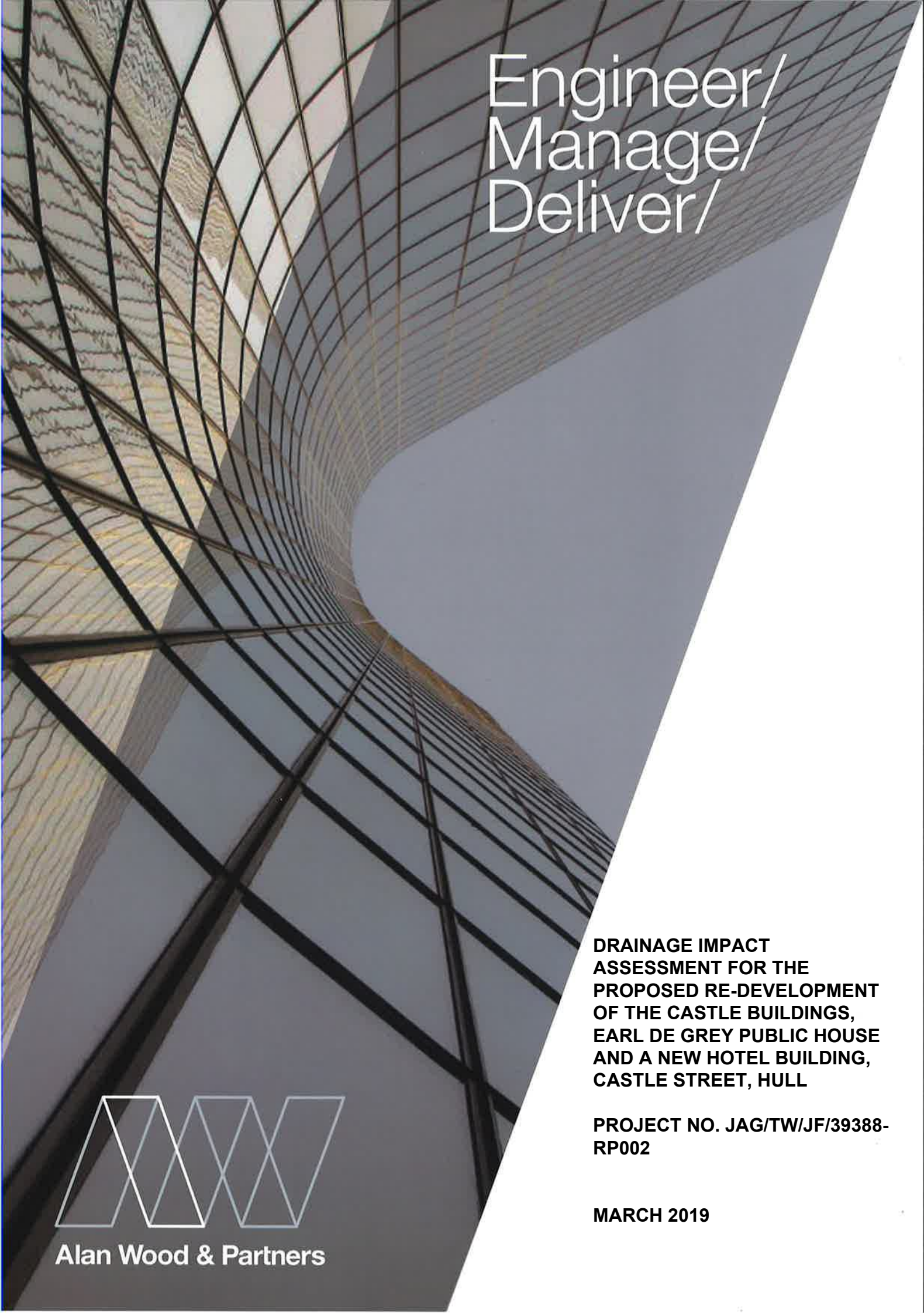

DRAINAGE IMPACT ASSESSMENT FOR THE PROPOSED RE-DEVELOPMENT OF THE CASTLE BUILDINGS, EARL DE GREY PUBLIC HOUSE AND A NEW HOTEL BUILDING, CASTLE STREET, HULL

PROJECT NO. JAG/TW/JF/39388-RP002

MARCH 2019

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DRAINAGE IMPACT ASSESSMENT FOR THE PROPOSED RE-DEVELOPMENT OF THE CASTLE BUILDINGS, EARL DE GREY PUBLIC HOUSE AND A NEW HOTEL BUILDING, CASTLE STREET, HULL

Prepared by: T Wilkinson, MEng (Hons)

Signed: ……
Date: 22nd March 2019

Approved by: J Gibson, MEng (Hons), CEng, CWEM MCIWEM
Civil Engineering Director

Signed: ……
Date: 22nd March 2019

Issue	Revision	Revised by	Approved by	Revised Date

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Appendix F : Surface Water Storage Calculations

Appendix G : Surface Water Exceedance Flood Routing Drawings

1.0 INTRODUCTION

1.1 Background

1.1.1 Alan Wood & Partners were commissioned by Castle Buildings LLP to prepare a Drainage Impact Assessment for the proposed re-development of the Castle Buildings, reconstruction of the Earl De Grey Public House and erection of a hotel at Castle Street, Hull.

1.1.2 A Drainage Impact Assessment (DIA) for the proposed development considers the drainage implications of the proposed development.

1.1.3 This report should be read in conjunction with the Flood Risk Assessment (FRA) which has been prepared for the development (ref: 39388-Rp001 FRA, Prop'd Re-Dev't of the Castle Buildings Site, Castle St, Hull).

2.0 EXISTING SITE DESCRIPTION

2.1 Location

2.1.1 The site is located to the north of Castle Street (A63), to the south east of Waterhouse Lane and to the west of the Princes Quay car park.

2.1.2 An aerial photograph and location plan are included in Figures 1 and 2 below.

Figure 1: Aerial Photograph

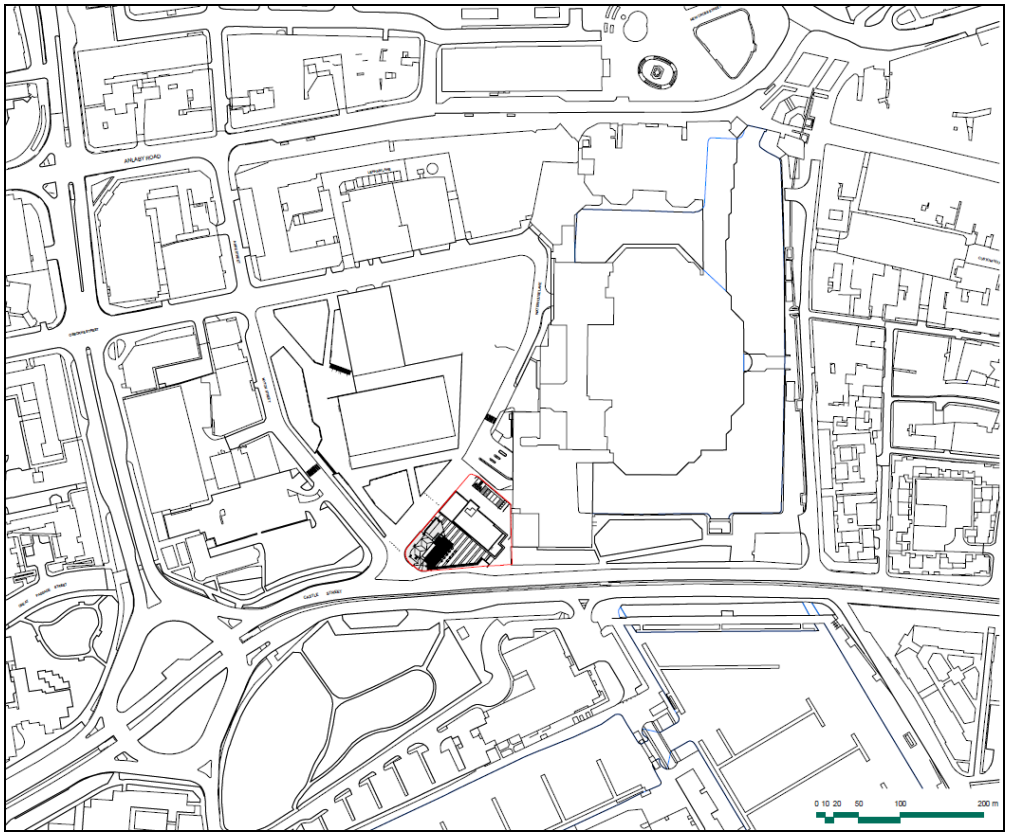


Figure 2: Site Location Plan

2.1.3 The Ordnance Survey grid reference for the centre of the site is approximately 509515, 428490.

2.2 Existing Site Description

2.2.1 The area of the development currently comprises the Castle Buildings, the Earl De Grey public House and a car park.

2.2.2 The total area of the development has been calculated at 2475m².

2.3 Surrounding Features

2.3.1 To the north of the development site lies Waterhouse Lane and the Bonus Arena development.

2.3.2 Immediately to the east of the site is the southern extremity of the Princes Quay retail and multi-storey car park development.

2.3.3 To the south of the development is Castle Street (A63), beyond which is a hotel and Hull Marina.

2.3.4 To the west of the site is Myton Street, beyond which is a car park and retail development.

2.4 Topography

2.4.1 A topographic survey of the development site has been undertaken, which shows that existing ground levels over the area of the site vary from approximately 3.08m to 3.64m OD(N).

2.4.2 Road levels along Castle Street fronting the site were found to vary from approximately 2.78m to 3.09m OD(N).

2.4.3 Road levels on Myton Street adjacent to the site were found to vary from approximately 3.07m to 3.18m OD(N).

2.4.4 Road levels on Waterhouse Lane adjacent to the site were found to vary from approximately 3.13m to 3.17m OD(N).

2.4.5 A copy of the topographic survey drawing is included in Appendix A.

2.5 Ground Conditions

2.5.1 A desktop study of the British Geological Survey map reveals the local geology to comprise superficial deposits of Tidal Flat Deposits – Clay and Silt overlaying bedrock comprising Burnham Chalk Formation – Chalk.

2.5.2 Local borehole records show that the glacial clays extend to a minimum depth of 4m below ground level.

2.5.3 The ground conditions are therefore considered to be unsuitable for the disposal of surface water run-off to soakaways/infiltration trenches.

2.5.4 A study of the groundwater maps shows that the site overlays a Principal Aquifer but does not lie within a Groundwater Vulnerability Zone.

3.0 PROPOSED DEVELOPMENT

3.1 The development involves the re-development of the existing Castle Buildings and Earl De Grey public house adjacent land to include the following:-

- Refurbishment and extension to the existing 2/3-storey Castle Buildings.
- Dismantling and partial relocation of the existing 3-storey Earl De Grey public house.
- Construction of a new 9-storey hotel building.
- External paved area.
- External area of car parking.
- Landscaping works.
- New service supplies.

3.2 Layout drawings of the proposed development are included in Appendix B.

4.0 FOUL WATER DRAINAGE

4.1 Based upon the British Code of Practice 'Flows and Loads – 4' a maximum occupancy of 300 guests and 70 staff for the hotel, 350 guests and staff for the restaurant, 450 guests and staff for the public house and 100 staff to the offices, the peak foul water discharge from the site has been calculated at approximately 1.5 litres per second (see calculation spreadsheet in Appendix C).

4.2 A separate foul sewer network will be designed and built to meet Building Regulations standards.

4.3 It is proposed that the foul water discharge from the new development will be connected to the existing site drainage network which serves the existing site and which ultimately discharges to the public sewer network.

4.4 It is considered that such a rate of discharge from the new development would not have any impact on the public sewer network.

4.5 Yorkshire Water have been consulted with regard to the proposal to discharge foul water run-off from the development to the public sewer.

4.6 A copy of their response is included in Appendix D.

4.7 Yorkshire Water have advised that foul water waste should discharge to the 900mm diameter public sewer located to the south west of the development.

4.8 However, due to the quantity of existing statutory services located in that region, it is currently proposed that discharge will be to the combined public sewer located to the west of the development in Waterhouse Lane.

4.9 Foul sewer pipe sizes will range from 100mm to 150mm in diameter and the pipe gradients will range from 1 in 40 to 1 in 100 to meet the required standards.

4.10 A preliminary foul water drainage layout drawing is included in Appendix E showing an indicative foul water sewer layout for the scheme. A 150mm pipe laid at a gradient of 1 in 150 has the capacity to discharge the anticipated peak foul water flows from the site and at this stage a gravity connection to the sewer appears to be feasible, subject to detailed design.

4.11 However, should it prove necessary for a pumped outfall from the new development due to relative levels of the new drainage and the public sewer, then a package foul water pumping station would need to be provided.

5.0 SURFACE WATER DRAINAGE

5.1 Existing Site

5.1.1 From the aerial photograph included in Figure 3 below, it can be seen that the area of the development is currently impermeable, in the form of roof areas and external paving, which are positively drained.

Figure 3: Aerial Photograph

5.1.2 From the topographic survey which has been undertaken and is included in Appendix A, the impermeable area of the development site which was formerly positively drained has been calculated at 2475m².

5.2 Point of Discharge

5.2.1 Requirement H3 of the Building Regulations establishes a preferred hierarchy for disposal of surface water. Consideration should firstly be given to soakaway, infiltration, watercourse and sewer in that priority order.

5.2.2 Investigations have revealed that the underlying strata comprises glacial clays and silts.

5.2.3 The soil conditions are therefore not considered to be suitable for the use of soakaways/infiltration as a method of surface water run-off.

5.2.4 There are no watercourses in the vicinity of the development into which the surface water run-off from the development could be discharged.

5.2.5 It is therefore proposed that the surface water run-off from the development is discharged to the public sewer network.

5.3 Flood Risk

5.3.1 For new developments, the current design criteria required for the surface water drainage will need to be based upon the critical 1 in 100 year storm event, with an additional allowance of 30% to account for climate change resulting from global warming in accordance with Hull City Council's guidelines. There should be no above ground flooding for the 1 in 30 year return period and with no flooding to the buildings or off-site flooding affecting other parties from the critical 1 in 100 year storm event, with the additional allowance to account for climate change.

5.4 Peak Flow Control

5.4.1 The area of impermeable surfacing which was positively drained within the area of the development has been calculated at 2475m², based on the roof areas of the buildings and areas of paving.

5.4.2 Based upon BSEN752 calculations using a rainfall intensity of 50mm per hour, the uncontrolled surface water run-off from the existing site would have been approximately 34 litres per second.

5.4.3 Based upon a 2 year 6-hour storm event, calculations show that the resulting current discharge rate from the impermeable areas equates to approximately 8.5 litres per second.

5.4.4 Current guidelines for new developments require the discharge from brownfield sites to be reduced to 50% of the existing discharge in order to provide a degree of improvement to the existing drainage network.

5.4.5 The resultant permissible discharge rate would therefore reduce to 4.3 litres per second and consequently this criteria has been used as the basis for the design.

5.4.6 It will be necessary to attenuate the new surface water drainage network by restricting the discharge rate to the agreed rate and providing surface water storage as required.

5.4.7 The required volume of storage required to accommodate a 30 year storm event will need to be stored below ground, within oversized pipes or a storage tank.

5.4.8 The additional volume required to accommodate the storage for the 100 year plus 30% event can be stored above ground, providing it remains within the confines of the site and does not pose a risk of flooding to the building or to other parties beyond the curtilage of the site. Alternatively, the additional storage can be contained below ground level in an appropriate storage tank.

5.4.9 Calculations have been undertaken based upon the above design criteria in order to determine the volume of surface water storage which is likely to be required.

5.4.10 The calculations show that the required storage volume from a 30 year storm event would be approximately $50m^3$.

5.4.11 The calculations show that the required storage volume from a 100 year storm event would be approximately $103m^3$.

5.4.12 A copy of the surface water storage calculations is included in Appendix F.

5.4.13 A preliminary drainage layout drawing showing an indicative surface water drainage system for the scheme is included in Appendix E.

5.4.14 The drawing currently shows the storage volume required for the 30 year storm plus a proportion of the storage required for the 100 year storm event, plus climate change, contained within an off-line storage tank. The balance of the storage required will be provided above ground level on the external paving or within a below-ground storage tank.

5.4.15 It is assumed that the surface water run-off from the development can discharge to the existing drainage network by means of a gravity outfall.

5.4.16 On this basis, the discharge rate would be restricted by installing an appropriate Hydro-Brake flow control valve within the final manhole, prior to connection into the existing pipework.

5.4.17 However, should it prove necessary for a pumped outfall from the site due to relative levels of the new site drainage network and the existing sewer, then the discharge rate would be controlled by appropriate pumps within a package pump station.

5.4.18 The pipe sizes, pipe gradients and storage details will be subject to the final detailed design.

5.5 Volume Control

5.5.1 SuDS guidance advises that the surface water run-off post development should be lower than the pre-development situation.

5.5.2 Whilst sustainable drainage methods are encouraged, due to the limitations of infiltration methods of disposal and restricted areas around the development, the opportunity to reduce the surface water discharge volume is limited.

5.5.3 However, the discharge rate has been substantially reduced and we therefore consider that the impact on the receiving sewers has been minimised as far as is reasonably practical.

5.6 Pollution Control

5.6.1 The risk of pollution is low as the proposed site is to be used for commercial and leisure (hotels/restaurant) purposes only. Clean roof water drainage will be discharged into the below ground sewers via a closed system.

5.6.2 Grease traps will need to be provided to all kitchen facilities prior to discharge to the sewer network.

5.6.3 There is no effluent drainage or disposal of chemicals, processing waste or the like involved with the development.

5.6.4 The development should not pose a risk of increased pollution to the final receiving sewer.

5.7 Designing for Exceedance

5.7.1 Overland flood risk from exceedance flows and from off-site sources will be mitigated to a large extent by the creation of the new surface water drainage system as detailed within this report.

5.7.2 Ground levels around the perimeter of the development are to remain at existing levels and consequently the opportunity for any ground re-modelling to be undertaken is limited.

5.7.3 The design will, however, need to ensure that ground levels channel flows away from the buildings.

5.7.4 The flow routes around the development will improve the risk of flooding around the existing building and will not increase the risk of flooding to other parties beyond the curtilage of the site.

5.7.5 Indicative drawings showing the likely flood routing of any surface water exceedance is included in Appendix G.

5.8 Highways Drainage

5.8.1 There is no formal highway drainage involved with the development.

5.9 Climate Change

5.9.1 The impact of climate change is included in the proposed system for the 1 in 100 year event by including a 30% increase in rainfall intensity within the calculations as required by Hull City Council.

5.10 Operation and Maintenance

5.10.1 The sewers will remain under private ownership and consequently the client will be responsible for the operation, management and maintenance of the drainage system in line with standard requirements and obligations for the full lifetime of the development.

5.10.2 The pipework will be designed with self-cleansing gradients and should require little or no maintenance.

5.10.3 Any new gullies or drainage channels serving the development should be regularly cleaned at a maximum of 12 monthly intervals to ensure there is no resultant flooding from blockages.

5.10.4 The inspection chambers should be regularly inspected to ensure the system is free-flowing.

5.10.5 Should it be necessary to provide a pumped outfall due to relative levels of the new drainage network and the site drainage system, then a formal maintenance agreement will need to be put in place with regard to the pumps to ensure they are routinely inspected and adequately maintained.

5.10.6 Alternatively, if a flow control valve is fitted, then this should be inspected on an annual basis to ensure it is functioning correctly (i.e. no blockages). No other specific maintenance works should be required.

5.11 Construction Design Elements

5.11.1 The drainage system will be operated and maintained in accordance with Table 20.15 and Section 32 of the Ciria C793 SuDS Manual.

5.11.2 The Client will be responsible for all future maintenance of the scheme for the lifetime of the development.

5.11.3 The WINDES calculations included in Appendix F show the critical storage volumes for the development.

5.11.4 The required storage of 103m^3 with a discharge flow rate of 4.3 litres per second will take approximately 6.7 hours to empty, which is acceptable.

5.11.5 Assuming a pumped outfall is not necessary, the required flow control device will be designed and installed to the specific manufacturer's details in an accessible chamber and will meet the requirements of Section 28 of Ciria C793.

6.0 SUMMARY

6.1 This report has been prepared to assess the drainage impact for the re-development of the Castle Buildings and the Earl De Grey public house, together with the construction of a new hotel building at Castle Street, Hull.

6.2 Foul water will be discharged to the Yorkshire Water Public combined sewer at an approximate rate of 1.5 litres per second via the existing site drainage outfall with the adoptable outfall designed to the approval of Yorkshire Water Services.

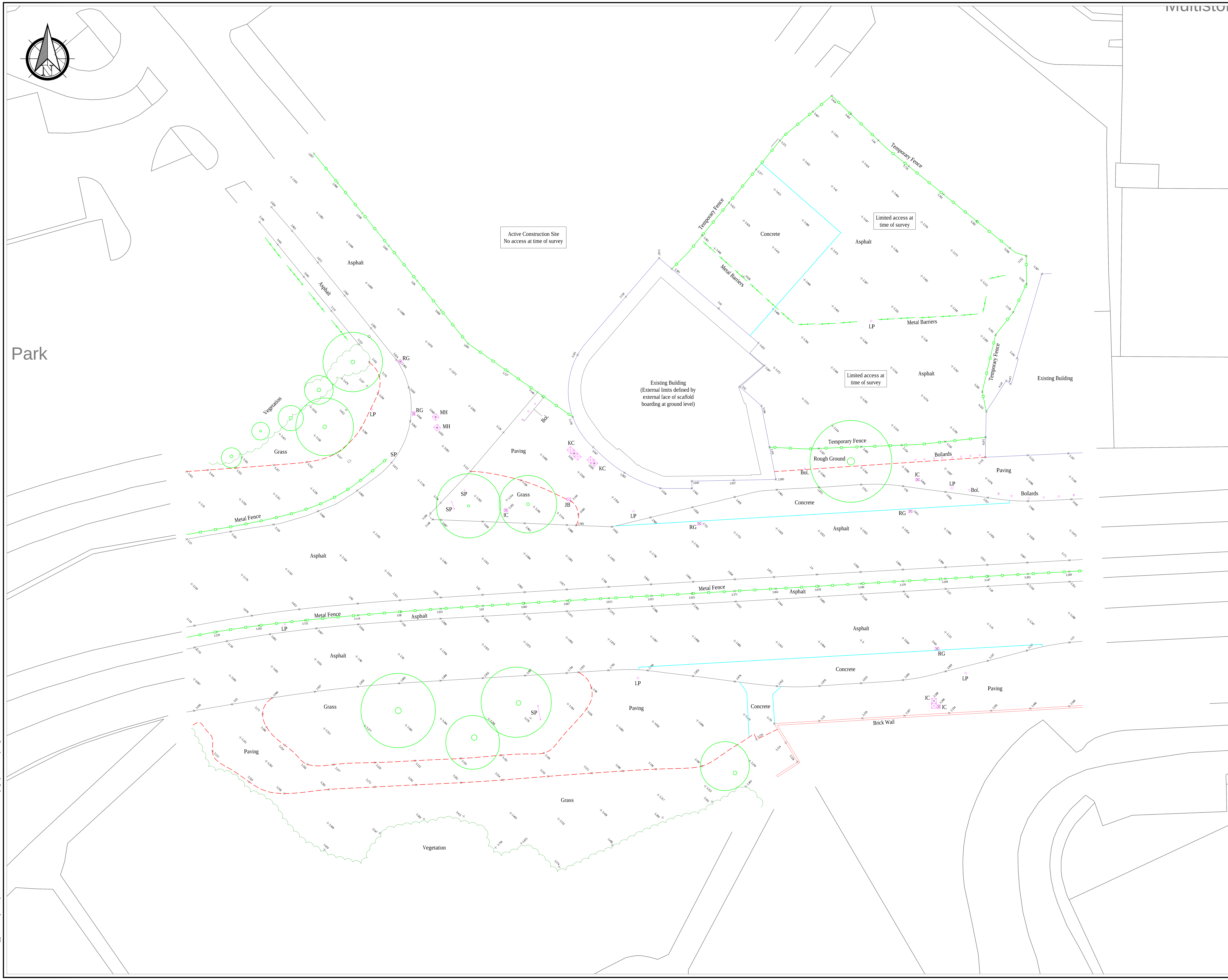
6.3 Surface water will be discharged to the Yorkshire Water public combined sewer at the agreed run-off rate which will be restricted by means of a flow control device and excess flows balanced on site. The private sewers will be designed and constructed to meet the requirements of the Building Regulations.

6.4 The reports supporting calculations and sketches provide a robust case for justifying the means of foul and surface water drainage and that the site can be suitably, safely and sustainably drained.

6.5 Overall, this report demonstrates that the foul and surface water drainage systems for the new development can be designed and constructed to meet local and national planning and drainage policies. Suitably worded Conditions can be applied to the grant of planning permission to control the delivery of the development in the usual manner.

APPENDIX A

Topographic Survey Drawing



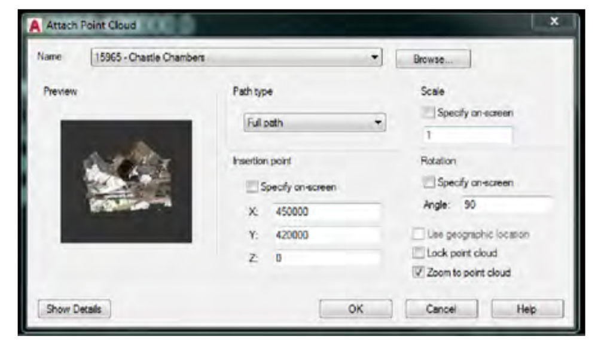
NOTES:

This drawing is subject to copyright and must not be reproduced, stored or transmitted in any form without prior permission from Mason Clark Associates.

All topographical data collected using a Faro M-Series scanner. Integral mean scan point tension <2.0mm.

All levels to O.S. Datum. Levels on Stations S1-3 established using Leica Smartnet RTK Corrective GPS. Minimum of 100 RTK corrections per measurement.

To insert Recap point cloud to correct O.S. position insert at 450000,420000,0 (as shown below)



Key:

LP	Lamp Post
IC	Inspection Cover
RG	Road Gully
Bol.	Bollard
MH	Manhole
JB	Junction Box
KC	Telecoms Cover

Rev	Details	By	Date
P1	Preliminary Issue	MT	08.12.2017

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Client. Wykeland

Project. Castle Chambers

Title. Topographical Survey

Drawn: MT	Checked: ND	Date: Dec 2017
Scale @ A1 : 1/200		
Drawing No : 15965-01		Rev: P1

Version 3.0

C:\Users\nick.duggan\Desktop\Surveys\Castle Chambers\6 - CAD\15965-H-DR-001-Topographical Survey.dwg

APPENDIX B

Layout Drawings

BONUS ARENA

WATERHOUSE LANE

MYTHON STREET

A63 CASTLE STREET

FUTURE A63 ROADWORKS (EDGE OF KERB)

1 0015

2 0015

1 0031

1 0032

1 0033

0030 1

3 0015

1 0015

2 0015

3 0015

0 2 5 10 20 m

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PROJECT
PRINCES QUAY, HULL

TITLE
PROPOSED SITE PLAN

SCALE
1 : 200 @ A2

DATE
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2016-223

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VP

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PROJECT	ORIGINATOR	ZONE	LEVEL	TYPE	ROLE	NUMBER
	DLA					0012

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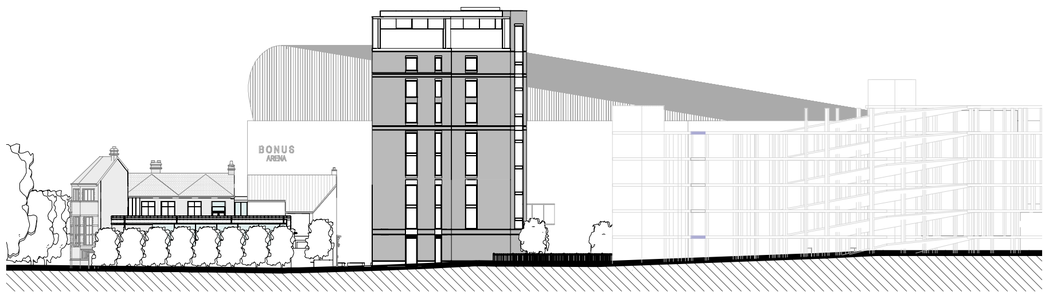

SITE SECTION 2

1 : 500

SITE SECTION 3

1 : 500

VIEW OF PROPOSED BUILDINGS AND PUBLIC REALM

APPROACH FROM A63 WEST

APPROACH FROM HULL MARINA - VIEW OF PROPOSED BUILDINGS APPROACH FROM HULL MARINA AND PROPOSED NEW PEDESTRIAN

AERIAL VIEW OF PROPOSAL IN THE CONTEXT OF HULL BONUS ARENA, HULL MARINA, HULL MINSTER, THE OLD TOWN AND PROPOSED NEW

0 5 10 20 50 m

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REVISION
REVISION DESCRIPTION

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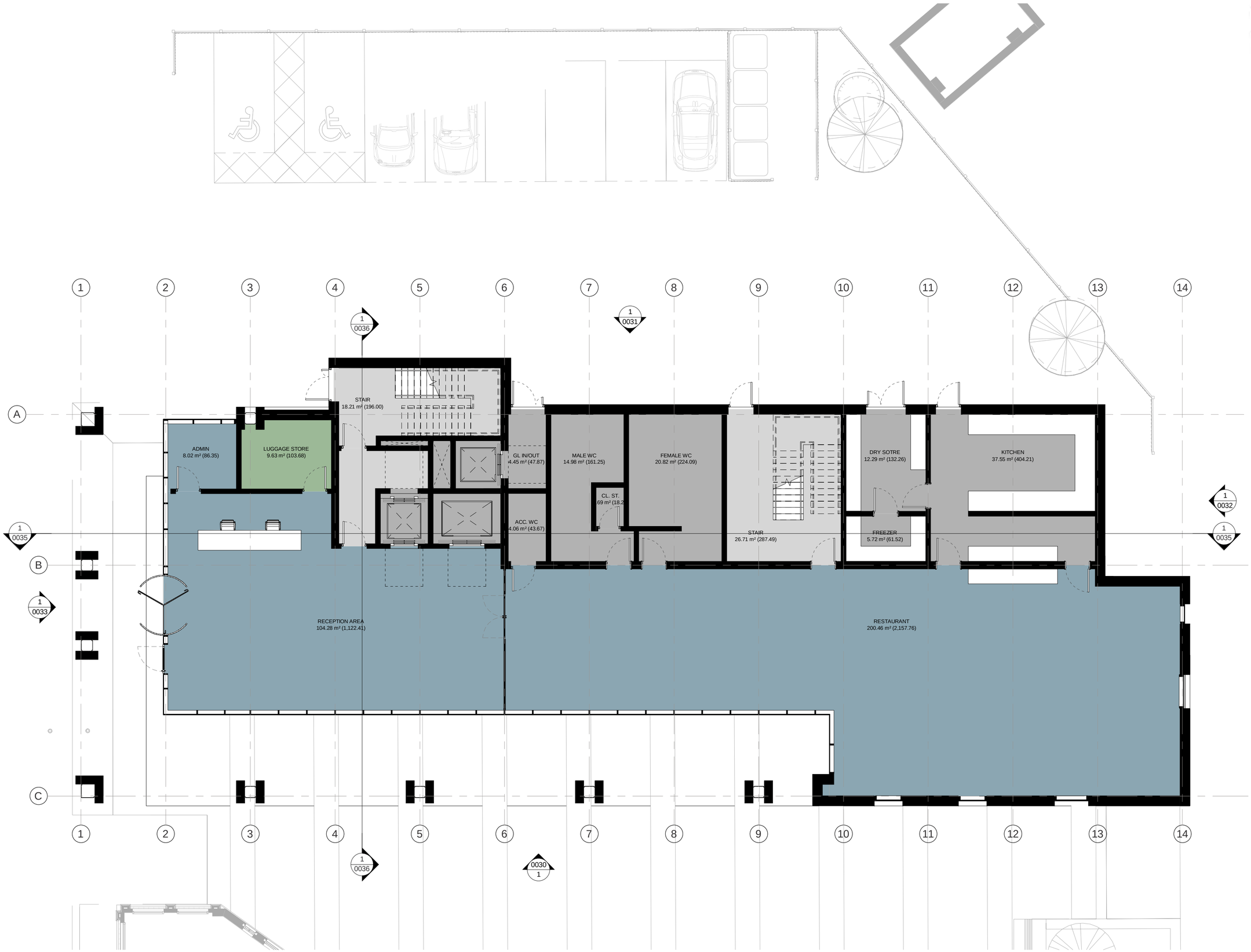

By Department Legend

- ANCILLARY
- CIRC
- BOH
- NET AREA

NORTH

ARCHITECTURE

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PROJECT
PRINCES QUAY, HULL

TITLE
GA GROUND FLOOR PLAN
HOTEL

SCALE	DATE
1 : 100 @ A2	13/02/19

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2016-223	VP	JO

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PROJECT	ORIGINATOR	ZONE	LEVEL	TYPE	ROLE	NUMBER
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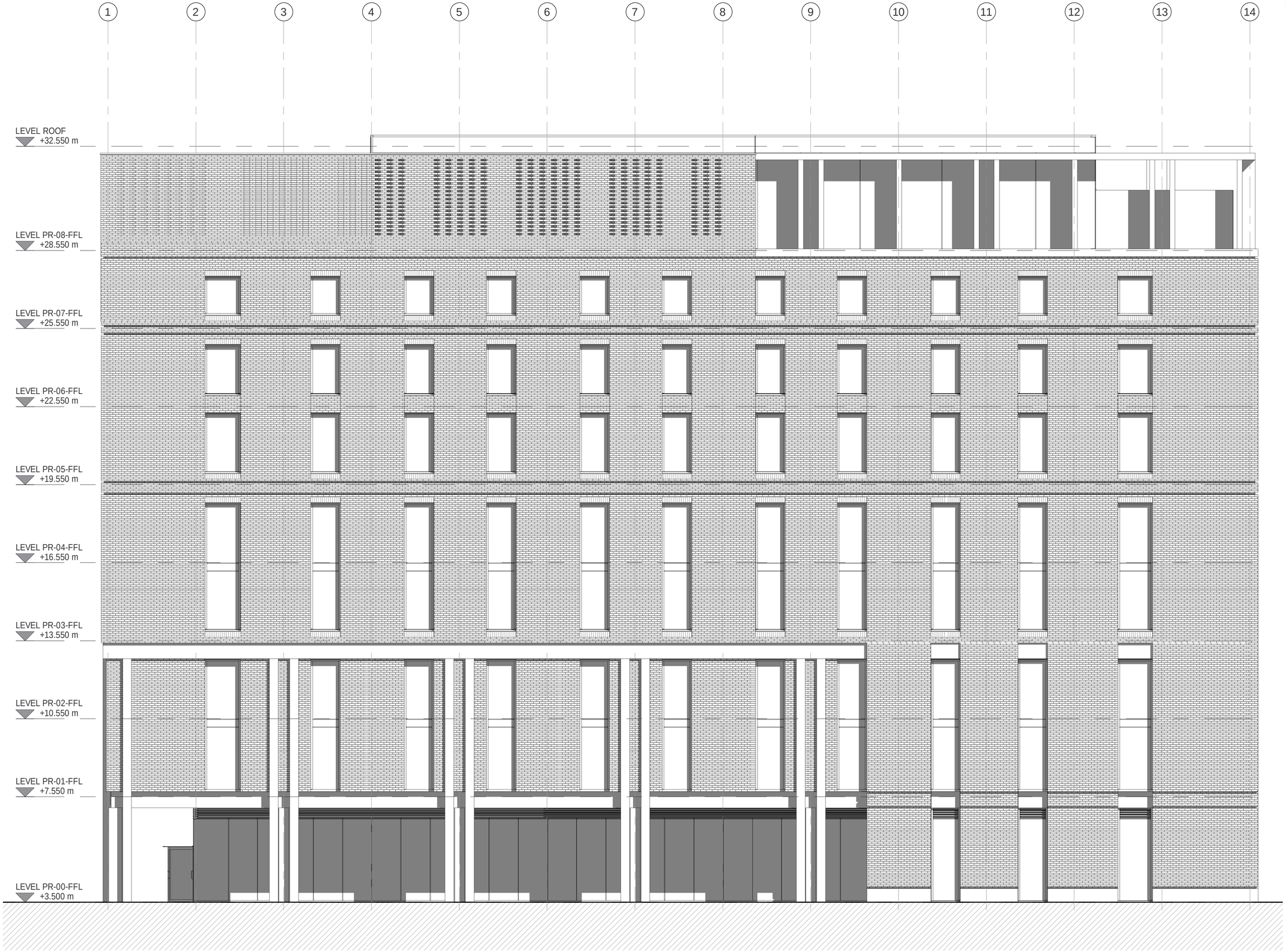

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TITLE
GA SOUTH ELEVATION
HOTEL

SCALE
1 : 100 @ A2

DATE
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2016-223

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PROJECT	ORIGINATOR	ZONE	LEVEL	TYPE	ROLE	NUMBER
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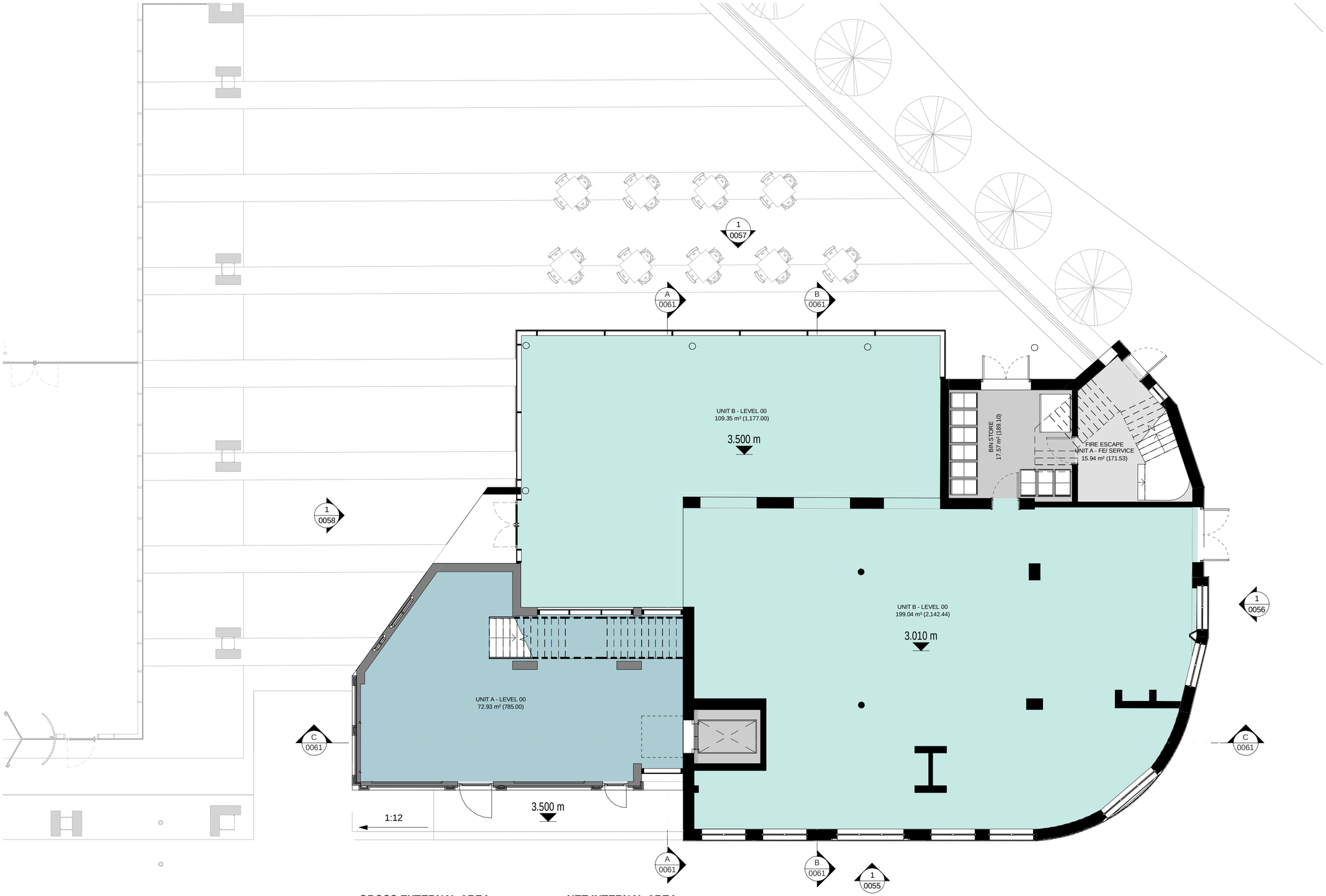

GROSS EXTERNAL AREA:

Level	Area (m)	Area (ft)
00	458	4930
01	301	3240
02	43	463
Total	802	8633

NET INTERNAL AREA:

Name	Department	Area (m)	Area (ft)
BIN STORE	SERVICE	17.57 m²	189 ft²
UNIT A - CIRC.	CIRCULATION	2.52 m²	27 ft²
UNIT A - FE/ SERVICE	CIRCULATION	15.94 m²	172 ft²
UNIT A - FE/ SERVICE	CIRCULATION	25.79 m²	278 ft²
UNIT A - LEVEL 00	UNIT A	72.93 m²	785 ft²
UNIT A - LEVEL 01	UNIT A	157.61 m²	1696 ft²
UNIT A - LEVEL 01A	UNIT A	53.38 m²	575 ft²
UNIT A - LEVEL 02	UNIT A	27.09 m²	292 ft²
UNIT A - LIFT	SERVICE	4.68 m²	50 ft²
UNIT A TERRACE	CIRCULATION	23.38 m²	252 ft²
UNIT B - LEVEL 00	UNIT B	199.04 m²	2142 ft²
UNIT B - LEVEL 00	UNIT B	109.35 m²	1177 ft²
		709.27 m²	7635 ft²

0 1 2 5 10 m

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By Department Legend

CIRCULATION
UNIT A
SERVICE
UNIT B

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PR GA GROUND FLOOR PLAN
CAS. BUILD. & EARL DE GREY

SCALE
1 : 100 @ A2

DATE
13/02/19

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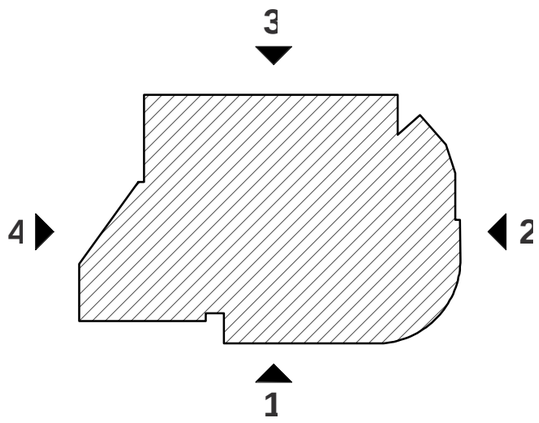

KEY PLAN ELEVATIONS

1 : 500

0 1 2 5 10 m

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TITLE
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STATUS	SUITABILITY DESCRIPTION
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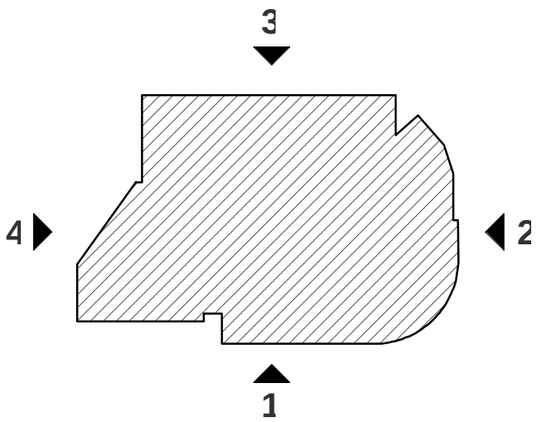
REVISION	REVISION DESCRIPTION



KEY PLAN ELEVATIONS

1 : 500

0 1 2 5 10 m

DLA DESIGN

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ARCHITECTURE

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PROJECT
PRINCES QUAY, HULL

TITLE
PROPOSED ELEVATION 3
CAS. BUILD. & EARL DE GREY

SCALE	DATE
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2016-223	VP	JO

DRAWING NAME

PROJECT	ORIGINATOR	ZONE	LEVEL	TYPE	ROLE	NUMBER
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STATUS	SUITABILITY DESCRIPTION
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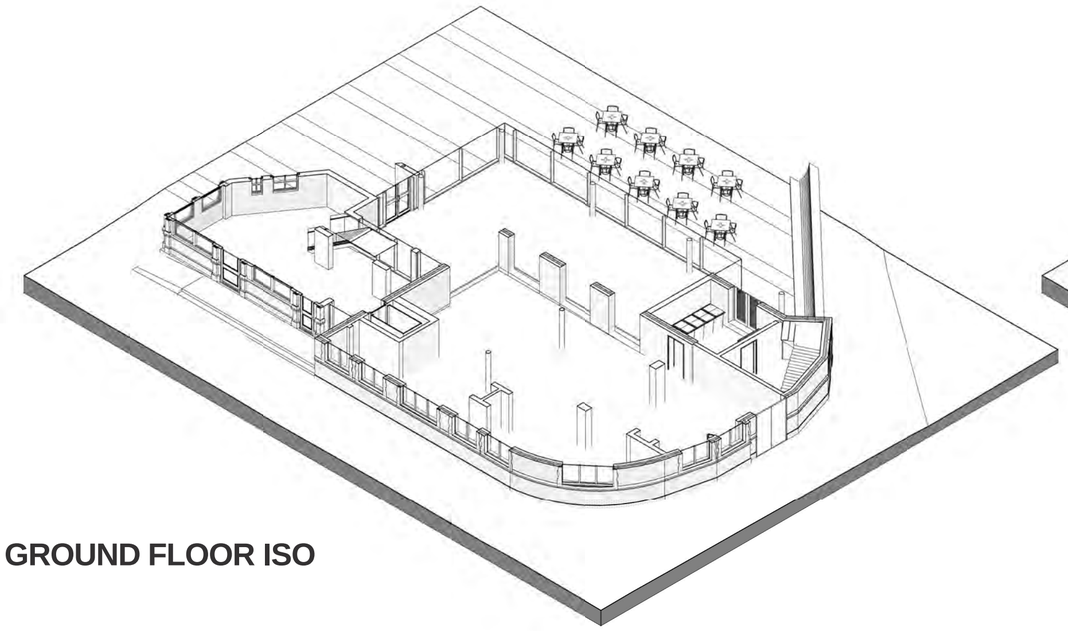
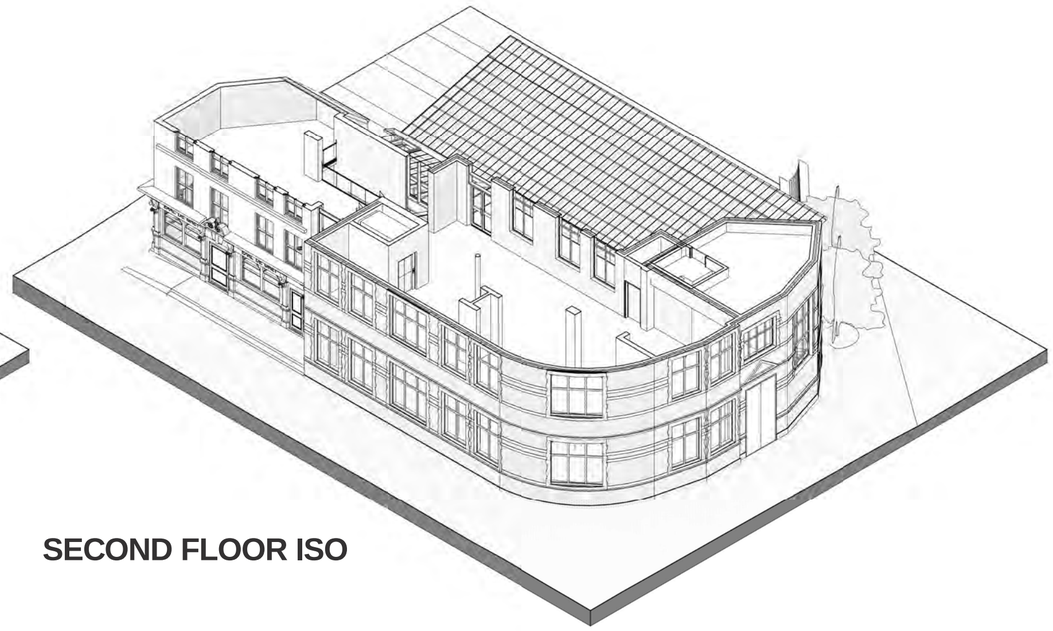
REVISIONS

No.	DESCRIPTION	DATE



GROUND FLOOR ISO



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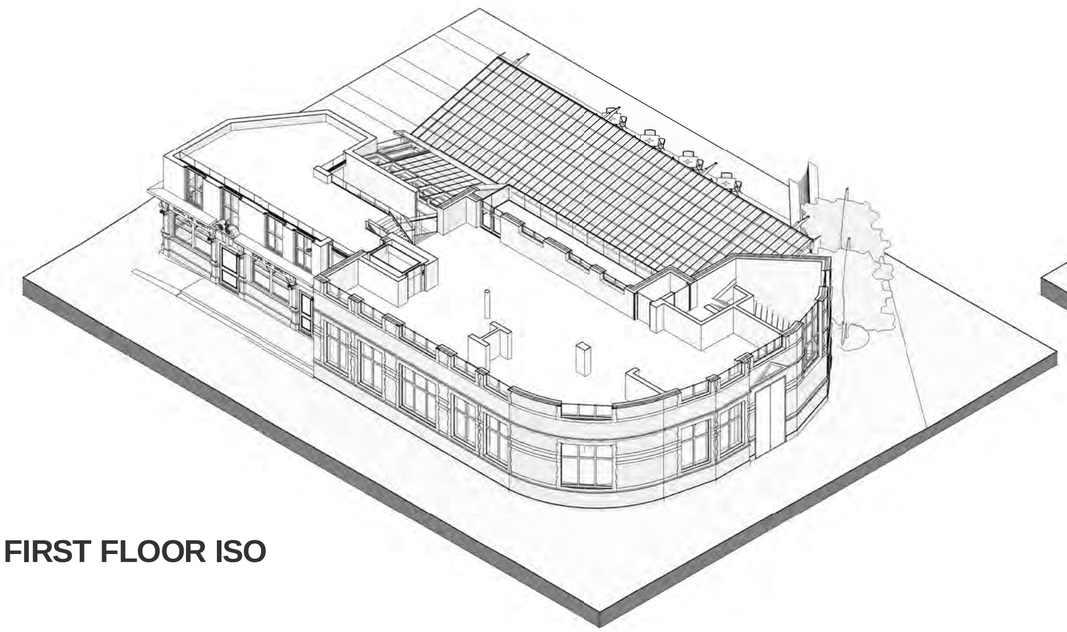
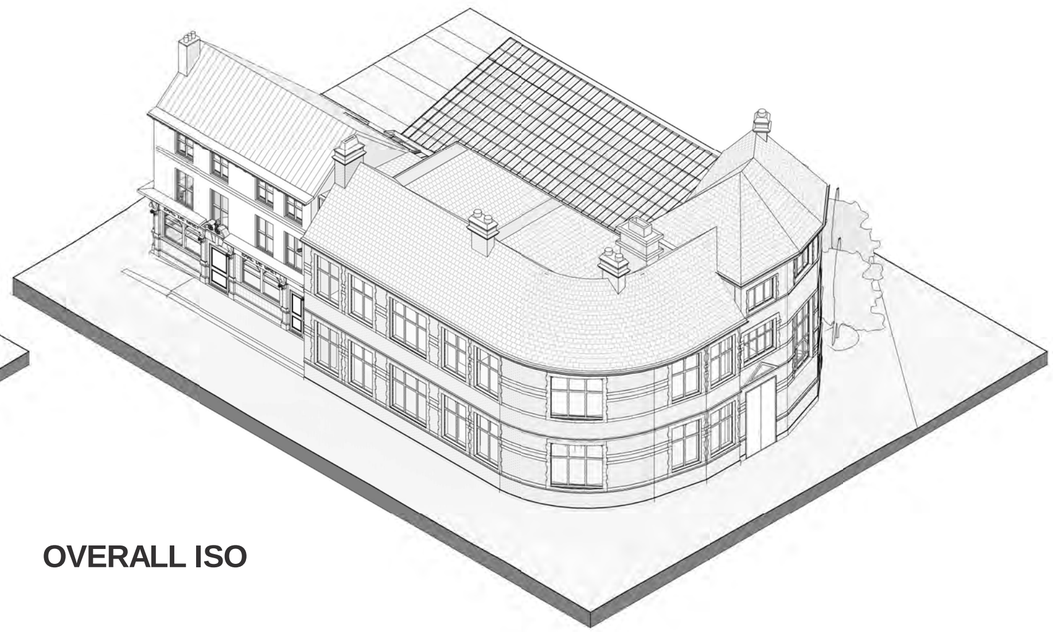


FIRST FLOOR ISO



OVERALL ISO

ARCHITECTURE

No. 55 | St Paul's Street | **Leeds** | **LS1**

0113 887 3100 **www.dla-**

PROJECT

PRINCES QUAY, HULL

TITLE

PROPOSED GA - ISOMETRICS
CAS. BUILD. & EARL DE GREY

SCALE	DATE
@ A2	13/02/19

DLA REF	DRAWN	REVIEWED
2016-223	VP	JO

DRAWING NAME

PROJECT	ORIGINATOR	ZONE	LEVEL	TYPE	ROLE	NUMBER
	DLA					**0060**

STATUS	SUITABILITY DESCRIPTION
	FOR PLANNING

REVISION	REVISION DESCRIPTION

APPENDIX C

Calculation of Foul Water Discharge

Foul Water Flow Calculation

Calculation Based on British Water Flows and Loads - 4 Guidance

Hotel										
Source of Waste					Flow (l/day)		BOD g/day		NH3	
Description	Comments	no. rooms	occupancy	No.	Per Head	Total	Per Head	Total	Per Head	Total
Rooms		150	2	300	250	75000	94	28200	10	3000
Bar Drinkers				150	12	1800	15	2250	5	750
Non Resident Luxury meals				300	30	9000	38	11400	4	1200
Staff, full-time				50	90	4500	38	1900	5	250
Staff, Part Time				20	45	900	25	500	3	60
Laundry	sent off site Domestic for tea towels									
Total						91200		44250		5260

Restaurant										
Source of Waste					Flow (l/day)		BOD g/day		NH3	
Description	Comments	no. rooms	occupancy	No.	Per Head	Total	Per Head	Total	Per Head	Total
Non Resident Luxury meals				300	30	9000	38	11400	4	1200
Staff, full-time				30	90	2700	38	1140	5	150
Staff, Part Time				20	45	900	25	500	3	60
Total						12600		13040		1410

Bar/Pub										
Source of Waste					Flow (l/day)		BOD g/day		NH3	
Description	Comments	no. rooms	occupancy	No.	Per Head	Total	Per Head	Total	Per Head	Total
Bar Drinkers				420	12	5040	15	6300	5	2100
Bar Snacks/meals				200	15	3000	19	3800	2.5	500
Staff, full-time				20	90	1800	38	760	5	100
Staff, Part Time				10	45	450	25	250	3	30
Total						10290		11110		2730

Offices										
Source of Waste					Flow (l/day)		BOD g/day		NH3	
Description	Comments	no. rooms	occupancy	No.	Per Head	Total	Per Head	Total	Per Head	Total
Staff, full-time				100	90	9000	38	3800	5	500
Staff, Part Time				20	45	900	25	500	3	60
Total						9900		4300		560

		Flow (l/day)	BOD g/day	NH3
Development Total		123990	72700	9960

Average flow rate (l/s)	1.44

APPENDIX D

Yorkshire Water PPE Response

YorkshireWater

Mr M Cropp
Alan Wood & Partners
341 Beverley Road
Hull
HU5 1LD

Yorkshire Water Services
Developer Services
Sewerage Technical Team
PO BOX 52
Bradford
BD3 7AY

Tel: 0345 120 8482
Fax: (01274) 372 834

Email:
technical.sewerage@yorkshirewater.co.uk

For telephone enquiries ring:
Chris Roberts on 0345 120 8482

Your Ref: AWP054
Our Ref: V002957

3rd March 2019

Dear Mr Cropp,

Castle Street, Hull, HU1 2DA - Pre-Planning Sewerage-Enquiry-Residential T320936

Thank you for your recent enquiry. Our charge of £158.93 (plus VAT) will be added to your account with us, reference AWP054. You will receive an invoice for your account in due course.

Please find enclosed a complimentary extract from the Statutory Sewer Map which indicates the recorded position of the public sewers. Please note that as of October 2011 and the private to public sewer transfer, there are many uncharted Yorkshire Water assets currently not shown on our records. The following comments reflect our view, with regard to the public sewer network only, based on a 'desk top' study of the site and are valid for a maximum period of twelve months:

Development of the site should take place with separate systems for foul and surface water drainage. The separate systems should extend to the points of discharge to be agreed.

Foul Water

Foul water domestic waste should discharge to the 900 mm diameter public combined sewer recorded in the south western part of the site.

Foul water from kitchens and/or food preparation areas of any restaurants and/or canteens etc. must pass through a fat and grease trap of adequate design before any discharge to the public sewer network.

Surface Water

The developer's attention is drawn to Requirement H3 of the Building Regulations 2000. This establishes a preferred hierarchy for surface water disposal. Consideration should firstly be given to discharge to soakaway, infiltration system and watercourse in that priority order.

Sustainable Drainage Systems (SuDS), for example the use of soakaways and/or permeable hardstanding etc, may be a suitable solution for surface water disposal appropriate in this situation. You are advised to seek comments on the suitability of SuDS in this instance from the appropriate authorities.

It is understood that a marina/watercourse is located to the east of the site. This appears to be the obvious place for surface water disposal (if SuDS are not viable).

If other methods of surface water disposal are not viable and subject to providing satisfactory evidence as to why they have been discounted, curtilage surface water discharges to the public sewer will be restricted to the level of run-off - i.e. same rate of discharge - to that from the existing use of the site less a 50% reduction in the existing discharge. Any discharge of surface water from the site should discharge to similar points of connection to that of the existing use of the site. You will need to demonstrate positive drainage, based on a 1 in 1 year storm, to the public sewer to Yorkshire Water by means of investigation and calculation carried out at your expense.

To do this, Yorkshire Water requires to see existing and proposed drainage layouts with pipe sizes, gradients and connection points, measured impermeable areas of the present and proposed use of the site, along with the calculations that show the existing and proposed discharge rate from the site to the public sewer.

Please note further restrictions on surface water disposal from the site may be imposed by other parties. You are strongly advised to seek advice/comments from the Environment Agency/Land Drainage Authority/Internal Drainage Board, with regard to surface water disposal from the site.

Surface water run-off from communal parking (greater than 800 sq metres or more than 50 car parking spaces) and hardstanding must pass through an oil, petrol and grit interceptor/separator of adequate design before any discharge to the public sewer network. Roof water should not pass through the traditional 'stage' or full retention type of interceptor/separator. It is good drainage practice for any interceptor/separator to be located upstream of any on-site balancing, storage or other means of flow attenuation that may be required.

Surface water run-off from areas of vehicular parking and/or hardstanding etc. must pass through an oil, petrol and grit interceptor/separator of adequate design before any discharge to the public sewer network. Roof water should not pass through the traditional 'stage' or full retention type of interceptor/separator.

It is imperative, however that surface water run-off from the forecourt of petrol stations, areas used for the delivery of fuel, areas used for and immediately adjacent to vehicle washing facilities and/or other similar areas where detergent is likely to be used is not discharged to any public surface water sewer network. Surface water from such areas must pass through an oil, petrol and grit interceptor/separator of adequate design before discharge to the public foul or combined sewer network. A trade effluent consent - that may be conditional and, amongst other things, place a restriction on the rate of discharge to public sewer - may be required for such discharges. The developer is advised to contact Yorkshire Water's Industrial Waste Section (telephone 0345 1242424) about any such proposal.

It is good drainage practice for any interceptor/separator to be located upstream of any on-site balancing, storage or other means of flow attenuation that may be required.

Other Observations

Any new connection to an existing public sewer will require the prior approval of Yorkshire Water. You may apply on line or obtain an application form from our website (www.yorkshirewater.com) or by telephoning 0345 120 84 82.

Under the provisions of section 111 of the Water Industry Act 1991 it is unlawful to pass into any public sewer (or into any drain or private sewer communicating with the public sewer network) any items likely to cause damage to the public sewer network interfere with the free flow of its contents or affect the treatment and disposal of its contents. Amongst other things this includes fat, oil, nappies, bandages, syringes, medicines, sanitary towels and incontinence pants. Contravention of the provisions of section 111 is a criminal offence.

An off-site foul and surface water sewer may be required which may be provided by the developer and considered for adoption under Section 104 of the Water Industry Act 1991. Please telephone 0345 120 84 82 for advice on sewer adoptions. Alternatively, the developer may in certain circumstances be able to requisition off-site sewers under Section 98 of the Water Industry Act 1991 for which an application must be made in writing. For further information, please telephone 0345 120 84 82.

YorkshireWater

Prospectively adoptable sewers and pumping stations must be designed and constructed in accordance with the WRc publication "Sewers for Adoption - a design and construction guide for developers" 6th Edition as supplemented by Yorkshire Water's requirements, pursuant to an agreement under Section 104 of the Water Industry Act 1991. An application to enter into a Section 104 agreement must be made in writing prior to any works commencing on site. Please contact our Developer Services Team (telephone 0345 120 84 82) for further information.

The site is within an area that may be affected by river, coastal or estuarine flooding. We would advise you to contact the Environment Agency for details.

All the above comments are based upon the information and records available at the present time. The information contained in this letter together with that shown on any extract from the Statutory Sewer Map that may be enclosed is believed to be correct and is supplied in good faith. Please note that capacity in the public sewer network is not reserved for specific future development. It is used up on a 'first come, first served' basis. You should visit the site and establish the line and level of any public sewers affecting your proposals before the commencement of any design work.

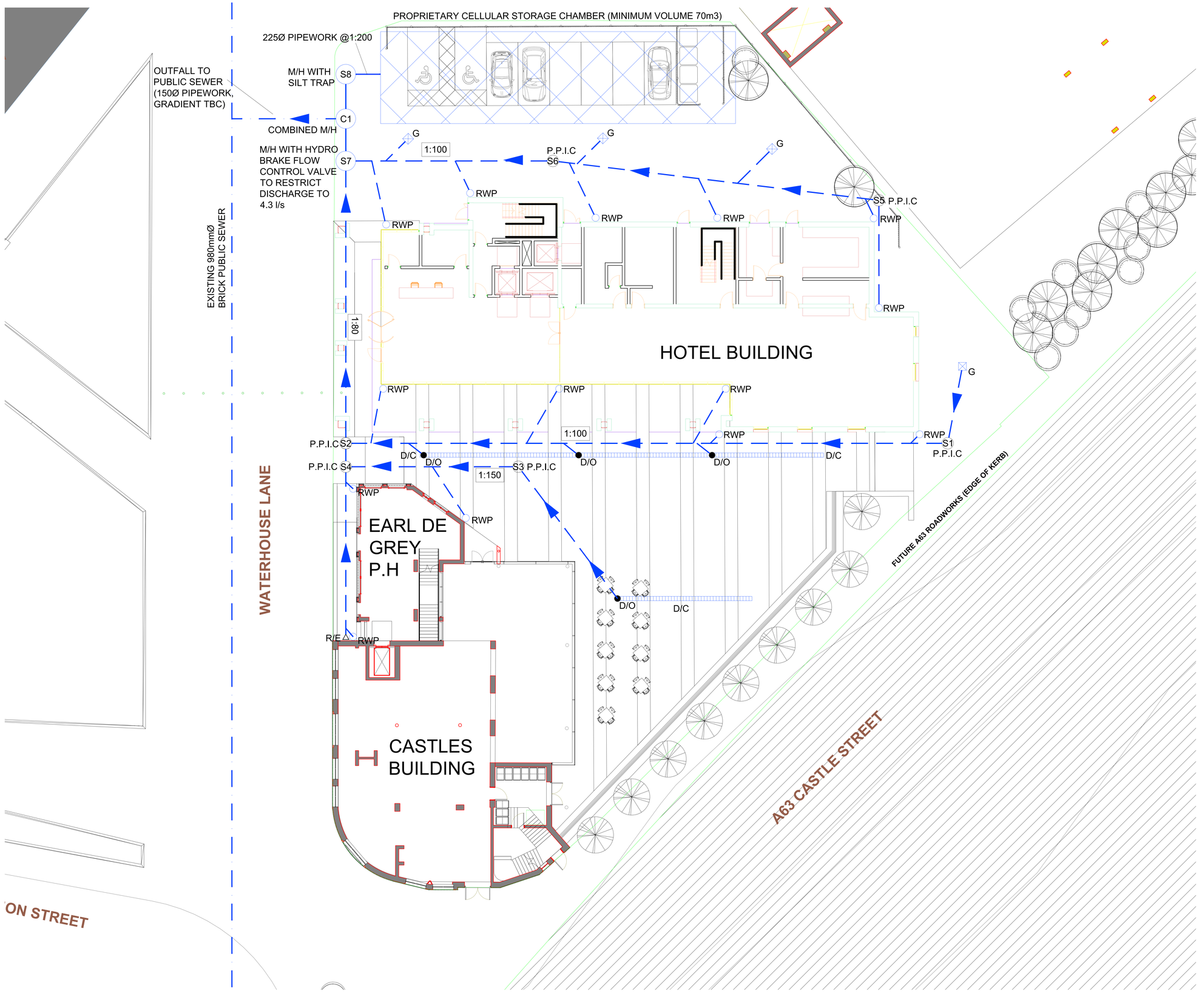
Yours sincerely

[redacted]

Chris Roberts
Sewerage Technician
Developer Services

APPENDIX E

Preliminary Drainage Layout Drawings



NOTES:

1. THESE NOTES ARE INTENDED TO AUGMENT DRAWINGS AND SPECIFICATIONS. WHERE CONFLICT OF REQUIREMENTS EXIST THE ORDER OF PRECEDENCE SHALL BE AS SHOWN IN THE SPECIFICATION, OTHERWISE THE STRICTEST PROVISION SHALL GOVERN.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEERS AND ARCHITECTS DRAWINGS.
3. DRAWINGS NOT TO BE SCALED. ALL DIMENSIONS TO BE CHECKED ON SITE BY THE CONTRACTOR. ANY DISCREPANCIES TO BE NOTIFIED TO THE ENGINEER AND FURTHER INSTRUCTIONS OBTAINED BEFORE WORK IS COMMENCED.
4. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE BUILDING IS FULLY COMPLETED. IT IS THE CONTRACTORS SOLE RESPONSIBILITY TO DETERMINE THE ERECTION PROCEDURE AND SEQUENCE AND ENSURE THAT THE BUILDING AND ITS COMPONENTS ARE SAFE DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER TEMPORARY BRACING, GUYS OR TIE-DOWNS WHICH MAY BE NECESSARY. SUCH MATERIAL REMAINING THE THE PROPERTY OF THE CONTRACTOR ON COMPLETION, AND FOR ENSURING THAT THE WORKS AND ANY ADJACENT PROPERTIES ARE SAFE IN THE TEMPORARY CONDITION.

KEY

- = SURFACE WATER DRAINAGE (150 PIPES UNLESS NOTED OTHERWISE)
- 1:100 = PIPE GRADIENT
- RWP = RAINWATER PIPE
- M/H = SURFACE WATER MANHOLE
- G = GULLY
- D/C = DRAINAGE CHANNEL
- R/E = RODDING EYE
- D/O = DRAINAGE OUTLET

Rev	Description	Date	By	Chk	App
P1	FIRST ISSUE	14.03.19	MJC	AD	--

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Sheffield T. 01142 440077
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Project: BUILDING RE-DEVELOPMENT AND PROPOSED HOTEL, CASTLE STREET, HULL

Client: CASTLE BUILDINGS LLP

Drawing: INDICATIVE SURFACE WATER DRAINAGE LAYOUT

Role: CIVIL ENGINEER

Drawing Status: PRELIMINARY

Job. no. 39388 | Scale@ A1: 1:200 | Rev. P1

Project	Originator	Volume	Level	Type	Role	Number
CAS	AWP	ZZ	XX	DR	C	0003

100mm at A0

NOTES:

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KEY

- = FOUL WATER DRAINAGE
- M/H = FOUL MANHOLE
- SVP = SOIL VENT PIPE
- SFG = SEALED FLOOR GULLY
- P.P.I.C = INSPECTION CHAMBER

OUTFALL TO PUBLIC SEWER (150Ø PIPEWORK, GRADIENT TBC)

C1

COMBINED M/H

EXISTING 980mmØ BRICK PUBLIC SEWER

F8 M/H

150Ø PIPEWORK@1:100

P.P.I.C F7

150Ø PIPEWORK@1:60

P.P.I.C F6

P.P.I.C F5

P.P.I.C F4

100Ø PIPEWORK@1:100

P.P.I.C F3

SFG

SVP

SFG

SVP

150Ø PIPEWORK@1:100

HOTEL BUILDING

150Ø PIPEWORK@1:100

P.P.I.C F2

F1 P.P.I.C

150Ø PIPEWORK@1:60

SVP

EARL DE GREY P.H

CASTLES BUILDING

WATERHOUSE LANE

FUTURE A63 ROADWORKS (EDGE OF KERB)

A63 CASTLE STREET

ON STREET

100mm at A0

Rev	Description	Date	By	Chk	App
P1	FIRST ISSUE	14.03.19	MJC	AD	--

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Project: BUILDING RE-DEVELOPMENT AND PROPOSED HOTEL, CASTLE STREET, HULL

Client: CASTLE BUILDINGS LLP

Drawing: INDICATIVE FOUL WATER DRAINAGE LAYOUT

Role: CIVIL ENGINEER

Drawing Status: PRELIMINARY

Job. no. 39388 Scale@ A1: 1:200 Rev. P1

Project	Originator	Volume	Level	Type	Role	Number
CAS	AWP	ZZ	XX	DR	C	0004

Alan Wood & Partners

APPENDIX F

Surface Water Storage Calculations

Summary of Results for 30 year Return Period

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	10.592	0.592	4.3	29.6	O K
30 min Summer	10.741	0.741	4.3	37.0	O K
60 min Summer	10.839	0.839	4.3	41.9	O K
120 min Summer	10.855	0.855	4.3	42.7	O K
180 min Summer	10.832	0.832	4.3	41.6	O K
240 min Summer	10.798	0.798	4.3	39.9	O K
360 min Summer	10.722	0.722	4.3	36.1	O K
480 min Summer	10.640	0.640	4.3	32.0	O K
600 min Summer	10.548	0.548	4.3	27.4	O K
720 min Summer	10.471	0.471	4.3	23.6	O K
960 min Summer	10.348	0.348	4.3	17.4	O K
1440 min Summer	10.200	0.200	4.2	10.0	O K
2160 min Summer	10.117	0.117	3.7	5.9	O K
2880 min Summer	10.095	0.095	3.0	4.7	O K
4320 min Summer	10.074	0.074	2.2	3.7	O K
5760 min Summer	10.064	0.064	1.8	3.2	O K
7200 min Summer	10.057	0.057	1.5	2.9	O K
8640 min Summer	10.053	0.053	1.3	2.6	O K
10080 min Summer	10.049	0.049	1.2	2.5	O K
15 min Winter	10.671	0.671	4.3	33.5	O K
30 min Winter	10.840	0.840	4.3	42.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	70.267	0.0	32.6	18
30 min Summer	45.948	0.0	42.7	32
60 min Summer	28.763	0.0	53.5	60
120 min Summer	17.497	0.0	65.1	100
180 min Summer	12.951	0.0	72.2	132
240 min Summer	10.419	0.0	77.5	166
360 min Summer	7.627	0.0	85.1	236
480 min Summer	6.113	0.0	90.9	306
600 min Summer	5.147	0.0	95.7	366
720 min Summer	4.470	0.0	99.7	426
960 min Summer	3.576	0.0	106.4	542
1440 min Summer	2.608	0.0	116.4	766
2160 min Summer	1.900	0.0	127.2	1104
2880 min Summer	1.517	0.0	135.4	1468
4320 min Summer	1.103	0.0	147.6	2200
5760 min Summer	0.879	0.0	156.9	2936
7200 min Summer	0.737	0.0	164.5	3640
8640 min Summer	0.638	0.0	170.9	4400
10080 min Summer	0.565	0.0	176.4	5104
15 min Winter	70.267	0.0	36.5	18
30 min Winter	45.948	0.0	47.8	32

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	10.503	0.503	4.3	51.8	O K
30 min Summer	10.650	0.650	4.3	66.9	O K
60 min Summer	10.777	0.777	4.3	80.1	O K
120 min Summer	10.856	0.856	4.3	88.1	O K
180 min Summer	10.860	0.860	4.3	88.6	O K
240 min Summer	10.847	0.847	4.3	87.2	O K
360 min Summer	10.807	0.807	4.3	83.1	O K
480 min Summer	10.766	0.766	4.3	78.9	O K
600 min Summer	10.725	0.725	4.3	74.7	O K
720 min Summer	10.683	0.683	4.3	70.3	O K
960 min Summer	10.587	0.587	4.3	60.5	O K
1440 min Summer	10.426	0.426	4.3	43.9	O K
2160 min Summer	10.265	0.265	4.3	27.3	O K
2880 min Summer	10.176	0.176	4.1	18.1	O K
4320 min Summer	10.110	0.110	3.5	11.3	O K
5760 min Summer	10.089	0.089	2.8	9.2	O K
7200 min Summer	10.077	0.077	2.4	8.0	O K
8640 min Summer	10.070	0.070	2.1	7.2	O K
10080 min Summer	10.065	0.065	1.8	6.6	O K
15 min Winter	10.567	0.567	4.3	58.4	O K
30 min Winter	10.733	0.733	4.3	75.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	118.224	0.0	54.7	18
30 min Summer	78.014	0.0	72.3	33
60 min Summer	49.114	0.0	91.2	62
120 min Summer	29.915	0.0	111.2	120
180 min Summer	22.100	0.0	123.2	170
240 min Summer	17.728	0.0	131.8	198
360 min Summer	12.895	0.0	143.8	262
480 min Summer	10.296	0.0	153.1	332
600 min Summer	8.640	0.0	160.6	402
720 min Summer	7.484	0.0	166.9	470
960 min Summer	5.960	0.0	177.2	600
1440 min Summer	4.318	0.0	192.6	840
2160 min Summer	3.123	0.0	209.1	1188
2880 min Summer	2.479	0.0	221.3	1528
4320 min Summer	1.788	0.0	239.3	2204
5760 min Summer	1.416	0.0	252.9	2936
7200 min Summer	1.182	0.0	263.7	3672
8640 min Summer	1.019	0.0	272.7	4400
10080 min Summer	0.898	0.0	280.5	5136
15 min Winter	118.224	0.0	61.3	18
30 min Winter	78.014	0.0	81.0	32

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	10.880	0.880	4.3	90.6	O K
120 min Winter	10.979	0.979	4.3	100.8	O K
180 min Winter	10.994	0.994	4.3	102.3	O K
240 min Winter	10.976	0.976	4.3	100.6	O K
360 min Winter	10.924	0.924	4.3	95.2	O K
480 min Winter	10.868	0.868	4.3	89.4	O K
600 min Winter	10.809	0.809	4.3	83.3	O K
720 min Winter	10.747	0.747	4.3	77.0	O K
960 min Winter	10.606	0.606	4.3	62.5	O K
1440 min Winter	10.362	0.362	4.3	37.3	O K
2160 min Winter	10.173	0.173	4.1	17.8	O K
2880 min Winter	10.112	0.112	3.6	11.5	O K
4320 min Winter	10.083	0.083	2.6	8.5	O K
5760 min Winter	10.070	0.070	2.1	7.2	O K
7200 min Winter	10.063	0.063	1.7	6.4	O K
8640 min Winter	10.057	0.057	1.5	5.9	O K
10080 min Winter	10.053	0.053	1.3	5.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
60 min Winter	49.114	0.0	102.2	62
120 min Winter	29.915	0.0	124.5	118
180 min Winter	22.100	0.0	138.0	174
240 min Winter	17.728	0.0	147.6	224
360 min Winter	12.895	0.0	161.0	278
480 min Winter	10.296	0.0	171.4	356
600 min Winter	8.640	0.0	179.8	434
720 min Winter	7.484	0.0	186.9	512
960 min Winter	5.960	0.0	198.5	654
1440 min Winter	4.318	0.0	215.7	882
2160 min Winter	3.123	0.0	234.2	1192
2880 min Winter	2.479	0.0	247.8	1496
4320 min Winter	1.788	0.0	268.0	2204
5760 min Winter	1.416	0.0	283.2	2936
7200 min Winter	1.182	0.0	295.3	3640
8640 min Winter	1.019	0.0	305.5	4400
10080 min Winter	0.898	0.0	314.2	5120

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.700	Shortest Storm (mins)	15
Ratio R	0.391	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+30

Time Area Diagram

Total Area (ha) 0.248

Time (mins) From:	To:	Area (ha)
0	4	0.248

Model Details

Storage is Online Cover Level (m) 12.000

Tank or Pond Structure

Invert Level (m) 10.000

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	103.0	1.000	103.0	1.001	0.0

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0098-4300-1000-4300
Design Head (m)	1.000
Design Flow (l/s)	4.3
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	98
Invert Level (m)	10.000
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	4.3
Flush-Flo™	0.298	4.3
Kick-Flo®	0.636	3.5
Mean Flow over Head Range	-	3.7

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.2	1.200	4.7	3.000	7.2	7.000	10.7
0.200	4.2	1.400	5.0	3.500	7.7	7.500	11.1
0.300	4.3	1.600	5.3	4.000	8.2	8.000	11.4
0.400	4.2	1.800	5.6	4.500	8.7	8.500	11.8
0.500	4.1	2.000	5.9	5.000	9.1	9.000	12.1
0.600	3.7	2.200	6.2	5.500	9.6	9.500	12.4
0.800	3.9	2.400	6.5	6.000	10.0		
1.000	4.3	2.600	6.7	6.500	10.4		

Summary of Results for 30 year Return Period

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	10.960	0.960	4.3	48.0	O K
120 min Winter	10.985	0.985	4.3	49.2	O K
180 min Winter	10.953	0.953	4.3	47.6	O K
240 min Winter	10.905	0.905	4.3	45.3	O K
360 min Winter	10.791	0.791	4.3	39.6	O K
480 min Winter	10.670	0.670	4.3	33.5	O K
600 min Winter	10.523	0.523	4.3	26.1	O K
720 min Winter	10.408	0.408	4.3	20.4	O K
960 min Winter	10.248	0.248	4.3	12.4	O K
1440 min Winter	10.118	0.118	3.8	5.9	O K
2160 min Winter	10.087	0.087	2.8	4.4	O K
2880 min Winter	10.074	0.074	2.2	3.7	O K
4320 min Winter	10.060	0.060	1.6	3.0	O K
5760 min Winter	10.053	0.053	1.3	2.6	O K
7200 min Winter	10.047	0.047	1.1	2.4	O K
8640 min Winter	10.044	0.044	0.9	2.2	O K
10080 min Winter	10.041	0.041	0.8	2.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
60 min Winter	28.763	0.0	59.9	60
120 min Winter	17.497	0.0	72.9	112
180 min Winter	12.951	0.0	80.9	140
240 min Winter	10.419	0.0	86.8	180
360 min Winter	7.627	0.0	95.3	256
480 min Winter	6.113	0.0	101.9	332
600 min Winter	5.147	0.0	107.2	392
720 min Winter	4.470	0.0	111.7	448
960 min Winter	3.576	0.0	119.2	556
1440 min Winter	2.608	0.0	130.4	748
2160 min Winter	1.900	0.0	142.5	1100
2880 min Winter	1.517	0.0	151.6	1464
4320 min Winter	1.103	0.0	165.4	2188
5760 min Winter	0.879	0.0	175.8	2928
7200 min Winter	0.737	0.0	184.2	3672
8640 min Winter	0.638	0.0	191.4	4288
10080 min Winter	0.565	0.0	197.6	5136

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	30	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	18.700	Shortest Storm (mins)	15
Ratio R	0.391	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+0

Time Area Diagram

Total Area (ha) 0.248

Time (mins) From:	To:	Area (ha)
0	4	0.248

Model Details

Storage is Online Cover Level (m) 12.000

Tank or Pond Structure

Invert Level (m) 10.000

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	50.0	1.000	50.0	1.001	0.0

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0098-4300-1000-4300
Design Head (m)	1.000
Design Flow (l/s)	4.3
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	98
Invert Level (m)	10.000
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	4.3
Flush-Flo™	0.298	4.3
Kick-Flo®	0.636	3.5
Mean Flow over Head Range	-	3.7

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
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0.200	4.2	1.400	5.0	3.500	7.7	7.500	11.1
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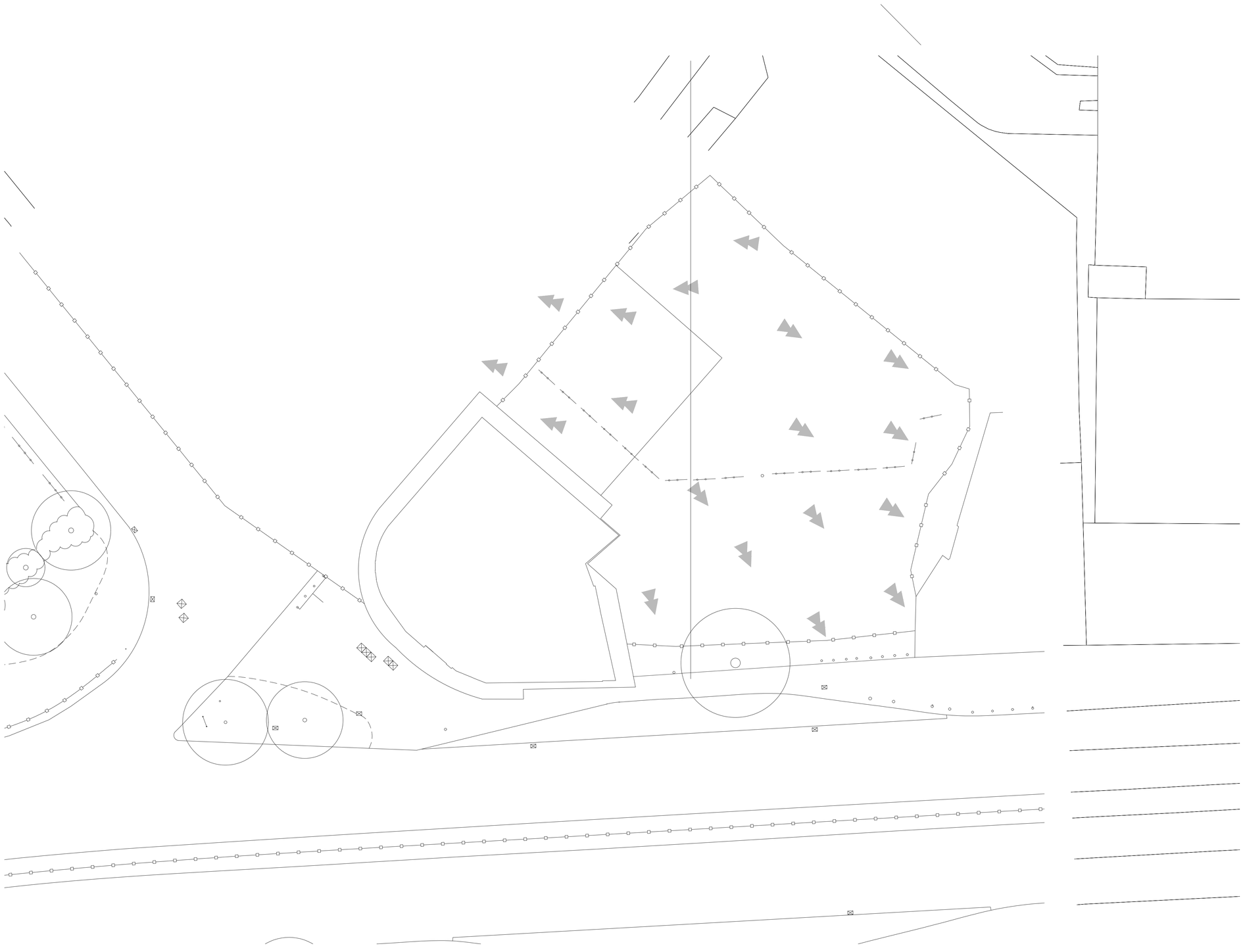
0.400	4.2	1.800	5.6	4.500	8.7	8.500	11.8
0.500	4.1	2.000	5.9	5.000	9.1	9.000	12.1
0.600	3.7	2.200	6.2	5.500	9.6	9.500	12.4
0.800	3.9	2.400	6.5	6.000	10.0		
1.000	4.3	2.600	6.7	6.500	10.4		

APPENDIX G

Surface Water Exceedance Flood Routing Drawings



NOTES:

1. THESE NOTES ARE INTENDED TO AUGMENT DRAWINGS AND SPECIFICATIONS. WHERE CONFLICT OF REQUIREMENTS EXIST THE ORDER OF PRECEDENCE SHALL BE AS SHOWN IN THE SPECIFICATION. OTHERWISE THE STRICTEST PROVISION SHALL GOVERN.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEERS AND ARCHITECTS DRAWINGS.
3. DRAWINGS NOT TO BE SCALED. ALL DIMENSIONS TO BE CHECKED ON SITE BY THE CONTRACTOR. ANY DISCREPANCIES TO BE NOTIFIED TO THE ENGINEER AND FURTHER INSTRUCTIONS OBTAINED BEFORE WORK IS COMMENCED.
4. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE BUILDING IS FULLY COMPLETED. IT IS THE CONTRACTORS SOLE RESPONSIBILITY TO DETERMINE THE ERECTION PROCEDURE AND SEQUENCE AND ENSURE THAT THE BUILDING AND ITS COMPONENTS ARE SAFE DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER TEMPORARY BRACING, GUYS OR TIE-DOWNS WHICH MAY BE NECESSARY, SUCH MATERIAL REMAINING THE THE PROPERTY OF THE CONTRACTOR ON COMPLETION, AND FOR ENSURING THAT THE WORKS AND ANY ADJACENT PROPERTIES ARE SAFE IN THE TEMPORARY CONDITION.

KEY

= EXISTING SURFACE WATER EXCEEDANCE FLOW PATH ROUTE

Rev	Description	Date	By	Chk	App
P1	FIRST ISSUE	13.03.19	MJC	AD	--

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Project: BUILDING RE-DEVELOPMENT AND PROPOSED HOTEL, CASTLE STREET, HULL

Client: CASTLE BUILDINGS LLP

Drawing: EXISTING SURFACE WATER EXCEEDANCE FLOOD ROUTING

Role: CIVIL ENGINEER

Drawing Status: PRELIMINARY

Job. no. 39388 | Scale@ A1: 1:200 | Rev. P1

Project Originator Volume Level Type Role Number

CAS - AWP - ZZ - XX - DR - C - 0001

100mm at A1

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Project: BUILDING RE-DEVELOPMENT AND PROPOSED HOTEL, CASTLE STREET, HULL

Client: CASTLE BUILDINGS LLP

Drawing: PROPOSED SURFACE WATER EXCEEDANCE FLOOD ROUTING

Role: CIVIL ENGINEER

Drawing Status: PRELIMINARY

Job. no. 39388 | Scale@ A1: 1:200 | Rev. P1

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