

FLOOD RISK ASSESSMENT

DOMESTIC EXTENSION
27 SINCIL BANK, LINCOLN

Saxilby
Construction Ltd
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DOCUMENT ISSUE RECORD

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1.0 INTRODUCTION

- 1.1 The FRA has been produced on behalf of Saxilby Construction Ltd in respect of a planning application for a domestic extension at 27 Sincil Bank, Lincoln.
- 1.2 It has been based on readily available information.

Existing Site

- 1.3 The site is located at grid reference SK9759270571 as shown in **Figure 1.1** below.

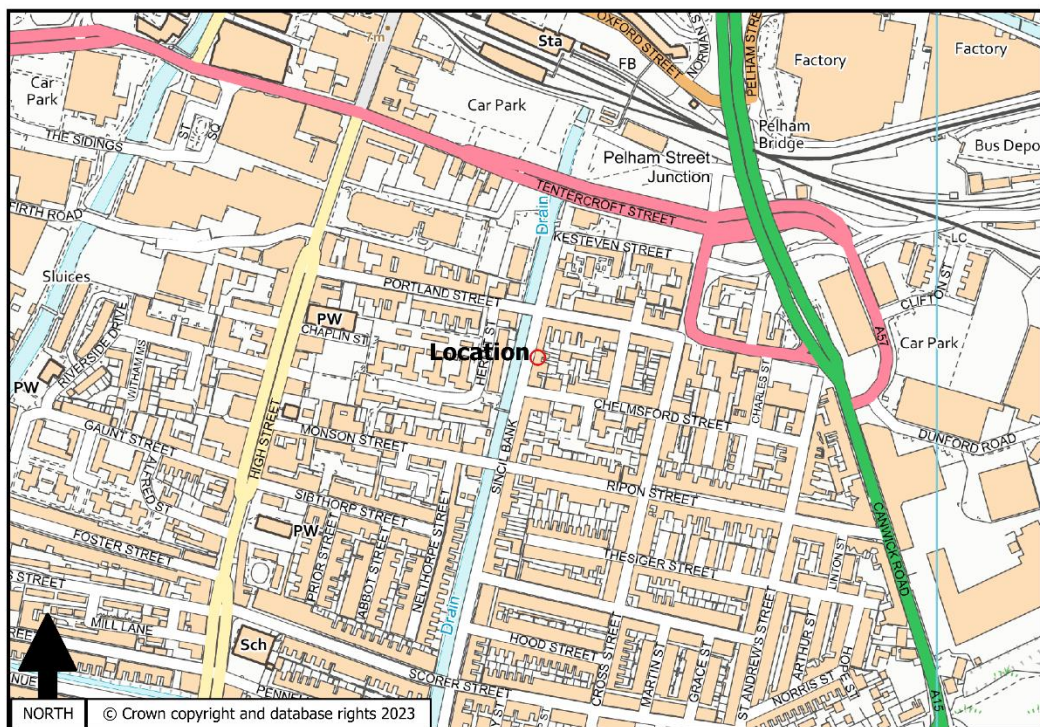


Figure 1.1 Site Location

- 1.4 LiDAR 2m DTM shows that the existing land level is approximately 4.80m AOD adjacent to the building, and the existing floor level of the building is approximately 4.95m AOD.
- 1.5 The online British Geological Survey maps indicates that the site is located on superficial deposits of sand and gravel over a bedrock of mudstone.

Proposed Development

- 1.6 The proposed development consists of a 12m² domestic extension as shown on the extract of the proposed plan below in **Figure 1.2**

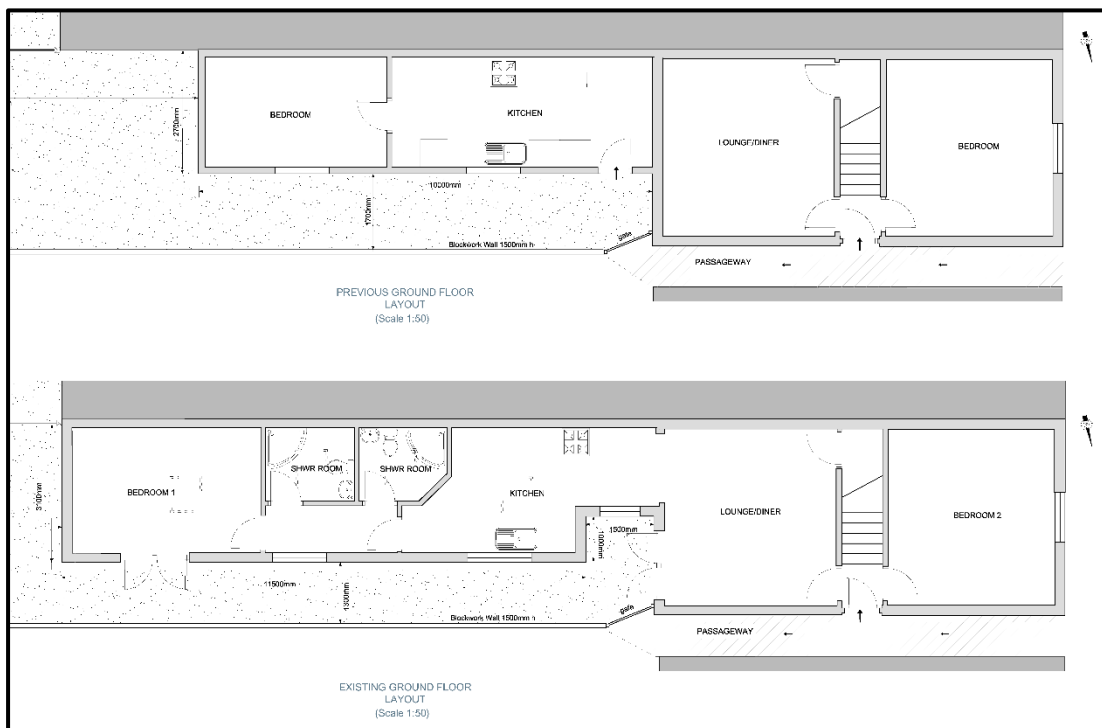


Figure 1.2 Proposed Plan

2.0 FLOOD RISK PLANNING POLICY

National Planning Policy Framework

- 2.1 The NPPF sets out the Government's national policies on different aspects of land use planning in England in relation to flood risk. A supporting web-based Planning Practice Guidance is also available.
- 2.2 The guidance uses four Flood Zones to characterise flood risk which refer to the probability of river and sea flooding, ignoring the presence of defences.

Sequential Test

- 2.3 The NPPF requires the application of a Sequential Test to ensure that new development is in areas with the lowest probability of flooding and the Flood Zones provide the basis for applying the Test.

Flood Zone Definition

Flood Zone 1	Low probability (1 in 1000 annual probability of river or sea flooding (<0.1%)).
Flood Zone 2	Medium probability (between 1 in 100 and 1 in 1000 annual probability of river flooding (1.0%-.0.1%) or between 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5%-.0.1%) in any given year).
Flood Zone 3a	High probability (1 in 100 or greater annual probability of river flooding (>1.0%) or 1 in 200 or greater annual probability of sea flooding (>0.5%) in any given year).
Flood Zone 3b	This zone comprises land where water must flow or be stored in times of flood. Land which would flood with an annual probability of 1 in 30 (3.3%), or is designed to flood in an extreme flood (0.1%) should provide a starting point for discussions to identify functional floodplain.

- 2.4 The Flood Zones do not consider the projected effects of climate change and may not represent potential flooding from smaller watercourses.
- 2.5 The aim is to steer new development to Flood Zone 1 and where there are no reasonably available sites in Flood Zone 1, local planning authorities in their decision making should consider the flood risk vulnerability of land uses and consider reasonably available sites in Flood Zone 2, applying the Exception Test if required.
- 2.6 Only where there are no reasonably available sites in Flood Zones 1 or 2 should the suitability of sites in Flood Zone 3 be considered, considering the flood risk vulnerability of land uses and applying the Exception Test if required.
- 2.7 The guidance also sets out the vulnerability to flooding of different land uses and this land use is highlighted below.

Flood Risk Vulnerability Classification

Essential Infrastructure

- Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk.
- Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including infrastructure for electricity supply including generation, storage and distribution systems; including electricity generating power stations, grid and primary substations storage; and water treatment works that need to remain operational in times of flood.
- Wind turbines.
- Solar farms

Highly Vulnerable

- Police and ambulance stations; fire stations and command centres; telecommunications installations required to be operational during flooding.
- Emergency dispersal points.
- Basement dwellings.
- Caravans, mobile homes and park homes intended for permanent residential use.
- Installations requiring hazardous substances consent. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as 'Essential Infrastructure'.)

More Vulnerable

- Hospitals
- Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels.
- **Buildings used for dwelling houses**, student halls of residence, drinking establishments, nightclubs and hotels.
- Non-residential uses for health services, nurseries and educational establishments.
- Landfill and sites used for waste management facilities for hazardous waste.
- Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.

Less Vulnerable

- Police, ambulance and fire stations which are not required to be operational during flooding.
- Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'more vulnerable' class; and assembly and leisure.
- Land and buildings used for agriculture and forestry.
- Waste treatment (except landfill and hazardous waste facilities).
- Minerals working and processing (except for sand and gravel working).
- Water treatment works which do not need to remain operational during times of flood.
- Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place.
- Car parks.

Water Compatible

- Flood control infrastructure.
- Water transmission infrastructure and pumping stations.
- Sewage transmission infrastructure and pumping stations.
- Sand and gravel working.
- Docks, marinas and wharves.
- Navigation facilities.
- Ministry of Defence installations.
- Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location. Water-based recreation (excluding sleeping accommodation).
- Lifeguard and coastguard stations.
- Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms.
- Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan

Appropriate Development

- 2.8 Based on the vulnerability of a development the guidance states domestic extension Flood Zone(s) the development is appropriate within. The flood risk compatibility is summarised below.

Flood Zone 1	Appropriate Development – All.
Flood Zone 2	Exception Test - Highly vulnerable. Appropriate Development - Essential Infrastructure; More vulnerable; Less vulnerable and Water Compatible.
Flood Zone 3a	Should not be permitted – Highly vulnerable. Exception Test – Essential Infrastructure, More vulnerable. Appropriate Development – Less vulnerable; Water compatible.
Flood Zone 3b	Should not be permitted – Highly vulnerable; More vulnerable; Less vulnerable. Exception Test – Essential Infrastructure. Appropriate Development –Water compatible.

- 2.9 The Planning Practice Guidance also states that all sources of flooding should be considered when preparing a FRA.

Exception Test

- 2.10 The Exception Test is a method to demonstrate and help ensure that flood risk to people and property will be managed satisfactorily, while allowing necessary development to go ahead in situations where suitable sites at lower risk of flooding are not available.
- 2.11 The first part of the Exception Test is to show that the proposed development will provide wider sustainability benefits to the community that outweigh flood risk. The second part is the requirement for a FRA to demonstrate that it will be safe for its lifetime, without increasing flood risk elsewhere and where possible reduce flood risk overall.

Development Proposals

2.12 The proposed development consists of an extension to a Dwelling House.

Flood Zones

2.13 The Flood Zones are shown on **Figure 2.1** below which shows the site to be in Flood Zone 3.

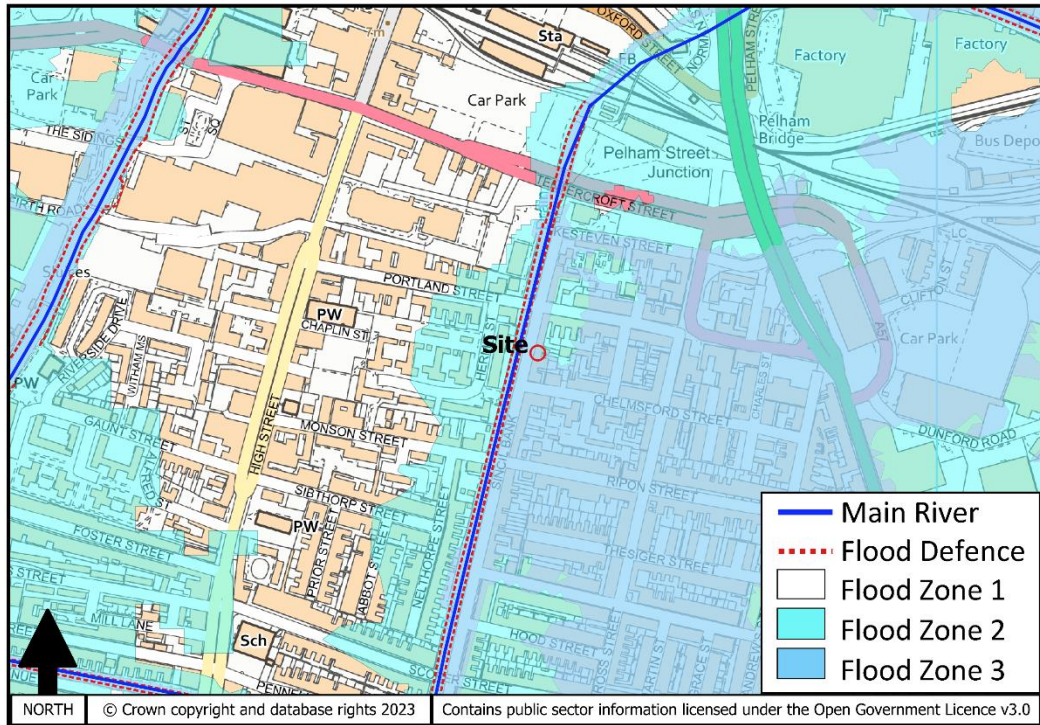


Figure 2.1 Flood Zones

Development Vulnerability

2.14 Dwelling Houses are More Vulnerable.

2.15 The NPPF states that “Applications for some minor development and changes of use should not be subject to the Sequential or Exception Tests but should still meet the requirements for site-specific flood risk assessments.”

2.16 The proposed development is for a domestic extension and therefore not subjected to the Sequential and Exception Tests.

2.17 A FRA is required to ensure the development will remain safe over its lifetime from all sources of flooding and not increase flood risk elsewhere.

3.0 FLOOD RISK SOURCES

3.1 The following flood risk sources have been identified and where mitigation is required to reduce the flood risk this is discussed in **Section 4**.

Fluvial

Main River

3.2 The nearest EA Main River to the site is the Sincil Dyke approximately 10m to the west of the site.

3.3 The EA have produced maps which show the flood risk from rivers or the sea. These maps take into account the effect 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.

3.4 The risk of flooding map is shown below in **Figure 3.1** which shows the site to be at a low risk of flooding.

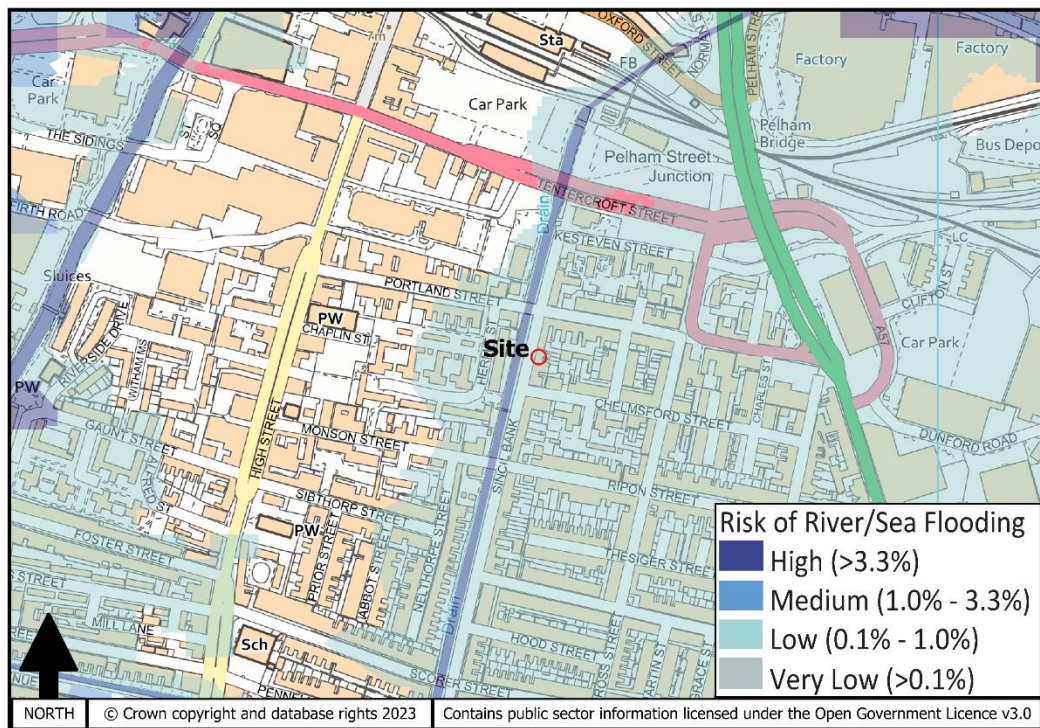


Figure 3.1 Flood Risk Map

Ordinary Watercourses

3.5 The site lies within the district of the Witham first Internal Drainage Board, (IDB).

3.6 The risk of flooding from fluvial sources is low.

Residual Risk

3.7 The site is protected from flooding by defences, including a raised defence. However, if that defence was to be breached or overtopped then flooding could occur.

Sewers

- 3.14 Public maintained sewers are unlikely to pose a significant flood risk as they are well maintained.
- 3.15 The risk of flooding from existing sewers is low.

Reservoirs

- 3.16 The EA has prepared reservoir failure flood risk mapping to show the largest area that might be flooded if a reservoir were to fail and release the water it holds. The mapping displays two scenarios as follows:
- Dry this is the extent when the river levels are normal,
 - Wet this is the extent when there is also flooding from rivers.
- 3.17 The mapping displays a worst-case scenario and is only intended as a guide.
- 3.18 The site is shown to be at risk of flooding due to the failure of a large, raised reservoir in both the dry and wet scenarios. However, given the legal requirement to design, construct, inspect and maintain a reservoir under the Reservoirs Act this type of failure is very unlikely and therefore the risk of flooding is considered to be low.

Canals and Artificial Water Bodies

- 3.19 The site is not at risk of flooding from canals.

4.0 MITIGATION

- 4.1 Section 4.0 has identified the sources of flooding which could potentially pose a risk to the site and the proposed development. This section of the FRA sets out the mitigation measures which are to be incorporated within the proposed development to address and reduce the risk of flooding to within acceptable levels.

Site Layout

- 4.2 The proposed development is at a low risk of flooding from fluvial, groundwater, sewers and reservoir failure.
- 4.3 The existing land level is approximately 4.80m AOD adjacent to the building, and the existing floor level of the building is approximately 4.95m AOD.
- 4.4 The floor level of the proposed extension will be no lower than the existing at **4.95m AOD**.

5.0 CONCLUSIONS

- 5.1 This FRA is compliant with the requirements set out in the NPPF and the associated online Planning Practice Guidance.
- 5.2 The FRA has been produced on behalf of Saxilby Construction Ltd.
- 5.3 This report demonstrates that the proposed development is not at significant flood risk, and will not increase flood risk to others, subject to the recommended flood mitigation strategies being implemented.
- 5.4 The identified risks and mitigation measures are summarised below;

Flood Risk Source	Level of Risk Without Mitigation	Proposed Mitigation
Fluvial Groundwater Sewers Reservoir	Low	Floor level no lower than existing at 4.95m AOD.
Tidal Groundwater Canal/Artificial	None	

Table 5.1 Summary of Risk and Mitigation

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