NON-TECHNICAL SUMMARY

Project name	Homebase, 84 Manor Road, North Sheen, Richmond		
Design note title	Flood Risk Non-Technical Summary		
Document reference	25608-HYD-XX-XX-TN-FR-0001		
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1. INTRODUCTION

This non-technical summary has been provided by Hydrock Consultants Ltd on behalf of their client Avanton Richmond Development Ltd in support of a planning submission for a proposed development of 84 Manor Road, Richmond.

The purpose of this note is to provide a summary of flood risk and current work being undertaken by Hydrock for the Greater London Authority (GLA) and will include:

- A brief background history of the flood risk at the site including a summary of the key findings from the original Flood Risk Assessment (FRA) undertaken by Fairhurst (July 2020, Ref: 126782-RP-C-0001);
- The key findings from the updated FRA being undertaken by Hydrock (25608-HYD-XX-XX-RP-FR-0002) and any major changes between the two reports;
- An introduction and overview of the hydraulic modelling being undertaken by Hydrock including the key findings from the initial outputs;
- Any mitigation and resilience measures being proposed by Hydrock.

2. SITE INFORMATION

2.1 Location and Setting

The site is located at the former Homebase site in Richmond. It is triangular in shape and bound by the railway line to the south and north west boundaries and by Manor Road to the East. The site is surrounded by a combination of residential and commercial developments.

Table 1 provides a summary of site referencing information with the site location and approximate red line plan shown in Figure 1.

Table 1. Site Referencing Information

Site Referencing Information	
Nearest Site Address	84 Manor Road, Richmond, London, TW9 1YB
OS Grid Reference	TQ 18914 75421
Easting, Northing	518914,175421

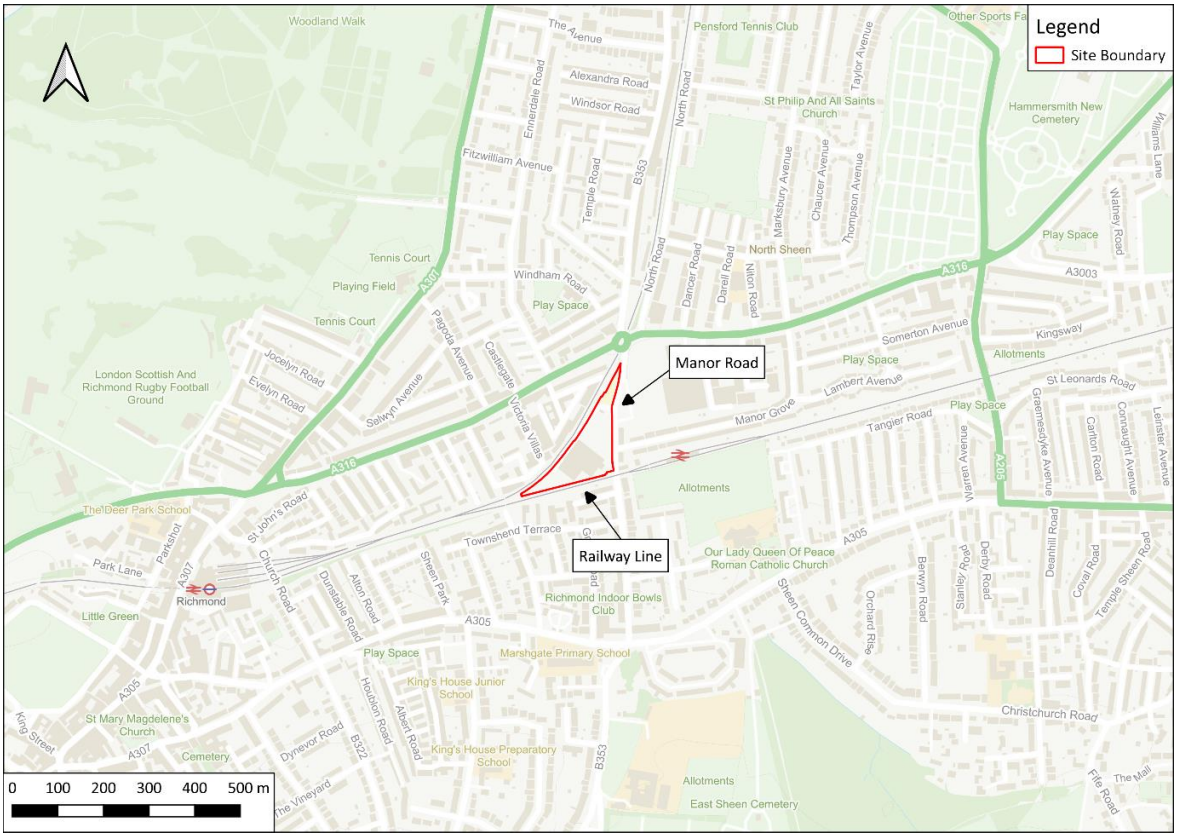

Figure 1. Site Location

3. FLOOD RISK

3.1 Fluvial and Tidal Flooding

The site is located south of a bend in the River Thames located 1.5 km north west and 1.5km east at its closest points respectively, flowing in a generally easterly direction.

Current Environment Agency (EA) Flood Zone Mapping indicates the site to be entirely within Flood Zone 1 defined as land assessed as having a ≤0.1% Annual Exceedance probability (AEP) of fluvial or tidal flooding in any given year, equivalent to the ≥1,000yr return period flood event. This is the flood zone with the lowest risk.

Neither the London Borough of Richmond upon Thames Strategic Flood Risk Assessment nor the EA Recorded Flood Outlines indicate the site to have been impacted by previous incidents of fluvial flooding.

The River Thames is considered to be tidal within the borough of Richmond upon Thames. However, as the site lies within Flood Zone 1 it is considered to be at Low risk of Tidal Flooding.

There have been no changes in the fluvial and tidal flood risk since the original FRA was undertaken by Fairhurst.

3.2 Surface Water Flooding

Surface water flooding occurs as the result of an inability of intense rainfall to infiltrate the ground. This often happens when the maximum soil infiltration rate or storage capacity is reached. Flows generated by such events either enter existing land drainage features or follow the general topography which can concentrate flows and lead to localised ponding/flooding.

The EA Surface Water Flood Risk Mapping shows the site predominantly at Low risk of surface water flooding, with some isolated patches of medium risk within the south of the site and along the north west boundary associated with the railway line. There are some high-risk areas (>10%) around the edge of the existing building.

The EA Long Term Flood Risk Mapping indicates the predicted depths for the majority of the flooding on site to be between 300 and 900mm with the extent mapping suggesting a potential flow route overtopping into the site from the railway line to the south-west and causing the ponding around the existing site buildings.

The FRA undertaken by Fairhurst concluded that the risk of surface water flooding at the site was low and does not provide any mitigation or commentary regarding the potential flow routes shown by current EA mapping. As such, the GLA has requested the updated FRA by Hydrock provide a more detailed assessment of the potential surface water risk and *"demonstrate how the flood flow route would be retained post development to ensure no flood water is displaced off site. The FRA should also include mitigation measures within the site to ensure that site users are safe from flooding."* Therefore, as part of the updated works, Hydrock have undertaken a surface water modelling exercise to assess existing risk and any proposed mitigation to manage the risk post-development (see Section 4).

3.3 Groundwater Flooding

According to the BGS Geology viewer the site is underlain by bedrock of the London Clay Formation comprising clay and silt, with superficial deposits of the Kempton Park Gravel Member comprising sand and gravel, suggesting variable permeability.

The Fairhurst FRA referred to historic boreholes undertaken in 1999 within close proximity to the site which indicated groundwater levels to be as shallow as 1.5m below ground level (bgl). Since original FRA, Fairhurst have undertaken onsite ground investigation (July 2021, ref: 126782/R2) and included groundwater monitoring. The results of the GI indicate groundwater was found at 2.32 to 2.41m bgl in the north of the site but increased to 3.45 to 4.26m bgl in the central and southern areas of the site.

Groundwater is therefore shown to be at a deeper depth than previously thought. Given the results of the groundwater monitoring it is not considered that groundwater emergence on site is considered to be a risk. It should be noted however, that owing to the groundwater being near surface (within 3m) in parts of the site, there may be some interaction at construction phase but this is not expected to impact the operations within the site.

3.4 Artificial Sources

Since the original FRA, the EA have updated their Reservoir Failure Extent mapping which now indicates the site to lie within the maximum flood extent of a potential breach of a reservoir when there is also flooding from rivers. It does not indicate the site to lie within the flood extent when river levels are normal.

Whilst the monitoring and maintenance requirements for reservoirs under the Reservoir Act (1975) means the risk of a breach occurring is considered very low the GLA have asked for the potential risk to be addressed through a Flood Warning and Evacuation Plan (FWEP) and as such one is being prepared by Hydrock.

4. HYDRAULIC MODELLING

4.1 Introduction

Following comments received by the GLA with respect to flood risk, Hydrock have undertaken a hydraulic modelling exercise in order to provide a more detailed assessment of existing surface water flood risk on the site and to assess potential mitigation to minimise increase in risk as a result of the development and impact on any existing surface water flow routes through the site.

Current EA Surface Water Flood Mapping shows the site to lie within a potential surface water flow route originating off-site, entering in the south-west corner, and causing ponding around the existing buildings. The modelling undertaken by the EA is considered to be coarse and will not consider surveyed site levels and therefore given this and the comments from the GLA a hydraulic assessment has been made.

A detailed hydraulic modelling report is being prepared and will be provided with an updated Flood Risk Assessment and Flood Warning and Evacuation Plan with the formal planning submission.

4.2 Baseline Assessment

Given the indicated risk to the site is from surface water sources, a direct runoff model has been created to assess the risk. The design event for the modelling is defined as the 1% Annual Exceedance Probability (AEP) (1 in 100 year) + 40% climate change allowance event, in line with standard modelling practice.

The results of the baseline assessment, which include existing site levels as provided within the topographical survey (Ref:LS2024/T/01RevA), show a similar extent to the existing EA Surface Water Flood Risk Mapping.

In line with the EA Mapping, flooding is shown to enter the site via the south west corner and via the southern boundary of the site from the railway line in all events modelled except the smallest 1 in 5year event. The flow path from the south-west of the site is indicated to be the primary flow route into the site and is shown to be more prevalent in the larger events (1 in 100yr, -100yr + 40%cc, -1000yr). In all events flooding is predicted to pond around the existing building with depths up to approximately 0.5m in the critical design event. The results of the modelling also indicate that in all events, excluding the 1 in 5yr and 1 in 30yr, the surface water flow path is indicated to continue off site following local topography to the north and exit the site via the northern boundary and onto the existing railway. Flows are predicted to continue along the railway with maximum depths indicated to be approximately 0.2-1.11m. The majority of the flooding onsite is indicated to be slow flowing (i.e., <=0.2m/s) however along the northern boundary the existing flow route is predicted to be slightly faster flowing with velocities ranging between 0.2-0.6m/s.

4.3 Post-Development

Initial levels for the post-development scenario have been taken from a technical layout provided by Manhire Associates (ref: MNR-MA-XX-00-DR-C-1060 P6) with the cover levels from this drawing used to create a basic surface for the flood model.

In order to manage the flow path through the site, levels have been lowered through out to create a preferential flow route for any overland flows which may occur and direct them back towards the railway in the north of the site as is what occurs the existing scenario. Where possible, levels have been lowered to allow for more onsite storage, particularly in the main courtyard area in the centre of the proposed development, and limit any increase in flood depths offsite whilst also ensuring a gradient so that flows are not predicted to be "pond" onsite.

It should be noted that the hydraulic modelling undertaken by Hydrock does not account for any existing drainage features that may be serving the area, in line with standard modelling practice, and if anything is an overestimation to current levels of risk on site. Hydrock, with the assistance of Manhire Associates, are undertaking volumetric calculations to ascertain any change in flood volume along the railway and Manor Road to assess if this impact can be managed through onsite drainage features as discussed with the GLA in the meeting (04/10/2022).

All modelling files and reporting will be available for review following formal submission of the planning application.