


Bassetlaw Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables	
	
Site details	
Site Code	N/A- Bassetlaw Garden Village
Address	Land at Upper Morton, Upper Morton, Retford DN22 8HG. Grid Reference: SK 66164 77886
Area	323ha
Current land use	Greenfield with farm buildings
Proposed land use	Mixed-Use- Residential, commercial and infrastructure
Sources of flood risk	
Location of the site within the catchment	The site is in the catchment of an unnamed watercourse which is a tributary of the River Idle. The watercourse is a designated ordinary watercourse.
Existing drainage features	The site is located 1760m west of an unnamed watercourse. The watercourse is a tributary of the River Idle and flows in a northerly direction towards the River Idle. The site is also located 1700m north of the River Poulter. The river is an Environment Agency designated main river and flows in an easterly direction towards its confluence with the River Idle. No other watercourses are near the site
Fluvial	<p>The proportion of site at risk:</p> <p>FZ3b – 0% FZ3a – 0% FZ2 – 0% FZ1 – 100%</p> <p><i>The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%).</i></p> <p>Available data: Flood zones are based on detailed 1D-2D Flood Modeller Tuflow modelling of the River Idle. Modelling was completed by the Environment Agency in 2020.</p> <p>Flood characteristics: The site is not shown to be at risk of fluvial flooding. The site is however adjacent to Flood Zone 3 along the edge near Mansfield Road from an unnamed watercourse located east of the site.</p>
Coastal and Tidal	The site is not at risk of coastal or tidal flooding.
Surface Water	<p>Proportion of site at risk (RoFFSW):</p> <p>3.3% AEP – 1% Max depth <0.3m Max velocity <0.25m/s 1% AEP – 1% Max depth <0.3m Max velocity <0.25m/s 0.1% AEP – 2% Max depth 0.3-0.6m Max velocity 0.5-1m/s</p>

Commented [HC1]: Do we know the source of this floodwater?

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	<p><i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 1% AEP extent includes the 3.3 % AEP extent)</i></p> <p>Description of surface water flow paths:</p> <p>In the 3.3% AEP event. Several small surface water ponding areas are present around the site. Flood depths are low and are less than 0.3m, and have a flood hazard rating of 'caution' to 'dangerous for some'.</p> <p>In the 100-year flood event, the extent of flooding is not significantly increased from the 30-year flood event. Flood depths remain below 0.3m and have a flood hazard rating of 'caution' to 'dangerous for some'.</p> <p>There are three surface water flow paths on the site during the 1,000-year flood event. The first flows in an easterly direction across the North-east corner of the site. The second flow path is located in the centre of the site and also flows in an easterly direction, crossing the B6420 Mansfield Road and flowing along the eastern boundary before flowing out of the site and joining the first path outside the site. The third flow path is located in the south of the site and flows in a north-easterly direction towards the site's eastern boundary. Flood depths are shallow and are predominantly less than 0.15m. Where the flow path intersects areas of ponding, flood depths are deeper but remain less than 0.6m. The flow path velocities are below 0.25m/s-1m/s and have a flood hazard rating of 'caution', apart from the minor topographic lows, which have a flood hazard rating of 'dangerous for some'. It is possible these are the floodplains are ephemeral watercourses.</p> <p>Several surface water ponding areas are scattered around the site. Flood depths of these areas are generally shallow and are between 0.15-0.3m, with some areas in the centre of the site reaching 0.3-0.6m.</p>
Reservoir	The site is not shown to be at risk of reservoir flooding from available online maps.
Canals	The site is a significant distance from the Chesterfield Canal and would not be affected if the canal was to breach.
Groundwater	<p>The Environment Agency's Areas Susceptible to Groundwater Flooding dataset, provided as 1km grid squares, shows an area's susceptibility to groundwater flood emergence. The following comments can be made about groundwater flood risk:</p> <ul style="list-style-type: none"> The north eastern corner of the site has a <25% susceptibility to groundwater flood emergence from superficial deposits. No data on groundwater flooding is available for the rest of the site. <p>This assessment does not negate the requirement that an appropriate groundwater regime assessment should be carried out at the site-specific FRA stage.</p>
Sewers	The Level 1 SFRA indicates that 17 incidences of sewer flooding have occurred in the DN22 8 postcode area.
Flood history	The Environment Agency's historic flooding map does not hold a record of flooding at the site. NCC has three records of flooding within the site; however, the flooding source is unknown.
Flood risk management infrastructure	
Defences	This site is not protected by any formal flood defences.
Residual risk	There is no residual risk to the site from flood risk management structures.
Emergency planning	
Flood warning	The site is not located in an Environment Agency flood warning or flood alert area.
Access and egress	<p>The site can currently be accessed from two locations, from the B6420 Mansfield Road, which runs through the centre of the site and two small roads in the south and north of the site that provide access to farms in these areas.</p> <p>In terms of surface water flood risk, the northern and central surface water flow paths flow east, crossing the B6420 Mansfield Road. Flood depths from this flow path are shallow, and therefore access is unlikely to be affected.</p>
Climate change	

<p>Implications for the site</p>	<p>No detailed modelling was available for either the unnamed watercourse or the River Poulter. As such, Flood Zone 2 has been used as a proxy, as the upper-end climate change allowance extent is usually in a similar order of magnitude to Flood Zone 2. As noted above, the site is not located in Flood Zone 2; therefore fluvial risk is unlikely to be affected by climate change.</p> <p>In terms of surface water flood risk, there is a small increase in flood risk between the 1% and 0.1% AEP events indicating that the site has some sensitivity to increases in surface water flood risk as a result of climate change.</p>
<p>Requirements for drainage control and impact mitigation</p>	
<p>Broad-scale assessment of possible SuDS</p>	<p>Geology & Soils</p> <ul style="list-style-type: none"> • Geology at the site consists of: <ul style="list-style-type: none"> ○ Bedrock- Chester Formation- Sandstone, Pebbly (Gravelly). ○ Superficial- Till, Mid-Pleistocene- Diamicton, Sand and Gravel. • Soils at the site consist of: <ul style="list-style-type: none"> ○ Freely draining slightly acid sandy soils. <p>SuDS</p> <ul style="list-style-type: none"> • The site is considered to have very low susceptibility to groundwater flooding; this should be confirmed through additional site investigation work. Below ground development such as basements may still be susceptible to groundwater flooding. • BGS data indicates that the underlying geology is Sandstone which is likely to be free draining. This should be confirmed through infiltration testing, with the use of infiltration maximised as much as possible in accordance with the SuDS hierarchy. • The entire site is mainly located within Groundwater Source Protection Zone 1 (SPZ), and infiltration techniques may not appropriate for anything other than clean roof drainage. If infiltration is proposed for anything other than clean roof drainage, a hydrogeological risk assessment should be undertaken to ensure that the system does not pose an unacceptable risk to the supply source. Proposed SuDS should be discussed with relevant stakeholders (LPA, LLFA and EA) at an early stage to understand possible opportunities and constraints. • The site is not located within a historic landfill site. • Surface water discharge rates should not exceed the current greenfield runoff rates for the site. Opportunities to further reduce discharge rates should be considered and agreed with the LLFA. It may be possible to reduce site runoff by maximising the permeable surfaces on-site using a combination of permeable surfacing and soft landscaping techniques. • The Risk of Flooding from Surface Water (RoFSW) mapping indicates surface water flow paths during the 3.3, 1, 0.1% AEP event. Existing flow paths should be retained and integrated with blue-green infrastructure and public open space. • If it is proposed to discharge runoff to a watercourse or sewer system, the receiving watercourse or asset's condition and capacity should be confirmed through surveys, and the discharge rate agreed with the asset owner.
<p>Opportunities for wider sustainability benefits and integrated flood risk management</p>	<ul style="list-style-type: none"> • Implementation of SuDS at the site could provide opportunities to deliver multiple benefits, including volume control, water quality, amenity and biodiversity. This could provide more comprehensive sustainability benefits to the site and surrounding area. Proposals to use SuDS techniques should be discussed with relevant stakeholders (LPA, LLFA and EA) at an early stage to understand possible constraints. • Development at this site should not increase flood risk either on or off-site. The design of the surface water management proposals should consider the impacts of future climate change over the projected lifetime of the development.
<p>NPPF and planning implications</p>	
<p>Exception Test requirements</p>	<p>The Local Authority will need to confirm that the sequential test has been carried out. The Sequential Test will need to be passed before the Exception Test is applied. Residential development is classified as 'More Vulnerable' development, and commercial development is classed as 'less vulnerable development', Transport infrastructure is classed as 'essential infrastructure.</p> <p>As the site is in Flood Zone 1, the Exception Test is not required for the site.</p>
<p>Requirements and guidance for site-</p>	<p>Flood Risk Assessment:</p> <ul style="list-style-type: none"> • A site-specific Flood Risk Assessment will be required at the planning application stage as the development is more than 1ha in size.

<p>specific Flood Risk Assessment</p>	<ul style="list-style-type: none"> All flooding sources, particularly the risk of surface water, should be considered part of a site-specific flood risk assessment. At site specific Flood Risk Assessment stage it is recommended that more detailed modelling is undertaken based on a site topographical survey. Given the geology it is possible that overland flow paths are the natural floodplains of ephemeral watercourses and this should be investigated further in the FRA. The anecdotal information on past flooding should also be investigated further. The site-specific FRA should be carried out according to the National Planning Policy Framework; Flood Risk and Coastal Change Planning Practice Guidance, Bassetlaw Council's Local Plan policies, and the Nottinghamshire County Council Lead Local Flood Authority's Statutory Consultee for Planning Guidance Document. <p>Guidance for site design and making development safe:</p> <ul style="list-style-type: none"> Any proposal should be accompanied by an overall Surface Water Management Masterplan and Strategy (SWMMS) which should cover: <ul style="list-style-type: none"> How the cumulative effects of potential peak rates and volumes of water from development sites would impact on peak flows, duration of flooding and timing of flood peaks on receiving watercourses. This should be used to develop and implement appropriate drainage sub catchments and specific runoff rate and volume requirements for each phase of the development. The risk of flooding from all sources, including for rainfall events greater than the design standard of the surface water drainage system should be taken into account to ensure there is no flood risk to new properties and that exceedance flows in extreme events are safely routed around those properties. The consideration of how SuDS, natural flood management techniques, green infrastructure and green-blue corridors can be designed into the development master plan to facilitate drainage flood risk management and ensure wider benefits such as biodiversity, amenity, water quality and recreation are realised. Based on the above, a Drainage Phasing Plan should be developed, based on the SuDS train method (considering firstly how water can be infiltrated/stored at a plot level, then conveyed through the site and any regional storage needs at a settlement level). The provision of drainage during the building phase shall be based on the Drainage Phasing Plan to ensure adequate drainage is provided and implemented throughout the development life. The LLFA, Environment Agency and LPA should be consulted during the development of the Surface Water Management Masterplan and Strategy. An integrated flood risk management and sustainable drainage scheme for the site is advised. A detailed surface water flooding model using the existing drainage system, topographical and asset survey must be constructed at the FRA stage and should consider the risk in a post development scenario. This will further determine the risk from surface water flooding and ensure that overland flows do not overwhelm future sustainable drainage features. The site should discharge surface water at the greenfield runoff rate. Developers should refer to Nottinghamshire County Council's 'Nottinghamshire County Council's Guidance Note on the Validation Requirements for Planning Applications and the Level 1 SFRA for information on SuDS guidance on the information required by the LLFA from applicants to enable it to respond to planning applications.
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Key messages

<p>The development is likely to be able to proceed if:</p> <ul style="list-style-type: none"> Development is located outside of areas at risk of flooding. Any proposal is accompanied by an overall Surface Water Management Masterplan. Space for surface water to be stored on the site is provided, and rainwater harvesting should be considered. It is ensured that surface water is discharged at the pre-development greenfield rate.

Mapping Information

The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.

<p>Flood Zones</p>	<p>Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning mapping to assess the risk fo flooding.</p>
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Climate change	Climate change has been assessed using Flood Zone 2 as a proxy for Fluvial flooding and the 0.1% AEP event as a proxy for surface water flooding.
Fluvial depth, velocity and hazard mapping	Flood depth, velocity and hazard outputs were not available for this model.
Surface Water	The Risk of Flooding from Surface Water map has been used to define areas at risk from surface water flooding.
Surface water depth, velocity and hazard mapping	The surface water depth and hazard mapping for the 1 in 0.1% AEP event is taken from the Environment Agency's Risk of Flooding from Surface Water mapping.