# SUSTAINABLE DRAINAGE STRATEGY

# INVICTA HOUSE, ATKINSON STREET

# MANCHESTER

# ON BEHALF OF

# HENRY BOOT DEVELOPMENTS LTD

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September 2015

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## 1.0 INTRODUCTION

Integra Consulting have been commissioned by Henry Boot Developments Limited to provide a drainage strategy for the proposed re-development of the existing Invicta House site, Atkinson Street Deansgate. This document is submitted in support of the planning application for the development of the application site.

The objective of the drainage strategy was to identify potential flooding issues and surface/foul water drainage strategy at the proposed development.

The assessment has been undertaken in accordance with the pro-forma guidance contained in:

- Pro-forma guidance contained in Department for Communities and Local Government document ‘‘National Planning Practice Guidance: Flood Risk and Coastal Change;
- The DEFRA / Environment Agency publication SR744 Preliminary Rainfall Runoff Management for Developments revision E dated January 2012;

## 2.0 STANDARDS AND LIMITATIONS

This report has been prepared solely for use by Henry Boot Developments Limited. It shall not be relied upon or transferred to any other party without the prior written authorisation of Integra Consulting.

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

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

## 3.0 CURRENT SITUATION

### 3.1 Site Location and Description

The site is located at Atkinson Street, Deansgate, Manchester at National Grid reference E383459, N398113 and is less than 0.1Ha in area. The site is occupied in the main by the existing Invicta House building with a small area of courtyard parking to the rear. The site is bounded by Hardman Street to the north, Deansgate to the east, Atkinson Street to the south and existing office buildings to the west.

Following liaison with the EA, we can confirm that the site does not lie within an elevated flood zone and is therefore considered to be at low / no risk of fluvial or coastal flooding.

### 3.2 Hydrology and Flooding

From research undertaken to date, there are no historical records of flooding from sewers, highway drainage, overland flow or groundwater at the site. Following liaison with the EA, it has been confirmed that the site does not lie within an elevated flood zone and no detailed flood analysis is therefore required for the application site.

### 3.3 Existing Site Surface Water Drainage

It is appears that the rainwater pipes from the existing building and the gully's to the rear courtyard discharge directly to the existing public combined sewer along Atkinson Street (0.5x0.7m brick sewer). A connectivity survey will be undertaken to confirm the surface water connection points.

### 3.4 Existing Site Foul Water Drainage

It is assumed that the site foul water drainage system for Invicta House consists of a series of soil vent pipes (SVP's). It is assumed that the SVP's from the existing building are connected directly into the public combined sewer along Atkinson Street. A connectivity survey will be required to confirm connection points for the foul system.

## 4.0 PROPOSED DEVELOPMENT

### 4.1 Development Proposals

The proposed development over site comprises the re-development of the existing site with new multi storey office commercial space.

### 4.2 Surface Water Drainage Proposals

The issue of surface water drainage to the proposed development has been considered with reference to the hierarchy of surface water disposal as noted in the Building Regulations H3:

i) Sustainable urban drainage systems (SUDS)

ii) Discharge of surface water off site direct to watercourse

iii) Discharge to adopted sewer

Using the above hierarchy, SUDS are made up of one or more structures built to manage surface water runoff. They are used in conjunction with good management of the site to prevent flooding and pollution. There following are the general methods of control:

- Constructed wetlands
- Filter strips and swales
- Filter drains and permeable surfaces
- Infiltration basins or devices
- Basins and detention ponds

The city centre location and subsequent lack of public open space within the development scheme inhibits the use of features such as constructed wetlands, filter strips and swales. Therefore the potential use of these features is unachievable due to the lack of open space available at the development site.

Filter drains and permeable surfacing are more suited to use in external car parks, driveways, paths and patios and would not therefore lend themselves for use at development site considering that the building is bounded by adopted highway and there are therefore no available associated site external areas.

The potential for using infiltration basins and devices such as soakaways has been considered and deemed unsuitable for the development site. This is due to the lack of any external open space which could be utilised to locate soakaway devices. Considering that soakaways are required to be located a minimum of 5m from any property as stipulated in BS8301, there are no opportunities at the site to accommodate infiltration devices.

The potential use of detention basins or balancing ponds is again considered unachievable due to the lack of open space available for this purpose.

In summary of the above, sustainable urban drainage systems are not considered feasible for the proposed development particularly due to the reliance of such methods on external areas, and are thus more suitable for use on less densely populated sites.

The hierarchy of surface water discharge requires consideration of discharge direct to a watercourse. The nearest watercourse to the site is the River Irwell situated approximately 400m east of the site and hence discharge of surface water off the site into this watercourse is considered impractical due to the significant amount of third party land between the application site and the watercourse. A desk study search has been undertaken to establish whether any underground culverts cross or lie in close proximity to the site. Our enquiries indicate that there are no adopted or private culvert structures beneath or adjacent to the proposed development site and therefore this potential method of surface water discharge has also been discounted on this basis.

## 5.0 CONCLUSIONS

### 5.1 Flooding

Our research indicates no historical record of flooding at the site from sewers, highway drainage, overland flow or groundwater and it is therefore deemed that no detailed flood analysis is required for the development site.

### 5.2 Site Surface Water Drainage

The issue of surface water drainage to the proposed development has been considered with reference to the hierarchy of surface water disposal as noted in the Building Regulations H3.

SUDS are not considered a practical option at the application site, principally due to the high density nature of the site and thus lack of open space to accommodate SUDS systems.

On the basis of the distance to the nearest watercourse (River Irwell) and multiple land ownerships between the site and this watercourse, direct discharge of surface water off the site into watercourse is considered

impractical. Furthermore, there are no records of underground culverts in the vicinity of the development site and hence this method of discharge does not provide a solution for site surface water drainage.

With the above options having been investigated and found to be inappropriate, the use of the existing adopted sewers surrounding the site to discharge post-development surface water in the current manner remains the optimum solution.

### 5.3 Site Foul Water Drainage

Subject to detailed liaison with UU, it is proposed to discharge the foul water from the development site into the existing connections to the adopted combined sewers surrounding the site.

### 5.4 Off Site Impacts

.As there are no alterations to the existing system and because the increase in surface water discharge is negligible, the proposed surface water discharge is not envisaged to compromise the existing United Utilities public sewerage system infrastructure.

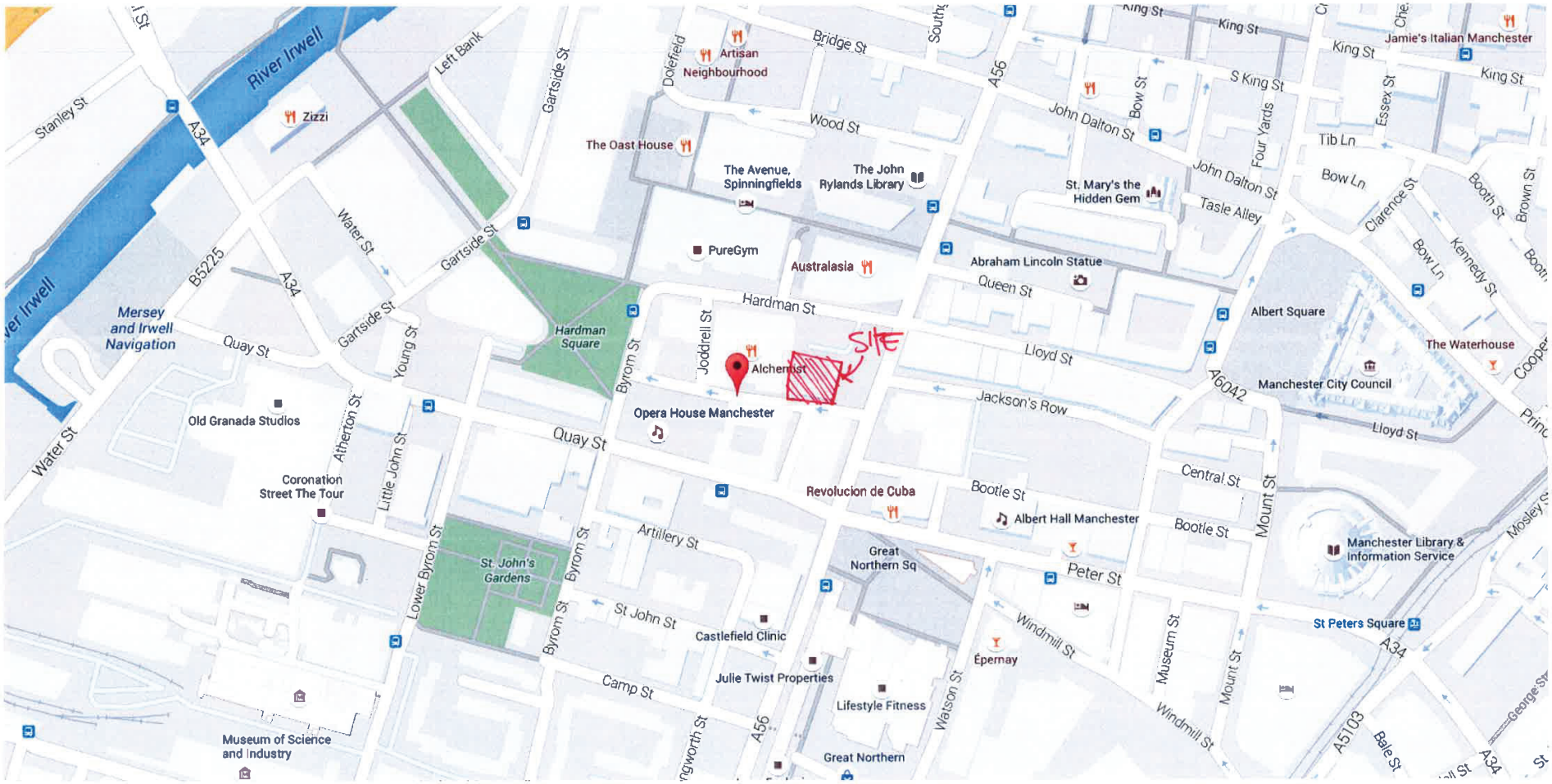
All roof areas are to be positively drained into the on site surface water drainage system. This will ensure that there are no off site flood flows generated by the proposed development.

## 5.5 Residual Risk

With careful design of the drainage elements as described above, no residual flood related risks will remain after the development has been completed. The building owner will be responsible for future maintenance of the on site drainage services. This will ensure that the drainage system will always operate at its maximum efficiency.

# APPENDIX 1

# SITE LOCATION PLAN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S King St
Essex St
Wood St
The Oast House
The Avenue, Spinningfields
The John Rylands Library
John Dalton St
Bow St
Four Yards
Tib Ln
St. Mary's the Hidden Gem
Tasle Alley
Bow Ln
Clarence St
Booth St
Brown St
Kennedy St
Water St
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PureGym
Australasia
Abraham Lincoln Statue
Queen St
Albert Square
Mersey and Irwell Navigation
Quay St
Young St
Hardman Square
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Joddrell St
Byrom St
Alchemist
SITE
Lloyd St
The Waterhouse
Manchester City Council
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Jackson's Row
Opera House Manchester
Old Granada Studios
Atherton St
Little John St
Coronation Street The Tour
Revolucion de Cuba
Bootle St
Central St
Mount St
Albert Hall Manchester
Artillery St
St. John's Gardens
Lower Byrom St
Great Northern Sq
Peter St
Manchester Library & information Service
St John St
Castlefield Clinic
Windmill St
St Peters Square
Epernay
Museum St
Julie Twist Properties
Camp St
Lifestyle Fitness
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Museum of Science and Industry
Great Northern
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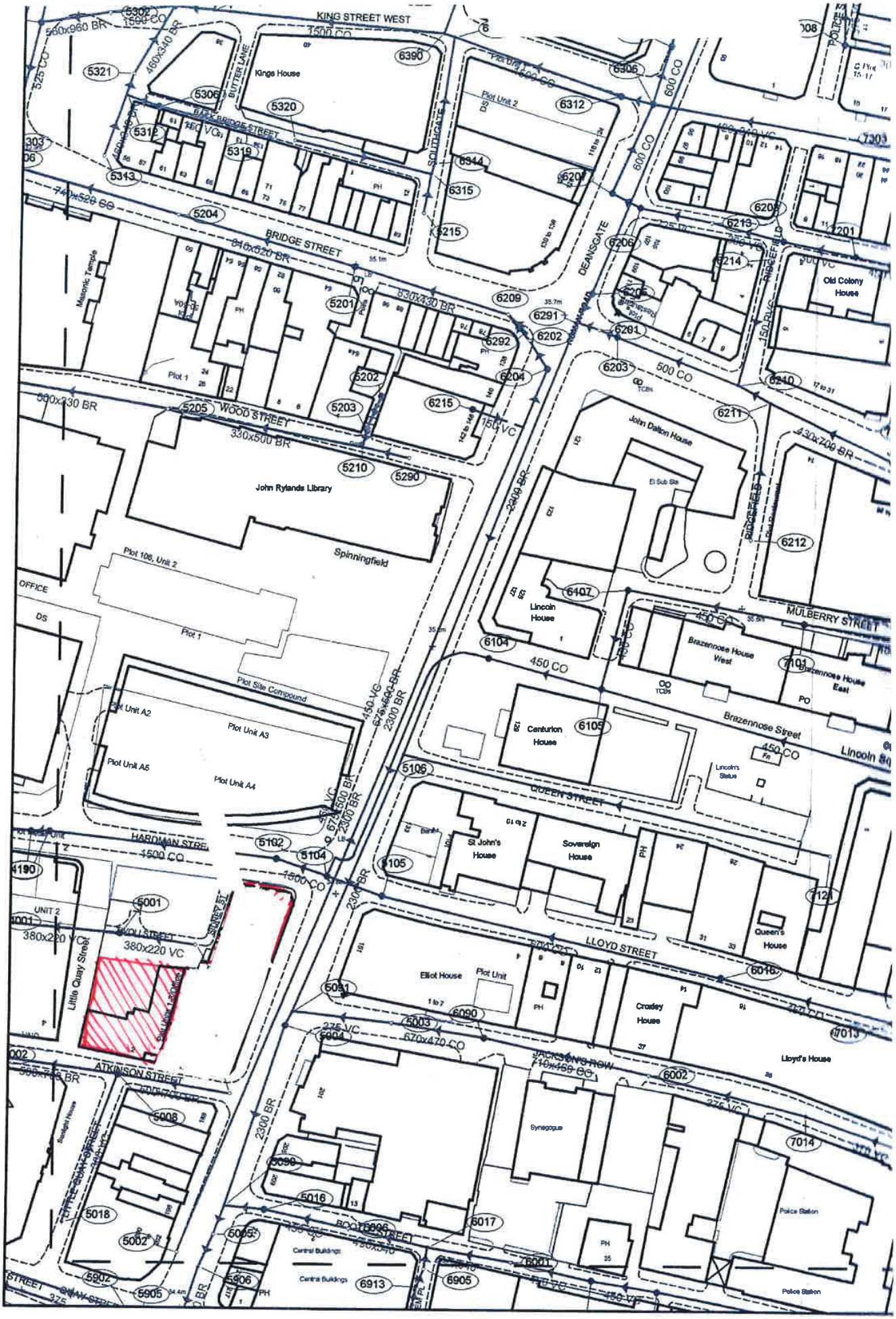
Bale St
George St

# APPENDIX 2

# UNITED UTILITES SEWER RECORDS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BUTTER LANE
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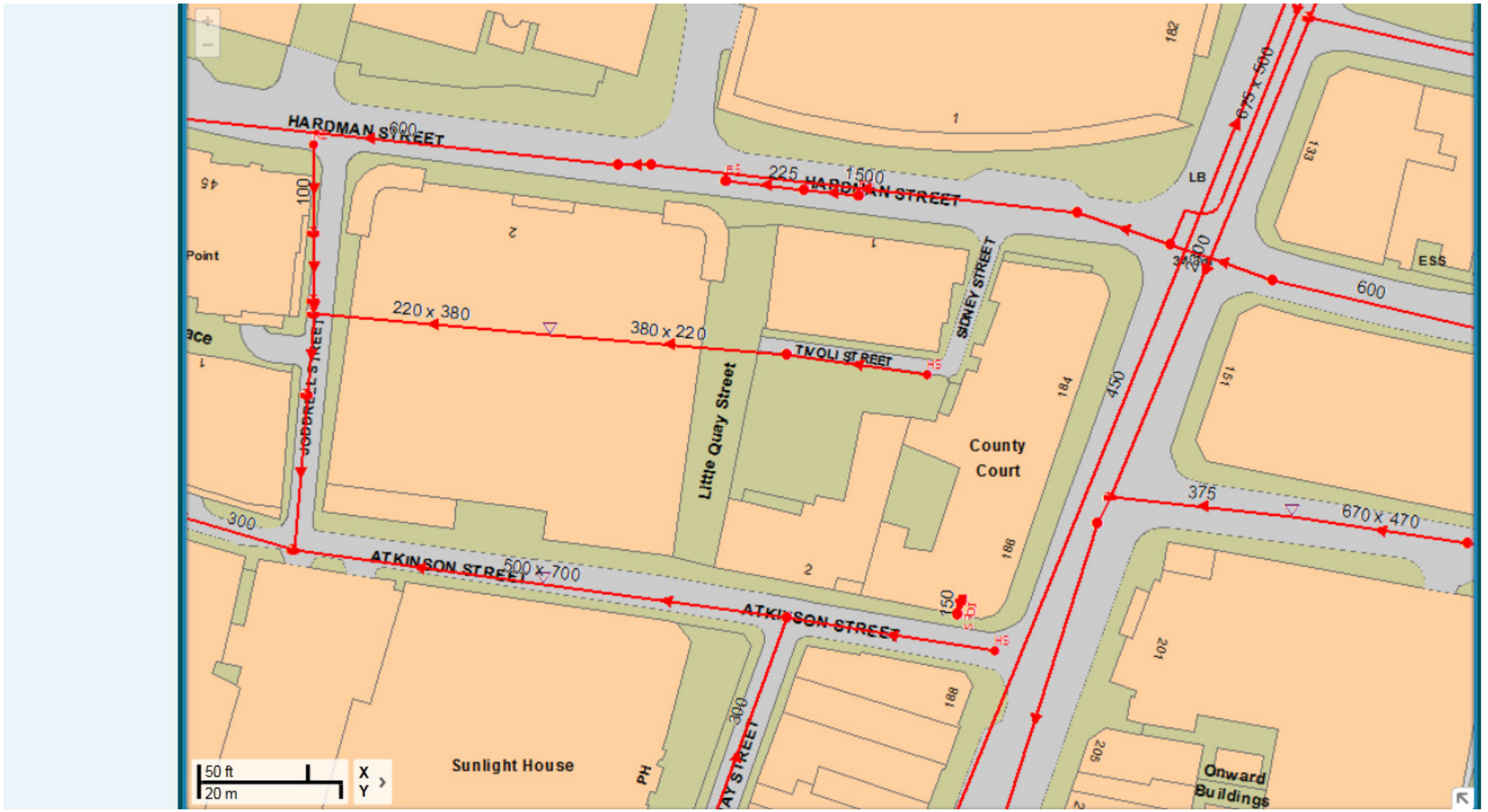
WOOD STREET
John Rylands Library
Spinningfield
John Dalton House
Lincoln House
MULBERRY STREET
Brazennose House West
Brazennose House East
Brazennose Street
Centurion House
Lincoln's Statue
QUEEN STREET
St John's House
Sovereign House
Queen's House
HARDMAN STREET
LLOYD STREET
Elliot House
Crosley House
Lloyd's House
JACKSON'S ROW
Synagogue
ATKINSON STREET
Little Quay Street
Police Station
Central Buildings
Plot Site Compound
Plot Unit A2
Plot Unit A3
Plot Unit A4
Plot Unit A5
Plot 1
Plot 106, Unit 2
Plot Unit 2
OFFICE
UNIT 2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1500
HARDMAN STREET
LB
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600
ESS
220 x 380
380 x 220
TIVOLI STREET
SIDNEY STREET
Little Quay Street
County
Court
450
375
670 x 470
ATKINSON STREET
500 x 700
ATKINSON STREET
300
150
Sunlight House
PH
Onward
Buildings
50 ft
20 m
X
Y