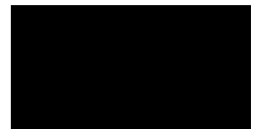




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Flood Risk Assessment

Proposed development at

131A Sea Road, Preston

On behalf of

Mr & Mrs Steel

July 2018

Document History and Status

Project Reference 23023

Date	Version	Prepared By	Reviewed By	Approved By
29 May 2018	DRAFT	Tom Zajac BEng GradICE	Bava Sathan CEng MICE FIHE	S Magowan IEng MICE
09 July 2018	1.0	Tom Zajac BEng GradICE	Steve Doughty	S Magowan IEng MICE

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1 Non Technical Summary

- 1.1 This Flood Risk Assessment has been undertaken in accordance with the National Planning Policy Framework on behalf of Mr & Mrs Steel in support of a Planning Application for a change of use of an existing storage building on land east of Sea Road, East Preston to a residential use.
- 1.2 This Assessment is to be read in conjunction with all planning, architectural and other reports that accompany the Planning Application for the proposed development.
- 1.3 The Environment Agency flood data indicates that the proposed development is located within Flood Zone 3.
- 1.4 Ordnance survey data information confirms that the existing building is located above the modelled flood level and is within Flood Zone 1. The site is not at risk from fluvial or tidal flooding or at risk of flooding from overland flows or groundwater.
- 1.5 Foul water and surface water runoff will be discharged in the same manner as the former use.

2 Planning Policy Context

2.1 National Planning Policy Framework

2.1.1 National Planning Policy Framework aims to reduce flood risk through development opportunities. The policy framework aims to ensure flood risks and the predicted effects of climate change have been taken into account and appropriate measures put in place to ensure that:

- The development is safe
- Where possible the flood risk overall is reduced
- Increased flood risk does not occur elsewhere
- Appropriate mitigation measures are employed to deal with these effects and risks.

2.2 Lead Local Flood Authority

2.2.1 West Sussex County Council became a Lead Local Flood Authority under the Flood and Water Management Act 2010 and was given a series of new responsibilities to coordinate the management of local flood risk.

2.2.2 As part of their role West Sussex County Council have produced the following documents

- Local Flood Risk Management Strategy dated May 2014
- Preliminary Flood Risk Assessment dated May 2011
- Strategic Flood Risk Assessment dated January 2010

2.2.3 All documents have been reviewed in the preparation of this report.

2.3 Arun District Council

2.3.1 Arun District Council adopted the Strategic Flood Risk Assessment in August 2016.

2.4 Local Planning Policy

2.4.1 Arun District Council's Local Plan (2011-2031) is yet to be adopted. It is currently under examination and the final inspector's report is expected in early July 2018.

2.4.2 Until the Local Plan is adopted by the District Council the statutory development currently consists of:

- The saved policies within the Arun District Local Plan (2003)
- The Arun District Proposals Map
- The saved policies within the West Sussex Minerals Local Plan (2003)

2.4.3 Arun District Council Local Plan (2003)

2.4.3.1 The following policies of the currently adopted Local Plan of relevance to this Flood Risk Assessment are as follows:

2.4.3.2 **Policy GEN9** Foul and Surface Water Drainage states that *'planning permission for development which will materially increase foul and/or surface water discharges will be refused unless the Local Planning Authority is satisfied that either adequate drainage capacity exists or appropriate drainage capacity can be provided as part of the development. Consideration should also be given to the use of Sustainable Urban Drainage Systems (SUDS) as alternatives to conventional drainage where appropriate.'*

2.4.3.3 **Policy GEN10** Tidal Flooding and Coastal Defence states that *'planning permission will be refused for development which would be at an unacceptable risk of tidal flooding and/or where proposals are detrimental to the integrity of tidal defences or the ability to maintain or improve them.'*

It continues *'within the built-up areas, planning permission will only be granted where the local planning authority is satisfied that appropriate flood and coastal defence and mitigation measures have been provided so that the development will not itself be at unacceptable risk and furthermore does not pose an unacceptable risk to existing development in the area.'*

2.4.3.4 **Policy GEN11** Inland Flooding states that *'permission for development which would be at risk from flooding and/or materially decrease the capacity of a floodplain to store or pass flows of floodwater, will be refused unless the Local Planning Authority is satisfied that compensatory flood storage/waterway areas can be provided as part of the development and the function and*

effectiveness of existing watercourses, or their replacements, are not adversely affected.'

2.4.4 Arun District Council Local Plan (2011-2031)

2.4.4.1 **Policy W DM1** Water supply and quality states that *'to ensure good water quality in the District, all major developments must:*

- *Illustrate, where necessary, how they have contributed to the protection and enhancement of waterbodies identified by the South East River Basin Management Plan objectives; and*
- *Demonstrate, where it will materially increase foul and/or surface water discharges, adequate drainage capacity exists or can be provided as part of the development. Where adequate capacity does not exist, there will be a requirement that facilities are adequately upgraded prior to the completion and occupation of development. In sewered areas, there will be a general presumption against the use of non mains foul water drainage.*

Developments with respect to all of the above shall also be consistent with all other Local Plan policies.'

2.4.4.2 **Policy W DM2** Flood Risk states that *'development in areas at risk from flooding, identified on the latest Environment Agency flood risk maps and the Council's Strategic Flood Risk Assessment (Strategic Flood Risk Assessment), will only be permitted where all of the following criteria have been satisfied:*

- *The sequential test in accordance with the National Planning Policy Framework Technical Guidance has been met.*
- *A site specific Flood Risk Assessment demonstrates that the development will be safe, including access and egress, without increasing flood risk elsewhere and reduce flood risk overall.*
- *The scheme identifies adaptation and mitigation measures.*
- *Appropriate flood warning and evacuation plans are in place; and*
- *New site drainage systems are designed to take account of events which exceed the normal design standard i.e. consideration of flood flow routing and utilising temporary storage areas.'*

2.4.4.3 **Policy W DM3** Sustainable Urban Drainage Systems states that *'to increase the levels of water capture and storage and improve water quality, all development must identify opportunities to incorporate a range of Sustainable Urban Drainage Systems (SUDS), appropriate to the size of development, at an early stage of the design process.*

Proposals for both major and minor development proposals must incorporate SUDS within the private areas of the development in order to provide source control features to the overall SUDS design. These features include:

- *Green roofs*
- *Permeable driveways and parking*
- *Soakaways*
- *Water harvesting and storage features including water butts.*

Proposals for major development must also integrate SUDS within public open spaces and roads, in liaison with West Sussex County Council, (the SUDS Approval Body) or its agent. SUDS must therefore be integrated into the overall design of a development and must:

- *Contribute positively to the appearance of the area*
- *Effectively manage water (including its quality)*
- *Accommodate and enhance biodiversity by making connections to existing Green Infrastructure assets and*
- *Provide amenity for local residents (ensuring a safe environment) and*
- *Retain existing open drainage ditches in their current form.*

In order to ensure that SUDS discharge water from the development at the same or lesser rate, as prior to construction, developers must:

- *Follow the hierarchy of preference for different types of surface water drainage disposal systems as set out in Approved Document H of the Building Regulations and the SUDS manual produced by CIRIA.*
- *Undertake up to six months groundwater monitoring within the winter period.*

- Undertake winter percolation testing in accordance with BRE365.
- The proposed drainage system must be designed to ensure that there is no flooding on a 1:30 year storm event.
- The design must also take account of the 1:100 year storm event plus 30% allowance for climate change, on stored volumes, to ensure that there is no flooding of properties or the public highway or inundation of the foul sewerage system. Any excess flows must be contained within the site boundary, and within designated storage areas.
- Flow routes through the development must be demonstrated as a first stage in the design process, demonstrating how water will travel at or near the surface for three types of flow:

Low flow routes: Once surface water run-off has been collected, cleaned and controlled in source control features it will either be stored where it fell as rain in permeable pavement, or flow onward to local storage structures. The day-to-day flows from these features should travel in low flow channels through the development in a controlled way contributing to landscape quality.

Overflows: In the event of local blockages or surcharge a simple overflow arrangement should allow water to bypass the obstruction and return to the management train sequence until conditions return to normal.

Exceedance routes: When SUDS are overwhelmed by exceptional rainfall then exceedance routes protect people and property by providing unobstructed overland flow routes from the development and should be considered for all drainage schemes. The SUDS design must demonstrate that flow routes have been considered at each design stage to take into account the effect of proposed development on the natural flow pattern for the site. Exceedance routes should also be protected from future changes in land use.'

3 Existing Site

3.1 Site Location

- 3.1.1 The development site is located on the Coastal Caravan Park at 131A Sea Road, East Preston at Ordnance Survey reference TQ 071 015. The nearest postcode is BN16 1PD.



- 3.1.2 A copy of the site location plan is located in Appendix 1 at the rear of this report.

3.2 Site Description

- 3.2.1 The site is approximately 400m² in area and is occupied by a storage building serving the Coastal Caravan Park.
- 3.2.2 There is no site specific topographical survey provided however ordnance survey data confirms the existing ground levels are at their highest point to the northwest boundary of the site at a level of approximately 6.1-6.2m AOD.
- 3.2.3 The site slopes towards the southeast where the lowest point of the site is at a level of approximately 5.4m AOD.

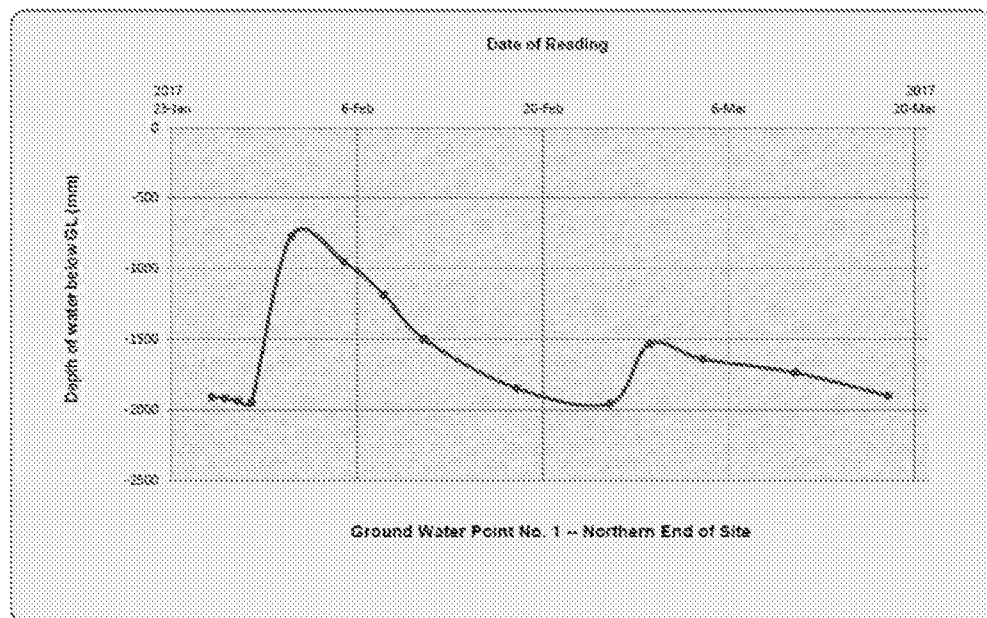
- 3.2.4 The site is bounded to the north by residential properties, to the east and south by the Costal Caravan Park and to the west by Sea Road.
- 3.2.5 The site is located 100m north of the coast and there are no existing watercourses in the vicinity of the site.
- 3.2.6 A copy of the existing site layout plan is located in Appendix 2 at the rear of this report.

3.3 Existing Drainage

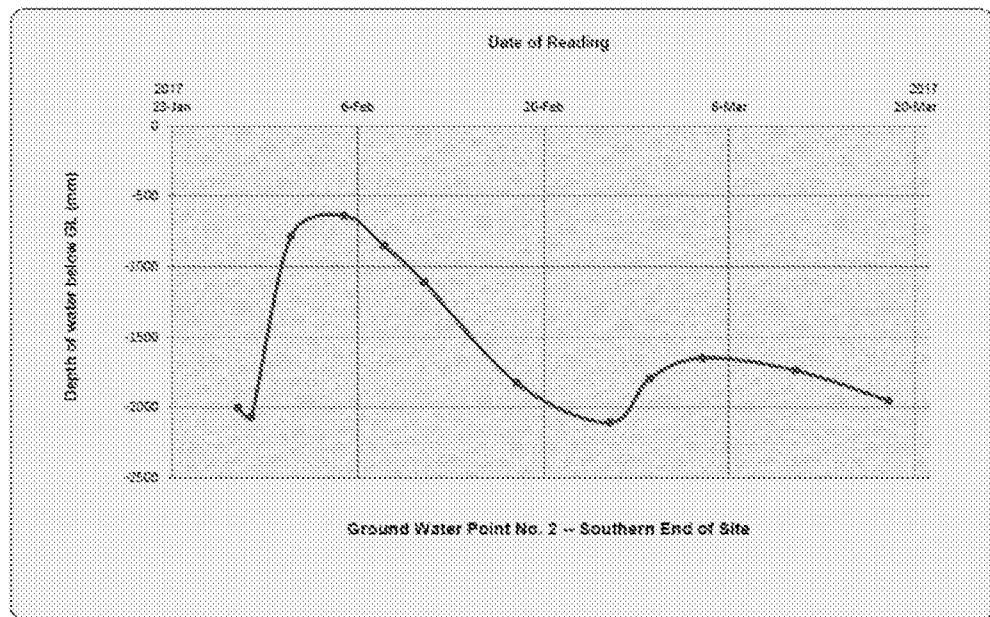
- 3.3.1 It is assumed that the surface water runoff from the existing building is discharged into the onsite foul sewer network.
- 3.3.2 Foul drainage is discharging into the public foul sewer located beneath Sea Road to the east of the site.
- 3.3.3 A copy of the sewer records is located in Appendix 3 at the rear of this report.

3.4 Geology and Groundwater

- 3.4.1 British Geological Survey borehole information indicates a variety of clay underlain by sand, gravel and chalk layers in the wider locality.
- 3.4.2 The borehole logs confirm that approximately 1.8m of clay is overlying a presence of 6.1m of sand and gravel over the underlying chalk strata.
- 3.4.3 The online “Magic Map” available from Defra confirms that the site is located above a major aquifer classified as having a high vulnerability.
- 3.4.4 Groundwater monitoring undertaken at Coastal Caravan Site between January and March 2017 identifies the ground water level varies between 0.64m – 2.2m below ground level.



Maximum groundwater level 770mm below ground level.



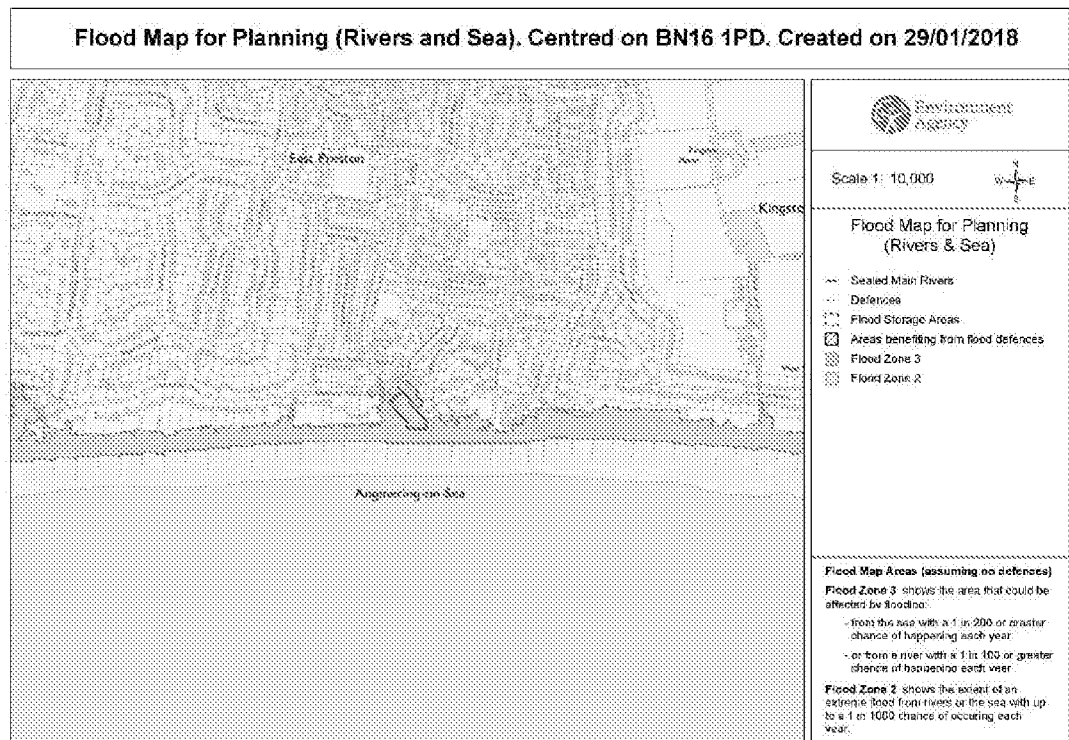
Maximum groundwater level 636mm below ground level.

- 3.4.5 A copy of the geological borehole data is located in Appendix 4 at the rear of this report.

4 Flood Zone and Flood History

4.1 Flood Zone

- 4.1.1 The Environment Agency's Product 4 mapping indicates that the site is located in Flood Zone 3 and is at risk of tidal flooding from a 1:200 year flood event.



4.2 Flood History

4.2.1 Environment Agency

- 4.2.1.1 The Environment Agency maps of historic flood incidents do not show any historic flooding records at the proposed development site.

4.2.2 West Sussex County Council

- 4.2.2.1 Neither the Preliminary Flood Risk Assessment dated May 2011, the Strategic Flood Risk Assessment dated January 2010 nor the Local Flood Risk Management Strategy dated May 2014 identify any specific flood incidents in the immediate vicinity of the site.

4.2.3 Arun District Council

- 4.2.3.1 The Strategic Flood Risk Assessment dated August 2016 does not identify any specific flood related incidents within the vicinity of the site.

- 4.2.3.2 Arun District Council confirm the proposed development site is at risk of surface water flooding however they do not hold any records of historic flooding from surface water or land drainage recorded at the proposed development site.
- 4.2.4 Environment Agency Product 4 Information, Flood Maps, West Sussex County Council and Arun District Council Correspondence are located in Appendix 5 at the rear of this report.

5 Flooding Potential

5.1 Tidal Flooding

- 5.1.1 The site is located approximately 100m from the coast.
- 5.1.2 The Environment Agency's predicted tidal flood levels on the current 1:200 year tidal flood level is 5.78m AOD and the predicted future year 2110 1:200 tidal event 5.82m AOD.
- 5.1.3 This does not however take into account the existing ground levels which are at approximately 6.1m-6.2m AOD within the area of the existing building.
- 5.1.4 This places the building above the future 1:200 year flood level and in Flood Zone 1 and provides approximately 300mm freeboard above the predicted future year 2110 1:200 tidal event.

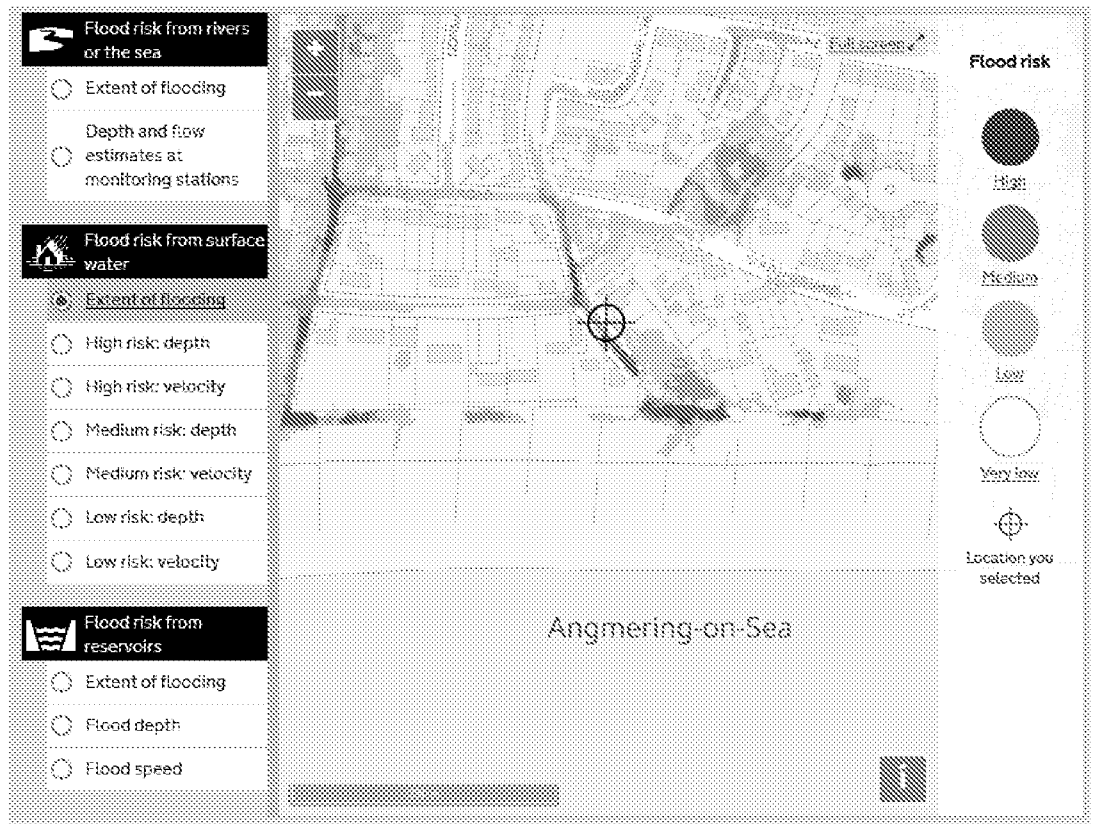


6.2 m or 20.4 feet
Location : 50.80365, -0.48045
Input the latitude and longitude of a point on the map and see the estimated elevation.

- 5.1.5 The site is located within the area benefiting from flood defences in the form of a Sand and Shingle Beach maintained by Arun District Council.

5.2 Surface Water Flooding

- 5.2.1 The site is located within an area classified by the Environment Agency as at low risk of flooding from surface water.



Environment Agency: The Potential Source of Flood Risk Map Extract.

- 5.2.2 Arun District Council have provided a flood map identifying part of the Caravan Site being affected by surface water flooding. The existing building is unaffected by this potential surface water flooding.



Arun District Surface Water Flooding Route

5.3 Ground Water Flooding

- 5.3.1 The Arun District Council Strategic Flood Risk Assessment Groundwater Map confirms the site being located in an area with 25 – 50% chance of flooding.
- 5.3.2 Groundwater monitoring undertaken at Coastal Caravan Site between January and March 2017 identify ground water level varies between 0.64m – 2.2m below ground level.
- 5.3.3 There is no indication in any of the West Sussex County Council Flood documents including the Preliminary Flood Risk Assessment, Strategic Flood Risk Assessment and the Local Flood Risk Management Strategy or other available flood maps of groundwater flooding affecting the site.

5.4 Overland Flow

- 5.4.1 The site slopes naturally towards its southeast corner.
- 5.4.2 Any overland flow from the site would discharge directly toward the southeast boundary of the site.

5.4.3 The existing building is not at significant risk of flooding due to overland flows and there are no properties which would be affected by overland flows leaving the site.

5.4.4 There is no evidence of any historic overland surface water flooding affecting the existing building and flood risk to the building from such sources is considered as low.

5.5 Flood Routing

5.5.1 The natural route for flood waters to dissipate should any ever occur on the site is towards the sea at the southeast site boundary.

5.5.2 A plan showing the existing flow paths is located in Appendix 6 at the rear of this report.

6 Development Proposals

6.1 Description

- 6.1.1 The development proposal is for a change of use of the existing storage building to residential use which also changes classification in vulnerability from less vulnerable to more vulnerable.
- 6.1.2 There will be no increase in impermeable area as a result of the development proposals.
- 6.1.3 A copy of the proposed site layout plan is attached at Appendix 7 at the rear of this report.

6.2 Surface Water Drainage Strategy

- 6.2.1 The proposed change of use will not increase the impermeable areas and surface water will be discharged as is currently the case with no alteration to the existing system.

6.3 Foul Water

- 6.3.1 Foul drainage will be discharged as is currently the case into the existing onsite foul drainage system.

7 Safe Development

7.1 Site Location

7.1.1 The proposed site is located in Flood Zone 1.

7.1.2 With reference to Table 2 (Flood Risk Vulnerability Classification) and Table 3 (Flood Risk Vulnerability and Flood Zone Compatibility) of the Technical Guidance to the National Planning Policy Framework the proposed development is classified as more vulnerable and is considered suitable in Flood Zones 1 and 2.

7.2 Review of Suitability for Development

7.2.1 Technical Guidance to the National Planning Policy Framework (NPPF) details the Flood Risk Vulnerability Classification and suitability of development for each flood zone. A copy of the table is reproduced below:

	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test Required	✓	✓	✓
Zone 3a	Exception Test Required	x	Exception Test Required	✓	✓
Zone 3b	Exception Test Required	x	x	x	✓

Table 1: Flood Risk Vulnerability Classification

7.2.2 The existing building is within Flood Zone 1. The proposed change of use from less vulnerable to more vulnerable is suitable in Flood Zones 1 & 2.

7.3 Risk to Others

7.3.1 The proposed change of use will have no increase within the impermeable areas and therefore the risk of flooding to others due to the development proposals is negligible.

8 Conclusions

- 8.1 The available level information sets the existing building within Flood Zone 1.
- 8.2 The type of development proposed is classified as more vulnerable and suitable in Flood Zones 1 and 2.
- 8.3 The existing building is not at risk of flooding from tidal or fluvial sources, or at significant risk of flooding from overland surface water flows or groundwater.
- 8.4 There are no historic records of flooding affecting the existing building.
- 8.5 Foul water and surface water runoff will be discharged in the same manner as the former use.
- 8.6 In terms of flood risk planning the proposed change of use is safe and suitable at this location and is considered appropriate.

9 List of Appendices and Tables

Appendix 1	Site Location Plan
Appendix 2	Existing Site Layout Plan
Appendix 3	Sewer Records
Appendix 4	BGS Geological Borehole Data
Appendix 5	Environment Agency Product 4 Information, Flood Maps, West Sussex County Council and Arun District Council Correspondence
Appendix 6	Existing Flow Path Plan
Appendix 7	Proposed Site Layout Plan
Table 1	Flood Risk Vulnerability Classification