

Shropshire Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables



Site details	Site Code	MDR034			
	Address	Land off Maer Lane and A53, Market Drayton			
	Area	5.67 hectares			
	Current land use	Greenfield			
	Proposed land use	Residential			
Sources of flood risk	Location of site within catchment	<p>The site is located in the upper catchment of an unnamed watercourse, which runs parallel with the Tern, on the northern edge of Market Drayton.</p> <p>The site is located in an area of higher ground, but is in a topographic low spot, surrounded by higher ground levels from Maer Lane to the east, the A53 to the south, a field boundary to the west and the perched Shropshire Union Canal to the north. These topographic boundaries may restrict flooding and cause localised ponding where low spots bound higher ground.</p>			
	Existing drainage features	<p>An unnamed tributary of the River Duckow flows along the north and western site boundary of the site, in a south-westerly direction. An additional, unmodelled drainage channel crosses the centre of the site from the eastern boundary to meet the unnamed tributary.</p>			
	Fluvial	Proportion of site at risk			
		FZ3b	FZ3a	FZ2	FZ1
		5%	5%	29%	71%
		Highest zone of risk (Risk of Flooding from Rivers and Sea)			
		Medium			
<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: The Environment Agency's Flood Zone mapping has been used in this assessment. This is based on 2D generalised modelling data, which starts at the site.</p> <p>Flood characteristics: Fluvial flood risk to the site is associated with the unnamed watercourse that flows through the north-west of the site and the unnamed drainage channel in the centre of the site. The extents of all Flood Zones extend away from the channel into the western area of the site. Flood Zone 3 is confined to the south-western corner of the site while Flood Zone 2 occupies a larger area at the western and central areas of the site. As the topography is low here and 2D generalised modelling techniques have been used, the water is shown to spread away from the channel and pond against the A53. The risk here may be refined with more detailed channel survey; however, any water out of bank is likely to back-up against the A53.</p> <p>The Environment Agency's Risk of Flooding from Rivers and Sea mapping shows that the south-west corner of this site is at medium risk of flooding, with a probability of 1%-3.3% that flooding will occur in a given year. An area of low risk extends further into the centre of the site. In this area the probability of flooding in a given year is 0.1%-1%.</p>					

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Surface Water	Proportion of site at risk (RoFfSW)			
		30-year	100-year	1,000-year
		1%	6%	12%
		Max depths (m)		
		0.3-0.9	0.3-0.9	0.3-0.9
		Max velocity (m/s)		
		<0.25	>0.25	>0.25
		<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. 100-year includes the 30-year %)</i>		
		Description of surface water flow paths:		
		<p>For the 30-year event, there are two small isolated areas of ponding at the east of the site and the south-west of the site. For the 100-year event, there is more ponding across the site and part of the western corner of the site is affected due to the low ground levels. For the 1,000-year event, the surface water flooding follows the local topography and affects a larger proportion of the western corner of the site.</p> <p>In the 100-year surface water event, velocities are predominantly low, with only some isolated spots indicating a velocity of larger than 0.25m/s.</p> <p>The deepest areas of the surface water extent are located at low spots within the western side of the site and along the northern boundary following the channel.</p>		
Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.			
Flood history	There are no records of historic flooding at the site from the Environment Agency or Shropshire Council.			
Flood risk management infrastructure	Defences	Defence Type	Standard of Protection	Condition
		-	-	-
	This site is not protected by any formal flood defences.			
Residual risk	<p>A culvert crosses from north to south across A53 near to the south-western corner of the site. If this structure became blocked, there is potential for increased surface water and fluvial flooding in the south-western area of the site if water backs up due to the A53's higher ground levels, along the watercourse and through the overland route. The potential for blockage may need to be considered in a site-specific assessment.</p> <p>Also, the Shropshire Union Canal is perched along the north-eastern boundary of the site. There is a risk over overtopping/ breach which could affect the site. The potential for this and its impacts should be considered in a site-specific Flood Risk Assessment.</p>			

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Emergency planning	Flood warning	The site is not covered by the Environment Agency's Flood Warning Service.
	Access and egress	<p>Safe access and egress to the site is available via Maer Lane in all fluvial events; however, in the surface water events some minor surface water flow paths and ponding exist along the road. Access for emergency vehicles still be possible from the northern end of Maer Lane in the 100-year event as the depths of flooding are up to 0.3m. In the 1,000-year surface water event, the water depths along parts of north and south Maer Lane are up to 0.9m.</p> <p>Safe access and egress could also be gained via A53 from east in all fluvial events. For the surface water events, there are small areas of ponding in all events, but the road is largely higher topographically, so access is not impeded.</p> <p>The depths, velocities, hazards, durations and speeds of onset of surface water and fluvial flooding along access/ egress routes should be investigated further in a site-specific assessment, to confirm whether access for emergency vehicles could still be obtained.</p>

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Climate Change	Implications for the site	<ul style="list-style-type: none"> Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard and frequency of both fluvial and surface water flooding. There is no detailed fluvial modelling available at the site, and therefore Flood Zone 2 has been used as a conservative indication of flood risk from climate change. This extends into a large proportion of the western half of the site. As part of a site-specific Flood Risk Assessment, latest EA climate change allowances will need to be considered in a detailed hydraulic model, to confirm the impact in the site. Climate change also needs to be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling. The current day 1,000-year surface water extent provides an indication of the likely increase in extent of the more frequent events. This extent encroaches further into the western corner of the site. This would require a detailed FRA to assess the site layout and design. Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA. 	
Cumulative Impact of development within the catchment	Level of risk	Catchment	Level of risk
		Duckow	Low
	This catchment has a low sensitivity to the cumulative impacts of development.		
	Recommendations	N/A	

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Requirements for drainage control and impact mitigation	Broad scale assessment of possible SuDS	<ul style="list-style-type: none"> • Geology at the site consists of: <ul style="list-style-type: none"> ○ Bedrock – Helsby Sandstone Formation. ○ Superficial – Till. • The sites are located within a Groundwater Source Protection Zone. As such infiltration techniques should only be used where there are suitable levels of treatment although it is possible that infiltration may not be permitted. Proposed SuDS should be discussed with relevant stakeholders (LPA, LLFA and EA) at an early stage to understand possible constraints. The central section of Wel2 is not in a Source Protection Zone. • Most source control techniques are likely to be suitable. Mapping suggests that permeable paving may have to use non-infiltrating systems given the possible risk both to and from groundwater. • Infiltration may be suitable. Mapping suggests a medium risk of groundwater flooding and underlying soils may be permeable. Further site investigation should be carried out to assess potential for drainage by infiltration. If infiltration is suitable it should be avoided in areas where the depth to the water table is <1m. Additionally, proposed SuDS should be discussed with relevant stakeholders (LPA, LLFA and EA) at an early stage to understand possible constraints given that the site is located with a Source Protection Zone. • Detention may be feasible provided site slopes are < 5% at the location of the detention feature. If the site has contamination or groundwater issues; a liner will be required. • Filtration is probably suitable provided site slopes are <5% and the depth to the water table is >1m. If the site has contamination or groundwater issues; a liner will be required. • All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. If the site has contamination or groundwater issues; a liner will be required. • The site is not designated by the Environment Agency as previously being a landfill site. • Developers should refer to Shropshire Council's ‘Surface Water Management: Interim Guidance for Developers’ and ‘SuDS requirements for new developments’ webpage, as well as the Level 1 SFRA, for information on suitable types of SuDS, the management train and opportunities and constraints in site master-planning.

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NPPF and planning implications	Exception Test requirements	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied. Residential development is classified as 'More Vulnerable'. It is recommended that proposed development will be sequentially located within Flood Zone 1 areas in the site.</p> <p>The Exception test will need to be applied if:</p> <ul style="list-style-type: none"> • More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2. • Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b. • More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b.

Requirements and guidance for site-specific Flood Risk Assessment

Flood Risk Assessment:

- At the planning application stage, a site-specific Flood Risk Assessment will be required if any development is located within Flood Zones 2 or 3 or is greater than one hectare.
- All sources of flooding, particularly the risk of surface water and groundwater flooding, should be considered as part of a site-specific flood risk assessment.
- A more detailed hydraulic model will be required at Flood Risk Assessment stage, to confirm flood risk, FZ3b and climate change extents, using channel topographic survey.
- Any FRA should be carried out in line with the National Planning Policy Framework; Flood Risk and Coastal Change Planning Practice Guidance; Shropshire Council's Local Plan policies, and the LLFA's ['Surface Water Management: Interim Guidance for Developers'](#) and ['SuDS requirements for new developments' webpage](#).
- Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.
- The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes, preserving these spaces as green infrastructure. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.
- Development in FZ3b should be avoided unless appropriate use can be demonstrated in line with NPPF.
- Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.
- The Shropshire Union Canal is perched along the north-eastern boundary of the site. There is a risk over overtopping/ breach which could affect the site. The potential for this and its impacts should be considered in a site-specific Flood Risk Assessment.

Guidance for site design and making development safe:

- The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).
- Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity and hazard outputs. Raising of access routes must not impact on surface water flow routes. Consideration should be given to the siting of access points with respect to areas of surface water flood risk.
- Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.
- The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.
- On site attenuation schemes would need to be tested against the unnamed watercourse to ensure flows are not exacerbated downstream within the catchment.
- New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff. Assessment for runoff should include allowance for climate change effects.
- Betterment on the existing site runoff rate should be sought to ensure that there is no increase in surface water flood risk elsewhere. Ideally, surface water runoff should be fully attenuated to the greenfield rate.

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		<ul style="list-style-type: none"> • Developers should refer to Shropshire Council's 'Surface Water Management: Interim Guidance for Developers' and 'SuDS requirements for new developments' webpage and the Level 1 SFRA for information on SuDS. • New development must seek opportunities to reduce overall level of flood risk at the site, for example by: <ul style="list-style-type: none"> ○ Reducing volume and rate of runoff ○ Relocating development to zones with lower flood risk ○ Creating space for flooding. • Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.
Key messages		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> • Development is limited to the 90% of the site outside of the Environment Agency's Flood Zone 3 and is preferentially located within Flood Zone 1, which covers 71% of the site on the western side. • Areas in Flood Zone 2 are used for the least vulnerable parts of the development in accordance with Table 2 in the NPPF. No residential development is permitted in Flood Zone 3 and no development at all is permitted in Flood Zone 3b. • If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another). • Space for green infrastructure should be considered in the areas of highest flood risk. <p>Refer to the 'detailed guidance for developers' section for further information on the measures that are appropriate for this site.</p>
Mapping Information		
<p>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 mapping. More details regarding data used for this assessment can be found below.</p>		
Flood Zones	<p>Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on 2D generalised modelling in this area as there is no detailed hydraulic model available. It is recommended that a more detailed hydraulic model is constructed at the site-specific Flood Risk Assessment stage, to confirm flood risk.</p>	

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Climate change	Climate change was based on Flood Zone 2 to serve as an indication of possible extents alongside the extent of the 1000-year surface water flooding event. It is recommended that the latest EA's climate change allowances are modelled in a detailed hydraulic model as part of a site-specific Flood Risk Assessment.	
Fluvial depth, velocity and hazard mapping	There is no available fluvial modelling data; therefore, the Risk of Flooding from Surface Water mapping has been used as this represents the floodplains of small watercourses. This should be explored further at site-specific stage.	
Surface Water	The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.	
Surface water depth, velocity and hazard mapping	The surface water depth, velocity and hazard mapping for the 1 in 30-year (high risk), 1 in 100-year (medium risk) and 1 in 1000-year (low risk) events is taken from the Environment Agency's Risk of Flooding from Surface Water mapping.	