

Flood Risk Assessment

Site:

Unit J,
Unit 3, Durban Road
Bognor Regis
West Sussex
PO22 9QT

Application requirement:

Change of Use

All measurements contained herein are derived from Google Earth information.

Site:

Overview

The Unit forms part of an overall larger premises which has been divided into three parts. There has been a dividing wall built following the line of the apex roof, which divides the building “north to south”, and the front office space has been made into a single unit, which is currently occupied by an accountancy firm.

The “north” side of the apex is being used as a car repair workshop.

Unit J, Unit 3, is currently unused, but was, as understood, another vehicle repair center.

Location:

The unit is on the west side of Durban Road, opposite the Cul-de –sac of Evans Place, on the east side.

The whole building is on the “south” corner of Byfield Place and Durban Road.

The ditch tributary of the Aldingbourne Rife, is approximately 130 meters from the premises door (as map depicts).

The Immediate cause of flood risk

At the end of Evans Place runs a drainage ditch for the Riverside Caravan park. This runs around the north, south and west side of part of the caravan park, and creates an island of this particular piece of land, by flowing into the Aldingbourne rife, which forms the east side of waterway which creates the island. The drainage ditch flows into the Rife at the north and south ends: The south flow forms the North boundary of the Tesco car park; the north flow creates the boundary between this part of the riverside Caravan Park, and the south side of Heath Place.

Point to Note: At the “Ditch end” of Evans Place is an Electric Sub Station.

Terrain and altitude

Although Evans Place and Durban Road are “flat” tarmac roadways, Evans Place has a noticeably visual slope downwards from Durban Road.

Altitude Checks confirm this: The “ditch end” of Evans Place is shown as 0m: The junction of Durban Road and Evans Place, shows an altitude of 1m.

Taking an Altitude reading of Byfield Place we find that 280cm from the rear of the subject unit the altitude is 2m.

This suggests a 2 meter uphill gradient from the Rife to the rear of the building in question, over a distance of 142 meters.

Durban Road has the expected 5" (130mm) kerb stones, which raise the footpath and the buildings to this level. On top of which, Unit J, Unit 3's floor height is a further 4" (100mm) above this.

Considering the vast acreage that surrounds the Adingbourne Rife at an altitude of 0 meters – extending to the north of Rowan way, and encapsulating most of Riverside caravan park: "Durban Road side" of the ditch, the distance measured from the ditch to an altitude of 1m varies between 25 and 58 meters. Within these distances are buildings such as the WSCC building, Renolds Warehouse, Remco Motors, Regis Gymnsatics to name but a few. The point is, there will have to an unprecedented amount of surface water building up; significantly more than we have thus far experienced, before "the other side" of Durban Road could be considered "in danger": Ash Grove Industrial Park, for example, at an altitude of 0 meters, would be "under water" before units in Durban Road on the opposite side to the ditch (where unit 3, unit J is) could be considered "in imminent" danger.

Points To Note: The Tesco's car park floods periodically. Altitude checks show that the main part of the car park has an altitude of 0m.

Although Tesco's has often had to close because of this and buildings near to the rife in Durban Road such as the WRVS kitchen, and part of the ground floor in the WSCC building, have historically been flooded, I am not aware of the actual roadway of Durban Road itself, having any flooding issues.

It would be true to say that there have been flooding issues concerning the Riverside caravan park, but this too, lies on an altitude of 0m.

The Tesco's / A29 junction has an altitude of 2m, and has never been known to flood.

Surface Water

We are only requesting "change of use" of the building, with no structural changes.

Therefore the surface water would be drained by existing drainage systems, drainage through naturally "finding its own level" and vehicle spray, aids evaporation.. On top of which the downwards sloping Evans Place towards the ditch acts as a natural "run off", should this be required.

However: The Ryebank Rife as well as other waterways, also flow into the Aldingbourne rife, and as such will contribute to the water content of the rife and its tributaries, although the Ryebank Rife, it appears, has an outlet to the sea on the East Side of Ancton.

They all make up small inland waterways and drainage provision, and each one will have an effect on the other. For the most part, they all run through agricultural land, and this land would act as "flood relief" usually.

It is the proportion of urban (built up) area through which the waterways pass, that is presents "issues".

It is an anomaly that the sluice gates to the east of Butlins, are shut to protect from flooding at high tides, but need to be open for water drainage in the event of the waterways becoming "full"!

It is an event that perhaps happens once or twice a year, depending on tidal and weather conditions.

However, as yet, this has not had an impact on the west side of Durban Road, or as mentioned earlier, even the actual road surface of Durban Road.

It is more likely that the houses on Fir Tree Way, and those to the north of Rowan Way (Addison Way) at altitudes of 0m will be liable to flooding before Unit J is affected.

Climate Change Allowance

All figures are derived from the base year of 1990....

Sea Levels

Using the figures provided, to 2015, the sea level has risen 4 inches (100mm) from 1990 and is projected to raise a further 4mm per year until 2025, making the total rise of sea level to 2025, 140mm (approximately 6")

Rain fall

This is proving difficult to obtain accurate information.

According to the MET Office, the highest average rainfall for Bognor Regis, is in the month of October, for the period of 1981 – 2010, for which we have an average monthly rainfall of 91.1mm .

We can't use the formulae of dividing the 91.1 mm by 744 hours (hours in the month of October), as in doing so, we obtain an average hourly rate of 0.123mm!

This is not viable information on two fronts: Firstly, we need to work out the findings on the "peak" or "most" rainfall in an hour, and secondly, we have had 11.2 days in October, where the rainfall has been $\geq$ 1mm per day!

Although average rainfall is lower for January, the number of days where $\geq$ 1mm fell is increased to 12.5!

In April & June 2012, the coastal area between Selsey and Worthing experienced a 191% increase in rainfall, based on an average over the period 1981 – 2010. (433mm over the three months.)

However, there were climatic circumstances that all contributed to this phenomenon, that will probably not be seen for decades, if not centuries.

The most significant being the shift of the Jet stream, which along with the usual shift of the gulf stream, caused the wettest summer since 1912.

There is a "two day accumulation" figure of 145mm for the days of 10th & 11th June 2012. I will use this figure averaged over the 48 hour period for "peak" rainfall projections, although it will probably be higher than required.

This equates to an average rainfall per hour of 3.02mm.

Using the formulae, we can expect this to rise to 3.2mm in 2025.

However, being coastal, it is the combination of high tides, wind and rain, that would cause the greatest risk of flooding.

It is unlikely that the unit in question will be subject to flooding within the next ten years, by which time, hopefully, “MiniLights” will have outgrown the unit, and be looking for larger premises.

This unit could possibly then revert back to current use.

Estimated flood level

There are no historic records of Durban Road itself being subjected to flooding, despite its relatively low attitude.

This is not to say that it won’t be susceptible in the future. Inconsistent and unusual weather patterns over the past five years have highlighted how alert we all should be to weather “anomalies”.

The Tesco car park, that has been highlighted previously, is accepted to form part of the flood plain.

According to the Environment Agency, there is a $\geq 1\%$ chance of river flooding for the premises in question.

What is very noticeable concerning the EA flood risk area on their web site, is that some shaded areas have never flooded (such as Durban Road) , and yet some areas which are prone to flooding (such as near the traffic lights at the Felpham way / Downview Road junction) are apparently “no risk”!

The supplied additional information (link below to the relevant ADC document), seems to suggest that most of the flooding from 2009, was due to blocked gullies, and/or waterways.

<http://www2.westsussex.gov.uk/ds/cttee/ea/ea140709i15apa1.pdf>

Flood protection

We will have a “soft floor” for our activity. As a general rule, “soft” will translate as “absorbent”.

When an area is prone to flooding, it is usually not only surface water that ingresses, but sewerage also is a problem.

The last thing we need is for our soft floor area to become impregnated with ANY liquid damage.

That said, this unit is less prone to such events as the unit we currently share with Regis Gymnastics, (Unit 16a castle Grove) which is within yards of the ditch, and at an altitude of 0 meters.

We will have at our disposal a number of sandbags (enough to place along the door steps) to act as a primary defence. If necessary, if the situation looks as if the sandbags won’t offer enough protection, we would “take the floor up”, and store the floor panels at a higher level. We will also sign up to EA flood alert warning service and/or similar local authority predictions.

Evacuation

There is only one entrance / exit door, which is shown on the floor plan. It would be easy to visually monitor the water level along the road, should the need occur. If it is felt that evacuation is required, then the premises will be vacated as deemed enough time to be able to move the soft flooring to a higher level.

We have to consider the premises environment both for us the operators, and for the users of all ages, so we would most definitely not want any unpleasant smells, or potentially subject any equipment to situations where bacterial hazards to health could manifest, which would render the equipment unusable.

Assessment Sources

Google Earth predominantly. (For altitude, waterways, General geography)

Met Office web site

Arun district council web site

Environment Agency:

(As well as doing our own analysis, I have sought advice and help from Mr Mark Luker, based in the Worthing depot of the Environment Agency.

He advised that although the unit is in a flood Zone 3 area, ($\geq 1\%$) because of the use we propose, it is of very low vulnerability, He is of the opinion that for a mere change of use, with no structural changes, no residential developments or other significant infrastructure works, an assessment of the detail I have complied is not required.

He can be contacted on 01903 703883 should any clarification be required.)

Personal knowledge and experience gained from living in Eastergate / Walberton, Yapton, Barnham and Bognor Regis for over 50 years....