



164-166 CAVERSHAM ROAD

Reading

FLOOD RISK ASSESSMENT

Project No 25-310-60

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Control Sheet

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CONTENTS

1	INTRODUCTION	1
2	SITE DESCRIPTION AND PROPOSALS	2
3	FLOOD RISK	4
4	SUMMARY AND CONCLUSIONS	11

Tables

Table 3-1	EA Flood Zone Classification	5
Table 3-2	PPG Development Vulnerability Classification	10

Figures

Figure 2-1	Site Context	2
Figure 3-1	Recorded Flood Outlines	5
Figure 3-2	Flood Zones	6
Figure 3-3	RoFSW Extents	8
Figure 3-4	RoFSW Future 1 in 1,000 year depths	8

Appendices

Appendix A	Topographic Survey
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1 INTRODUCTION

1.1 Background

1.1.1 Calibro has been appointed by 3 Bridge Commercial Limited to undertake a Flood Risk Assessment (FRA) for a proposed Change of Use application for 164-166 Caversham Road.

1.1.2 Footnote 63 of the NPPF states that a site-specific FRA will be required for proposals:

- a) that are greater than 1 hectare in area within Flood Zone 1;
- b) that are located in Flood Zones 2 and 3;
- c) in an area within Flood Zone 1 which has critical drainage problems;
- d) in an area within Flood Zone 1 identified in a Strategic Flood Risk Assessment (SFRA) as being at flood risk now or in the future;
- e) in an area in Flood Zone 1 that may be subject to other sources of flooding, where its development would introduce a more vulnerable use.

1.1.3 The site is shown to fall within Flood Zones 2 and 3 and therefore an FRA is required.

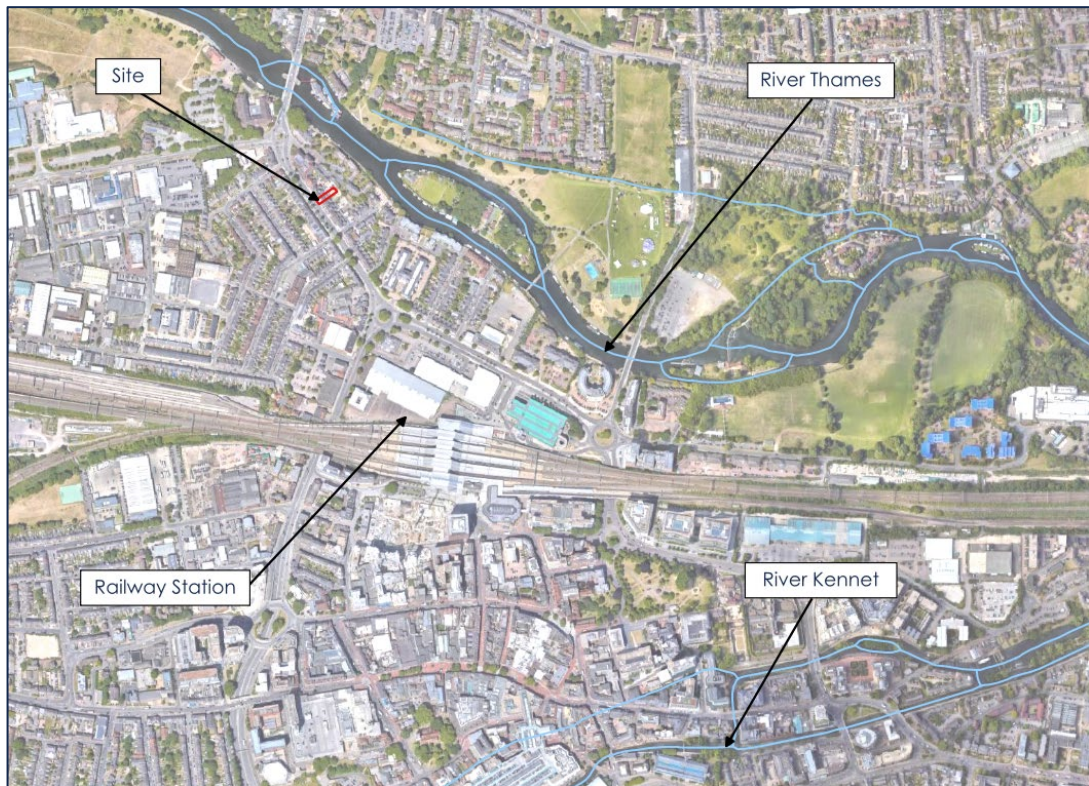
1.1.4 This assessment considers the risks of all types of flooding to the site and provides mitigation measures to minimise flood risk to the site.

2 SITE DESCRIPTION AND PROPOSALS

2.1 Site Description

- 2.1.1 The site comprises the existing buildings at 164-166 Caversham Road, Reading and their curtilage. It is located in the built-up area of Reading approximately 400m northwest of the railway station.
- 2.1.2 Topographic survey undertaken by MIC Surveys in August 2025 records the site as falling from the frontage (southwest) to the rear (northeast). The maximum and minimum external ground levels are 38.43mAOD and 37.56mAOD respectively. The internal floor levels at the front of building are 38.56-38.68mAOD. Levels at the rear of the property are lower, varying between 38.12 and 38.21mAOD. A copy of the topographic survey is contained in Appendix A.
- 2.1.3 The site comprises made ground. British Geology Survey data records superficial deposits of 'Langley Silt Member - Clay and silt' and Bedrock of 'Seaford Chalk Formation and Newhaven Chalk Formation – Chalk' underlying the site.
- 2.1.4 The site is approximately 100m southwest of the River Thames. The River Kennet is approximately 1.2km to the south.
- 2.1.5 The site location and watercourses are shown in Figure 2-1.

Figure 2-1 Site Context



2.2 Site Proposals and Policy Implications

- 2.2.1 The proposals are for a Change of Use from a guesthouse to a House of Multiple Occupation (HMO). 4 bedrooms are proposed on the ground floor at the front of the building. At the rear, where floor levels are lower, the ground floor proposals are for two kitchens and two communal lounges. Site proposals are included elsewhere in the planning submission.
- 2.2.2 As the application is for a change of use, the Sequential and Exception Tests are not relevant and the key policy requirement is to make sure the development will be safe over its lifetime.

3 FLOOD RISK

3.1 National Planning Policy Framework (NPPF)

3.1.1 In accordance with the NPPF, this FRA considers all sources of flooding including:

- a) Tidal Flooding – from the sea;
- b) Fluvial Flooding – from rivers and streams;
- c) Surface Water Flooding – from intense rainfall events;
- d) Groundwater flooding – from elevated groundwater levels or springs;
- e) Flooding from sewers – from existing sewer systems; and
- f) Artificial sources – from reservoirs, canals etc.

3.2 Historical Flooding

3.2.1 The Environment Agency Recorded Flood Outlines dataset includes records of the following flood events:

- August 1977
- Spring 1947
- July 2007
- December 2000
- Winter 2013/2014
- December /January 2003
- Winter 2000

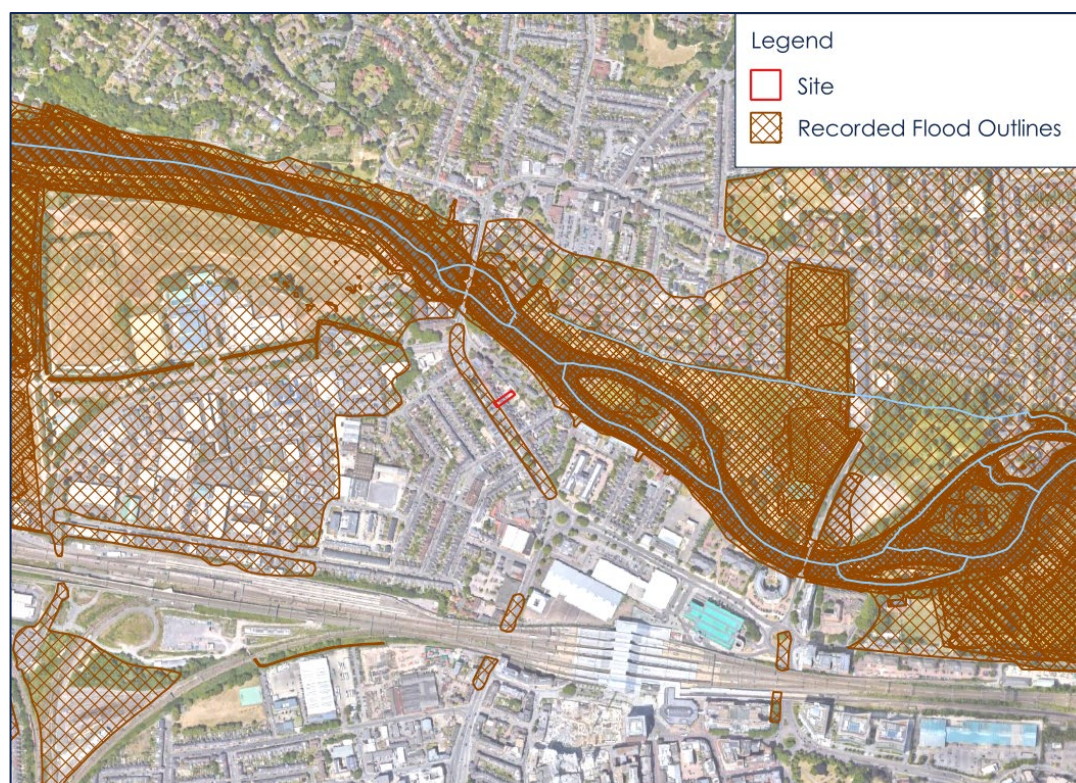
3.2.2 The attributed source of these events are fluvial flooding with the exception of 1947 (local drainage/surface water) and Winter 2013/2014 (other).

3.2.3 The Reading Borough Council Section 19 Flood Report¹ for the 2013/2014 flood classifies the main characteristics of the flooding as “*Natural flood - saturated ground conditions and extreme prolonged rainfall*”. Reading Borough Council Records 37 properties as having flooded during this event. Of the other events only the 1947 event has larger extents. This is the event which resulted in flooding of Caversham Road.

3.2.4 None of the events are recorded as having flooded the site. The recorded flood outlines are shown in Figure 3-1.

¹<https://democracy.reading.gov.uk/Data/Strategic%20Environment,%20Planning%20and%20Transport%20Committee/201407161830/Agenda/fAAyADgAMgA0ADQAFAB8AFQAcgB1AGUAfAB8ADAAfAA1.pdf>

Figure 3-1 Recorded Flood Outlines



3.3 Flood Zones

- 3.3.1 The Flood Zones are based on the assessed probability of the site flooding from rivers and the sea, ignoring the presence of flood defences. The flood zone classifications from the Flood Risk and Coastal Change Planning Practice Guidance (PPG) are presented in Table 3-1 below.

Table 3-1 EA Flood Zone Classification

Flood Zone	Risk	Fluvial Flooding Annual Chance	Tidal Flooding Annual Chance
1	Low	≥ 1 in 1,000	
2	Medium	Between 1 in 1,000 and 1 in 100	Between 1 in 1,000 and 1 in 200
3	High	≤ 1 in 100	≤ 1 in 200
3b	Functional Floodplain	Land where water has to flow or be stored in times of flood. This is defined in the relevant SFRA.	

- 3.3.2 The Flood Map for Planning classifies the majority of the site as being Flood Zone 3. A small amount of the frontage is classified as Flood Zone 2. The Flood Map for Planning Flood Zones are presented in Figure 3-2.

Figure 3-2 Flood Zones



3.4 Thames Mapledurham to Hurley Modelling Study

3.4.1 Data from the Thames Mapledurham to Hurley Modelling Study was provided by the Environment Agency. The following levels were extracted from the undefended scenario peak flood level grids:

- 1 in 100 year – 37.98mAOD
- 1 in 100 year +25% - 38.25mAOD
- 1 in 100 year +35% - 38.34mAOD
- 1 in 1,000 year – 38.41mAOD

3.4.2 Internal floor levels are above the 1 in 1,000 year flood level and therefore should be classified as Flood Zone 1 at **low risk** of flooding. The lower, rear floors are below the 1 in 1,000 year flood level and should be classified as Flood Zone 2 at **medium risk** of flooding.

3.4.3 National policy requires that development is safe from flooding over its lifetime by considering the design event flood. The site falls with the 'Thames and South Chilterns' catchment. The central estimate of climate change (commensurate with residential 'more vulnerable' development) to the 2080s (2070-2125) is 31%.

3.4.4 The most relevant model output is for the 1 in 100 +35% event, which will overestimate design flood levels slightly. Flooding at 38.34mAOD would result in flooding to the

ground floor at the rear of the property. The proposals for this part of the building are for communal areas and kitchens.

- 3.4.5 To mitigate this, flood resistance measures will be installed as part of the development. It is proposed to install flood-proof doors at the rear of the property and flood-proof airbricks where necessary. It may also be necessary to seal service entry points to prevent water ingress. These measures are not required to mitigate a present day 1 in 100 year event, and it is unlikely they would be required to mitigate a 1 in 100 year event until the latter part of this century. However, these measures would protect against a predicted 1 in 100 year event in 2125 and most likely a 1 in 1,000 year event in 2125.
- 3.4.6 These measures would effectively prevent internal flooding of the property and keep the users in the building safe from flooding. As a HMO, the building will meet the requirements for a place of safe refuge. The only scenario in which the building would flood internally would be if the flood-proof door was not closed or it leaked in some way during an extreme event. Even in this unlikely scenario peak flood depths during a 1 in 100 year flood in 2125 would not exceed 0.22m and would be slow-moving and therefore would not present a risk to site users.

3.5 Surface Water Flooding

- 3.5.1 The January 2025 Risk of Flooding from Surface Water (RoFSW) mapping indicates areas where water would tend to flow and accumulate during extreme rainfall events. The mapping is derived by simulating a 1 in 30, 1 in 100 and 1 in 1,000 year rainfall event to define areas at high, medium and low risk of surface water flooding respectively. The mapping is derived by simulation of these rainfall events over a digital terrain model (DTM). The dataset includes predictions for the present day and for the future by applying an uplift of 20% to account for the projected impacts of climate change.
- 3.5.2 Only the rear yard is affected by a present day 1 in 1,000 year rainfall event and is therefore the majority of the site is at **Very Low** risk of surface water flooding (see Figure 3-3).
- 3.5.3 During a future 1 in 100 year rainfall event, some minor flooding (<0.2m) is predicted over approximately 30m² of the rear yard but would not affect the building. Even in the most extreme future 1 in 1,000 year scenario, flooding to the rear of the property is less than 0.2m and there is no flooding at the front (see Figure 3-4).

Figure 3-3 RoFSW Extents

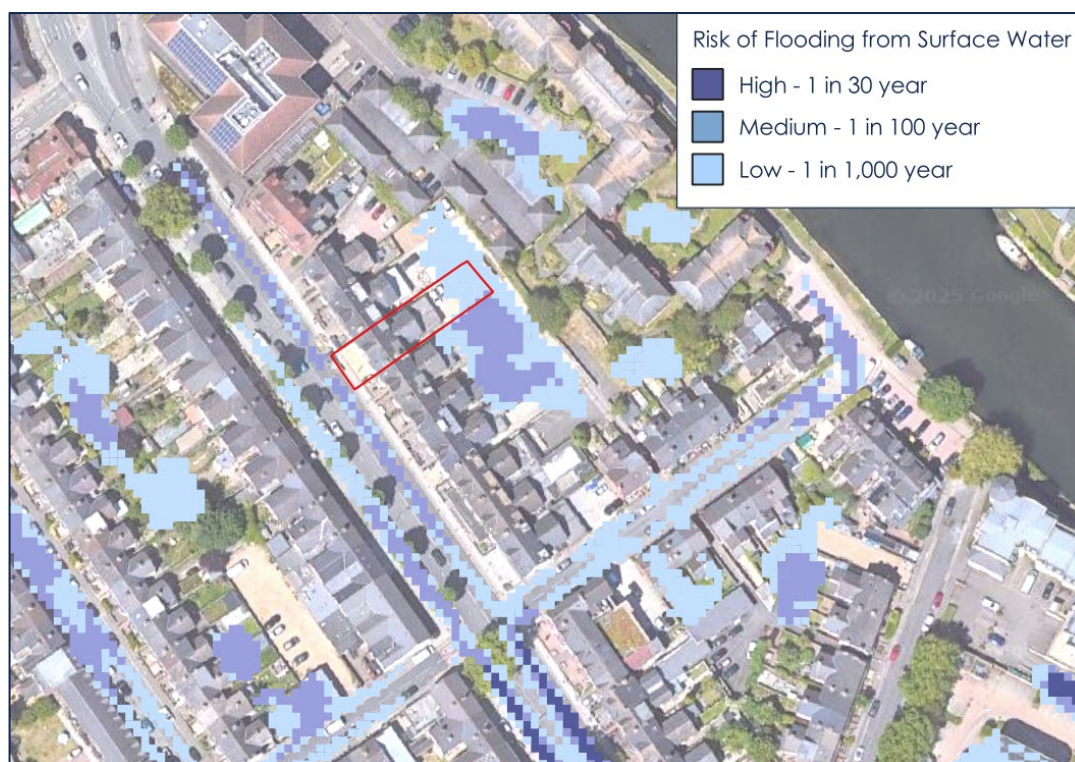
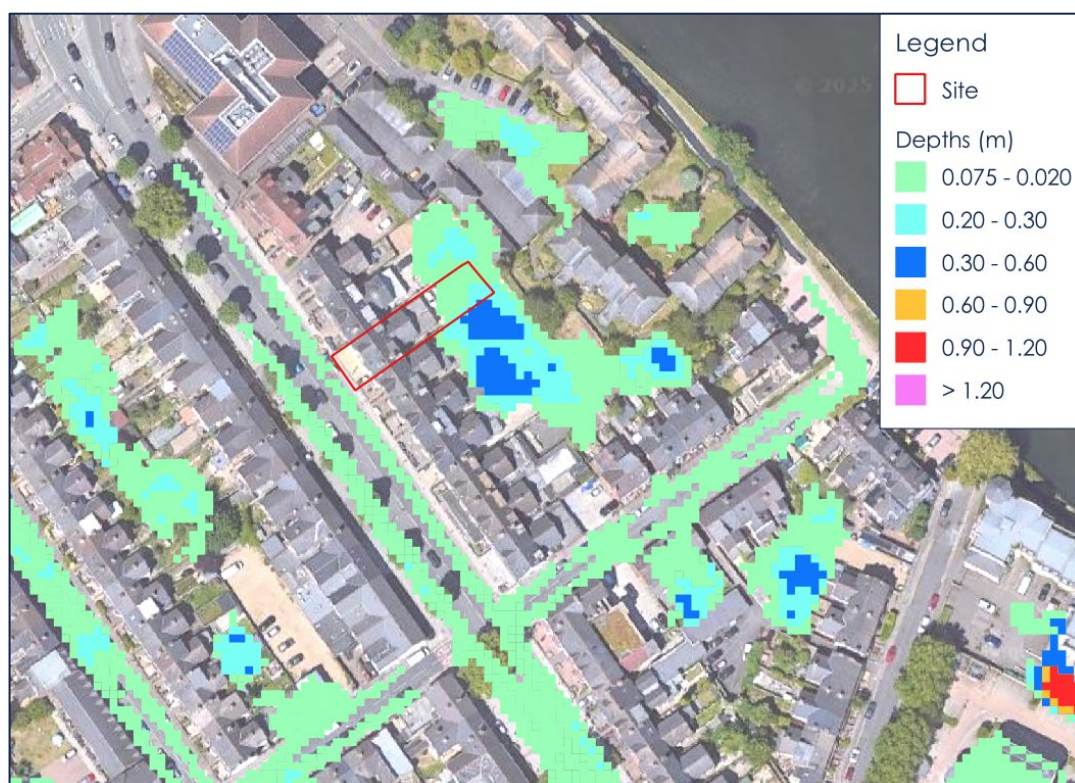


Figure 3-4 RoFSW Future 1 in 1,000 year depths



- 3.5.4 Comparing the RoFSW outputs with LiDAR data suggests a future 1 in 1,000 year surface water flood level of 37.75mAOD, which is below internal floor levels. Consequently, no specific mitigation is considered to be necessary.

3.6 Groundwater Flooding

- 3.6.1 Although the underlying geology is water bearing, the overlying clay and silt and made ground are likely to be essentially impermeable preventing the emergence of groundwater. In the event that groundwater did rise above the surface it is extremely unlikely that it would reach levels significantly above those in the River Thames given its proximity.
- 3.6.2 The risk of flooding from groundwater is assessed as being **low**.

3.7 Flooding from Sewers

- 3.7.1 Given the internal floor levels are raised above the surrounding land and the property is not shown to be at risk from surface water, the risk of sewer flooding is considered to be **Low**.

3.8 Flooding from Artificial Sources

- 3.8.1 Mapping data from the Environment Agency (Figure 5-3) shows the results of analysis of the predicted impacts if a reservoir failure occurred on either a 'wet day', with local rivers experiencing an extreme flood, or 'dry day', with local rivers at normal levels. The data shows an extensive area including the site as being at risk of reservoir flooding.
- 3.8.2 All reservoirs which are represented in the reservoir flooding dataset fall under the requirements set out in the Reservoirs Act 1975. This act makes it a legal requirement to appoint a Supervising Engineer to produce an annual report and for the operator to address any issues raised therein. Since the introduction of the Reservoir Act, there have been no catastrophic failures of reservoirs. Consequently, it is considered that the probability of failure is very low and that the risk of flooding from reservoirs is **Very Low**.

3.9 Flood Emergency Planning

- 3.9.1 During a future 1 in 100 year +35% flood event parts of the local road network will be flooded. Consequently it is recommended that a Flood Emergency Management Plan is put in place. Given the extensive area that could be flooded in an extreme event it is recommended that the default position should be to 'stay put' as the HMO will have the necessary services to qualify as a place as safe refuge.
- 3.9.2 The site falls within the 'River Thames at Reading and Caversham including the Portman Road and Richfield Avenue industrial estates, Caversham Road area of Reading and the Lower Caversham area' flood warning area. The occupants should

sign up to the flood warning and a plan put in place to set out appropriate actions and responsible persons.

- 3.9.3 In addition to Environment Agency Flood Warnings, the above actions could also be triggered by appropriate messages or instructions from the Emergency Services or Reading Borough Council.
- 3.9.4 Given the extreme weather circumstances required to generate a severe fluvial flood event, there would likely be additional warning of impending flooding problems through the Met Office, local news and social media channels significantly in advance of the event. It is recommended that site operators 'follow' the Met Office, Environment Agency and Reading Borough Council social media accounts to stay alert to the potential for flooding to occur.

3.1 Development Vulnerability

- 3.1.1 Table 2 of the PPG defines which types of development are acceptable in each Flood Zone and is reproduced in Table 3-2.

Table 3-2 PPG Development Vulnerability Classification

Flood Zone	Flood Risk Vulnerability				
	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
1	✓	✓	✓	✓	✓
2	✓	Exception Test Required	✓	✓	✓
3a	Exception Test Required	✗	Exception Test Required	✓	✓
3b	Exception Test Required	✗	✗	✗	✓

- 3.1.2 The proposed development is for More Vulnerable development which is appropriate in Flood Zone 2 (assessed with reference to model and survey data).

4 SUMMARY AND CONCLUSIONS

- 4.1.1 The site is classified as falling within Flood Zones 2 and 3. To better understand the risk to the site a review of undefended model output from the Thames Mapledurham and Hurley Modelling Study has been carried out with reference to surveyed site levels.
- 4.1.2 This work concludes that the majority of the building is above the 1 in 1,000 year flood level and should be classified as Flood Zone 1. Floor levels at the rear of the property are above the 1 in 100 year flood level but below the 1 in 1,000 year level and should be classified as Flood Zone 2.
- 4.1.3 The proposals are for a Change of Use and consequently the Sequential Test is not a planning consideration.
- 4.1.4 The 1 in 100 year +35% event outputs are a reasonable proxy for the design event, which according to policy is the 1 in 100 year +31% event. In this event, the modelled flood level is 38.34mAOD which is comfortably below finished floor levels at the front of the property (38.56-38.68mAOD). No mitigation is necessary at the front of the property to make the development safe from flooding.
- 4.1.5 The finished levels at the rear of the property are between 0.13 and 0.22 metres below the design flood event. The proposals for this part of the building are for communal areas and kitchens. To mitigate the risk of flooding, it is proposed to install flood proof doors, flood proof airbricks and seal all service entry point to prevent flooding during the design event. With these measures in place, the development will be safe from flooding for the next 100 years and be compliant with policy.
- 4.1.6 To further safeguard the occupants from flooding events, it is recommended that a proportional flood emergency management plan is produced.
- 4.1.7 The rear yard is shown to be at risk of shallow flooding of up to 0.2m in a future 1 in 1,000 year rainfall event. This should not pose a major hazard to occupants as this is caused by water ponding and consequently velocities will be low.
- 4.1.8 The site is not considered to be at significant risk from any other source of flooding.

APPENDICES

APPENDIX A

Topographic Survey



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