FLOOD RISK ASSESSMENT

LOCATION:
Akeferry Road, Graizelound

CLIENT:
Marek Bielenica

DOCUMENT REF:
25605-FRA-001

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CONTENTS & AMENDMENT HISTORY

Revision	Description	Date	Author	Checked
A	First Issue	Sep 2025	O Mountain	H Dyson

1.0 INTRODUCTION

This Flood Risk Assessment (FRA) is compliant with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance. The FRA has been produced on behalf of Marek Bielenica in respect of a planning application for the proposed residential development at Akerferry Road, Graizelound.

Site Name	Akerferry Road, Graizeloud
Location	Akerferry Road, Graizeloud, Doncaster DN9 2NG
Application Site Area (ha)	0.186 ha
Development Type	Residential Development
NPPF Vulnerability	More
EA Flood Zone	Flood Zone 3
EA Office	Lincolnshire
Local Planning Authority	North Lincolnshire Council

Table 1.1 - Site Summary

1.1 SOURCES OF DATA

The report is based on the following information:

i. Red Line Plan
ii. Topographical Survey
iii. Flood Data
iv. North Lincolnshire Council Strategic Flood Risk Assessment

1.2 EXISTING SITE

The site in question is located to the far East of the city of Doncaster. The site is approximately 0.186ha in size and is bounded by Akerferry Road to the South and other residential properties to the East and West.

In Appendix B, the topo shows that the highest level in the northwest corner is approximately 3.40 AOD. Contrastingly, in the southeast corner, the lowest level is approximately 3.55 AOD. Therefore, the land is fairly flat as the level difference across the site is only 0.15 AOD

There are no watercourses or waterbodies in close proximity to site that could pose a risk to the development.

Figure 1.1 - Site Location

1.3 PROPOSED DEVELOPMENT

The proposed development is set to consist of a residential development. A site layout is contained in appendix A.

1.4 FLOOD RISK PLANNING POLICY

National Planning Policy Framework

The 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 is also available online.

The Planning Practice Guidance 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.

The Planning Practice Guidance also states that alternative sources of flooding, other than fluvial (river flooding), should also be considered when preparing a Flood Risk Assessment.

This Flood Risk Assessment is written in accordance with the NPPF and the Planning Practice Guidance.

Flood Zones

The Flood Zone Map for Planning has been prepared by the Environment Agency. This identifies areas potentially at risk of flooding from fluvial or tidal sources. An extract from the mapping is included as Figure 1.2.

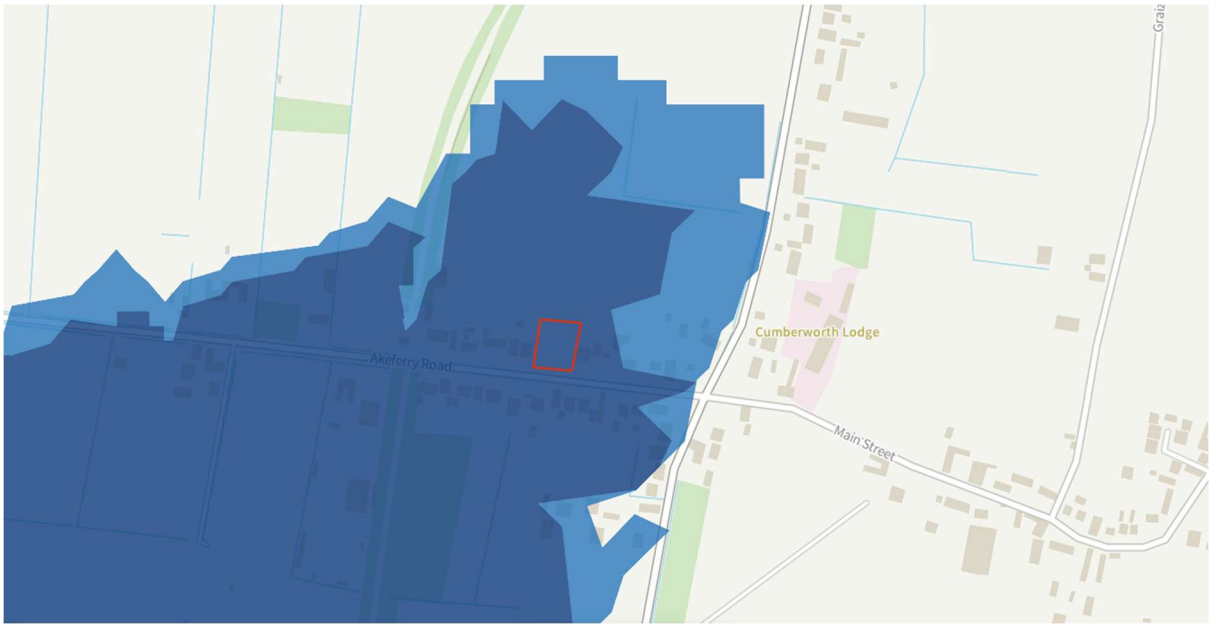

Figure 1.4 - Environment Agency Flood Zone Mapping

The site is shown to be located entirely within Flood Zone 3 (High Probability) therefore the site is considered to be High risk of flooding. Flood Zone 3 is defined as land assessed as having more than 1% annual probability of flooding from fluvial and tidal sources.

Table 2 of the Planning Practice Guidance classifies land use. Under these classifications the proposed residential development is considered to be 'More Vulnerable' to the potential impacts of flooding.

Table 3 of the Planning Practice Guidance identifies that any development is considered appropriate within Flood Zone 1.

Flood Risk Vulnerability Classification	Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable
Flood Zone 1	✓	✓	✓	✓
Flood Zone 2	✓	✓	Exception test required	✓
Flood Zone 3a	Exception test required	✓	**x**	Exception test required
Flood Zone 3b	Exception test required	✓	**x**	**x**

1.5 OTHER RELEVANT POLICY AND GUIDANCE

Strategic Flood Risk Assessment

The North Lincolnshire Council Strategic Flood Risk Assessment (SFRA) was prepared to review flood risks on a much wider scale to assess the potential for new development within the study area. The SFRA was used as an evidence base for Local Development Frameworks for each Local Planning Authority.

The SFRA therefore aims to bring together all available flood risk information for a variety of sources to provide a robust assessment. The SFRA therefore is useful for this site-specific FRA by highlighting available data and instances of known flooding in the area. Although written under the guidance of Planning Policy Statement 25, the SFRA is still considered to include relevant information.

2.0 POTENTIAL SOURCES OF FLOOD RISK

The table below identifies the potential sources of flood risk to the site, and the impacts which the development could have in the wider catchment prior to mitigation. These are discussed in greater detail in the forthcoming section. The mitigation measures proposed to address flood risk issues and ensure the development is appropriate for its location are discussed within Section 3.0.

Flood Source	Potential Risk				Description
	High	Medium	Low	None	
Fluvial	X				The site is located in flood zone 3.
Tidal				X	There are no tidal influences effecting the site.
Canals				X	None present.
Groundwater			X		Ground conditions are not conducive to fluctuating groundwater levels.
Reservoirs and waterbodies				X	The site is shown to fall outside of the catchment for reservoir and waterbodies flooding.
Sewers			X		The site in question is higher than the surrounding sewers therefore there is a very low risk.
Pluvial runoff			X		An area of the site is within a Low-risk area of surface water flooding.
Effect of Development on Wider Catchment			X		The impermeable area of the site is being altered.

Table 2.1 - Pre-Mitigation Sources of Flood Risk

2.1 FLUVIAL FLOOD RISK

As previously mentioned, the site is shown to be within Flood Zone 3 and therefore poses a High risk to the proposed development.

Mitigation measures to address the residual risk posed by the watercourses surrounding the site are discussed within Section 3.0 of this report.

2.2 GROUNDWATER FLOOD RISK

Subject to completion of site investigation to confirm we would assume that natural ground water level is located well below the site surface and the nature of the strata means it is unlikely that there will be perched water above this level.

We therefore do not consider there is a risk of groundwater flooding affecting the development subject to final confirmation upon completion of suitable site investigation.

2.3 FLOOD RISK FROM RESERVOIRS & LARGE WATERBODIES

Reservoir failure flood risk mapping has been prepared by the Environment Agency, 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. An extract from the mapping is included as Figure 2.1.

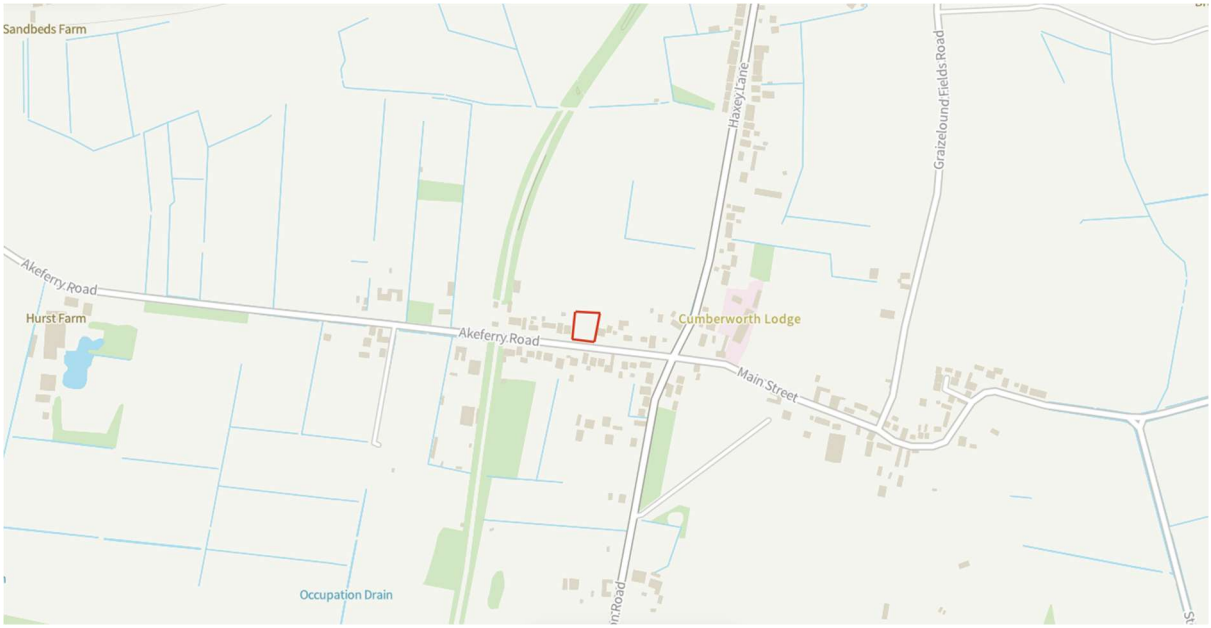

Figure 2.3 - Environment Agency Reservoir Failure Flood Risk Map

Mapping demonstrates the site and possible access routes are far removed from the flood extent associated with flooding from large reservoirs. A review of Ordnance Survey mapping shows that no areas or reservoir flooding encroach the site.

As such, there is considered to be no risk from reservoir flooding.

2.4 FLOOD RISK FROM SEWERS

The site in question lies above any main roads which is potentially where any Yorkshire Water sewers will lie.

As such, it is considered that there is no risk of flooding from sewers.

2.5 PLUVIAL FLOOD RISK

Risk of flooding from surface water mapping has been prepared by the Environment Agency, 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. An extract from the mapping is included as Figure 2.

Figure 2.5 - Risk of Flooding from Surface Water Mapping

The mapping produced by the Environment Agency shows that small areas of the site are at risk of surface water flooding. Surface water mitigation will be produced to mitigate the risk of pluvial flooding.

However DPG paragraph 175a notes where FRA and site layout along with mitigation ensures future users remain safe. The pluvial flooding wouldn't require a sequential test. As the site layout locates plots & access outside pluvial flood area it is considered the requirements of PPC paragraph 175a have been met.

Therefore, the risk posed by this threat is considered negligible.

2.6 EFFECT OF DEVELOPMENT ON WIDER CATCHMENT

2.6.1 Development Drainage

The current site is considered to be greenfield. The amount of impermeable area will be altered. However a surface water system will be designed to SUDs (Sustainable Urban Drainage) Guidance and will restrict surface water to greenfield run off rate. Therefore the risk posed to the wider development is negligible.

3.0 FLOOD RISK MITIGATION

Section 2.0 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 considered within the proposed development detail design to address and reduce the risk of flooding to within acceptable levels.

3.1 SITE ARRANGEMENTS

3.1.1 Sequential Arrangement

The Flood Zone mapping shows the site to be located within flood zone 3.

3.1.2 Finished Levels

Floor levels should be set to 150mm above existing ground levels and the levels should fall away from the building to ensure no ponding and flooding occurs locally. A positive drainage strategy will also be produced to mitigate the risk of flooding.

Due to the site being located within Flood Zone 3, FFLs should be set to a minimum of 4.1 AOD also including suitable mitigation measures.

All residents should register for the Flood Warning Line on 0345 988 1188 to be informed in the event of a potential flood.

The site has areas that are at risk of Pluvial flooding. However, these areas do not cover the proposed buildings or driveways therefore not directly affecting the proposed development.

Consideration should be given to flood proofing the reception building to a level equivalent to the proposed ground floor level plus 1.6m to reduce the residual damages if a critical event was to occur. Flood proofing is a technique by which buildings are designed to withstand the effects of flooding. There are two main categories of flood proofing, which are dry proofing and wet proofing.

Dry proofing methods are designed to keep water out of the building, and wet proofing methods are designed to improve the ability of the property to withstand the effects of flooding once the water has entered the building. Both would be required in this case, due to the possible failure of the dry proofing methods.

Where wet proofing is required it is important that a flood response plan should be prepared and practised regularly, so that any contents of the building can be moved to design flood level if required or are built to withstand immersion in water or are designed to be easily replaceable.

The differential pressures across load bearing walls and the flotation effect that will occur during flood events should be taken into account when considering dry proofing techniques. For most existing properties this means that dry flood proofing should only be considered if the expected flood depth is under 0.5m, which in this particular case is expected to be less than 0.5m depth, as such, dry proofing is likely to be successful. It is therefore considered that flooding in excess of 0.5m will cause some damage to the building; however, this is considered to be acceptable.

The table below summarises the recommendations for flood proofing measures which can be incorporated within the design of buildings.

Feature	Considerations To Improve Flood Proofing
External Walls	Careful consideration of materials: use low permeability materials to limit water penetration if dry proofing required. Avoid using timber frame and cavity walls. Consider applying a water resistant coating. Provide fitting for flood boards or other temporary barriers across openings in the walls.
Internal Walls	Avoid use of gypsum plaster and plasterboards; use more flood resistant linings (e.g. hydraulic lime, ceramic tiles). Avoid use of stud partition walls.
Floors	Avoid use of chipboard floors. Use concrete floors with integrated and continuous damp proof membrane and damp proof course. Solid concrete floors are preferable; if a suspended floor is to be used, provide facility for drainage of sub-floor void. Use solid insulation materials.
Fitting, Fixtures and Services	If possible, locate all fittings, fixtures and services above design floor level. Avoid chipboard and MDF. Consider use of removable plastic fittings. Use solid doors treated with waterproof coatings. Avoid using double-glazed window units that may fill with flood water. Use solid wood staircases. Avoid fitted carpets. Locate electrical, gas and telephone equipment and systems above flood level. Fit anti-flooding devices to drainage systems.

4.0 CONCLUSIONS AND RECOMMENDATIONS

This Flood Risk Assessment (FRA) is compliant with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance. The FRA has been produced on behalf of Marek Bielenica.

This report demonstrates that the proposed development is not at significant flood risk, and simple mitigation measures have been recommended to address any residual risks that may remain. The identified risks and mitigation measures are summarised within Table 4.1.

Flood Source	Proposed Mitigation Measure
Fluvial	Site is shown to be in Flood Zone 3.
Impact of the Development	Strategic surface water drainage strategy prepared for wider development will ensure a sustainable approach to surface water management.

Table 4.1 - Summary of Flood Risk Assessment

In compliance with the requirements of National Planning Policy Framework, and subject to the mitigation measures proposed, the development could proceed without being subject to significant flood risk. Moreover, the development will not increase flood risk to the wider catchment area as a result of suitable management of surface water runoff discharging from the site.

5.0 APPENDICES

Appendix A – Red Line Plan

Appendix B – Topographical Survey

Appendix C – Flood Data

Appendix A

Proposed Site Layout

Appendix B

Topographical Survey

Appendix C

Flood Data