FLOOD RISK STATEMENT

Project name	Fort Halstead - QinetiQ Land
Design note title	Flood Risk Statement
Document reference	10730-HYD-XX-XX-RP-FR-0001
Author	Simon Mirams
Revision	P01
Date	27 May 2021

1.1 Introduction

This document provides commentary on the approach to drainage of a site known as QinetiQ Enclave, which is part of a wider site known as Fort Halstead.

A Flood Risk Assessment has been submitted to support a planning application for the adjoining redevelopment site (Planning Ref: 19/05000/HYB). The purpose of this document is to draw on the principles established by this Strategy and appraise how these principles relate to the QinetiQ Enclave scheme.

1.2 Existing Topography, Geology & Hydrology

The A224 and the M25 pass just to the east of the site's eastern boundary in a north-south orientation. The site is bounded by woodland to the north and east, and farmland (of arable use) to the south and west. The site itself is predominantly developed and previously occupied by the Defence Science and Technology Laboratory (DSTL).

The site is situated on locally high ground (on the crest of the North Downs) and has a high point towards the site's southwestern limit. Levels on the site fall gently to the west, east and north from this highpoint, and more steeply to the southeast. The south-eastern limit of the site forms the scarp face of the North Downs.

British Geological Survey mapping shows the site to be underlain by Lewes Nodular, Seaford and Newhaven Chalk Formations, which are classified as Principal Aquifers, underlain by superficial deposits of Clay-with-Flints. Underlying bedrock is considered permeable, but the superficial deposits not, which is therefore likely to act as an aquiclude and prevent groundwater from the aquifer from rising to the surface.

The nearest watercourses to the site are the River Darent and the Twitton Brook which are approximately 1.5km and 1.1km due east of the site respectively.

1.3 Flood Risk

1.3.1 Fluvial and Tidal

The Environment Agency's (EA's) Flood Zone mapping (Figure 1) shows the entirety of the site to be within Flood Zone 1, i.e. land having a less than 1 in 1,000 annual probability of fluvial or tidal flooding.

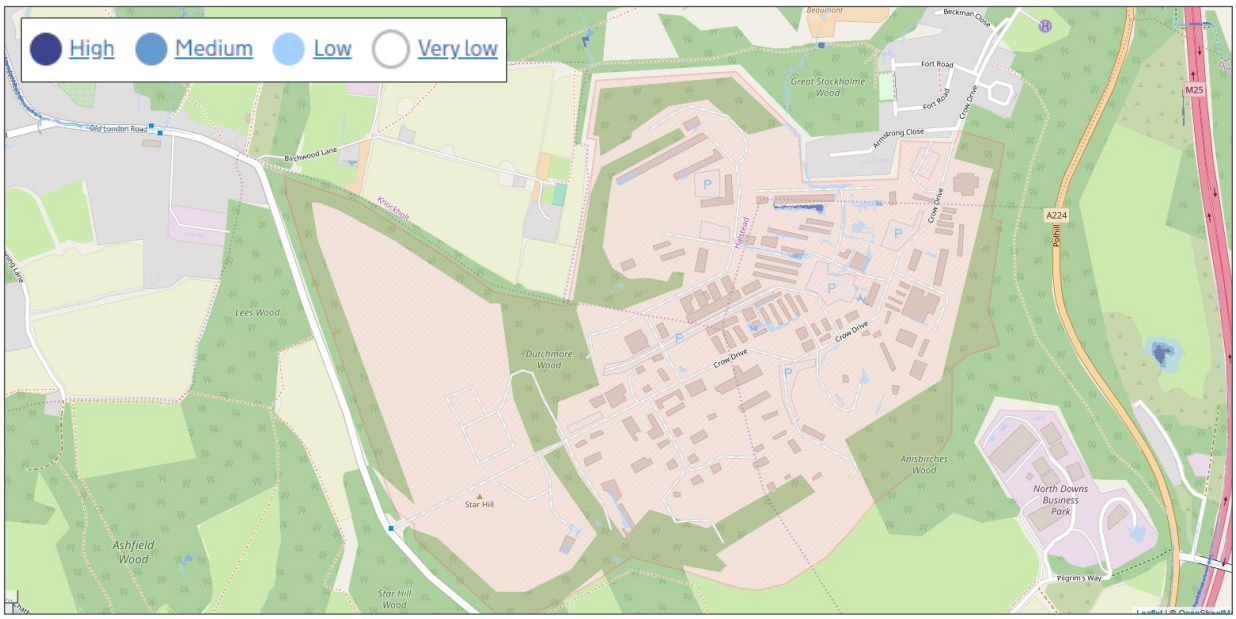
In being categorised as Flood Zone 1, it is therefore concluded that the site is suitably elevated above the River all modelled watercourses so as to be at low risk of flooding from these potential sources. Indeed, OS contour mapping shows that the River Darent and Twitton Brook are at an approximate elevation of 60m AOD and a minimum of 120m below lowest existing site levels. As such, the site is concluded to be at low risk of fluvial flooding. At this location these watercourses are not tidal.

The site is therefore concluded to be at negligible risk of fluvial and tidal flooding.

1.3.2 Surface Water

The entirety of the site is shown to be predominantly at ‘very low’ risk of surface water (except for a small area along Cambridge Street which is shown as 'low' risk) flooding by the EA’s Flood Risk from Surface Water mapping (Figure 2).

Figure 2. EA Flood Risk from Surface Water Mapping



The location of the site on the top of the North Downs scarp means that there is no catchment draining in to the site from higher ground. Couple this with the relatively permeable bedrock and expected low groundwater, any overland flows are likely to be negligible and associated only with the developed areas of the site where existing drainage is absent.

There are a number of localised areas within the site that are shown to be at potentially increased risk of surface water flooding. However, these areas are considered to be associated with existing impermeable hardstanding which is likely to be positively drained.

Sevenoaks District Council's Strategic Flood Risk Assessment (SFRA) does not record any previous surface water flooding incidents within the vicinity of the site.

1.3.3 Groundwater

Kent County Council's Preliminary Flood Risk Assessment (PFRA) and the SFRA indicates that the site is located in a 'negligible' groundwater flood risk area. Furthermore, groundwater has not been encountered at the application site during previous Site Investigations. Mapping contained within Kent County Council's Surface Water Management Plan (SWMP) shows that no groundwater flooding has occurred at or in the vicinity of the application site, with the closest recorded incident being approximately 4.6km to the southeast of the application site where ground levels are much lower.

As such, the site is concluded to be at low risk of groundwater flooding.

1.3.4 Infrastructure Failure

Similar to the assessment of surface water flooding, given the location of the site at the high point of the local area, there are no potential sources of artificial flood risk upstream of the site (such as canals, reservoirs and/or sewers). The only potential source of infrastructure failure flood risk posed to the site is therefore that posed by existing on-site sewers if they became surcharged and any resulting overland flows. However, such a scenario has not previously been recorded at the site, and as such is considered a 'residual' risk. Regardless, any overland flows would be directed away from the site to the surrounding lower-lying ground.

As such the site is concluded to be at low risk of infrastructure failure flooding and/or flooding from artificial sources.

1.4 NPPF Requirements

1.4.1 Sequential Test

This assessment has demonstrated that the site is on land designated as Flood Zone 1 by the EA's Flood Zone Mapping, and at low risk of flooding from all other potential sources.

The NPPF Flood Risk Vulnerability and Flood Zone Compatibility matrix (Table 3) indicates that all forms of development are appropriate in Flood Zone 1 and accordingly the proposed development is concluded to meet the requirements of the Sequential Test.

1.4.2 Exception Test

Whilst an Exception Test is not explicitly required under the NPPF, due to the site being demonstrated to pass the Sequential Test, the following section details any measures necessary to mitigate any 'residual' flood risks, to ensure that the proposed development and occupants will be safe and that flood risk will not be increased elsewhere, akin to the requirements of the second section of the Exception Test.

1.5 Mitigation

In order to afford the site additional protection from any potential 'residual' flood risks, it is recommended that finished floor levels be set a minimum 'standard' 150mm above adjacent infrastructure thoroughfare levels. This aims to ensure any design exceedance flows, should they occur, will be directed away for all new development.

A comprehensive Surface Water Drainage Strategy will be constructed as part of the proposed development (the details of which are provided in the following section). This is designed to intercept and manage rainfall. Furthermore, the proposed highway and building layout has been designed to create a preferential overland flow route through the site, to allow any overland flows (should the proposed drainage system fail or surcharge) to pass through the site, away from existing or proposed buildings, and continue away from the site, as per the existing situation (although it is noted that the proposed drainage system will be designed to intercept and therefore mitigate the risk of such overland flows being directed off-site).

1.6 Conclusions

Based on a high-level desktop assessment, the site is concluded to be within Flood Zone 1 and at low risk of flooding from all assessed sources. The proposed development is therefore concluded to meet the flood risk requirements of the National Planning Policy Framework, in terms of the Sequential and Exception Tests.