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Executive Summary

Woodsyde Developments Ltd has been commissioned by Roger Parry & Partners on behalf of G E Bebb & Sons to undertake a Flood Risk Assessment (FRA) for a planning application for a Proposed New Farm Access and Roadway at Hall Farm, Cruckmeole, Hanwood, Shrewsbury. The new farm access and roadway to serve the existing farm will be to the north of the current existing access direct from the County Highway.

According to the Environment Agency Flood Maps the central section of the proposed new access track will be located within Flood Zone 2/3 and on this basis requires the submission of a Flood Risk Assessment as designated by National Planning Policy Framework (NPPF).

As part of the site appraisal process it has been necessary to demonstrate that the proposed development can be achieved with an acceptable risk of flooding and without increasing flood risk to third parties. This report describes the methods used and the results of this study. The report takes into account the recommendations of National Planning Policy Framework (NPPF)

Ordinarily, paragraph 158 of the NPPF requires decision makers to steer new development to areas at the lowest probability of flooding by applying a sequential test. It further confirms that only where there are no reasonably available sites in Zones 1 or 2, should the suitability of sites in Flood Zone 3 be considered. The proposal here is for a "less vulnerable" development as this is for a proposed new access and roadway.

This report will demonstrate that there will be no additional flood risk to the site or other properties as a result of this development. Appropriate drainage facilities and attenuation will be provided to the access to enable potential flood flows to pass either side of the track unhindered. The proposals will include sustainable drainage systems in the form of a french drain along the new access.

1.0 Introduction

1.1 Project Brief.

Woodsyde Developments Limited has been commissioned to carry out an assessment to satisfy the Shropshire Council and Environment Agency's (EA) requirements for a Flood Risk Assessment (FRA) for a planning application for a proposed new access and roadway at Hall Farm, Cruckmeole, Hanwood.

The FRA is prepared in full accordance with the National Planning Policy Framework (NPPF). The FRA is required to identify the 1% (1 in 100 year) and 1%+ allowance for climate change flood extents and levels for the site and ensure that all aspects of development are clear of the 1%+ allowance for climate change floodplain.

The Environment Agency Flood Maps indicate that the proposed initial section and bellmouth of the new access to the site and the latter section by the farm buildings is within Flood Zone 1, however the central section of the proposed roadway is located within Flood Zone 2 and 3 and is potentially at risk of flooding. This area is considered to be a part of the overall floodplain locally. The area of land subject to the planning application is currently in the main Greenfield pastureland. The route along the proposed access track varies in terms of height, with the ground generally falling from the farm buildings to the watercourse fairly centrally along the route and then climbs again towards the county highway and junction bellmouth. The existing ground levels along the proposed roadway varies from approximately 78.3m AOD at the junction bellmouth, down to 75.3m AOD over Westbury Brook and rises back up to 77.5m AOD at Hall Farm. It can be seen from the Environment Agency Flood Maps that the current existing access is also within Flood Zone 2/3. This access crosses over a ford to the Rea Brook and is impassable when flooding occurs during periods of prolonged rainfall. Necessary vehicular traffic to the farm therefore struggles to gain access, such as milk collection and smaller deliveries essential to the ongoing daily running and management of the farm.

Overall, we consider that there will be no additional flood risk caused by the proposal as the proposed road will be elevated with a series of large diameter pipes interconnecting the flood areas so that the proposal does not interfere with the existing floodplain. The displacement of flooded waters will only affect the existing farmlands and will unlikely affect the flood areas to be detrimental to the farm land or any persons or lands downstream. Proposed attenuation will be provided to the proposed access, however due to its location ultimately during flood events the floodplain will continue to flood the surrounding pasturelands and it is thought that it is highly unlikely the proposals would cause severe or significant detriment to the immediate or wider flood plain area.

1.2 Assessment Procedure

This report has been prepared in accordance with the requirements of NPPF.

An assessment of the flood risk to the proposal has been considered on the basis of the best information available at the date of this report. The assessment herein is deemed appropriate to the requirements of the Environment Agency, the scale and nature of the development, and the available data. The key elements of this assessment are as follows:

- Desk study scoping exercise;
- Site visit;
- Consultation with relevant authorities;
- Review of site topography and development proposals;
- Identification of data corresponding to appropriate design flood events;
- Consideration of climate change;
- Consideration of flood risks to and from the development;
- Calculation of the impact of the development on surface water run-off, and;
- Recommended attenuation measures.

1.3 National Planning Policy Framework

- NPPF was published by Communities and Local Government, March 2012 and supersedes the Planning Policy Guidance Note 25.
- NPPF has been developed to provide additional guidance to local planning authorities to ensure the effective implementation of the planning policy set out in the NPPF on development in areas at risk of flooding.
- The guidance and framework for this Flood Risk retains the key elements of Planning Policy Statement 25.
- The EA is a statutory consultee for all planning applications and will give comment and recommendations to the planning authority for any proposed developments affecting a watercourse.
- NPPF states that a Strategic Flood Risk Assessment (SFRA) should be carried out by the local planning authority to inform the preparation of Local Development Documents (LDDs), having regard to catchment wide flooding issues which affect the area. The SFRA will provide the information needed to apply the sequential approach.

1.4 Requirements of NPPF

For a FRA proportionate to the risk and appropriate to the scale, nature and location of the development the following will need to be considered;

- the risk of flooding arising from the development in addition to the risk of flooding to the development; take the impacts of climate change into account;
- the potential adverse and beneficial effects of flood risk management infrastructure including raised defences, flow channels, flood storage areas and other artificial features together with the consequences of their failure;
- the vulnerability of those that could occupy and use the development, taking account of the Sequential and Exception Tests and the vulnerability classification, including arrangements for safe access;
- quantify the different types of flooding (whether from natural and human sources and including joint and cumulative effects) and identify flood risk reduction measures, so that assessments are fit for the purpose of the decisions being made;
- the effects of a range of flooding events including extreme events on people, property, the natural and historic environment and river and coastal processes; include the assessment of the remaining (known as 'residual') risk after risk reduction measures have been taken into account and demonstrate that this is acceptable for the particular development or land use;

- how the ability of water to soak into the ground may change with development, along with how the proposed layout of the development may affect drainage systems;
- and be supported by appropriate data and information, including historical information on previous events.

1.5 Report Limitations

It is noted that the findings presented in this report are based on a desk study of information supplied and provided by third parties. We have assumed that all information is representative of past and present conditions, but we offer no guarantee as to its validity. The report does not include consideration of any sizing or specific design of the site drainage.

2.0 Site Details

2.1 Site Overview

The site is located to the north of the A488 in the village of Cruckmeole. The proposed access and roadway is to the north-east of Hall Farm. (Hall Farm NGR SJ 42985 09643). The existing access to the farm is located within the village of Cruckmeole off the County Highway, with the proposed access approximately 450m to the north.

Proposed New Access Hall Farm Ketsing Satelis k Cector UllageHall

Figure 2.1 below shows the location of the application site.

OS NGR	SJ 342985 309643
Local Planning Authority	Shropshire Council
Environment Agency Office	Shropshire Region
Water Utility Company	Severn Trent Water

2.2 Site Description

The proposed entrance lies to the northeast of Hall Farm and to the north of where the Westbury Brook meets the Rea Brook. Access to Hall Farm will be suitably designed and is derived off the same road as the existing access, albeit around approximately 450m to the north and flood risk free. Presently the site is predominantly pastureland, and a large proportion of this land makes up the local floodplain to both Westbury Brook and Rea Brook. It shall be noted that the proposed access road will be elevated above the flood level, with oversized pipework below to allow the flood waters to continue to pass either side of the road without detriment to any lands away from the farm. The proposed access is situated at an approximate level of 78.3m AOD, with a low of approximately 75.3m AOD at the Westbury Brook and then rises again to the south-west to Hall Farm to approximately 77.5m AOD.

2.3 Surrounding Area

To the immediate north, east, south-west and west lies agricultural lands. To the south-east lies the village of Cruckmeole and approximately 500m to the north lies the village of Cruckton. The A488 lies to the south of Hall Farm, however the current and proposed access are off the lower order County Highway to the north of the A488.

2.4 Development Proposals

The proposed development will be the creation of a new access and roadway to serve Hall Farm. Currently the existing access is down a narrow stretch of road that passes a number of residential properties. The road is tortuous and has little or insufficient forward visibility. The access crosses over a ford to the Rea Brook which becomes impassable during heavy periods of precipitation. Therefore the proposed roadway will be elevated above the flood level to ensure a safe and satisfactory access can be used to enter and leave Hall Farm in all weather conditions.

The proposed surface water run-off from the track will be collected in an attenuation system using Effluent drains and this will filter out into the pastureland. An outfall will be provided to the nearby Westbury Brook.

3.0 Scoping Report

3.1 Indicative Floodplain Map

The Environment Agency is responsible for the provision of information pertaining to flood risk from tidal and main watercourses throughout England and Wales. The EA provides online information service though its Flood Map data. This data is not intended to provide detailed flood information for individual properties but does provide a useful resource at scoping stage. An extract from the Flood Map is given in Figure 3.1 below.



Figure 3.1: Extract from EA Flood Map for Planning (Printed on 23.02.24)

Flood Zone 3 areas have the highest risk of flooding and as such it is recommended that development is restricted in these areas to essential development only.



Figure 3.2: Extract from EA Flood Map – Rivers and Seas (Printed on 23.02.24)

This plan indicates that the middle section of the proposed roadway is at a potential high risk of flooding from rivers and seas. The proposed access from the County Highway and the latter section of the proposed roadway to Hall Farm are within Flood Zone 1 and it is highly unlikely that these areas will flood.



Figure 3.3: Extract from EA Flood Map – Surface Water (Printed on 23.02.24)

This plan indicates that the majority of the area of the proposed roadway sits within low risk, with the high-risk area of the roadway being Westbury Brook.



Figure 3.3: Extract from EA Flood Map – Reservoirs (Printed on 23.02.24)

This plan indicates that the area of the application sits outside of any flood zone or flood risk for reservoirs.

3.2 Historical Flooding

The proposed roadway sits within a floodplain to both the Westbury Brook and Rea Brook. It can be seen from the Environment Agency Maps that the majority of the flooding is from the River and Seas, with the application area only being at low risk from surface water run-off. The current existing access is impassable during heavy periods of precipitation due to the ford of the Rea Brook that runs across the road close to the farm.

3.3 Strategic Flood Risk Assessment

The Shropshire Council Local Plan advises that development should be well located and preferably on previously developed land. Here it is expected that preference should be given to locating development in Flood Zone 1. However, consideration must be given to the risk of alternative sources of flooding (e.g. surface water, sewage, and/or groundwater). Sustainable urban drainage techniques should be employed to ensure that any existing flooding problems elsewhere within the area are not exacerbated. It should be noted that the site and lands owned by the applicant fall within the flood plain of the Rea Brook and Westbury Brook however the proposed roadway will be elevated above existing flood levels to ensure that Hall Farm can be accessed during extreme storm events.

3.4 NPPF– The Sequential Test

The sequential test should demonstrate that there are no reasonably available sites in areas with a lower probability of flooding that would be appropriate to the type of development or land use proposed.

NPPF suggests that where an SFRA is not available, the sequential test will be

based on the EA Flood Zones. The EA maps confirm that some of the site is located within Flood Zone 3 'high probability'. The proposed development will be "less vulnerable" given it is an access and roadway. Therefore, based on the EA flood zone classification of the development, Table 3 in NPPF (see Table 3.0 below), indicates that development is generally appropriate, and a Flood Risk Assessment test is required as the site is located within Flood Zone 3.

The existing access is currently within Flood Zone 3 and is impassable in periods of heavy precipitation, therefore the new access will be raised above flood levels to allow for safer entry and exit to Hall Farm.

Flood Risk Vulnerability Classification		Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone	Zone 1	>	>	>	~	>
	Zone 2	*	*	Exception Test required	>	*
	Zone 3a	Exception Test required	~	x	Exception Test required	~
	Zone 3b 'Functional Floodplain'	Exception Test required	J	x	x	x

Table 3.0: NPPF: Flood Risk Vulnerability and Flood Zone 'Compatibility'

Key:

J Development is appropriate. x Development should not be permitted

3.5 Mechanisms of Flooding

To understand the risk of flooding to a site, it is imperative that potential sources of flooding be clearly defined. The likelihood and severity of flooding depends on the characteristics of the flood sources and the degree to which the site is currently, or can potentially, be protected against flooding from these sources. Table 3.2 reviews the potential risk of flooding at the proposed site from different sources.

Table 3.2 Potential Risk of Flooding to the Proposed Development

Source of Electing	Potential		l	Comments	
Source of Flooding	High	Med Low			
Fluvial (Rivers)	x			The site is located within Flood Zone 3 (High Probability)	
Tidal/Coastal			X	The site is located far inland and there is no risk of tidal flooding.	
Pluvial (drainage system)			Х	The proposal is for an access road and the risk will therefore be low as it is surrounded by pastureland.	
Surface Run-off		x		Increase in areas of impermeable material which will be attenuated.	
Ponding			X	Proposed drainage must prevent Ponding	
Groundwater			X	No apparent Groundwater flood risk. No basements proposed.	

4.0 Flood Risk Assessment

4.1 Introduction

Following the scoping exercise, the primary flood risks are identified to be from Fluvial sources with a medium risk of Surface Run-off. It is noted however that Pluvial and Surface Run-off have been identified on the EA Flood Maps along parts of the proposed roadway. These sources of flooding have been investigated in greater detail, to ascertain whether the risks are acceptable to the nature of the proposed development. Opportunities to mitigate these risks are discussed in Section 5 of this report.

4.2 Fluvial (Rivers)

The site is located within Flood Zone 3 (High probability), which means that the likelihood of flooding from fluvial or tidal sources in Flood Zone 3 is potentially greater than 1 in 30-year probability of flooding.

The closest watercourses are Westbury Brook to the north of Hall Farm and Rea Brook to the south-west. These two brooks meet to the south of the proposed access location with the County Highway. We do note that the pastureland surrounding the proposal provides flood plain during periods of heavy rainfall.

4.3 Pluvial (Drainage Systems)

There is no reported evidence of pluvial flooding at the application site. The proposed drainage system for the site will utilise Sustainable Drainage Systems (SUDS) where possible. The attenuation for the proposed roadway will have an outfall into the Westbury Brook.

Currently there is no identifiable surface water drainage system to the application site as this is pastureland where any rainfall drains to ground. The new and proposed drainage will likely feature a french drain type arrangement designed for a 1 in 100year event plus 30% climate change. The drainage proposals will allow any potential pluvial flooding to collect in the permeable stone or in a positive drainage system to then outfall into the Westbury Brook.

Further details of the Drainage Strategy for the site are presented in Section 6 of this report.

4.4 Surface Run-off

The immediate land to the north, east and west is currently grassed land and has some undulations where surface water will collect in shallow and areas of depression which simply dissipates into the topsoil's and subsoils.

Surface water drainage for the proposed development will utilise french drains alongside the proposed roadway where the road will be side hung to allow any rainwater to fall into the attenuation.

Any drainage system will be designed to accommodate the worst event 1 in 100-year storm + 30% for climate change.

Further details of the Drainage Strategy for this site are presented in Section 6 of this report.

4.5 Ponding

Ponding may occur if drainage is not adequately designed after periods of heavy rainfall, given the application area is for the roadway only, we would not expect ponding to occur. The new development will have to implement an adequate drainage system as discussed in Section 5 and 6 of this report.

4.6 Groundwater

There is no apparent flooding threat posed from the ground water level at this site. There are currently no basements to be constructed in the development and therefore no seepage into these structures will occur. Suitable cut-off drainage and French drainage will be incorporated to ensure there are no issues from this source.

4.7 Residual Risk

In respect of the residual risk, it shall be noted that the proposed road level will be approximately 450mm above the flood level. Due to the nature of the proposal there will be no electrical services. The proposals will allow for vehicles to access Hall Farm during a flood event, where currently the existing access to Hall Farm over the Ford to Rea Brook is impassable.

It is considered that there will be no residual risk as a result of the proposed development.

5.0 Recommended Flood Mitigation

5.1 Introduction

This section discusses mitigation options that should be considered in order to reduce the severity of the flood risk and to minimise the potential hazards associated with any residual flood risk.

5.2 Design Levels

The proposed access and roadway will be constructed at a height approximately 450mm above the flood level. Pipework will be provided under the roadway to allow for flood waters to continue along it's path.

5.3 Site Topography and Flood Routing

From the Environment Agency Flood Maps it is estimated that the level of Flood Zone 3 is approximately 76.00m AOD and Flood Zone 2 is 75.50m AOD. The proposed roadway will have an approximate freeboard of 450mm above the flood zone levels, with the minimum level therefore being 76.450m AOD.

The proposed access is situated at an approximate level of 78.3m AOD, which is out of the Flood Zones, with the middle of the proposed roadway being at an approximate level of 75.3m AOD. The land rises again near to Hall Farm at an approximate level of 77.5m AOD.

Flood routing will remain unaltered from the proposals and as the site is in Flood Zone 3 there will be no significant level change such to reduce flood storage in any way. Additional drainage will be provided to provide attenuation for the roadway, but we consider that by elevating it above the flood levels this will protect the road. Pipework will be provided under the elevated new roadway to ensure that the floodplain can continue as existing.

5.4 Sustainable Drainage Systems

It is now commonly a planning requirement to consider utilising sustainable drainage systems (SUDS) if it is appropriate to the specific site conditions. These systems are diverse, but generally aim to provide drainage systems that may facilitate flood and/or pollution control, related to run-off. Such systems are generally 'soft engineering' and as a result can be financially, as well as environmentally, attractive engineering solutions.

Due to the site being a floodplain, it is unlikely that the ground has sufficient porosity for the use of soakaways.

5.5 Flood Resistance & Resilience

A basic level of flood resistance and resilience can be achieved by following good building practice and complying with the requirements of the Building regulations 2000 published by the Office of the Deputy Prime Minister (ODPM). The incorporation of flood proofing measures should be considered as part of the design and construction of the development. These could include raising the roadway level above the flood levels and providing additional freeboard as an extra safety precaution.

6.0 Drainage Strategy

6.1 Introduction

In order to demonstrate that all forms of flooding have been considered as required by NPPF a drainage strategy is being developed. The aim of including this strategy as part of the flood risk assessment, is that it can easily be seen that the proposed development will not adversely affect the surface water regime in the area and that overall, the current situation will be slightly improved. A site layout plan can be found in Appendix A.

6.2 Existing Surface Water Drainage

The application site is currently pastureland with no clear identifiable surface water drainage, and it is assumed that the water drains to ground.

6.3 Existing Foul Water Drainage

It is understood that there is no existing foul water system in the application site.

6.4 Proposed Surface Water Drainage

The proposed roadway will be side hung into a french drain which will then outfall into the Westbury Brook to the north of Hall Farm. The french drain will be designed for a worst storm event of 1 in 100-year storm including 30% climate change. However in such an event some of the Effluent drain will be full as the lands adjacent to the track will also flood.

The use of french drains is considered to be SuDS compliant and are considered appropriate for the nature of the proposals.

The middle section of the roadway falls within the Flood Zone 3, with the start and end within Flood Zone 1 as identified on the Environment Agency Flood Maps. The surface water will be collected at source and will be suitably designed for the 1 in 100-year event plus 30% climate change.

6.5 Proposed Foul Water Drainage

No foul drainage proposals are planned in association with these proposals.

6.6 Maintenance/Adoption.

The proposed roadway will be maintained by the client.

6.7 Sustainable Drainage Techniques

It is now commonly a planning requirement to consider utilising sustainable drainage systems (SUDS) if it is appropriate to the specific site conditions. These systems are diverse, but generally aim to provide drainage systems that may facilitate flood and/or pollution control, related to run-off. Such systems are generally 'soft engineering' and as a result can be financially, as well as environmentally, attractive engineering solutions.

7.0 Conclusions & Recommendations

The proposed new farm access and roadway for Land at Hall Farm, Cruckmeole, Hanwood has been assessed with regards to flood risk. Some of the proposed roadway falls within Flood Zone 3 and is classified as highly vulnerable to potential flood risk. However, the nature of the proposal is such that this is a less vulnerable proposal. Suitable drainage proposals have been indicated for the roadway and access and the use of suitably sized french drains will not likely generate greater risks to the development or any property or land outside the site.

The proposals will not add to flood risk as pipework will be installed under the elevated roadway so that it does not disrupt the floodplain.

7.1 Review of NPPF Objectives

NPPF states that decision makers steer new development to the lowest probability of flooding by supplying a sequential test. Nonetheless, where there are no reasonably available sites in Flood Zones 1 and 2 the suitability of sites in Flood Zone 3 should be considered, taking into account the flood risk vulnerability of the land and applying the exception test. Given that the current access falls within Flood Zone 3 and is impassable during periods of extreme rainfall, we consider that by elevating the proposed roadway out of the flood plain will allow for a safe access to Hall Farm to be available even in extreme storm events.

The proposed development is not considered highly vulnerable. Appropriate drainage will be provided to the proposals by the introduction of french drains.

The proposed site entrance is situated at an approximate level of 78.3m AOD, with a low of approximately 75.30m AOD to the south and 77.5m AOD by the existing Hall Farm.

The development will not increase flood risk elsewhere, with the restriction of surface water run-off and French drains.

The measures proposed to deal with the effects and risks associated with flooding are appropriate, for example using french drains.

Other origins of flooding have also been assessed against the proposal and it has been found that there will be no increase in risk of flooding from land, groundwater or sewers as a result of this development.

There are no anticipated negative social, economic on environmental impacts which would result from the development of the site provided mitigation measures outlined in Section 6.4 are adhered to.

Based on the overall assessment, the development is considered to be a non-major development and would suggest that both the exception test and sequential tests have been met whereby the proposal will not see an increase in surface water run-off and the roadway will be raised above the flood level, with sufficient measures put in place to ensure the floodplain is not disrupted.

Review of Drainage Strategy

The proposed development will ensure that the 1 in 100 year + 30% climate change flows will be attenuated on site.

Sustainable Drainage Systems will be utilised as where ground conditions allow and this will be incorporated at the detailed design stage.

The type of development is considered appropriate to the land and Flood Zone 3 identified.