	Chelmsford City Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables
Site details	
Site Code	**SGS18a**
Address	Land North West of Chelmsford (North of Hollow Lane)
Area	8.27ha
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 western outskirts of the Melbourne area of Chelmsford. The site is bordered by Broom Wood and farmland to the north, Hollow Lane to the east and south and Woodhall Hill to the west. The site is located within the Chignall Brook Water Body Catchment, which is described as a heavily modified catchment. The water body catchment is within the Chelmer Operational Catchment of the Combined Essex Management Catchment.
Topography	Environment Agency 1m resolution LiDAR shows that the topography across the site generally slopes down from the northeastern corner to southwestern corner. The north-east section of the site is at higher elevation than the western and southern sections of the site. The highest elevation within the northeastern corner of the site is 50.57mAOD. The lowest elevation is along the southwestern site boundary, at 46.57mAOD.
Existing drainage features	There are no mapped Main Rivers within the site, however, LiDAR mapping suggests that there may be localised drainage ditches/ordinary watercourses in the area.
Critical Drainage Area	The site is not within a Critical Drainage Area; however, Broomfield South Critical Drainage Area is situated approximately 800m east of the site.

Fluvial and tidal	**The proportion of site at risk FMFP:** **FZ3 – 0%** **FZ2 – 0%** **FZ1 – 100%** *The Flood Zone values quoted show the percentage 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. This is because the values quoted are the area covered by each Flood Zone/extent within the site boundary. For example: Flood Zone 2 includes Flood Zone 3. Flood Zone 1 is the remaining area outside Flood Zone 2 (FZ2+ FZ1 = 100%).* **Defended outputs:** **3.3% AEP fluvial event – 0%** **1% AEP fluvial event – 0%** **0.1% AEP fluvial event – 0%** **Available data:** The proportion of the site at flood risk is determined from the Environment Agency's Flood Map for Planning Flood Zones. **Flood characteristics:** The site is located wholly within Flood Zone 1 of the Flood Map for Planning, indicating it is at low risk of flooding from fluvial sources.
Surface Water	**Proportion of site at risk (RoFSW):** **3.3% AEP** – 1% Max depth – 0.6m Max velocity – 0.50m/s **1% AEP** – 1% Max depth – 0.3m Max velocity – 0.50m/s **0.1% AEP** – 3% Max depth – 0.6m Max velocity – 1.00m/s *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 %).* The Environment Agency's Risk of Flooding from Surface Water (2025) mapping was used in this assessment for the extent, depth, and hazard of surface water flooding. **Description of surface water flow paths**: Surface water flood risk on the site is associated with drainage ditches along the northern and eastern site boundaries and through the centre of the site. During the 3.3% AEP event the mapping shows flow paths along the northern site boundary. There are also areas of ponding within the drainage ditch through the centre of the site as well as along Hollow Lane which encroaches across the eastern site boundary. Much of the surface water flooding across the site has an anticipated maximum depth of 0.2 or 0.3m. There is a small area of ponding within the drainage ditch at the centre of the site where depths are up to 0.6m. The velocity of the surface water flooding is largely anticipated to be up to 0.25m/s. There is a small area of flooding with velocity of 0.5m/s in the northeastern corner of the site. Maximum flood hazard rating during this event is 'significant – danger for most'.

	The extent of the ponding and surface water flow routes increase across the site during the 1% AEP event. The areas where the surface water extent increase is greatest is along the eastern site boundary, adjacent to Hollow Lane. As with the 3.3% AEP event, the anticipated depth of the surface water flooding across the site is up to 0.3m, with a velocity of up to 0.5m/s during the 1% AEP event. The maximum flood hazard rating during the 1% AEP event remains 'significant – danger for most'. The extent of surface water flooding increases to cover 3% of the site during the 0.1% AEP event. Existing areas of ponding expand, particularly within the drainage ditch at the centre of the site and along the eastern site boundary. Two additional areas of ponding form in the western side of the site during this event. One near the northern boundary and one near the southern boundary. Compared to the 1% AEP event, the depth and velocity of the surface water flooding increases to 0.6m and 1.00m/s respectively. The hazard rating remains 'significant – danger for most'.
Reservoir	The Environment Agency's (EA) risk of flooding from reservoirs dataset shows that the site is not at risk during the dry and wet day scenarios.
Groundwater	JBAs Groundwater Emergence Map is provided as 5m resolution grid squares. The site is shown to be in an area where there is no risk of groundwater emergence.
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 DWMP.
Flood history	The Environment Agency's Historic Flood Map does not show any records of flooding within the vicinity of the site. Essex County Council as Lead Local Flood Authority (LLFA) has no records of flooding within the site boundary, or within the vicinity of the site. The LLFA have several flood records in the Melbourne area of Chelmsford, to the south and east of the site. These incidents are largely >1km south of the site.
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 is not at residual risk from breach or failure of defences. There is residual risk of where any of the drainage ditches flow under roads in culverts, beneath Hollow Lane for example. If these were to block, water could back up and cause flooding in a similar pattern to the surface water risk mapping. This should be assessed as part of a site-specific flood risk assessment (FRA).
Emergency planning	
Flood warning	The site is not located within an EA Flood Warning Area or Flood Alert Area.

Access and egress	Due to the extent of the site, there may be multiple points of access and egress. There is surface water flooding modelled along both Hollow Lane and Woodhall Hill, which may impact access and egress. The hazard ratings for each AEP for the flow paths are as follows: Hollow Lane: 3.3% AEP: 'Significant – dangerous for most' 1% AEP: 'Significant – dangerous for most' 0.1% AEP: 'Significant – dangerous for most' Woodhall Hill: 3.3% AEP: 'Very low hazard' 1% AEP: 'Very low hazard' 0.1% AEP: 'Warning – dangerous for some' 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. Given the risk to the site during the surface water scenarios, safe access/egress is likely to be achievable via Woodhall Hill, avoiding the ponding on Hollow Lane.
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 site is not shown to be at risk of flooding from fluvial sources, considering the impact of climate change. **Surface Water:** The latest climate change allowances have been applied to the Risk of Flooding from Surface Water map (2024) to indicate the impact on surface water flood risk. The 1% AEP event plus 40% climate change corresponds to the 1% AEP upper end allowance for peak rainfall intensity for the 2070s epoch and is therefore the 'design event' scenario. During the 1% AEP plus climate change scenario, the extent of the surface water flooding across the site, including the areas of ponding along the eastern boundary and within the northwestern side of the site, is wider than the present day 1% AEP event. The extent during the 1% AEP event plus climate change, is not however as extensive as the present day 0.1% AEP event. 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 – Till – Diamicton consisting of clay, sand and gravel
	• Soils at the site consist of:
	  ○ Freely draining lime-rich 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 the Chelmer and Blackwater 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.
	• The Risk of Flooding from Surface Water (RoFSW) mapping indicates the presence of surface water flow paths during the 3.3% 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 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 within Flood Zone 1 of the Flood Map for Planning. 1% of the site is at high risk from surface water flooding, 1% at medium risk and a further 3% at low risk. The Exception Test is not required under the NPPF provided no development is proposed within Flood Zones; however the Sequential Test must be passed, the criteria for which is highlighted within the Level 1 SFRA. 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 of other sources of flooding (surface water)
	• All sources of flooding should be considered as part of a site-specific FRA, including consideration of the residual risk from culvert blockage.
	• 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 surface water 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. Given the risk to the site, safe access and egress are likely achievable via Woodhall Hill, avoiding surface water ponding on Hollow Lane.
	• Provisions for safe access and egress should 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.

Key messages	
The site is located wholly within Flood Zone 1. There are however areas across the site which are 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 risk to the site, safe access and egress are likely achievable via Woodhall Hill, avoiding surface water ponding on Hollow Lane. • A carefully considered and integrated flood resilient and sustainable drainage design is put forward, with development steered away from the areas identified to be at risk of surface water flooding across the site. • 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 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. The Risk of Flooding from Surface Water map (2024) has been used to define areas at risk from surface water flooding.
Fluvial and tidal extents, depth, velocity and hazard mapping	Modelling was not available 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	The Risk of Flooding from Surface Water map (2025) has been used to define areas at risk from surface water flooding.