PROPOSED DEVELOPMENT AT REAR OF 30 – 31 WESTLODE STREET SPALDING PE11 2AF

FLOOD RISK ASSESSMENT



View of rear of development site

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This flood risk assessment has been prepared solely to support the planning application for the proposed new development at 30 – 31, Westlode Street, Spalding. The author has made every effort to provide an accurate assessment of the flood risk but accepts no liability should the information be found to be incorrect or incomplete.

Introduction

An application is due to be made to South Holland District Council for Planning Permission to demolish the rear buildings at 30 – 31 Westlode Street, Spalding and construct a new building containing nine self contained flats. The work will also include the formation of further flats at first floor level by refurbishing the existing building adjacent to the road.

The site is within Flood Zone 3 as shown on the Environment Agency's Flood Zone Map. These maps do not take into account existing flood defences.

The Planning Application requires a Flood Risk Assessment to be carried out as required in Technical Guidance to the National Planning Policy Framework.

The site is shown within the defended area of the South Holland District Council's Strategic Flood Risk Assessment (SHDC SFRA) map and is located in the Welland and Deepings Internal Drainage Board district.

Application Site

The development is located on the western side of the River Welland. The National Grid Reference of the site is 524990 322930.

The location of the site is shown on the plan at the end of this document.

The proposed development is within Flood Zone 3(a) "High Probability" as detailed on the Environment Agency's flood zone maps without defences, as defined in Table 1 of the Technical Guidance.

Applying the flood risk vulnerability classification in Table 2 of the Guidance, the development is classified as "more vulnerable", and Table 3 states that more vulnerable development should only be permitted after the sequential and exception test is followed.

Sequential Test

As the proposed development is located in Flood Zone 3(a) the NPPF requires the sequential test to be applied to determine if there are any reasonably available and suitable alternative sites in a lower flood risk zone for this type of development. All of the area of Spalding is within Flood Zone 3, so it is not possible to locate development to a lower flood risk zone. The proposed development is located in the central area of Spalding where the ground level is approximately 2.0 metres higher than outer areas of the town. Therefore the development can be considered to be in an area with the lowest risk of flooding in Spalding, and therefore complies with South Holland District Council's policies on flood risk.

Exception Test

The Sequential Test has demonstrated that it is not possible, consistent with wider sustainability objectives, for the development to be located in zones with a lower probability of flooding. Therefore the Exception Test must be applied and for this to be passed:

- It must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risks, informed by the Strategic Flood Risk Assessment; and
- A site-specific flood risk assessment must demonstrate that the development will be safe for its lifetime taking into account of the vulnerability of its users, without increasing flood risk elsewhere, and where possible will reduce flood risk overall.

Both parts of this test must be satisfied in order for the development to be considered appropriate in terms of flood risk. There must be robust evidence in support of every part of the test.

The first section will be demonstrated by the Supporting Planning Statement and compliance with South Holland District Council's planning policies.

This flood risk assessment will demonstrate that the development will be safe for its lifetime and it will not increase flood risk elsewhere.

Strategic Flood Risk Assessment

The following information about the flood risk at the location of the proposed development has been gained from the maps produced for the South Holland District Council Strategic Flood Risk Assessment:

1. **Report Maps**

- Map 5 indicates the site to be low or medium risk and protected by flood defences.
- Map 6 indicates the peak depth is zero for the present day 1% fluvial / 0.5% tidal event probability.
- Map 7 indicates the peak velocity is zero for the present day 1% fluvial / 0.5% tidal event probability.
- Map 8 indicates the risk extent is zero for the present day 1% fluvial / 0.5% tidal event probability.
- Map 10 indicates the actual risk extent for the 0.1% event probability is zero.
- Map 12 indicates the actual risk extent is zero.
- Map 13 indicates the 1% fluvial / 0.5% tidal event probability for 2115 for the site is zero.
- Map 14 indicates the actual risk extent for the year 2115 for the 0.1% event probability is zero.
- Map 16 indicates the site is not within a rapid inundation zone.

2. Flood Maps Table D1

- The maps illustrate the actual flood hazard which is as follows:

For the present day	Depth of flooding ... zero
	Extent of flooding .. zero
	Hazard .... Nil
	Velocity ... Nil
For year 2115	Depth of flooding ... zero
	Extent of flooding .. Low or medium flood probability
	Hazard ... Nil
	Velocity .. Nil

- The maps also illustrate the residual flood hazard which is as follows:-

For the present day	Depth of flooding ... zero
	Extent of flooding .. Low or medium flood probability
	Hazard ... zero
	Velocity .. zero
• For the year 2115	Depth of flooding ... zero
	Extent of flooding .. Low or medium flood probability
	Hazard ... zero
	Velocity .. zero

3. The maximum flood levels in the fluvial section of the Spalding Welland is shown in the reports as follows:

	Peak 1 in 100		Peak 1 in 1000	
Year	2007	2115	2007	2115
Level	4.43	4.67	4.45	4.68

The defence level of left bank of Spalding Welland is 5.20m OD

4. The extreme tide levels in the section of the River Welland north of Fulney Lock is shown in the report as follows:

	2007	2055	2115
1 in 100 year	5.98	6.31	7.12
1 in 1,000 year	6.32	6.65	7.46

The lowest bank level occurs 200 metres north of Fulney Lock, where a section 300 metres long has a minimum level of 6.98m OD.

Site Levels

The level of the entrance to the rear of the building is approximately 5.25m OD, which is the same level as the level of the footpath and road. The level of the hardstanding at the rear is 5.04m OD, and the rear of the site is 500mm lower at a level of 4.58m OD. The floor level of the shops at the front alongside the road is 5.39m OD. It is recommended that the new building should have a floor level of 5.50m OD.

Existing Flood Alleviation Measures

The site is within a defended flood plain, as defined in Appendix 1 of the Environment Agency's "Policy and Practice for the Protection of Flood Plains" and is considered to be passive until such time that a flood greater than the defences can withstand occurs. The likelihood of flooding due to overtopping or failures of the defences is considered to be very low.

The site is approximately 130 metres from the River Welland, which is main river and maintained by the Environment Agency.

This area west of the River Welland is drained by surface water sewers maintained by Anglian Water, which discharge either into the River Welland or into drainage channels maintained by Welland and Deepings Internal Drainage Board. The water levels in the IDB channels are controlled by the water level in South Drove Drain which also is operated by Welland and Deepings IDB.

Potential Sources of Flooding

The following sources of flooding will be considered:

1. Failure or overtopping of the tidal defences.
2. Overtopping of the River Welland.
3. From IDB watercourses
4. Surface water flooding

1. Failure or overtopping of tidal defences.

The River Welland is tidal north of Fulney Lock, which is approximately 2km north of the site. The SFRA states that the defences are adequate to withstand a 1 in 200 year (0.5%) probability event for present day. In the future in 2115 some of the banks would be overtopped with a 0.5% probability event. However if overtopping or a breach occured water would flow westwards from the tidal Welland and lower land to the west of the River Welland would be flooded. The central area of Spalding would remain unaffected, even if a tide of extreme proportions occurred.

It is reasonable to presume that within the next one hundred years works would be undertaken on this section of the bank to ensure that there will be a 1 in 200 year standard of defence continuing into the future.

2. **Overtopping of the River Welland.**

The west bank of the River Welland is at a level of 5.20m O.D. at London Road. This is not a raised defence at this point. The area around Double Street is also at a level of 5.20m OD. The average level of the roads and footpaths in Westlode Street is 5.25m OD. The maximum water level possible in the fluvial section of the Welland is 4.67m OD. This is because above this level a siphon is activated to spill water on Cowbit Washes. Also water will begin to flood over lower banks around Crowland. Therefore, there is no possibility of flood water from this source reaching this area of the Crescent.

Therefore, this source of flooding can be discounted.

3. **Flooding from IDB watercourses**

The highest predicted water levels in IDB drainage channels in the area are in Vernatts Drain which are 3.79m OD. As the proposed floor level of the new building is 5.50m OD this source of flooding can be discounted.

4. **Surface Water Flooding**

The road and path level in this part of Westlode Street is 5.25m OD, and the proposed ground floor level of the new building 5.50m OD. If there is any accumulation of surface water in Westlode Street after a heavy storm it is unlikely to be greater than 100mm in depth and flood the new building. Flood depths of greater than 100mm are unlikely to occur because excess water will flow northwards into areas where the ground level is much lower. Therefore flooding from this source can be discounted.

Extent of known Flooding

During the preparation of this assessment, no evidence was discovered of any surface water flooding having occurred in this area of Spalding. This is not surprising as the land levels are some of the highest in the area.

Probabilities and Trends of Flooding

The probability of this development flooding from Environment Agency main river is very low. In an extreme event any effect on this location would not be sudden and there would be time for residents to take precautionary measures to limit the impact of any flooding that may occur.

Residual Risk – Extreme Events

The residual risk from extreme events is very low on this site. The major risk to the site is from a breach or overtopping of the tidal defences

The risk of this happening in this case is low and the hazard from any flooding is also low.

Therefore although this site is within Flood Zone 3 according to the initial classification because of the current standards of drainage and flood risk in Spalding there is a very low risk of flooding to this site.

The flood zones were designated a number of years ago by the EA when little modelling had been carried out. Since then much work has been carried out by the EA which gives much better predictions of flood levels. If the designations were revisited this area would be at least designated in flood zone 2.

Summary of Risk of Flooding to the Site

With a proposed ground floor level of 5.50m OD flooding as a direct result from breaches to the tidal or fluvial section of the River Welland the risk of flooding to this site is so low it can almost be discounted. Even in an extreme tidal event with multiple breaches occurring in the west bank of the tidal Welland it is difficult to foresee flooding occurring at this location, as lower land to the north would flood in preference to the higher central area of Spalding.

Conclusions

The following conclusions can be made:

- The proposed development is not in a functional flood plain as defined by the Technical Guidance.
- Although the site is in flood zone 3, the actual risk of the site flooding from any Environment Agency watercourse is extremely low.
- The SFRA indicates that no actual or residual flooding is predicted in the area for the 0.1% event possibility in 2015, as shown on the map reproduced on page 9 taken from the SHDC SFRA.
- The risk of the site becoming flooded from any source is extremely low.
- The flood risk to the proposed building is extremely low and acceptable for the use as small flats with some sleeping accommodation on the ground floor.

Recommendations

- In any area at risk of flooding it is preferable that a proposed building should be of at least two story construction with all bedrooms at first floor level. This will provide a refuge for residents if the building becomes flooded after a major

breach, and ensure there is no danger to residents when they are asleep. However as the risk of any flooding occurring is so low that it could almost be discounted then accommodation with bedrooms on the ground floor is considered satisfactory.

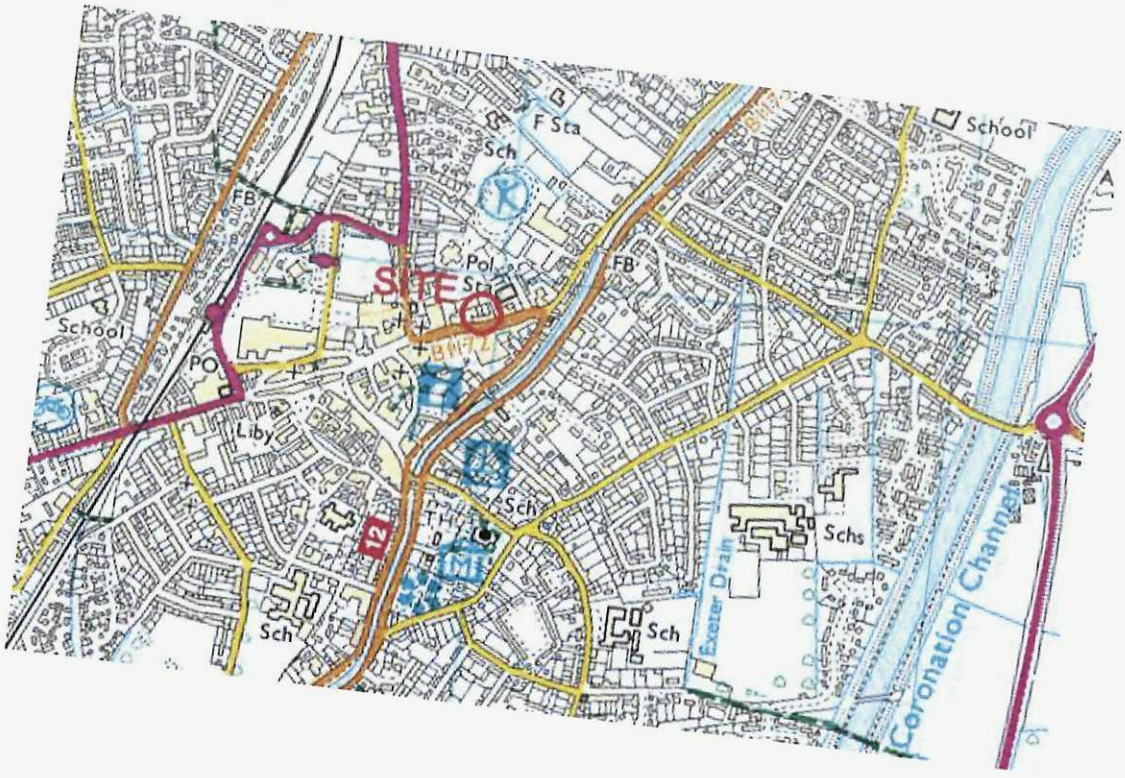
- The ground floor level of the new building should be 5.50m OD.
- If any flooding did occur it would happen extremely slowly over many hours and occupants of the flats would have adequate time to prepare themselves for the event.
- The owner of the building should advise all tenants that they should register with the Environment Agency's Floodline Warnings Direct Service.
- On site surface water drainage should be discharged into soakaways and these should be designed to BRE Digest 365 and approved under Building regulations.
- In a flood risk area there is always a risk of an event occurring of greater magnitude than has been considered in this flood risk assessment.

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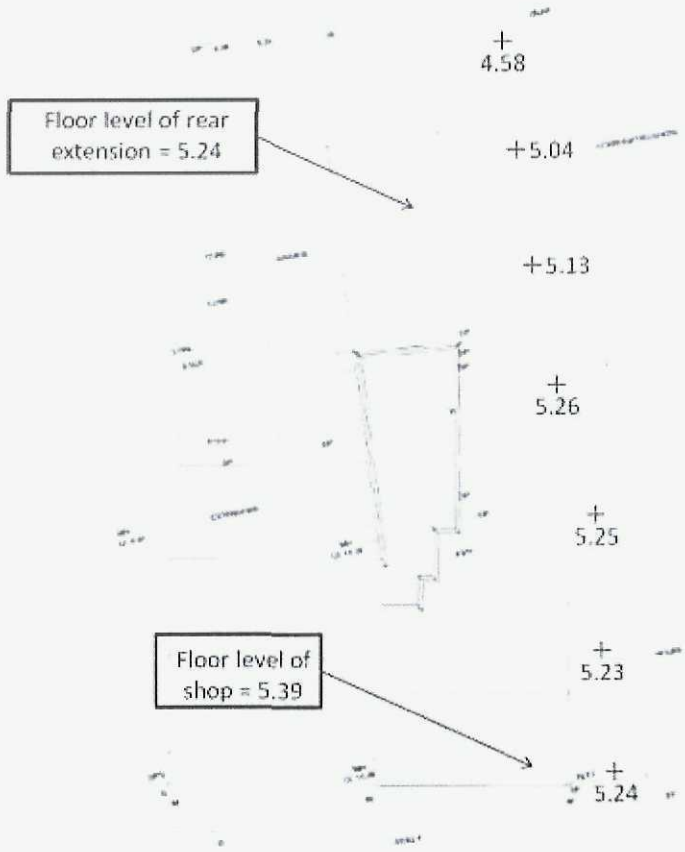
LOCATION PLAN



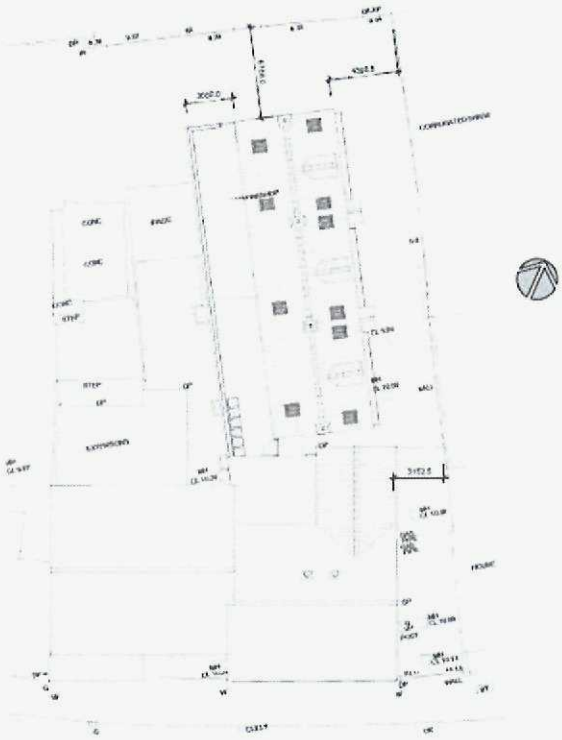
SITE LOCATION PLAN



SITE LEVELS



BLOCK PLAN



RESIDUAL PEAK DEPTH YEAR 2115 0.1% EVENT PROBABILITY

