

Flood Risk Assessment

Support of Application APP/15/00286

by

**Healthy Koi Ltd, Unit 21, The WREN Centre, Westbourne Road,
Emsworth, Hants.. PO107SU, 01243 698284**

1 Introduction

Healthy Koi Ltd have submitted a Planning Application (APP/15/00286) to Havant Borough Council with regards to the use of the premises. The Application has been made to regularise the current situation and amend the usage from Classes B1/ B8 to A1/ B1/ B8, with limited usage for Class A1.

2 Sources of Flooding

2.1 Tidal Flood Risk

The premises and access are not considered to be at risk of tidal flooding. The application area is outside the extent of the tidal floodplain and situated at an approximate elevation of 10m AOD.

2.2 Groundwater flooding

The premises and access route are not considered to be at risk of groundwater flooding. This is based upon the rationale that the over lying soils are largely impermeable and that the underlying London Clay has limited potential to store water. There has been no record of ground seepage in the past.

2.3 Surface Water Flood Risk

The proposal does not increase the size of the building or any surface water discharge. Surface water storage areas or attenuation is not affected or reduced and remedial measures are not necessary

2.4 Pluvial Flood Risk

The surface water drainage system is already in place and with adequate catchment. With good falls to all outside paved surfaces to trapped gullies discharging into storm drains to the nearby River Ems, pluvial flooding has not occurred. This system ensure that an appropriate level of performance is provided and minimising the risk associated with surface water flooding.

Should the River Ems flood, the discharge will 'back-up' and the fluvial flood situation is dealt with below.

2.5 Fluvial Flood Risk

The premises and access route are within approximately 50 meters from the inland waterway, the River Ems. This area is designated 'at risk' on the Environment Agency flood maps. In view of this, the report will concentrate on the Fluvial flood risk and demonstrate that all the flood risk areas have been considered and will be managed, as part of this Planning Proposal, in order to ensure the safety of all those within the premises and those entering and egressing from the site.

3 Fluvial Flood Risk

As mentioned above, the primary flood risk associated with the WREN Centre comes from the fluvial flooding of the River Ems following surcharge by upland run-off. This results in the overtopping the river bank nearby. The flooding is most likely to occur between November and February during periods of heavy rain. The Met Office records show that December 2013 and January 2014 combined were the wettest months since records began in 1910. The Environment Agency has a river level gauging Station on the River Ems at Westbourne. The highest river level recorded at this location since it was sited in January 1980, was 10.65m AOD and this occurred on the 24th December, 2013. This is about 120mm below the 100 years flood contour at this area.

Flood zone maps which refer to the probability of inland river and coastal flooding by the sea are published by the Environment Agency (EA) who are the national flood control agency. A copy of the flood zone map published by the EA for the area in the vicinity of the WREN Centre is attached (RAI/04/15).

Flood Zone 2 has a medium probability of occurrence and relates to land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding.

Flood Zone 3 has a higher probability of occurrence and relates to land having a 1 in 100 annual probability of river flooding.

In accordance with the EA flood zone map:

- a. The premises known as Unit 21 in the WREN Centre falls within flood zone 2.
- b. The existing entry and exit route from Westbourne Road to the premises cross flood zone 3 designated land.

In looking at the Flood Risk Vulnerability Classification for the proposed changes, Buildings used for retail are considered *Less Vulnerable*.

3.1 Flood Levels

100 year modelled flood levels in metres (AOD) centred on Westbourne Road have been provided by the Environment Agency. The work was carried out by Peter Brett Consulting in 2006 for EA and shows the hydraulic gradient of the flood contours across the site (see plan RAI/04A/15). The contours reduce in magnitude southwards towards Westbourne Road. These contours have been used for the subsequent analysis. However, the contour at the flood gauge appears to be about 120mm higher than the maximum level recorded at this monitoring station which gives the analysis a safety margin.

3.2 Flood Defences

The site is not protected by flood defences. There are no building construction works being undertaken by Healthy Koi therefore the use of flood defence products are not applicable.

3.3 Existing Ground Levels

A closed level survey was carried out for the site using the Ordnance Survey NBM on the parapet wall of the nearby Hampshire Bridge. The existing ground levels of the access road leading to unit 21 and the finished floor level of the premises are shown on scaled plans numbered RAI/05/15 and 06/15.

4 Analysis

4.1 The Premises

The finished (internal) floor level (FFL) for unit 21 is 10.89m AOD.

The 100 years storm flood level outside the entrance to the building is 10.465m AOD.

The FFL of the premises is 425mm above the 100 years storm flood level, outside the entrance to the building

The concrete pavement outside the building which is used for short term parking by visitors is marginally above the 100 years storm flood level, and has not been covered by floodwater in the past.

4.2 The Access Route/s

The exit route from Unit 21 to Westbourne Road is via a concrete paved access road. The bellmouth connection with Westbourne Road is very wide and the exit aligns on the Eastern side of the junction. The Westbourne road carriageway at the bellmouth is marginally super-elevated to the south and the junction crossfalls from west to east, towards the low point near the River Ems.

A vertical profile along the access road was plotted to a 1:10 exaggerated scale and labelled Section A- A on drawing number RAI/07/15. The profile shows existing ground levels and the 100 years flood levels (blue broken line) and indicates the likely depth of floodwater laying over the surface.

In considering the nature of the business, customers over the years have visited the premises by private car or light commercial vehicle (van). There has been no bicycle, motorcycle or external pedestrian visitors. Impaired mobility visitors are brought by car and will safely enter the building using the concrete entry ramp.

Many authorities consider that the depth of floodwater which can be negotiated in safety by a car at slow speed, should the occasion arise, is 100mm flowing water (such as a river ford) and 150mm still water, to be reasonable. Any water laying over the access road at the WREN Centre can be considered 'not moving'.

In looking at the depth of a 100 years storm floodwater over the access, the first 32 meters from unit 21 towards the junction will be dry. At this stage, the vertical alignment changes and the floodwater increases from zero to 65mm deep for the next 37 meters, with an occasional hollow. Because of the level difference of the bellmouth, the water depth will then rise from 65mm to a maximum of 222mm deep at the junction with Westbourne Road.

In order to improve this, we looked at using an exit path about seven meters further west in the bellmouth to take advantage of the width and the increase in ground level in this direction. The alternative exit alignment is shown on plan RAI/06/15 and a vertical profile plotted (Section B-B) on plan RAI/08/15. The profile again is to a 1:10 exaggerated scale and shows existing ground levels and the 100 years flood levels (blue broken line) indicating the likely depth of floodwater laying over the surface.

The first 69 meters of access road from Unit 21 towards Westbourne Road will remain unchanged from Section A-A.. For the final 23 metres of track leading up to the north channel of the public highway, the water depth will rise from 65mm to a maximum of depth of 150mm. This is a considerable improvement on the depths encountered along Section A-A in the bellmouth.

The position of the revised exit alignment which need only be used in times of a 100 years flood, will not compromise safety or be detrimental to traffic entering and leaving the premises. The full stopping sight distance (SSD) of 70metres will still be obtainable from an offset of 2.4m back from the north channel. Any vehicles travelling from west to east along Westbourne Road will also be negotiating the road at a very slow speed due to water present.

Should these conditions occur, staff will give visitors directions to ensure that they are kept safe.

5 Conclusions

1. The main risk of flooding will come from a fluvial source
2. The finished floor level of the premises known as Unit 21 the WREN Centre has been constructed 425mm above the 100 years storm flood level and will not endanger staff or customers visiting the building in adverse conditions
3. The parking area immediately outside the building is marginally above (15mm) the 100 years storm flood level, and has not been covered by floodwater in the past. Visitors and staff will be able to enter and leave the building from their vehicle in safety during such an event.
4. Visitors and staff will be able to gain access to the public highway in safety using the current access road in 100 years flood conditions provided they drive slowly, carefully and use the suggested western path at the bellmouth. This route will ensure that the depth of water is kept to a minimum level. There are no construction works required here.

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