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

Site details	**Site Code**	**PYC021**
	Address	Land at Penygarreg Lane, Pant
	Area	1.08 hectares
	Current land use	Greenfield
	Proposed land use	Residential
Sources of flood risk	**Location of site within catchment**	The development site is located in the upper to middle area of the River Morda catchment, approximately 400m northwest and upslope from an unnamed tributary. The site lies in a localised area of low topography and is bounded by higher ground sloping upwards to the southeast and northwest of the site.
	Existing drainage features	There is no evidence of existing drainage features through this site, but this site has been assessed due to surface water risk.
	Fluvial	**Proportion of site at risk**

FZ3b	FZ3a	FZ2	FZ1
0%	0%	0%	100%

Highest zone of risk (Risk of Flooding from Rivers and Sea)
N/A
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%)
Available data: The Environment Agency's Flood Zone mapping has been used in this assessment. This is based on 2D generalised modelling data. **Flood characteristics:** The site is not impacted by Flood Zones 2 or 3 and does not fall within the Environment Agency's Risk of Flooding from Rivers and Sea dataset.

		Proportion of site at risk (RoFfSW)
Surface Water	**30-year**	**100-year**	**1,000-year**
	7%	12%	35%
	Max depths (m)		
	<0.3	<0.3	0.3-0.9
	Max velocity (m/s)		
	<0.25	<0.25	>0.25
	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 %)		

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

Site details	**Site Code**	**PYC021**		
	Address	Land at Penygarreg Lane, Pant		
	Area	1.08 hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
		Description of surface water flow paths: In the 30-year and 100-year surface water events there are isolated areas of ponding in the centre of the site and extending onto the site from the northern boundary. In the 1,000-year event, these areas of ponding are joined with a flow route that passes through the centre of this narrow site from south to north, inundating a significant portion of the site and bisecting the site. Consideration should be given to the impacts of impeding this flow route.		
	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.		
Flood risk management infrastructure	**Defences**	**Defence Type**	**Standard of Protection**	**Condition**
		-	-	-
		This site is not protected by any formal flood defences.		
	Residual risk	n/a		
Emergency planning	**Flood warning**	This site does not fall within the Environment Agency's Flood Warning or Flood Alert areas.		
	Access and egress	Safe access and egress to the site can be gained from the A483 along the western boundary of the site in all fluvial flooding events and surface water flooding events. In the 1,000-year surface water event, there are areas of isolated ponding along this road; maximum depths are estimated to be 0.3m so it is likely that emergency services will still be able to gain access to the site. However, the surface water flow path bisects the site from south to north in the 1,000-year event, potentially impeding access to the eastern part of the site. Consideration will be needed of how access from the half of site away from the road is obtained, should the site be bisected. 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.		

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

Site details	**Site Code**	**PYC021**	
	Address	Land at Penygarreg Lane, Pant	
	Area	1.08 hectares	
	Current land use	Greenfield	
	Proposed land use	Residential	
Climate Change	**Implications for the site**	• Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard and frequency of both fluvial and surface water flooding. • Flood Zone 2 can be used as an indication of increased fluvial flood risk as a result of climate change in the absence of more detailed modelling. However, this site is unaffected by fluvial flood risk and therefore fluvial flood risk from climate change does not increase. • 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 flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. The 1,000-year surface water flood event impacts 35% of this site, passing directly through the centre of the site. A detailed FRA would be required 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**
		River Morda	Low
		The River Morda catchment has been identified as one with a lower sensitivity to the cumulative impact of development within the catchment.	
	Recommendations	N/A	

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

Site details	**Site Code**	**PYC021**
	Address	Land at Penygarreg Lane, Pant
	Area	1.08 hectares
	Current land use	Greenfield
	Proposed land use	Residential

Requirements for drainage control and impact mitigation	**Broad scale assessment of possible SuDS**	• Geology at the site consists of:
		  ○ Bedrock: Leete Limestone Formation and Loggerheads Limestone Formation (undifferentiated) - Limestone
		  ○ Superficial: Till, Devensian - Diamicton.
		• The site is not located within any Environment Agency designated 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.
		• Mapping suggests that the site slopes are suitable for all forms of detention. A liner may be required due to the site potential groundwater flooding.
		• All filtration techniques are likely to be suitable. A liner maybe required to prevent the egress of groundwater.
		• 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. A liner may be required to prevent the egress of groundwater.
		• 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.

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

Site details	**Site Code**	**PYC021**
	Address	Land at Penygarreg Lane, Pant
	Area	1.08 hectares
	Current land use	Greenfield
	Proposed land use	Residential
NPPF and planning implications	**Exception Test requirements**	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 of the site and away from highest surface water risk. The Exception test will need to be applied if: • 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. • 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. **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 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. • 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.

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

Site details	**Site Code**	**PYC021**
	Address	Land at Penygarreg Lane, Pant
	Area	1.08 hectares
	Current land use	Greenfield
	Proposed land use	Residential

		• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:
		  ○ 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		The flood risk element of the Exception Test is likely to be passed if: • Development is limited to the 65% of the site not impacted by the 1,000-year surface water flooding event. Development should be steered towards the outer edges of the site, away from the surface water flow path passing through its centre. • Consideration of access and egress is required in the 1,000-year surface water event, which shows the site to be bisected. • 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. Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site.

Mapping Information

The key datasets used to make planning recommendations regarding this site was 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.

Flood Zones	Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning.
Climate change	Climate change was based on the 1,000-year surface water flooding event to serve as an indication of the potential increase in the extent of the 100-year surface water event as a result of climate change. 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.

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

Site details	**Site Code**	**PYC021**
	Address	Land at Penygarreg Lane, Pant
	Area	1.08 hectares
	Current land use	Greenfield
	Proposed land use	Residential
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 1,000-year (low risk) events is taken from the Environment Agency's Risk of Flooding from Surface Water mapping.