Welwyn Hatfield Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables

<table>
<tr><td rowspan="5">Site details</td><td>Site Code</td><td colspan="5">HC95</td></tr>
<tr><td>Address</td><td colspan="5">126 Great North Road</td></tr>
<tr><td>Area</td><td colspan="5">0.2ha</td></tr>
<tr><td>Current land use</td><td colspan="5">Brownfield</td></tr>
<tr><td>Proposed land use</td><td colspan="5">Residential</td></tr>
<tr><td rowspan="11">Sources of flood risk</td><td>Existing drainage features</td><td colspan="5">No existing drainage features within the site. The nearest watercourse is approximately 500m to the south east.</td></tr>
<tr><td rowspan="3">Fluvial</td><td colspan="5">Proportion of site at risk</td></tr>
<tr><td>FZ3b</td><td colspan="2">FZ3a</td><td>FZ2</td><td>FZ1</td></tr>
<tr><td>0%</td><td colspan="2">0%</td><td>0%</td><td>100%</td></tr>
<tr><td colspan="6">The site is 100% in FZ1 and there are no watercourses nearby.</td></tr>
<tr><td rowspan="7">Surface Water</td><td colspan="6">Proportion of site at risk (RoFfSW)</td></tr>
<tr><td>30-year</td><td colspan="2">100-year</td><td colspan="2">1,000-year</td></tr>
<tr><td>34%</td><td colspan="2">47%</td><td colspan="2">66%</td></tr>
<tr><td colspan="6">Max depths (m) (out of bank)</td></tr>
<tr><td>>1.20 (negligible)</td><td colspan="2">>1.20</td><td colspan="2">>1.20</td></tr>
<tr><td colspan="6">Max velocity (m/s) (out of bank)</td></tr>
<tr><td>0.50-1.00</td><td colspan="2">0.50-1.00</td><td colspan="2">1.00-2.00</td></tr>
<tr><td colspan="6">Max hazard rating (out of bank)</td></tr>
<tr><td>Danger for most</td><td colspan="2">Danger for most</td><td colspan="2">Danger for all (negligible)</td></tr>
<tr><td colspan="6">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 %). The % given are indicative only and more detailed work to refine this at a site-specific scale may be required.</td></tr>
</table>

Welwyn Hatfield Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables

Site details	**Site Code**	**HC95**		
	Address	126 Great North Road		
	Area	0.2ha		
	Current land use	Brownfield		
	Proposed land use	Residential		
		Description of surface water flow paths: The reason for this site warranting a L2 assessment is due to surface water risk at the site; surface water flood extents follow the topography of the site, predominantly affecting the northern portion of the site. Flood risk decreases towards the south, but there is still a larger risk from the 1,000-year events. The site is also bounded topographically by a railway to the east and Great North Road to the west. There is a topographic depression either side of the railway line where water ponds heavily in all surface water events. The maximum hazard in the 30-year and 100-year events is 'Danger for most', in areas of ponding in the north of the site. In the 1,000-year event there is a small area of 'Danger for all' along the northern site boundary. The highest surface water depths can be seen along the northern site boundary and in the north-eastern corner of the site, where the maximum depth is >1.20m across all events. Across all surface water events, the velocities are fairly low, with the majority of velocities between 0.00-0.50m/s; however, there are areas of higher velocity (up to 1.00m/s in the 30 and 100-year events and up to 2.00m/s in the 1,000-year event) along the north and west site boundaries. Developers should steer development away from the north of the site where the risk is greatest and consider that access is impeded across Great North Road, north of the site.		
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.		
	Flood history	The EA's historic flood map shows no history of flooding at the site.		
Flood risk management infrastructure	**Defences**	**Defence Type**	**Standard of Protection**	**Condition**
		-	-	-
		This site is not protected by any formal flood defences.		
	Residual risk	-		
Emergency planning	**Flood warning**	The site is not covered by the Environment Agency's Flood Warning Service.		

Welwyn Hatfield Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables

Site details	**Site Code**	**HC95**
	Address	126 Great North Road
	Area	0.2ha
	Current land use	Brownfield
	Proposed land use	Residential
	Access and egress	Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change rainfall events, using the depth, velocity and hazard outputs. Potential access and egress via The Great North Road to the south-west of the site is available in the 30 and 100-year surface water flood events. The 1,000-year surface water extent covers the boundary between the site and the Great North Road; however, the hazard and depth maps show there is a low risk and therefore there is the potential for safe egress and access. Looking at the surface water mapping, access to the north of the site should be avoided where possible, due to ponding in all events in the topographic low spot. The depths of surface water flooding along access/ egress routes could be investigated in a site-specific assessment, to confirm whether access for emergency vehicles could still be obtained.
Climate Change	**Implications for the Site**	• Increased storm intensities due to climate change may increase the extent, depth and frequency of surface water flooding. • 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 extent provides an indication of the likely increase in extent of the more frequent events. 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.

Welwyn Hatfield Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables

Site details	**Site Code**	**HC95**
	Address	126 Great North Road
	Area	0.2ha
	Current land use	Brownfield
	Proposed land use	Residential

Requirements for drainage control and impact mitigation	**Broad scale assessment of possible SuDS**	• Geology at the site consists of:
		  ○ Bedrock – Chalk
		  ○ Superficial – Sand, gravel and Till.
		• The site is 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.
		• Source control techniques are likely to be suitable for this site.
		• Infiltration is likely to be suitable. Mapping suggests a low risk of ground water flooding however, site investigations should be carried out to assess potential for drainage by infiltration.
		• Detention features may be feasible providing site slopes are <5% at the location of the detention feature. If groundwater is a risk to the site, then a liner may be required to mitigate against potential contamination issues.
		• Filtration systems are probably suitable providing site slopes are <5% and the depth to the water table is >1m. If the site has contamination issues, or is at risk from groundwater, then a liner will be required.
		• All forms of conveyance features are likely to be suitable. Where slopes are >5%, features should follow contours or utilise check dams to slow flows.
		• The site is not designated by the EA as previously being a landfill site.
		• Developers should refer to Hertfordshire County Council's SuDS Design Guidance and SuDS Policy Statement, 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.

NPPF and planning implications	**Exception Test requirements**	The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential and Exception Test document (November 2019) provides the detail on how this has been undertaken and can be found on the Local Authority website. The Sequential Test will need to be passed before the Exception Test is applied. Residential development is classified as 'More Vulnerable'. 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**
		• 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; Welwyn Hatfield Council's Local Plan policies, and the LLFA's SUDS guidance and Policy Statement.
		• 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.
		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.
		• 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 Hertfordshire County Council's SuDS Design Guidance, SuDS Policy Statement 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:
		  ○ Reducing volume and rate of runoff
		  ○ Relocating development to zones with lower flood risk
		  ○ Creating space for flooding.

Mapping Information	
Flood Zones	There are no Flood Zones at this site and no fluvial risk.
Climate change	No fluvial risk at the site, hence no climate change outputs. Climate change for surface water should be considered at the site-specific assessment stage.
Fluvial depth, velocity and hazard mapping	No mapping available.
Surface Water	The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding. This dataset is not suitable for identifying whether an individual property will flood. It is based on the confidence in the modelling at that location; because of the way the mapping has been produced and is indicative, the maps are not appropriate to act as the 'sole evidence' for any specific planning or regulatory decision or assessment

Welwyn Hatfield Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables

Site details	**Site Code**	**HC95**
	Address	126 Great North Road
	Area	0.2ha
	Current land use	Brownfield
	Proposed land use	Residential
		of risk in relation to flooding without further supporting studies or evidence. Please consult all layers and outputs provided on the RoFfSW mapping for further details.
Surface water depth, velocity and hazard mapping		The surface water depth, velocity and hazard mapping for the 1 in 100-year event (considered to be medium risk) is taken Environment Agency's Risk of Flooding from Surface Water.