



Acland
Bracewell

Flood Risk Assessment & Surface Water Strategy

East Crantum Farm
New Cut Lane,
Halsall
Southport.

December 2021

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1. Introduction

- 1.1 Acland Bracewell Surveyors Limited have been instructed by F & A Baybutt to provide a Flood Risk Assessment (FRA) and Sustainable Drainage Strategy to accompany the planning application for the proposed change of use of building, (approved 2006/0629) to a mixed use, being (1) the keeping of horses, (2) Livery, (3) agriculture, change of use of agricultural land, to keeping of horses and construction of ménage.
- 1.2 The report considers the various factors that may affect this Site and any susceptibility to flooding. Determining any level of risk will, therefore, providing a justification for the proposal.
- 1.3 This report has been prepared in accordance with the guidance contained within the National Planning Policy Framework (NPPF) and former Planning Policy 25 (PPS 25).
- 1.4 An inspection of the site has been undertaken in order to gain an understanding of the existing features of the Site, inspect local watercourses to ascertain their direction of flow and capacity.

2. Site Description

- 2.1 The Site is located off the south of New Cut Lane and is accessible via two access points off New Cut Lane for vehicles and pedestrians. The Site comprises of a large detached dwelling and a number of steel-framed buildings associated with the wider uses on the Site. One access leads to the dwelling house and the second to the farm buildings.
- 2.2 The Site is approximately 4.5 miles southeast of Southport, 21.6 miles southwest of Preston and 5.5 miles west of Ormskirk. The Site is also within 14.4 miles of Junction 27 of the M6 Motorway, connecting to the wider national motorway network.
- 2.3 A location plan is produced at **Appendix 1**.
- 2.4 The farmstead currently extends to approximately 2.52 acres (1.02ha). In 1996, the farm under the occupants, F. & A. Baybutt, cropped 500 acres (202.35ha) and by 2001, the farm has increased to 800 acres (323.76ha). The farm continued to expand, and as a result of the increased acreage, the requirement for substantial investment in machinery, equipment and modern, purpose built agricultural buildings to be constructed. This is relevant to the agricultural buildings granted by the Council in both 2006 (Ref: 2006/0162) and 2009 (Ref: 2009/1392/FUL) for a silo and for storing grain respectfully.
- 2.5 Where appropriate, F. & A. Baybutt undertook improvements to existing agricultural building, to accommodate crops harvested from the agricultural holding.
- 2.6 By 2016, the agricultural holding has expanded to c. 2,000 acres (809.39ha), cropping cereal and potato crops and, following the granting of planning permission in 2015 (Ref: 2015/0334/FUL), erected a new refrigerated agricultural building for the purposes of both loose and boxed potato storage together with associated hardstanding, was necessary to meet this increased requirement.
- 2.7 The surrounding area is predominantly agricultural land to the north and south, interspersed by scattered patterns of established farmsteads consisting of mainly of arable farmsteads. Birkdale lies 0.5miles to the West and
- 2.8 The Site is accessed from New Cut Lane, an adopted road directly off the A5147 to Birkdale.
- 2.9 An extract from the Ordnance Survey Explorer MasterMap is produced at **Appendix 2**.

- 2.4 Where appropriate, F. & A. Baybutt undertook improvements to existing agricultural building, to accommodate crops harvested from the agricultural holding.
- 2.5 By 2016, the agricultural holding has expanded to c. 2,000 acres (809.39ha), cropping cereal and potato crops and, following the granting of planning permission in 2015 (Ref: 2015/0334/FUL), erected a new refrigerated agricultural building for the purposes of both loose and boxed potato storage together with associated hardstanding, was necessary to meet this increased requirement.

3. Relevant Planning Policy

- 3.1 As set out in the National Planning Policy Framework, inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere.
- 3.2 “Areas at risk of flooding” means land within Flood Zones 2 and 3; or land within Flood Zone 1 which has critical drainage problems, and which has been notified to the local planning authority by the Environment Agency:
- The area surrounding the site is managed by the Environment Agency.
 - The Area of the site is drained via Boundary Brook, which is pumped at Boundary Brook Pumping station which is discharged via Three Pools Waterway to be subsequently pumped into the sea at Crossons Pumping Station.
 - Boundary Brook is one of many man-made drainage ditches which drain Halsall/Southport Moss.
- 3.3 “Flood risk” means risk from all sources of flooding - including from rivers and the sea, directly from rainfall on the ground surface and rising groundwater, overwhelmed sewers and drainage systems, and from reservoirs, canals and lakes and other artificial sources.
- 3.4 The National Planning Policy Framework incorporates a Sequential Test. The overall aim should be to steer new development to Flood Zone 1. Where there are no reasonably available sites in Flood Zone 1, local planning authorities allocating land in local plans or determining planning applications for development at any particular location, should take into account the flood risk vulnerability of land uses and consider reasonably available sites in Flood Zone 2, applying the Exception Test if required.
- 3.5 Under Policy LP14: of the Central Lincolnshire Local Plan adopted in 2017, the Council will ensure that development does not result in unacceptable flood risk or drainage problems elsewhere by requiring development to:
- that they are informed by and take account of the best available information from all sources of flood risk and by site specific flood risk assessments where appropriate;
 - that there is no unacceptable increased risk of flooding to the development site or to existing properties;

- that the development will be safe during its lifetime, does not affect the integrity of existing flood defences and any necessary flood mitigation measures have been agreed with the relevant bodies;
- that the adoption, ongoing maintenance and management of any mitigation measures have been considered and any necessary agreements are in place;
- how proposals have taken a positive approach to reducing overall flood risk and have considered the potential to contribute towards solutions for the wider area; and
- that they have incorporated Sustainable Drainage Systems (SuDS) into the proposals unless they can be shown to be impractical.

3.6 West Lancashire Strategic Flood Risk Assessment (SFRA) (Final Report) December 2019

The SFRA provides details of flood risks within the district of West Lancashire. The proposed Site is located on the western boundary of West Lancashire and the southwest border of Lancashire county.

With the nearest settlement being Kettlethorpe, being under 1 mile to the north west of the Site, and using LiDAR data, the elevation of both Park Farm Road and Kettlethorpe are approximately the same.

The SFRA makes the following comments in regard to the area surrounding the site:

- The ground in the western region of the Borough is predominantly wet with elevated groundwater levels. The western region to the north of the railway drains into a network of ditches which feed into the pumping station at Alt Crossens. The flow of this water is managed by 5 land drainage pumping stations in conjunction with sluice gates. Much of the land in this area is peat, and therefore land levels have reduced due to the introduction of the pumped land drainage system. Due to the relatively flat nature of the existing water courses, flow is generally slow which results in high levels of silt deposition. Maintenance of watercourses is essential to ensure that flow is not jeopardised to reduce the risk of flooding. Flooding in this area tends to develop slowly as the ground is slow to reach saturation, therefore when flooding does occur it can be widespread but relatively shallow, which is evidenced by historical flood records Table 4.1 – Flooded Areas and Sources of Flooding, June 2007 states that 5 properties were affected by flooding from flood defence systems and surface runoff.
- The settlements of Halsall and Haskayne are currently at low probability from fluvial flooding. There are limited areas within and immediately adjoining the settlements that are at risk from

non-fluvial flooding; however, there are areas at higher risk of surface water flooding to the east and north-east of Halsall and areas to the west to the Sefton boarder are at risk of tidal and fluvial flooding.

- The Crossens and Altmouth pumping stations are considered to be two of the largest in Europe and operate in conjunction with several satellite pumping stations. Given the low-lying nature of the area, the inoperability of pumping stations, particularly Crossens pumping station in Banks, would result in inundation of a large area of high quality agricultural land in the west of the Borough. However, the Environment Agency is moving away from investment in discretionary land drainage practices to protection of life and property. Consequently, in September 2015, the EA served two years notice that they would no longer be able to operate five satellite pumping stations at Banks Marsh, Boundary Brook, Clay Brow, Kew and Rufford Causeway. This notice period has now been extended until the 31 March 2021 and partners are therefore currently seeking a sustainable long term drainage solution for beyond this time. (Council, 2019)

4. Existing Flood Defences

- 4.1 The Site is listed by the Environment Agency Flood Zone 2 and due to the nature of the land it is artificially protected with flood defences, these defences are in the form of drainage ditches and pumping stations such as Boundary Brook, Crossons and Altcar.
- 4.2 The main river on which the Site is drained is via Boundary Brook, which is then pumped at Boundary Brook Pumping Station at Birkdale Cop, then subsequently drained into three pools, then on to be pumped into the sea at Crossons Pumping Station.
- 4.3 The Site benefits from a number of drainage ditches which subsequently drain into boundary brook. The site does have a high reliance over the effectiveness of boundary brook and the pumping stations.

5. Flood Risks

- 5.1 In accordance with the Environment Agency Flood Map, which can be found at **Appendix 3**, the Site is located partly within a Flood Risk Zone 2, an area considered to have a medium probability of flooding.
- 5.2 The Site is assessed as having between a 1 in 100 and a 1 in 1,000 annual probability of river flooding (1% - 0.1%) or between a 1 in 200 and a 1 in 1,000 annual probability of sea flooding (0.5% - 0.1%) in any one year.
- 5.3 These flood zones refer to the probability of river and sea flooding, ignoring the presence of any flood defences. As states above, the Environment Agency Flood Map (**Appendix 3**) specifies that the Site benefits from flood defences of the nearest main river – Fosdyke Canal.
- 5.4 The type of proposed development which is suitable within Flood Zone 2 is produced under the NPPF Technical Guidance through table 2, which is reproduced below. This confirms that Buildings used for general industry would be classed as less vulnerable development.

Essential infrastructure
<ul style="list-style-type: none"> Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk.
<ul style="list-style-type: none"> Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood.
<ul style="list-style-type: none"> Wind turbines.
Highly vulnerable
<ul style="list-style-type: none"> Police stations, ambulance stations and fire stations and command centres and telecommunications installations required to be operational during flooding.
<ul style="list-style-type: none"> Emergency dispersal points.
<ul style="list-style-type: none"> Basement dwellings.
<ul style="list-style-type: none"> Caravans, mobile homes and park homes intended for permanent residential use.
<ul style="list-style-type: none"> 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
<ul style="list-style-type: none"> Hospitals.
<ul style="list-style-type: none"> Residential institutions such as residential care homes, children’s homes, social services homes, prisons and hostels.
<ul style="list-style-type: none"> Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.
<ul style="list-style-type: none"> Non-residential uses for health services, nurseries and educational establishments.
<ul style="list-style-type: none"> Landfill and sites used for waste management facilities for hazardous waste.
<ul style="list-style-type: none"> Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.
Less vulnerable
<ul style="list-style-type: none"> Police, ambulance and fire stations which are not required to be operational during flooding.
<ul style="list-style-type: none"> Buildings used for shops, financial, professional and other services, restaurants and cafes, hot food takeaways, offices, general industry, storage and distribution, non-residential institutions not included in “more vulnerable”, and assembly and leisure.
<ul style="list-style-type: none"> Land and buildings used for agriculture and forestry.
<ul style="list-style-type: none"> Waste treatment (except landfill and hazardous waste facilities).
<ul style="list-style-type: none"> Minerals working and processing (except for sand and gravel working).
<ul style="list-style-type: none"> Water treatment works which do not need to remain operational during times of flood.
<ul style="list-style-type: none"> Sewage treatment works (if adequate measures to control pollution and manage sewage during flooding events are in place).

Table 2 from NPPF Technical Guide 2012

5.5 The tidal effects do not have much influence on the flooding mechanisms, provided that the tidal influences from the river Alt & Ribble are controlled via the sluice gates at Crossons and Altcar.

5.6 The main risk of flooding in this area is predominantly associated with the failure of the existing assets including:

- Inoperability of the pumping stations at Crossons and Altcar.
- Failure of existing coastal and tidal defences resulting in salt-water ingress.

6. Sequential Test

- 6.1 In accordance with Appendix D of the ‘former’ PPS25, the Site falls within Flood Zone 2, with a high probability (>1.0%) without the flood defences present in the area.
- 6.2 The proposal retrospective full planning approval for the Change of Use (part-retrospective) of the agricultural buildings to stables for the keeping of horses, livery and change of use of agricultural land, together with the construction of a menage.
- 6.3 Applying the Flood Risk Vulnerability and Flood Zone Capacity table 3 of the NPPF, you can see below that the development is appropriate without an exception test being required.

Table 3: Flood risk vulnerability and flood zone ‘compatibility’

Flood risk vulnerability classification (see table 2)		Essential infrastructure	Water compatible	Highly vulnerable	More vulnerable	Less vulnerable
Flood zone (see table 1)	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception Test required	✓	✓
	Zone 3a	Exception Test required	✓	✗	Exception Test required	✓
	Zone 3b functional floodplain	Exception Test required	✓	✗	✗	✗

Key: ✓ Development is appropriate.
✗ Development should not be permitted.

7. Flood History & Flood Sources

7.1 Annual maintenance of banks, floodgates sluices and drainage ditches of main water courses are undertaken by the Environment Agency and individual farmers.

7.2 It is required through the NPPF that all sources of flood risk to the proposed site be explored. With a review of the West Lancashire Strategic Flood Risk Assessment it is found that key sources of flooding within the area are:

Sources of Flooding	Potential of flooding at Site.
Surface Water	Surface water flooding is considered to be generally very low within the area of the Site but are heavily reliant on local watercourses and the effectiveness of the local water system.
Tidal	Site considered to be at low risk of flooding from the River Ribble/Alt, but reliant on the flood defence systems at Altcar and Crossons.
Ground water	The Site is considered to be of low risk of flooding via groundwater.
Fluvial	The Site is located within Flood Zone 2 and is of medium probability of flooding but has a greater than 3.3% possibility of flooding each year. The proposal is to be at a minimum of 4m AOD to ensure that the buildings should not be at risk of flooding.
Infrastructure and Defence failure	Failure of lock gates, sluice gates and embankments with a combination of fluvial and tidal forces could lead to flooding at site through the breach of defences and drains such as boundary brook. It should be noted that all the land to east is lying below the Site level.

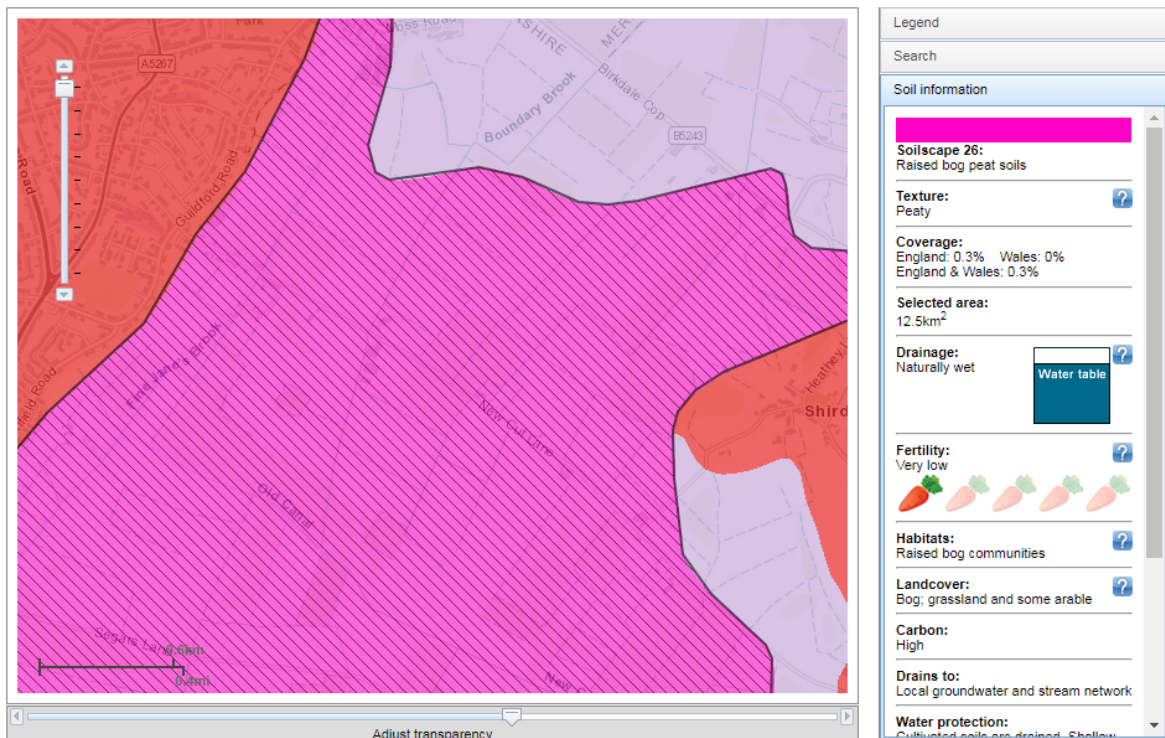
7.3 As evident in the table above, the main source of flooding which poses risk to the Site and the development, would be from fluvial and tidal sources through a breach of drainage infrastructure.

8. Global Warming/Climate Change

- 8.1 The NPPF states that there is a requirement of consideration of the impacts through climate change on the flood risk for any proposed development. Climate change can influence both sea level rise and volume of precipitation in a given area. It is recommended that a progressive increase in peak flows be calculated through the lifespan of the drainage design reaching 30% by 2115. The attenuation calculations used to design the surface water drainage scheme has included within the calculation and addition of 30% of rainfall peaks to ensure that the attenuation design is suitable for the level of increased rainfall the development will experience within its expected lifespan.

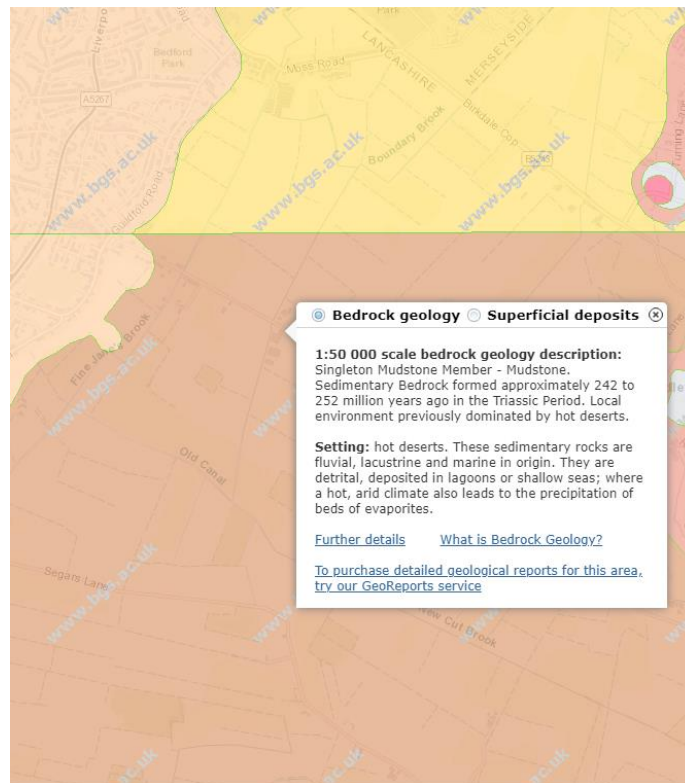
9. Site Topography and Geology & Soils

- 9.1 The Site can be described as generally flat and level with the general sloping of elevation going towards the north east. Ordnance Survey demarks the A57, directly 315m to the south east of the Site at 6.7 AOD.
- 9.2 The Site's mean elevation is 3.27m AOD.
- 9.3 Cranfield Soil & Agri-food Institute's Soilscape gives the classification of Soilscape No. 26, described as a Raised bog peat soils which is naturally wet. The soil on which the proposal will be situated would not be suitable for ground infiltration due to the high ground water and low-lying nature of the Site.



www.landis.org.uk/soilscape/

- 9.4 The British Geological Society, Geology of Britain Map Viewer shown below states that the Site is in an area with bedrock geology of Singleton Mudstone member – Mudstone. Sedimentary bedrock formed between 242 and 252 million years ago during the Triassic periods.



British Geological Society, Geology of Britain Viewer.

10. Existing Site Surface Water Drainage Scheme

- 10.1 The Site is previously developed, and the application is retrospective in nature, the site is drained via underground drainage pipes which either travel west towards Boundary Brook or east towards the ordinary watercourse which is the east boundary of the site.
- 10.2 All surface water from the buildings are directed to the ditches via drainage pipes.
- 10.3 There have been no recorded major flooding incidents on the Site.

11. Development Proposals

- 11.1 The planning application seeks planning permission for the retrospective full planning approval for the Change of Use (part-retrospective) of the agricultural buildings to stables for the keeping of horses, livery and change of use of agricultural land, together with the construction of a ménage.
- 11.2 The development includes 858m² of ménage to be used for the applicant proposed livery business. The area on which the ménage is has been built was previously been hard surfacing with a semi-permeable surface (road plainings) since 2012.
- 11.3 The ménage is constructed from hardcore base, with waxed sand on top. This in itself is permeable and allows for infiltration through both the sand layer and hardcore. As the below ground soil type/geology is of peat, the surface water will percolate in a similar manner as with a greenfield site.
- 11.4 The proposed development is for the purposes of Leisure and in accordance with the West Lancashire Borough Council Local Development Framework Strategic Flood Risk Assessment, 'Land and buildings used for leisure are considered to be less vulnerable developments and are therefore permitted within Flood Zones, 1, 2 and 3a.
- 11.5 The proposed Site will be developed to a minimum elevation of 4.0m AOD.

12. Surface Water Drainage Design

- 12.1 The NPPF states that all surface water arising from a new development should be as far as practical be managed and controlled in a manner that does not increase the surface water flows from prior to the development. The drainage design proposed has been designed to reduce surface water flows to the natural stated flow of 5l/s, considerations of climate change, increased rainfall and pollution control have been taken into account, these have been managed using source control techniques, and source treatment systems to ensure that the correct flow is maintained and to remove any potential pollution arising from the development and operations on the Site.
- 12.2 All development proposals must be screened to determine whether or not the Site would be at risk of flooding or whether or not the development of the Site would exacerbate flood risk elsewhere.
- 12.3 All rainwater is collected from the existing rooves of the buildings via rainwater gullies to a new below ground piped drainage system. All water is collected through the use of 110mm diameter rainwater pipes, which then flows to Boundary Brook.
- 12.4 As the proposal is of retrospective in nature, and that the ménage itself is of permeable nature, it is not envisaged that the development will increase the surface water run off rate and will not increase flood risk downstream.

13. Site Suitability for Development

- 13.1 The proposed application will not contribute to or cause a risk of flooding to any other properties.
- 13.2 The application does not propose to create any structures that would be significant to the effect of levels elsewhere in the event of a flood.
- 13.3 Considering the nature of the Site and the existing use, we consider that the proposed development is acceptable.
- 13.4 The grant of planning permission will not affect the flood risk to the Site or the surrounding properties.
- 13.5 The site is located partly within a Flood Zone 2 and in accordance with the NPPF a sequential approach to the development is necessary as to identify whether the building can be located in an area of Flood Zone 1.
- 13.6 The proposed location of the building has been chosen as to limit the expansion of the existing farmyard, keeping the buildings in a compact position and reducing the need for any additional hard standing areas.
- 13.7 Although the siting of the proposed building is within Flood Zone 2, the vulnerability of the development in the event of flooding is considered to be low.

14. Conclusion

- 14.1 We consider that the proposed development is not detrimental to a flood scenario, nor does it contribute to any flood concerns and therefore the risk is acceptable.
- 14.2 In carrying out a site-specific flood risk assessment and in accordance with the West Lancashire's Borough Council's Local Development Framework Strategic Flood Risk Assessment, as the Site is located within Flood Zone 2 and that the nature of the development is considered less vulnerable, we do not believe that the potential for flood risk is significant enough to justify refusal of the proposed development.