

- Architects
- Structural Engineers
- Quantity Surveyors
- Developers

**Project: 271 Midgeland Road, Blackpool,
FY4 5JA**

**FLOOD RISK ASSESSMENT
30.01.24**



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1. Introduction

Background

1.1 The purpose of this report is to assess the risk of flooding to the proposed development and where possible recommend sufficient mitigation to demonstrate that a future development could remain safe throughout its lifetime, not increase flood risk on site and elsewhere and, where practicable, reduce flood risk overall.

Site Proposals

1.2 It is understood the Client wishes to consider redevelopment of an existing dwelling with associated landscaping, parking, and access.

National & Local Planning Policy

1.3 The National Planning Policy Framework (NPPF) sets out the Government's national policies on different aspects of land use planning in England in relation to flood risk. Planning Practice Guidance (PPG) is also available online.

1.4 The PPG sets out the vulnerability to flooding of different land uses. It encourages development to be located in areas of lower flood risk where possible and stresses the importance of preventing increases in flood risk off site to the wider catchment area.

1.5 The NPPF states that a site-specific Flood Risk Assessment will be required for proposals:

- a. that are greater than 1 hectare in area within Flood Zone 1
- b. for all proposals for new development (including minor development and change of use) in Flood Zones 2 and 3
- c. in an area within Flood Zone 1 which has critical drainage problems; and where proposed development or a change of use to a more vulnerable class may be subject to other sources of flooding
- d. in an area within Flood Zone 1 identified in a Strategic Flood Risk Assessment as being at increased flood risk in the future
- e. in an area in Flood Zone 1 that may be subject to other sources of flooding, where its development would introduce a more vulnerable use

1.6 This assessment considers the risks of all types of flooding to the site including tidal, fluvial, surface, groundwater, sewer and artificial sources and provides mitigation measures to ensure that the flood risk to the site is minimised and that flood risk off-site is not increased.

2. Existing Site & Hydrological Characteristics

Site Location & Composition

2.1 The site is located off Midgeland road, Blackpool. The approximate coordinates for the centre of the site are E333681, N432170, with the nearest post code of FY4 5JA. The site location is approximately shown outlined in red in Figure 1.1.

2.2 The current site comprises of an existing residential detached dwelling, along with its associated parking, access and landscaping. The north of the site is bound by a residential dwelling house. A caravan park is located to the east of the site and a residential dwelling is present along the site's Southern border. The Midgeland Road runs along the Western boundary of the site. Fig. 1.1

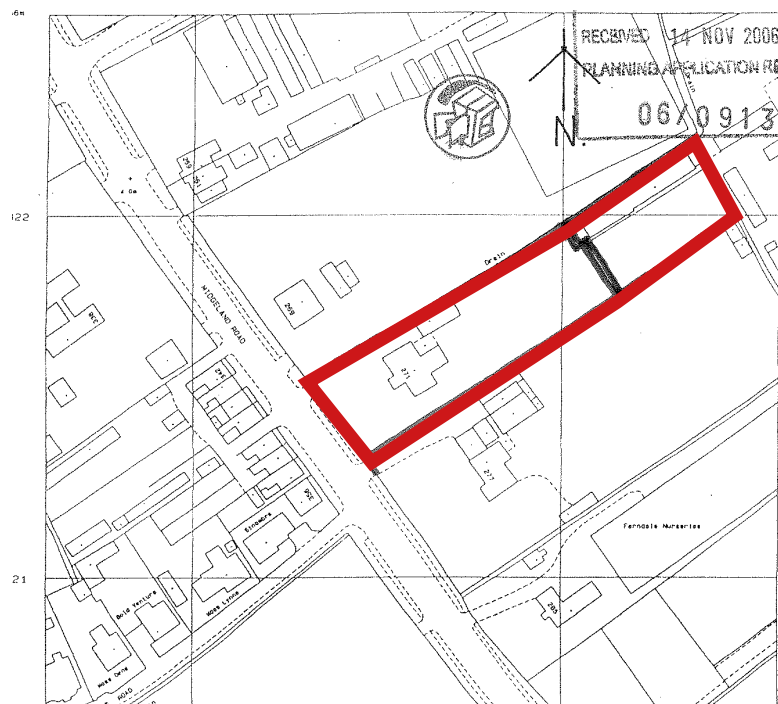


Fig. 1.1 : Location Plan

Topography

2.3 A desktop topographic exercise was utilised given the lack of a detailed topographic survey using Ordnance Survey elevation data. Ground levels on the site fall in a northern direction from 5.4 metres Above Ordnance Datum (mAOD) to 4.3mAOD located in the North-Eastern corner of the site.

Ground Conditions

2.4 Geological data held by the British Geological Survey (BGS) shows that the bedrock geology underlying the site is Kirkham Mudstone Member – Mudstone. Superficial deposits are recorded as Tidal Flat deposits – clay and silt in the northern extent of the site, Figure 1.2.

2.5 The nearest borehole log with freely available information is located approximately 356m west of the site and was recorded to a depth of 17.68m, obtained via online BGS maps. The borehole log reference number is SD33SW12. The log identifies presence of firm and then hard silty clay.

2.6 Soils mapping indicates the underlying soil as Loamy and sandy soils with naturally high groundwater and a peaty surface which is naturally wet.

2.7 Department for Environment, Food & Rural Affairs (DEFRA) Magic Service Mapping shows the site is not located in a groundwater Source Protection Zone (SPZ).

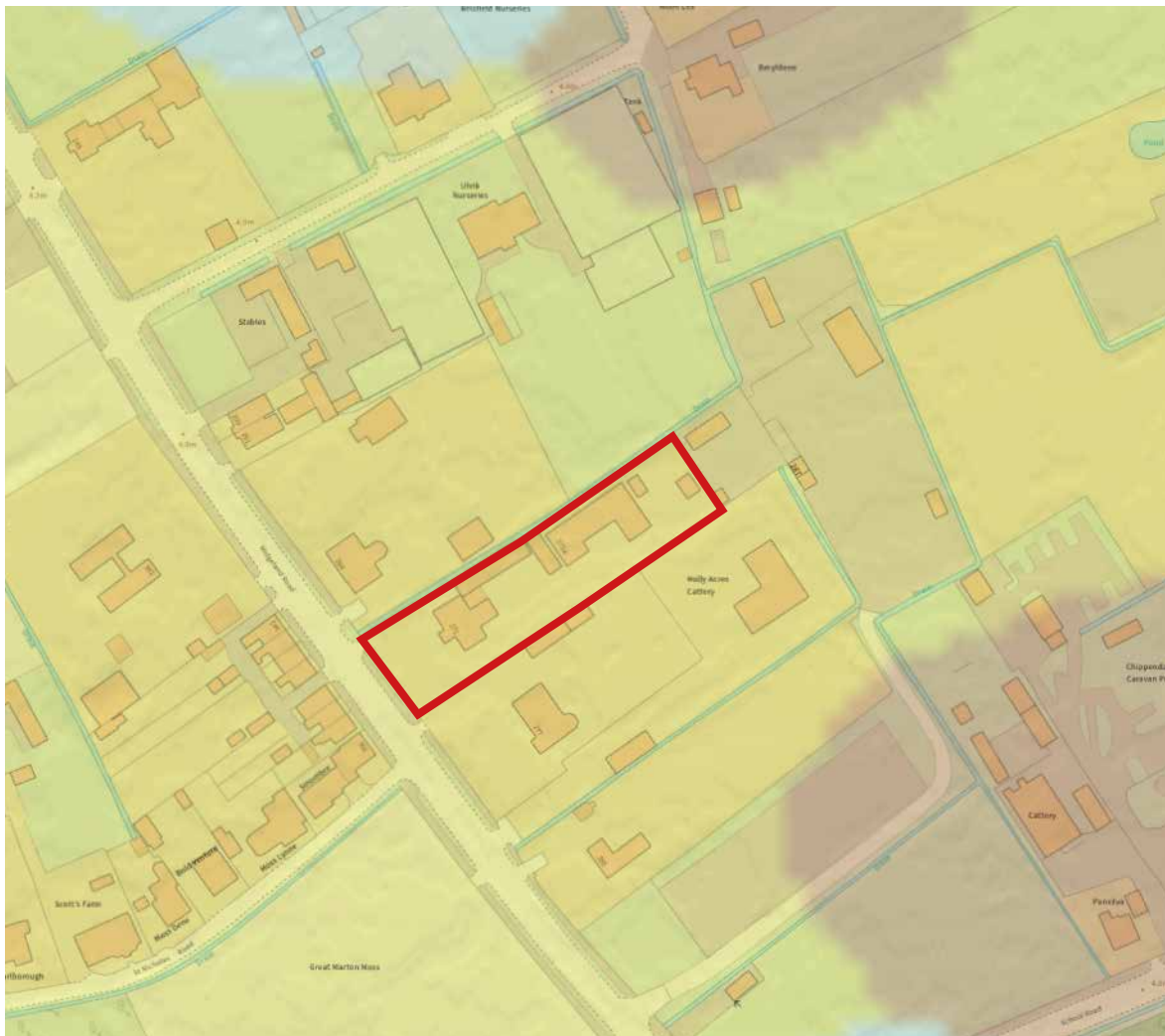


Fig. 1.2 : Bedrock Formation

Existing Drainage & Hydrology

2.8 A drainage ditch is present along the site's northern boundary. This leads directly to Midgeland Road.

2.9 There are two sealed main rivers that run north and south of the site. These are the Main drain and the wilding lane. Fig. 1.3

2.10 The DEFRA Magic Map (England and Wales) shows there are no designated sites (SSSIs) in or close to the site.

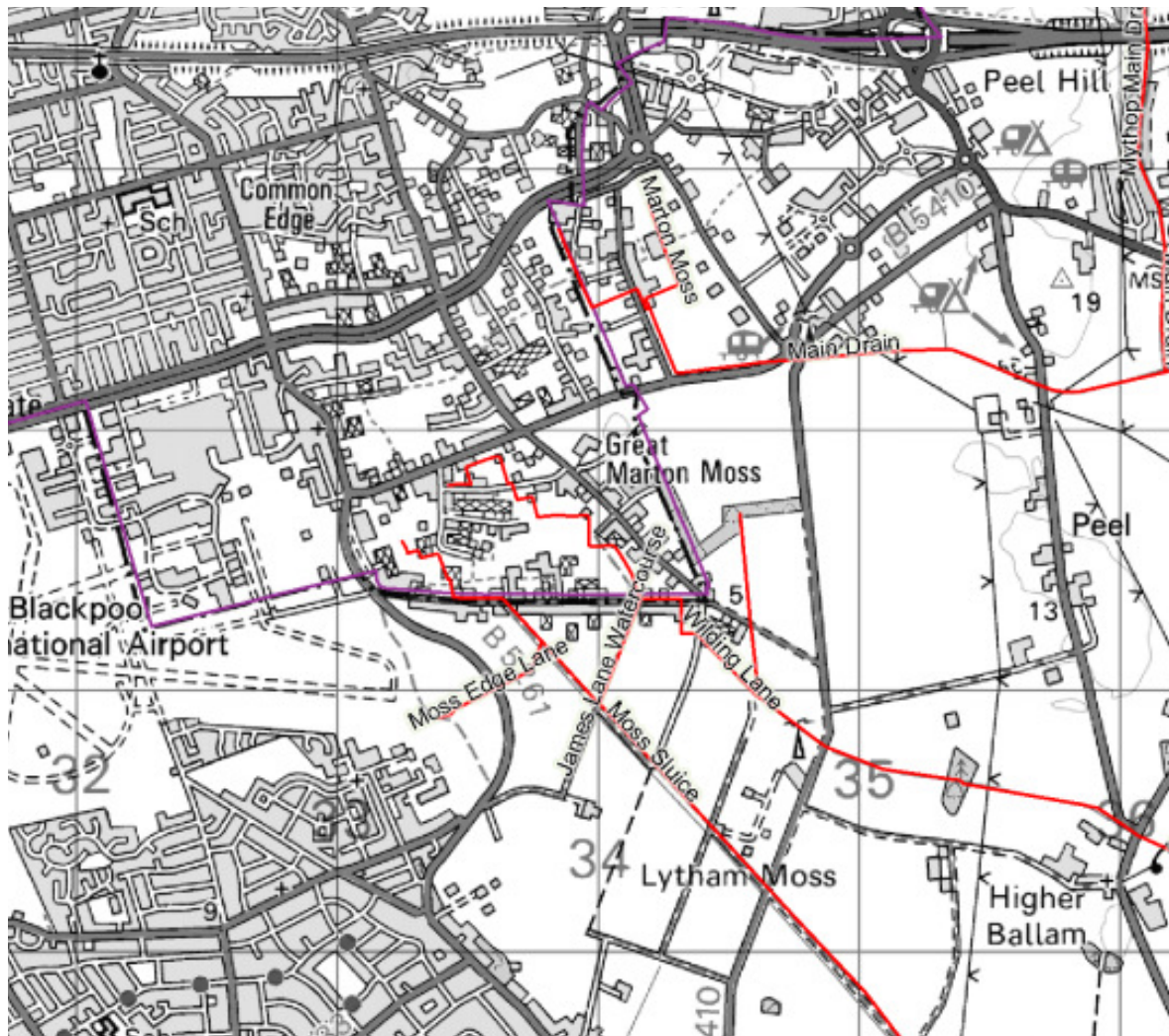


Fig. 1.3 : Moss Sluice and Wilding Lane (SFRA 2014)

3. Development Vulnerability & Flood Zone Classification

National Planning Policy Framework

3.1 Local Planning Authorities, (LPA) have a statutory obligation to consult the Environment Agency, (EA) on all applications in flood risk zones. The EA will consider the effects of flood risk in accordance with the NPPF.

3.2 NPPF requires that, as part of the planning process:

- a. A 'site specific' Flood Risk Assessment will be undertaken for any site that has a flood risk potential.
- b. Flood risk potential is minimised by applying a 'sequential approach' to locating 'vulnerable' land uses.
- c. Sustainable drainage systems are used for surface water disposal where practical.
- d. Flood risk is managed through the use of flood resilient and resistant techniques.
- e. Residual risk is identified and safely managed.

3.3 Table 1 of NPPF, categorises flood zones into:

- a. Zone 1- Low risk, less than 0.1% Annual Event Probability (AEP) (< 1 in 1000 years)
- b. Zone 2- Medium risk, 0.1% AEP (1 in 1000 - 1 in 100 years)
- c. Zone 3a- High risk, 1% AEP (> 1 in 100 years)
- d. Zone 3b- High risk - Functional Floodplain, 3.33% AEP (>1 in 30 years)

Environment Agency Flood Map for Planning

3.4 The Environment Agency Flood Zones are the current best information on the extent of the extremes of flooding from rivers or the sea that would occur without the presence of flood defences, since these can be breached, overtopped and may not be in existence for the lifetime of a development.

3.5 The site is located within Flood Zone 2 as shown on the Environment Agency Flood Map for Planning and Figure 1.4. This is the area shown to be at medium risk of river flooding.

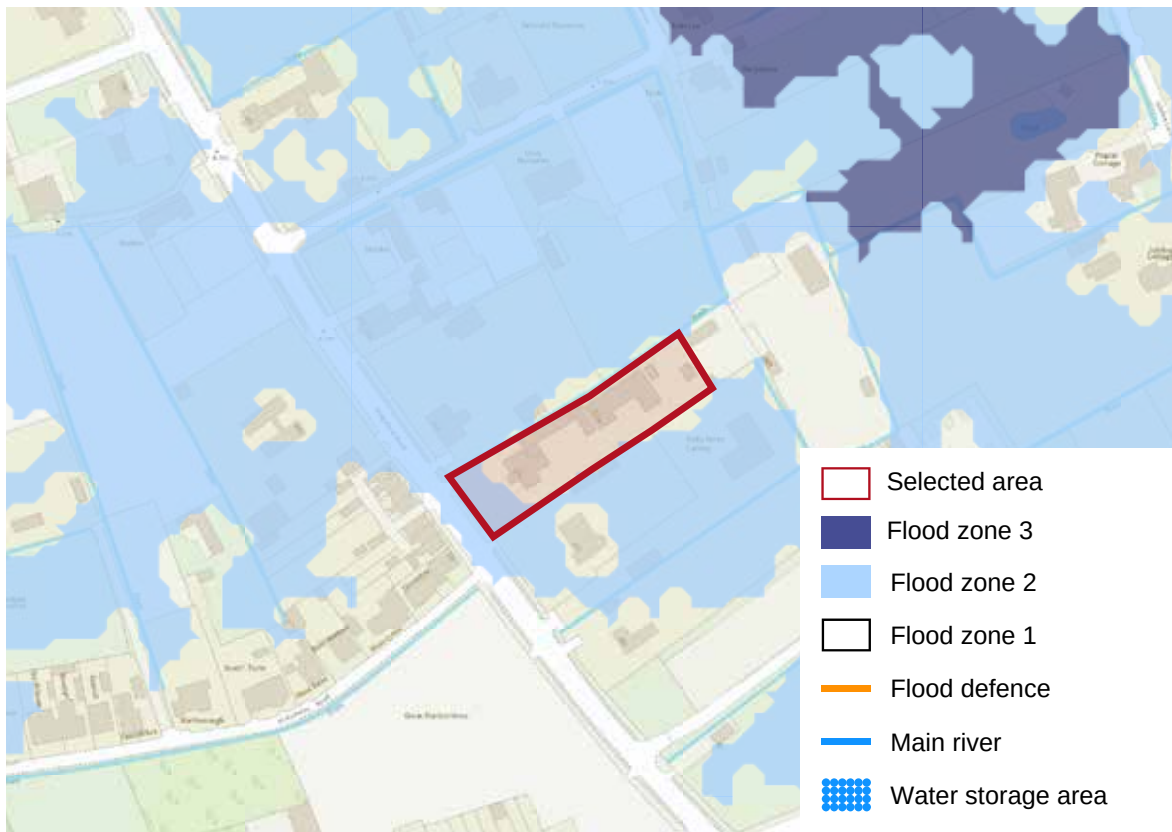


Fig. 1.4 : Flood Map (Environmental Agency)

Flood Risk Vulnerability

3.6 Residential development is considered to be ‘more vulnerable’ in terms of its land use type flood risk vulnerability as shown in Annex 3 of the PPG.

3.7 The NPPF sets out a matrix indicating the flood risk vulnerability types of development that are acceptable in different flood zones based upon the Flood Map for Planning as shown in Table 2 of the PPG.

3.8 The principle of residential development in Flood Zone 2 locations is considered to be acceptable provided the proposals do not increase flood risk elsewhere and are safe for future occupants. An Exception Test would not need to be undertaken.

4. Site Specific Flooding

National Planning Policy Framework (NPPF)

4.1 In accordance with the National Planning Policy Framework, this Flood Risk Assessment considers all sources of flooding including:

- a. Tidal flooding – from sea;
- b. b) Fluvial flooding – from rivers and streams;
- c. c) Pluvial flooding – overland surface water flow and exceedance;
- d. d) Groundwater flooding – from elevated groundwater levels or springs;
- e. e) Flooding from sewers – exceedance flows from existing sewer systems;
and
- f. f) Artificial sources – reservoirs, canals etc.

Historic Flooding

4.2 The Blackpool Council Strategic Flood Risk Assessment (SFRA) (November 2014) states that there have been a number of flooding incidents in Marton Moss (Southern Drainage Area). These have been due to incidental blockages in watercourses and operational failures at Lennox Gate Pumping Station during intense rainfall events. Included are a number of domestic or localised incidents of flooding as a result of temporary watercourse or culvert blockages due to inadequate maintenance or deliberate interference with drainage outlets. Generally, the watercourse incidents do not relate to strategic flood risk caused by inadequate capacity, but are specifically related to incidental instances on existing systems which, once dealt with, eliminates the problem. No additional information relating to the impacts of these incidents in the vicinity of the site was provided.

Tidal Flooding

4.3 Inundation of low-lying coastal areas by the sea may be caused by seasonal high tides, storm surges and storm driven wave action. Tidal flooding is most commonly a result of a combination of two or more of these mechanisms, which can result in the overtopping or breaching of sea defences. River systems may also be subject to tidal influences.

4.4 The watercourses/waterbodies in the vicinity of the site don't pose a tidal risk to the site. The risk of tidal flooding is therefore negligible.

Fluvial Flooding

4.5 Flooding from watercourses occurs when flows exceed the capacity of the channel, or where a restrictive structure is encountered, which leads to water overtopping the banks into the floodplain. This process can be exacerbated when debris is mobilised by high flows and accumulates at structures.

4.6 The site is located within Flood Zone 2 as shown on Figure 1.4. This is the area shown to be at medium risk of river flooding associated with the sealed main rivers.

Pluvial Flooding

4.7 Pluvial flooding can occur during prolonged or intense storm events when the infiltration potential of soils, or the capacity of drainage infrastructure is overwhelmed leading to the accumulation of surface water and the generation of overland flow routes.

4.8 Risk of flooding from surface water mapping has been prepared, this shows the potential flooding which could occur when rainwater does not drain away through the normal drainage systems or soak into the ground but lies on or flows over the ground instead.

4.9 The Surface Water (Pluvial) Flood map provided by the Environment Agency indicates that the site is at low risk of pluvial flooding. A small area of low-risk pluvial flooding is projected to occur in the area of low topography in the north-western corner of the site.

4.10 The pluvial maps do not fully represent any underground drainage systems and therefore any flooding entering the site from existing roads is likely to be intercepted by road gullies and discharged into the local drainage network.

4.11 The Blackpool Council SFRA (2014) provides limited information relating to the risk of surface water flooding within the Borough. No indication is provided that surface water flooding has occurred at or within nearby vicinity of the site.

4.12 Pluvial flood risk for the proposed development is considered to be low.

Groundwater Flooding

4.13 Groundwater flooding occurs when the water table rises above ground elevations. It is most likely to happen in low lying areas underlain by permeable geology. This may be regional scale chalk or sandstone aquifers, or localised deposits of sands and gravels underlain by less permeable strata such as that in a river valley.

4.14 No information relating to the risk of groundwater flooding at the site, or in its vicinity, is provided within the Blackpool Council SFRA (2014). It is noted within the SFRA data collected for the assessment did not uncover any areas of potential groundwater risk within the Borough.

Sewer Flooding

4.15 Sewer flooding can occur when the capacity of the infrastructure is exceeded by excessive flows, or as a result of a reduction in capacity due to collapse or blockage, or if the downstream system becomes surcharged. This can lead to the sewers flooding onto the surrounding ground via manholes and gullies, which can generate overland flows.

4.16 The Blackpool Council SFRA (2014) notes that a low level of risk is posed to the area. The risk of sewer flooding to the site is therefore considered to be low.

4.17 Reservoirs

4.18 Flooding can occur from large waterbodies or reservoirs if they are impounded above the surrounding ground levels or are used to retain water in times of flood. Although unlikely, reservoirs and large waterbodies could overtop or breach leading to rapid inundation of the downstream floodplain.

4.19 To help identify this risk, reservoir failure flood risk mapping has been prepared, this shows the largest area that might be flooded if a reservoir were to fail and release the water it holds. The map displays a worst-case scenario and is only intended as a guide. This identifies the site isn't at risk from this source.



Fig. 1.5 : Flood Risk From Reservoirs

5. Flood Mitigation Measures

Introduction

5.1 It is important to demonstrate that future users will not be at risk from flood hazards during the lifetime of the development, as well as ensuring that flood risk is not increased elsewhere.

Finished Floor Levels

5.2 In accordance with Environment Agency guidance, finished floor levels (FFLs) should (where possible) be set a minimum of 600mm above the 100 year plus latest climate change allowance flood levels for the site.

5.3 In the absence of the 100 year climate change allowance flood level, following local Environment Agency office guidance, the recommended 'nominal' climate change allowance (300mm) has been applied. This is applicable due to the development being considered non major, On this basis, a proposed minimum floor level of 5.7mAOD would be recommended.

Ground Levels

5.4 Ground levels should be profiled to remove hollows/depressions within the site topography and the area of potential risk of pluvial flooding.

5.5 Ground levels should be finished so that overland runoff is encouraged to flow away from the proposed new buildings and be directed to the nearest on-site drainage system runoff collection point.

Access & Egress

5.6 Safe pedestrian access/egress is available onto Midgeland Road in order to access the wider road/street network.

Flood Resilience

5.7 The following recommendations are in accordance with Environment Agency standing advice and Communities and Local Government document Improving the Flood Performance of New Buildings.

5.8 Resilience measures are either an integral part of the building or features inside the building. Flood resilient buildings are designed to reduce the impact of flood water entering the building to restrict permanent damage, ensure structural integrity is maintained and to assist with drying and cleaning following flooding.

5.9 The following recommendations should be considered:

- a. Low permeability construction
- b. Flood proof doors and windows
- c. Flood proof air bricks
- d. Non return valves on drainage connections
- e. Landscape bunding
- f. Raised electrical sockets

Flood Warning & Evacuation Plan

5.10 It is advised as a precautionary measure that future end users of the proposed development register for the Environment Agency free Flood Warning service. This can allow valuable preparation in the event of a flood.

5.11 The site should be evacuated if either a flood warning indicates that this is appropriate action, or if advised to do so by the Environment Agency, Lead Local Flood Authority, or a Category 1 responder.

Groundwater

5.12 The potential for shallow groundwater should also be considered during the construction phase of the development, particularly during the excavations. It is recommended that groundwater levels are monitored during the construction phase, and where groundwater is encountered appropriate dewatering should be employed.

Drainage

5.13 To mitigate the proposed developments impact on the current runoff regime through the increased rate of runoff that would result due to the impermeable areas that would be introduced; surface water storage would be required as part of the development proposals to satisfy the requirements of Blackpool Council as the Lead Local Flood Authority and demonstrate the proposal would not increase flood risk elsewhere. To achieve this a development will be expected to restrict the level of runoff disposed of to the annual average greenfield rate of the site in an undeveloped form.

5.14 A drainage strategy would need to be formulated as part of the future development design. This would require consideration of sustainable drainage techniques and above ground storage features such as drainage ponds, swales and permeable paving. Soakaway testing would also be recommended to rule out the potential for infiltration drainage.

6. Summary and Conclusions

Summary

6.1 This assessment has considered the risks of all types of flooding to the site including tidal, fluvial, surface, groundwater and sewer and provides mitigation measures to ensure that the flood risk to the site is minimised and that flood risk off-site is not increased.

Conclusions

6.2 The majority of the site is shown to be located within Flood Zone 2 as shown on the Environment Agency Flood Map for planning and at medium risk of river flooding. The principle of residential development within Flood Zone 2 locations is considered acceptable to consider.

6.3 The site is at low risk of all other forms of flooding assessed.

6.4 Mitigation in the form of raised finished floor levels, and flood resilience measures will help to mitigate the residual risks posed to the development and provide additional protection from any further risks.

6.5 Surface water drainage measures will be required and should be accounted for in a future development design to ensure there would be no increase in flood risk resulting from surface water runoff.

