Flood Risk Assessment

1.0 INTRODUCTION

This Flood Risk Assessment has been prepared in accordance with National Planning Policy Framework (NPPF) and supporting planning practice guidance (PPG) on Flood Risk and Coastal Change. In areas at risk of flooding or for sites of 1 hectare or more, developers are required to undertake a site-specific Flood Risk Assessment to accompany an application for planning permission.

2.0 SITE LOCATION AND DESCRIPTION

2.1 Site Location

The site is located on land attached to 27 Delgate Avenue, Weston, Spalding, Lincolnshire, PE12 6TH. The location of the site is shown in Figure 1.

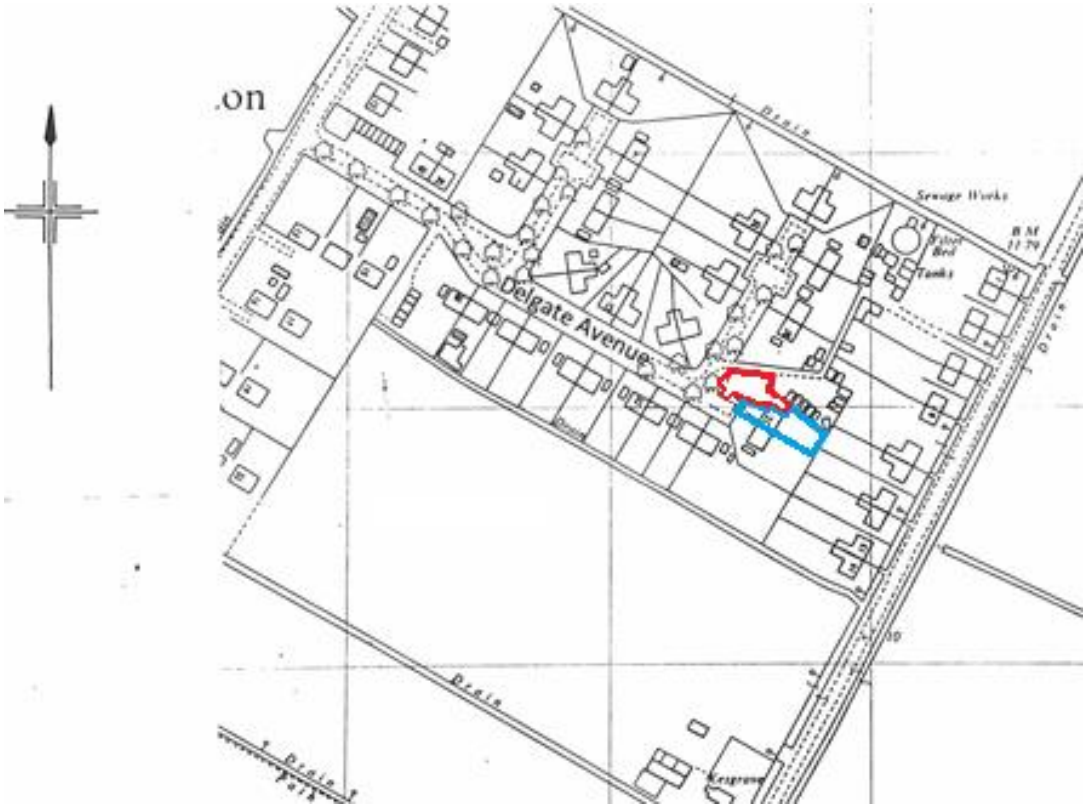

Figure 1 – CP1509-C4

2.2 Existing Site

The Existing site is located in Delgate Avenue, Weston, PE12 6HT. The national grid reference is 529461, 324795. The site is garden land to 27 Delgate Avenue. with residential dwellings to the North, South and West of the site. The proposed area for development is approximately 0.0255 hectares.

2.3 Proposed Development

The proposed development consists of one dwelling. The dwelling will be detached. The proposed site plan is outlined in red in figure 2.

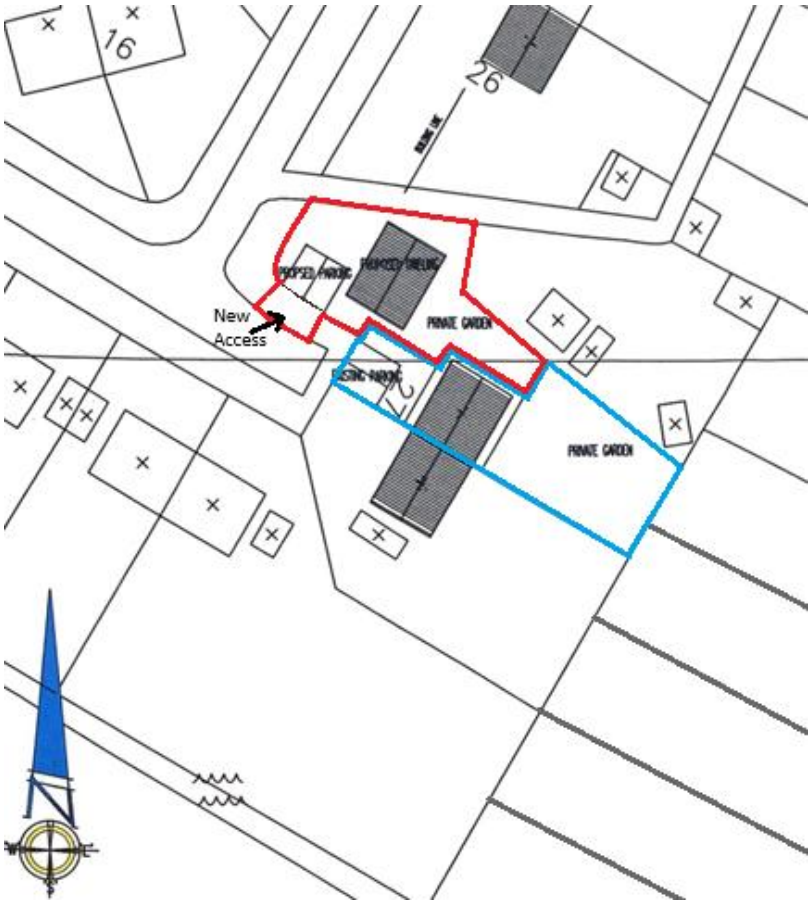

Figure 2 – CP1509-B4

2.4 Local Development Documents

The South East Lincolnshire Local Plan 2011 – 2036, adopted in March 2019, is the Local Plan for the district. Policy 4: Approach to Flood Risk states the requirements for flood risk reduction. The South East Lincolnshire Level 1 and Level 2 Strategic Flood Risk Assessment (SFRA) was prepared in June 2017.

The Joint Lincolnshire Flood Risk and Drainage Management Strategy has been prepared by Lincolnshire County Council as the Lead Local Flood Authority. The purpose of the Strategy is to increase the safety of people across Lincolnshire by reducing the number of people at risk of flooding, increasing the resilience of local communities, and reducing the impact of flooding.

2.5 Flood Zones

An extract from the Environment Agency Flood Map for Planning is shown in Figure 3. The site is located within Flood Zone 3, an area with a high probability of flooding.

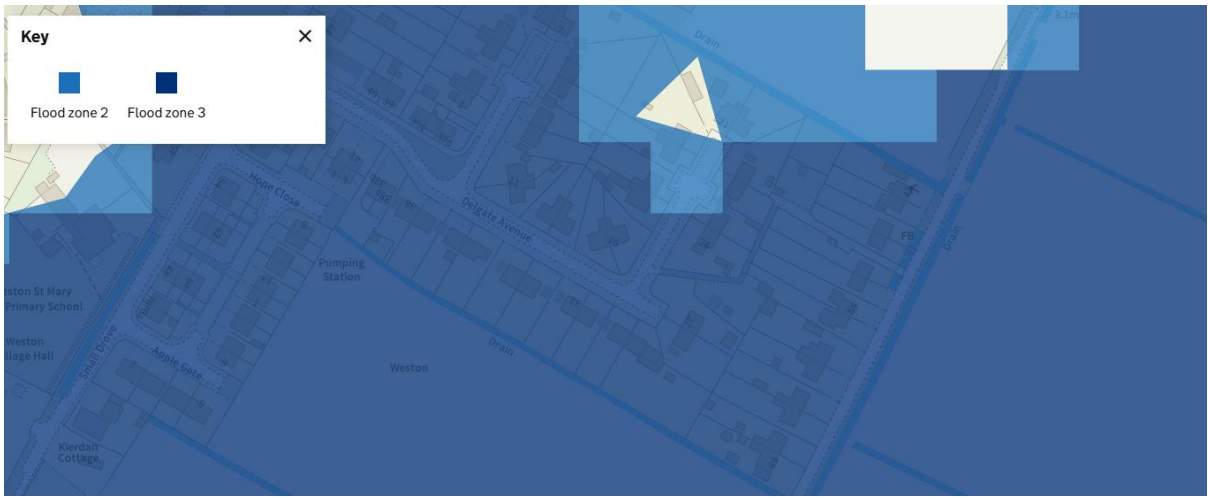

Figure 3- Environment Agency Flood Map Planning

The Environment Agency Long Term Flood Risk maps show that:

• the site has a low risk of flooding from rivers or the sea (annual probability between 0.1% and 1%);

• the site has a very low risk of surface water flooding (annual probability less than 0.1%);

• the site is not within an area at risk of reservoir flooding.

Table 1 shows the level of risk at the site within the South East Lincolnshire SFRA.

3.0 FLOOD RISK

3.1 Flood Risk Vulnerability

The Sequential and Exception Test the NPPF requires the application of a Sequential Test to ensure that new development is in areas with the lowest probability of flooding.

The Exception Test is a method to demonstrate and help ensure that flood risk to people and property will be managed, while allowing necessary development to go ahead in situations where suitable sites at lower risk of flooding are not available.

3.2 Vulnerability Classification

Table 2 of the PPG Flood Risk and Coastal Change categorises different types of uses and development according to their vulnerability to flood risk.

The proposed development is covered by the description of buildings used for dwellings and is classified as 'More Vulnerable'. Table 3 of the PPG Flood Risk and Coastal Change sets out Flood Risk Vulnerability and flood zone 'compatibility'.

The site is in Flood Zone 3 and the development is 'More Vulnerable' therefore it is necessary to complete the Exception Test. PPG Flood Risk and Coastal Change defines that the lifetime of the development in terms of flood risk and coastal change is 100 years.

3.3 Application of the Sequential and Exception Test

It is for the Local Planning Authority, using the evidence provided and taking advice from the Environment Agency as appropriate, to consider whether an application passes the Sequential Test.

Large parts of the South Holland district between the River Welland and River Nene lie within Flood Zone 3. As such, opportunities to undertake the development at an alternative site with a lower flood risk are limited.

At this location it is not possible to position the development on higher ground within the proposed site. The SFRA states that as it is necessary to use the refined flood risk information (hazard and depth maps) to assist with the application of the sequential test.

The refined flood risk information contained within the SFRA demonstrates the site is not at risk during the present day 1% fluvial and 0.5% tidal event. The site therefore has a low probability of flooding and is considered to pass the Sequential Test.

The Exception Test requires consideration of the wider sustainability benefits of a development and that the development would be safe and residual risks managed.

Section 5 of this Flood Risk Assessment describes the flood mitigation measures and the management of the residual risks, demonstrating that this development will be safe and not increase flood risk elsewhere.

The development is considered to pass the Exception Test.

4.0 SITE SPECIFIC FLOOD RISK

4.1 Local Flood Assets

The site is 3.0 km east of the Coronation Channel. The Coronation Channel is a bypass channel of the River Welland constructed in the 1950's to convey river flows around Spalding.

The Coronation Channel together with the Crowland and Cowbit Washes offer flood reduction to Spalding and the surrounding district. North of Spalding, downstream of the confluence with the Coronation Channel, the area is protected by the River Welland tidal defences between Spalding and Fossdyke.

The defences are 2.4km west of the site and minimum embankment levels of +7.0m OD. The River Welland and the Coronation Channel are the responsibility of the Environment Agency. There is a long-term strategy for the maintenance of the Environment Agency defences which is reviewed and updated periodically.

There is an extensive local drainage network managed by South Holland IDB. There is an IDB High Priority Watercourse 500m north and east of the site. The site and surrounding land are part of the Lord's catchment and drain by gravity to Lords Drain Pumping Station.

The pumped water discharges to the tidal River Welland. During the operation and maintenance of its pumping stations, associated structures, and channel systems, the IDB seeks to maintain a general standard capable of providing flood protection to its district.

A routine maintenance programme is in place to ensure that the Boards assets are commensurate with the standard of protection that is sought. Current maintenance standards of the South Holland Internal Drainage Board and the Environment Agency are generally good.

4.2 Probability of Flooding

The probability of flooding associated with blockages in the South Holland IDB drainage system is low due to the maintenance standards achieved and managed by the IDB. Failure of Lord's Drain Pumping Station could lead to an increased level of risk at the site.

Through the operation and maintenance of the pumping stations and the channel system the Board seek to maintain a general standard capable to providing flood protection to agricultural land and developed areas of 1 in 20 years and 1 in 100 years, respectively.

The risk associated with flood events that exceed the standard of protection provided is lowered due to the South Holland IDB main drains incorporating freeboard.

This freeboard provides storage during the exceedance events. The Coronation Channel earth embankment has a minimum crest level of +6.0m OD. The 1% annual probability (1 in

100 chance each year) peak flood level inclusive of climate change during the next 100 years in the River Welland is +5.45m OD. The Coronation Channel embankment provides a standard of protection of 1% annual probability (1 in 100 chance each year) with a minimum 0.55m freeboard. The River Welland tidal defences provide protection during a 0.5% annual probability (1 in 200 chance each year) event.

4.3 Historic Flooding

During the preparation of this assessment, no evidence was discovered of the site being flooded. Previous historic rainfall events of 1968 and 1978, estimated to be greater than 1% annual probability (1 in 100 chance each year), caused no flooding to any residential properties.

4.4 Climate Change

Climate change is likely to impact the site through increased rainfall intensity and duration affecting the local drainage network and increased tide levels.

The flood level in the River Welland at Fossdyke during the 0.5% annual probability (1 in 200 chance each year) event inclusive of climate change to 2069 is estimated to be 6.41m AOD.

The minimum defence level of the River Welland embankments is 7.0m AOD. In summary the site is not at risk for the design life of the development (i.e., 100 years).

5.0 MITIGATION

5.1 Flood Risk Mitigation

Summary of Risks The probability of this development flooding from localised drainage systems is low. Failure of Little Holland Pumping Station could lead to an increased level of risk at the site.

The probability of the site flooding from any Environment Agency system is less than 0.5% annual probability (1 in 200 chance each year) because of the standards of the existing flood defences. Over time there will be a gradual increase in risk to the site due to climate change.

During the design life of the development, it is not anticipated that the site would flood from overtopping of the defences. The SFRA considers the residual risk associated with a breach in the defences in 2116. The peak flood depth during the 0.1% annual probability (1 in 1000 chance each year) is estimated to be 0.4m.

The proposed arrangement increases the impermeable area and therefore there will be an increased volume of surface water that has the potential to increase flood risk.

5.2 Mitigation Measures

Based upon the information available during the preparation of this flood risk assessment, it is recommended that the floor levels of the dwellings are 0.5m above typical site levels.

It is recommended that there is 0.5m of flood resilient construction above finished floor level.

The developer should ensure that the eventual occupiers of the dwellings are sufficiently aware of the risk of flooding, and the standard of the existing defences. The Environment Agency operates a flood warning system for properties at risk of flooding to enable householders to protect life or take actions to manage the effect of flooding on property. Floodline Warnings Service is a national system run by the Environment Agency for broadcasting flooding warnings.

The occupier of the dwellings should register to receive flood warnings. During an exceedance event it is anticipated that sufficient time would be available to take precautionary actions to limit the potential impact of flooding.

Should there be a failure of Little Holland Pumping Station and conditions were such to put properties and land at risk of flooding, the Internal Drainage Board would take emergency action to maintain the drainage level of service by using temporary pumping equipment.

It is recommended that surface water run-off is managed so that stormwater from the development will not affect any adjoining properties or increase the flood risk elsewhere.

6.0 CONCLUSIONS

As a result of the assessment, the following conclusions have been reached.

• The proposed development comprises one dwelling between 26 and 27 Delgate Avenue, Weston.

• The site is located within an Internal Drainage Board catchment and through the operation and maintenance of the pumping stations and the channel system the Board seek to maintain a general standard capable to providing flood protection to agricultural land and developed areas of 1 in 20 and 1 in 100 years, respectively.

• The proposed development is in Flood Zone 3. The site benefits from defences on the River Welland that provide protection during the 1% annual probability (1 in 100 chance each year) fluvial event and 0.5% annual probability (1 in 200 chance each year) tidal event including climate change.

• It is recommended that the finished floor levels are 0.5m above typical site levels. It is recommended that there is 0.3m of flood resilient construction above finished floor level.

• The development passes the Sequential Test and Exception Test and is therefore suitable for the proposed location.