

## **6.6 Foul Water Strategy**

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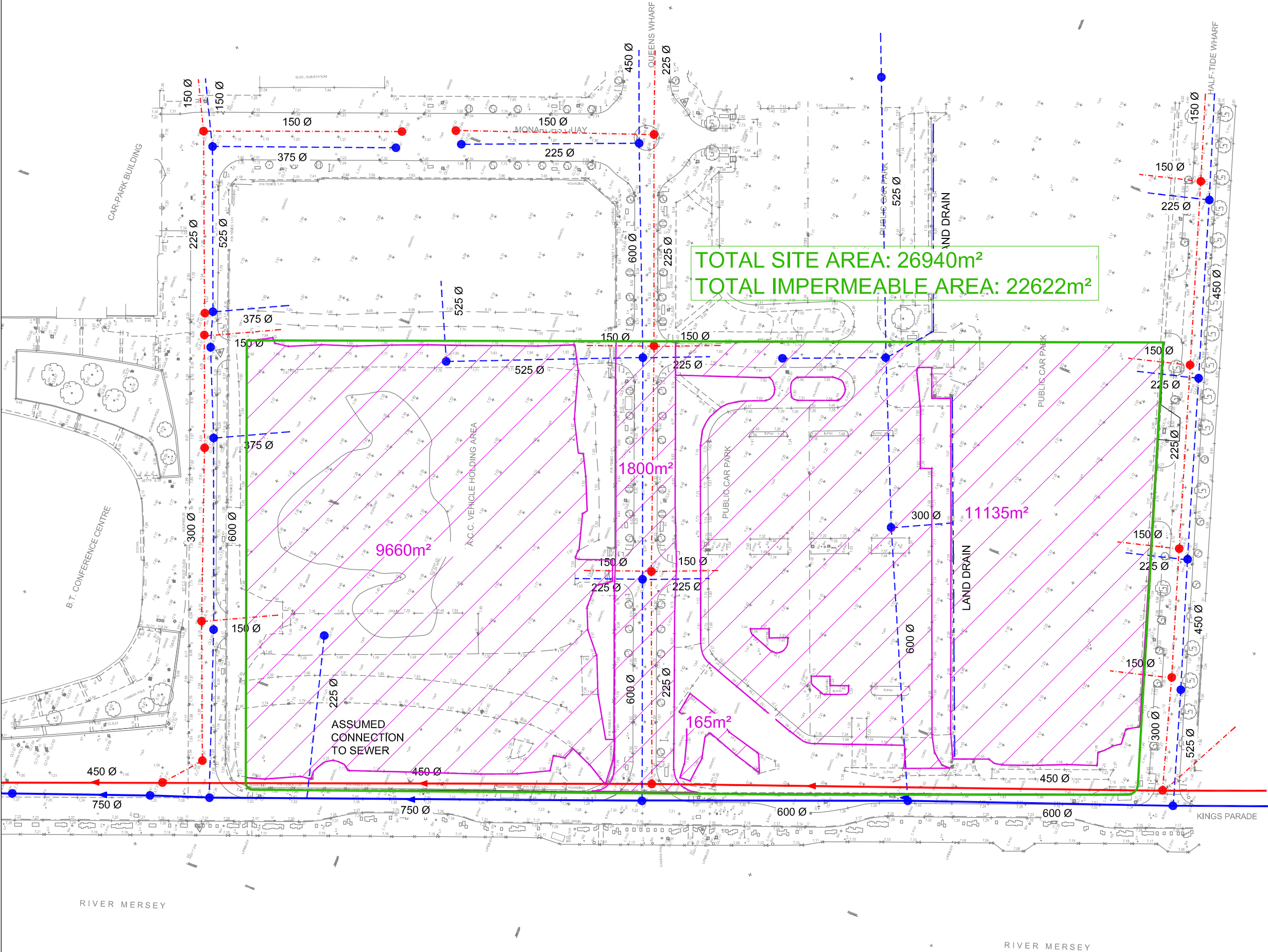
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KEY

- EXISTING SURFACE WATER PUBLIC SEWER
- EXISTING FOUL/COMBINED PUBLIC SEWER
- - - EXISTING SURFACE WATER DRAINAGE
- - - EXISTING FOUL WATER DRAINAGE
- SITE BOUNDARY
- EXISTING IMPERMEABLE AREAS

ALL EXISTING AND PROPOSED DRAINAGE RUNS ARE SHOWN APPROXIMATELY WITH EXACT LOCATION TO BE CONFIRMED



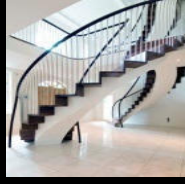
P2	23.01.13	PG	PG	SITE BOUNDARY AND AREAS AMENDED
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Scott Hughes Design Ltd. The Flint Glass Works, 64 Jersey Street, Manchester M4 6JW t. 0161 605 0831 f. 0161 605 0832 e.mail@scotthughesdesign.co.uk Reg No. 4899745

CLIENT	ISG CONSTRUCTION LTD
PROJECT	EXHIBITION CENTRE LIVERPOOL
DRAWN BY	PG
ENGINEER	PG

TITLE	EXISTING DRAINAGE LAYOUT AND IMPERMEABLE AREAS
SCALE	1:1000
SHEET	A3
DRAWING No	2593 - FRA - 001
ISSUE No.	P2



# **Exhibition Centre Liverpool, Queens Wharf, Liverpool**

## **Flood Risk Assessment**

**project number:** 2593

**date:** 22.02.2013

**revision:** 2

**scott hughes design**

the flint glass works

64 jersey street

manchester

m4 6jw

## Document Control Sheet

Client: ISG Construction Ltd

Project No.: 2593

Project Title: Exhibition Centre Liverpool, Queens Wharf, Liverpool

Report Title: Flood Risk Assessment

Version: 1

Status: Final

Control Date: 22<sup>nd</sup> February 2013

### Document Revision Record:

Version	Status	Author	Approved	Date
1	Draft	Paul Graveney	Ian Scott	23/01/13
1	Final	Paul Graveney	Ian Scott	22/03/13

### Document Distribution Record:

Version	Organisation	Quantity
1	ISG / BK / DCM	1
1	ISG / BK / DCM / TY / AMEC	1

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**Scott Hughes Design**

## **6.0 Outline Drainage Strategy**

### **6.1 Overview**

- 6.1.1 As part of this study, United Utilities (UU) as the sewage undertaker for the district, the Environment Agency and Liverpool City Council have been consulted.

### **6.2 External Consultation**

#### **6.2.1 United Utilities**

As discussed in Section 3, the UU sewer records have been reviewed and confirm that there are foul and surface water sewers within Kings Parade to the west of the site. Both foul and surface water private drains pass within and adjacent the development site and outfall to the respective public sewers. UU have confirmed (refer to section 2.6) that a free discharge of foul and surface water will be acceptable in principle.

#### **6.2.2 Environment Agency**

The Environment Agency (EA) has been consulted. They have confirmed that a free discharge to the public sewer is acceptable if UU agree. Testing would need to be carried out to consider flood impact for the 30yr and 100yr events. Any flooding that does occur should be retained on the site and directed away from buildings.

#### **6.2.3 Liverpool City Council**

Contact was made with Liverpool Council. However SHD were advised that the engineer who carried out the design of the drainage around the area had left and that all the information was now archived.

### **6.3 Existing Surface Water Runoff**

- 6.3.1 The existing site was historically a number of docks with peripheral quay sides and warehousing. Over time these have been infilled to form the current tarmac parking areas. Therefore in terms of runoff characteristics the site can be considered as 'Brownfield'.
- 6.3.2 No specific runoff rates have been defined due to the number of connections from the existing site. However drawing 2593-FRA-001 in Appendix E clearly indicates the extent of the existing drainage, the impermeable areas and the connections from the site to the surrounding drainage infrastructure. The site is approximately 84% impermeable.

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## **6.4 Outline Surface Water Drainage Strategy**

- 6.4.1 The post development impermeable area footprint will increase from 84% to 88%. However, as noted in section 2.6 and 6.2, discussions with UU and the EA have confirmed that post development a free discharge of surface water flows to the surrounding drains that ultimately outfall into the public sewer and then immediately down stream to the Mersey Estuary is acceptable.
- 6.4.2 The general principal of the surface water drainage strategy is to collect the runoff from the roof and external pedestrian and yard areas, and direct to a series of new below ground surface water drainage networks connecting to the existing large diameter stubs that then pass out of the site. The exact drainage layout and position of the final connections will be confirmed as part of the detailed design.
- 6.4.3 The future private drainage layout for the new development site will be designed in accordance with BS EN 752: 2008 and Building Regulations part H guidance and if necessary in line with Sewers for Adoption (current edition). In both cases this is to provide no flooding up to the 30 year storm return period criterion.
- 6.4.4 Flooding can occur on a local scale beyond the 30yr criterion due to runoff exceeding the capacity of the minor system during extreme events and it can only be addressed on a site specific basis. Sewers for Adoption (SfA) 7<sup>th</sup> Edition (WRc, 2006) states that properties should be protected against flooding from extreme events (1 in 30 year) and that flood pathways are identified when the drainage system is exceeded.
- 6.4.5 In the case of this development, exceedance flows will be all those over and above the 30 year design criterion set by Building Regulations and SfA guidance. Using above ground storage within the lower lying eastern external yard areas would be achievable and would direct flood water away from the new building with flows directed back into the surface water drainage network as the water levels in the drainage networks recede. As connection is ultimately to the public sewer, exceedance flooding of these could occur in parallel with the drainage from the development site. However, as the external Kings Parade holds a lower ground level any flooding would occur at this location and not within the development site. During the detailed drainage design of the development, consideration will also be made to a surcharged outfall from a high tide scenario.
- 6.4.6 All future drainage calculations carried out for the development layouts themselves must include the appropriate increase in rainfall to satisfy the future Climate change allowances.

## **6.5 Pollution Control**

- 6.5.1 Silt is to be prevented from entering the drainage system by the use of trapped gullies, channels with silt traps, french drains with silt traps or by the use of Sustainable Drainage techniques. If appropriate, oil separators in line with Pollution Prevention Guidance 3 criteria will be provided.

## **6.6 Foul Water Strategy**

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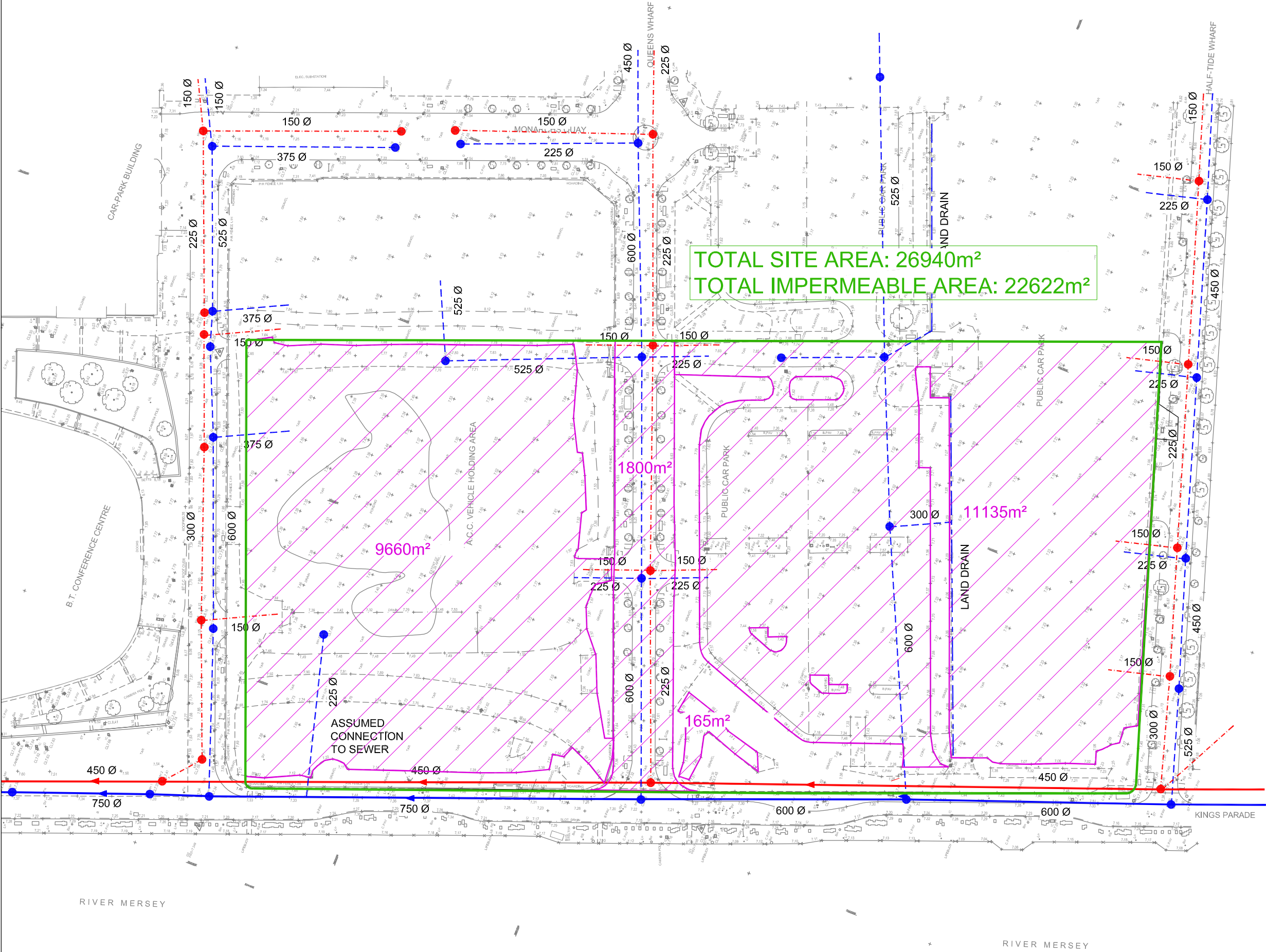
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## Richard Hughes

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**From:** Scott McLean  
**Sent:** 24 August 2017 14:14  
**To:** NW-reception@ISGplc.com  
**Cc:** Richard Hughes  
**Subject:** Exhibition Centre Liverpool  
**Attachments:** SHF.1380.001.HY.D.008  
\_ - Monarchs Quay Liverpool - Existing Drainage Network within the Wider Site.pdf

Dear Sir/Madam

We have been appointed by Knight Frank to look at the FRA and planning for the Monarch Key development site next door to the Exhibition centre Liverpool. Knight frank commissioned a survey to trace existing drainage assets in the area which highlighted that a new drainage system had been installed in the area connecting to the UU sewer in the Kings Parade.

We have been in contact with the exhibition centre who directed us to yourselves. We have also been in contact with David Jackson at Amey (acting on behalf of Liverpool council) who have limited information on the new roads and services built in that area.

We are looking for any information you have for the area shown on the drainage survey attached. The drainage system in the road all appears to be an adopted foul and surface water system installed in preparation for the proposed development plots (current used for parking). We are looking for any:

- As built site record plans for drainage and other services (ideally in dwg but any format would be acceptable) showing what was built and why, and any external feeds into the network from outside our clients area that needs to be accounted for.
- Drainage calculations supporting the as built design (ideally in microdrainge but any format would be acceptable)
- Correspondence with United utilities supporting any adoption or connection discussions as the system appears connected to the UU Sewer in Kings Parade.
- Highway design and build up drawings
- Any information you have for the substation and services connecting to it.

Many thanks

Scott McLean  
Principal Engineer - Drainage



Enzygo Ltd,  
Samuel House  
5 Fox Valley Way  
Stocksbridge  
Sheffield  
S36 2AA

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Tel: +44 (0) 7872 461357

Email: [scott.mclean@enzygo.com](mailto:scott.mclean@enzygo.com)  
Web: [www.enzygo.com](http://www.enzygo.com)

**Registered Office:** Stag House, The Chipping, Wotton under Edge, GL12 7AD  
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5 Fox Valley Way  
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Sheffield  
S36 2AA

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Tel: +44 (0) 7872 461357

Email: [scott.mclean@enzygo.com](mailto:scott.mclean@enzygo.com)  
Web: [www.enzygo.com](http://www.enzygo.com)

**Registered Office:** Stag House, The Chipping, Wotton under Edge, GL12 7AD  
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**BRISTOL OFFICE**

The Byre,  
Woodend Lane,  
Cromhall,  
Gloucestershire GL12 8AA  
Tel: 01454 269 237

**SHEFFIELD OFFICE**

Samuel House,  
5 Fox Valley Way,  
Stocksbridge,  
Sheffield S36 2AA  
Tel: 0114 321 5151

**MANCHESTER OFFICE**

76 King Street,  
Manchester,  
M2 4NH  
Tel: 0161 413 6444