LANMOR Consulting

Civil Engineers & Transport Planners

23a Frays Avenue

Flood Risk Assessment

January 2023

211552/FRA/AG/KBL/01

LANMOR Consulting

Civil Engineers & Transport Planners

LANMOR Consulting Ltd,
Thorogood House, 34 Tolworth Close
Surbiton, Surrey, KT6 7EW

Tel: 0208 339 7899 Fax: 0208 339 7898
E-mail: info@lanmor.co.uk
Internet: www.lanmor.co.uk

DOCUMENT STATUS

Project: 23a Frays Avenue

Title: Flood Risk Assessment

Client:

Reference: 211552/FRA/AG/KBL/01

Produced by:	AG	Date:	16/1/23
Checked by:	RS	Date:	16/1/23
Approved by:	KBL	Date:	16/1/23

Issue/revision	Date	Status	Issued by
First	16/01/2023	For Approval	KBL

CONTENTS

FIGURES

APPENDICES

1 INTRODUCTION

1.1 Scope

1.1.1 Lanmor Consulting Ltd has been appointed to prepare a Flood Risk Assessment (FRA) for the proposed development at 23a Frays Avenue, West Drayton, UB7 7AF.

Figure 1.1 – Site Location

1.1.2 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).

1.1.3 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.

1.1.4 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 PARAMETERS

2.1 Existing Site

2.1.1 The application site is located at the convergence of the Frays Rivers, it is located off Frays Avenue in West Drayton. The Frays River runs along the eastern and western boundaries of the application site.

2.1.2 The site is currently occupied by a single 4 bed residential dwelling. The existing site layout showing the dwelling is included in Appendix A as drawing E-08.

2.2 Existing Geology

2.2.1 The British Geological Survey shows that the site sits on a bedrock of London Clay formation consisting of Clay, Silt, and Sand. This sedimentary bedrock was formed approximately 48 to 56 million years ago during the Palaeogene period.

2.2.2 Superficial deposits of Alluvium - Clay, silt, sand and gravel. Sedimentary superficial deposit formed between 11.8 thousand years ago and the present during the Quaternary period have been recorded overlying the bedrock formation.

2.3 Proposed Development

2.3.1 The proposed development seeks approval for the extension of the existing building above the current ground floor to create an additional floor or residential accommodation.

2.3.2 The proposed site plan for the development is included in Appendix B as drawing P-08 and shows the ground floor layout. Drawing P-02 also included in Appendix C shows the new first floor accommodation. The current dwelling has 4 bedrooms and living area at ground floor, the proposals will remove the bedrooms at ground floor and extend the current living area over the entire ground floor. This will include a lounge, dining room and kitchen. The bedrooms will be moved to the new first floor, in total there will be 3 bedrooms at first floor, a reduction of one from that currently provided in the existing property.

3 SOURCES OF FLOODING

3.1 Fluvial/Tidal Flooding

3.1.1 Detailed flood information was requested from the Environmental agency (EA) for the site. The National Planning Policy Framework (NPPF) defines the flood zones as the following:

- Zone 1: 'Low Probability': This comprises land assessed as having a less than 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 sea flooding (≥0.5%) in any year.

- Zone 3b: 'The Functional Floodplain' – This zone comprises of land where water must flow or be stored in times of flood. The 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 EA) including water conveyance routes.

3.1.2 The most significant source of fluvial flooding to the development comes from the Frays River directly east, west and south of the site. The EA flood mapping indicates the application site lies partly within Flood Zones 2 and 3. Figure 3.1 below shows the location of the site and its relationship to the flood zones in the area.

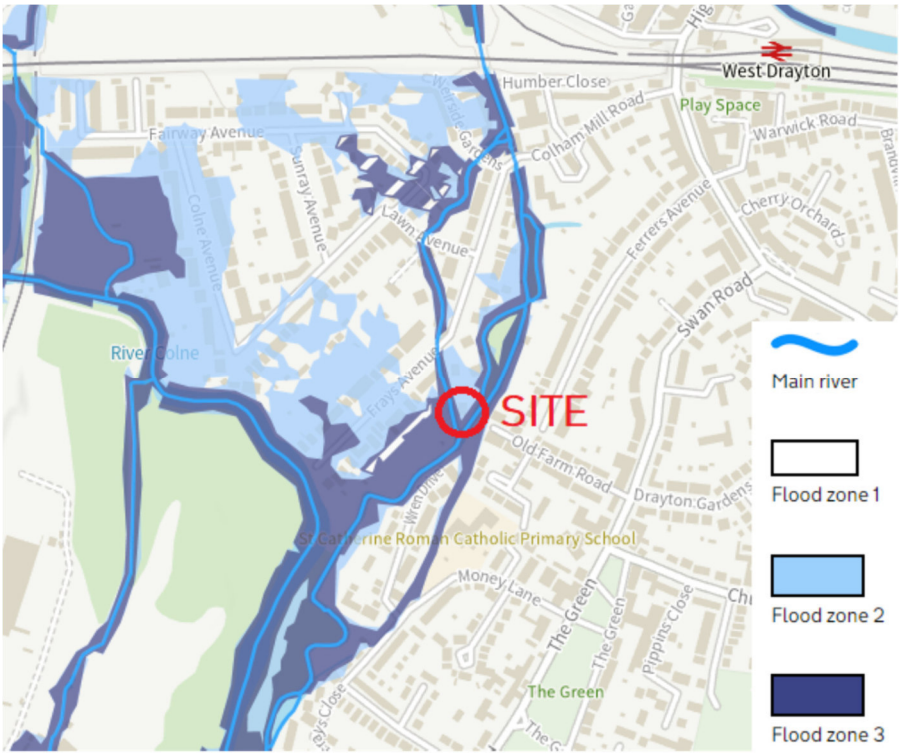

Figure 3.1 – EA Flood Zones Map

3.1.3 The dark blue shaded areas indicate the extent of flood zone 3 and the light blue flood zone 2, the unshaded area indicate flood zone 1. The information provided by the EA shows the site is located within Flood Zones 2 and 3.

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 a starting point for understanding patterns and probability of surface water flooding. The EA accept that the mapping has 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 The application site is indicated as having a very low risk of surface water flooding, as shown in Figure 3.2 below. The depth of flooding for an event with a 1 in 100-year probability is indicated in figure 3.2 below. The application site and Frays Avenue to the rear is not indicated to be at risk from surface water flooding.

Figure 3.2 – EA Surface Water Map

3.3 Groundwater Flooding

3.3.1 Mapping provided by west London SFRA shows the site is in an area with a greater that 75% risk of ground water flooding. It is not in Groundwater Source Protection Zone.

3.4 Flooding from Reservoirs

3.4.1 The mapping from the gov.uk website for reservoir flooding indicates the site could be at risk from and event, figure 3.3 below shows the extent of flooding from a failure of the reservoir.

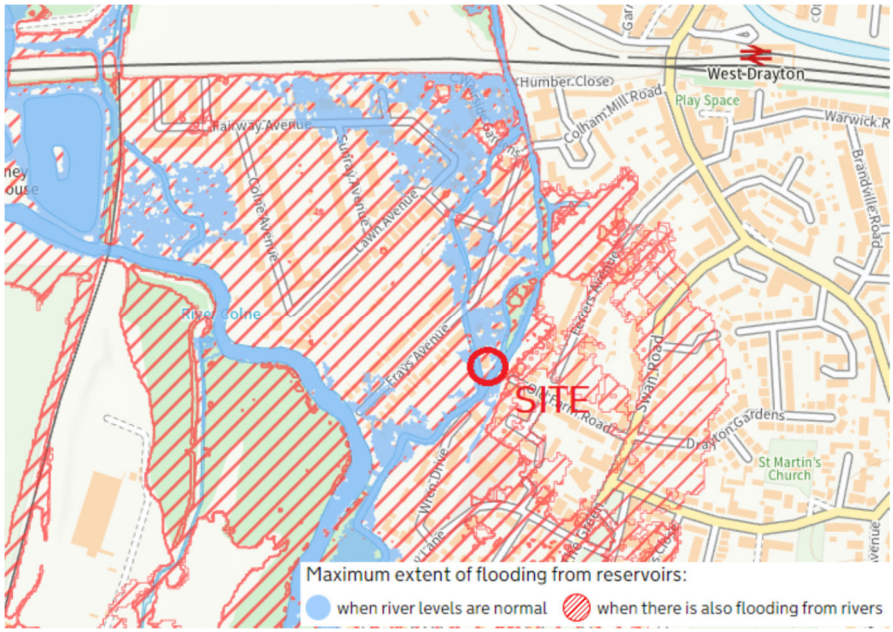

Figure 3.3 – EA Extent of Flooding from Reservoirs Map

3.5 Flood Defences

3.5.1 The EA has confirmed that there are no flood defences in the area of the application site.

4 MODELLED FLOOD EVENTS AND CLIMATE CHANGE

4.1 Flood Probability

4.1.1 The principal source of flooding to the site is from the Frays River on the eastern and western boundaries of the application site. Detailed site-specific flood information has been provided by the EA, this consists of Product 5 and 6 data. The flood data provided shows the estimated flood depths and hazards associated with flood events for different return periods.

4.1.2 The Flood Data provided by the EA for the site shows it not to be a risk from a flood event with a probability of 1.0% or greater in the defended and undefended scenario.

4.1.3 Figure 4.1 below shows an extract from the EA defended flood model, the site is shown as being within flood zone 2 and 3 with the centre of the site being in flood zone 1. Flood zone 3 is confined to east and west of the site along the river corridor.

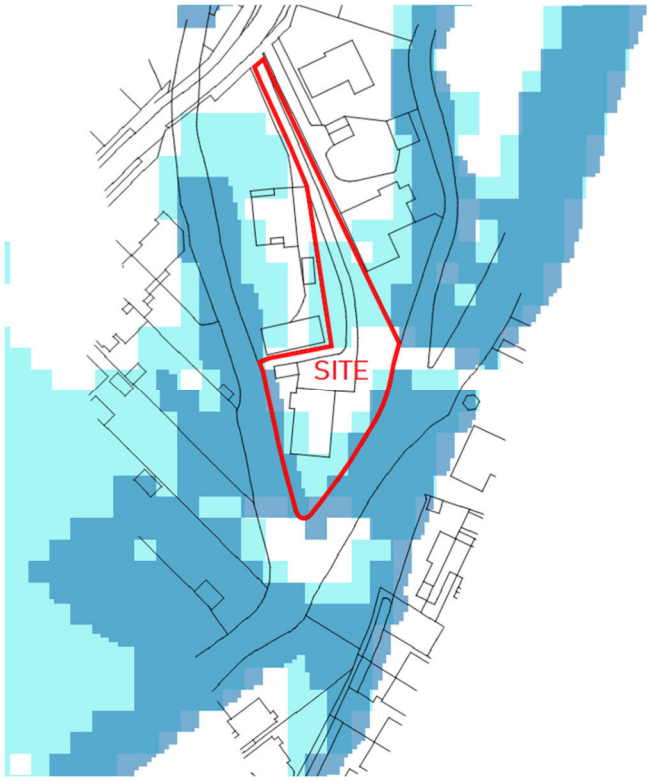

Figure 4.1 – EA Undefended Flood Zone Model Mapping

4.1.4 Figure 4.1 above shows the extent of flood zone 3 in dark blue and flood zone 2 in light blue the unshaded area indicates flood zone 1 for the defended scenario.

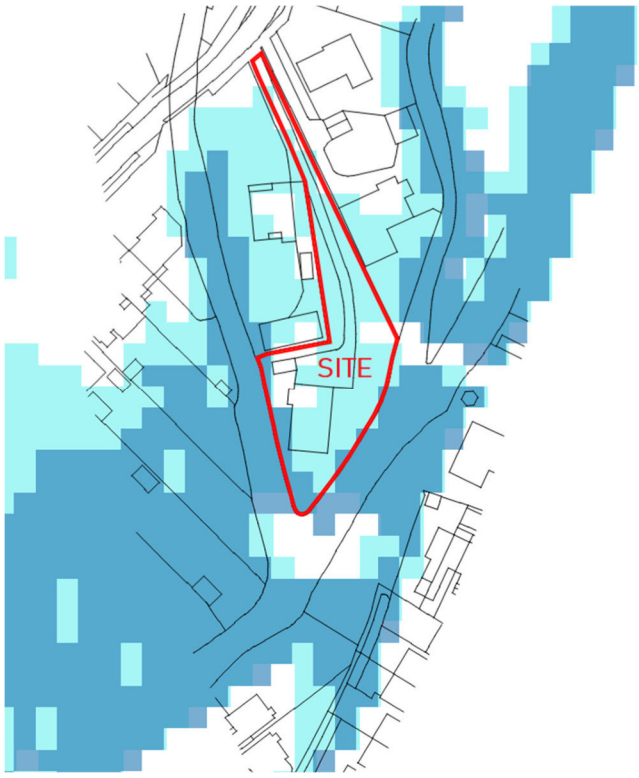

Figure 4.2 – EA Defended Flood Zone Model Mapping

4.1.5 Figure 4.2 shows the undefended flood extents, which shows the extent of flood extent 3 is still restricted to the river channel but the extent of flood zone 2 covers more of the site than in the undefended scenario.

4.1.6 The EA flood model clearly shows the existing building is located outside of the flood zone 3 extent for both the defended and undefended scenarios. It is therefore considered the property has a fluvial risk of flooding with a probability of between 0.1% to 1.0%.

4.2 Climate Change

4.2.1 Past, present, and future emissions of greenhouse gases are expected to cause significant global climate change during this century – the nature of climate change at regional level will vary. The NPPF recommends that FRA's should consider the future flood levels and the impact climate change may have on rising sea levels, increased rainfall etc.

4.2.2 The climate change allowances are based on the River Management Catchment Area, the flood vulnerability and the life expectancy of the development. Under Flood Risk Assessments: Climate Change Allowances published on the gov.uk website it sets out the level of allowance to be applied to peak river flows depending on the flood zone and use.

4.2.3 The application site is a residential development so under table 2 of the PPG for NPPF it is categorised as a "more vulnerable" use, it is located in flood zone 3 / 2 so under "Flood Risk Assessment: Climate Change Allowances" for more vulnerable uses in flood zone 3 the "central Allowance" should be applied.

4.2.4 The application site is located in the Colne Management Catchment area and as it is residential use with a 100-year life expectancy. From the DEFRA website for climate changes for the central allowance a 21% increase in the peak river flows should be allowed.

4.2.5 The EA have not modelled the 21% climate change impact on this stretch of the river, but they modelled a 20% allowance. Figure 4.3 below shows the extent of flooding from an event with a probability of 1.0% plus a 20% allowance for climate change.

4.2.6 Figure 4.3 below shows the extent of flooding that might occur if climate change allowance are factored into the flood level / extent for a 1.0% probability event (Zone 3). The majority of existing property is indicted to be free of flooding from an event with a 1.0% probability plus a 20% allowance for climate change. The flooding will only encroach into the building in the southwest corner.

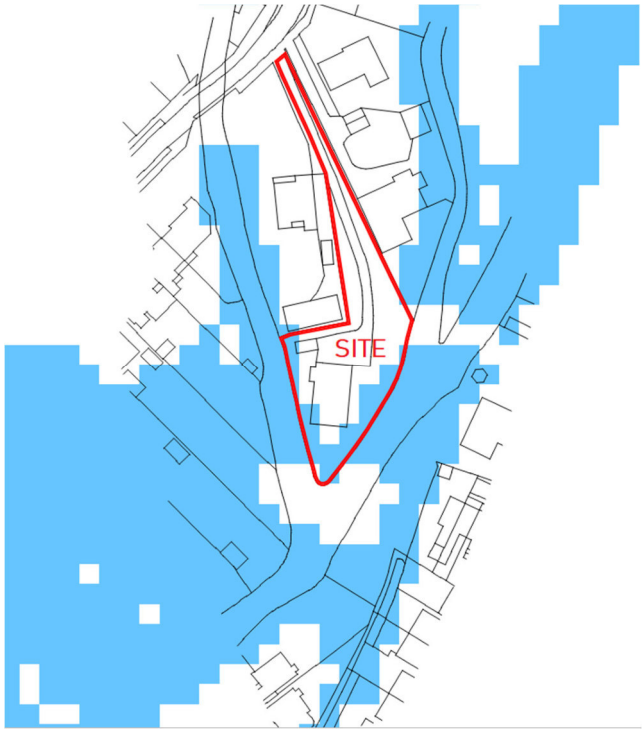

Figure 4.3 – EA Flood Model 1.0% Event With 20% Allowance

5 IMPACT OF FLOODING

5.1 Impact on Flood Waters

5.1.1 The proposed development seeks permission to extend the existing property upwards to provide an additional floor of accommodation. The proposal will not alter the external footprint of the existing building also the building is outside of the flood extent for an event with a probability of 1.0%. When climate change allowances are factored in the majority of the property will be free from flooding with a probability of 1.0% +CC.

5.1.2 Only a small section in the southwest corner of the building is shown as at potential risk of flooding but this is an existing building and therefore there will be no obstruction the free flow of flood waters for an event with a probability of 1.0% +CC allowance when compared to the existing situation.

5.2 Impact on Storage Volumes

5.2.1 As stated above there will be no increase in the built form on site so the proposed extension at roof level will not result in the loss of any flood storge for an event with a probability of 1.0% + CC allowance.

5.3 Flood Impact on Development

5.3.1 The above assessment has considered the impact of flooding on the property and demonstrated that the property will not be affected by flood events with a probability of 1.0% + CC allowance. When climate change allowances are factored in flooding around the southwest corner of the property however the proposals will provide a benefit int that it will remove sleeping accommodation from the ground floor. Moving the sleeping accommodation to first floor will provide a safe haven for residents to wait for flood waters to recede should there be a sudden inundation. It will also ensure residents are not put a risk should there be flooding incident at night when they are sleeping.

5.3.2 The proposals will also allow flood mitigation measures to be incorporated in the refurbishment of the ground floor to limited potential damage to the building from flood waters. The proposed development will provide a safer environment for residents as there will no sleeping accommodation on the ground floor. All bedrooms will be located at first floor at least 2m above the highest estimated flood level.

5.3.3 The ground floor will incorporate material that are not water sensitive and the construction methods used will be designed to restrict the ingress of water into the building as recommended in communities and local government Flood Resilient Construction document for improving the flood performance of new buildings.

5.4 Safe Access

5.4.1 The site is located in flood zone 2. The modelling undertaken by the EA includes flood hazard mapping associated with residents leaving the site for a 1.0%+CC event. An extract of the hazard mapping is reproduced below as figures 5.1.

Figure 5.1 – EA Fluvial Flood Hazard Mapping

5.4.2 The areas shaded in yellow indicates the areas “at danger for some”, the orange area “danger for most” and the red area “danger for all”. The grey area shows the low hazard risk area and the unshaded areas “No Risk”.

5.4.3 As shown in figure 5.1 above the property and the access road to the north are not in any shaded areas so a safe dry access can be provided from the site for all flood events up to and including the 1 in 100 (1.0%)+ CC allowance.

6 DRAINAGE

6.1 Existing Drainage

6.1.1 The site is currently occupied by an existing property, hard standing and impermeable grassed areas. The existing building including the roof is drained to an onsite drainage network.

6.2 Proposed Drainage

6.2.1 Although the application seeks to make alterations to the existing hardstanding at the site, there will in fact be a net reduction in the hardstanding surface area. There will be no change to how runoff is collected from the building etc., therefore it is proposed to retain and reuse the existing drainage system.

6.2.2 Given there will be no changes to the site the existing drainage system is considered adequate and there will be no increased risk of flooding in the area compared to the existing scenario.

7 SEQUENTIAL TEST

7.1.1 The proposed development involves the extension of the existing property to create a first floor. The property is a single storey 4 bed dwelling which will be replaced with a two storey 3 bed dwelling. The site already has consent for a single dwelling and the proposals are to retain a single dwelling on the site.

7.1.2 Therefore, the sequential test is not appropriate as the proposals are for the retention of the current use on the application site. It is not proposed to increase the number of dwellings on site and there will be no increase in the number of residents in the property as the proposals will reduce the number of bedrooms by one.

7.1.3 Given the above it is considered the sequential test has been meet.

8 SUMMARY AND CONCLUSION

8.1.1 This Flood Risk Assessment has been prepared for the proposed development at 23a Frays Avenue to construct a first floor on the existing building to allow the sleeping accommodation to be relocated to first floor.

8.1.2 The application site is indicated to be within Flood Zones 1, 2 and 3 on the EA flood modelling. The existing building is to be retained and there will be no external extension, the flood modelling has demonstrated that the existing building is located in zone 1 and will not be subject to flooding from an event with a probability of 1.0% or greater.

8.1.3 Only when climate change allowances are factored will flooding affect the existing property and will be restricted to the very southwest corner. Given the property will be unaltered therefore the proposals will not restrict the flow of flood waters or result in the loss of flood storage volumes.

8.1.4 The existing building will not be affected by flooding except for a small area in the southwest corner, however the proposals will provide a benefit by removing all sleeping accommodation at ground floor, providing a safer environment for residents should flooding occur and the ground floor will be refurbished to include flood resilience measures.

8.1.5 For the reasons outlined within this report, we see no reason to refuse planning permission on the grounds of flood risk as it has been demonstrated that the proposals will not impact on the current flood regime or increase the risk of flooding in the area, it will also provide a safer dwelling against flooding for its residents.