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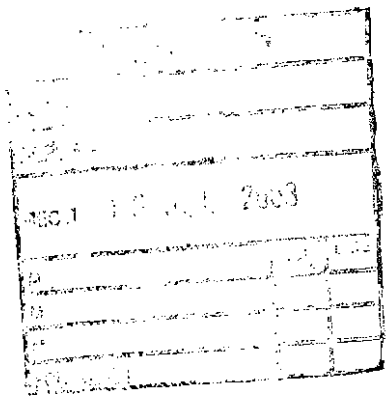

Client:
**Monzer Butt**

Carried out for:
**Proposed Restaurant and Banqueting centre**
**Woodlands Mill,**
**Crumpsall,**
**Manchester**

# Report on Flood Risk

**Project No: 00.08059**

**Date: July 2008 – Final**

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## 1.0 INTRODUCTION

### 1.1 Reason for the Report

Adept Consulting Engineers Ltd has been instructed by Evo Architects in behalf of Monzer Butt to perform a Flood Risk Assessment (FRA) in support of a planning application relating to the proposed redevelopment at Woodlands Mill, Hazelbottom Road, Crumpsall, Manchester, M8 0GQ. It is intended to retain part of the existing mill and construct a new banqueting hall following demolition of the remainder of the existing structure. On these instructions, a flood risk assessment has been carried out in order to assess the potential hazards on and adjacent to the site and prepare a risk assessment for further consideration.

This FRA has been prepared in accordance with the guidance set out in Planning Policy Statement 25 (PPS25). This note requires such an assessment to identify and assess the risk of all forms of flooding to and from the development and demonstrate how these flood risks will be managed, taking climate change into account.

It has been assumed that the development has already successfully passed both the exception and sequential tests if applicable.

### 1.2 Objectives

The objectives of the assessment, in accordance with PPS 25, are as follows:

- Demonstrate whether any proposed development is likely to be affected by current or future flooding from any source.
- Satisfy the Local Planning Authority that the development is safe and where possible reduces flood risk overall.
- Whether it will increase flood risk elsewhere; and
- the measures proposed to deal with these effects and risks.
- Investigate the existing drainage system and outline mitigation requirements in accordance with SUDS guidance, set out by the Construction Industry research Information Centre (CIRIA)

### 1.3 Limitations

The opinions expressed in this report and the recommendations given, are based on the information obtained from the site investigation.

The information, views and conclusions drawn concerning the site are based, in part, on information supplied to Adept Consulting Engineers Ltd by other parties. Adept Consulting Engineers Ltd accepts no liability for any inaccurate conclusions, assumptions or actions taken resulting from any inaccurate information supplied to Adept Consulting Engineers Ltd from others.



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Adept Consulting Engineers are not aware of any existing reports or studies carried out on the site.

## 2.0 SITE SETTING

### 2.1 Site Location

The site is located at Woodlands Mill, Hazelbottom Road, Crumpsall, Manchester, M8 0GQ between in an area containing a mix of industrial, warehousing, business and residential properties (see location plan in Appendix 1). The approximate centre of the site is given by National Grid Reference: SD 850 011.

The River Irk is located approximately 150m to the east of the site

The site is currently occupied by the existing vacant mill building with car parking to the west of the site and is predominantly impermeable.

### 2.2 Proposed Site

Monzer Butt propose to refurbish the existing building on Hazelbottom Road and following demolition of existing buildings behind plan to construct a new banqueting hall over two floors with a basement car park below, the site plan is included in Appendix 1.

### 2.2 Site Walkover Visit

A site walkover survey was conducted on 20th June 2008 to assess the location of the site with respect to local topography and adjacent properties that could impact the site.

As previously discussed the mill is currently unoccupied (figures 2-1 to 2-6 in appendix 2). Boundaries to the site are defined by existing commercial/industrial units to the north, east & south, Hazelbottom Road to the west with residential properties beyond. The main entrance to the site is via Hazelbottom Road. The site falls from west to east across the site



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## 3.0 FLOODING

### 3.1 Fluvial Flood risk

Information from the Environment Agency has been collated which is included in Appendix3.

It is evident from the Environment Agency's flood plain maps attached (fig 3-1) that the site appears to lie on the boundary of flood zone one & two.

A comparison of existing levels, based on the topographical survey to ordnance datum, and the agencies flood levels has been undertaken and the nearest flood point level local to the site is IRKR01_3311A located at grid reference 385122,401028 with a value of 40.410 without defences for the 100 year return and 42.900 for the 1000 year return. The lowest recorded site elevation is 40.563, 153mm above the agencies 100 year flood level with the existing building to be retained at 42.896, within 4mm of the predicted 1000 year level.

It is evident from this exercise that the site actually lies within flood zone two and as discussed in table 3.1 below previously developed areas in flood zone two would be at low to medium risk of flooding and would be suitable for most developments.

***Table 3.1 PPS25 Flood Zone***

| **Flood Zone** | **Appropriate planning response** |
|---|---|
| 1. Little or no risk:<br>Annual exceedence probability of flooding, (AEPF) < 0.1% | No constraints due to river, tidal or coastal flooding |
| 2. Low to Medium risk:<br>*River:* AEPF 0.1% - 1%<br>*Tidal*: AEPF 0.1% - 0.5% | Suitable for most development: flood risk assessments, flood-resistant construction and warning/evacuation procedures may be required. |
| 3. High risk<br>*River:* AEPF > 1%<br>*Tidal*: AEPF > 0.5% | a) *Developed Areas* – may be suitable for industrial development<br>b) *Undeveloped Areas* – generally not suitable for industrial development<br>c) *Functional Flood Plain* – built development should be wholly exceptional |

The floor level of the proposed new building will be set to match the existing building being retained and will, therefore, be set at 42.896, 2.486m above the 100 year flood level and flood resilient construction is not deemed necessary at this level. The building is to be supported on columns with basement car parking below and we



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### 4.4 Flood Compensation

As the site is located within flood zone two flood plain compensation has not been considered.

## 5.0 SURFACE WATER DRAINAGE STRATEGY

### 5.1 Summary Methodology

To determine the existing runoff and provide an outline surface water drainage system at the site a number of steps and assessments need to be completed, including

- Identify how the existing surface water run-off is drained from the site.
- Establish the existing run-off rate from the site.
- Assess the impact on surface water run-off rates as a result of the proposed development
- Determine the appropriate allowable discharge rate from the development using guidance from consultees including Environment Agency, the local council and the local water authority.
- Propose options for a surface water management strategy to ensure that the allowable discharge rate is not exceeded. Climate change also needs to be taken into account.

### 5.2 Existing Surface Water Drainage System

An assessment of the existing site has been made and it appears that the site drains to the existing sewers in Hazelbottom Road. A copy of United Utilities sewer record plans have also been enclosed in Appendix 4 showing the existing sewerage system.

### 5.3 Existing Run-off Rate

As discussed in section 4.1 above the existing impermeable area of the site is assumed to be 4626sq.m, refer to 4.1 which equates to an existing discharge of 64 l/s (based on 50mm/ hour).

### 5.4 Drainage Strategy

It is proposed to re-use the existing drainage outfalls from site and the surface water discharge from the site will, therefore be restricted to the previous discharge from site, 64l/s, and on site attenuation will be provided in accordance with the Environment Agencies requirements. When assessing the proposed site run-off the 30 and 100 year storms have been taken into consideration along with an allowance for climate change and are summarised in the table 5.1 below.



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would recommend that flood resilient construction is utilised in the basement to a level 1200mm above the 100 year flood level, i.e. 41.610.

### 3.2 Other forms of flooding

Consideration has been given to other forms of flooding, i.e flooding from land, groundwater, sewers or other artificial sources.

The topography of the site and adjacent areas would not lead to other forms of flooding, any overland flows from flooding from land would flow around the site and toward the nearby River Irk.

The site is not considered to be at risk from groundwater or any other artificial sources

## 4.0 FLOOD IMPACT

### 4.1 Site Assessment

*Existing site:* From the information available, topographical survey in appendix 1, the existing site has approximately 4626sq.m of impermeable area. This drawing shows the whole majority of the site as impermeable.

*Proposed site:* The proposed site results in a slight reduction in impermeable area of approximately 5% to 4400sq.m.

### 4.2 Flood impact

Due to the effects of climate change it is evident from the above that without careful management there would be an increase in surface water run-off from the site and potential increase in flood risk to downstream properties. To account for this the surface water drainage scheme will need to be designed to limit the extent of flooding to adjacent and downstream properties. This will be dealt with in more detail in Section 5 of this report.

### 4.3 Event Exceedence

It is anticipated that in the event of an extreme flood, event exceedence, that the overland flow routes will be toward the east of the site across the existing industrial units and into the river Irk, hence not increasing flood risk elsewhere.



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*Table 5.1 Assessment of proposed flows*

| Return Period | Rainfall Intensity (mm/hour) | Required Storage Volume ($m^3$) |
|---|---|---|
| **1 Year** | 48 | 0 |
| **30 Year** | 116 | 18 |
| **100 Year** | 148 | 36 |
| **100 Year + 30% for climate change** | 192 | 54 |

In accordance with SUDS guidance, set out by the Construction Industry Research Information Centre (CIRIA) and the Building Regulation Approved Document H sustainable drainage techniques will be utilised where available to manage the surface water run-off from site. A site investigation has not yet been undertaken for the site but it is unlikely that the underlying ground will be suitable for infiltration techniques considering proximity to the river and local ground conditions.

It is proposed, therefore, that surface water will be attenuated by means of underground 'stormcell' type tanks or oversized pipework, the final storage volume will be agreed at detail design stage. As a minimum the 100 year volume will be contained below ground and the 100 year with an allowance for climate change will be contained within the site using car parks, hollows or additional underground storage.

Finished floor levels within the site are set above car parking areas and in the event of the capacity of the site drainage system being exceeded, external levels will be set such that the buildings are not compromised and the overland flow routes are across site toward River Irk Beck as discussed in section 4.3 above.



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## 6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 This assessment has been completed in accordance with PPS25 as advised by the Environment Agency and supports the planning application for the redevelopment of the site.

6.2 Following a review of the information provided by the Environment Agency the proposed development falls within flood zone two and is considered to have a little to medium risk from flooding from the River Irk. Considering the finished floor level of the proposed building, 42.896, only 4mm below the 1000 year flood level the development is considered to be at little or no risk from flooding.

6.3 Flood resilient construction should be taken into consideration when constructing the piers supporting the building and any services located at this level should be maintained at 1200 above ground level.

6.4 The site is not considered to be at risk from other forms of flooding.

6.5 Surface water run-off from the site will be attenuated on site with storage volumes agreed in accordance with the Environment Agency requirements and current SUDS guidance. The run-off will be restricted to that of the previous brownfield run-off of 64l/s and at least 36 cu.m of underground storage will be provided subject to detailed design. The additional volume of storage required when taking into account climate change can be accommodated in the upstream pipework, manholes, low lying car parking areas or additional underground storage.

6.6 In the event of the capacity of the site drainage system being exceeded, external levels will be set such that the buildings are not compromised and the overland flow routes are across site toward the River Irk.



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# APPENDIX 1

SITE LOCATION PLANS, PROPOSED SITE LAYOUT AND TOPOGRAPHICAL SURVEY



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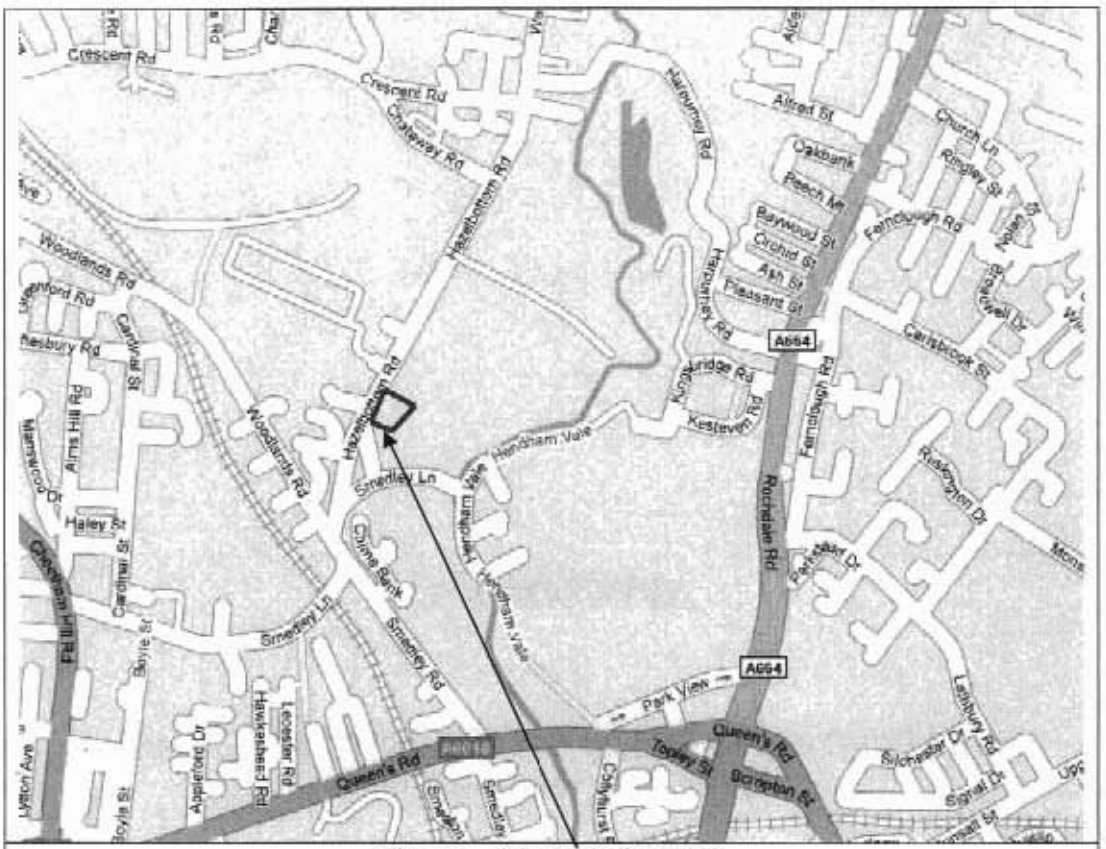


Fig 1-1 - Site Location Plan



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# APPENDIX 2

SITE PHOTOGRAPHS



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Fig 2-1 – Aerial view of site



Fig 2-2 – View looking north with existing mill to east



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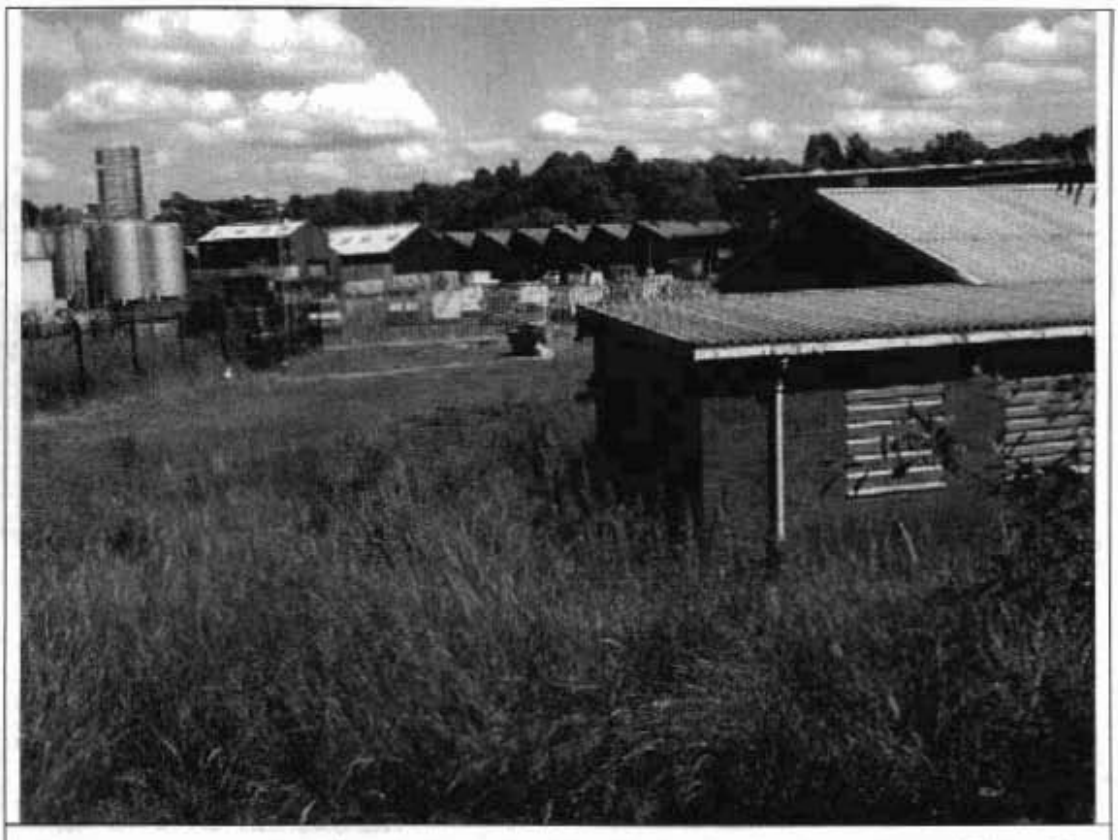

Fig 2-3 – View across site east toward existing industrial development and River Irk



Fig 2-4 – View north across site, lower building to west to be demolished



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Fig 2-5 – west side of existing building



Fig 2-6 – View north across front of site



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# APPENDIX 3

INFORMATION RECEIVED FROM ENVIRONMENT AGENCY &
FLOOD PLAIN MAP



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Fig 3.1: Environment Agency floodplain map




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Site

Flooding from rivers or sea without defences

Extent of extreme flood

Flood defences

Areas benefiting from flood defences



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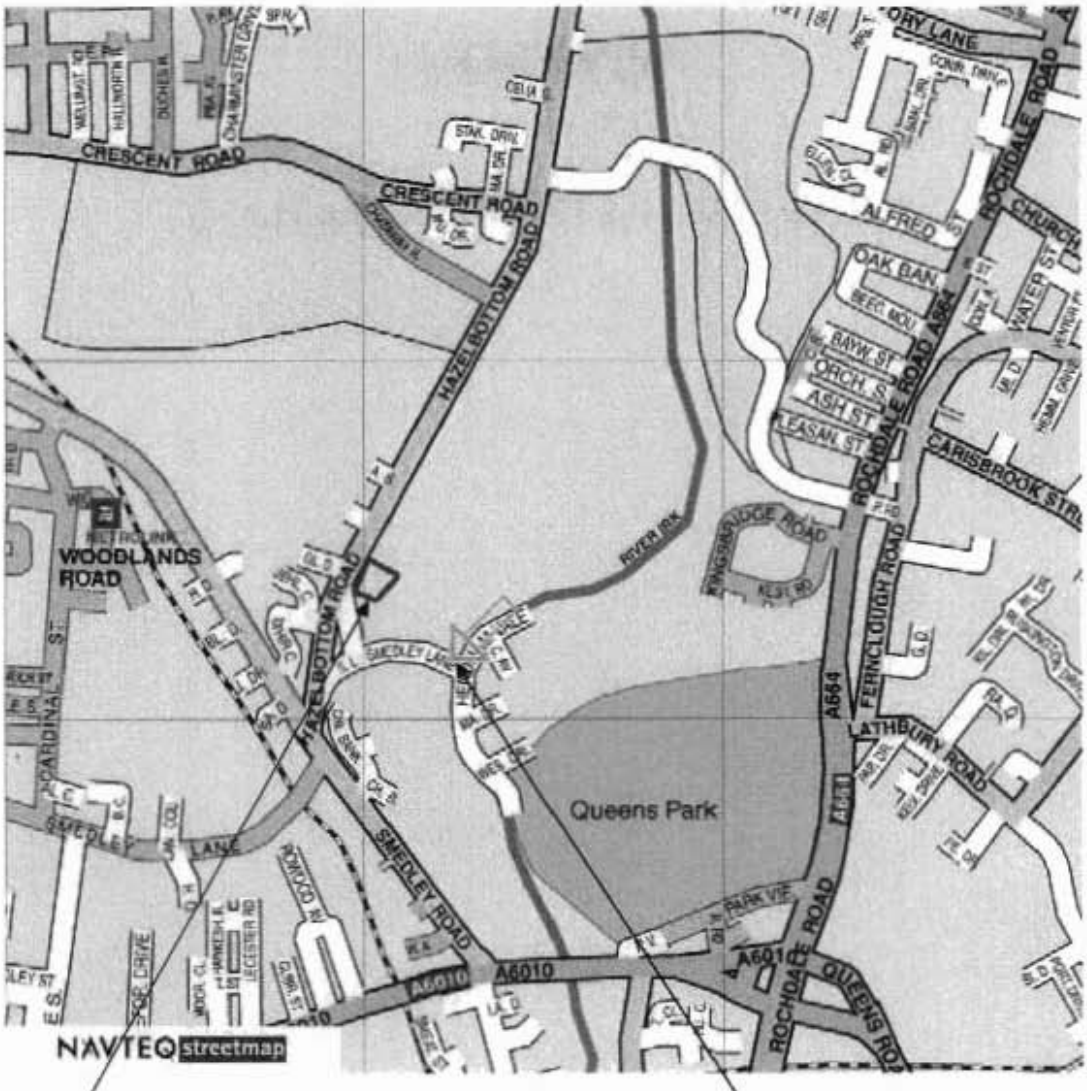
| | | | 1% AEP with Defences | | 1% AEP without Defences | | 0.1% AEP without defences | |
|---|---|---|---|---|---|---|---|---|
| Node | Eastings | Northing | Max. Level (m) | Max Flow ($m^3/s$) | Max. Level (m) | Max Flow ($m^3/s$) | Max. Level (m) | Max Flow ($m^3/s$) |
| IRKR01_3652 | 385381 | 401266 | 41.64 | 54.32 | 41.14 | 27.84 | 43.04 | 29.19 |
| IRKR01_3520 | 385302 | 402169 | 41.51 | 53.18 | 41.15 | 25 | 43.04 | 26.03 |
| IRKR01_3410A | 385200 | 401136 | 40.87 | 53.27 | 41.14 | 27.57 | 43.04 | 29.36 |
| IRKR01_3410B | 385194 | 401133 | 40.87 | 53.68 | 41.14 | 34.17 | 43.04 | 30.29 |
| IRKR01_3311A | 385122 | 401078 | 40.45 | 59.2 | 40.41 | 58.68 | 42.9 | 100.23 |
| IRKR01_3300 | 385119 | 401068 | 39.64 | 59.2 | 39.63 | 58.67 | 40.27 | 100.23 |
| IRKR01_3208 | 385126 | 400977 | 39.08 | 59.19 | 39.06 | 58.64 | 39.73 | 100.23 |
| IRKR01_3095 | 385191 | 400886 | 38.35 | 59.23 | 38.34 | 58.63 | 39.31 | 100.24 |

Levels and Flows have been taken from the Irwell ABD ISIS model created by Faber Maunsell 2008.

Fig 3.2: Environment Agency flood levels




Site

Node IRKR01_3311A
Grid reference 385122,401028



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# APPENDIX 4

UNITED UTILITIES SEWER RECORD PLANS



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# APPENDIX 5

SURFACE WATER FLOOD ROUTING PLAN



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