow from the site is 8.3 l/s and that a variable flow is not considered appropriate. United Utilities have also confirmed in their pre-development enquiry response that flows from the development can be accommodated within the public combined sewer within Bow Street, with alterative connection points being considered, it is therefore recommended that exact discharge locations are reviewed with United Utilities once internal arrangements or drainage are confirmed. Refer to the United Utilities correspondence enclosed in *Appendix E.*

5.3.19 The surface water is proposed to drain discharge into the public sewer system within South King Street of 8.3l/s.

5.3.20 Due to the requirement for flow restriction and attenuation, the proposed surface water drainage is to be collected down to basement level, with an attenuation tank located above the slab at basement level within the designated surface water attenuation tank room. The outfall will therefore require pumping with a rising main, routed to the northern elevation. The rising main will then terminate externally and connect to the public sewer in South King Street.

5.3.21 It is recommended that sustainable methods of attenuation are implemented where possible. Therefore, the strategy currently proposes for partial green roof at level 10. The Green roof covers approximately 100m², refer to the Level 10 GA Plan enclosed in *Appendix A.*

5.3.22 The attenuation sizing currently excludes the green roof capacity and the proposed drainage system will require modelling once above ground drainage pipework has been confirmed. At this stage an assessment of volumes is based on the catchment area draining at a restricted rate of 8.3 l/s with capacity to accommodate the 1 in 100 year +40% climate change event.

5.3.23 Estimated volumes required are 51m³, indicated to be provided by an above ground tank of 34m² x 1.5m deep (1.8m overall height for 300mm freeboard allowance). Volumes should be reassessed upon receipt of the green roof design and internal pipework designed.

5.3.24 The proposed drainage strategy for the site has been included within *Appendix E*.

Surface water run-off from hard paved areas at risk of contamination should receive water quality treatment. On the basis that there are no external areas proposed in the development and there are no vehicle access there are no measures proposed for pollution treatment prior to entering the downstream

5.3.25 It is assumed that the site will remain under a single ownership, therefore sewers can not 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.

5.3.26 The proposed drainage strategy is enclosed in *Appendix F*.

5.3.27 The final design of the drainage networks shall be in accordance with the legislation set by the Environment Agency, Manchester City Council and United Utilities.

5.4 Maintenance

5.4.1 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.

5.4.2 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.

5.4.3 A management company may be required for maintenance of attenuation facilities.

5.4.4 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:

- 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.

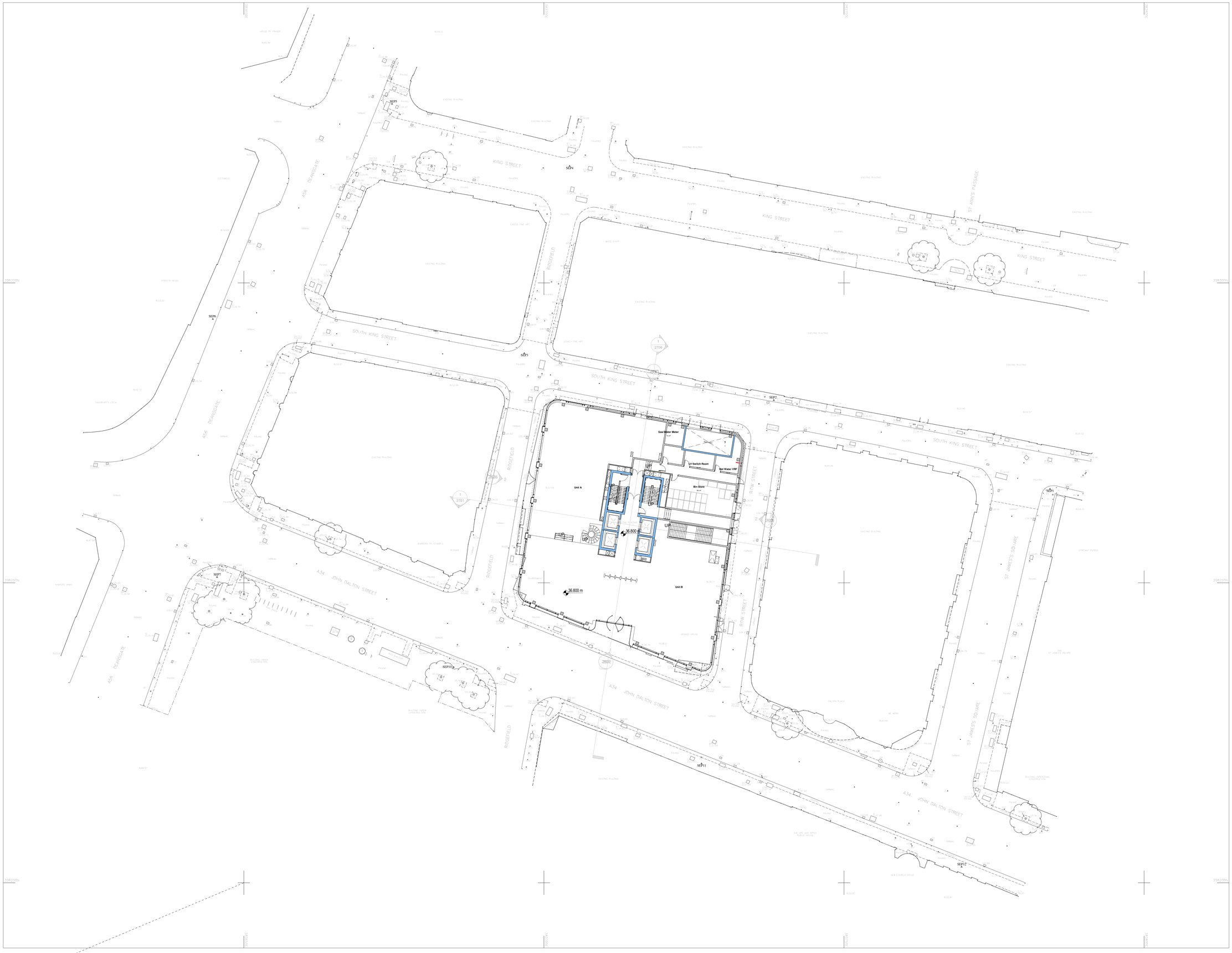
Appendix A

Proposed Building and Redline Boundary

Proposed Basement Floor (GA) Layout

Proposed Ground Floor (GA) Layout

Proposed Level 10 (GA) Layout



Drawing Original Size

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Red line boundary

Proposed building line - Upper Floors

Drawing Revisions

Date:	Rev:	Note:	Check:
17.02.21	P 1	First Issue	RP
12.03.21	P 2	Issued for Coordination	RP
26.03.21	P 3	Issued for Coordination	RP

CARTWRIGHT PICKARD

Client
Henry Boot

Project
834 | John Dalton Street

Building Name
Island

Drawing Title
Proposed Building & RL boundary

Scale
1:200 @ A0

Drawing Created
02/15/21

Revision
P 3

Drawing No.
TIS-CPA-ZA-ZZ-DR-A-0127

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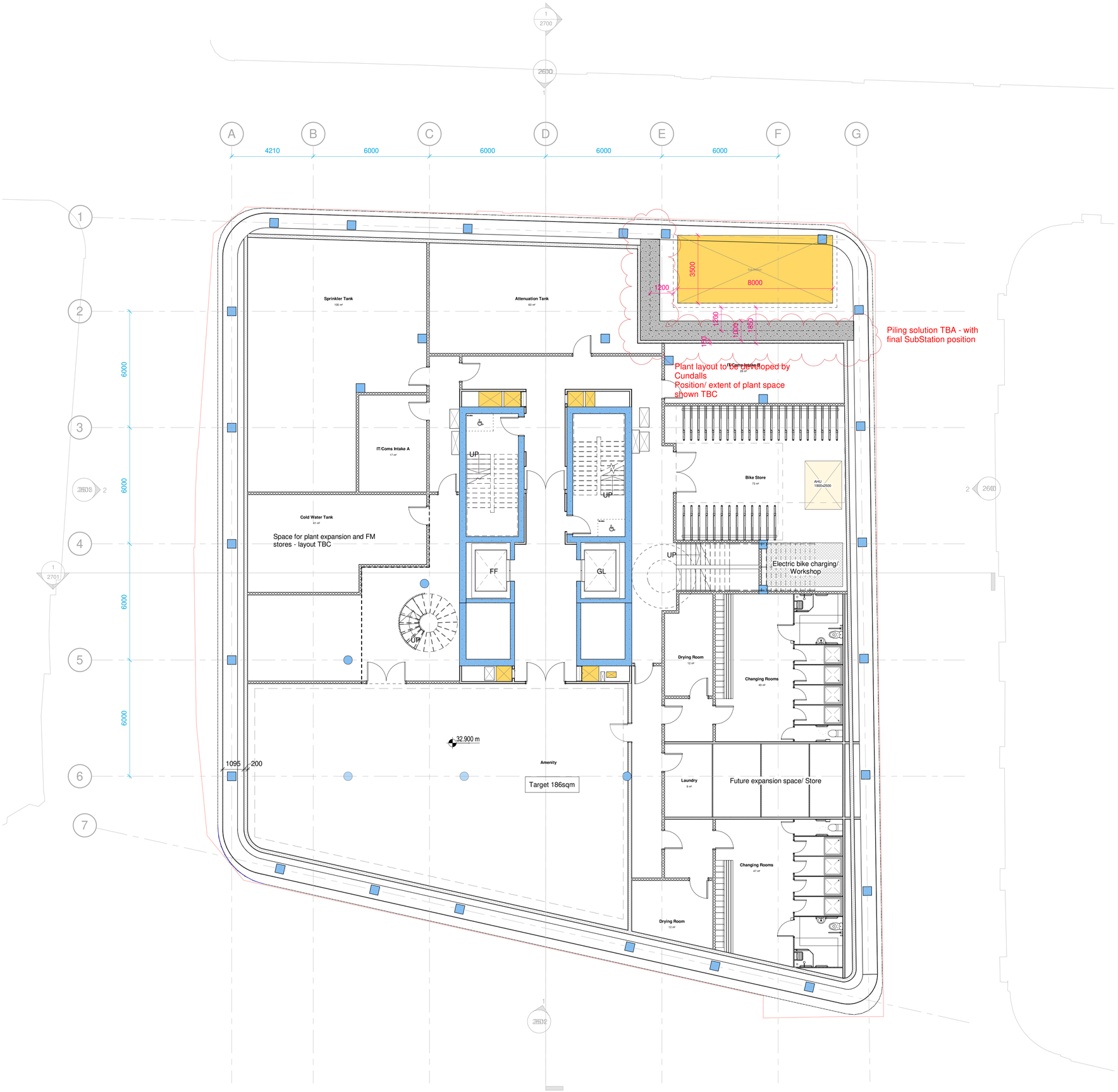

1 **Level B1**
1 : 100

NOTE:

Drawings to be read in conjunction with Structures (Curtins), MEP (Cundalls), Vertical transportation (Cundalls) and Fire (Cundalls).
Please refer to CP facilities provision document which states our assumption and calculations for the following:

- WC's
- Shower & changing rooms
- Bin store
- Cycle store

CP assumptions:

- Areas stated assume a single tenant per floor. Two tenancies would reduce net to allow for dual entrances.
- External wall build ups developed through, discussions with Techrete and Rockwool

Thermal Element	Target Value
Roof thermal conductivity, U-value, W/(m².K)	0.10
Floor thermal conductivity, U-value, W/(m².K)	0.10
Wall thermal conductivity, U-value, W/(m².K)	0.15
Ext. glazing thermal conductivity, U-value, W/(m².K)	1.4
Ext glazing solar transmittance, g-value, %	30
Ext. glazing VLT %	70
Air permeability @ 50 Pa (m³/(hr.m²))	2.0

- detail to be developed further in Stage 3 and may affect areas stated.

Red line boundary.

Title Plan MAN352978 -
Provided by HBD
12/06/20.

- Red line boundary drawn as described in email to HBD (17.02.21) stating CP assumptions and interpretation of title deed plans - awaiting client approval

- External edge of the building perimeter is set back 40mm (min) from indicated Red Line Boundary.
This is to allow for structural tolerance and to avoid oversail of the Red Line Boundary at upper levels

Drawing Original Size
A1

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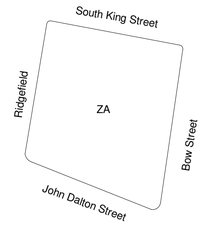

Drawing Revisions

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03.06.20	P 1	Issued for Coordination	NS
11.06.20	P 2	Issued for Coordination	RP
30.06.20	P 3	Issued for Coordination - Core risers updated	RP
03.07.20	P 4	Issued for Coordination	RP
08.07.20	P 5	Stage 2 Issue	RP
08.02.21	P 6	Layout updated	RP
12.03.21	P 7	Issued for Coordination	RP
26.03.21	P 8	Issued for Coordination	RP

CARTWRIGHT PICKARD

Client
Henry Boot

Project
834 | John Dalton Street

Building Name
Island

Drawing Title
GA Plan - Basement

Scale
As indicated @ A1

Drawing Created
06/26/20

Revision
P 8

Drawing No.
TIS-CPA-ZA-B1-DR-A-2000

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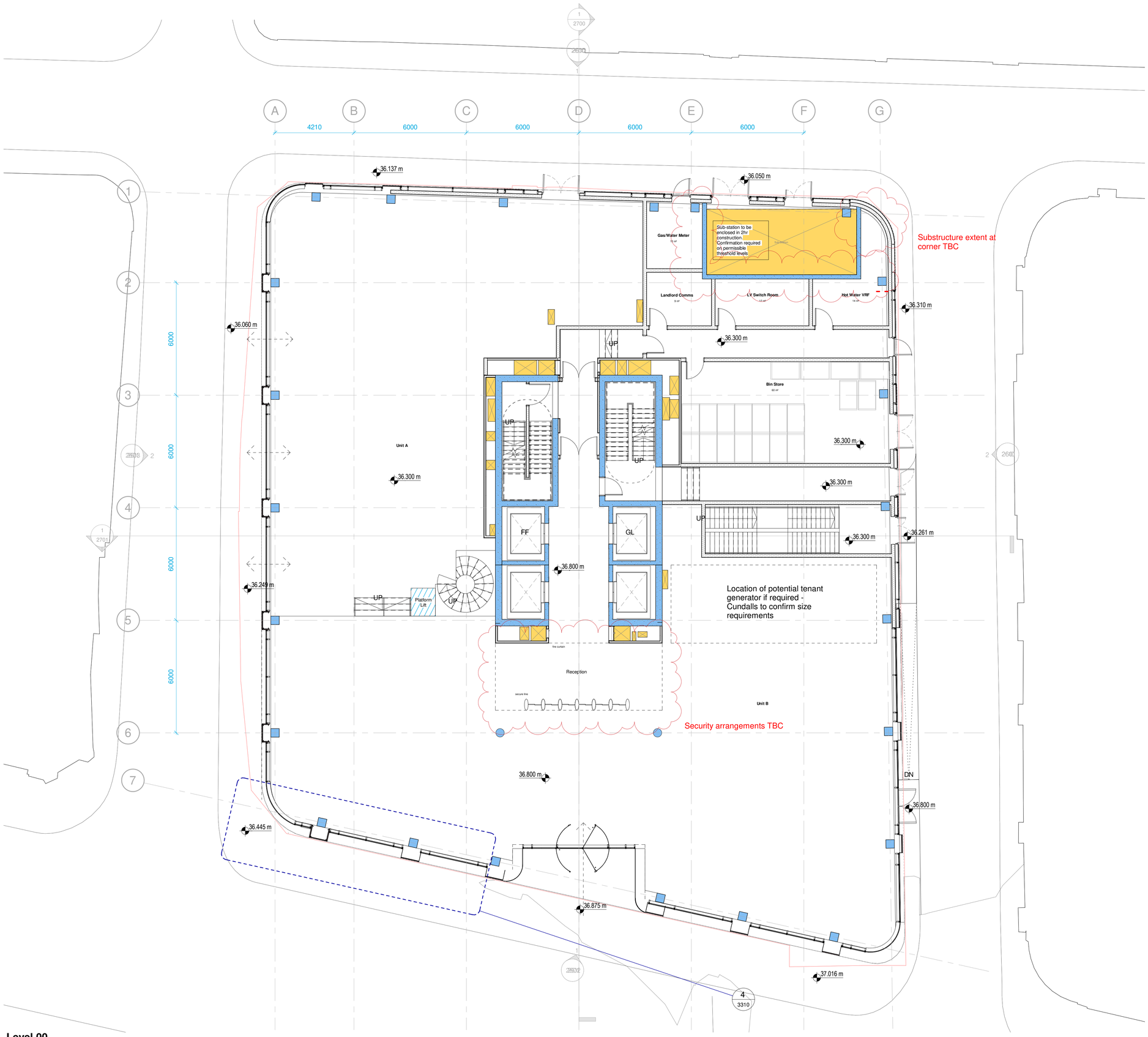

1 **Level 00**
1 : 100

NOTE:

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Red line boundary.

Title Plan MAN352978 -
Provided by HBD
12/06/20.

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Drawing Original Size
A1

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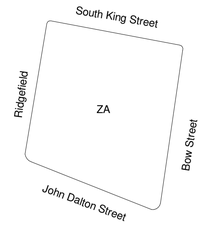

Drawing Revisions

Date:	Rev:	Note:	Check:
03.06.20	P 1	Issued for Coordination	NS
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30.06.20	P 3	Issued for Coordination - Core risers updated	RP
08.07.20	P 4	Stage 2 Issue	RP
08.02.21	P 5	Layout updated	RP
12.03.21	P 6	Issued for Coordination	RP
26.03.21	P 7	Issued for Coordination	RP

CARTWRIGHT PICKARD

Client
Henry Boot

Project
834 | John Dalton Street

Building Name
Island

Drawing Title
GA Plan - Level 00

Scale
As indicated @ A1

Drawing Created
01/21/20

Revision
P 7

Drawing No.
TIS-CPA-ZA-GF-DR-A-2001

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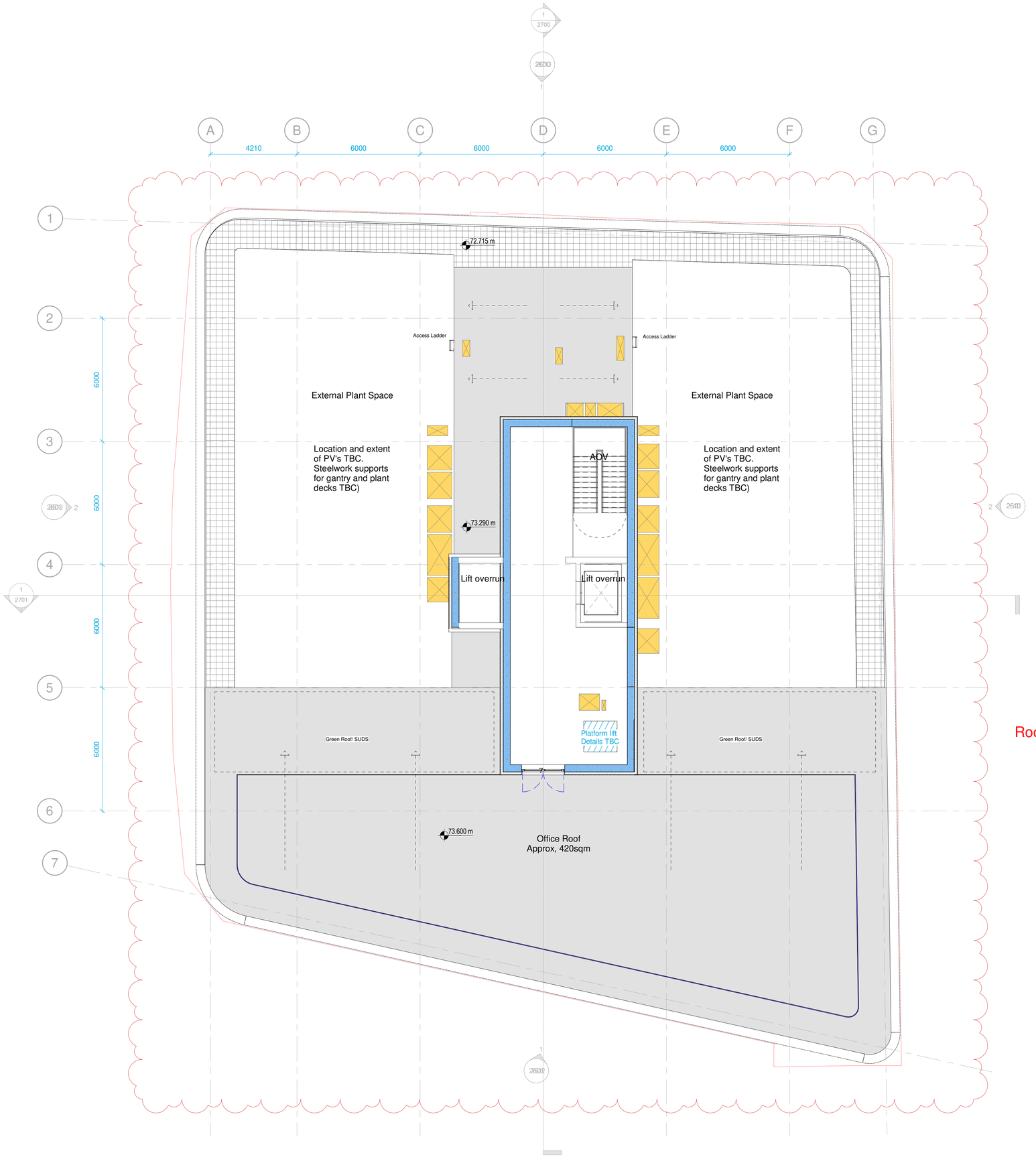

Roof Amenity Option TBC

NOTE:

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Ext. glazing thermal conductivity, U-value, W/(m².K)	1.4
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Ext. glazing VLT %	70
Air permeability @ 50 Pa (m³/(hr.m²))	2.0

– detail to be developed further in Stage 3 and may affect areas stated.

Red line boundary.

Title Plan MAN352978 -
Provided by HBD
12/06/20.

- Red line boundary drawn as described in email to HBD (17.02.21) stating CP assumptions and interpretation of title deed plans - awaiting client approval

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Drawing Original Size
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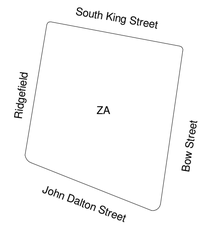

Drawing Revisions

Date:	Rev:	Note:	Check:
17.02.21	P 1	First Issue	RP
12.03.21	P 2	Issued for Coordination	RP
26.03.21	P 3	Issued for Coordination	RP

CARTWRIGHT PICKARD

Client
Henry Boot

Project
834 | John Dalton Street

Building Name
Island

Drawing Title
GA Plan - Level 10 (Roof)

Scale
As indicated @ A1

Drawing Created
09.01.20

Revision
P 3

Drawing No.
TIS-CPA-ZA-10-DR-A-2011

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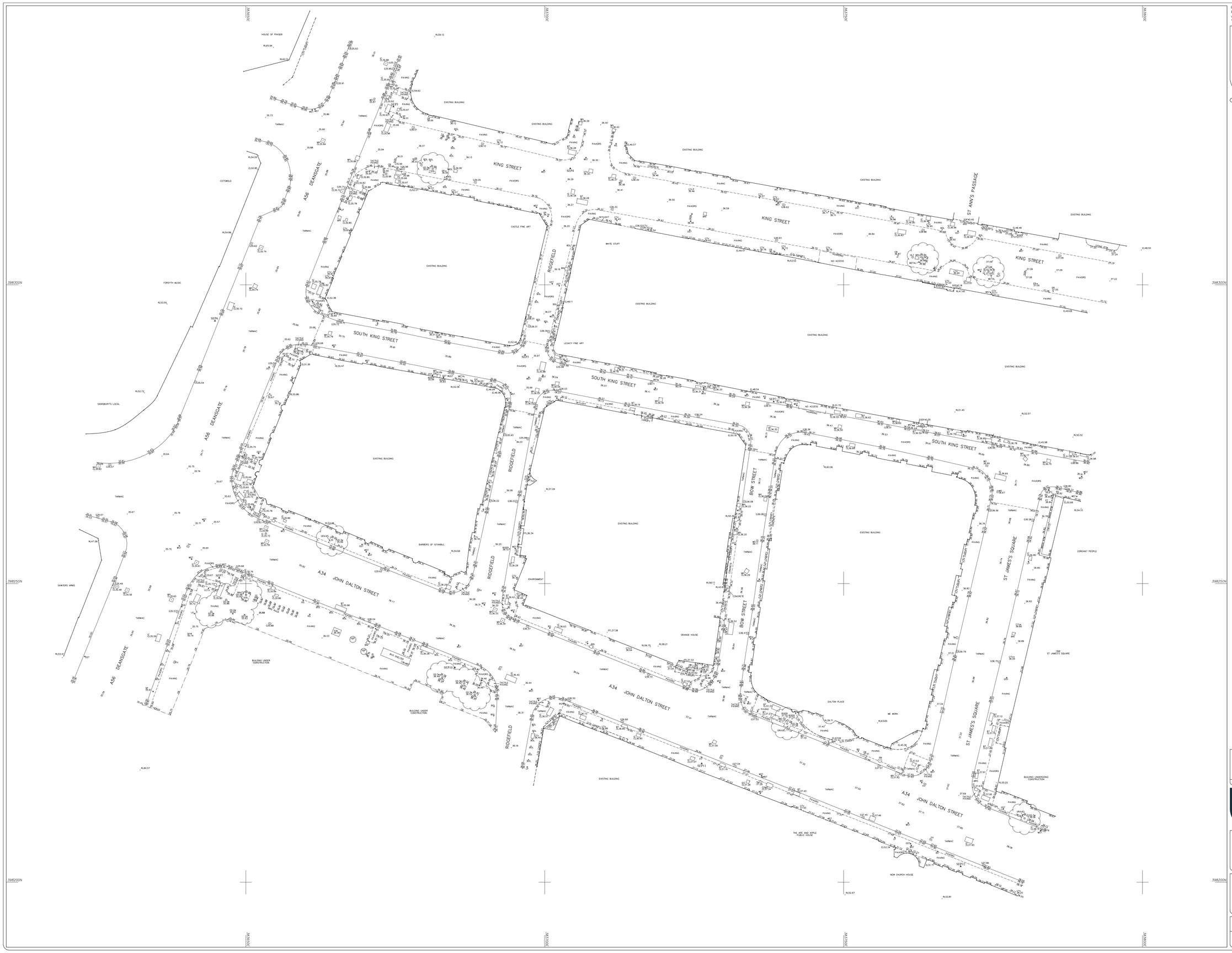
Appendix B

Topographical Survey

Measured Building Survey – Basement

Measured Building Survey – Ground



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N

PLAN GRID NORTH

File name: 120327-T.dwg

LEGEND

AV	AIR VALVE	LBY	LIFEBUOY
BB	BELGIAN BEACON	MH	MANHOLE
BOL	BOLLARD	MKR	MARKER
BS	BUS STOP POLE	MP	MOORING PIPE
BW	BIN	MP	MOORING POINT
BM	BENCH MARK	MW	MONITORING WELL
CB	CATCH BASIN	NP	NEWS PAPER BOX
BT	BT INSPECTION COVER	PO	POST OFFICE BOX
CCTV	CCTV CAMERA	PP	PHONE POST
CCTV	CCTV CAMERA POST	PP	PETROL PUMP
CH	CHAINAGE	PS	PILLAR
COM	COMMUNICATIONS COVER	RE	RIDGING EVE
CSP	CAR CHARGING STATION	RL	RIDGE LEVEL
DC	DRAINAGE CHANNEL	RP	REFLECTOR
DG	DRAINAGE CHANNEL	RTW	RETAINING WALL
DP	DOWN PIPE	RWP	RAINWATER PIPE
DP	DRAIN PIPE	SIGN	SIGNAGE
EC	ELEC INSPECTION COVER	SNP	NAME PLATE
EL	EAVES LEVEL	SP	SIGN POST
ELB	ELECTRIC BOX	SL	SOFFIT LEVEL
ER	EARTH ROD	SV	STOP VALVE
FL	FLAG POLE	TB	TELEPHONE BOX
FL	FINISHED FLOOR LEVEL	TCB	TELEPHONE CALL BOX
FP	FIRE PROTECTION	TL	TRAFFIC LIGHT
FP	FUEL PIPE	TL	TRAFFIC LIGHT
G	GULLY	TLB	TRAFFIC LIGHT BOX
GLT	GARDEN LIGHT	TP	TELEPHONE POLE
GP	GATE POST	TP	TELEGRAPH POLE
GST	GAS TAP	VP	VENT PIPE
GV	GAS VALVE	WC	WATER CUTTER
IC	INSPECTION COVER	WO	WASH OUT
L	INVERT LEVEL	WST	WATER STOP TAP
LAD	LADDER - FIXED	WT	WATER TANK - ABOVE
LAD	LADDER -	UCB	TREE (GIRTH 0.5m)
LP	LAMP DOWN	WO	TREE MULTI-GIRTH
LP	LAMP POST		
			BATTER LEVEL
PAL	PALISADE		BATTER / SLOPE
W/W	WIRE MESH		KERB
R/W	RAILWAY WALL		EDGE
C/W	CONC FAMC		SURFACE CHANGE
P/W	POST AND WIRE		MAST
W/W	WIRE WALL		TOP BANK
S/R	SCRIB RAIL		BOTTOM BANK
C/B	CLOSE BOARDED		BUILDING
C/L	CHAIN LINK		BUILDING CANOPY
(M.E.P.)	TOP OF FEATURE		OVER HEAD ELECTRICAL
(G.M.)	GATE		OVER HEAD TELECOM
BH	BOREHOLE		
	BOREHOLE		HEDGE
	BATTER		

NOTES:

All levels relate to O.S (Newlyn) Datum, Established using network RTK.
Survey plotted on a plane local grid, orientated to National Grid.

SURVEY STATIONS			
Name	Easting	Northing	Height
SEP1	383784.323	398283.614	36.868
SEP2	383738.396	398288.444	36.439
SEP3	383741.171	398316.492	36.329
SEP4	383746.273	398318.492	36.269
SEP5	383674.693	398329.848	37.986
SEP6	383673.157	398329.848	37.986
SEP7	383645.037	398329.917	37.178
SEP8	383684.968	398233.947	36.429
SEP10	383726.261	398234.868	37.129
SEP12	383784.398	398282.637	37.960

0 2m 4m 8m 12m 16m
SCALE BAR

REV	DATE	DESCRIPTION

SURVEY & ENGINEERING PROJECTS

Client
Curtins Consulting Limited
17-19 Whitworth Street West
Manchester
M1 5WG

Project Title
Topographical Survey of Land at:
The Island
John Dalton Street
Manchester
M2 6FW

Surveyed	Drawn	Checked
I.Bryning	D.Shipton	R.Critchley

Scale	Date	Drawing Ref.	No.	Size	Rev
1:200	Mar 20	S20327-T	01	A0	--

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N

PLAN GRID NORTH

File Name: S20327-BM.dwg

LEGEND

SPOT LEVEL	99.99	TV AERIAL SOCKET	AER
FLOOR LEVEL	FL99.99	ALARM SENSOR	AS
CEILING LEVEL	CL99.99	ALARM	AL
SUSPENDED CEILING LEVEL	SUS99.99	SINGLE COMPUTER SOCKET	CPS
UNDERSIDE OF BEAM	USB99.99	DOUBLE COMPUTER SOCKET	CPS
DOOR HEIGHT	DH99.99	TRIPLE COMPUTER SOCKET	CPS
SILL LEVEL	SL99.99	EXTRACTOR FAN	EXF
HEAD LEVEL	HL99.99	FIRE ALARM	FA
ARCH TOP LEVEL	ATL99.99	FIRE ALARM SWITCH	FAS
ARCH BOTTOM LEVEL	ABL99.99	FLOOR SOCKET	FS
SOLID WALLS		HAND DRYER	HD
PARTITION WALLS		SINGLE LIGHT SWITCH	LS
BOILER		DOUBLE LIGHT SWITCH	LS
BUILDING CANOPIES		TRIPLE LIGHT SWITCH	LS
CABINETS		SINGLE PLUG SOCKET	PS
CABLES		DOUBLE PLUG SOCKET	PS
CLADDING		TRIPLE PLUG SOCKET	PS
COLUMN		UNKNOWN SOCKET	PS
DIMENSIONS		SINGLE SWITCH	SW
DOORS		DOUBLE SWITCH	SW
DUCTING		TRIPLE SWITCH	SW
ELEVATION DATUM		BOILER SWITCH	BOS
ELEVATIONS STRUCTURAL		EXTRACTOR FAN SWITCH	EFS
ELEVATIONS DETAIL		SWITCH BOARD	SWB
FENCES		SINGLE PHONE SOCKET	TEL
HANDRAILS		DOUBLE PHONE SOCKET	TEL
HATCH		TRIPLE PHONE SOCKET	TEL
INSPECTION COVERS		THERMOSTAT	TH
KITCHEN FURNITURE		WALL LIGHT	WL
LADDERS		LIGHT	LI
LIFTS		SMOKE DETECTOR	SD
LIGHTING		RADIATOR	RAD
BEAMS			
CEILING DETAIL			
PIPES			
RADIATORS			
SEATING			
SECTION DATUM			
SECTIONS			
SERVICES			
SKYLIGHTS			
STEELWORK			
STEPS/ STAIRS			
SURFACE CHANGES			
TANKS			
VENTS			
WALLS			
SANITRY FITTINGS			
WINDOWS			
WORKTOPS			
HIDDEN DETAIL			
LEVEL MARKER	99.99		
LEVEL MARKER	99.99		
STAIRS/RAMP DIRECTION			
SLOPING CEILING DIRECTION			
BREAK LINE			

TOILET, URINAL, SHOWER, WASH BASIN, KITCHEN SINK, BATH, DOOR SWING

NOTES:
All levels relate to O.S (Newlyn) Datum. Established using network RTK.
Survey plotted on a plane local grid, orientated to National Grid.

0 1m 2m 4m 6m 8m
SCALE BAR

REV	DATE	DESCRIPTION

SURVEY & ENGINEERING PROJECTS

Client
Curtins Consulting Limited
17-19 Whitworth Street West
Manchester
M1 5WG

Project Title
Basement Floor Plan at:
The Island
John Dalton Street
Manchester
M2 6FW

Surveyed	Drawn	Checked
A.Lyon	B.Carr	R.Critchley

Scale	Date	Drawing Ref.	No.	Size	Rev
1:100	Mar 20	S20327-BM	01	A1	--

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N

PLAN GRID NORTH

File Name: S20327-GF.dwg

LEGEND

SPOT LEVEL	99.99
FLOOR LEVEL	FL99.99
CEILING LEVEL	CL99.99
SUSPENDED CEILING LEVEL	SUS99.99
UNDERSIDE OF BEAM	US99.99
DOOR HEIGHT	DH99.99
SILL LEVEL	S99.99
LINTEL LEVEL	L99.99
ARCH TOP LEVEL	A799.99
ARCH BOTTOM LEVEL	AB99.99

SOLID WALLS
PARTITION WALLS
BOILER
BUILDING CANOPIES
BUILDINGS
CABLES
CEILING
COLUMN
DIMENSIONS
DOORS
DUCTING
ELEVATION DATUM
ELEVATIONS STRUCTURAL
ELEVATIONS DETAIL
FENCES
HANDRAILS
HATCH
INSPECTION COVERS
KITCHEN FURNITURE
LADDERS
LEVELS
LIGHTING
BEAMS
CEILING DETAIL
PIPES
RADIATORS
SEATING
SECTION DATUM
SECTIONS
SHUTTERS
SKYLIGHTS
STEELWORK
STEPS STAIRS
SURFACE CHANGES
TANKS
VENTS
WALLS
SANITARY FITTINGS
WINDOWS
WORKTOPS
HIDDEN DETAIL

LEVEL MARKER 99.99
LEVEL MARKER 99.99
STAIRS/RAMP DIRECTION
SLOPING CEILING DIRECTION
BREAK LINE
TOILET
URINAL
SHOWER
WASH BASIN
KITCHEN SINK
BATH
DOOR SWING

TV AERIAL SOCKET	AER
ALARM SENSOR	AS
ALARM	AL
SINGLE COMPUTER SOCKET	CPS
DOUBLE COMPUTER SOCKET	CPS
TRIPLE COMPUTER SOCKET	CPS
EXTRACTOR FAN	EXF
FIRE ALARM	FA
FIRE ALARM SWITCH	FAS
FLOOR SOCKET	FS
HAND DRYER	HD
SINGLE LIGHT SWITCH	LS
DOUBLE LIGHT SWITCH	LS
TRIPLE LIGHT SWITCH	LS
SINGLE PLUG SOCKET	PS
DOUBLE PLUG SOCKET	PS
TRIPLE PLUG SOCKET	PS
UNKNOWN SOCKET	PS
SINGLE SWITCH	SW
DOUBLE SWITCH	SW
TRIPLE SWITCH	SW
BOILER SWITCH	BOS
EXTRACTOR FAN SWITCH	EFS
SWITCH BOARD	SWB
SINGLE PHONE SOCKET	TEL
DOUBLE PHONE SOCKET	TEL
TRIPLE PHONE SOCKET	TEL
THERMOSTAT	TH
WALL LIGHT	WL
LIGHT	LI
SMOKE DETECTOR	SD
RADIATOR	RAD

NOTES:
All levels relate to O.S (Newlyn) Datum, Established using network RTK.
Survey plotted on a plane local grid, orientated to National Grid.

0 1m 2m 4m 6m 8m
SCALE BAR

REV	DATE	DESCRIPTION

SURVEY & ENGINEERING PROJECTS

Client
Curtins Consulting Limited
17-19 Whitworth Street West
Manchester
M1 5WG

Project Title
Ground Floor Plan at:
The Island
John Dalton Street
Manchester
M2 6FW

Surveyed	Drawn	Checked
A.Lyon	C.Wills	R.Critchley

Scale	Date	Drawing Ref.	No.	Size	Rev
1:100	Mar 20	S20327-GF	01	A1	--

Appendix C

CCTV Drainage Survey

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PLAN GRID NORTH

File Name: BOW STREET LAYER DRAINAGE.dwg

LEGEND

AV	AIR VALVE	BT	BT
BT	BT INSPECTION COVER	CABLE DUCT	DUCT
CB	CONTROL BOX	CABLE TV	CATV
CP	CONTROL BOX POST	CCTV	CCTV
COM	COMMUNICATIONS COVER	TELECOMS	COM
CTV	CABLE TV COVER	TELECOMS STRIP	COM
CTV	CABLE TV BOX/PANEL	ELECTRIC	ELEC
DP	DOWN PIPE	ELECTRIC STRIP	ELEC
EB	ELEC. BOX	FUEL LINE	FL
EC	ELEC. INSPECTION COVER	FUEL INSPECTION LINE	FIL
EP	ELECTRIC POLE	GAS	GAS
ER	EARTH ROD	MAINS WATER	W
EP	ELECTRICITY POLE	SEWER FW	FW
FL	FUEL LINE LEVEL	SEWER FM	FM
FH	FIRE HYDRANT	SEWER CW	CW
G	GRATE	UNIDENTIFIED TRACE CABLE	UNID
GL	GROUND LIGHT	UNIDENTIFIED TRACE	UNID
GV	GAS VALVE	UNIDENTIFIED CABLE	UT
GC	GAS INSPECTION COVER	UNIDENTIFIED TRACE	UT
IC	INSPECTION COVER	VERIFIED INSPECTION CABLE	
LP	LAMP POST	SURVEY BOUNDARY	
LS	LIGHT SWITCH		
MH	MANHOLE		
LP	LAMP POST		
MW	MARKER WALL		
MP	MARKER		
OP	OUTFALL PIPE		
PP	POST		
PP	PETROL PUMP		
RWP	RAINWATER PIPE		
RP	RAINWATER PIPE		
SV	STOP VALVE		
SP	STOP VALVE		
TCB	TELEPHONE CALL BOX		
TP	TELEPHONE POLE		
TLB	TRAFFIC LIGHT BOX		
TP	TELEGRAPH POLE		
WC	WATER CUTOFF		
WO	WATER OUTLET		
WS	WATER STOP		
WSV	WATER STOP VALVE		
EOT	END OF TRACE		
OOA	OUT OF SURVEY AREA		
UTS	UNABLE TO SEARCH		
UTG	UNABLE TO GRADE		
UTT	UNABLE TO TRACE		
BL	BOLLARD LIGHT		
BLD	BLOCKED		
MC	MULTIPLE SERVICE CONTACTS		
NP	NO PHOTO TAKEN		
SOP	SOA OFFSET PIPE		
SOP	SOA OFFSET POST		
LJ	EOT SYMBOL		

FROM STATUTORY AUTHORITY PLANS

BT		
CABLE DUCT		
CATV		
CCTV		
TELECOMS		
ELECTRIC		
MAINS GAS		
MAINS WATER		
SEWER CW		
SEWER FW		
SEWER RW		
FIBRE-OPTICS	FO	FO
	STAT	STAT

NOTES:

All levels relate to O.S (Newlyn) Datum, Established using network RTK. Survey plotted on a plane local grid, orientated to National Grid.

Services shown as 'From Statutory Authority Plans' has styles are taken from Statutory Records plans supplied by the relevant regional authority. These services were not located and are shown for indicative purposes only.

DISCLAIMER:

At Layer Surveys staff are skilled and experienced staff, modern up to date techniques and equipment are used to locate and establish existing buildings to accuracy and quality standards as specified by the client. Of the equipment employed in our service surveys can be adversely affected by factors outside the control of Layer Surveys, therefore Layer Surveys

cannot guarantee that all utilities present on site have been located. It is the responsibility of the Client to consult regional authority records and request that a Cable Avoidance Tool survey

Where similar services run in close proximity it may be impossible to separately trace individual services as the trace signal can experience interference. In such cases, services will be shown as a single, annotated line. The displayed depth will refer to the shallowest detected utility.

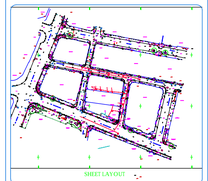
Successful tracing of non-conductive materials may be limited. Drainage galleys are dye tested where possible to prove connectivity but it is not always possible to introduce the sonde due to narrow pipe sizes and/or accumulated silt.

Depth information of underground service/features are generally accurate to within +/-10% (i.e. a pipe at 2m deep may be accurate to +/-200mm) but this cannot be guaranteed. Depths shown usually refer to the top of the service. Gravity sewer and drain depths are usually to invert (base of drainage channel) unless otherwise stated.

Some above ground features may have been obscured at time of survey. It is not always possible to operate the Ground Penetrating Radar in areas including, but not limited to, dense vegetation, rubble, debris and/or rough uneven ground.

Existing record information that was made available to Layer Surveys by the Client or by the statutory utility provider should be regarded only as an indication and cannot be guaranteed.

Excavation in the vicinity of services shown should be carried out with due diligence (Ref. HSG47).



SHEET LAYOUT

0 10m 20m 40m 60m 80m

SCALE BAR

REV	DATE	DESCRIPTION

Layer Surveys Ltd
See the Complete Picture

Client

Project Title
Level Survey of Ground Floor At:
Bow Street
Spinningfields

M2 6AZ

Surveyed	Drawn	Checked
		D.W

Scale	Date	Drawing Ref.	No.	Size	Rev
1:200	MAR20	Lay-18/03/20	01	A0	01

1
2
3
4
5

Appendix D

Environment Agency Flood Map for Planning

Flood map for planning

Your reference	Location (easting/northing)	Created
Island	**383710/398245**	**29 Mar 2021 13:44**

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.

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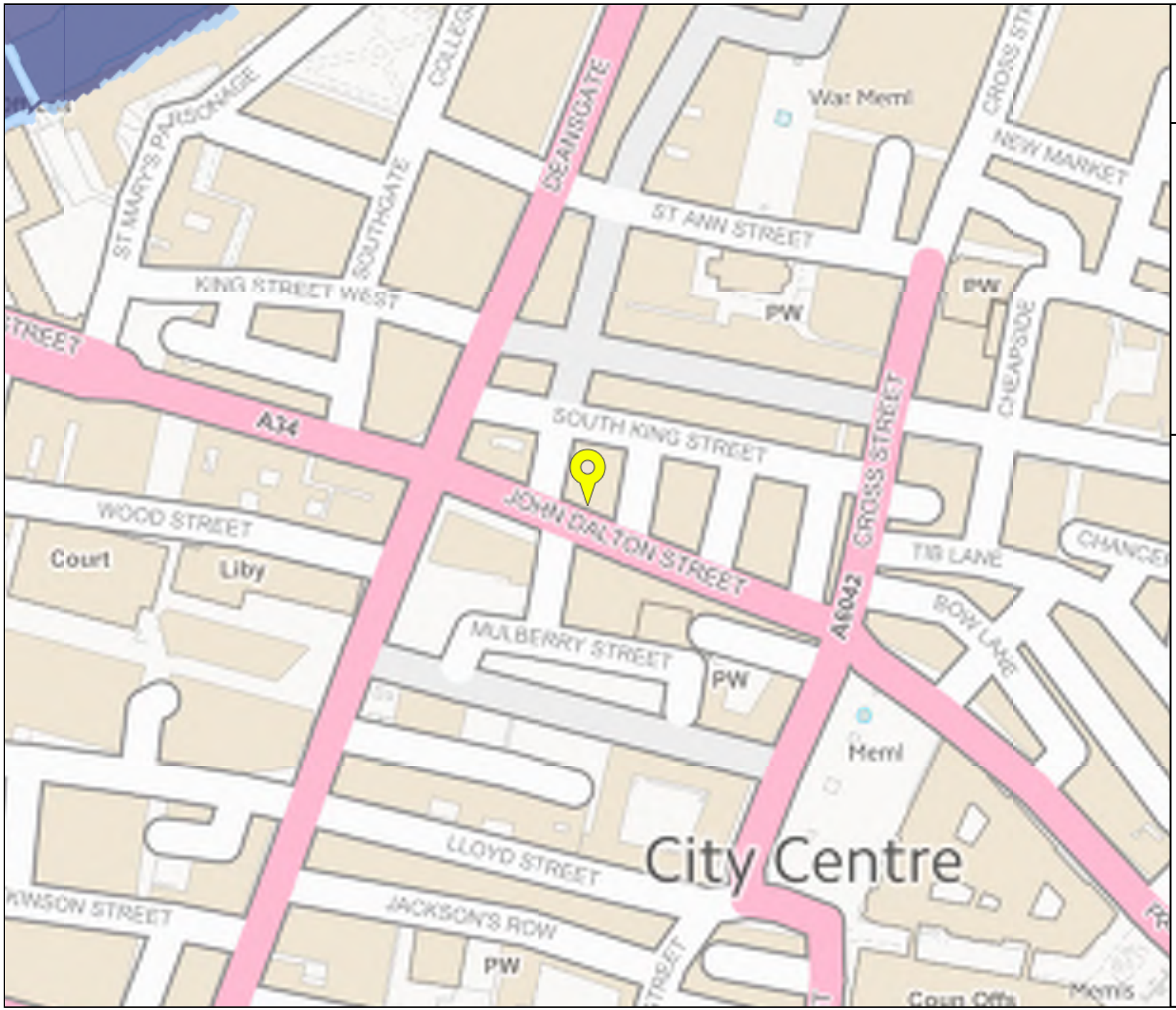
https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/



Environment Agency

Flood map for planning

Your reference
Island

Location (easting/northing)
383710/398245

Scale
1:2500

Created
29 Mar 2021 13:44

- 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

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Appendix E

Lead Local Flood Authority Correspondence

United Utilities Correspondence

Chloé Grimsley

From: Flood Risk Management <floodriskmanagement@manchester.gov.uk>
Sent: 11 March 2021 16:57
To: Chloé Grimsley
Subject: RE: The Island, John Dalton Street, Manchester

Follow Up Flag: Follow up
Flag Status: Completed

Hi Chloe,

Thanks for the email.

I can confirm that a Drainage Strategy will suffice.

Regarding the discharge rates, we could only agree these once the calculations have been sent through and we have reviewed written confirmation from UU that they accept these proposed flows to the public combined network.

However, in principle we would find these proposed flow rates acceptable (however as previously mentioned these can only be confirmed to be acceptable following receipt of the above information).

I can confirm that we have no historic records of flooding on site and that our records do not show any culverted watercourses within close proximity to the site.

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.Grimsley@curtins.com>
Sent: 25 February 2021 16:28
To: Flood Risk Management <floodriskmanagement@manchester.gov.uk>
Subject: The Island, John Dalton Street, Manchester

Good Afternoon Sir/Madam,

We are currently looking at the proposed development of the land currently occupied by The Old Colony House, 5 Ridgefield and Grange House at John Dalton Street, Manchester M2 6EG (bound by Ridgefield, Bow Street and South King Street).

The site location is illustrated below:

The proposals are to demolish the existing building and construct a new 10-Storey building, inclusive of basement level.

The site extends to approximately 0.13 hectares and is entirely within Flood Zone 1, although within the Conurbation Critical Drainage Area, we assume a Drainage Strategy will suffice for any future planning application – please could you confirm?

With regards to proposals for draining the proposed development site, we anticipate that both foul and surface water will discharge to the surrounding United Utilities public sewers, subject to their agreement. We have reviewed other options for discharge of surface water and I have summarised:

Infiltration
The proposed building is to extend up to the site ownership – to back of the surrounding footpaths, therefore options to infiltrate would be limited and given the underlying geology it is not anticipated to be compatible in any case. In terms of proposed.

Watercourse
The nearest watercourse to the site is the River Irwell approximately 280m north-west of the site and therefore a new connection would be unviable.

Surface Water Sewer
There are no surface water public sewer recorded near to the development site – please see below.

Combined Sewer
There are various combined water public sewers surrounding the development site and the existing drainage system on site discharges to the public sewers within Bow Street and John Dalton Street.
Therefore it is proposed to discharge to the combined sewer system for both foul and surface water drainage.

With regards to the proposed surface water discharge rates, we have assessed the existing drainage system and this has been captured by a CCTV Survey. I have attached the survey layout for information.
The survey confirms that there are 4 No. Outfalls from the site (3 x 150mm connections into Bow Street and 1 x 150mm connection into John Dalton Street). Unfortunately, rainwater pipes were not easily identified from general stacks above ground and so the detailed arrangement above ground is unclear in terms of the catchments draining to each downpipe and the outfall this discharged to. There was also limited access to the outfall into John Dalton Street due to a trap on the outfall. Therefore to approximate the likely existing discharge from the site, we have assumed a 150mm pipe network at a gradient of 1 in 100, accepting 100% flows from the plot catchment of 0.13 Ha and modelled within Micro-Drainage.

The existing flow rates are estimated as:
1 Year = 15.6 l/s
30 Year = 30 l/s
100 Year = 36.3 l/s

We would therefore aim to reduce flow by 50% to achieve a maximum of the following flows, subject to agreement with United Utilities.
1 Year = 7.8 l/s
30 Year = 15 l/s
100 Year = 18.15 l/s

Please could you confirm if the above is acceptable.

Please could you also confirm if you have any historic records of flood at or near the site and any information that may inform our drainage strategy – watercourse, highway drainage information.

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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This footnote also confirms that this email message has been swept for the presence of computer viruses.
****

Chloé Grimsley

From: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Sent: 09 March 2021 17:52
To: Chloé Grimsley
Cc: Wastewater Developer Services
Subject: Pre Development Enquiry for : The Old Colony House 5 Ridgefield & Grange House, John Dalton Street Mancheste M2 6EG UU reference Number : 4200037752

Dear Sirs,

Pre Development Enquiry for: The Old Colony House 5 Ridgefield & Grange House, John Dalton Street Manchester M2 6EG UU reference Number : 4200037752

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 450mm diameter public combined sewer within Bow Streetlocated to the east of your proposed development at an unrestricted rate. Given the fact that you intend to install a basement unit I would encourage you to consider pumping foul to the combined sewer to avoid flooding from surcharging in the public sewer.

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.

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.

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 450mm diameter public combined sewer within Bow Street 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 8.3 l/s.

I have based my figure on the rational method with a rainfall intensity of 50mm /hr and then applied a 50% reduction in line with the Manchester local planning policy. I do not believe that a variable discharge rate is appropriate for such a small site with a single building.

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 pubic sewerage network under any circumstances

Existing Water Assets Crossing the Site

It is the developer responsibility to identify utilities on-site. Where clean water assets are shown on our records, we recommend that you contact our Water Pre-Development Team, via the following email address: DeveloperServicesWater@uuplc.co.uk. Further information for this service can be found on our website via the link below:
https://www.unitedutilities.com/builders-developers/larger-developments/pre-development/water-pre-dev/

Connection Application

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

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

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

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

Kind regards,

Graham Perry
Development Engineer
Developer Services
M: 07557 577548
T: 01925 679405
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Appendix F

Proposed Drainage Layout – Basement

Proposed Drainage Layout – Ground Floor

KEY:

EXISTING DRAINAGE

PROPOSED SURFACE PUBLIC SEWER AND MANHOLE

PROPOSED PRIVATE FOUL DRAIN — SizeØ

PROPOSED PRIVATE SURFACE DRAIN — SizeØ

PROPOSED ATTENUATION SYSTEM (TYPE TO BE CONFIRMED BY OTHERS)

PROPOSED LINEAR DRAIN AND ACCESS/OUTLET BOXES (TYPE TO BE CONFIRMED) — AB, OB

FOUL WATER GULLY — FG

FOUL PUMPING & STORAGE

FLOWS TAKEN FROM BRITISH WATER COP CHAPTER 3

PUMPED VOLUMES WILL BE BASED ON OCCUPANCY NUMBERS USING THE BASEMENT FACILITIES - TO BE CONFIRMED BY THE ARCHITECT.

ASSUMPTIONS: SHOWER, TOILET AND CHANGE FACILITY BASED ON CYCLIST USE - 35No.

SHOWERS:
CYCLE STORAGE HAS A CAPACITY FOR APPROX. 35;
ASSUMING FULL USE AND ALL SHOWER (AM ONLY)
WATER USE 40L/ USE.
VOLUME = 1,400 LITRES (1.4m³)

TOILETS:
ASSUMING USE AS PER SHOWERS (35)
WATER USE 10L/ USE.
VOLUME = 350 LITRES (0.35m³).

NOTE:
THE ASSUMPTIONS ABOVE HAVE BEEN USED AS CONFIRMED INFORMATION HAS NOT BEEN PROVIDED TO CURTINS. THE CONTRACTOR/ CLIENT AND M&E DESIGNER SHOULD SATISFY THEMSELVES THAT THE ASSUMPTIONS ARE SUFFCIENTLY ROBUST.

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DESIGN BASED ON TOPOGRAPHICAL SURVEY AND CCTV SURVEY INFORMATION AVAILABLE AT THE TIME OF DESIGN.
3. 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.
4. 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.
5. ALL DIMENSIONS ARE IN METRES AND LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE NOTED.
6. WHERE EXISTING DRAINAGE IS BEING USED, ALLOWANCES SHOULD BE MADE TO REMEDIATE THIS DRAINAGE IN LINE WITH AVAILABLE CCTV SURVEY INFORMATION. IF NO SURVEY IS AVAILABLE, IT IS ADVISED TO OBTAIN ONE PRIOR TO COMMENCEMENT OF WORKS.
7. ALL EXISTING SERVICES TO BE LOCATED PRIOR TO COMMENCEMENT OF ANY DRAINAGE WORKS, AND WHERE NECESSARY PROTECTION OR DIVERSIONS TO BE UNDERTAKEN TO AVOID CONFLICT WITH THE PROPOSED WORK.
8. ALL RAINWATER AND FOUL POP UPS LOCATIONS AND SIZES INDICATIVE ONLY AND TO BE CONFIRMED BY THE ARCHITECT AND M&E ENGINEER.
9. COVER LEVELS, GULLY POSITIONS, AND BUILDINGS LOCATION ARE APPROXIMATE AND SHALL BE CONFIRMED BY ARCHITECT/ LANDSCAPE ARCHITECT.
10. ALL PIPE DIAMETERS GIVEN ARE NOMINAL INTERNAL PIPE DIAMETERS. THESE ARE TO BE CONFIRMED ONCE A DETAILED CAPACITY CHECK HAS BEEN UNDERTAKEN AT A LATER DESIGN STAGE.
11. OUTFALL CONNECTION(S) SUBJECT TO AGREEMENT WITH THE APPROVING AUTHORITY.

OTHER DISCIPLINE DRAWING REFERENCES

THE DESIGN OF THIS SCHEME HAS BEEN DESIGNED IN ACCORDANCE WITH THE BELOW DRAWINGS AND INFORMATION.

ARCHITECTS DRAWING REF:
TIS-CPA-ZA-B1-DR-A-2000-P8-GA Plan - Basement
TIS-CPA-ZA-GF-DR-A-2001-P7-GA Plan - Level 00

CCTV SURVEY REPORT AND DRAWING BY LAYER SURVEYS MARCH 2020

Rev:	Description:	Date:	By:	Chkd:
P01	ISSUED FOR PLANNING	26.03.21	CG	CG

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Status: PRELIMINARY

Project: THE ISLAND SITE MANCHESTER

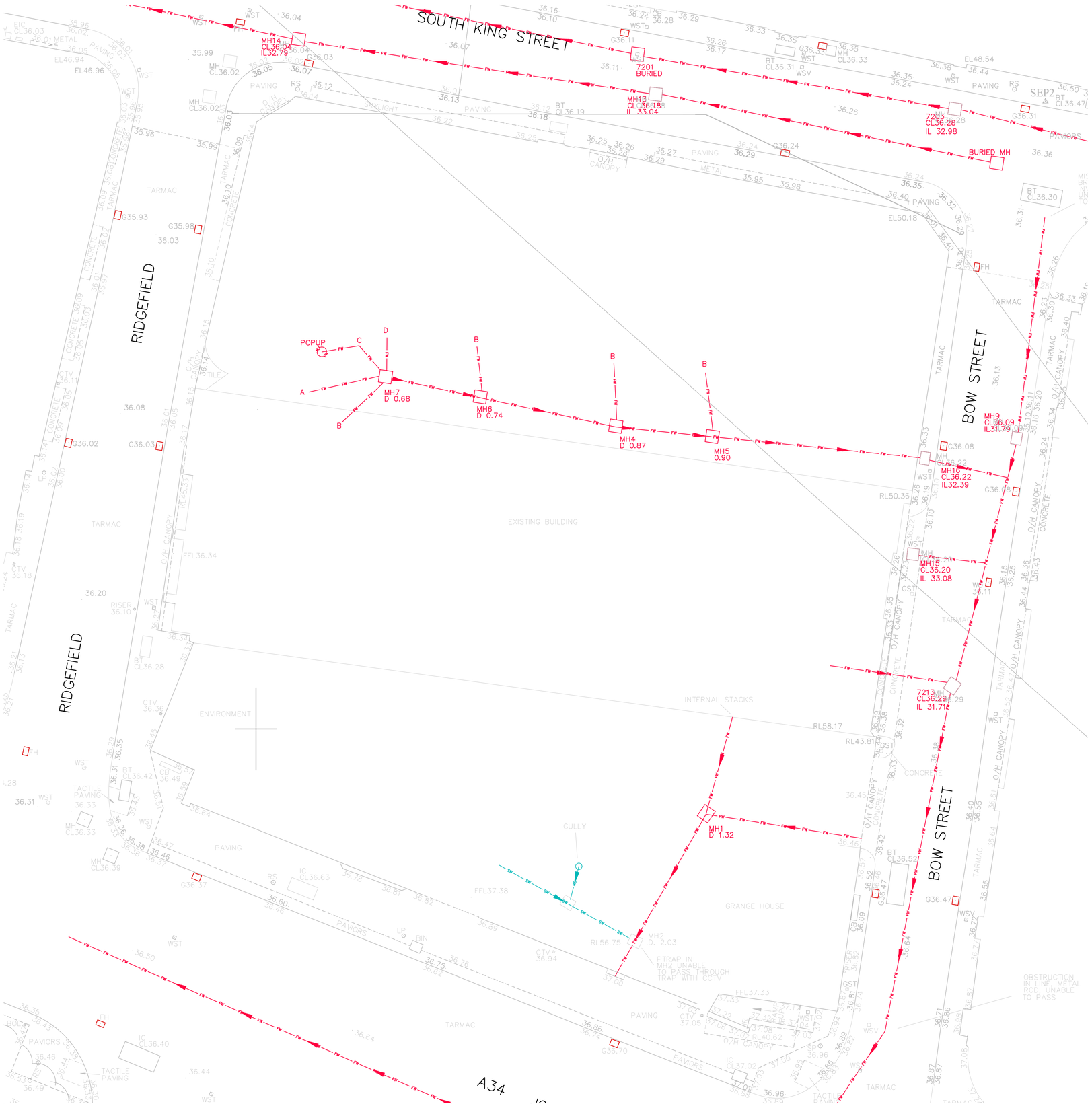
Drg Title: PROPOSED DRAINAGE LAYOUT BASEMENT

Size:	Date:	Drawn By:	Designed By:	Checked By:
A1	26.03.21	CG	CG	CG

Scale: 1:250

Project No:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:
070298	CUR	XX	XX	DR	C	92500	P01

\\mafs02\Projects\070001 - 071000\070298 - Island Site, Manchester\04-Production\4A-Models-Drawings\CIAD\92\


SOUTH KING STREET
RIDGEFIELD
BOW STREET
MH14
CL36.04
IL32.79
7201
BURIED
MH13
CL36.18
IL 33.04
7203
CL36.28
IL 32.98
BURIED MH
POPUP
MH7
D 0.68
MH6
D 0.74
MH4
D 0.87
MH5
0.90
MH9
CL36.09
IL31.79
MH16
CL36.22
IL32.39
MH15
CL36.20
IL 33.08
7213
CL36.29
IL 31.71
MH1
D 1.32
MH2
D. 2.03
PTRAP IN MH2 UNABLE TO PASS THROUGH TRAP WITH CCTV
EXISTING BUILDING
INTERNAL STACKS
GRANGE HOUSE
ENVIRONMENT
GULLY
OBSTRUCTION IN LINE, METAL ROD, UNABLE TO PASS
A34

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