

Client: Arctica

# Ferndale Foods, Hailey Road, Erith Packaging Store - Flood Risk Assessment



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DOCUMENT CONTROL			
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## 1 Introduction

This Flood Risk Assessment (FRA) has been prepared by Parsons Consulting Engineers Ltd. on behalf of Ferndale Foods Ltd. in support of the proposed new packaging warehouse at their existing factory premises at Hailey Road, Erith, Kent, DA18 4AR.

This FRA has been prepared in accordance with the National Planning Policy Framework (NPPF) and the Planning Practice Guidance (PPG) and in consultation with the Environment Agency and the London Borough of Bexley.

## 2 Planning Policy

### 2.1 National

The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these are expected to be applied, including policy on appropriate consideration of flood risk for new developments. In addition to this, the National Planning Policy Framework – Technical Guidance (NPPF-TG) provides additional guidance on planning policy for the development of sites at risk of flooding. The general objective is to favour developments in areas with the lowest risk of flooding.

Local Planning Authorities have the authority to control development in accordance with their local plans, which are required to incorporate the policy and guidance from the NPPF and NPPF-TG.

### 2.2 Local

Breach data presented in this Flood Risk Assessment have now been superseded but haven't been available to ourselves yet. The Flood Risk Assessment will need to be revised including the latest breach data once these are available.

The London Borough of Bexley's Level 1 and 2 Strategic Flood Risk Assessments (SFRA) were published in August 2010 and October 2014 respectively. They provide further local guidance in respect of flood risk. This FRA has been prepared with reference to the SFRAs.

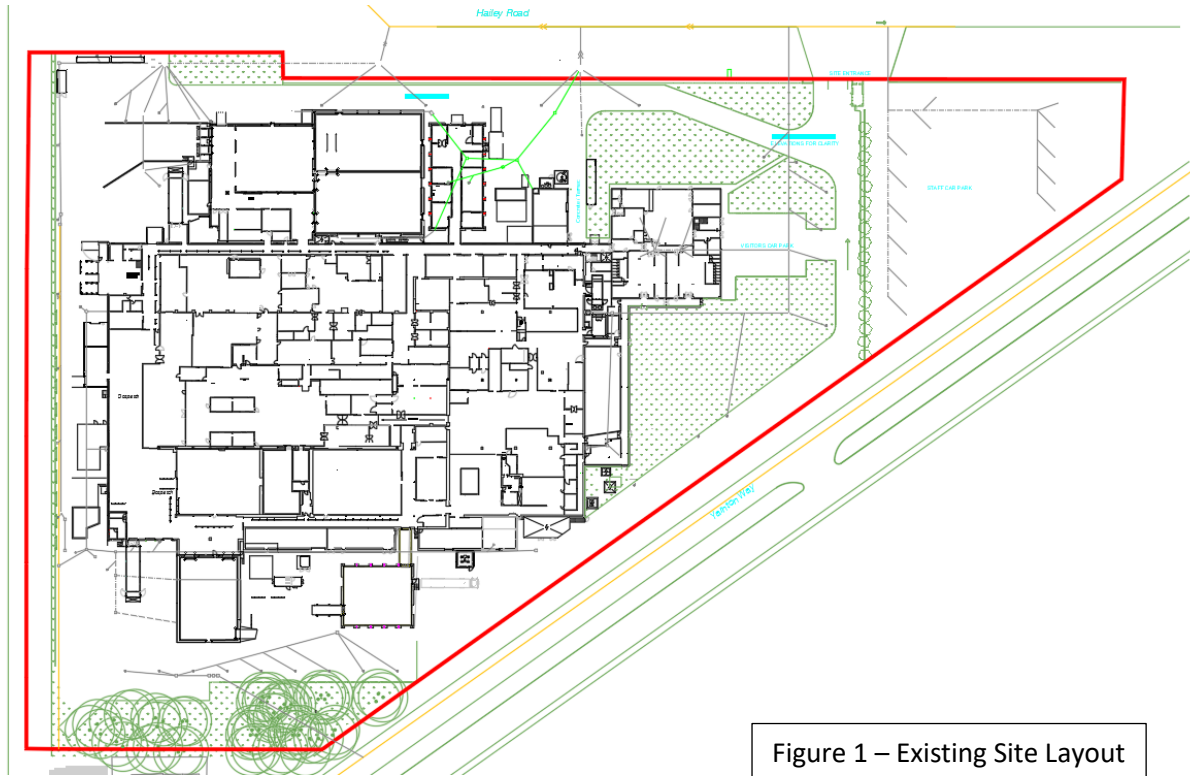
It is noted that the site lies within the Belvedere Sustainable Growth Area.

### 3 Existing Site

#### 3.1 General

The application site is classified as Brownfield and has a gross area of approximately 3.86ha.

The site is currently occupied by an existing large food manufacturing factory together with all ancillary plant buildings, access roads, service yard and parking areas. The factory produced ready meals and snack foods for supermarket supply chains.



#### 3.2 Levels

A topographical survey of the site has been made available. Ground Levels at the western end of the site are circa 0.900m AOD. The land falls southwards at a level of circa 0.490m AOD.

The site and general area is flat with the existing main building being generally set 150-200mm above the prevailing external level.

#### 3.3 Drainage

Whilst extracts of the public sewer records have not been obtained from Thames Water, we understand that there are public foul and surface water sewers located with Hailey Road.

A drainage survey of the existing premises has not been carried out, however, we understand that the site is served by a foul and surface water drainage network which connects to the respective public sewers. We also understand that there is an existing trade effluent discharge agreement in place with respect of the foul effluent discharge.

## 4 Proposed Development

### 4.1 General

It is proposed to provide a new warehouse (with a footprint of approximately 360m<sup>2</sup>) on the southern side of the existing main factory building, in which to store packaging. The existing site is partially concrete paved hard-standing and verge.

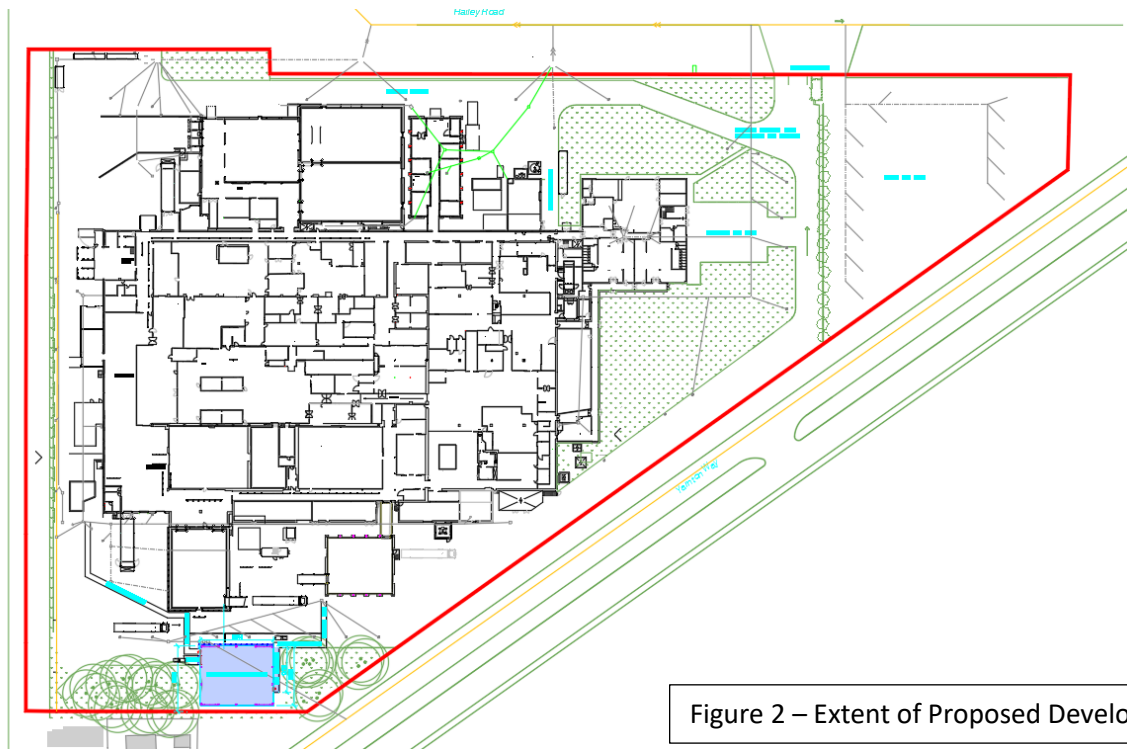


Figure 2 – Extent of Proposed Development

### 4.2 Levels

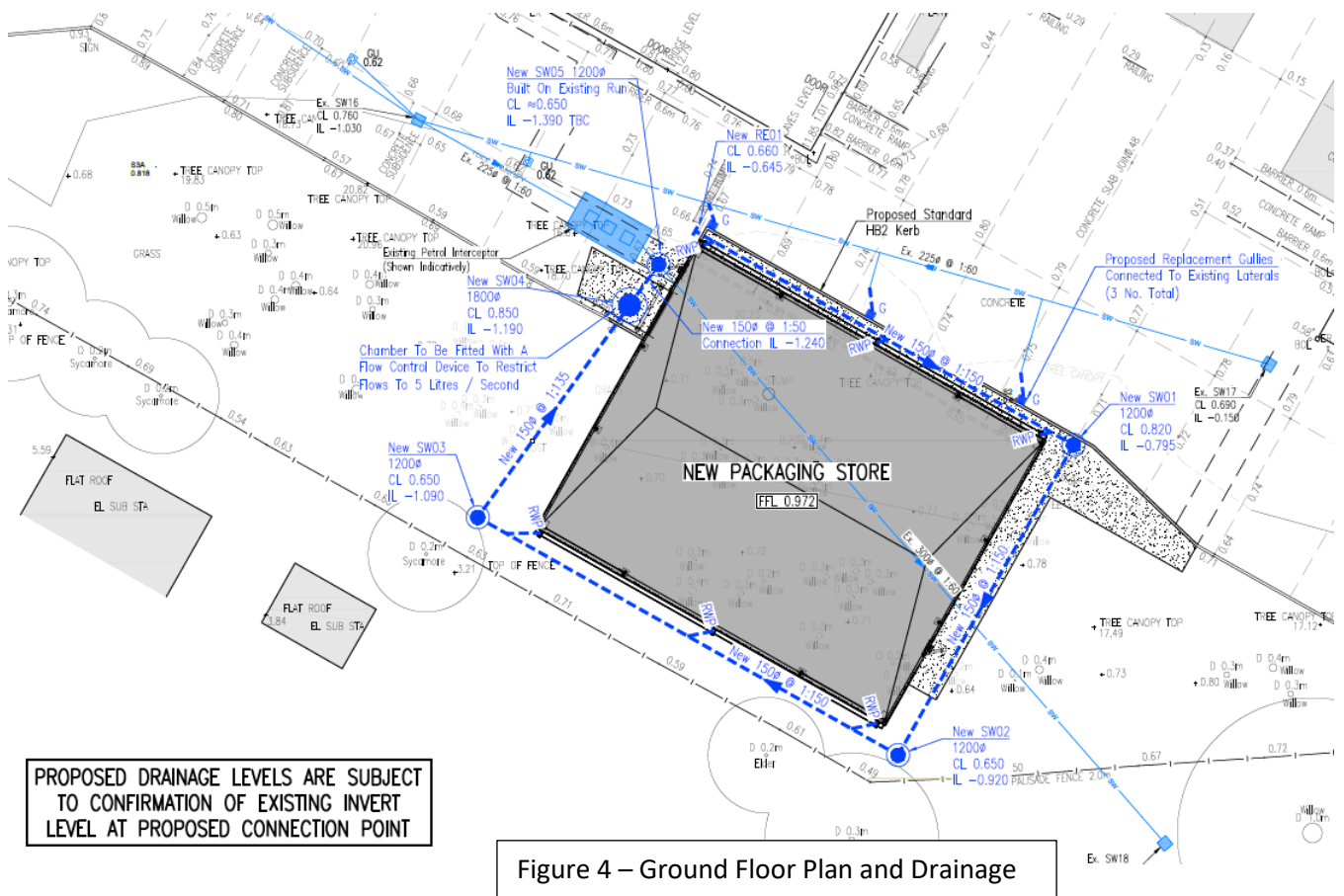
It is understood that the finished floor level of the proposed new warehouse will be 0.972m. For operational reasons there is no scope for raising the proposed floor level further.

### 4.3 Foul Drainage

There is no foul drainage associated with the proposed development.

### 4.4 Surface Water Drainage

It is proposed to provide a surface water drain around the perimeter of the new store providing attenuation, with a hydrobrake limiting discharge to 5-l/s from the system (See figure 4 below)



## 5 Potential Sources of Flooding

### 5.1 Fluvial/Tidal Flooding

The nearest potential sources of fluvial/tidal flooding to the site are represented by the surrounding local Erith Marsh Dyke network and the River Thames which lies approximately 1km to the north.

An extract of the Environment Agency's on-line flood mapping is shown in Figure 5 below. The dark blue areas represent Flood Zone 3, 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. The light blue areas represent Flood Zone 2, 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. All remaining areas are classified as Flood Zone 1, land assessed as having a less than 1 in 1000 annual probability of river or sea flooding (<0.1%) in any year.

The site boundary has been added to the flood mapping extract below, confirming that it lies within Flood Zone 3 in the absence of any defences. The hatching confirms that the site and surrounding area does, however, benefit from formal flood defences.

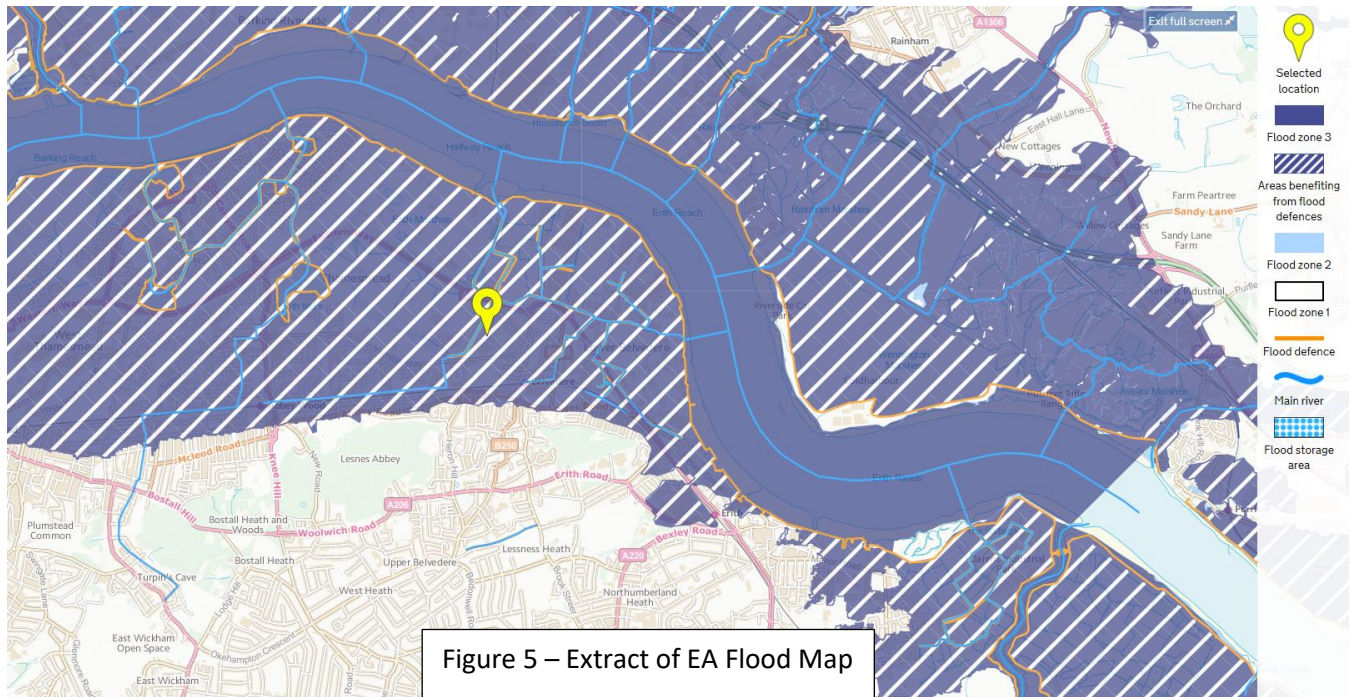


Figure 5 – Extract of EA Flood Map

The SFRAs include breach modelling for the 1 in 200-year tidal climate change event and this suggests that the site would potentially be inundated to a depth of between 3.51m 4.00m within 6 hours. The flood hazard rating for the site and immediate surrounding area in such an event would be classified as ‘Danger for All’.

The SFRA suggest that the site and surrounding area was last subject to fluvial/tidal flooding in 1953, prior to the construction of the flood defences.

## 5.2 Groundwater

The information contained within the SFRA suggests that the site lies within an area susceptible to high groundwater levels, however, it includes no specific records or information in respect of groundwater flooding incidents.

We are not aware of any other evidence to suggest the site or immediate surrounding area has previously been affected by groundwater flooding.

## 5.3 Overland/Surface Water Flows

The SFRA mapping indicates three surface water flooding incidents in the surrounding area. These are all however, located to the south of Yanton Way, close to the railway embankment.

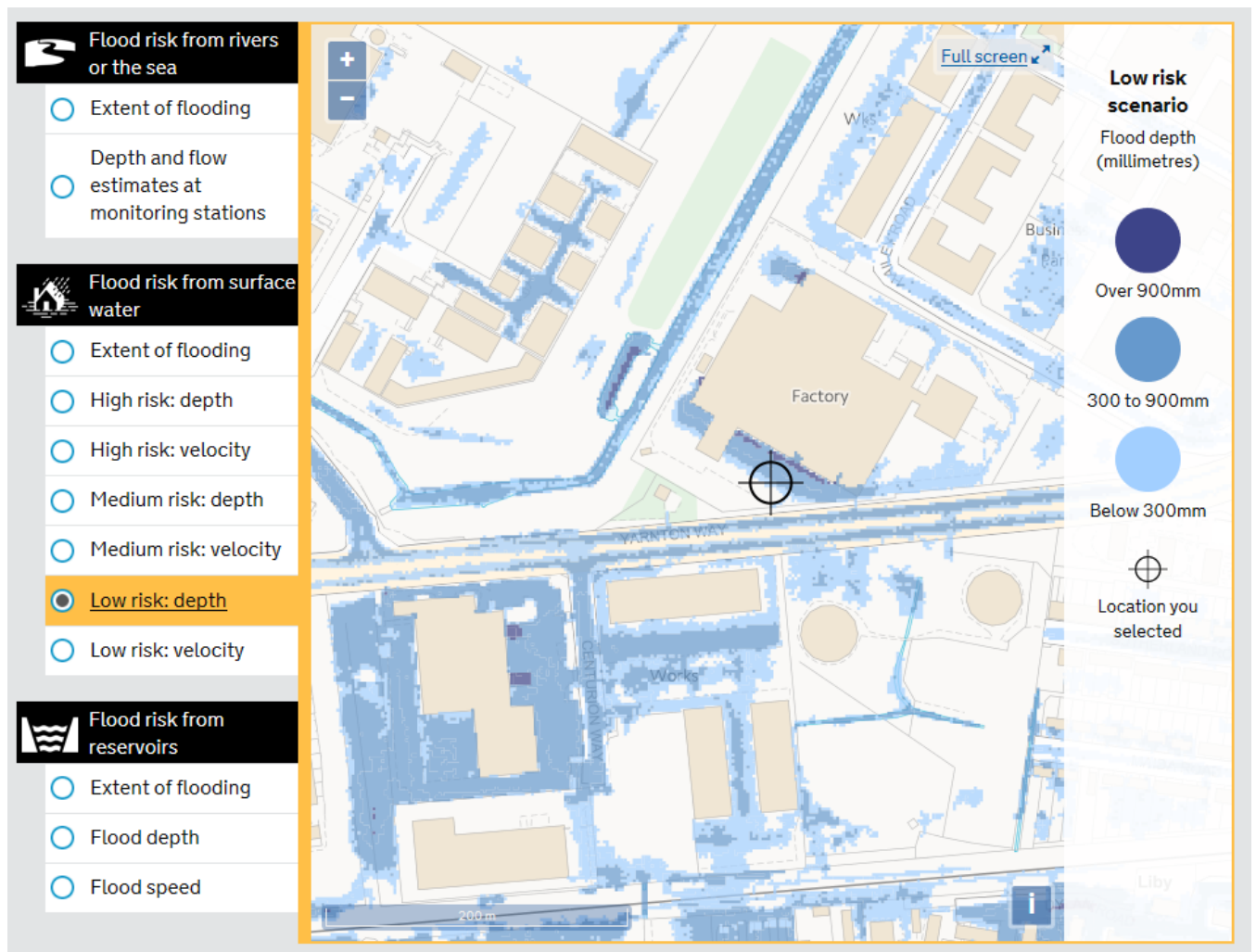


Figure 6 – Extract of EA Flood Map showing Surface Water Flood Risk

The Environment Agency on-line flood maps (See Figure 6) identify that there is a medium risk of surface water flooding in excess of 300mm in the vicinity of the proposed new warehouse. This risk is caused by the existing ground sloping towards the south east side of the factory building . Ground levels along this side of the building are between 0.690 AOD and 0.640m AOD, making the predicted flood level circa 1.0m AOD.

Given that the proposed floor level is 0.972m, there is a medium risk that very shallow flooding can occur within the new warehouse. The proposed use of the warehouse can tolerate this and the structure will be of 'resilient design'.

The new warehouse will increase the impermeable area by 360m<sup>2</sup>. The runoff from the building is proposed to be attenuated within the new drainage system around the store.



## 5.4 Existing Sewers

Crossness Sewage Treatment Works is situated approximately 300m north-west of the site. This facility treats sewage effluent from a large proportion of southern London, with flows entering the site via twin bore large diameter pipes, constructed in Victorian times. The majority of the treatment tanks on site are raised above ground, which presents the potential for significant flooding in the event of structural failure. Such flood conditions are controllable, but are likely to be very disruptive.

## 5.5 Reservoirs, Canals and Other Artificial Sources

There are no artificial sources of flooding identified within the vicinity that pose a flood risk to the site.

# 6 Vulnerability & Compatibility

## 6.1 General

In accordance with NPPF-TG Table 2, sites that are 'General Industrial Usage' shall be classified as "Less Vulnerable", which is not an increase in vulnerability from the existing use and are suitable for construction within the Flood Zone of the site.

Flood Risk Vulnerability classification (See Table 2 of NPPF)		Type of Development				
		Essential Infrastructure	Water Compatible	Less Vulnerable	More Vulnerable	Highly Vulnerable
Flood Zone (See Table 1 of NPPF)	Zone 1 (Low Risk)	✓	✓	✓	✓	✓
	Zone 2 (Medium Risk)	✓	✓	✓	✓	Exception Test required
	Zone 3a (High Risk)	Exception Test required	✓	✓	Exception Test required	✗
	Zone 3b (Functional Flood Plain)	Exception Test required	✓	✗	✗	✗

**Summary of NPPF Table 1**

The proposed use of the Warehouse is for storage of packaging, which would not be affected by flooding.

## 6.2 Sequential Test

In accordance with Table 1 of NPPF (and as summarised above), the proposed use can be considered appropriate if Sequential Test is passed.

In accordance with paragraph 104 of the NPPF, applications for minor development should not be subject to a formal Sequential Test but must still meet the requirements or site specific FRAs. It is reasonable to consider the proposed extension as minor development.

## **7 Assessment of Flood Impact**

### **7.1 Fluvial/Tidal Flooding**

Based on the Environment Agency and SFRA flood mapping, the proposed extension will be located within Flood Zone 3 and therefore must be assessed as having a 1 in 200 or greater annual probability of tidal flooding (<0.5%). However, the Site benefits from the significant protection afforded by the local River Thames flood defences, which are designed to protect against a 1 in 1000-year event.

In the event that the flood defences were breached, SFRA reports that modelling suggests that in the 1 in 200-year tidal climate change event, the site and proposed extension would potentially be inundated to a depth of between 3.51m and 4.00m within 6 hours. As the proposed factory extension is to be used for storage only it does not increase the risk the life under such events.

### **7.2 Groundwater**

We are not aware of any records or anecdotal evidence to suggest that the site has been subject to groundwater flooding.

The risk of groundwater flooding to the proposed development is therefore considered to be low.

### **7.3 Overland/Surface Water Flows**

As identified in Section 5, the southern side of the existing factory has a low-spot near to the building which could be prone to surface water flooding. Whilst, recent extensions to the drainage system have alleviated the problem, the risk of flooding remains and ideally the building floor level should be raised above the maximum predicted flood level.

The proposed drainage for the new Warehouse includes for attenuation of additional runoff within over-sized pipework. As such, the existing risk of flooding will not be worsened.

### **7.4 Existing Sewers**

We are not aware of any records or anecdotal evidence to suggest that the site has been subject to flooding resulting from deficiencies with the existing public or private drainage networks.

The risk of flooding to the proposed development from this source is therefore considered to be low.

### **7.5 Proposed Drainage**

There is no additional foul or storm water load created by the proposals.



## 7.6 Reservoirs, Canals & Other Artificial Sources

With no artificial sources of flooding identified within the vicinity, the associated risk of flooding to the development is therefore considered to be low.

## 8 Conclusions & Recommendations

Whilst the proposed new warehouse will be located within Flood Zone 3, it benefits from significant local flood defences. The defences are in good condition with a formal plan in place for long term maintenance.

The risk of fluvial or tidal flooding is therefore restricted to the defences being breached or overtopped and is therefore considered to be residual in nature. Based on the breach modelling included within the SFRA, the site and proposed extension would be at risk of flooding in the unlikely occurrence of such an event. However, the new warehouse is not for residential use and will not increase the risk to life as such no special measures need to be incorporated.

The proposals will increase the impermeable area of the Site, but recent changes to the drainage system have already allowed for these additions and as such the proposed development will not alter the flood risk to other properties.

Surface Water flooding is considered to be the greatest risk for the proposed warehouse, with predicted flood levels in the region of 1.0m AOD, resulting in very shallow flooding (Less than 30mm depth). The building will be resilient (concrete floors and raised electrics) and the use is not susceptible to flooding. Hence it is considered that the flood risk is mitigated. The proposed storm drainage solution will attenuate storm runoff to ensure no nett increase in runoff rates.