

Technical design note

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Design note title	Scheme Changes - Flood Risk		
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Author	Luke Whalley BSc (Hons) GradCIWEM		
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1. Introduction

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

This note is to be supplied to the Greater London Authority (GLA) with the purpose to provide an overview of: the previous flood risk strategy (at the GLA Hearing in October 2020); the assumptions the previous strategy was based on; what has changed since the previous strategy and why the proposals have had to be revisited.

2. Previous Strategy

A Flood Risk Assessment (FRA) was previously undertaken by Fairhurst in July 2020 (Ref: 126782-RP-C-0001) following a planning application for the redevelopment of the Site which was submitted to London Borough of Richmond Upon Thames (LBRuT) in February 2019 (ref. 19/0510/FUL) (the 'Original Proposed Development') and was considered at LBRuT Planning Committee on 3 July 2019.

The FRA concluded the Site to be within Flood Zone 1 which means it has a low probability of flooding from rivers and the sea.

With regards to surface water flooding, the FRA indicated the EA Surface Water Flood maps identify surface water flooding within the Site during a 30-, 100- and 1,000-year storm events. These are classified as the low, medium and high risk flood extents within the EA Mapping.

However, the report states that a request for the Site with Thames Water returned no evidence of surface water flooding of the Site due to surcharging sewer events on record and, due to the area being served by separate foul and surface water sewers the site was concluded to not be at risk of flooding from foul water or surcharging sewers.

With regards to groundwater flooding, the FRA recommended groundwater modelling on site is required to ascertain the risk of flooding from this source.

Due to the report concluded the site is not at risk of flooding from surface water sources, no further mitigation was recommended other than a surface water drainage strategy.

3. Updates to Policy

Since the original FRA was undertaken there have been two key changes to local and national guidance which have impacted the flood risk on site.

3.1 Strategic Flood Risk Assessment

In September 2020, the new Richmond Strategic Flood Risk Assessment¹ was issued, with an updated and finalised report released in March 2021.

Within the SFRA, are a number of Strategic Policy Recommendations for the London Borough of Richmond upon Thames. The key policy change which has a potential impact on the Site is the recommendation to consider implementing the 1 in 100-year surface water extent as Flood Zone 3a (surface water) for the borough. With the requirements of Flood Zone 3a (surface water) potentially being similar to those adopted for Flood Zone 3a (fluvial / tidal) such as:

- a. a. Development within the 1 in 100-year RoFSW mapped extent will be treated as if it were Flood Zone 3a as defined in PPG Table 1 (Paragraph 065).
- b. Highly vulnerable developments may be possible within the 1 in 100-year RoFSW mapped extents outside of existing infrastructure or solid building footprints.
- c. To enable development, proposals must provide mitigation and resilience against flood risk (taking advice from the LLFA as appropriate) and provide appropriate compensation to existing flood risk levels and volumes (addressing the predicted 1 in 100-year RoFSW mapped depths as a minimum), supported by detailed flood risk modelling if appropriate.
- d. The development must not increase flood risk elsewhere and where possible reduce flood risk overall. Evidence demonstrating that all surface water is managed on site and that surface water is discharged at greenfield runoff rate (or within three times the calculated greenfield rate) is required.

On a site-specific level, the policy recommendation is that the London Borough of Richmond upon Thames should insist that submitted FRAs utilise the 'upper end' climate change scenarios when implementing the climate change allowances for surface water and fluvial flood risk.

The SFRA indicates surface water flood risk to vary throughout the Borough but the heavily urbanised and densely populated areas contribute to a mostly impermeable area with increased overland flows unable to drain away through infiltration. These surface water flow paths will flow towards localised topographical low point and have a higher peak runoff rate as a result.

With regards to site-specific flood risk assessment the SFRA states:

- » "Where major and minor developments are proposed within the 1 in 100-year surface water extent (based on the Surface Water Flood Risk Web Map), the London Borough of Richmond upon Thames requires the developer and/or applicant to submit a FRA" and;
- » *"Submitted site-specific FRAs should demonstrate how flood risk will be managed now and in the future over the proposed development's lifetime. The FRA needs to take climate change into account, and the vulnerability of land use classification of the development (Refer to Table 2 – Flood Risk Vulnerability of the PPG)"*

¹ London Borough of Richmond Upon Thames Strategic Flood Risk Assessment - Level 1 (March 2021) [Metis Consultants]

3.2 National Planning Policy Guidance – Flood Risk and Coastal Change

On the 25th August 2022, the National Planning Policy Guidance (NPPG) for flood risk and coastal change was updated to bring it in line with the latest policy position on flood risk introduced in the updates to the National Planning Policy Framework in 2018 and 2021.

The key changes to impact the site within the NPPG are as follows:

- » Assigning a “design flood” event. This is a flood event of a given annual flood probability, which for surface water is flooding likely to occur with a 1% annual probability (a 1 in 100 chance each year).
- » A sequential approach should be taken to the location of the development and this now includes development in current and future medium and high flood risk areas considering all sources of flooding including areas at risk of surface water flooding.
- » Where possible It should be demonstrated that the development will reduce flood risk overall and this could be achieved through:
 - » Incorporating green infrastructure within the layout and form of development to make additional space for the flow and storage of flood water;
 - » Providing Sustainable Drainage Systems, that manage flood risk beyond the proposed site and above the usual standard, such as by removing surface water from existing combined sewers
- » If the development or cumulative impact of the development may result in an increase in flood risk elsewhere as a result of impacts such as the loss of floodplain storage, the deflection or constriction of flood flow routes or through inadequate management of surface water. Site-specific flood risk assessments should assess these impacts and demonstrate how mitigation measures have addressed them.
- » Where flood storage from any source of flooding is to be lost as a result of development, on-site level-for-level compensatory storage, accounting for the predicted impacts of climate change over the lifetime of the development, should be provided. Where it is not possible to provide compensatory storage on site, it may be acceptable to provide it off-site if it is hydraulically and hydrologically linked.
- » Where development proposals would result in the deflection or constriction of identified flood flow routes, a site-specific flood risk assessment will need to demonstrate that such routes will be safely managed within the site. The impact of development on flood flow routes may also be an important consideration for sites which benefit from the presence of flood risk management infrastructure and where flow routes are likely to affect the site in the event of a failure or exceedance of such infrastructure. Any such measures to ensure development will not increase risk elsewhere would need to be secured in any planning permission granted. The provision of multifunctional sustainable drainage systems, natural flood management and green infrastructure can also make a valuable contribution to mitigating the cumulative impacts of development on flood risk.

4. Latest Strategy

As a result of the latest SFRA and update in the NPPG, there is a greater need to ensure the development will not cause an increase in flood risk to third party land. Whilst this used to be mostly for flooding as a result of fluvial sources, the latest guidance has now expanded this to all forms of flooding, including surface water sources.

The EA mapping shows the development to be within a potentially key surface water flow route, with flows predicted to enter the Site in the south west corner and flow north, through the development onto Network Rail land in the north of the site.

Given the need to ensure no detrimental impact to third party land as a result of the development and the requirement to ensure surface water flooding is fully compensated for where storage volumes have been lost due to the development, Hydrock have been undertaking a hydraulic modelling exercise.

The purpose of the modelling exercise is to create a more detailed assessment of the existing (baseline) scenario, with EA mapping considered to be coarse and not suitable for site-specific assessments such as this. 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 and confirm the flow route through the site.

Following the baseline assessment, modelling is being undertaken for a post-development scenario to ensure the existing flow route through the site is maintained and no detrimental impact to third party land is caused. 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 "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.