



**Chelmsford City Council Level 2
Strategic Flood Risk Assessment
Detailed Site Summary Tables**

Site details

Site Code	GS9b
Address	Land to the East of 118 – 124 Plantation Road, Boreham
Area	1.9ha
Current land use	Greenfield
Proposed land use	Residential
Flood Risk Vulnerability	More Vulnerable

Sources of flood risk

Location of the site within the catchment	The site is located to the north-east of the village of Boreham, approximately 4km north east of Chelmsford and consists of two fields with a row of trees between them. Access to the site is from Plantation Road. The site is located within the Boreham Tributary Water Body catchment, which has an area of 17.4km² and is within the Chelmer Operational Catchment of the Combined Essex Management Catchment. The Boreham Tributary Water Body catchment has not been designated as an artificial or heavily modified catchment.
Topography	Environment Agency 1m resolution LiDAR shows that the topography of the site falls from the south to the north of the site, with an area of low topography in the centre of the site. The mapping shows that the elevation along the southern boundary is 40.2mAOD, and the elevation along the northern boundary is 37.9mAOD. The lowest elevation in the centre of the site is 37.0mAOD.
Existing drainage features	The mapping does not show any existing drainage features, however, the area of low elevation in the centre of the site may be a pond, this should be investigated.
Critical Drainage Area	The site is not located within a Critical Drainage Area.
Fluvial and tidal	The proportion of site at risk FMFP: FZ3 – 0% FZ2 – 0% FZ1 – 100% Available data: The proportion of the site at flood risk is determined from the Environment Agency's Flood Map for Planning Flood Zones. This represents the undefended scenario. Flood characteristics: The Flood Map for Planning shows that this site is not at risk from fluvial or tidal flooding.

Surface Water	Proportion of site at risk (RoFSW): 3.3% AEP – 3% Max depth – 0.3m Max velocity – 0.00m/s 1% AEP – 5% Max depth – 0.3m Max velocity – 0.00m/s 0.1% AEP – 9% Max depth – 0.6m Max velocity – 0.00m/s <i>The % Surface Water 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> The Environment Agency's Risk of Flooding from Surface Water (2025) mapping was used in this assessment of surface water flooding. Description of surface water flooding: During the 3.3% AEP surface water event, there are areas of ponding, one along the northern boundary of the site and the second is in centre of the site which corresponds to the low spot as discussed in the topography section. The depth of the ponding in the centre of the site is 0.3m and has a hazard rating of 'Moderate – dangerous for some'. The extent of the surface water flooding increases across the site during the 1% AEP event. The ponding along the northern boundary extends approximately 12m into the site. Along the eastern boundary there is an additional area of ponding. The depth and hazard rating remain the same as the 3.3% AEP event. During the 0.1% AEP event the extent of the ponding along the northern boundary, eastern boundary and in the centre of the site increases. A flow route along the southern boundary of the site is also shown during the 0.1% AEP event. The ponding in the centre of the site has a depth of 0.6m and a hazard rating of 'Significant – dangerous for most'.
Reservoir	The Environment Agency's (EA) risk of flooding from reservoirs dataset shows that the site is not at risk from reservoir flooding in the wet or dry day scenario.
Groundwater	JBA's Groundwater Emergence Map, is provided as 5m resolution grid squares. The site is shown to have negligible risk of groundwater emerging in this area, and any groundwater emergence incidence has a chance of less than 1% annual probability of occurrence. There will be a remote possibility that incidence of groundwater flooding could lead to damage to property or harm to other sensitive receptors at, or near, this location. The risk from groundwater should be confirmed and quantified as part of a site-specific flood risk assessment (FRA).
Sewers	Sewer flooding records were not available for this assessment. The entirety of Chelmsford is identified as a Flood priority catchment in Anglian Water's Drainage and Wastewater Management Plan (DWMP). Developers should consult Anglian Water as part of any development proposal to ensure development does not exacerbate existing issues and maximise opportunities for development to deliver benefits in line with the long term strategic aims set out in the Drainage and Wastewater Management.
Flood history	The Environment Agency's Historic Flood Map does not show any records of flooding on the site.

	Essex County Council as Lead Local Flood Authority (LLFA) has no records of flooding within the site boundary.
Flood risk management infrastructure	
Defences	The Environment Agency AIMS dataset shows there are no formal flood defences in the vicinity of the site.
Residual risk	The site does not appear to be at residual risk from any sources of flooding.
Emergency planning	
Flood warning	The site is not located in an Environment Agency Flood Alert or Flood Warning Area.
Access and egress	The access and egress from the site will be via Plantation Road, to the west of the site. The flooding in the centre of the site is unlikely to impact the access and egress, and the hazard ratings for each AEP event are as follows: 3.3% AEP: Moderate – Dangerous for some people 1% AEP: Moderate – Dangerous for some people 0.1% AEP: Significant - Dangerous for most people The site is currently undeveloped and surface water flows are likely to be affected by the form of any built development and associated drainage features. A site-specific FRA should consider the risk from surface water considering land levels and drainage features associated with the post development scenario, rather than just the currently available results. Arrangements for safe access and egress will need to be demonstrated for 1% AEP plus an appropriate allowance for climate change, using the depth, velocity, and hazard outputs.
Dry Islands	The flood risk mapping suggests that the site will not become a dry island during a flood event.
Climate change	
Implications for the site	Management Catchment: Combined Essex Management Catchment Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding. Fluvial The Environment Agency Flood Map for Planning now has climate change allowances incorporated into the data. The mapping shows that the site is not within Flood Zone 2 or 3 in a climate change scenario. Surface Water: Climate change allowances, up to 2060, have been applied to the NaFRA2 dataset for surface water flooding using the UK Climate Projections (UKCP18). In the areas of ponding, the extent of the 3.3% AEP event plus climate change has a greater extent than the present day 3.3% AEP event, but not as great as the 1% AEP event. The extent of the 1% plus climate change event shows an increase across the site compared to the present day 1% AEP event. During the 0.1% AEP event plus climate change, the extent of the surface water flooding across the site is greater than the 0.1% AEP present day

	event. During the 0.1% AEP event plus climate change the mapping shows a flow route along the eastern boundary of the site. Based on the information presented, it can be inferred that this site is sensitive to surface water climate change. Development proposals at the site must address the potential changes associated with climate change and be designed to be safe for the intended lifetime. The provisions for safe access and egress must also address the potential increase in severity and frequency of flooding.
Requirements for drainage control and impact mitigation	
Broad-scale assessment of possible SuDS	Geology & Soils - Geology at the site consists of: - Bedrock Geology – London Clay Formation consisting of clay, silt and sand. - Superficial Geology – Brickearth consisting of clay, silt and sand. - Soils at the site consist of freely draining slightly acid loamy soils. SuDS - The site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work. - British Geological Survey data indicates that the underlying geology is a mixture of clay, silt and sand which is likely to be with highly variable permeability. This should be confirmed through infiltration testing. Off-site discharge in accordance with the SuDS hierarchy may be required to discharge surface water runoff from the site. - The site is not located within a Groundwater Source Protection Zone. - The site is located within a Nitrate Vulnerable Zones (2017): - River Chelmer (surface water) - Sandlings and Chelmsford (groundwater) - The site is located within a Drinking Water Safeguard Zone. - The site is not located within a historic landfill site. - Surface water discharge rates should not exceed the existing 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. - If it is proposed to discharge runoff to a watercourse or sewer system, the condition and capacity of the receiving watercourse or asset should be confirmed through surveys and the discharge rate agreed with the asset owner.
Opportunities for wider sustainability benefits and integrated flood risk management	- Implementation of SuDS at the site could provide opportunities to deliver multiple benefits including volume control, water quality, amenity, and biodiversity. This could provide wider sustainability benefits to the site and surrounding area. Proposals to use SuDS techniques should be discussed with relevant stakeholders (Local Planning Authority, 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 take into account the impacts of future climate change over the projected lifetime of the development. - Opportunities to incorporate source control techniques such as green roofs, permeable surfaces, and rainwater harvesting must be considered in the design of the site. - SuDS are to be designed so that they are easy to maintain, and it should be set out who will maintain the system, how the maintenance will be funded and they should be supported by an appropriately detailed maintenance and operation manual.

	• Opportunities to incorporate filtration techniques such as filter strips, filter drains and bioretention areas must be considered. Consideration should be made to the existing condition of receiving waterbodies and the Water Framework Directive objectives for water quality. The use of multistage SuDS treatment will clean and improve water quality of surface water runoff discharged from the site and reduce the impact on receiving water bodies. • The potential to utilise conveyance features such as swales to intercept and convey surface water runoff should be considered. Conveyance features should be located on common land or public open space to facilitate ease of access. Where slopes are >5%, features should follow contours or utilise check dams to slow flows.
NPPF and planning implications	
Exception Test requirements	The site is classified as 'More Vulnerable' and is generally at low risk, though there is an area at high risk from surface water flooding. The Exception Test is not required under the NPPF; however the Sequential Test must be passed, unless a site-specific FRA demonstrates that the site can be developed safely without increasing risk elsewhere. It must be shown that the development will be safe for its lifetime and the risk of flooding from all sources can be managed through a sequential approach to design.
Requirements and guidance for site-specific Flood Risk Assessment	Flood Risk Assessment: • At the planning application stage, a site-specific FRA will be required as the proposed development site is: ◦ Greater than one hectare ◦ At risk surface water flooding • All sources of flooding should be considered as part of a site-specific FRA, including consideration of the residual risk from a failure, or overtopping of defences. • Consultation with Chelmsford City Council, Essex County Council, Anglian Water, and the Environment Agency should be undertaken at an early stage. • Any FRA should be carried out in line with the National Planning Policy Framework (NPPF); Flood Risk and Coastal Change Planning Practice Guidance (PPG); and the Council's Local Plan's SuDS Policy. • Assessment of surface water risk to the site should be supported by detailed modelling, and consideration of the post-development site-layout and drainage features as well as the present undeveloped risk. 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). • The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, so runoff magnitudes from the development are not increased by development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure runoff rates are limited to pre-development greenfield rates. • Arrangements for safe access and egress will need to be provided for the 1% AEP fluvial and rainfall events with an appropriate allowance for climate change, considering depth, velocity, and hazard. Design and access arrangements will need to incorporate measures, so development and occupants are safe.

Key messages

The site is in Flood Zone 1 but has an area at high risk of surface water flooding. With regards to managing the flood risk, development may be able to proceed if:

- Safe access and egress can be demonstrated in the surface water 1% AEP plus climate change events. This includes measures to reduce flood risk along these routes such as raising access, but not displacing floodwater elsewhere. Given the significant risks to the site, a suitable flood warning and evacuation plan will be required if development is located within areas of risk and/or safe access and egress cannot be provided in an extreme event.
- Development is steered away from the areas of surface water flooding.
- A site-specific FRA demonstrates that site users will be safe throughout the lifetime of the development and that development of the site does not increase the risk of surface water/fluviat flooding on the site and downstream.

Mapping Information

The key datasets used to make planning recommendations for this site were the Environment Agency's Flood Map for Planning and the Environment Agency's Risk of Flooding from Surface Water map. 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 mapping.
Climate change	Climate change allowances have been incorporated into the Environment Agency's Flood Map for Planning. Climate change allowances have been incorporated into the Environment Agency's Risk of Flooding from Surface Water mapping.
Fluvial and tidal extents, depth, velocity and hazard mapping	N/A – not required for this assessment.
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	Environment Agency's Risk of Flooding from Surface Water dataset.