ROY LOBLEY CONSULTING
Specialists in Flood Risk Management

FLOOD RISK ASSESSMENT

RESIDENTIAL DEVELOPMENT
CARR GREEN LANE, MAPPLEWELL

Mr R Richardson
September 2025

DOCUMENT ISSUE RECORD

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The information in this report is based on statistical data and qualitative analysis which are for guidance purposes only. This study provides no guarantee against flooding or of the absolute accuracy of water levels, flows and associated probabilities.

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EXECUTIVE SUMMARY

This Flood Risk Assessment is compliant with the requirements set out in the National Planning Policy Framework, and the associated online Planning Practice Guidance. It has been produced on behalf of Mr R Richardson. 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.

Policy

Development Type	Flood Zone	Vulnerability	Sequential Test
DWELLING HOUSES	2	MORE VULNERABLE	NOT REQUIRED

Flood Risk and Mitigation

Flood Risk Source	Level of Risk Without Mitigation	Proposed Mitigation
Pluvial	Medium	Minimum floor level 70.31m AOD. Flood residence to 70.61m AOD.
Fluvial Groundwater Sewers	Low	
Tidal Reservoir Canal/Artificial	None	

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1.0 INTRODUCTION

1.1 This Flood Risk Assessment, (FRA), is compliant with the requirements set out in the National Planning Policy Framework, (NPPF), and the associated online Planning Practice Guidance.

1.2 The FRA has been produced on behalf of Mr R Richardson in respect of a planning application for a residential development at Carr Green Lane, Mapplewell.

Data Used

1.3 This FRA is based on the following information:

- Topographic Survey
- Proposed Plans
- British Geological Survey Drift & Geology Maps
- Environment Agency Data
- British Geological Survey Hydrogeology Data

Existing Site

1.4 The site is located at grid reference SE3317509465 as shown in **Figure 1.1** below.

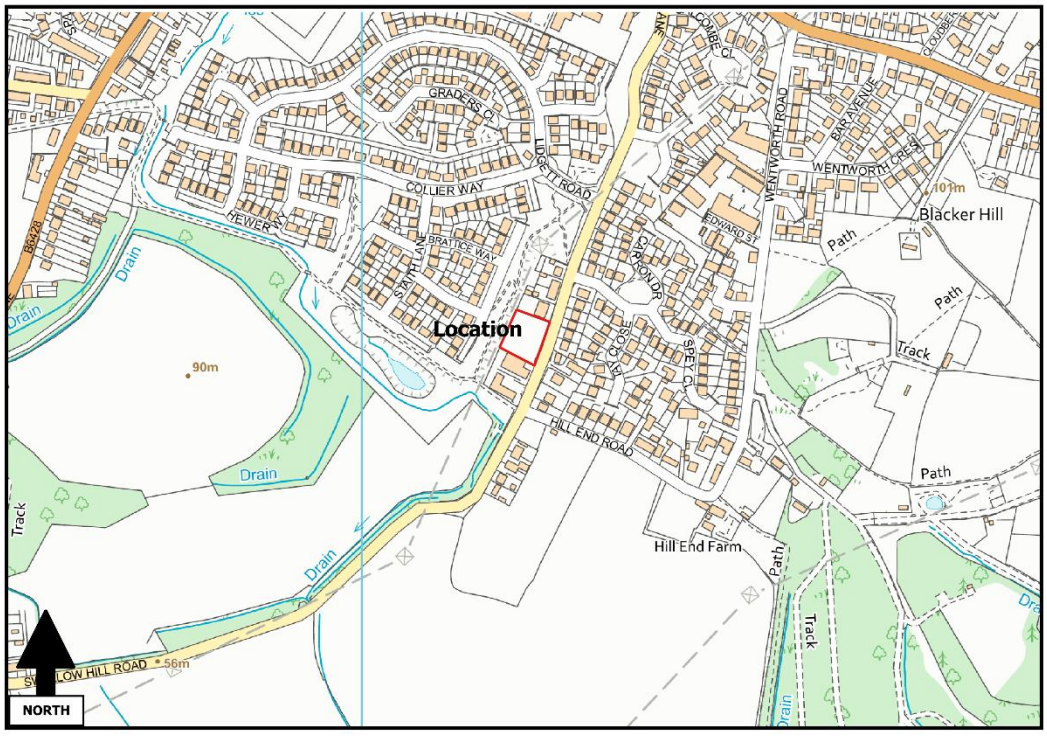

Figure 1.1 Site Location

1.5 A full topographic survey has been undertaken and shows the existing land level in the lowest part of the site in the south west corner is 69.86m AOD.

1.6 The online British Geological Survey maps indicates that the site is located on a bedrock of coal.

Proposed Development

1.7 The proposed development consists of a residential development as shown on the extract of the proposed plan below in **Figure 1.2**

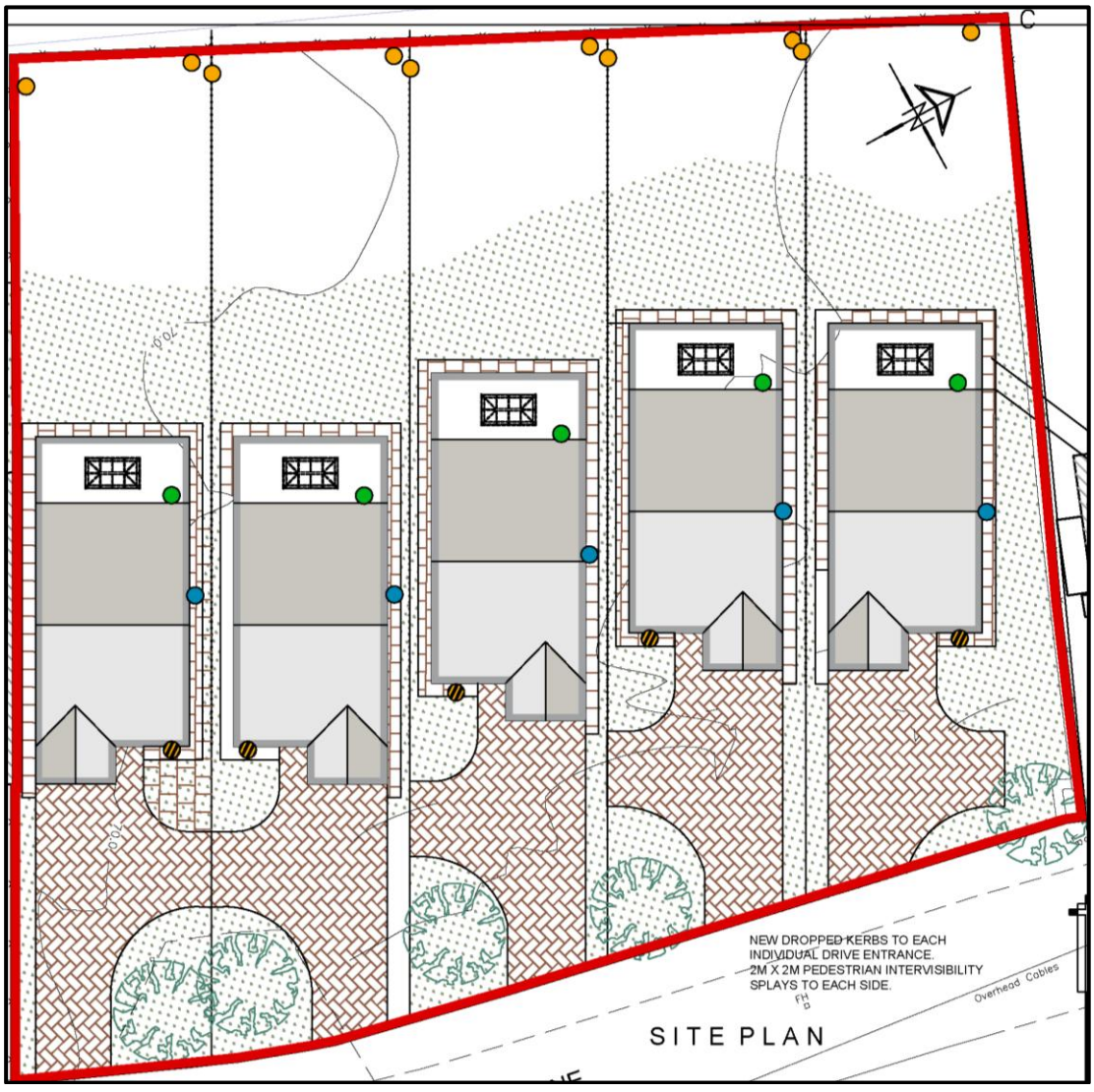

Figure 1.2 Proposed Plan

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.

Sequential Test

2.2 The NPPF requires a sequential risk-based approach to be undertaken to individual applications in areas known to be at risk now or in the future from any form of flooding. Within this context the aim of a Sequential Test is to steer new development to areas with the lowest risk of flooding from any source.

2.3 The sequential test should be used in areas known to be at risk now or in the future from any form of flooding, except in situations where a site-specific flood risk assessment demonstrates that no built development within the site boundary, including access or escape routes, land raising or other potentially vulnerable elements, would be located on an area that would be at risk of flooding from any source, now and in the future (having regard to potential changes in flood risk).

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 great 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 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. 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.

2.5 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

Exception Test

2.6 Having applied the sequential test, if it is not possible for development to be located in areas with a lower risk of flooding (taking into account wider sustainable development objectives), the exception test may have to be applied. The need for the exception test will depend on the potential vulnerability of the site and of the development proposed. 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. The guidance states when the application of the Exception Test is required and this is summarised below.

Flood Zone 1	Exception Test is not required	All.
Flood Zone 2	Exception Test is not required	Essential Infrastructure; More Vulnerable; Less Vulnerable; Water Compatible;
	Exception Test required	Highly Vulnerable.
Flood Zone 3a	Exception Test is not required	Less vulnerable; Water Compatible.
	Exception Test required	Essential Infrastructure; More Vulnerable.
	Should not be permitted	Highly vulnerable.
Flood Zone 3b	Exception Test is not required	Water Compatible.
	Exception Test required	Essential Infrastructure;
	Should not be permitted	Highly vulnerable; More vulnerable; Less vulnerable.

Development Proposals

2.8 The proposed development consists of a dwelling houses.

Flood Zones

2.9 The Flood Zones, including allowances for climate change up to 2125, are shown on **Figure 2.1** below which shows part of the site to be in Flood Zone 2.

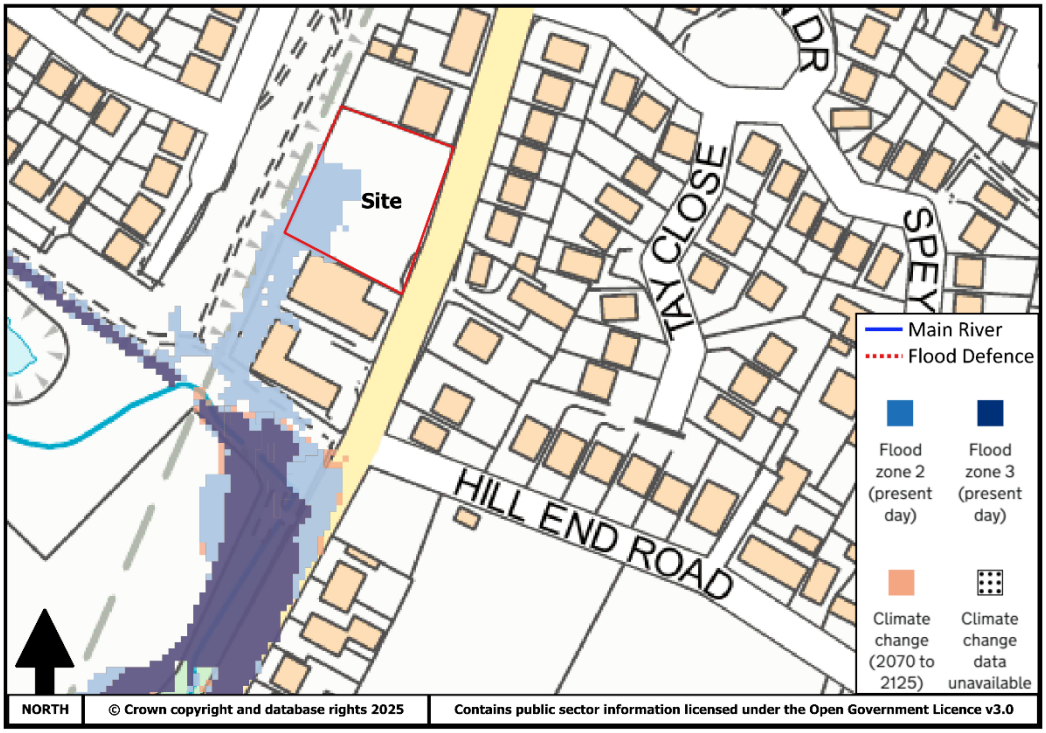

Figure 2.1 Flood Zones

Development Vulnerability

2.10 Dwelling houses are more vulnerable.

Site Sequential and Exception Tests

2.11 The proposed dwellings will be sited in **Flood Zone 1** along with their access driveways and therefore there is no requirement for a Sequential Test or part one of the exception test.

2.12 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 CLIMATE CHANGE

3.1 The NPPF sets out how the planning system should help minimise vulnerability and provide resilience to the impacts of climate change.

3.2 As the Government's expert on flood risk on 19th February 2016 the Environment Agency, (EA), published revised climate change allowances to support the NPPF. The sea level rise allowances were revised on the 17th December 2019, the peak river flows revised on the 20th July 2021 and the peak rainfall allowances were revised on 10th May 2022.

3.3 The climate change allowances are based on projections and different scenarios of carbon dioxide (CO2) emissions to the atmosphere and provide predictions of anticipated change for:

- peak river flow and peak rainfall intensity by river Management Catchment;
- sea level rise;
- offshore wind speed and extreme wave height.

Peak River Flow Allowances

3.4 The peak river flow allowances show the anticipated changes to peak flow by Management Catchment with three allowances; central; higher central and upper end. This proposed development is in the Don & rother Management Catchment.

3.5 However, the proposed built development is in Flood Zone 1 and therefore peak river flow allowances do not apply.

Peak Rainfall Intensity Allowance

3.6 Increased rainfall affects river levels and land and urban drainage and should be applied to surface water drainage systems. The climate change allowances in peak rainfall intensity therefore need to be applied to subsequent studies.

Sea Level Allowances

3.7 There is a range of allowances for each region and epoch or time frame for sea level rise. However, this site is not affected from tidal sources, see section 4.

4.0 FLOOD RISK SOURCES

4.1 The following flood risk sources have been identified and where mitigation is required to reduce the flood risk this is discussed in **Section 5**.

Fluvial

Main River

4.2 The nearest EA Main River to the site is the River Dearne approximately 580m to the south of the site.

Ordinary Watercourses

4.3 The site does not lie within any Internal Drainage Board District.

4.4 An ordinary watercourse is located approximately 66m to the south of the site.

4.5 The proposed dwellings will be sited in **Flood Zone 1** along with their access driveways.

4.6 The risk of flooding from fluvial sources is low.

Tidal

4.7 The site is approximately not at risk from tidal sources.

Pluvial

4.8 The EA have produced maps that show the chance of flooding from surface water to areas of land. Climate change scenarios have been produced to indicate the predicted impacts of climate change on future flood risk between 2040 and 2060.

4.9 The flood Risk is displayed as one of three likelihood categories:

- High Greater than or equal to 1 in 30 (3.3%) chance of flooding in any year.
- Medium Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance of flooding in any given year.
- Low Less than 1 in 100 (1%) but greater than or equal to 1 in 1000 (0.1%) chance of flooding in any given year.

4.10 The climate change, (2040 – 2060), risk of flooding map is shown below in **Figure 4.1**.

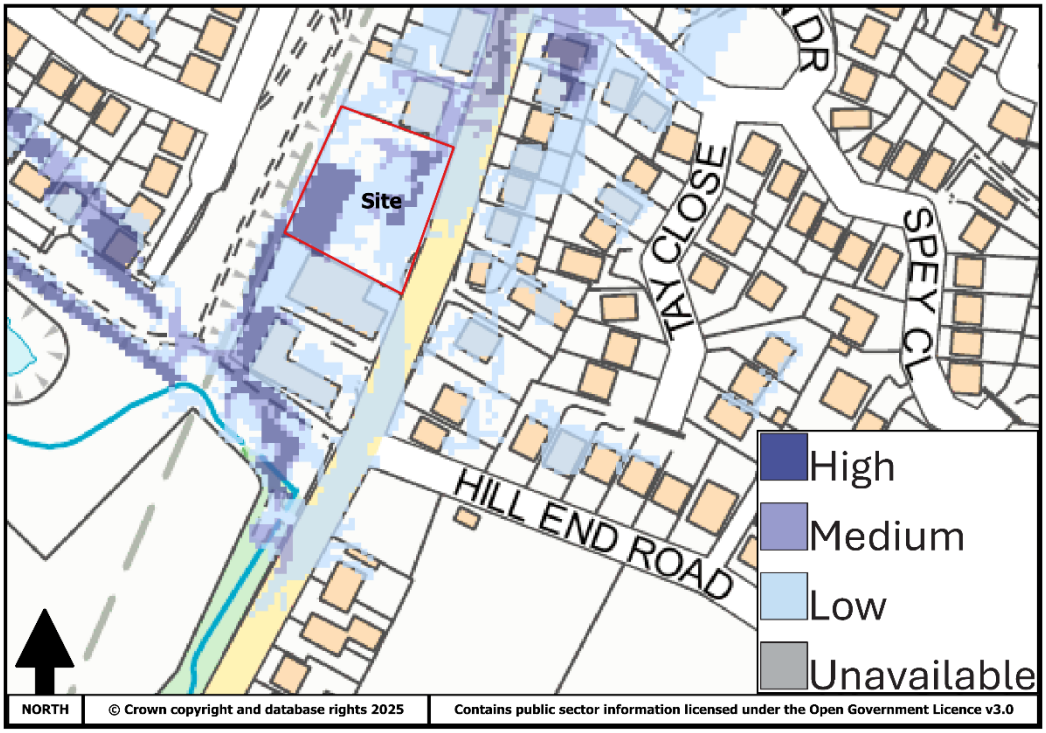

Figure 4.1 Risk of Flooding from Surface Water (2040 – 2060)

Flood Depths

4.11 The dataset also presents the likelihood of flooding for the following depths:

Flood Depth	Likelihood
1.20m	NONE
0.90m	NONE
0.60m	NONE
0.30m	LOW
0.20m	LOW

Table 4.1 Flood Depths from Surface Water (2040 – 2060)

4.12 The risk of flooding from pluvial sources (2040 – 2060) on the lowest part of the site is high, with a low likelihood flood depths will reach 0.30m.

Groundwater

4.13 The site is located on a moderately productive aquifer and there are no known instances of groundwater flooding in the area.

4.14 The risk of flooding from groundwater is low.

Sewers

4.15 Public maintained sewers run adjacent to the site but are unlikely to pose a significant flood risk as they are well maintained.

4.16 The risk of flooding from existing sewers is low.

Reservoirs

4.17 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.

4.18 The site is not at risk of flooding from reservoirs.

Canals and Artificial Water Bodies

4.19 The site is not at risk of flooding from canals.

5.0 MITIGATION

5.1 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

5.2 The risk of flooding from pluvial sources (2040 – 2060) on the lowest part of the site is high, with a low likelihood flood depths will reach 0.30m.

5.3 The existing land level is 69.86m AOD in the lowest part of the site.

5.4 The maximum surface water flood level is therefore 69.86m AOD + 0.30m = 70.16m AOD.

5.5 The proposed dwellings will be sites in Flood Zone 1 along with their access driveways.

5.6 The ground floor of the proposed dwelling will be set at a minimum of **70.31m AOD**.

5.7 Additional flood resilience measures will be included, where required, as follows;

- Water resisting airbricks.
- Backwater valves and non-return valves.
- Electrical installation to be above **70.61m AOD**.

6.0 CONCLUSIONS

6.1 This FRA is compliant with the requirements set out in the NPPF and the associated online Planning Practice Guidance.

6.2 The FRA has been produced on behalf of Mr R Richardson.

6.3 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.

6.4 The identified risks and mitigation measures are summarised below;

Flood Risk Source	Level of Risk Without Mitigation	Proposed Mitigation
Pluvial	Medium	Minimum floor level 70.31m AOD. Flood residence to 70.61m AOD.
Fluvial Groundwater Sewers	Low	
Tidal Reservoir Canal/Artificial	None	

Table 6.1 Summary of Risk and Mitigation

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