

FLOOD RISK ASSESSMENT INCLUDING SURFACE WATER STRATEGY

BROAD STREET MALL, READING

FOR

**INCEPTION (READING) SARL
(C/O MOORGARTH GROUP)**



JULY 2018

REPORT REF: 2206-FRA01

Rev D - NOVEMBER 2019

CIVIL/STRUCTURAL ENGINEERS | DEVELOPMENT CONSULTANTS | PROJECT MANAGERS

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PREPARED BY	CHECKED BY	DATE	REVISION
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1.0 INTRODUCTION

BJB Consulting has been commissioned by Inception (Reading) Sarl (c/o Moorgarth Group Ltd) to undertake a Flood Risk Assessment (FRA) to accompany the planning application for the development of this subject site, in line with Government Policy with respect to development and flood risk in areas in England, contained within the Department for Communities and Local Government document the National Planning Policy Framework (NPPF), published in July 2018: The National Planning Practice Guidance (NPPG), published in March 2014.

This FRA has been prepared in accordance with the National Planning Practice Guidance (NPPG) and in consultation with the Environment Agency and Local Authorities. The level of detail for any FRA should be appropriate for the scale and potential impact of the proposed development and this FRA adheres to the EA Standing Advice that lists a number of requirements that any FRA should address.

The comments given in this report and the opinions expressed are subject to BJB Consulting Service Constraints provided in Appendix A.

2.0 LOCATION AND TOPOGRAPHY

2.1 Site Location

The site is located within Reading town centre, approximately 450 metres (m) southwest of Reading railway station, in a mixed-use commercial, retail and residential area. Oxford Road is located adjacent to the north of the site, beyond which numerous retail, residential and commercial buildings are located. St. Mary's Butts is located adjacent to the east of the site, beyond which a church and further retail, residential and commercial buildings are located. A public house is located adjacent to the southeast of the site. A theatre and a small park are located adjacent to the south of the site. A walkway and a hotel are located adjacent to the west of the site.

The overall area of the site is approximately 2.42 hectares and the National Grid Reference for the approximate centre of the site is 471220, 173360. Existing and proposed plans are contained in Appendices B & C respectively.

2.1.1 Site Description and Topography

The subject site supports a shopping mall ('Broad Street Mall') arranged over basement level, ground floor and one upper floor. Furthermore, office accommodation ('Fountain House') is located within the north-western corner of the site. A multi-storey car park is located within the south-western area of the site and numerous further car parking spaces are located on the roof of the shopping mall. The basement level extends underneath the development and includes numerous plant rooms, the main waste storage area and numerous storage rooms associated with the retail units on-site.

The site is located within an area of low risk of flooding classified as Flood Zone 1.

Figure 1 below shows the general site area.



Figure 1: General site area (www.google.co.uk/maps accessed 11.07.18)

2.2 Development Proposals

The proposed scheme is developed into four distinct structure, as outlined below:

Construction of three residential buildings (Use Class C3) ranging in height from 5 to 22 storeys (Site A to provide 164 units, Site B to provide 134 Units, and Site E to provide 50 units) above Broad Street Mall and provision of a podium level amenity area; Construction of a 16 storey building on South Court comprising ground and first floor retail (Use Class A1/A3/A4) and residential over upper floors (Use Class C3, Site C to provide 98 units); Creation of two ground floor retail units (Use Class A1/A3/A4) fronting Dusseldorf Way and one ground floor retail unit (Use Class A1/A2/A3) fronting Queens Walk; All necessary enabling and alteration works required within the existing Broad Street Mall basement, ground and upper floors; Associated car park alterations, provision of servicing and refuse storage, cycle parking, public realm, landscape, and other associated works

3.0 POLICY & CONSULTATION

3.1 National Policy & Guidance

3.1.1 National Planning Policy Framework (NPPF) and National Planning Practice Guidance (NPPG)

The National Planning Policy Framework (NPPF), and the accompanying National Planning Practice Guidance (NPPG), sets out the Government's national policy on development and flood risk and seeks to provide clarity on what is required at regional and local levels to ensure flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding and to direct development away from areas at highest risk. The NPPF outlines a risk based approach to the planning process and requires that a Sequential Test is used in cases where sites are located in vulnerable flooding zones to guide the decision-making process by steering development to areas with the lowest probability of flooding where feasible.

The NPPG also provides details of how all new development must include appropriate consideration of the potential effects of climate change on flooding and the hydrological regime, within the Flood risk assessments: climate change allowances (last updated in February 2017). The NPPG refers to the Environment Agency's Guidance to support the National Planning Policy Framework. Depending upon the specific River Basin District that the proposed development site lies within, the guidance indicates precautionary increases in fluvial flows, sea levels and rainfall intensities that should be applied when assessing the risk of flooding, from now until 2115.

Although the Planning Policy Statement 25 (PPS25) has been superseded, the PPS25 Development and Flood Risk – Practice Guide (issued in December 2009) can still be used as a reference point. The EA's updated Flood Risk Assessment: Local Planning Authorities was last updated in February 2017. These documents provide further guidance on the scope for site specific FRA's depending on the type of development and probability of flooding.

3.1.2 The Water Framework Directive (2000)

The aim of the Water Framework Directive (WFD) is to establish 'good ecological and chemical status in all surface water and groundwater'. It also promotes the importance of sustainable water use. During the implementation process, Local Planning Authorities must not act in a way to compromise the WFD's aims. As part of the planning process, powers to control pollution at the source should be introduced to meet the obligations under the WFD.

3.1.3 Other National Guidance

The latest guidance on the use of Sustainable Drainage Systems (SuDS) is provided in 'The SuDS Manual' by CIRIA (ref: C753 dated 2015). This defines SuDS as 'Surface Water drainage systems developed in line with the ideals of sustainable development the philosophy of SuDS is to replicate, as closely as possible, the natural drainage from a site before development'. As such, SuDS drainage can be in a variety of forms, including infiltration trenches, swales, permeable surfaces and green roofs.

Sewers for Adoption 7th Edition (2012) provides guidance on the design, construction and maintenance of drains and sewers outside buildings which are to be adopted by a relevant public authority.

BS EN 752:2008 – Drain and Sewer Systems Outside Buildings, provides a framework for the design, construction, rehabilitation, maintenance and operation of drain and sewer systems outside buildings.

3.1.4 Reading Planning Policy & Local Plan

The Reading planning policy and draft local plan have been considered and do not impose any additional policies over and above the current legislative requirements when considering the surface water strategy for development sites.

3.2 Stakeholder Consultation

The Environment Agency was consulted to obtain information on flood risk for the technical assessment of the management of surface water.

3.2.1 Environment Agency

The Environment Agency (EA) has available on their web site indicative flood maps for much of England and Wales.

Flooding from Rivers and Seas

The site is located within an area of low risk of flooding classified as Flood Zone 1. This is defined by the EA as land having a less than 1 in 1,000 year (<0.1%) probability of river or sea flooding, as shown in Figure 2 below (<https://flood-map-for-planning.service.gov.uk>, accessed 03/07/18).

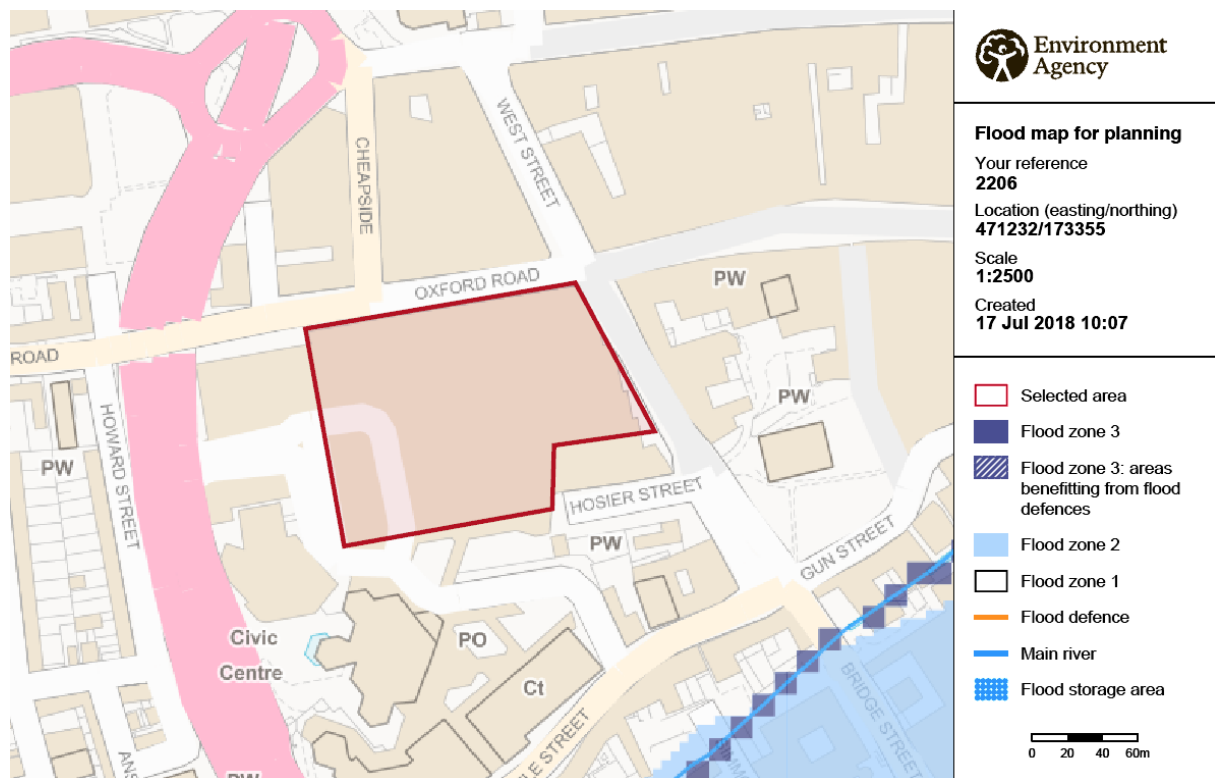


Figure 2 – Identification of Flood Zone for Planning

Furthermore, the site has a very low risk of flooding from rivers or seas, as shown in Figure 3 below. Figure 3 is taken from the freely available Long-Term Flood Risk Information service, which is provided by the Government (<https://flood-map-for-planning.service.gov.uk>, accessed 03/07/18).

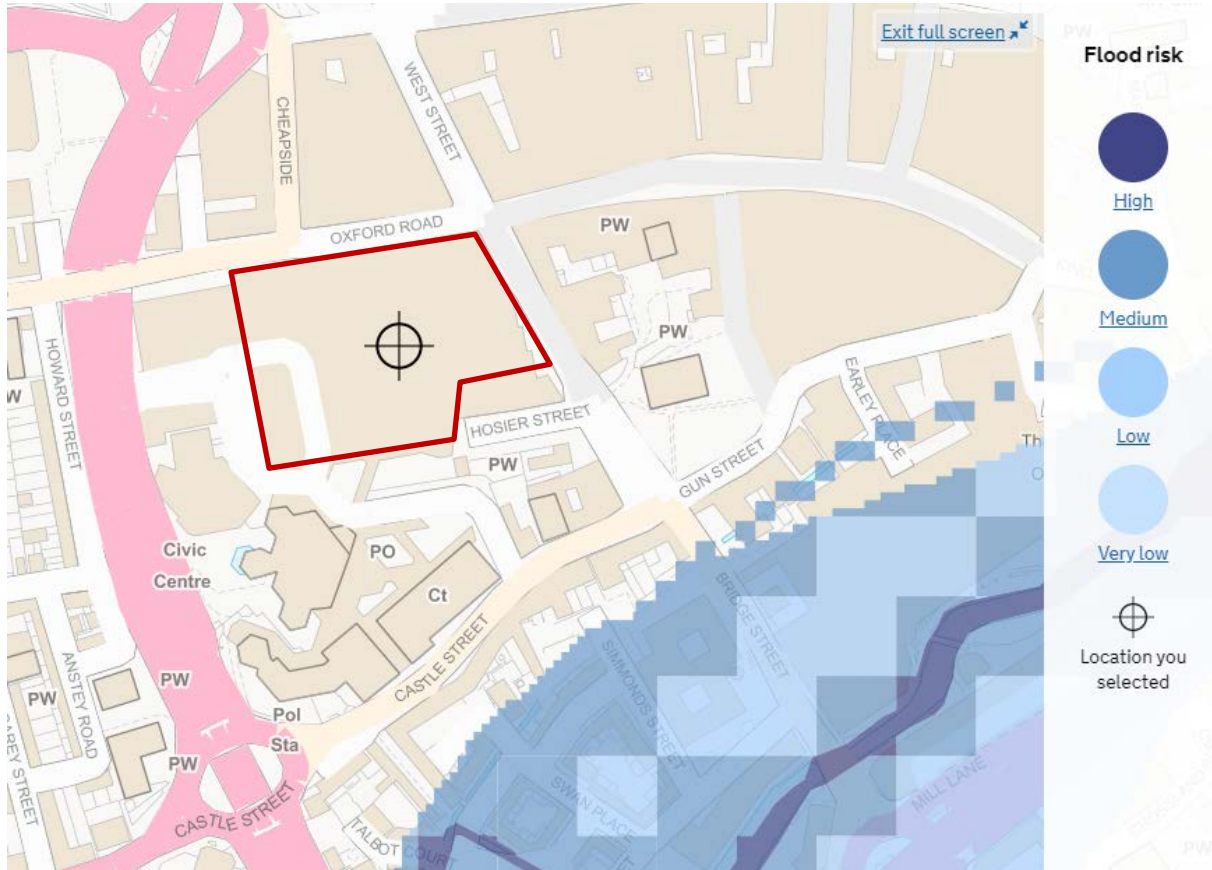


Figure 3 – Identification of Risk of Flooding from Rivers and Seas

Surface Water Flooding

The majority of the site lies within an area of 'very low' risk of surface water flooding.

In terms of risk of surface water flooding, 'very low' means that each year, the area has a chance of flooding of less than 1 in 1000 (0.1%).

There is a small section of the site which has a 'medium' risk of surface water flooding.

Figure 4 below shows the extent of the flood risk associated with surface water flooding. This information has been derived from the Long-Term Flood Risk Information service, which is provided by the Government (<https://flood-map-for-planning.service.gov.uk>, accessed 03/07/18).



Figure 4 – Identification of Extent of Surface Water Flooding

3.2.2 – Reading Borough Council – Transport / Directorate of Environment and Neighbourhood Services (DENS)

The above consultee raised comments on the previous application for the subject site dated 21st March 2019 referring to the requirement to adopt the DEFRA technical standards

BJB Consulting's reply was made on 23rd May 2019 with a response stating that the site is in flood zone 1 and has not experienced any flooding in the past. It also confirms that since the development does not propose to create any additional impermeable areas, therefore the existing above ground service water drainage is intended to be utilised which currently discharges into the existing public sewers in the vicinity of this site.

With regards to providing some form of SuDs it is not reasonably practicable to constrain the volume of run off to any drain, sewer or surface water body in accordance with the DEFRA technical standards S4 or S5 in this case. The runoff volume will be maintained at the current rate and since this has not caused any past flooding issues this therefore complies with S6 of DEFRA technical standard.

Flooding from Reservoirs

The Long-Term Flood Risk Information service identifies the area as not at risk from flooding from reservoir sources. Figure 5 below shows the maximum extent of flooding from reservoirs. This information has been derived from the Long-Term Flood Risk Information service, which is provided by the Government (<https://flood-map-for-planning.service.gov.uk>, accessed 03/07/18).



Figure 5 – Identification of Extent of Flooding from Reservoirs

4.0 FLOOD RISK

4.1 Sources of Flooding

The NPPF and associated NPPG state that all potential sources of flooding should be considered. Data provided from the consultation and review of other information is discussed below.

4.1.1 Potential Sources of River Flooding

River flooding occurs when excessive rainfall over an extended period of time causes a river to exceed its capacity.

There are no natural occurring rivers within close proximity of the site.

The site is located within an area classified as Flood Zone 1, land having a less than 1 in 1,000 year (<0.1%) probability of river or sea flooding.

It is therefore deemed that there is a low risk of river flooding to the development site according to the information reviewed.

4.1.2 Tidal/Coastal Flooding

The site is located within an area classified as Flood Zone 1, land having a less than 1 in 1,000 year probability of river or sea flooding.

It is therefore deemed that there is a low risk of tidal/coastal flooding to the development site according to the information reviewed.

4.1.4 Surface Water Flooding

Surface water flooding occurs when rainwater does not drain away through the normal drainage systems or infiltrates the ground, but instead ponds above ground.

The EA Long-Term Flood Risk Information map searches have identified that the site is within an area generally at 'very-low' risk of surface water flooding with a small zone subject to 'medium' flooding.

It is therefore deemed that there is a generally low risk of surface water flooding to the development site according to the information reviewed.

4.1.4 Artificial Flooding

Artificial flooding occurs when either excessive rainfall over an extended period of time causes a body of water, such as a reservoir or lake, to exceed its capacity or a dam is breached.

According to the EA Long-Term Flood Risk Information mapping, the site has a very low risk of artificial flooding. It is therefore deemed that there is a very low risk of artificial flooding to the development site according to the information reviewed.

4.2 Planning Policy Compliance

According to the Long-Term Flood Risk Flood Maps, the entirety of the site is located within Flood Zone 1 (low probability of flooding) for flooding from rivers and seas.

The intended use of the development, as discussed above, is classified as ‘more vulnerable’ to flooding according to Table 2 of the NPPG Flood Zone and Flood Risk Tables. Therefore, in accordance with the recommendations of the NPPG, the intended use of the proposed development is suitable, as highlighted in figure 5 below.

Flood risk vulnerability classification		Essential infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception Test required	✓	✓
	Zone 3a	Exception Test required	✓	x	Exception Test required	✓
	Zone 3b functional floodplain	Exception Test required	✓	x	x	x

Key: ✓ - Development is appropriate

X – Development should not be permitted

Figure 6 – Extract of Table 3 from the of the NPPG Flood Zone and Flood Risk Tables

5.0 SURFACE WATER MANAGEMENT

5.1 Existing Surface Water Drainage Infrastructure

The proposed develop is within the footprint of the existing Broad Street Mall shopping centre. The entire site's surface water is currently served by existing above and below ground gravity drainage pipework.

5.2 Existing & Proposed Surface Water Runoff Regime

There is existing surface water drainage which serves the entire site and the proposed development is intended to be within the existing roof areas therefore the existing impermeable area will not increase and will remain as existing.

The proposed raised amenity deck at podium level will also be maintained within the existing roof level car park deck thereby not increasing the existing impermeable area.

5.3 Consideration of SuDS Suitability

The Environment Agency and local planning authority require Sustainable Drainage techniques to be incorporated within new developments where possible. However, as mentioned above, the proposed development is within an existing impermeable area which will not increase. The use of SUDS for the proposed development is not feasible due to the lack of areas for swales, ponds, attenuation tanks, permeable paving etc.

APPENDIX A

BJB Consulting Service Constraints

SERVICE CONSTRAINTS

This report (together the “Services”) were compiled and carried out by BJB Consulting (BJB) for Moorgarth Estates (the “client”) in accordance with their instruction. The Services were performed by BJB with the reasonable skill and care ordinarily exercised by a reasonable Civil Engineer at the time the Services were performed. Further, and in particular, the Services were performed by BJB taking into account the limits of the scope of works required by the client, the time scale involved and the resources, including financial and manpower resources, agreed between BJB and the client.

Other than that expressly contained in paragraph 1 above, BJB provides no other representation or warranty whether express or implied in relation to the Services.

Unless otherwise agreed the Services were performed by BJB exclusively for the purposes of the client. BJB is not aware of any interest of or reliance by any party other than the client in or on the Services. Unless expressly provided in writing BJB does not authorise, consent or condone any party other than the client relying upon the Services. Should this report or any part of this report, or otherwise details of the Services or any part of the Services be made known to any such party, and such parties relies thereon that party does so wholly at its own and sole risk and BJB disclaims any liability to such parties. Any such party would be well advised to seek independent advice from a competent environmental consultant and/or lawyer.

It is BJB’s understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of or reliance upon the report in those circumstances by the client without BJB’s review and advice shall be at the client’s sole and own risk. Should BJB be requested to review the report after the date hereof, BJB shall be entitled to additional payment at the then existing rates or such other terms as agreed by BJB and the client.

The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. This information and conclusions contained in this report should not be relied upon in the future without the written advice of BJB. In the absence of such written advice of BJB, reliance on the report in the future shall be at the client’s own and sole risk. Should BJB be requested to review the report in the future, BJB shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between BJB and the client.

The observations and conclusions described in this report are based solely upon the Services, which were provided pursuant to the agreement between the client and BJB. BJB has not performed any observations, investigations, studies or testing not specifically set out or required by the contract between the client and BJB. BJB is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to this report, BJB did not seek to evaluate the presence on or off the site of asbestos, electromagnetic fields, lead paint, heavy metals, radon gas or other radioactive or hazardous materials.

The services are based upon BJB’s observations of Environment Agency Flood Maps of the Site together with BJB’s interpretation of information including documentation, obtained from third parties and from the client on flooding and drainage issues relating to the Site. The Services clearly are limited by

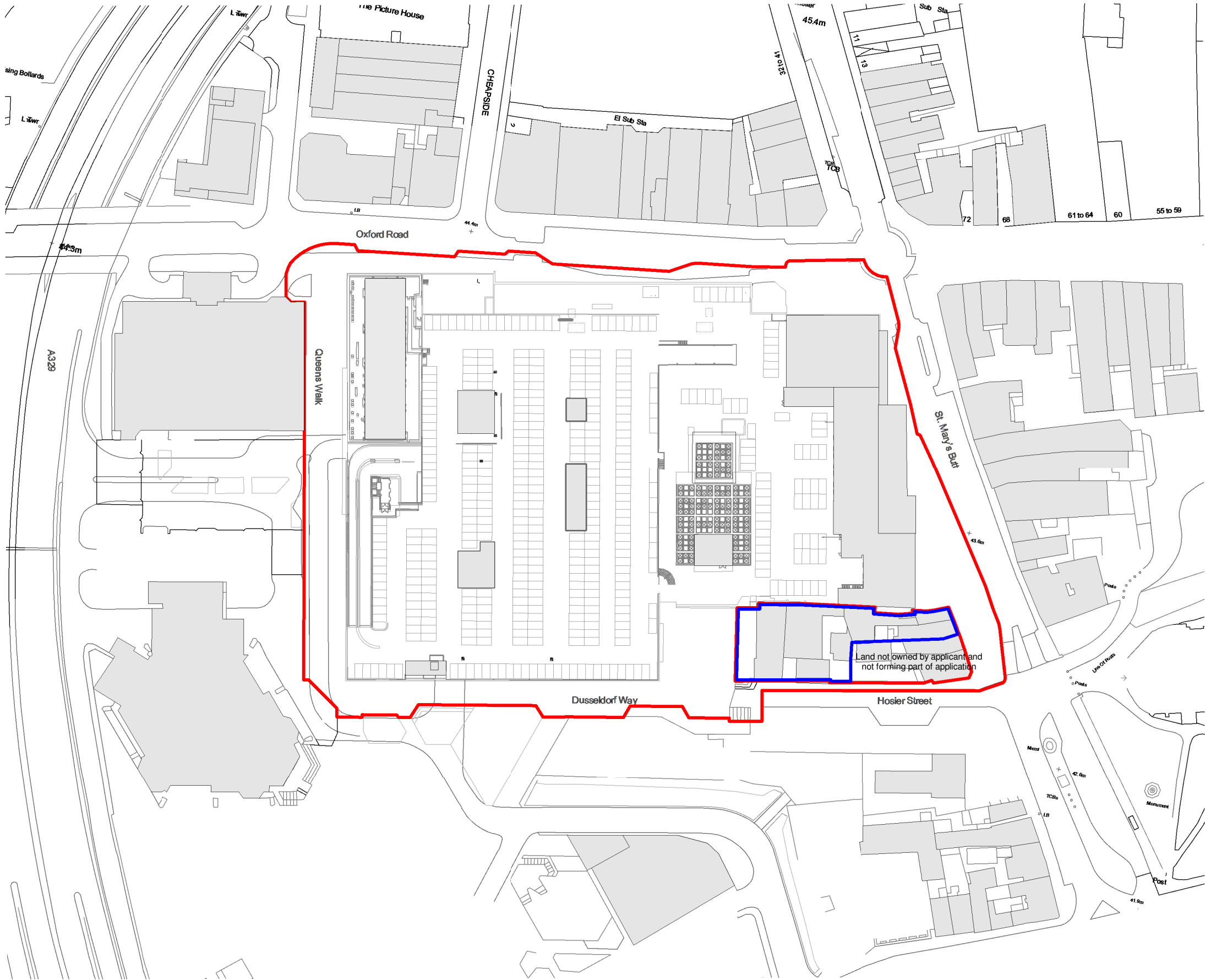
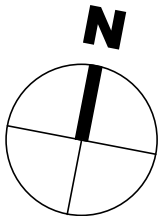
the accuracy of the information, including documentation. Further BJB was not authorised and did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the Services. BJB is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to BJB and including the doing of any independent investigation of the information provided to BJB save as otherwise provided in the terms of the contract between the client and BJB.

Any site drawings provided in this report is (are) not meant to be an accurate base plan, but is (are) used to present the general relative locations of features on, and surrounding, the site.

APPENDIX B

Existing Site Plan

- Application Boundary
- Land owned by Applicant, but does NOT form part of planning application



P-02	Update to Site Boundary along Hosier St	07.11.19	SI	RBJ
P-01	Updates to Boundaries	31.01.19	DS	RBJ
P-00	Issued for planning	30.11.18	CJ	RBJ
Rev	Description	Date	Dr by	App by

Project Stage
PLANNING

Client:
Inception (Reading) Sarl (c/o Moorgarth Group Ltd)

Project:
BROAD STREET MALL, READING

Drawing Title:
Site Location Plan

Drawn SI	Checked RBJ	Paper Size A3	Scale 1 : 1250@A3	Date 10/03/18
Project No. 16428		Drawing No. 0200		Revision P-02

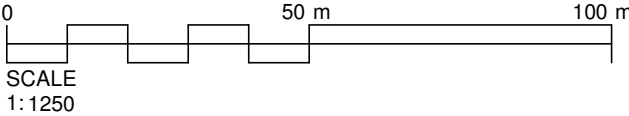
Drawing BIM Name:

CDE Area:	Suitability Code:	BIM Revision:
		-

CORSTORPHINE + WRIGHT
ARCHITECTS

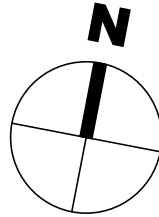
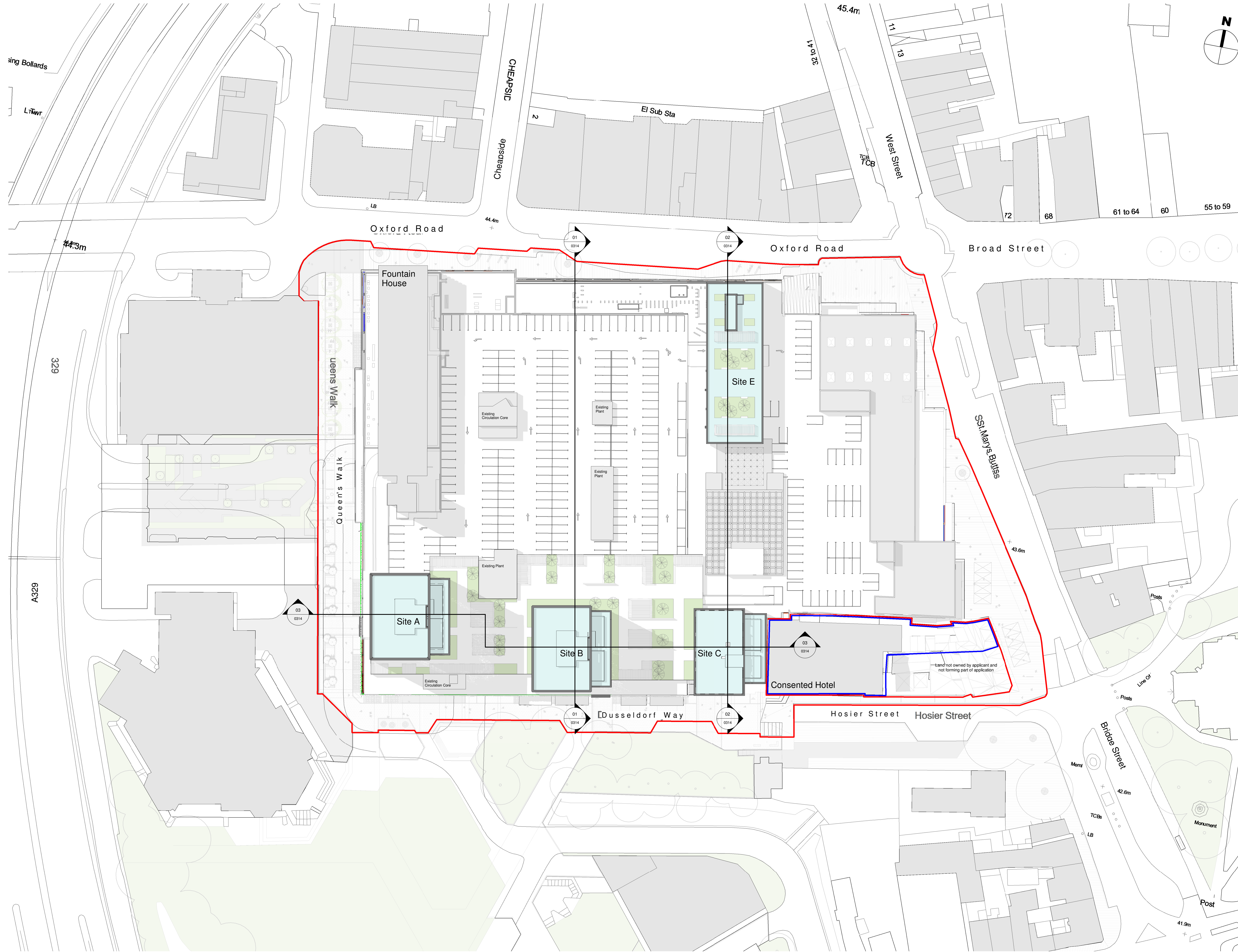
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APPENDIX C

Proposed Site Plan



The copyright of this drawing is vested with Corstorphine + Wright Ltd and must not be copied or reproduced without the consent of the company.

Figured dimensions only to be taken from this drawing. DO NOT SCALE.

All contractors must visit the site and be responsible for checking all setting out dimensions and notifying the architect of any discrepancies prior to any manufacture or construction work.

NOTES:

For landscaping details please refer to Macgregor Smith drawings; 1205-00'

Boundary Key

- Application Boundary
- Land owned by Applicant, but does NOT form part of planning application

P-03	Planning Resubmission	07.11.19	SI	RBJ
P-02	Updates to Boundaries	01.02.19	RV	RBJ
P-01	Updates to Landscape Layout	13.12.18	DS	RBJ
P-00	Issued for planning	30.11.18	CJ	RBJ
Rev	Description	Date	Dr by	App by

Project Stage

PLANNING

Client:
Inception (Reading) Sarl (c/o Moorgarth Group Ltd)

Project:
BROAD STREET MALL, READING

Location Plan:



Drawing Title:

Proposed Masterplan - Site Plan

Drawn	Checked	Paper Size	Scale	Date
SI	RBJ	A1	1 : 500 @ A1	09/14/18

Project No.	Drawing No.	Revision
16428	0300	P-03

Drawing BIM Name:

CDE Area:	Suitability Code:	BIM Revision:
		-

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APPENDIX D

Environment Agency Flood Map for Planning Report

Flood map for planning

Your reference
2206

Location (easting/northing)
471232/173355

Created
17 Jul 2018 10:07

Your selected location is in flood zone 1, an area with a low probability of flooding.

This means:

- you don't need to do a flood risk assessment if your development is smaller than 1 hectare and not affected by other sources of flooding
- you may need to do a flood risk assessment if your development is larger than 1 hectare or affected by other sources of flooding or in an area with critical drainage problems

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

The Open Government Licence sets out the terms and conditions for using government data.
<https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

Flood map for planning

Your reference
2206

Location (easting/northing)
471232/173355

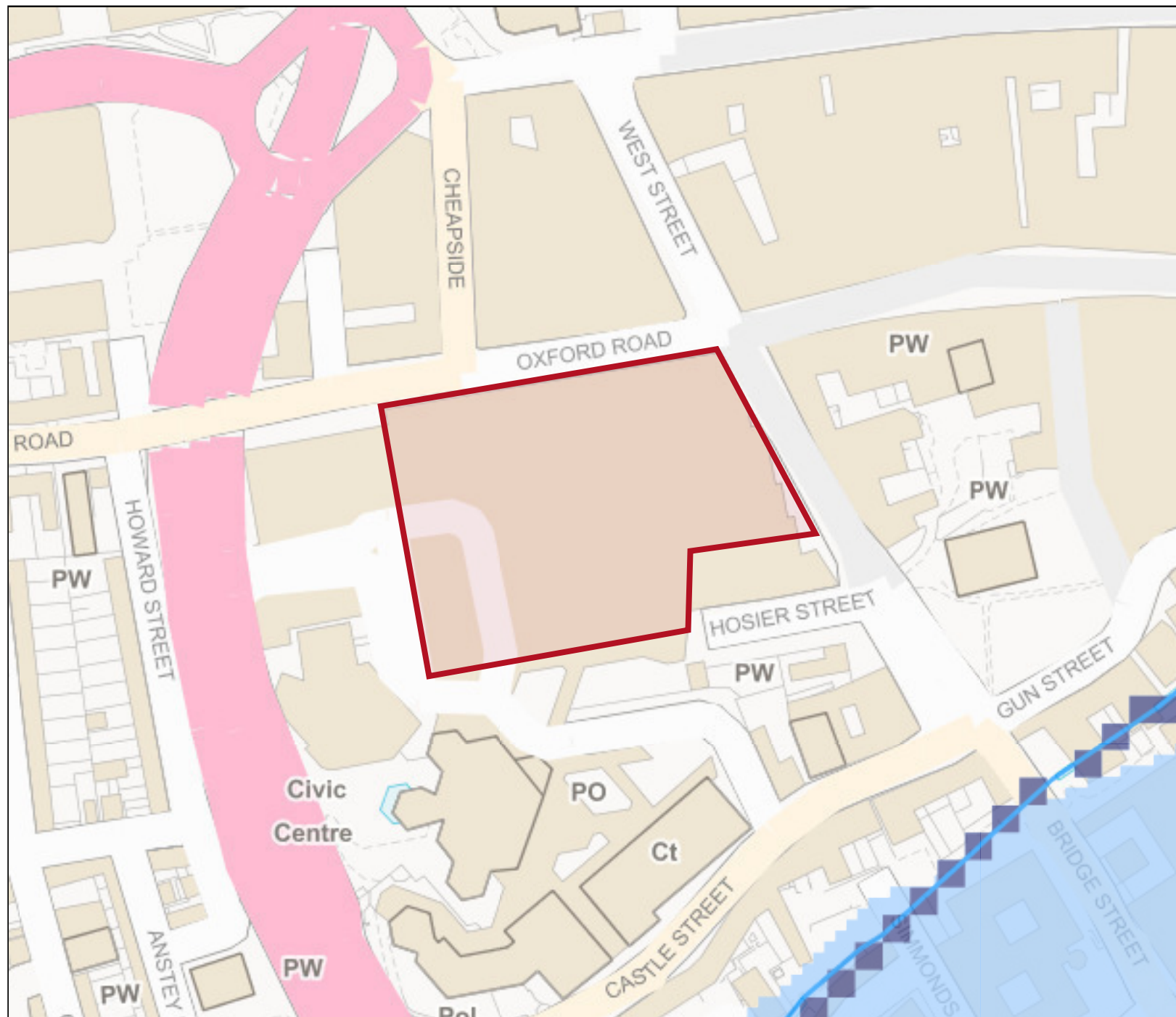
Scale
1:2500

Created
17 Jul 2018 10:07

-  Selected area
-  Flood zone 3
-  Flood zone 3: areas benefiting from flood defences
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Flood storage area

0 20 40 60m

Page 2 of 2



6.0 SUMMARY AND CONCLUSIONS

BJB Consulting has prepared this Flood Risk Assessment and Surface Water Strategy in accordance with the guidance set out in the National Planning Policy Framework and following consultation with the Environment Agency. The report can be summarised as follows:

- The site, which is of 1.86 Ha in area, is currently brownfield in nature and is 100% impermeable.
- The site is in an area designated as Flood Zone 1.
- The site lies within an area classified as 'low' risk of surface water flooding.
- The existing site is 100% impermeable in area and since no increases in roof area are proposed the development will not generate additional surface water discharge.
- The use of SuDS in this case is not feasible due to the unavailable means of implementing any of the usual SuDS solutions.
- As discussed in section 4.3 – Planning Policy Compliance – the proposed development comes under 'more vulnerable' category and therefore, in accordance with the National Planning Practice Guidance, Table 3, therefore the development is appropriate for the proposed use.