LANMOR Consulting

Civil Engineers & Transport Planners

25 Church Road, Teddington

Flood Risk Assessment – Rear Mews Dwellings

February 2023

231639/FRA/AG/RS/02

Rev B

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1 INTRODUCTION

1.1 Scope

1.1.1 Lanmor Consulting Ltd has been appointed to complete a Flood Risk Assessment for the proposed development at 25 Church Road, Teddington, TW11 8PF.

1.1.2 Figure 1.1 below shows the location of the site.

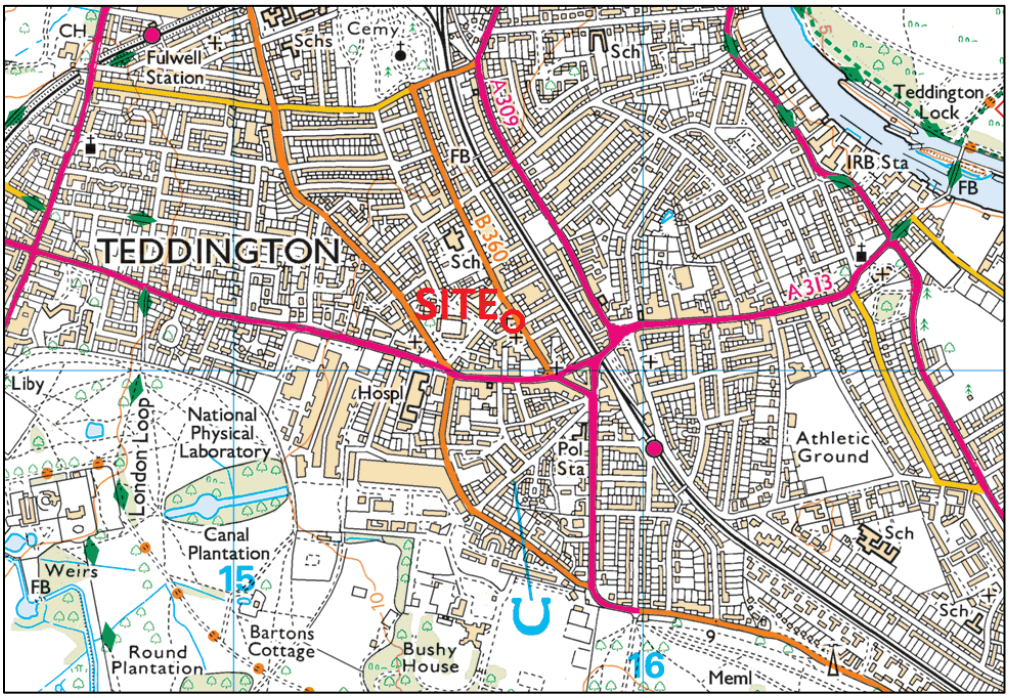

Figure 1.1 – Site Location Map

1.1.3 This report describes the proposed development, the implications of flooding and the impact the development will have on the flood plain in accordance with the governments guidance document; National Planning Policy Framework (NPPF) and its planning practise guidance (PPG).

1.1.4 This report will focus on the following:

- Location of the site;
- Development proposals;
- Existing information on extents and depths of flood events or on flood predictions;

- Sources of flooding;
- Flooding impact on proposed site;
- Safe access and egress from the site;
- An assessment of the likely run-off to be generated at the site.

1.1.5 This FRA report has been prepared in accordance with the requirements of the National Planning Policy Framework (NPPF) and will demonstrate that the proposed development will be safe and will not increase the risk of flooding in the surrounding areas.

2 BASELINE CONDITIONS AND PROPOSED DEVELOPMENT

2.1 Existing Site

2.1.1 The site is currently occupied by a 4-storey Victorian property. The property is located within a highly developed residential area of Teddington, in the Borough of Richmond upon Thames. The ground floor was formerly occupied by a tyre-fitting shop, with a 2-storey workshop to the rear of the property accessed via an undercroft, ground floor passageway. The first and second floors of the property are currently classified as office or ancillary usage, with the third floor primarily acting as a loft space and storage area. There is also a courtyard on the first floor which separates the upper floors of the property from the rear workshop. The front of the site is composed of hardstanding.

2.1.2 The site is located approximately 450m to the northwest of Teddington Train Station, which provides frequent services to central London.

2.2 Geology

2.2.1 The British Geological Survey (BGS) indicates that the site is underlain by a bedrock of London Clay Formation – Clay and silt. The sedimentary bedrock formed between 56 and 47.8 million years ago during the Palaeogene period. There are superficial deposits overlaying the bedrock of the Kempton Park Gravel Member - Sand and gravel. The sedimentary superficial deposit formed between 116 and 11.8 thousand years ago during the Quaternary period.

2.3 Proposed Development

2.3.1 The proposed development will involve the conversion of the existing rear workshop building from a commercial unit into 3 self-contained mews dwellings (accessible from the street via a side passage). Since there is a proposed change in the use of the property from commercial to residential, it is necessary to re-evaluate the flood risk for the development with the increase in vulnerability classification.

2.3.2 The mews building will consist of 2 x 2-storey/2-bedroom units and 1 x single-storey/1-bedroom unit.

2.3.3 Mews 1 and 2 will be entirely or semi located on the ground floor of the property. This also means 2 bedrooms of this development will be located on the ground floor. Mews 1 and 2 will each be allocated 2 private terraced areas.

3 SOURCES OF FLOODING

3.1.1 Detailed flood information was not available from the Environment Agency (EA). Since the site is located within Flood Zone 1, the EA were unable to provide any flood level information for the site.

3.1.2 The NPPF and PPG define the Flood Zones as follows:

- Zone 1: 'Low Probability' This zone comprises land assessed as having a less than a 1 in 1000 annual probability of river or sea flooding (<0.1%) in any year.

- Zone 2: 'Medium Probability' – This zone comprises land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% - 0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5%-0.1%) in any year.

- Zone 3a: 'High Probability' – This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.

- Zone 3b: 'The Functional Floodplain' – This zone comprises land where water has to flow or be stored in times of flood. SFRAs should identify this Flood Zone (land which would flood with an annual probability of 1 in 20 (5%) or greater in any year or is designed to flood in an extreme (0.1%) flood, or at another probability to be agreed between the LPA and the Environment Agency, including water conveyance routes).

3.1.3 The proposed site is shown to be within Flood Zone 1. This is defined as land assessed as having a less than 1 in 1000 annual probability of river flooding or tidal flooding in any year. Figure 3.1 below shows the location of the site with regards its proximity to/location within the flood zones, as determined by the Environment Agency's flood map for planning.

Figure 3.1 – EA Flood Zones Map

3.1.4 Light blue areas indicate the places at medium risk of flooding (Flood Zone 2) and dark blue areas indicate the places at a high risk of flooding (Flood Zone 3). Figure 3.1 shows that there are no medium or high flood risk areas in the immediate vicinity of the site and that the site therefore sits securely within Flood Zone 1.

3.2 Surface Water Flooding

3.2.1 The surface water flood mapping provided by the EA is the best available source of national information on surface water flooding. It is considered a starting point for understanding patterns and probability of surface water flooding. The EA accept that the mapping has some limitations and state that "*these maps cannot definitively show that an area of land or property is, or is not, at risk of flooding, and the maps are not suitable for use at an individual property level*."

3.2.2 Figure 3.2 below shows the site depth of surface water flooding, resulting from a 1 in 100 storm event. The site itself is indicated as being at low risk of surface water flooding.

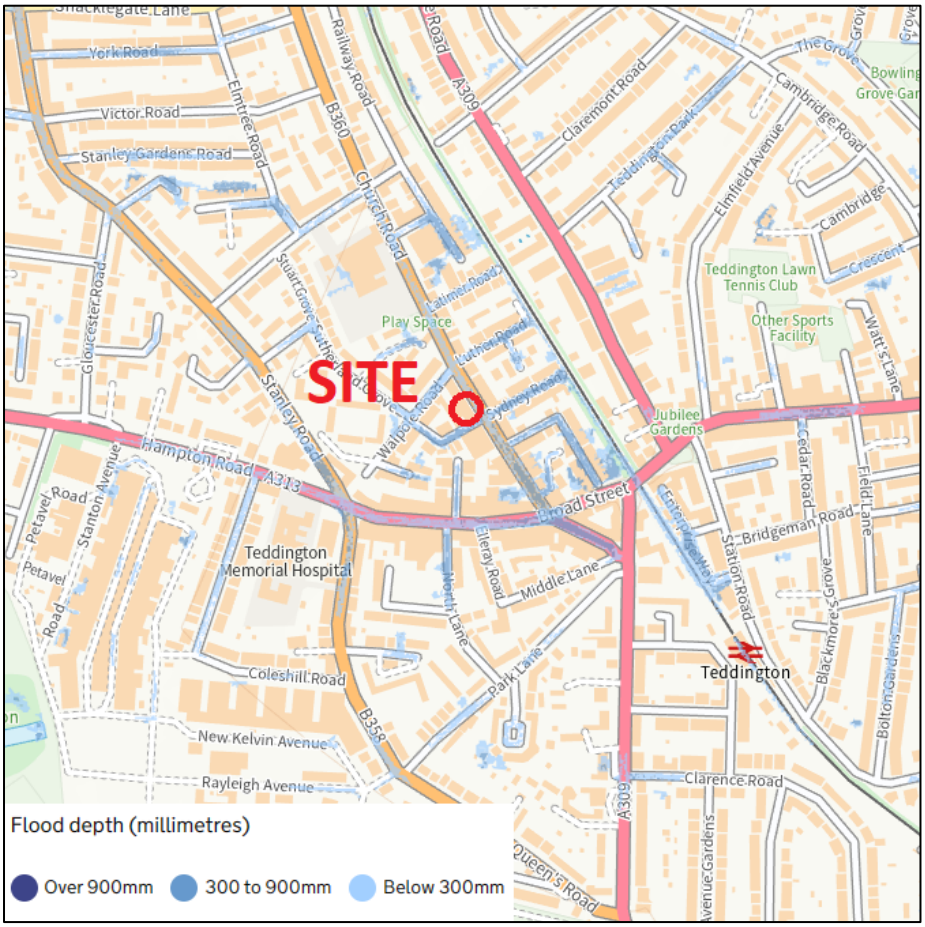

Figure 3.2 – EA Surface Water Flood Map

3.2.3 Figure 3.2 indicates that the site itself is not prone to surface water flooding from a 1 in 100 storm event, but the roadways immediately surrounding the property are at medium risk of surface water flooding and are prone to flooding depths of below 300mm.

3.3 Groundwater Flooding

3.3.1 Due to London Clay's low permeability, the borough is prone to groundwater flooding incidents. The SFRA prepared by Richmond Council states that basement and cellar substructures in the Richmond Hill area of the borough may be at risk of groundwater influenced flooding. The report specifically identifies Marble Hill, Strawberry Hill, and St Margaret's as "throughflow catchment areas".

3.3.2 Since the development proposals do not involve the construction of a basement or substructure, there will be no increase in the risk of groundwater flooding.

3.4 Reservoir Flooding

3.4.1 The Environment Agency's flood map for reservoir flooding indicates that the site is only at risk of reservoir flooding when the rivers are also in flood conditions, as shown in Figure 3.3 below.

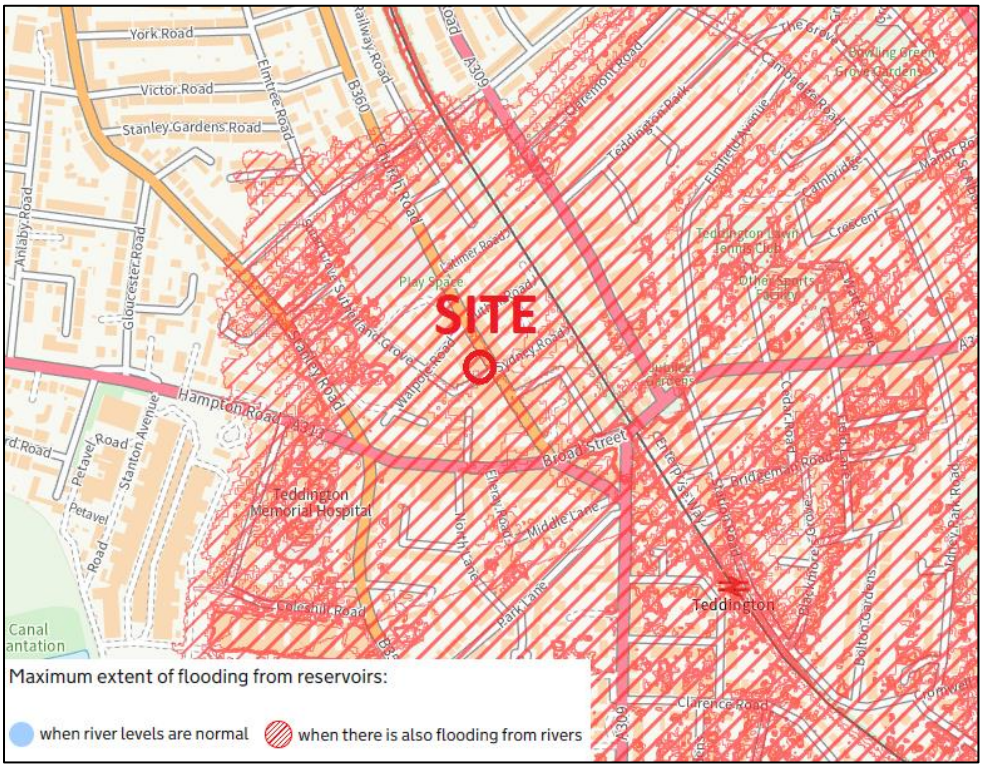

Figure 3.3 – EA Extent of Flooding from Reservoirs Map

3.4.2 However, ever since the passing of the Reservoir (Safety Provisions) Act 1930, reservoirs in England have had an excellent safety record. The last reservoir failure that led to loss of life in England was more than 100 years ago. Therefore, this is regarded as being a very low-risk occurrence.

4 MODELLED FLOOD LEVELS AND CLIMATE CHANGE

4.1 Modelled Flood Levels

4.1.1 The nearest source of fluvial flooding to the site is from the River Thames, which is located approximately 1km to the northeast of the site. Given the distance of the proposed development from the nearest source of flooding, the EA were not able to provide flood level data for this site.

4.1.2 They were able to confirm the site is located in Flood Zone 1, so has a probability of 0.1% or less risk of fluvial flooding.

4.2 Climate Change Allowances

4.2.1 The Environment Agency have published new climate change allowances. The allowance to be implemented is based on the management catchment area, flood zone and site vulnerability. The site is within Flood Zone 1, so no allowance needs to be considered. However, even if the higher climate change allowance was factored in the site would still be some distance from Flood Zones 2 and 3.

4.3 Impacts on Flood Waters

4.3.1 The EA flood maps show the site to be within Flood Zone 1, so the development will not have any impact on the free flow of flood waters for an event with a probability of 1.0% +CC or greater.

4.3.2 Although Church Road, Walpole Road and Walpole Crescent are all indicated as being at medium risk of surface water flooding in a 1% AEP +CC event, the site itself is indicated as being at low risk of surface water flooding. Furthermore, the existing footprint of the property will be retained, so there will be no increase in the risk of surface water flooding from the development.

4.4 Impacts on Storage Volumes

4.4.1 The proposed development will see the conversion of the existing rear workshop from a commercial building into 3 self-contained mews dwellings. The proposed development is located well above the flood level for an event with a probability of 1.0% +CC or greater. Given the site is above the highest estimated flood level it will not displace any flood storage volumes associated with an event of 1.0% AEP +CC.

4.5 Flood Impact on Development

4.5.1 According to the EA Flood Maps for Planning, the site is assessed as having a less than 0.1% probability of flooding and is a significant distance from the nearest fluvial flooding sources. Furthermore, the EA Surface Water Flood Map indicates that the site itself is at low risk of surface water flooding and so flooding from a 1 in 100-year storm event will not pose a risk to the property on site, even if the nearby roads may be affected.

4.5.2 Therefore, the proposed development will not be at risk of damage from flooding for an event with a probability of 1.0% AEP +CC and will not put residents at risk.

4.6 Safe Access

4.6.1 Since the proposed development will not be at risk of flooding with a probability of 1.0% +CC or greater a safe access route can be provided to and from the site at all times. The residual risk is considered minimal as the site is located within Flood Zone 1.

5 IMPACT OF FLOODING AND CLIMATE CHANGE

5.1 Development Vulnerability Classification

5.1.1 The proposed development will involve the conversion of the existing workshop from a commercial building into 3 mews units. Therefore, under Annex 3 of the NPPF and Table 2 of the Planning Practical Guidance, the proposed development would be classified as a building used for dwelling houses and therefore a "more vulnerable" proposed use.

5.2 Flood Probability

5.2.1 The main source of fluvial flooding for the site is from the River Thames. However, this is located approximately 1km to the northeast of the site. Since the EA have confirmed the site is situated in Flood Zone 1 and since there are no watercourses located within the immediate vicinity of the site, the probability of fluvial flooding to the site is considered to be less than 0.1%.

5.3 Climate Change

5.3.1 The Environment Agency have published new climate change allowances. The allowance to be implemented is based on the management catchment area, flood zone and site vulnerability. The site is within Flood Zone 1, so no allowance needs to be considered. However, even if the higher climate change allowance was factored in the site would still be some distance from Flood Zones 2 and 3.

5.4 Sequential Test

5.4.1 The principal of the sequential test is to assess locations and to prioritise development to areas at less risk of flooding. The NPPF suggests that Regional Planning Bodies and Local Planning Authorities should ensure their spatial strategies include a broad consideration of flood risk. Strategic Flood Risk Assessments (SFRA) refine information on the probability of flooding, taking other sources of flooding and the impacts of climate change into account. They provide the basis for applying the sequential test.

5.4.2 The proposed use is classified as “more vulnerable”. The application site is identified as being in Flood Zone 1 on the Environment Agency’s flood maps for planning. The proposal therefore meets the requirements of the sequential test to allocate developments to low flood risk areas. See Table 2 from the NPPF below.

Table 2: Flood risk vulnerability and flood zone ‘incompatibility’

Flood Zones	**Flood Risk Vulnerability Classification**				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✔	✔	✔	✔	✔
Zone 2	✔	Exception Test required	✔	✔	✔
Zone 3a †	Exception Test required †	X	Exception Test required	✔	✔
Zone 3b *	Exception Test required *	X	X	X	✔ *

Key:

✔ Exception test is not required

X Development should not be permitted

Table 5.1 – Flood risk vulnerability and flood zone ‘incompatibility’

6 SUMMARY AND CONCLUSION

6.1.1 This Flood Risk Assessment has been prepared for the proposed development at 25 Church Road, Teddington, TW11 8PF, involving the conversion of the existing rear workshop building from a commercial unit into 3 self-contained residential mews units. This report has considered all aspects of flooding in the local area and evaluated the flooding risk for the proposed development and any future residents of the property.

6.1.2 The development will retain the footprint of the existing property (and its external hardstanding areas). Thus, there will be no increase in the risk of surface water flooding as a result of this development.

6.1.3 The EA has confirmed that the site is located in Flood Zone 1, with a probability of flooding less than 0.1% in any year, or 1 in 1000 years, therefore the site is considered to be at low risk of fluvial flooding.

6.1.4 Safe access to and from the site can be provided during times of flooding, as the site is located in a low flood risk probability area, Flood Zone 1.

6.1.5 This statement clearly demonstrates that the development site is at low risk of fluvial flooding and surface water flooding, although the nearby roads (Church Road, Walpole Road, and Walpole Crescent) are indicated as being at medium risk of surface water flooding. However, the risk of surface water flooding will also be mitigated against through the retention of the existing footprint of the property and its associated hardstandings. For the reasons outlined within this report, we see no reason to refuse planning permission on the grounds of flood risk.