

The Manor House Play Café Flood Risk Assessment

Play Cafe: Site Location Plan



1.1. Site Address

47 Church Street

Pinchbeck

Spalding

Lincolnshire

PE11 3UB

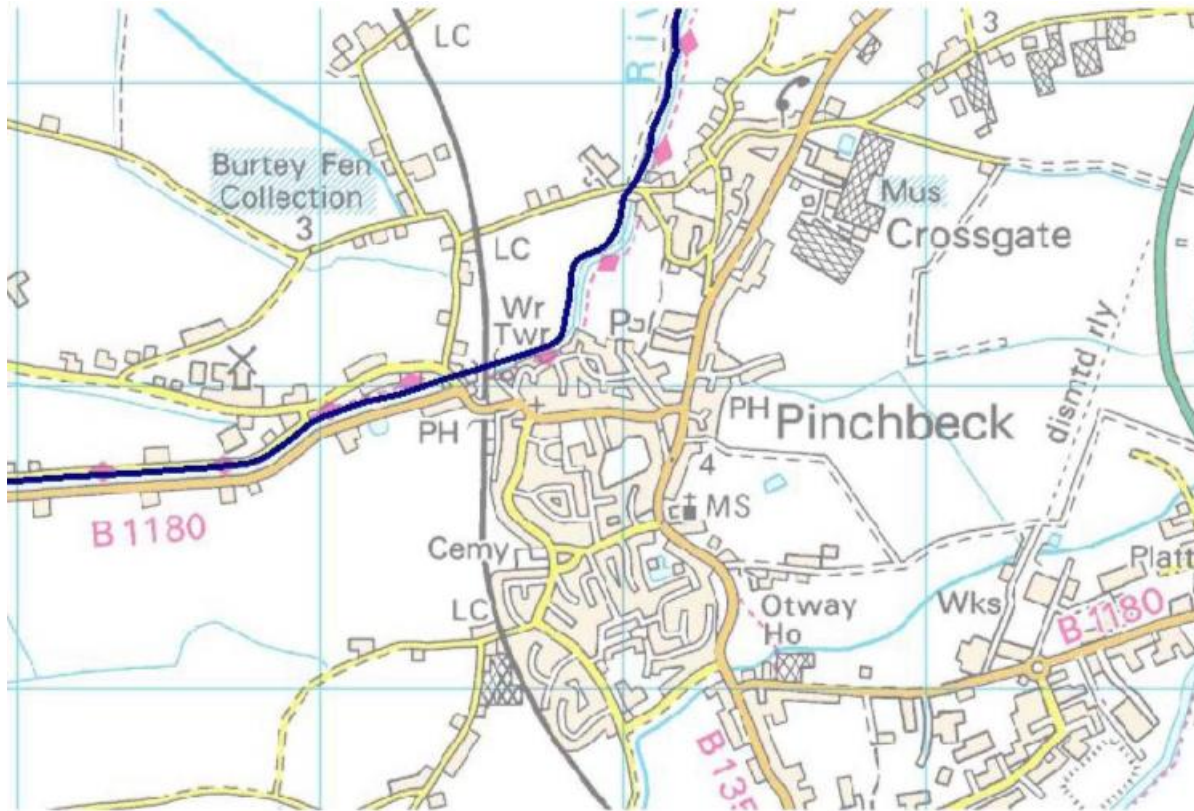
1.2. Application Purpose

A full planning application has been submitted for a change of purpose for two ground floor rooms, a foyer area and a toilet from residential to class A3 business use on the site of 47 Church Street, Pinchbeck, Spalding, Lincolnshire, PE11 3UB.



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Scale: 1:1250 @ A4

2.1. Main River Location



2.2. Site Location

The site is located 500m from the River Glen

The River Glen passes beyond Guthram Gowt in a north-easterly direction, passing through Pinchbeck and Surfleet before reaching the tidal entrance sluice where it joins the river Welland. Due to low-lying land it is flanked on both sides by drainage ditches.

The river Glen falls within the catchment of the river Welland.

3.1. Catchment Overview

Local Authority: South Holland District Council

The catchment of the River Welland is located in the east of England. It extends from the river's headwaters around Market Harborough and flows eastwards through Stamford and Spalding to its outfall into the Wash. It includes the major tributaries of the West Glen and East Glen Rivers, plus a number of other tributaries including Eye Brook, the River Chater and River Gwash. The downstream limit of the CFMP area is located at Fosdyke Bridge which is The Wash Shoreline Management Plan (SMP) boundary. The Wash SMP deals with coastal flood risk management, while the CFMP considers tidal flood risk along the River Welland upstream of Fosdyke Bridge to the tidal limit in Spalding.

The overall catchment area is about 1,680km², and has a population of approximately 250,000. It is predominantly rural with the majority of the catchment (approximately 80%) being used for arable crop production. There is a large proportion of high grade agricultural land particularly in The Fens. The main urban areas are Market Harborough, Oakham, Stamford, Market Deeping, Bourne, Spalding and the northern part of Peterborough, which includes the areas of Bretton, Dogsthorpe, Gunthorpe, New England, Ravensthorpe, Walton and Werrington.

The landscape of the catchment varies significantly. Upstream of Stamford it is relatively hilly. Downstream of Stamford, the river has raised embankments, to carry water through the low-lying fenland. The fens are drained mainly by pumping and discharging water into the Welland because large areas are at or below sea level. However, there are some watercourses which drain into the sea via outfalls using gravity. Internal Drainage Boards (IDBs) have an important role in managing land drainage within these low-lying fenland areas.

The underlying geology of the area is dominated by mudstone to the west of Rutland Water and Uppingham, and limestone and sandstone to the east. In the hilly areas to the west of the catchment, where underlying rock is nonporous clay, there are higher rates of rainfall runoff, and runoff flows directly into the watercourses. In the areas where there is limestone or sandstone bedrock, runoff may infiltrate the rock, delaying the response of rivers to rainfall and reducing peak flood flows. There is also a risk from groundwater flooding in these areas. In the lower fenland areas in the east of the catchment, the peat soils and the low gradients mean that water moves slowly to the river channels.

Within the River Welland catchment, there are a number of sites designated for their environmental importance including Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites. Important environmental sites in the catchment include Rutland Water (Ramsar, Site of Special Scientific Interest (SSSI), SPA) and The Wash (Ramsar, SAC, SPA, SSSI). There are 57 SSSIs throughout the catchment, some of which are designated for their geological importance. Scheduled Monuments (SMs), designated for their heritage values, are distributed across the catchment area.

3.2. Current & Future Flood Risk (Catchment)

3.2.1. Local Authority: South Holland District Council

Flood risk has two components: the chance (probability) of a particular flood and the impact (or consequence) that the flood would have if it happened. The probability of a flood relates to the likelihood of a flood of that size occurring within a one year period, it is expressed as a percentage. For example, a 1% annual probability flood has a 1% chance or 0.01 probability of occurring in any one year, and a 0.5% annual probability flood has a 0.5% chance or a 0.005 probability of occurring in any one year. The catchment has a history of flooding. The most significant river flood in the catchment occurred in March 1947 where there was widespread flooding. More recent river floods have been localised and impacted a few properties; for example, in November 2000. In 2004 Stamford and Market Harborough experienced surface water and sewer flooding.

Currently the main sources of flood risk for people, property, infrastructure and the land are;

- River flooding from the River Welland and its tributaries, particularly in the northern part of Peterborough, and towns of Market Harborough and Stamford;
- Tidal flooding from the River Welland between Spalding and Fosdyke Bridge, where tidal water could rise over the top of the embankments;
- Breaching/failure of embankments, which could be a problem along rivers that cross the fenland area of the catchment. This type of flooding is difficult to predict but could cause rapid flooding of areas immediately behind the embankments, which could result in the loss of life to people;
- Surface water drainage and sewer flooding, has occurred in parts of Market Harborough, Bourne and Stamford. Due to its geology, the northern part of Peterborough has the potential to be at risk from surface water flooding;
- Groundwater flooding is a risk for parts of the River Glen catchment and for areas around Stamford, when there are high groundwater levels within the underlying rock.

3.2.2. The impact of climate change and future flood risk

In the future, flooding can be influenced by climate change, changes in land use (for example urban development) and rural land management. Using river models were used to test the sensitivity of the rivers in the catchment to these drivers. For urbanisation, tests were undertaken for the sensitivity of the rivers in the catchment to a 56% increase in urban growth up to 2100. Increasing urbanisation had an impact on flood risk.

For climate change, tests were undertaken to the following changes up to 2100:

- 20% increase in peak flow in all watercourses. This will increase the probability of large scale flood risk;
- A total sea level rise of 905mm by the year 100. This will increase the probability of tidal flooding and increase the length of time watercourses will not be able to flow freely to the sea at high tide (tide-locked). Climate change was shown to have significant impact on flood risk.

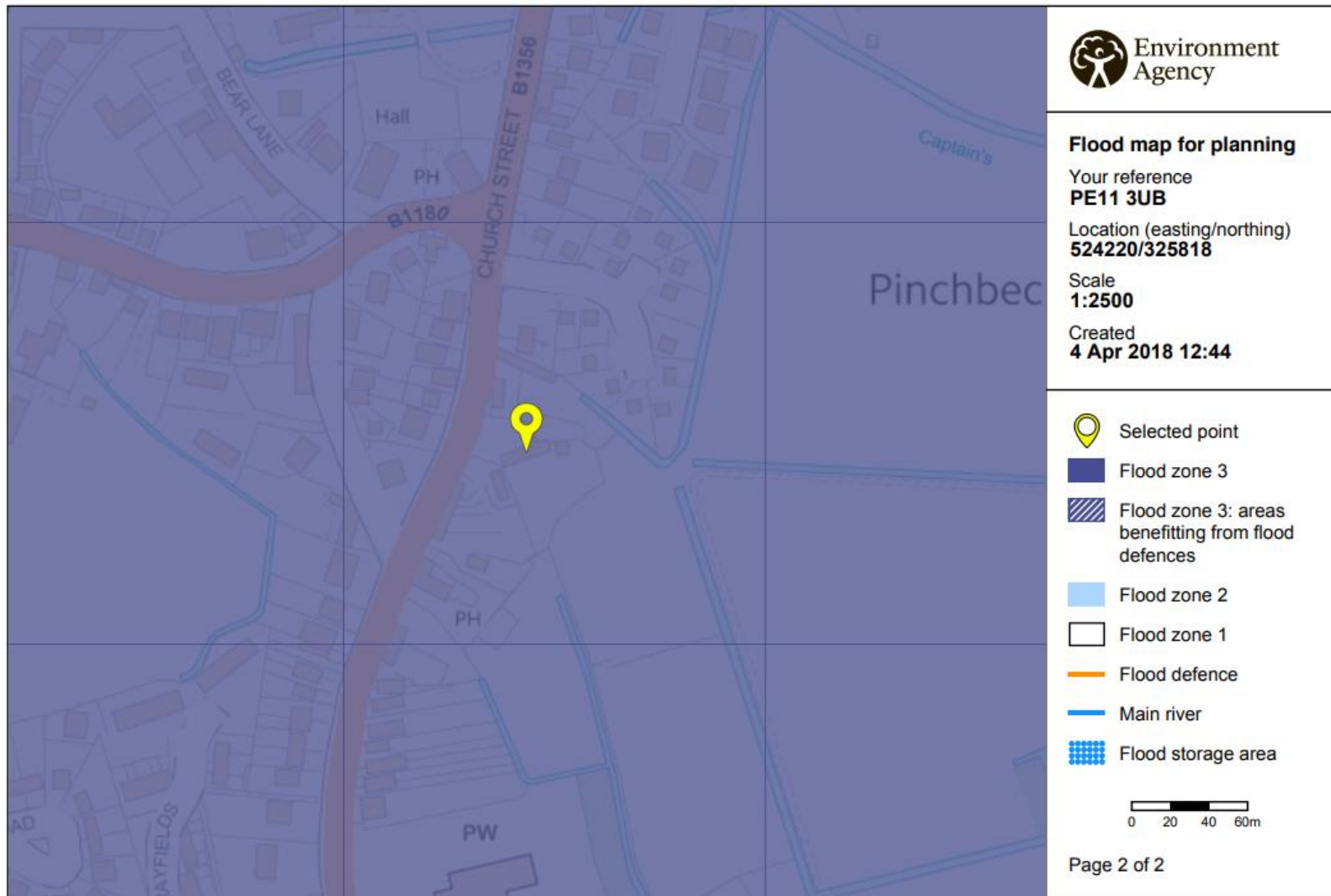
For rural land management, river models were adjusted to represent the effect of reducing and increasing intensive farming practices. At a catchment scale this had a limited impact on flood risk. In the River Welland CFMP, climate change and urbanisation were shown to have the greatest impact on flood risk. Therefore, the scenario used to model future flood risk was based on the current rural land management situation and the changes in urbanisation and climate change as described.

Using river models it is estimated that by 2100, around 1,000 people and 500 properties across the catchment may be at risk from a 1% annual probability river flood, and 60 people and 25 properties may be at risk from a 1% annual probability of tidal flooding. These figures take into account current flood defences.

In general, it is unlikely that the impact of flooding on infrastructure, transport services, or impact on environmental sites will increase significantly.

4.1. Flood Probability

4.1.1. Flood Map



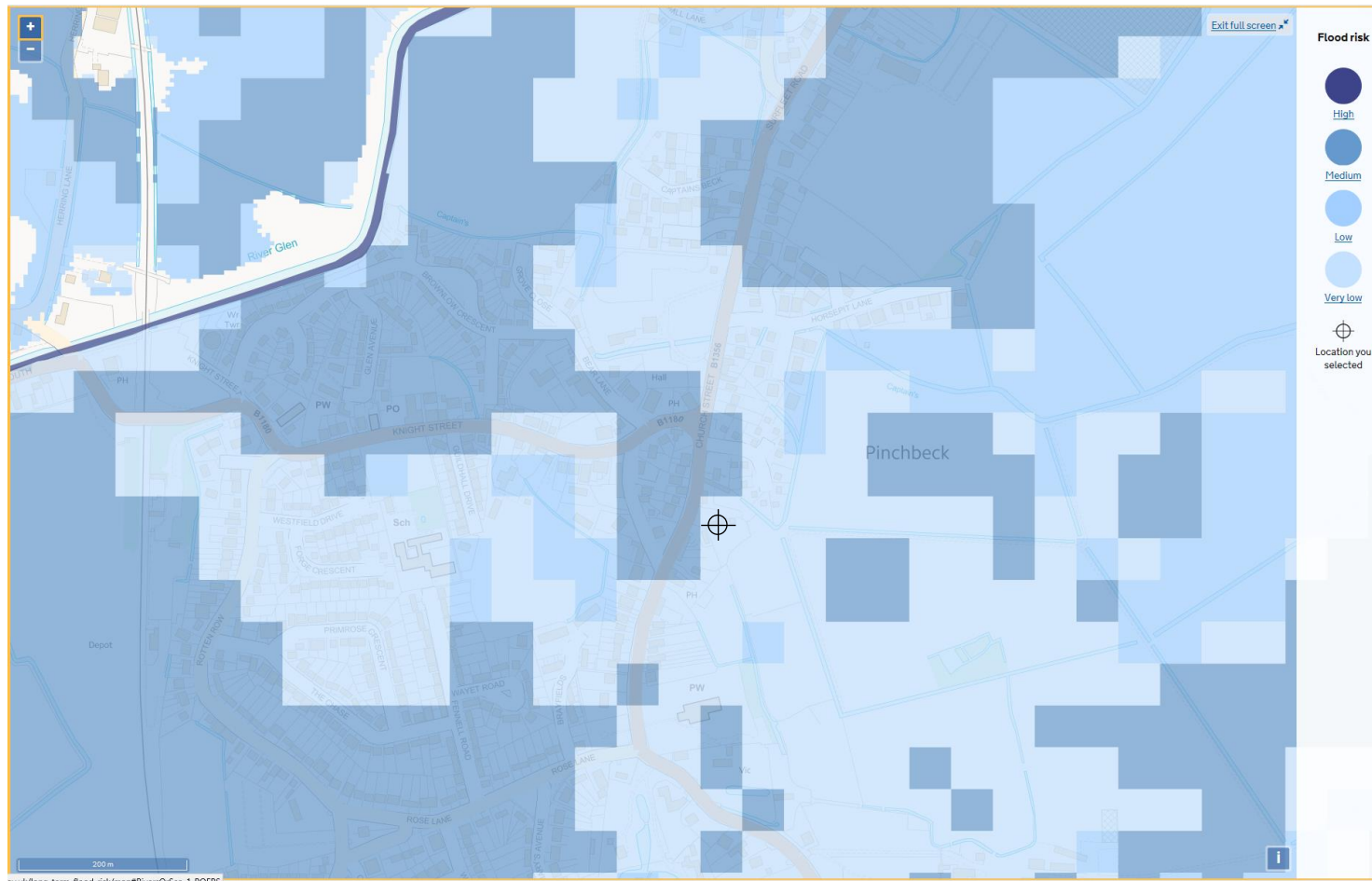
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4.1.2. Site Location

The site is located 500m from the River Glen. The site falls within Flood Zone 3.

4.2 Long Term Flood Risk: Rivers or Sea

4.2.1. Flood Map



4.2.2. Flood Risk Assessment

The flood risk from rivers or the sea is low.

A low risk means that each year this area has a chance of flooding less between 0.1% and 1% (1000 and 100 years). This considers of any flood defences in the area. These defences reduce, but do not completely stop the chance of flooding as they can be overtopped or fail.

4.3. Long Term Flood Risk: Surface Water

4.3.1. Flood Map



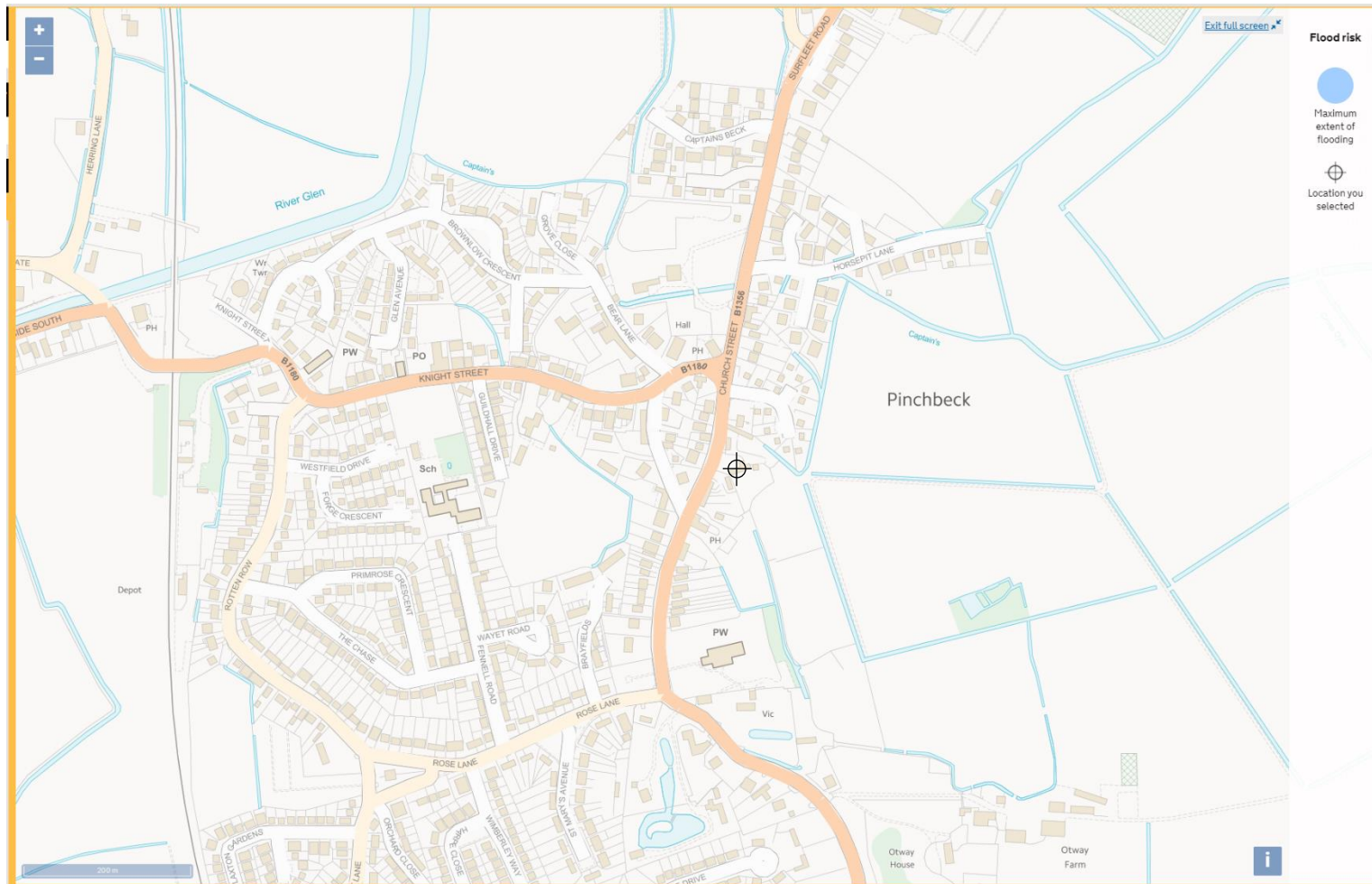
4.3.2. Flood Risk Assessment

The flood risk from surface water is very low.

Very low risk means that each year this area has a chance of flooding less than 0.1% (1,000 years). Flooding from surface water is difficult to predict as rainfall location and volume are difficult to forecast. In addition, local features can greatly affect the chance and severity of flooding. Because of this we report the highest risk within 20m of specific location, such as an individual property. This means reports for neighbouring properties may show different levels of risk.

4.4. Long Term Flood Risk: From Reservoirs

4.4.1. Flood Map



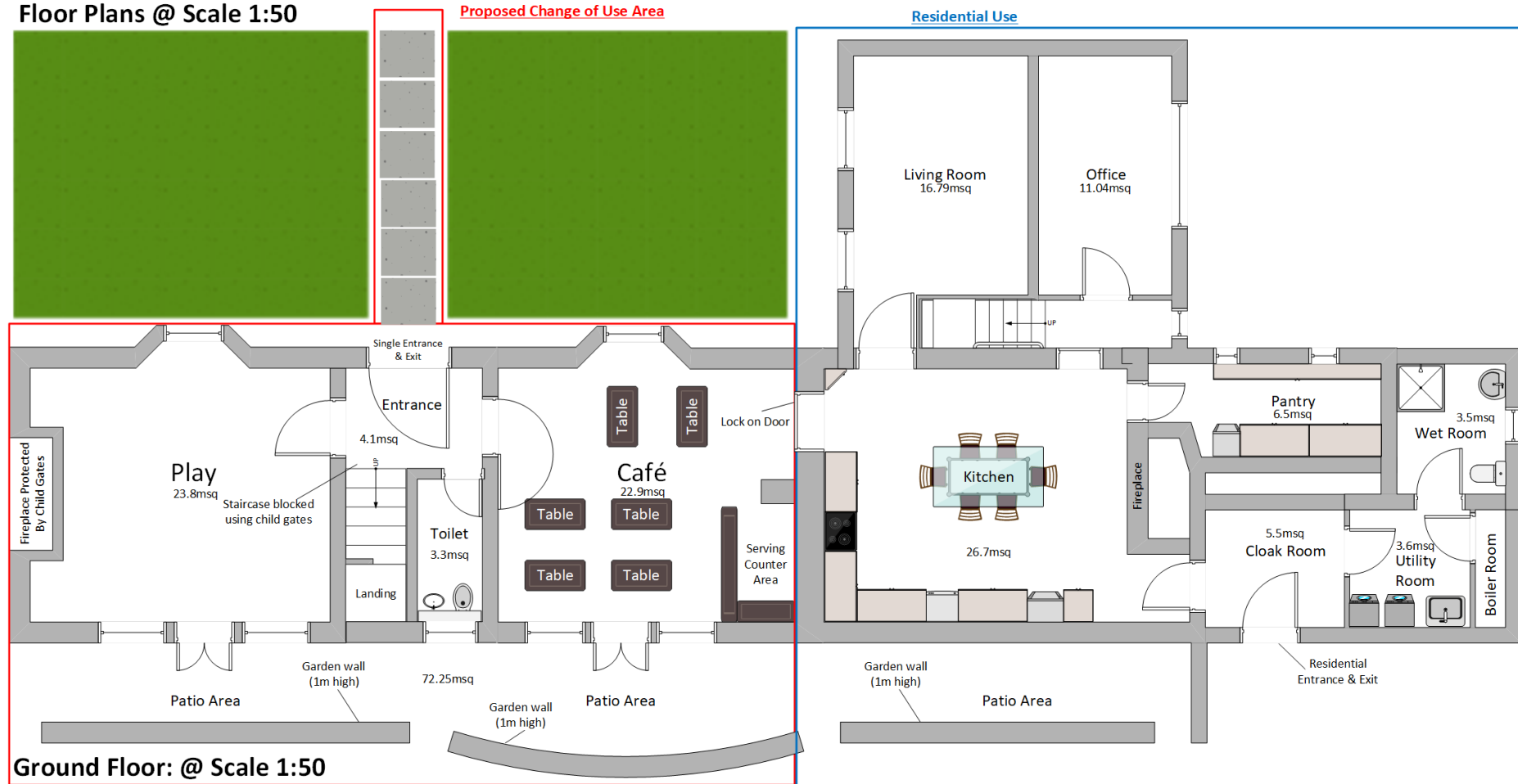
4.4.2. Flood Risk Assessment

The flood risk from reservoirs is very low. Very low risk means that each year this area has a chance of flooding less than 0.1% (less than once every 1,000 years).

5. Change of Use Design Scheme

The Manor House Play Cafe: 47 Church Street, Pinchbeck, PE11.

Floor Plans @ Scale 1:50



Change of use for 2 rooms & 1 toilet on the ground floor only.

The site further benefits from dykes on three sides of the property boundary, as well as its own 'Ha ha', reducing the risk of flood waters from reaching the site. The overall flood risk for the site is low to very low.