Chelmsford City Strategic Flood Risk Assessment Level 2
Detailed Site Summary Tables - INDEX

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Mapping

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

Site details	**Site Name**	Baddow Road Car Park
	Area	1.2 hectares
	Current land use	Brownfield
Sources of flood risk	**Existing drainage features**	The confluence of the River Can with the River Chelmer is just north of the site.
	Fluvial	**Proportion of site at risk**

FZ3b	**FZ3a**	**FZ2**	**FZ1**
6%	92%	2%	0%

The site is at significant flood risk with almost all the site within Flood Zones 3a and 3b.

Surface Water — **Proportion of site at risk (RoFfSW)**

30-year	**100-year**	**1,000-year**
5%	13%	82%

Surface water risk mapping shows significant surface water risk in the 1 in 1,000-year event. However, in the 1 in 30-year and 1 in 100-year, the risk is much less, with a small area of ponding in the east of the site.

Reservoir	Part of the site is shown to be at risk in the event of reservoir inundation.
Flood history	Most of the site falls within the extent of the Environment Agency's recorded flood outline for 1947.

Flood risk management infrastructure — **Defences**

Defence Type	**Standard of Protection**	**Condition**
-	-	-

The site is not protected by any known formal flood defences.

Residual risk	n/a
Emergency planning — **Flood warning**	All of the site falls within the River Wid and Can Flood Alert Area and the River Can and Chelmer, through Chelmsford or the Riverside properties in Chelmsford, including the cricket ground Flood Warning Area.
Access and egress	Safe access and egress for the site is an issue. Baddow Road, A1099 and the A1060 are shown to be in the Flood Zones with no alternative route.

Climate Change — **Climate change allowances for '2080s'**

River Basin District	**Central**	**Higher Central**	**Upper End**
Anglian	25%	35%	65%
% of site at risk	99%	99%	99%

Implications for the site	Climate change modelling suggests that almost all of the site will fall within Flood Zone 3 in the future.

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

Site details	**Site Name**	Baddow Road Car Park
	Area	1.2 hectares
	Current land use	Brownfield
Requirements for drainage control and impact mitigation	**Broad scale assessment of possible SuDS**	The underlying bedrock geology of the site is Thames Group (London Clay). This may result in poor infiltration capacity in some areas. The suitability of infiltration basins and devices will be dependent on the depth to the water table. The underlying superficial geology for parts of the site is Till. Depending on the proportion of the soil type encountered (e.g. clay, sand, gravel) the suitability of infiltration basins and devices may vary.
	Groundwater Source Protection Zone	The site is not located within a Groundwater Source Protection Zone.
	Historic Landfill Site	There is no historic landfill within the site boundary.
NPPF and planning implications	**Exception Test requirements**	The Sequential Test will need to be passed before the Exception Test is applied. The Exception Test will be required in the following scenarios • If More Vulnerable and Essential Infrastructure is located in FZ3a. • If Highly Vulnerable development is located in FZ2. • If Essential Infrastructure is located in Flood Zone 3b Development will not be permitted in the following scenarios • Highly Vulnerable infrastructure within FZ3a and FZ3b. • More Vulnerable and Less Vulnerable Infrastructure within FZ3b.
	Requirements and guidance for site-specific 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. Other sources of flooding should also be considered. • Given most of the site is within Flood Zone 3, flood compensation will be required on a level-for-level, volume-for-volume basis for any proposed loss of floodplain. Therefore, land within the vicinity and outside the proposed site will be required for flood compensation. Prospects for effective mitigation would need to be established before taking the site forward. • Consultation with the Local Authority and the Environment Agency should be undertaken at an early stage. • Given the level of risk, single storey buildings and the use of basements should be avoided. • Resilience measures will be required if buildings are placed within the risk areas • Finished floor levels should be set a minimum of 600mm above the 1 in 100-year plus climate change peak flood level. Allocating the ground floor of a building for less vulnerable, non-residential, use is an effective way of raising living space above flood levels. • Safe access and egress will need to be demonstrated; access should be situated 300mm above the design flood level and waterproof construction techniques used.

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

Site details	**Site Name**	Baddow Road Car Park
	Area	1.2 hectares
	Current land use	Brownfield

		• Onsite attenuation schemes would need to be tested against the hydrographs of the River Chelmer 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.
		• 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.

Mapping Information	
Flood Zones	Flood Zones 2 and 3a are based on the Environment Agency's Flood Zone 2 and 3. Flood Zone 3b is based on the 20-year results from the Environment Agency's River Chelmer detailed hydraulic model.
Climate change	The climate change allowances for the '2080's were modelled for the Level 1 SFRA using the Environment Agency's River Chelmer detailed hydraulic model for the purposes of the SFRA.
Surface Water	The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
Depth and velocity mapping	Depth and velocity mapping for the 1 in 100-year event (defended) have been taken from the Environment Agency's River Chelmer detailed hydraulic model.

Mapping

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

Site details	**Site Name**	Chelmsford Social Club and private car park (55 Springfield Road)			
	Area	0.74 hectares			
	Current land use	Brownfield			
Sources of flood risk	**Existing drainage features**	The River Chelmer flows southwards past the site. At the northern-most edge of the site, the river is adjacent to the site boundary.			
	Fluvial	**Proportion of site at risk**			
		FZ3b	**FZ3a**	**FZ2**	**FZ1**
		13%	44%	38%	5%
		Fluvial flood risk to the site is significant, with 95% of the site at risk from flooding.			
	Surface Water	**Proportion of site at risk (RoFfW)**			
		30-year	**100-year**	**1,000-year**	
		10%	29%	72%	
		Surface water flood risk to the site is significant with only 28% of the site outside of risk. The area outside of risk is located in the south of the site.			
	Reservoir	The site is not at risk of inundation in the event of reservoir failure.			
	Flood history	The Environment Agency's historic flood map shows the site has flooded in the past, in 1947.			
Flood risk management infrastructure	**Defences**	**Defence Type**	**Standard of Protection**	**Condition**	
		-	-	-	
		The site is not protected by any known formal flood defences.			
	Residual risk	n/a			
Emergency planning	**Flood warning**	The northern edge of the site falls within the River Wid and Can Flood Alert Area. The north of the site falls within the Riverside properties in Chelmsford, including the cricket ground Flood Warning Area whilst the south of the site falls within the River Can and Chelmer, through Chelmsford Flood Warning Area.			
	Access and egress	The A1099 is the only access and egress route for the site. In the immediate vicinity of the site the road is shown to be at risk (in Flood Zone 2 and 3). Just north of the site the road is free from fluvial flood risk. However, surface water risk mapping shows surface water flood risk is significant on the A1099 with the route at risk from a 1 in 30-year event along much of its length.			
Climate Change	**Climate change allowances for '2080s'**	**River Basin District**	**Central**	**Higher Central**	**Upper End**
		Anglian	25%	35%	65%
	% of site at risk		81%	91%	95%
	Implications for the site	Climate change modelling shows a significant impact on the level of risk with 81% to 95% of the site in Flood Zone 3 compared to the present day (43%).			

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

Site details	**Site Name**	Chelmsford Social Club and private car park (55 Springfield Road)
	Area	0.74 hectares
	Current land use	Brownfield
Requirements for drainage control and impact mitigation	**Broad scale assessment of possible SuDS**	The underlying bedrock geology of the site is Thames Group (London Clay). This may result in poor infiltration capacity in some areas. The suitability of infiltration basins and devices will be dependent on the depth to the water table. The underlying superficial geology for parts of the site is Till. Depending on the proportion of the soil type encountered (e.g. clay, sand, gravel) the suitability of infiltration basins and devices may vary.
	Groundwater Source Protection Zone	The site is not located within a Groundwater Source Protection Zone.
	Historic Landfill Site	There is no historic landfill within the site boundary.
NPPF and planning implications	**Exception Test requirements**	The Sequential Test will need to be passed before the Exception Test is applied. The Exception Test will be required in the following scenarios • If More Vulnerable and Essential Infrastructure is located in FZ3a. • If Highly Vulnerable development is located in FZ2. • If Essential Infrastructure is located in Flood Zone 3b Development will not be permitted in the following scenarios • Highly Vulnerable infrastructure within FZ3a and FZ3b. • More Vulnerable and Less Vulnerable Infrastructure within FZ3b.
	Requirements and guidance for site-specific 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 for any development greater than one hectare in Flood Zone 1. Other sources of flooding should also be considered. • Consultation with the Local Authority and the Environment Agency should be undertaken at an early stage. • Given the level of risk, single storey buildings and the use of basements should be avoided. • Resilience measures will be required if buildings are placed within the risk areas. • Finished floor levels should be set a minimum of 600mm above the 1 in 100-year plus climate change peak flood level. Allocating the ground floor of a building for less vulnerable, non-residential, use is an effective way of raising living space above flood levels. • Safe access and egress will need to be demonstrated; access should be situated 300mm above the design flood level and waterproof construction techniques used. • Onsite attenuation schemes would need to be tested against the hydrographs of the River Chelmer 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.

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

Site details	**Site Name**	Chelmsford Social Club and private car park (55 Springfield Road)
	Area	0.74 hectares
	Current land use	Brownfield

		• Assessment for runoff should include allowance for climate change effects.
		• 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.

Mapping Information	
Flood Zones	Flood Zones 2 and 3a are based on the Environment Agency's Flood Zone 2 and 3. Flood Zone 3b is based on the 20-year results from the Environment Agency's River Chelmer detailed hydraulic model.
Climate change	The climate change allowances for the '2080's were modelled for the Level 1 SFRA using the Environment Agency's River Chelmer detailed hydraulic model for the purposes of the SFRA.
Surface Water	The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
Depth and velocity mapping	Depth and velocity mapping for the 1 in 100-year event (defended) have been taken from the Environment Agency's River Chelmer detailed hydraulic model.

Mapping

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

Site details	**Site Name**	East Chelmsford – Manor Farm				
	Area	27.45 hectares				
	Current land use	Greenfield				
Sources of flood risk	**Existing drainage features**	The River Chelmer flows to the north of the site.				
	Fluvial	**Proportion of site at risk**				
		FZ3b	**FZ3a**	**FZ2**	**FZ1**	
		0%	<1%	3%	97%	
		Fluvial flood risk is low, with a small area along the northern site boundary in Flood Zone 2. A marginal area of FZ3a is present immediately along the northern boundary of the site, but this produces negligible extents on site.				
	Surface Water	**Proportion of site at risk (RoFfSW)**				
		30-year	**100-year**	**1,000-year**		
		0%	0%	3%		
		Surface water risk to the site is low, consisting of two flow paths south to north.				
	Reservoir	The site is not at risk of inundation in the event of reservoir failure.				
	Flood history	The site is outside of the Environment Agency's historic flood map.				
Flood risk management infrastructure	**Defences**	**Defence Type**	**Standard of Protection**	**Condition**		
		-	-	-		
		The site is not protected by any known formal flood defences.				
	Residual risk	n/a				
Emergency planning	**Flood warning**	The northern edge of the site falls within the Lower River Chelmer Flood Alert Area and the River Chelmer from the A138 at Chelmsford to Maldon Flood Warning Area				
	Access and egress	The main access and egress routes for the site (A1060 and A1114) are not affected by fluvial flooding and a largely unaffected by surface water flood risk. Therefore, safe access and egress should not be an issue.				
Climate Change	**Climate change allowances for '2080s'**	**River Basin District**		**Central**	**Higher Central**	**Upper End**
		Anglian		25%	35%	65%
	% of site at risk			1%	1%	2%
	Implications for the site	Climate change modelling suggests that the area that is currently Flood Zone 2 may become Flood Zone 3 in the future.				

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

Site details	**Site Name**	East Chelmsford – Manor Farm
	Area	27.45 hectares
	Current land use	Greenfield
Requirements for drainage control and impact mitigation	**Broad scale assessment of possible SuDS**	The underlying geology of the site is Thames Group (London Clay). This may result in poor infiltration capacity in some areas. The suitability of infiltration basins and devices will be dependent on the depth to the water table. Detention features may be feasible providing site slopes are <5% at the location of the detention feature. 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.
	Groundwater Source Protection Zone	The site is not located within a Groundwater Source Protection Zone.
	Historic Landfill Site	There is no historic landfill within the site boundary.
NPPF and planning implications	**Exception Test requirements**	The Sequential Test will need to be passed before the Exception Test is applied. The Exception Test will be required if Highly Vulnerable development is in FZ2.

	Requirements and guidance for site-specific Flood Risk Assessment	• At the planning application stage, a site-specific Flood Risk Assessment will be required if any development is located within Flood Zone 2 or for any development greater than one hectare in Flood Zone 1. Other sources of flooding should also be considered.
		• Consultation with the Local Authority and the Environment Agency should be undertaken at an early stage.
		• Buildings should be situated away from the flood risk area.
		• Onsite attenuation schemes would need to be tested against the hydrographs of the River Chelmer 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.
		• 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.

Mapping Information		
Flood Zones		Flood Zones 2 and 3a are based on the Environment Agency's Flood Zone 2 and 3. Flood Zone 3b is based on the 20-year results from the Environment Agency's River Chelmer detailed hydraulic model.

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

Site details	**Site Name**	East Chelmsford – Manor Farm
	Area	27.45 hectares
	Current land use	Greenfield
Climate change		The climate change allowances for the '2080's were modelled for the Level 1 SFRA using the Environment Agency's River Chelmer detailed hydraulic model for the purposes of the SFRA.
Surface Water		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
Depth and velocity mapping		Depth and velocity mapping for the 1 in 100-year event (defended) have been taken from the Environment Agency's River Chelmer detailed hydraulic model.

Mapping

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

Site details	**Site Name**	Former Gas Works, Wharf Road
	Area	3.3 hectares
	Current land use	Brownfield
Sources of flood risk	**Existing drainage features**	The River Chelmer flows along the south west boundary of the site. The River Can has its confluence with the River Chelmer at the site. There is potential for interaction between these two watercourses that could result in flooding to the site; the risk could come from both or just one of the watercourses.
	Fluvial	**Proportion of site at risk**

FZ3b	FZ3a	FZ2	FZ1
1%	93%	6%	0%

Flood risk to the site is high, with almost all the site within Flood Zone 3a.

Surface Water

Proportion of site at risk (RoFfSW)

30-year	100-year	1,000-year
1%	3%	55%

Surface water flood risk is low for events of 1 in 100-year and lower. However, in the 1 in 1,000-year event, over half of the site is at risk. The risk is spread evenly throughout the site, rather than restricted to localised areas.

Reservoir	The site is not at risk of inundation in the event of reservoir failure.
Flood history	The entire site falls within the 1947 flood extent in the Environment Agency's Historic Flood Map.

Flood risk management infrastructure

Defences

Defence Type	Standard of Protection	Condition
-	-	-

The site is not protected by any known formal flood defences.

Residual risk	n/a
Emergency planning — **Flood warning**	Most of the site falls within the River Wid and Can Flood Alert Area and the River Can and Chelmer, through Chelmsford and the Riverside properties in Chelmsford, including the cricket ground Flood Warning Areas.
Access and egress	The main access and egress routes for the site are Wharf Road and the A1099 (High Bridge Road) both of which are at risk from flooding.

Climate Change

Climate change allowances for '2080s'

River Basin District	Central	Higher Central	Upper End
Anglian	25%	35%	65%
% of site at risk	94%	95%	95%

Implications for the site	The risk to the site is already high in the present day; climate change modelling does not show a significant increase in the extent of Flood Zone 3 at the site. However, depths, velocities and hazard will increase in the future.

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

Site details	**Site Name**	Former Gas Works, Wharf Road
	Area	3.3 hectares
	Current land use	Brownfield
Requirements for drainage control and impact mitigation	**Broad scale assessment of possible SuDS**	The underlying bedrock geology of the site is Thames Group (London Clay). This may result in poor infiltration capacity in some areas. The suitability of infiltration basins and devices will be dependent on the depth to the water table. The underlying superficial geology for parts of the site is Till. Depending on the proportion of the soil type encountered (e.g. clay, sand, gravel) the suitability of infiltration basins and devices may vary.
	Groundwater Source Protection Zone	The site is not located within a Groundwater Source Protection Zone.
	Historic Landfill Site	There is no historic landfill within the site boundary.
NPPF and planning implications	**Exception Test requirements**	The Sequential Test will need to be passed before the Exception Test is applied. The Exception Test will be required in the following scenarios • If More Vulnerable and Essential Infrastructure is located in FZ3a. • If Highly Vulnerable development is located in FZ2. • If Essential Infrastructure is located in Flood Zone 3b Development will not be permitted in the following scenarios • Highly Vulnerable infrastructure within FZ3a and FZ3b. • More Vulnerable and Less Vulnerable Infrastructure within FZ3b.
	Requirements and guidance for site-specific 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 for any development greater than one hectare in Flood Zone 1. Other sources of flooding should also be considered. • As much of the site is within Flood Zone 3, flood compensation will be required on a level-for-level, volume-for-volume basis for any proposed loss of floodplain. Therefore, land within the vicinity and outside the proposed site will be required for flood compensation. Prospects for effective mitigation would need to be established before taking the site forward. • Consultation with the Local Authority and the Environment Agency should be undertaken at an early stage. • Given the level of risk, single storey buildings and the use of basements should be avoided. • Resilience measures will be required if buildings are placed within the risk areas • Finished floor levels should be set a minimum of 600mm above the 1 in 100-year plus climate change peak flood level. Allocating the ground floor of a building for less vulnerable, non-residential, use is an effective way of raising living space above flood levels.

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

Site details	**Site Name**	Former Gas Works, Wharf Road
	Area	3.3 hectares
	Current land use	Brownfield

		• Safe access and egress will need to be demonstrated; access should be situated 300mm above the design flood level and waterproof construction techniques used.
		• Onsite attenuation schemes would need to be tested against the hydrographs of the River Chelmer 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.
		• 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.

Mapping Information	
Flood Zones	Flood Zones 2 and 3a are based on the Environment Agency's Flood Zone 2 and 3. Flood Zone 3b is based on the 20-year results from the Environment Agency's River Chelmer detailed hydraulic model.
Climate change	The climate change allowances for the '2080's were modelled for the Level 1 SFRA using the Environment Agency's River Chelmer detailed hydraulic model for the purposes of the SFRA.
Surface Water	The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
Depth and velocity mapping	Depth and velocity mapping for the 1 in 100-year event (defended) have been taken from the Environment Agency's River Chelmer detailed hydraulic model.

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

Site details	**Site Name**	Former Royal Mail premises, Victoria Road				
	Area	1.4 hectares				
	Current land use	Brownfield				
Sources of flood risk	**Existing drainage features**	The River Chelmer flows approximately 2.25km away from the eastern boundary.				
	Fluvial	**Proportion of site at risk**				
		FZ3b	**FZ3a**	**FZ2**	**FZ1**	
		0%	0%	70%	30%	
		All but the very north of the site is shown to be in Flood Zone 2.				
	Surface Water	**Proportion of site at risk (RoFfSW)**				
		30-year	**100-year**	**1,000-year**		
		7%	15%	39%		
		Surface water flood risk mapping shows risk is predominantly located in the centre of the site.				
	Reservoir	The site is not at risk of inundation in the event of reservoir failure.				
	Flood history	The site is outside of the Environment Agency's historic flood map.				
Flood risk management infrastructure	**Defences**	**Defence Type**	**Standard of Protection**	**Condition**		
		-	-	-		
		The site is not protected by any known formal flood defences.				
	Residual risk	n/a				
Emergency planning	**Flood warning**	The southern portion of the site falls within the River Wid and Can Flood Alert Area and the River Can and Chelmer, through Chelmsford Flood Warning Area.				
	Access and egress	The main access and egress route for the site is Victoria Road, which is shown to be in Flood Zone 2 along the length of the road passing the site.				
Climate Change	**Climate change allowances for '2080s'**	**River Basin District**		**Central**	**Higher Central**	**Upper End**
		Anglian		25%	35%	65%
	% of site at risk			44%	59%	72%
	Implications for the site	Climate change modelling suggests those areas of the site that currently fall within Flood Zone 2 could become Flood Zone 3 in the future.				

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

Site details	**Site Name**	Former Royal Mail premises, Victoria Road
	Area	1.4 hectares
	Current land use	Brownfield
Requirements for drainage control and impact mitigation	**Broad scale assessment of possible SuDS**	The underlying bedrock geology of the site is Thames Group (London Clay). This may result in poor infiltration capacity in some areas. The suitability of infiltration basins and devices will be dependent on the depth to the water table. The underlying superficial geology for the southern part of the site is Till. Depending on the proportion of the soil type encountered (e.g. clay, sand, gravel) the suitability of infiltration basins and devices may vary.
	Groundwater Source Protection Zone	The site is not located within a Groundwater Source Protection Zone.
	Historic Landfill Site	There is no historic landfill within the site boundary.
NPPF and planning implications	**Exception Test requirements**	The Sequential Test will need to be passed before the Exception Test is applied. The Exception Test will be required if Highly Vulnerable development is in FZ2.

	Requirements and guidance for site-specific Flood Risk Assessment	• At the planning application stage, a site-specific Flood Risk Assessment will be required if any development is located within Flood Zone 2 or for any development greater than one hectare in Flood Zone 1. Other sources of flooding should also be considered.
		• Consultation with the Local Authority and the Environment Agency should be undertaken at an early stage.
		• Buildings should be situated away from the flood risk area.
		• Safe access and egress will need to be demonstrated; access should be situated 300mm above the design flood level and waterproof construction techniques used.
		• Onsite attenuation schemes would need to be tested against the hydrographs of the River Chelmer 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.
		• 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.

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

Site details	**Site Name**	Former Royal Mail premises, Victoria Road
	Area	1.4 hectares
	Current land use	Brownfield

Mapping Information	
Flood Zones	Flood Zones 2 and 3a are based on the Environment Agency's Flood Zone 2 and 3. Flood Zone 3b is based on the 20-year results from the Environment Agency's River Chelmer detailed hydraulic model.
Climate change	The climate change allowances for the '2080's were modelled for the Level 1 SFRA using the Environment Agency's River Chelmer detailed hydraulic model for the purposes of the SFRA.
Surface Water	The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
Depth and velocity mapping	Depth and velocity mapping for the 1 in 100-year event (defended) have been taken from the Environment Agency's River Chelmer detailed hydraulic model.

Mapping

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

Site details	**Site Name**	Garage Site and Land, Medway Close				
	Area	1.3 hectares				
	Current land use	Greenfield				
Sources of flood risk	**Existing drainage features**	One Bridge Brook Chignall flows along the western boundary of the site.				
	Fluvial	**Proportion of site at risk**				
		FZ3b	**FZ3a**	**FZ2**	**FZ1**	
		0%	24%	6%	70%	
		Fluvial flood risk is along the western site boundary, from the One Bridge Brook.				
	Surface Water	**Proportion of site at risk (RoFfSW)**				
		30-year	**100-year**	**1,000-year**		
		38%	61%	90%		
		Surface water flood risk mapping indicates the site is at significant risk from an overland route flowing north east to south west through the site.				
	Reservoir	The site is not at risk of inundation in the event of reservoir failure.				
	Flood history	The site is outside of the Environment Agency's historic flood map.				
Flood risk management infrastructure	**Defences**	**Defence Type**	**Standard of Protection**	**Condition**		
		-	-	-		
		The site is not protected by any known formal flood defences.				
	Residual risk	n/a				
Emergency planning	**Flood warning**	The eastern edge of the site falls within the River Wid and Can Flood Alert Area. It is not covered by any Flood Warning Area.				
	Access and egress	The main access and egress route for the site is the A1060 (Roxwell Road) which is not at risk of fluvial flooding.				
Climate Change	**Climate change allowances for '2080s'**	**River Basin District**	**Central**	**Higher Central**	**Upper End**	
		Anglian	25%	35%	65%	
	% of site at risk	Unknown				
	Implications for the site	Flood Zones in this area are taken from original 2D (Jflow) modelling; therefore, there are no climate change outputs in this area. However, modelling undertaken for the other watercourses around Chelmsford show a general trend of the Upper End allowance extents being broadly similar to the extent of Flood Zone 2 in undefended areas. Therefore, it would be a reasonable assumption that the Upper End allowance would result in a similar flood extent as Flood Zone 2 for the site, affecting the eastern boundary.				

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

Site details	**Site Name**	Garage Site and Land, Medway Close
	Area	1.3 hectares
	Current land use	Greenfield
Requirements for drainage control and impact mitigation	**Broad scale assessment of possible SuDS**	The underlying bedrock geology of the site is Thames Group (London Clay). This may result in poor infiltration capacity in some areas. The suitability of infiltration basins and devices will be dependent on the depth to the water table. The underlying superficial geology for parts of the site is Till. Depending on the proportion of the soil type encountered (e.g. clay, sand, gravel) the suitability of infiltration basins and devices may vary.
	Groundwater Source Protection Zone	The site is not located within a Groundwater Source Protection Zone.
	Historic Landfill Site	There is no historic landfill within the site boundary.
NPPF and planning implications	**Exception Test requirements**	The Sequential Test will need to be passed before the Exception Test is applied. The Exception Test will be required in the following scenarios • If More Vulnerable and Essential Infrastructure is located in FZ3a. • If Highly Vulnerable development is located in FZ2. • If Essential Infrastructure is located in Flood Zone 3b Development will not be permitted in the following scenarios • Highly Vulnerable infrastructure within FZ3a and FZ3b. • More Vulnerable and Less Vulnerable Infrastructure within FZ3b.
	Requirements and guidance for site-specific 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 for any development greater than one hectare in Flood Zone 1. Other sources of flooding should also be considered. • A detailed model of the One Bridge Brook may be required to define Flood Zone 3b, as well as the impact of climate change in the future. • The implication of blockage of the Roxwell Road culvert on flood risk in the site may need to be considered. • Consultation with the Local Authority and the Environment Agency should be undertaken at an early stage. • The sequential approach to site layout should be used to direct buildings towards Flood Zone 1. Resilience measures will be required if buildings are situated in the flood risk area. • Onsite attenuation schemes would need to be tested against the hydrographs of the One Bridge Brook 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.

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

Site details	**Site Name**	Garage Site and Land, Medway Close
	Area	1.3 hectares
	Current land use	Greenfield

		• Assessment for runoff should include allowance for climate change effects.
		• 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.

Mapping Information	
Flood Zones	Flood Zones 2 and 3a are based on the Environment Agency's Flood Zone 2 and 3.
Climate change	There is no detailed model in this area (Flood Zones are from original 2D (Jflow) modelling); therefore, there are no climate change outputs in this area.
Surface Water	The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
Depth and velocity mapping	There is no detailed model in this area (Flood Zones are from original 2D (Jflow) modelling); therefore, there are no depth or velocity outputs in this area.

Mapping

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

Site details	**Site Name**	Great Leighs – Land at Moulsham Hall
	Area	46.67 hectares
	Current land use	Greenfield
Sources of flood risk	**Existing drainage features**	Two unnamed watercourses flow parallel to each other in a generally north-east to south-west direction across the northern half of the site entering along the eastern boundary and exiting along the western boundary. The two watercourses have their confluence immediately prior to a bridge over the Rectory Lane approximately 360m to the west of the site. The unnamed watercourses are tributaries of the River Ter.
	Fluvial	**Proportion of site at risk** **FZ3b**: 3% | **FZ3a**: <1% | **FZ2**: 1% | **FZ1**: 96% No detailed hydraulic models exist for these watercourses, therefore 2D generalised modelling was undertaken. Fluvial flood risk is low for the majority of the site, with only the areas adjacent to the unnamed watercourses that flow across the site showing to be affected. The most northerly watercourse shows a misalignment between the drainage line on the OS mapping and the modelled output; this is because 2D modelling techniques allow water to spread over the topography, and therefore a low point along the bank at the upstream end allowed an adjacent flow route to be activated. Detailed modelling at FRA-stage will help confirm the flood risk from these watercourses.
	Surface Water	**Proportion of site at risk (RoFfSW)** **30-year**: 2% | **100-year**: 2% | **1,000-year**: 6% Isolated pockets of surface water develop in the 30-year event and expand in size in the 100-year and 1,000-year events. The greatest surface water extents on site relate to the channels of the unnamed watercourses and immediately adjacent land. Most of the site however is at very low risk of surface water flooding.
	Reservoir	The site is not at risk of inundation in the event of reservoir failure.
	Flood history	The site is outside of the Environment Agency's historic flood map.
Flood risk management infrastructure	**Defences**	**Defence Type**: - | **Standard of Protection**: - | **Condition**: - The site is not protected by any known formal flood defences.
	Residual risk	n/a
	Flood warning	The site is not covered by the Environment Agency Flood Warning Service.

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

Site details	**Site Name**	Great Leighs – Land at Moulsham Hall			
	Area	46.67 hectares			
	Current land use	Greenfield			
Emergency planning	**Access and egress**	The site is surrounded by numerous roads including: • Dumney Lane • School Lane • A131 • Moulsham Hill Lane In the 1,000-year fluvial event/ Flood Zone 2, all the roads and potential points of access and egress for the site are shown to be outside of the Flood Zone 2 extent. In the 1,000-year surface water event, safe access and egress is shown to still be available via the A131 and Moulsham Hill Lane. However, the impact of surface water on the surrounding road network may limit evacuation beyond the immediate vicinity of the site.			
Climate Change	**Climate change allowances for '2080s'**	**River Basin District**	**Central**	**Higher Central**	**Upper End**
		Anglian	25%	35%	65%
	% of site at risk		4%	4%	4%
	Implications for the site	Extents on the site increase slightly in the climate change events with the 65% Upper End scenario, closely resembling the extents of the current Flood Zone 2.			
Requirements for drainage control and impact mitigation	**Broad scale assessment of possible SuDS**	The underlying bedrock geology of the site is Thames Group (London Clay). This may result in poor infiltration capacity in some areas. The suitability of infiltration basins and devices will be dependent on the depth to the water table. The underlying superficial geology for parts of the site is Till. Depending on the proportion of the soil type encountered (e.g. clay, sand, gravel) the suitability of infiltration basins and devices may vary.			
	Groundwater Source Protection Zone	The site is not located within a Groundwater Source Protection Zone.			
	Historic Landfill Site	There is no historic landfill within the site boundary.			
NPPF and planning implications	**Exception Test requirements**	The Sequential Test will need to be passed before the Exception Test is applied. The Exception Test will be required in the following scenarios • If More Vulnerable and Essential Infrastructure is located in FZ3a. • If Highly Vulnerable development is located in FZ2. • If Essential Infrastructure is located in Flood Zone 3b Development will not be permitted in the following scenarios • Highly Vulnerable infrastructure within FZ3a and FZ3b. • More Vulnerable and Less Vulnerable Infrastructure within FZ3b.			

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

Site details	**Site Name**	Great Leighs – Land at Moulsham Hall
	Area	46.67 hectares
	Current land use	Greenfield

	Requirements and guidance for site-specific Flood Risk Assessment	• At the planning application stage, a site-specific Flood Risk Assessment will be required if any development is located within Flood Zone 2, 3 or for any development greater than one hectare in Flood Zone 1. Other sources of flooding should also be considered.
		• Consultation with the Local Authority and the Environment Agency should be undertaken at an early stage.
		• Buildings should be situated away from the flood risk area.
		• Flood risk at the site should be confirmed by undertaking more detailed hydraulic modelling at the site-specific level, which incorporates channel topographic survey, as part of a Flood Risk Assessment. The generalised 2D modelling provides an indication of flood risk for the purpose of the SFRA.
		• Onsite attenuation schemes would need to be tested against the hydrographs of the River Ter 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.
		• 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.

Mapping Information	
Flood Zones	Flood Zones 2 and 3a are based on Environment Agency's Flood Zone and where no data was available, generalised 2D hydraulic modelling was undertaken to provide Flood Zones 2 and 3a. The SFRA has identified Flood Zone 3b as land which would flood with an annual probability of 1 in 20 years. Flood Zone 3b has been derived from generalised 2D hydraulic modelling, undertaken for this SFRA. Due to the generalised nature of the modelling, defences have not been accounted for and therefore FZ3b mapping shows the 'undefended' scenario.
Climate change	The climate change allowances for the '2080s' epoch were modelled using generalised 2D modelling techniques for the purposes of the SFRA. Due to the generalised nature of the modelling, defences have not been accounted for and therefore mapping shows the 'undefended' scenario. The mapping provides a strategic assessment of climate change risk – developers should undertake detailed modelling of climate change allowances as part of a site-specific FRA.
Surface Water	The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.

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

Site details	**Site Name**	Great Leighs – Land at Moulsham Hall
	Area	46.67 hectares
	Current land use	Greenfield
Depth and velocity mapping		Depth and velocity mapping for the 1 in 100-year event (Flood Zone 3a) has been derived from the generalised 2D modelling. Due to the generalised nature of the modelling, any defences which may be present have not been accounted for and therefore mapping shows the 'undefended' scenario. The mapping provides a strategic assessment of flood depths and velocities; developers should undertake detailed modelling as part of a site-specific FRA.

Mapping

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

Site details	**Site Name**	Land rear of 17-37 Beach's Drive				
	Area	0.67 hectares				
	Current land use	Brownfield				
Sources of flood risk	**Existing drainage features**	The River Can flows 120m to the south of the site in an easterly direction. An unnamed watercourse flows 160m to the west of the site in a southerly direction until its confluence with the River Can.				
	Fluvial	**Proportion of site at risk**				
		FZ3b	**FZ3a**	**FZ2**	**FZ1**	
		0%	91%	5%	4%	
		Fluvial flood risk is high with the vast majority of the site at risk in the 100-year event (Flood Zone 3a), with an additional smaller area also at risk in the 1,000-year event (Flood Zone 2). Only a few small areas around the periphery considered to be at low risk of fluvial flooding (Flood Zone 1). Please note Flood Zones do not take into account flood defences; as such, the flood risk to the site could be less than that shown in the Flood Zones.				
	Surface Water	**Proportion of site at risk (uFMFSW)**				
		30-year	**100-year**	**1,000-year**		
		39%	69%	98%		
		The surface water flood risk to the site is high because the site is situated in a slight topographical depression, resulting in pooling water developing in over a third of the site in the 30-year event. This continues to worsen in the 100-year event and by the 1,000-year event is shown to affect much of the site and is indistinguishable from surface water extents in the valley relating to the River Can.				
	Reservoir	The site is not at risk of inundation in the event of reservoir failure.				
	Flood history	The site is outside of the Environment Agency's historic flood map.				
Flood risk management infrastructure	**Defences**	**Defence Type**	**Standard of Protection**	**Condition**		
		Embankment	100-years	3 (worst condition 5)		
		The site is defended from the River Can by embankment defences situated approximately 80m to the south of the site.				
	Residual risk	In the event of a breach or overtopping of the embankments, flooding from the River Can may inundate the site.				
Emergency planning	**Flood warning**	The majority of the site falls within the River Can and Chelmer, through Chelmsford Flood Warning Area (051FWFEF6C2).				
	Access and egress	The main access and egress for the site is via Beach's Drive to the west of the site. Flood Zones show safe access and egress would be available onto Beach's Drive in the 100-year (FZ3a) and 1,000-year (FZ2) fluvial events. Access and egress for the site is available up to and including the 1,000-year surface water event.				
Climate Change	**Climate change allowances for '2080s'**	**River Basin District**		**Central**	**Higher Central**	**Upper End**
		Anglian		25%	35%	65%
	% of site at risk			98%	99%	99%

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

Site details	**Site Name**	Land rear of 17-37 Beach's Drive
	Area	0.67 hectares
	Current land use	Brownfield
	Implications for the site	Climate change scenarios show almost all of the site inundated in all three scenarios with only a small area along the north-eastern boundary outside of the extents.
Requirements for drainage control and impact mitigation	**Broad scale assessment of possible SuDS**	The underlying bedrock geology of the site is Thames Group (London Clay). This may result in poor infiltration capacity in some areas. The suitability of infiltration basins and devices will be dependent on the depth to the water table. The underlying superficial geology for parts of the site is Till. Depending on the proportion of the soil type encountered (e.g. clay, sand, gravel) the suitability of infiltration basins and devices may vary.
	Groundwater Source Protection Zone	The site is not located within a Groundwater Source Protection Zone.
	Historic Landfill Site	There is no historic landfill within the site boundary.
NPPF and planning implications	**Exception Test requirements**	The Sequential Test will need to be passed before the Exception Test is applied. The Exception Test will be required in the following scenarios • If More Vulnerable and Essential Infrastructure is located in FZ3a. • If Highly Vulnerable development is located in FZ2. Development will not be permitted in the following scenarios • Highly Vulnerable infrastructure within FZ3a.

	Requirements and guidance for site-specific 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 for any development greater than one hectare in Flood Zone 1. Other sources of flooding should also be considered.
		• Consultation with the Local Authority and the Environment Agency should be undertaken at an early stage.
		• The sequential approach to site layout should be used to direct buildings towards Flood Zone 1. Resilience measures will be required if buildings are situated in the flood risk area.
		• Onsite attenuation schemes would need to be tested against the hydrographs of the River Can 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.
		• 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

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

Site details	**Site Name**	Land rear of 17-37 Beach's Drive
	Area	0.67 hectares
	Current land use	Brownfield
		○ Creating space for flooding. • Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

Mapping Information	
Flood Zones	Flood Zones 2 and 3a are based on the Environment Agency's Flood Zone 2 and 3. Flood Zone 3b is based on the 20-year results from the Environment Agency's River Chelmer detailed hydraulic model.
Climate change	The climate change allowances for the '2080's were modelled for the Level 1 SFRA using the Environment Agency's River Chelmer detailed hydraulic model for the purposes of the SFRA.
Surface Water	The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
Depth and velocity mapping	Depth and velocity mapping for the 1 in 100-year event (defended) have been taken from the Environment Agency's River Chelmer detailed hydraulic model.

Mapping

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

Site details	**Site Name**	Lockside, Navigation Road
	Area	2.25 hectares
	Current land use	Brownfield
Sources of flood risk	**Existing drainage features**	The main River Chelmer flows approximately 2km to the south of the site. There is also a branch of the watercourse that is adjacent to the south-west boundary.
	Fluvial	**Proportion of site at risk**

FZ3b	FZ3a	FZ2	FZ1
1%	56%	24%	19%

Flood risk to the site is high with over three quarters of the site in Flood Zones. Areas in Flood Zone 1 are located in the north of the site, away from the watercourse.

Surface Water	**Proportion of site at risk (RoFfSW)**	

30-year	100-year	1,000-year
9%	18%	45%

Just under half the site is at risk from surface water flooding, much of which is in the west and through the centre of the site.

Reservoir	The site is not at risk of inundation in the event of reservoir failure.
Flood history	The south-eastern corner of the site falls within the extent of the Environment Agency's recorded flood outline for 1947.

Flood risk management infrastructure	**Defences**	**Defence Type**	**Standard of Protection**	**Condition**
		-	-	-
		The site is not protected by any known formal flood defences.		
	Residual risk	n/a		
Emergency planning	**Flood warning**	Most of the site falls within the River Wid and Can Flood Alert Area and the River Can and Chelmer, through Chelmsford or the Riverside properties in Chelmsford, including the cricket ground Flood Warning Area.		
	Access and egress	Access and egress is via Byron Road which is unaffected by fluvial flood risk. However, surface water flood risk mapping does show Byron Road to be at risk along its length, predominantly from a 1 in 100-year event and higher.		

Climate Change	**Climate change allowances for '2080s'**	**River Basin District**	**Central**	**Higher Central**	**Upper End**
		Anglian	25%	35%	65%
	% of site at risk		72%	74%	79%
	Implications for the site	Climate change modelling suggests those areas of the site that currently fall within Flood Zone 2 could become Flood Zone 3 in the future.			

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

Site details	**Site Name**	Lockside, Navigation Road
	Area	2.25 hectares
	Current land use	Brownfield
Requirements for drainage control and impact mitigation	**Broad scale assessment of possible SuDS**	The underlying bedrock geology of the site is Thames Group (London Clay). This may result in poor infiltration capacity in some areas. The suitability of infiltration basins and devices will be dependent on the depth to the water table. Detention features may be feasible providing site slopes are <5% at the location of the detention feature. 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.
	Groundwater Source Protection Zone	The site is not located within a Groundwater Source Protection Zone.
	Historic Landfill Site	There is no historic landfill within the site boundary.
NPPF and planning implications	**Exception Test requirements**	The Sequential Test will need to be passed before the Exception Test is applied. The Exception Test will be required in the following scenarios • If More Vulnerable and Essential Infrastructure is located in FZ3a. • If Highly Vulnerable development is located in FZ2. Development will not be permitted in the following scenarios • Highly Vulnerable infrastructure within FZ3a.
	Requirements and guidance for site-specific 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 for any development greater than one hectare in Flood Zone 1. Other sources of flooding should also be considered. • As much of the site is within Flood Zone 3, flood compensation will be required on a level for level, volume for volume basis for any proposed loss of floodplain. Therefore, land within the vicinity and outside the proposed site will be required for flood compensation. Prospects for effective mitigation would need to be established before taking the site forward. • Consultation with the Local Authority and the Environment Agency should be undertaken at an early stage. • Given the level of risk, single storey buildings and the use of basements should be avoided. • Resilience measures will be required if buildings are placed within the risk areas. • Finished floor levels should be set a minimum of 600mm above the 1 in 100-year AEP plus climate change peak flood level. Allocating the ground floor of a building for less vulnerable, non-residential, use is an effective way of raising living space above flood levels.

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

Site details	**Site Name**	Lockside, Navigation Road
	Area	2.25 hectares
	Current land use	Brownfield

		• Onsite attenuation schemes would need to be tested against the hydrographs of the River Chelmer 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.
		• 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.

Mapping Information	
Flood Zones	Flood Zones 2 and 3a are based on the Environment Agency's Flood Zone 2 and 3. Flood Zone 3b is based on the 20-year results from the Environment Agency's River Chelmer detailed hydraulic model.
Climate change	The climate change allowances for the '2080's were modelled for the Level 1 SFRA using the Environment Agency's River Chelmer detailed hydraulic model for the purposes of the SFRA.
Surface Water	The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
Depth and velocity mapping	Depth and velocity mapping for the 1 in 100-year event (defended) have been taken from the Environment Agency's River Chelmer detailed hydraulic model.

Mapping

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

Site details	**Site Name**	Navigation Road				
	Area	0.4 hectares				
	Current land use	Brownfield				
Sources of flood risk	**Existing drainage features**	The River Chelmer flows to the west of the site before turning south east flowing, approximately 90m away from the southern boundary of the site.				
	Fluvial	**Proportion of site at risk**				
		FZ3b	**FZ3a**	**FZ2**	**FZ1**	
		0%	0%	14%	86%	
		Flood risk to the site is relatively low with small areas along the south west and north west boundaries at risk.				
	Surface Water	**Proportion of site at risk (RoFfSW)**				
		30-year	**100-year**	**1,000-year**		
		<1%	<1%	12%		
		Surface water risk to the site is generally low, with a more prominent area in the north east of site at risk in the 1 in 1,000-year event.				
	Reservoir	The site is not at risk of inundation in the event of reservoir failure.				
	Flood history	The site is outside of the Environment Agency's historic flood map.				
Flood risk management infrastructure	**Defences**	**Defence Type**	**Standard of Protection**	**Condition**		
		-	-	-		
		The site is not protected by any known formal flood defences.				
	Residual risk	n/a				
Emergency planning	**Flood warning**	The southern portion of the site falls within the River Wid and Can Flood Alert Area and the River Can and Chelmer, through Chelmsford Flood Warning Area.				
	Access and egress	There are three possible access and egress routes for the site; Navigation Road, Sandringham Place and the A1099. Both Navigation Road and the A1099 are shown to be in Flood Zone 2 and at risk from surface water flooding. Sandringham Place is not at risk from fluvial flooding but is shown to be at risk in a 1 in 1,000-year surface water flooding event.				
Climate Change	**Climate change allowances for '2080s'**	**River Basin District**	**Central**	**Higher Central**	**Upper End**	
		Anglian	25%	35%	65%	
	% of site at risk		0%	1%	12%	
	Implications for the site	Climate change modelling suggests that the area that is currently Flood Zone 2 may become Flood Zone 3 in the future.				

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

Site details	**Site Name**	Navigation Road
	Area	0.4 hectares
	Current land use	Brownfield
Requirements for drainage control and impact mitigation	**Broad scale assessment of possible SuDS**	The underlying bedrock geology of the site is Thames Group (London Clay). This may result in poor infiltration capacity in some areas. The suitability of infiltration basins and devices will be dependent on the depth to the water table. Detention features may be feasible providing site slopes are <5% at the location of the detention feature. 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.
	Groundwater Source Protection Zone	The site is not located within a Groundwater Source Protection Zone.
	Historic Landfill Site	There is no historic landfill within the site boundary.
NPPF and planning implications	**Exception Test requirements**	The Sequential Test will need to be passed before the Exception Test is applied. The Exception Test will be required if Highly Vulnerable development is in FZ2.

	Requirements and guidance for site-specific Flood Risk Assessment	• At the planning application stage, a site-specific Flood Risk Assessment will be required if any development is located within Flood Zone 2 or for any development greater than one hectare in Flood Zone 1. Other sources of flooding should also be considered.
		• Consultation with the Local Authority and the Environment Agency should be undertaken at an early stage.
		• Buildings should be situated away from the flood risk area.
		• Safe access and egress will need to be demonstrated; access should be situated 300mm above the design flood level and waterproof construction techniques used.
		• Onsite attenuation schemes would need to be tested against the hydrographs of the River Chelmer 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.
		• 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.

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

Site details	**Site Name**	Navigation Road
	Area	0.4 hectares
	Current land use	Brownfield

Mapping Information	
Flood Zones	Flood Zones 2 and 3a are based on the Environment Agency's Flood Zone 2 and 3. Flood Zone 3b is based on the 20-year results from the Environment Agency's River Chelmer detailed hydraulic model.
Climate change	The climate change allowances for the '2080's were modelled for the Level 1 SFRA using the Environment Agency's River Chelmer detailed hydraulic model for the purposes of the SFRA.
Surface Water	The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
Depth and velocity mapping	Depth and velocity mapping for the 1 in 100-year event (defended) have been taken from the Environment Agency's River Chelmer detailed hydraulic model.

Mapping

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

Site details	**Site Name**	North East Chelmsford
	Area	373.13 hectares
	Current land use	Predominantly Greenfield
Sources of flood risk	**Existing drainage features**	• An unnamed watercourse flows through the site in a generally south-easterly direction from its source in the centre of the site, exiting along the southern boundary before its confluence with Boreham Brook, approximately 1.23km to the south. • An unnamed watercourse with its source in the north west of the site flows in a westerly direction towards the site's western boundary, flowing to its confluence with the River Chelmer approximately 700m to the west of the site, via a culvert under the A130 and golf course. • A very small reach of an unnamed watercourse flows along the very south-eastern boundary line, shortly downstream of which it flows into a culvert discharging into a small pond. Downstream of this, it flows towards the Boreham Brook approximately 680m to the south of the site. • Numerous ponds within the site boundary
	Fluvial	**Proportion of site at risk**

FZ3b	FZ3a	FZ2	FZ1
1%	<1%	<1%	99%

No detailed hydraulic modelling is available, therefore 2D generalised modelling was undertaken. Fluvial flood risk is deemed low, with a small flood extent of FZ2 and 3 running north to south in the immediate vicinity of the unnamed watercourse which flows through the centre of site.
The small drain shown on the OS mapping in the north-west corner of the site and another in the south east corner were not well defined in the ground level data and was unable to be modelled.

Surface Water — **Proportion of site at risk (RoFfSW)**

30-year	100-year	1,000-year
1%	3%	8%

Isolated pockets of surface water develop in the 30-year event. These continue to increase in number and size in the 100-year and 1,000-year events. Most of the site however is at very low risk of surface water flooding.

	Reservoir	The site is not at risk of inundation in the event of reservoir failure.
	Flood history	The site is outside of the Environment Agency's historic flood map.
Flood risk management infrastructure	**Defences**	**Defence Type** | **Standard of Protection** | **Condition**

-	-	-

The site is not protected by any known formal flood defences.

	Residual risk	n/a
	Flood warning	The site is not covered by the Environment Agency Flood Warning Service.

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

Site details	**Site Name**	North East Chelmsford			
	Area	373.13 hectares			
	Current land use	Predominantly Greenfield			
Emergency planning	**Access and egress**	The site is surrounded by numerous roads including: • Belsteads Farm Lane • Pratts Farm Lane • Essex Regiment way • Wheeler's Hill • Leighs Road • Domsey Lane, and • Generals Lane In the 1,000-year fluvial event/ Flood Zone 2, all the roads and potential points of access and egress for the site are shown to be outside of the Flood Zone 2 extent. In the 1,000-year surface water event safe access and egress is shown to still be available via Wheeler's Hill, Domsey Lane and Pratts Farm Lane. However, the impact of surface water on the surrounding road network may limit evacuation beyond the immediate vicinity of the site.			
Climate Change	**Climate change allowances for '2080s'**	**River Basin District**	**Central**	**Higher Central**	**Upper End**
		Anglian	25%	35%	65%
	% of site at risk		1%	1%	1%
	Implications for the site	Extents on the site increase slightly in the climate change events with the 65% Upper End scenario, closely resembling the extents of the current Flood Zone 2.			
Requirements for drainage control and impact mitigation	**Broad scale assessment of possible SuDS**	The underlying bedrock geology of the site is Thames Group (London Clay). This may result in poor infiltration capacity in some areas. The suitability of infiltration basins and devices will be dependent on the depth to the water table. The underlying superficial geology for parts of the site is Till. Depending on the proportion of the soil type encountered (e.g. clay, sand, gravel) the suitability of infiltration basins and devices may vary.			
	Groundwater Source Protection Zone	The site is not located within a Groundwater Source Protection Zone.			
	Historic Landfill Site	There are two historic landfill sites within the site boundary. These are Belsteads Farm and Back Lane, and they are both located in the south west of the site. Where landfill is present, infiltration SuDS techniques will be unsuitable and alternative SuDS systems utilised in these areas should incorporate a liner to reduce the risk of contamination.			

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

Site details	**Site Name**	North East Chelmsford
	Area	373.13 hectares
	Current land use	Predominantly Greenfield
NPPF and planning implications	**Exception Test requirements**	The Sequential Test will need to be passed before the Exception Test is applied. The Exception Test will be required in the following scenarios • If More Vulnerable and Essential Infrastructure is located in FZ3a. • If Highly Vulnerable development is located in FZ2. • If Essential Infrastructure is located in Flood Zone 3b Development will not be permitted in the following scenarios • Highly Vulnerable infrastructure within FZ3a and FZ3b. More Vulnerable and Less Vulnerable Infrastructure within FZ3b.

	Requirements and guidance for site-specific Flood Risk Assessment	• At the planning application stage, a site-specific Flood Risk Assessment will be required if any development is located within Flood Zone 2, 3 or for any development greater than one hectare in Flood Zone 1. Other sources of flooding should also be considered.
		• Consultation with the Local Authority and the Environment Agency should be undertaken at an early stage.
		• Buildings should be situated away from the flood risk area.
		• Detailed hydraulic modelling utilising channel topographic survey may need to be undertaken on the unnamed watercourses that flow through the site, in order to confirm flood risk.
		• The flood risk from other waterbodies on site (i.e. ponds) should also be considered.
		• Onsite attenuation schemes would need to be tested against the hydrographs of the Boreham Brook and River Chelmer 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.
		• 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.

Mapping Information		
Flood Zones		Flood Zones 2 and 3a are based on Environment Agency's Flood Zone and where no data was available generalised 2D hydraulic modelling was undertaken to provide Flood Zones 2 and 3a. The SFRA has identified Flood Zone 3b as land which would flood with an annual probability of 1 in 20 years. Flood Zone 3b has been derived from generalised 2D hydraulic modelling, undertaken for this SFRA. Due to the generalised nature of the modelling, defences have not been accounted for and therefore mapping shows the 'undefended' scenario.

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

Site details	**Site Name**	North East Chelmsford
	Area	373.13 hectares
	Current land use	Predominantly Greenfield
Climate change		The climate change allowances for the '2080's epoch were modelled using generalised 2D modelling techniques for the purposes of the SFRA. Due to the generalised nature of the modelling, defences have not been accounted for and therefore mapping shows the 'undefended' scenario. The mapping provides a strategic assessment of climate change risk – developers should undertake detailed modelling of climate change allowances as part of a site-specific FRA.
Surface Water		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
Depth and velocity mapping		Depth and velocity mapping for the 1 in 100-year event (Flood Zone 3a) has been derived from the generalised 2D modelling. Due to the generalised nature of the modelling, any defences which may be present have not been accounted for and therefore mapping shows the 'undefended' scenario. The mapping provides a strategic assessment of flood depths and velocities; developers should undertake detailed modelling as part of a site-specific FRA.

Mapping

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

Site details	**Site Name**	North of South Woodham Ferrers
	Area	121.4 hectares
	Current land use	Greenfield
Sources of flood risk	**Existing drainage features**	The Fen Brook flows north to south through the western portion of the site. It is classed as Main River along this reach. A branch of the Fen Brook flows north east to south west through the site. It is classed as Ordinary Watercourse along much of its length, becoming Main River downstream of the B1418.
	Fluvial	**Proportion of site at risk**

FZ3b	FZ3a	FZ2	FZ1
0%	<1%	<1%	99%

Flood risk from the Fen Brook is relatively small; water only gets out of bank in the 100-year event (Flood Zone 3a) but the extent only increases slightly in the 1,000-year event (Flood Zone 2). The Fen Brook flows under Burnham Road at the site boundary; blockage of this culvert could increase levels upstream potentially resulting in overtopping of the banks and flooding of the site.

Surface Water

Proportion of site at risk (RoFfSW)

30-year	100-year	1,000-year
9%	16%	35%

Surface water flood risk largely corresponds to the river corridors, with a few small areas of ponding.

Reservoir	The site is not at risk of inundation in the event of reservoir failure.
Flood history	South Woodham Ferrers flooded in 1953; however, the site is outside of the historic flood map extent for this event. There are no known past flooding events affecting the site.

Flood risk management infrastructure — **Defences**

Defence Type	Standard of Protection	Condition
-	-	-

The site is not protected by any known formal flood defences.

Residual risk	n/a
Emergency planning — **Flood warning**	The site is outside of the Environment Agency's Flood Warning Service coverage.
Access and egress	There are several options for access and egress for the site including Burnham Road, Willow Grove and the B1418. All these routes are unaffected by fluvial flooding. However, surface water mapping shows the routes are at risk with depths ranging from below 300mm to 900mm.

Climate Change — **Climate change allowances for '2080s'**

River Basin District	Central	Higher Central	Upper End
Anglian	25%	35%	65%

% of site at risk	negligible
Implications for the site	Modelling shows the increase in fluvial flood risk due to climate change is negligible, with increased flows remaining in bank.

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

Site details	**Site Name**	North of South Woodham Ferrers
	Area	121.4 hectares
	Current land use	Greenfield
Requirements for drainage control and impact mitigation	**Broad scale assessment of possible SuDS**	The underlying geology of the site is Thames Group (London Clay). This may result in poor infiltration capacity in some areas. The suitability of infiltration basins and devices will be dependent on the depth to the water table. Detention features may be feasible providing site slopes are <5% at the location of the detention feature. 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.
	Groundwater Source Protection Zone	The site is not located within a Groundwater Source Protection Zone.
	Historic Landfill Site	There is no historic landfill within the site boundary.
NPPF and planning implications	**Exception Test requirements**	The Sequential Test will need to be passed before the Exception Test is applied. The Exception Test will be required if Highly Vulnerable development is located in FZ2.
	Requirements and guidance for site-specific Flood Risk Assessment	• At the planning application stage, a site-specific Flood Risk Assessment will be required if any development is located within Flood Zone 2 or for any development greater than one hectare in Flood Zone 1. Other sources of flooding should also be considered. • Investigation of the flood risk from the branch of the Fen Brook will be required as part of a site-specific Flood Risk Assessment. • The implication of blockage of the Burnham Road culvert on flood risk in the site should be considered. • Climate change modelling should also be undertaken for the branch of the Fen Brook using the relevant allowances for the type of development and level of risk. • Consultation with the Local Authority and the Environment Agency should be undertaken at an early stage. • Resilience measures will be required if buildings are situated in the flood risk area. • Onsite attenuation schemes would need to be tested against the hydrographs of the Fen Brook and branch of the Fen Brook 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. • New development must seek opportunities to reduce overall level of flood risk at the site, for example by: ○ Reducing volume and rate of runoff

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

Site details	**Site Name**	North of South Woodham Ferrers
	Area	121.4 hectares
	Current land use	Greenfield
		○ 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.

Mapping Information	
Flood Zones	Flood Zones 2 and 3a are based on the Environment Agency's Flood Zone 2 and 3. Flood Zone 3b is based on the 20-year results from the Environment Agency's Rettendon Brook detailed hydraulic model.
Climate change	The upper end climate change allowances for the '2080's were modelled using the Environment Agency's Rettendon Brook detailed hydraulic model for the purposes of the SFRA.
Surface Water	The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
Depth and velocity mapping	Depth and velocity mapping is not available for the Fen Brook as the detailed model is a 1D only model.

Mapping

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

Site details	**Site Name**	Peninsula Wharf Road				
	Area	4.1 hectares				
	Current land use	Brownfield				
Sources of flood risk	**Existing drainage features**	The River Chelmer flows along the southern boundary of the site. The River Can has its confluence with the River Chelmer just upstream of the site. There is potential for interaction between these two watercourses that could result in flooding to the site; the risk could come from both or just one of the watercourses. Springfield Lock is located at the eastern boundary of the site.				
	Fluvial	**Proportion of site at risk**				
		FZ3b	**FZ3a**	**FZ2**	**FZ1**	
		12%	27%	61%	0%	
		Flood risk to the site is high. FZ3b is confined to the southern boundary, whilst Flood Zone 3a is mainly located in the north-west corner of the site.				
	Surface Water	**Proportion of site at risk (RoFfSW)**				
		30-year	**100-year**	**1,000-year**		
		<1%	3%	21%		
		Surface water flood risk is low for events of 1 in 100-year and under. In the 1 in 1,000-year event, just under a quarter of the site is at risk. Most of the risk is along the site boundaries.				
	Reservoir	The site is not at risk of inundation in the event of reservoir failure.				
	Flood history	The entire site falls within the 1947 flood extent in the Environment Agency's Historic Flood Map.				
Flood risk management infrastructure	**Defences**	**Defence Type**	**Standard of Protection**	**Condition**		
		-	-	-		
		The site is not protected by any known formal flood defences.				
	Residual risk	n/a				
Emergency planning	**Flood warning**	Most the site falls within the River Wid and Can Flood Alert Area and the River Can and Chelmer, through Chelmsford or the Riverside properties in Chelmsford, including the cricket ground Flood Warning Areas.				
	Access and egress	The main access and egress route for the site is Wharf Road which is at risk from flooding.				
Climate Change	**Climate change allowances for '2080s'**	**River Basin District**		**Central**	**Higher Central**	**Upper End**
		Anglian		25%	35%	65%
	% of site at risk			74%	77%	81%
	Implications for the site	Climate change modelling suggests a large proportion of the site that is currently in Flood Zone 2 will become Flood Zone 3a in the future. Only a small dry island in the south east of the site is shown to remain unaffected by flooding.				

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

Site details	**Site Name**	Peninsula Wharf Road
	Area	4.1 hectares
	Current land use	Brownfield
Requirements for drainage control and impact mitigation	**Broad scale assessment of possible SuDS**	The underlying bedrock geology of the site is Thames Group (London Clay). This may result in poor infiltration capacity in some areas. The suitability of infiltration basins and devices will be dependent on the depth to the water table. The underlying superficial geology for a small area to the south of the site is Till. Depending on the proportion of the soil type encountered (e.g. clay, sand, gravel) the suitability of infiltration basins and devices may vary.
	Groundwater Source Protection Zone	The site is not located within a Groundwater Source Protection Zone.
	Historic Landfill Site	There is no historic landfill within the site boundary.
NPPF and planning implications	**Exception Test requirements**	The Sequential Test will need to be passed before the Exception Test is applied. The Exception Test will be required in the following scenarios • If More Vulnerable and Essential Infrastructure is located in FZ3a. • If Highly Vulnerable development is located in FZ2. • If Essential Infrastructure is located in Flood Zone 3b Development will not be permitted in the following scenarios • Highly Vulnerable infrastructure within FZ3a and FZ3b. • More Vulnerable and Less Vulnerable Infrastructure within FZ3b.
	Requirements and guidance for site-specific 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 for any development greater than one hectare in Flood Zone 1. Other sources of flooding should also be considered. • As a large proportion of the site is within Flood Zone 3, flood compensation will be required on a level-for-level, volume-for-volume basis for any proposed loss of floodplain. Therefore, land within the vicinity and outside the proposed site will be required for flood compensation. Prospects for effective mitigation would need to be established before taking the site forward. • Consultation with the Local Authority and the Environment Agency should be undertaken at an early stage. • Given the level of risk, single storey buildings and the use of basements should be avoided. • Resilience measures will be required if buildings are placed within the risk areas. • Finished floor levels should be set a minimum of 600mm above the 1 in 100-year plus climate change peak flood level. Allocating the ground floor of a building for less vulnerable, non-residential, use is an effective way of raising living space above flood levels.

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

Site details	**Site Name**	Peninsula Wharf Road
	Area	4.1 hectares
	Current land use	Brownfield

		• Safe access and egress will need to be demonstrated; access should be situated 300mm above the design flood level and waterproof construction techniques used.
		• Onsite attenuation schemes would need to be tested against the hydrographs of the River Chelmer 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.
		• 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.

Mapping Information	
Flood Zones	Flood Zones 2 and 3a are based on the Environment Agency's Flood Zone 2 and 3. Flood Zone 3b is based on the 20-year results from the Environment Agency's River Chelmer detailed hydraulic model.
Climate change	The climate change allowances for the '2080's were modelled for the Level 1 SFRA using the Environment Agency's River Chelmer detailed hydraulic model for the purposes of the SFRA.
Surface Water	The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
Depth and velocity mapping	Depth and velocity mapping for the 1 in 100-year event (defended) have been taken from the Environment Agency's River Chelmer detailed hydraulic model.

Mapping

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

Site details	**Site Name**	Rivermead, Chelmsford
	Area	1.6 hectares
	Current land use	Brownfield
Sources of flood risk	**Existing drainage features**	The site is surrounded by the River Chelmer. There is also an offshoot from the River Chelmer that crosses through the centre of the site.
	Fluvial	**Proportion of site at risk**

FZ3b	FZ3a	FZ2	FZ1
6%	42%	52%	0%

The site is at significant risk of flooding.
Although the site is shown to be in Flood Zone 3b, this may be the result of model resolution / grid size and the watercourse may remain in bank.

Surface Water	**Proportion of site at risk (RoFfSW)**	
30-year	**100-year**	**1,000-year**
0%	3%	8%

Surface water flood risk to the site is relatively low, mainly located along the site boundaries.

Reservoir	The site is not at risk of inundation in the event of reservoir failure.
Flood history	The entire site falls within the 1947 flood extent in the Environment Agency's Historic Flood Map.

Flood risk management infrastructure	**Defences**	**Defence Type**	**Standard of Protection**	**Condition**
		-	-	-

The site is not protected by any known formal flood defences.

Residual risk	n/a
Emergency planning	**Flood warning**	The site is covered by the Upper River Chelmer Flood Alert Area and the River Chelmer from Great Dunmow to Rivermead campus and Industrial Estate in Chelmsford Flood Warning Area.
	Access and egress	The main access and egress route for the site is along Bishop's Hall Lane. In the immediate vicinity of the site this route is shown to be at risk of flooding.

Climate Change	**Climate change allowances for '2080s'**	**River Basin District**	**Central**	**Higher Central**	**Upper End**
		Anglian	25%	35%	65%
	% of site at risk		61%	81%	98%
	Implications for the site	Climate change modelling shows a significant impact on the level of risk at the site with 61% to 98% of the site in Flood Zone 3 compared to the present day (42%).			

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

Site details	**Site Name**	Rivermead, Chelmsford
	Area	1.6 hectares
	Current land use	Brownfield
Requirements for drainage control and impact mitigation	**Broad scale assessment of possible SuDS**	The underlying bedrock geology of the site is Thames Group (London Clay). This may result in poor infiltration capacity in some areas. The suitability of infiltration basins and devices will be dependent on the depth to the water table. The underlying superficial geology for parts of the site is Till. Depending on the proportion of the soil type encountered (e.g. clay, sand, gravel) the suitability of infiltration basins and devices may vary.
	Groundwater Source Protection Zone	The site is not located within a Groundwater Source Protection Zone.
	Historic Landfill Site	There is no historic landfill within the site boundary.
NPPF and planning implications	**Exception Test requirements**	The Sequential Test will need to be passed before the Exception Test is applied. The Exception Test will be required in the following scenarios • If More Vulnerable and Essential Infrastructure is located in FZ3a. • If Highly Vulnerable development is located in FZ2. • If Essential Infrastructure is located in Flood Zone 3b Development will not be permitted in the following scenarios • Highly Vulnerable infrastructure within FZ3a and FZ3b. • More Vulnerable and Less Vulnerable Infrastructure within FZ3b.
	Requirements and guidance for site-specific 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 for any development greater than one hectare in Flood Zone 1. Other sources of flooding should also be considered. • Given a large area of the site is within Flood Zone 3. floodplain compensation will be required on a level-for-level, volume-for-volume basis for any proposed loss of floodplain. Therefore, land within the vicinity and outside the proposed site will be required for flood compensation. Prospects for effective mitigation would need to be established before taking the site forward. • Consultation with the Local Authority and the Environment Agency should be undertaken at an early stage. • Given the level of risk, single storey buildings and the use of basements should be avoided. • Resilience measures will be required if buildings are placed within the risk areas. • Finished floor levels should be set a minimum of 600mm above the 1 in 100-year plus climate change peak flood level. Allocating the ground floor of a building for less vulnerable, non-residential, use is an effective way of raising living space above flood levels.

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

Site details	**Site Name**	Rivermead, Chelmsford
	Area	1.6 hectares
	Current land use	Brownfield

		• Safe access and egress will need to be demonstrated; access should be situated 300mm above the design flood level and waterproof construction techniques used.
		• Onsite attenuation schemes would need to be tested against the hydrographs of the River Chelmer 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.
		• 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.

Mapping Information	
Flood Zones	Flood Zones 2 and 3a are based on the Environment Agency's Flood Zone 2 and 3. Flood Zone 3b is based on the 20-year results from the Environment Agency's River Chelmer detailed hydraulic model.
Climate change	The climate change allowances for the '2080's were modelled for the Level 1 SFRA using the Environment Agency's River Chelmer detailed hydraulic model for the purposes of the SFRA.
Surface Water	The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
Depth and velocity mapping	Depth and velocity mapping for the 1 in 100-year event (defended) have been taken from the Environment Agency's River Chelmer detailed hydraulic model.

Mapping

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

Site details	**Site Name**	Riverside Ice and Leisure			
	Area	1.1 hectares			
	Current land use	Brownfield			
Sources of flood risk	**Existing drainage features**	The River Chelmer flows north to south along the south-east boundary of the site.			
	Fluvial	**Proportion of site at risk**			
		FZ3b	**FZ3a**	**FZ2**	**FZ1**
		<1%	51%	49%	0%
		The fluvial flood risk to the site is high with all the site within Flood Zones 3 or 2.			
	Surface Water	**Proportion of site at risk (RoFfSW)**			
		30-year	**100-year**	**1,000-year**	
		23%	42%	59%	
		Surface water flood risk to the site is high, with over half the site at risk in the 1 in 1,000-year event; this risk is predominantly located in the southern half of the site.			
	Reservoir	The site is not at risk of inundation in the event of reservoir failure.			
	Flood history	The south-western boundary is adjacent to the extent of the Environment Agency's recorded flood outline for 1947.			
Flood risk management infrastructure	**Defences**	**Defence Type**	**Standard of Protection**	**Condition**	
		-	-	-	
		The site is not protected by any known formal flood defences.			
	Residual risk	n/a			
Emergency planning	**Flood warning**	The site falls within the River Wid and Can Flood Alert Area and the River Can and Chelmer, through Chelmsford or the Riverside properties in Chelmsford, including the cricket ground Flood Warning Area.			
	Access and egress	The only access and egress route for the site is along Waterloo Lane which is shown to be in the Flood Zones. The road is also shown to be at risk from surface water flooding in events as low as the 1 in 30-year event. This suggests there may be potential access and egress issues in time of flood.			
Climate Change	**Climate change allowances for '2080s'**	**River Basin District**	**Central**	**Higher Central**	**Upper End**
		Anglian	25%	35%	65%
	% of site at risk		71%	73%	76%
	Implications for the site	Climate change modelling suggests the extent of Flood Zone 3 will increase in the future. Although the extent does not increase significantly, it is likely that the depth, velocity and hazard of the flooding will increase.			

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

Site details	**Site Name**	Riverside Ice and Leisure
	Area	1.1 hectares
	Current land use	Brownfield
Requirements for drainage control and impact mitigation	**Broad scale assessment of possible SuDS**	The underlying bedrock geology of the site is Thames Group (London Clay). This may result in poor infiltration capacity in some areas. The suitability of infiltration basins and devices will be dependent on the depth to the water table. The underlying superficial geology for parts of the site is Till. Depending on the proportion of the soil type encountered (e.g. clay, sand, gravel) the suitability of infiltration basins and devices may vary.
	Groundwater Source Protection Zone	The site is not located within a Groundwater Source Protection Zone.
	Historic Landfill Site	There is no historic landfill within the site boundary.
NPPF and planning implications	**Exception Test requirements**	The Sequential Test will need to be passed before the Exception Test is applied. The Exception Test will be required in the following scenarios • If More Vulnerable and Essential Infrastructure is located in FZ3a. • If Highly Vulnerable development is located in FZ2. Development will not be permitted in the following scenarios • Highly Vulnerable infrastructure within FZ3a.
	Requirements and guidance for site-specific 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. Other sources of flooding should also be considered. • As much of the site is within Flood Zone 3 flood compensation will be required on a level-for-level, volume-for-volume basis for any proposed loss of floodplain. Therefore, land within the vicinity and outside the proposed site will be required for flood compensation. Prospects for effective mitigation would need to be established before taking the site forward • Consultation with the Local Authority and the Environment Agency should be undertaken at an early stage. • Given the level of risk, single storey buildings and the use of basements should be avoided. • Resilience measures will be required if buildings are placed within the risk areas. • Finished floor levels should be set a minimum of 600mm above the 1 in 100-year plus climate change peak flood level. Allocating the ground floor of a building for less vulnerable, non-residential, use is an effective way of raising living space above flood levels. • Safe access and egress will need to be demonstrated; access should be situated 300mm above the design flood level and waterproof construction techniques used.

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

Site details	**Site Name**	Riverside Ice and Leisure
	Area	1.1 hectares
	Current land use	Brownfield

		• Onsite attenuation schemes would need to be tested against the hydrographs of the River Chelmer 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.
		• 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.

Mapping Information	
Flood Zones	Flood Zones 2 and 3a are based on the Environment Agency's Flood Zone 2 and 3. Flood Zone 3b is based on the 20-year results from the Environment Agency's River Chelmer detailed hydraulic model.
Climate change	The climate change allowances for the '2080's were modelled for the Level 1 SFRA using the Environment Agency's River Chelmer detailed hydraulic model for the purposes of the SFRA.
Surface Water	The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
Depth and velocity mapping	Depth and velocity mapping for the 1 in 100-year event (defended) have been taken from the Environment Agency's River Chelmer detailed hydraulic model.

Mapping

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

Site details	**Site Name**	Travis Perkins Navigation Road
	Area	0.9 hectares
	Current land use	Brownfield
Sources of flood risk	**Existing drainage features**	The main River Chelmer flows approximately 2km to the south of the site. There is also a branch of the watercourse that is adjacent to the south west boundary.
	Fluvial	**Proportion of site at risk**

FZ3b	**FZ3a**	**FZ2**	**FZ1**
1%	18%	64%	17%

Fluvial flood risk to the site is high, with only the north-east corner of the site outside of the Flood Zones.

	Surface Water	**Proportion of site at risk (RoFfSW)**		
		30-year	**100-year**	**1,000-year**
		2%	8%	29%

Surface water flood risk consists of a flow path through the centre of the site. Much of the risk is from a 1 in 1,000-year event.

	Reservoir	The site is not at risk of inundation in the event of reservoir failure.
	Flood history	The south-western boundary borders the extent of the Environment Agency's recorded flood outline for 1947.

		Defence Type	**Standard of Protection**	**Condition**
Flood risk management infrastructure	**Defences**	-	-	-

The site is not protected by any known formal flood defences.

	Residual risk	n/a
Emergency planning	**Flood warning**	Most the site falls within the River Wid and Can Flood Alert Area and the River Can and Chelmer, through Chelmsford or the Riverside properties in Chelmsford, including the cricket ground Flood Warning Areas.
	Access and egress	The main access and egress route for the site is Navigation Road; this road is at risk of flooding between the site and the A1099. However, safe access and egress can be provided in the opposite direction towards Byron Road.

		River Basin District	**Central**	**Higher Central**	**Upper End**
Climate Change	**Climate change allowances for '2080s'**	Anglian	25%	35%	65%
	% of site at risk		4%	55%	80%
	Implications for the site	Climate change modelling suggests those areas of the site that currently fall within Flood Zone 2 could become Flood Zone 3 in the future.			

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

Site details	**Site Name**	Travis Perkins Navigation Road
	Area	0.9 hectares
	Current land use	Brownfield
Requirements for drainage control and impact mitigation	**Broad scale assessment of possible SuDS**	The underlying bedrock geology of the site is Thames Group (London Clay). This may result in poor infiltration capacity in some areas. The suitability of infiltration basins and devices will be dependent on the depth to the water table. Detention features may be feasible providing site slopes are <5% at the location of the detention feature. 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.
	Groundwater Source Protection Zone	The site is not located within a Groundwater Source Protection Zone.
	Historic Landfill Site	There is no historic landfill within the site boundary.
NPPF and planning implications	**Exception Test requirements**	The Sequential Test will need to be passed before the Exception Test is applied. The Exception Test will be required in the following scenarios • If More Vulnerable and Essential Infrastructure is located in FZ3a. • If Highly Vulnerable development is located in FZ2. • If Essential Infrastructure is located in Flood Zone 3b Development will not be permitted in the following scenarios • Highly Vulnerable infrastructure within FZ3a and FZ3b. • More Vulnerable and Less Vulnerable Infrastructure within FZ3b.
	Requirements and guidance for site-specific 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 for any development greater than one hectare in Flood Zone 1. Other sources of flooding should also be considered. • Consultation with the Local Authority and the Environment Agency should be undertaken at an early stage. • Given the level of risk, single storey buildings and the use of basements should be avoided. • Resilience measures will be required if buildings are placed within the risk areas. • Finished floor levels should be set a minimum of 600mm above the 1 in 100-year plus climate change peak flood level. Allocating the ground floor of a building for less vulnerable, non-residential, use is an effective way of raising living space above flood levels. • Safe access and egress will need to be demonstrated; access should be situated 300mm above the design flood level and waterproof construction techniques used. • Onsite attenuation schemes would need to be tested against the hydrographs of the River Chelmer to ensure flows are not exacerbated downstream within the catchment.

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

Site details	**Site Name**	Travis Perkins Navigation Road
	Area	0.9 hectares
	Current land use	Brownfield

		• 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.
		• 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.

Mapping Information	
Flood Zones	Flood Zones 2 and 3a are based on the Environment Agency's Flood Zone 2 and 3. Flood Zone 3b is based on the 20-year results from the Environment Agency's River Chelmer detailed hydraulic model.
Climate change	The climate change allowances for the '2080's were modelled for the Level 1 SFRA using the Environment Agency's River Chelmer detailed hydraulic model for the purposes of the SFRA.
Surface Water	The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
Depth and velocity mapping	Depth and velocity mapping for the 1 in 100-year event (defended) have been taken from the Environment Agency's River Chelmer detailed hydraulic model.

Mapping

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

Site details	**Site Name**	West Chelmsford
	Area	45.6 hectares
	Current land use	Greenfield
Sources of flood risk	**Existing drainage features**	One Bridge Brook, Chignall flows along the eastern boundary of the site.
	Fluvial	**Proportion of site at risk**

FZ3b	FZ3a	FZ2	FZ1
0%	4%	1%	95%

Fluvial flood risk is low, with a small area along the eastern site boundary in Flood Zones 2 and 3. There is only a small difference between the Flood Zone 3 and 2 extents suggesting a confined floodplain in this area.

Surface Water

Proportion of site at risk (uFMFSW)

30-year	100-year	1,000-year
1%	1%	4%

Surface water flood risk is low, mainly confined to the eastern site boundary. There is a small flow path from the centre of the site flowing eastwards to the Brook. There is also a small area of ponding in the south-west corner.

	Reservoir	The site is not at risk of inundation in the event of reservoir failure.
	Flood history	The site is outside of the Environment Agency's historic flood map.

Flood risk management infrastructure

Defences

Defence Type	Standard of Protection	Condition
-	-	-

The site is not protected by any known formal flood defences.

	Residual risk	n/a
Emergency planning	**Flood warning**	The eastern edge of the site falls within the River Wid and Can Flood Alert Area. It is not covered by any Flood Warning Area.
	Access and egress	The main access and egress for the site is Roxwell Road. Flood Zones show the road at risk in Flood Zone 2 and 3; however, the Flood Zones in these areas are from 2D modelling and are unlikely to accurately represent the flow through the culverts under the road.

Climate Change

Climate change allowances for '2080s'

River Basin District	Central	Higher Central	Upper End
Anglian	25%	35%	65%

% of site at risk	Unknown
Implications for the site	Flood Zones in this area are original 2D (Jflow) modelling; therefore, there are no climate change outputs in this area. However, modelling undertaken for the other watercourses around Chelmsford show a general trend of the Upper End allowance extents being broadly similar to the extent of Flood Zone 2 in undefended areas. Therefore, it would be a reasonable assumption that the Upper End allowance would result in a similar flood extent as Flood Zone 2 for the site, affected the eastern boundary.

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

Site details	**Site Name**	West Chelmsford
	Area	45.6 hectares
	Current land use	Greenfield
Requirements for drainage control and impact mitigation	**Broad scale assessment of possible SuDS**	The underlying bedrock geology of the site is Thames Group (London Clay). This may result in poor infiltration capacity in some areas. The suitability of infiltration basins and devices will be dependent on the depth to the water table. The underlying superficial geology for parts of the site is Till. Depending on the proportion of the soil type encountered (e.g. clay, sand, gravel) the suitability of infiltration basins and devices may vary.
	Groundwater Source Protection Zone	The site is not located within a Groundwater Source Protection Zone.
	Historic Landfill Site	There is no historic landfill within the site boundary.
NPPF and planning implications	**Exception Test requirements**	The Sequential Test will need to be passed before the Exception Test is applied. The Exception Test will be required in the following scenarios • If More Vulnerable and Essential Infrastructure is located in FZ3a. • If Highly Vulnerable development is located in FZ2. • If Essential Infrastructure is located in Flood Zone 3b Development will not be permitted in the following scenarios • Highly Vulnerable infrastructure within FZ3a and FZ3b. • More Vulnerable and Less Vulnerable Infrastructure within FZ3b.
	Requirements and guidance for site-specific 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 for any development greater than one hectare in Flood Zone 1. Other sources of flooding should also be considered. • A detailed model of the One Bridge Brook may be required to define Flood Zone 3b, as well as the impact of climate change in the future. • The implication of blockage of the Roxwell Road culvert on flood risk in the site may need to be considered. • Consultation with the Local Authority and the Environment Agency should be undertaken at an early stage. • The sequential approach to site layout should be used to direct buildings towards Flood Zone 1. Resilience measures will be required if buildings are situated in the flood risk area. • Onsite attenuation schemes would need to be tested against the hydrographs of the One Bridge Brook 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.

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

Site details	**Site Name**	West Chelmsford
	Area	45.6 hectares
	Current land use	Greenfield

		• 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.

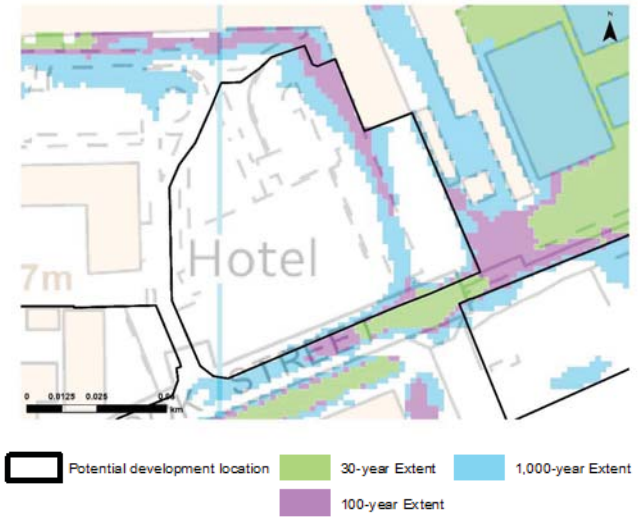
Mapping Information	
Flood Zones	Flood Zones 2 and 3a are based on the Environment Agency's Flood Zone 2 and 3.
Climate change	There is no detailed model in this area (Flood Zones are from original 2D (Jflow) modelling); therefore, there are no climate change outputs in this area.
Surface Water	The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
Depth and velocity mapping	There is no detailed model in this area (Flood Zones are from original 2D (Jflow) modelling); therefore, there are no depth, hazard or velocity outputs in this area.

SITE NAME	Ashby House Car Parks New Street, Chelmsford	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

Flood Zones

100-year plus climate change (2080s allowances)

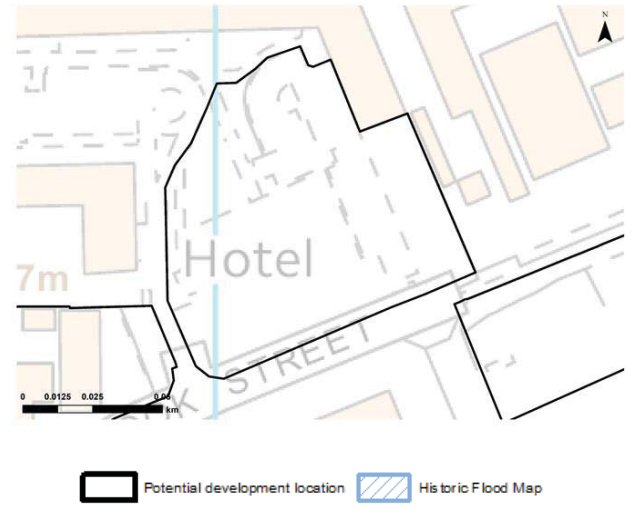
Surface Water (Risk of Flooding from Surface Water)



100-year depth

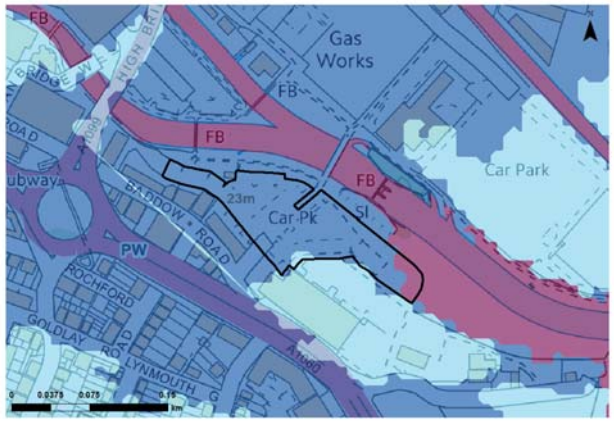
100-year velocity

Historic Flood Map

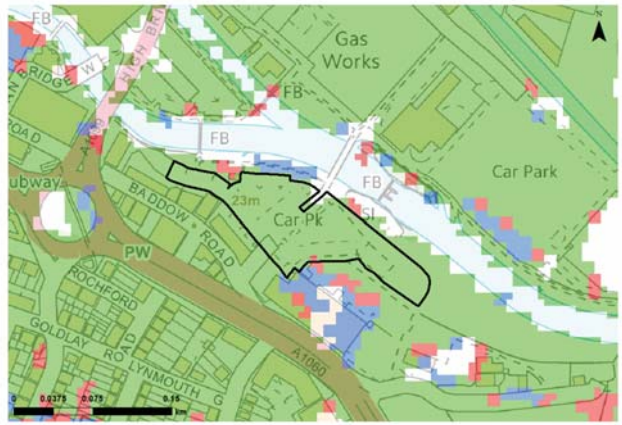


SITE NAME	Baddow Road Car Park	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

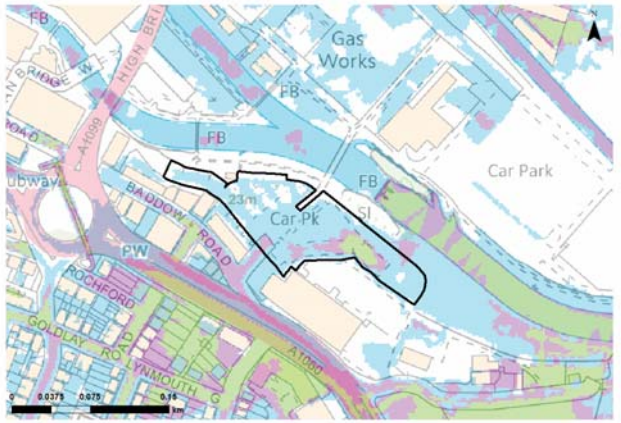
Flood Zones



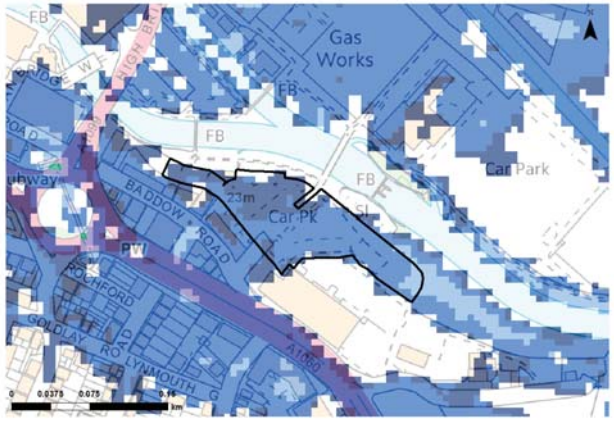
100-year plus climate change (2080s allowances)



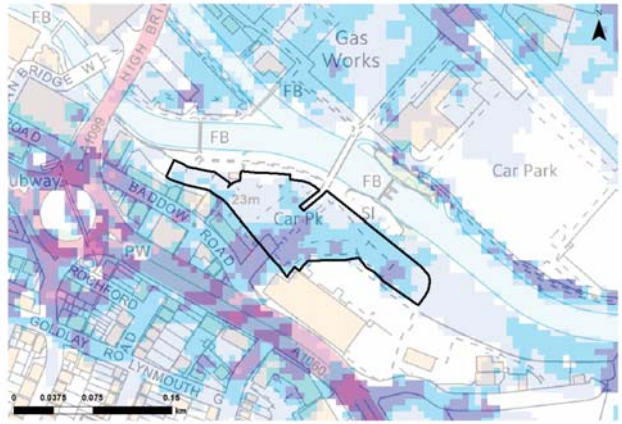
Surface Water (Risk of Flooding from Surface Water)



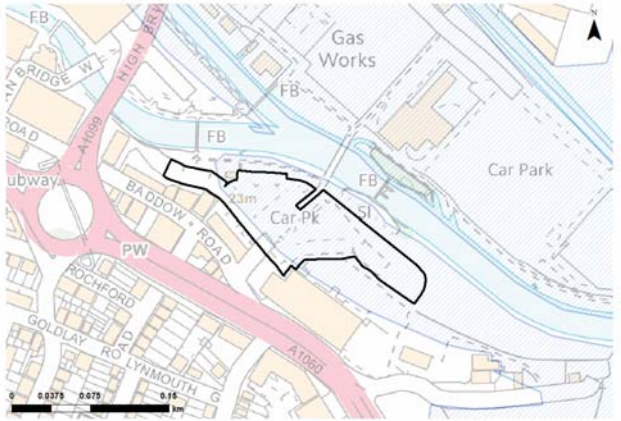
100-year depth



100-year velocity

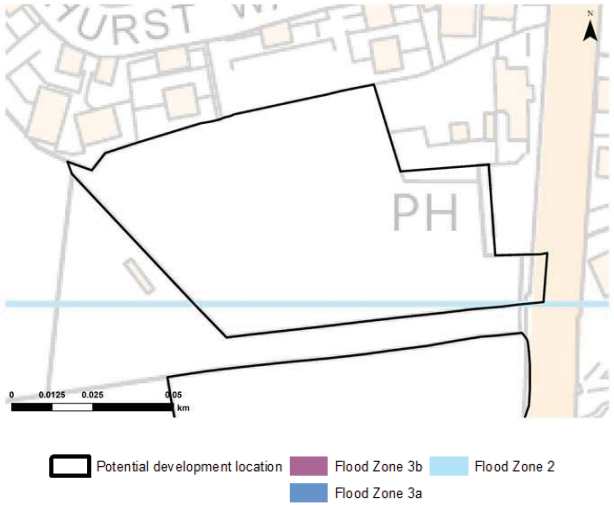


Historic Flood Map

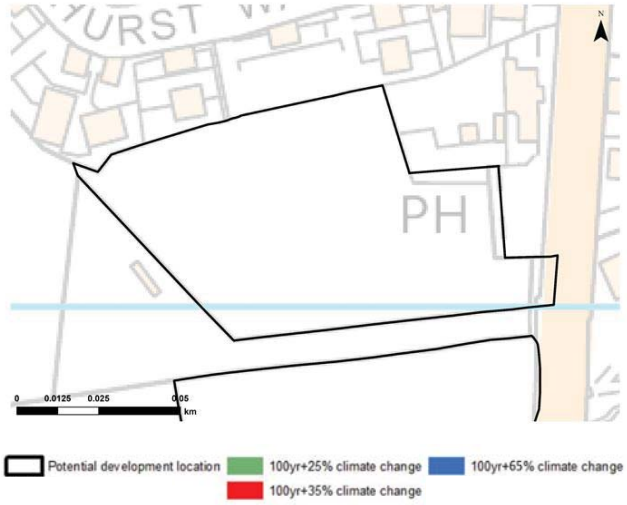


SITE NAME	Bicknacre North	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

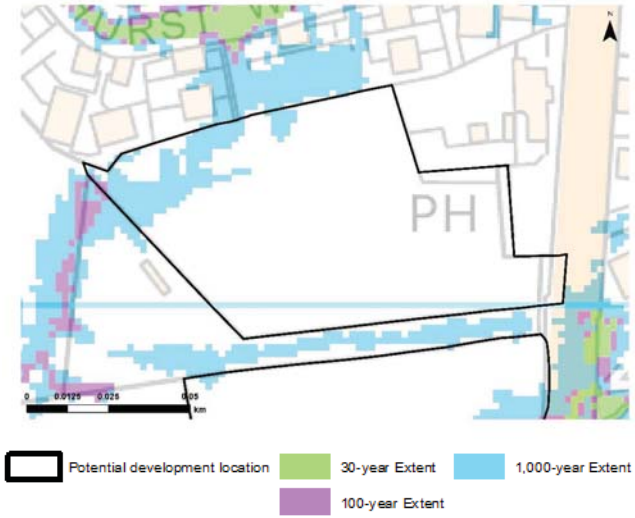
Flood Zones



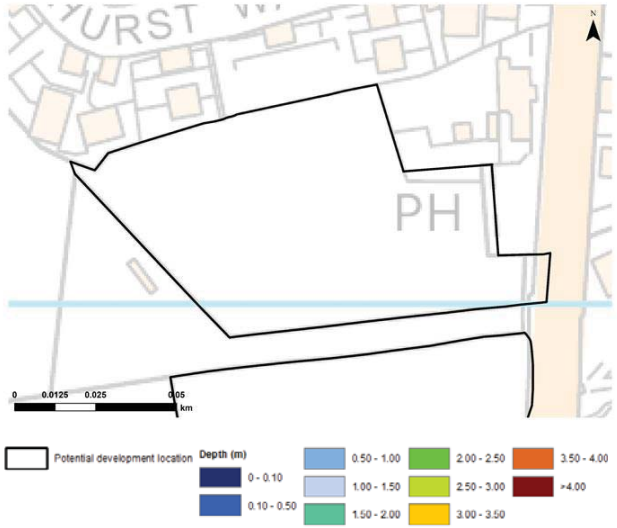
100-year plus climate change (2080s allowances)



Surface Water (Risk of Flooding from Surface Water)

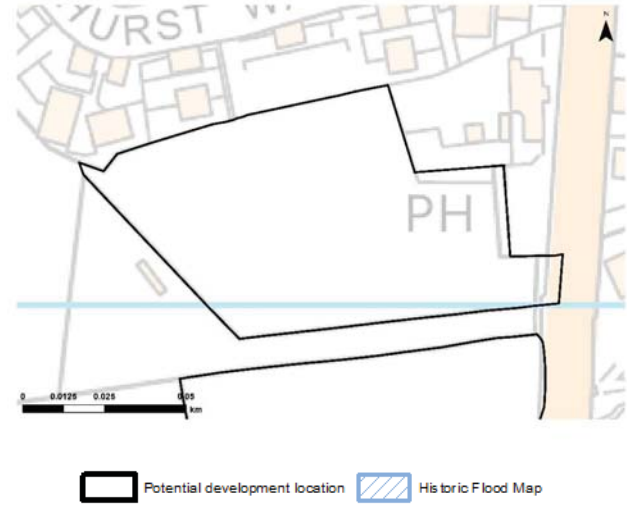


100-year depth



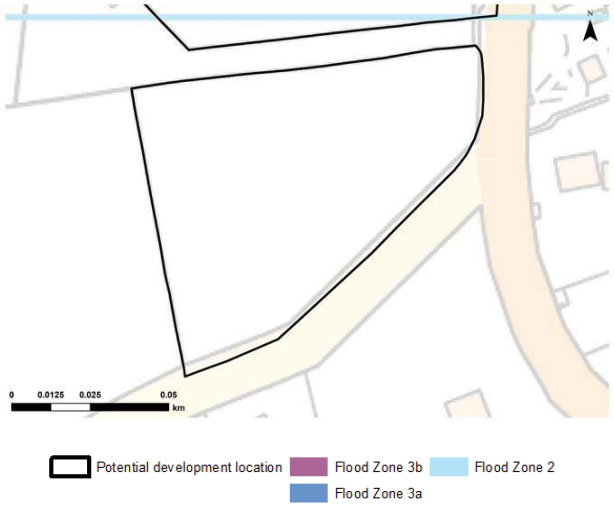
100-year velocity

Historic Flood Map

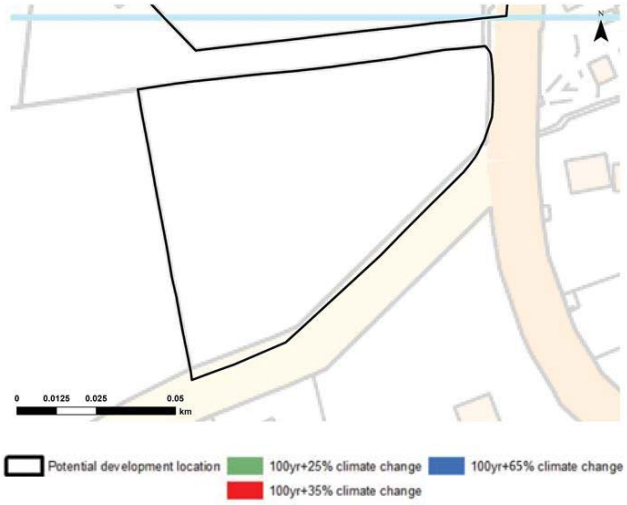


SITE NAME	Bicknacre South	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

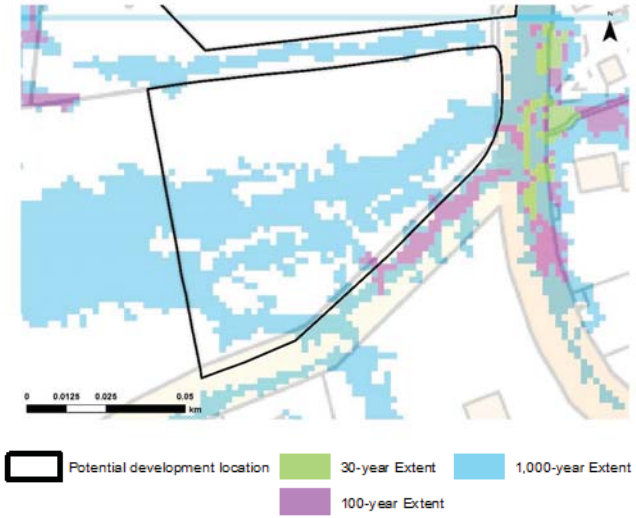
Flood Zones



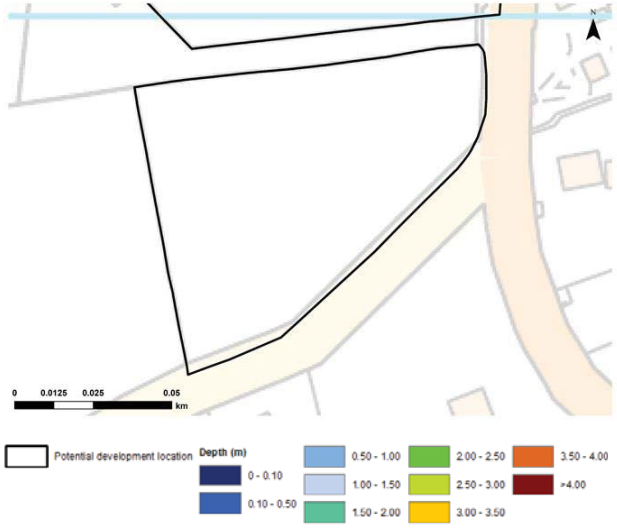
100-year plus climate change (2080s allowances)



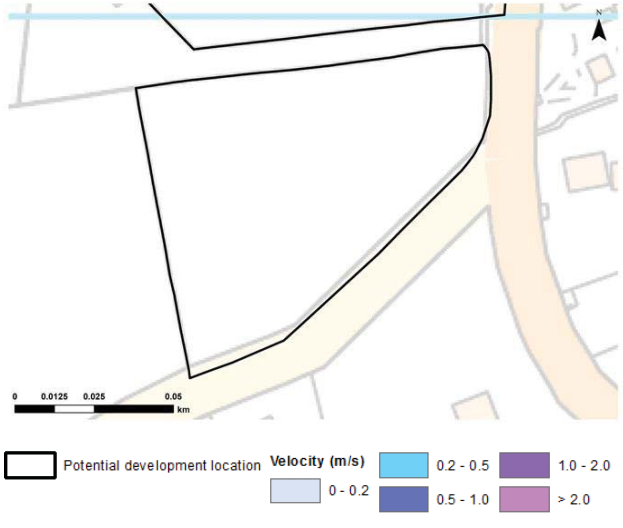
Surface Water (Risk of Flooding from Surface Water)



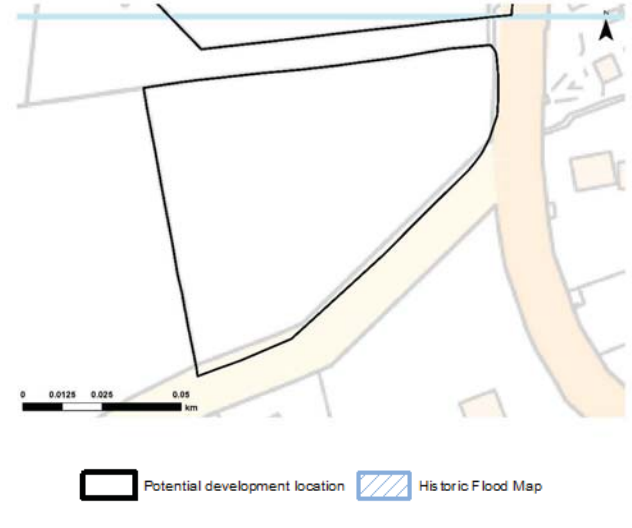
100-year depth



100-year velocity

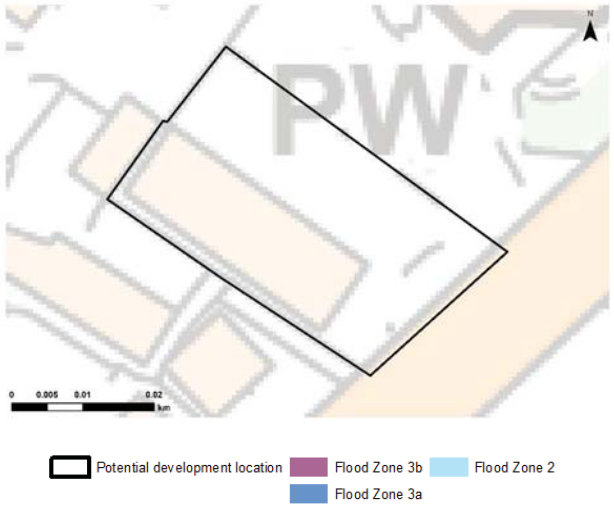


Historic Flood Map

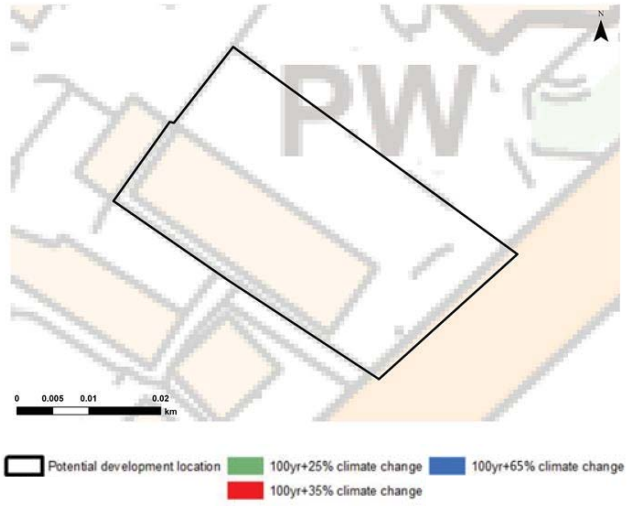


SITE NAME	British Legion, New London Road, Chelmsford	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

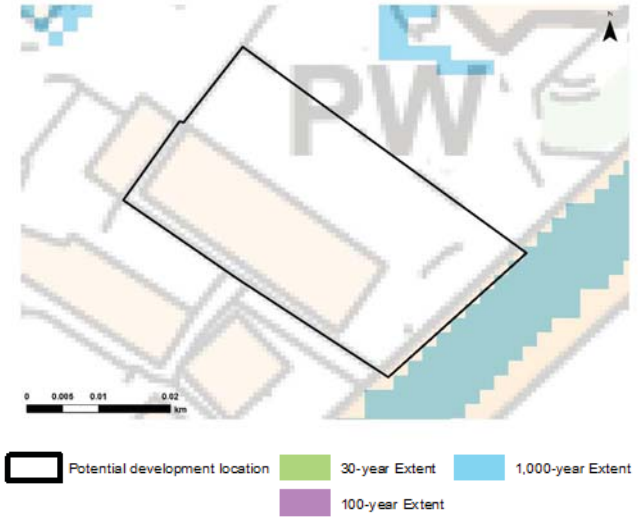
Flood Zones



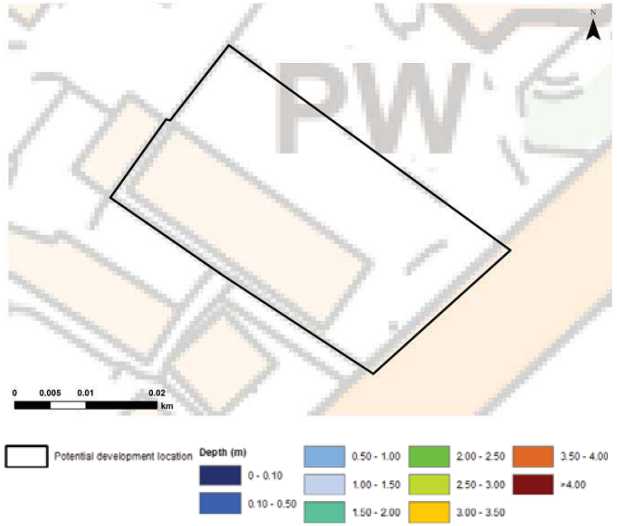
100-year plus climate change (2080s allowances)



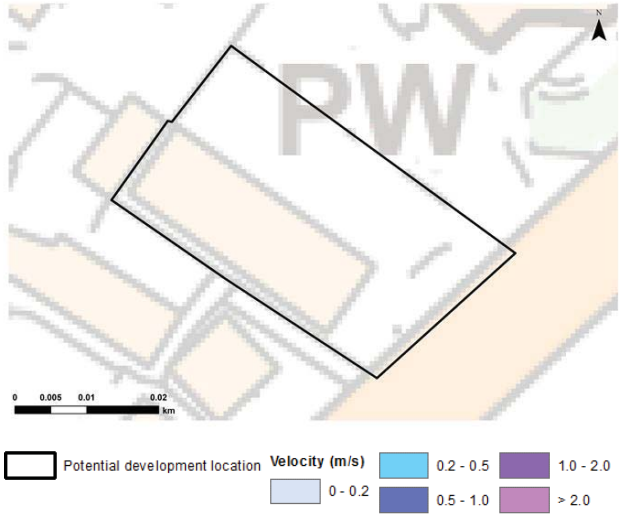
Surface Water (Risk of Flooding from Surface Water)



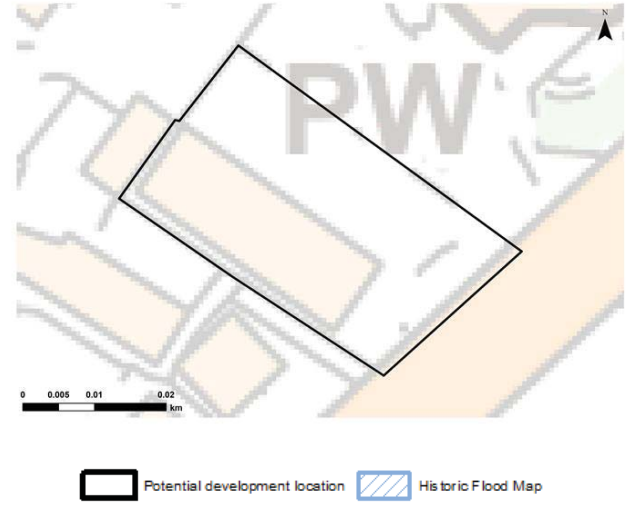
100-year depth



100-year velocity

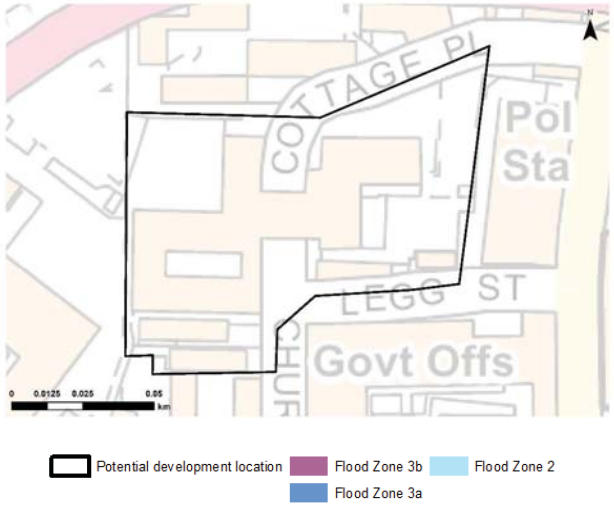


Historic Flood Map

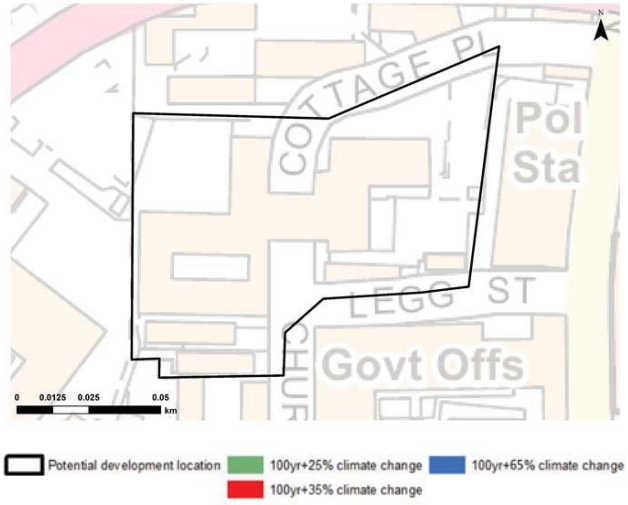


SITE NAME	BT Telephone Exchange Cottage Place, Chelmsford	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

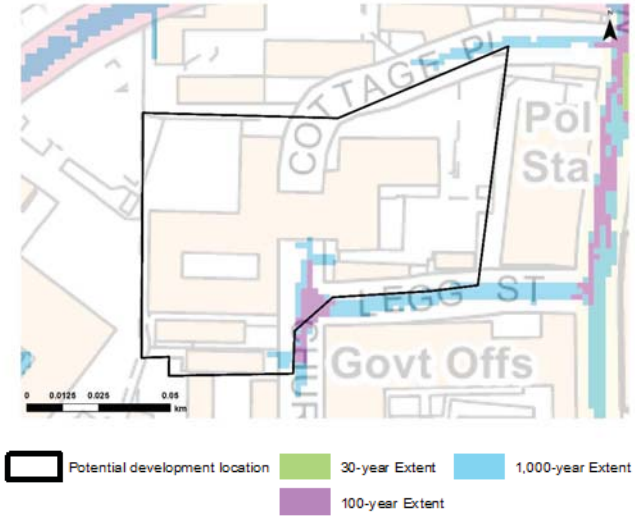
Flood Zones



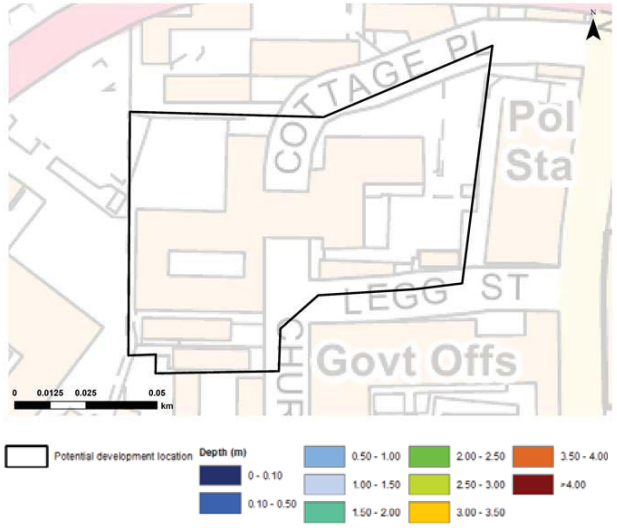
100-year plus climate change (2080s allowances)



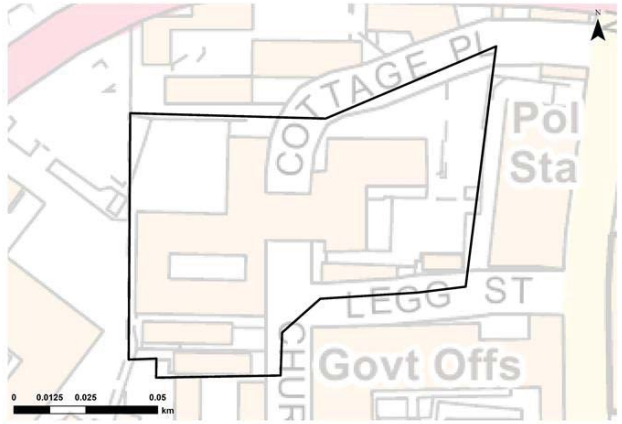
Surface Water (Risk of Flooding from Surface Water)



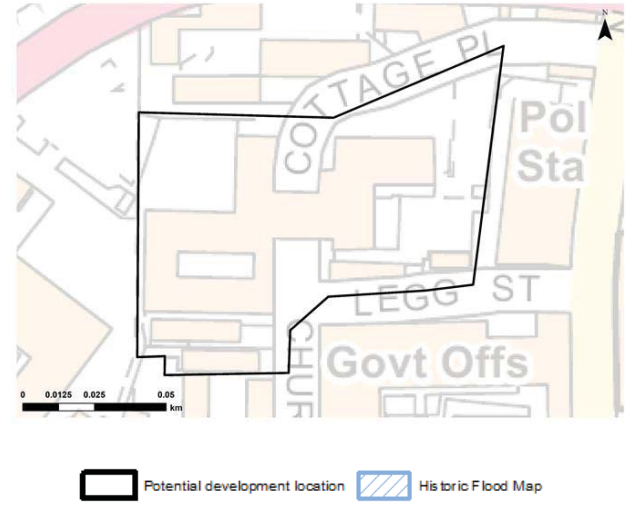
100-year depth



100-year velocity

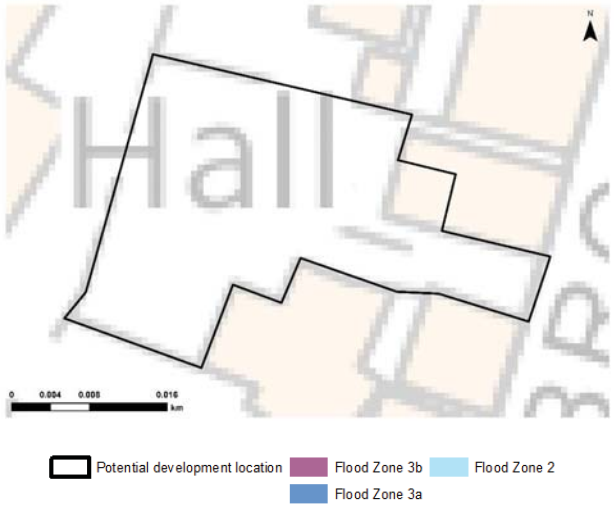


Historic Flood Map

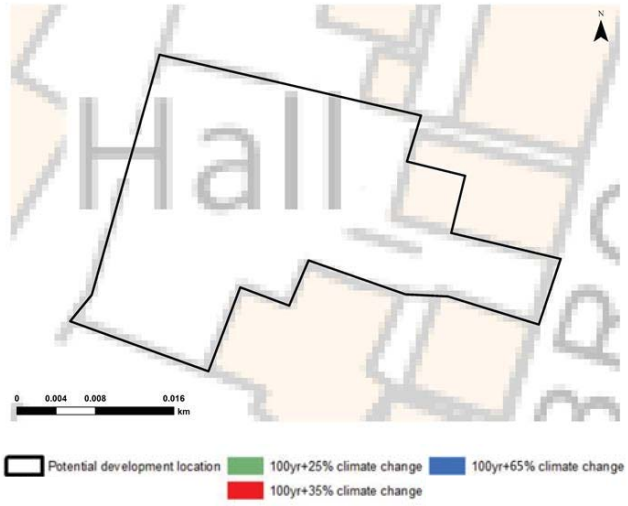


SITE NAME	Car Park R/O Bellamy Court, Broomfield Road, Chelmsford	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

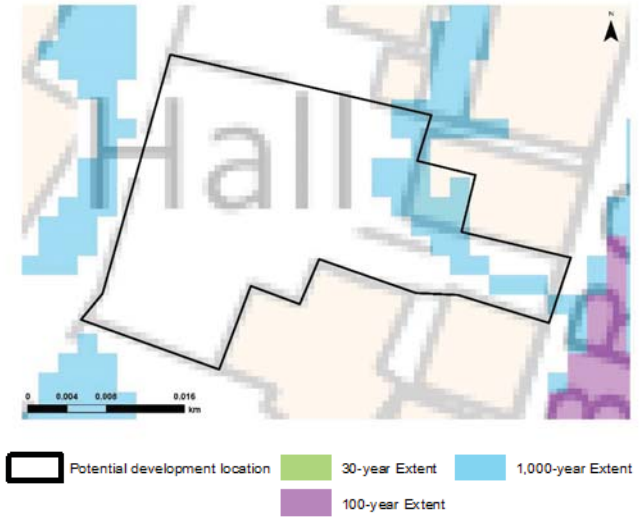
Flood Zones



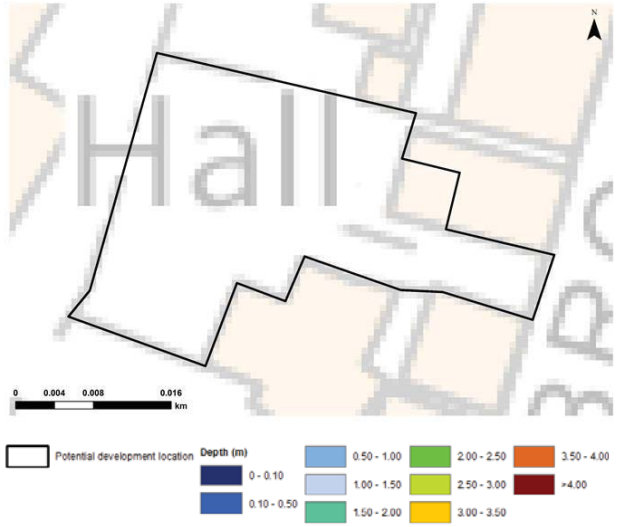
100-year plus climate change (2080s allowances)



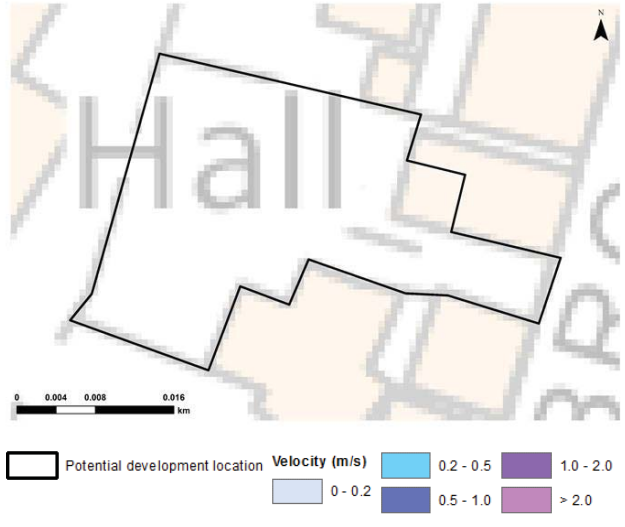
Surface Water (Risk of Flooding from Surface Water)



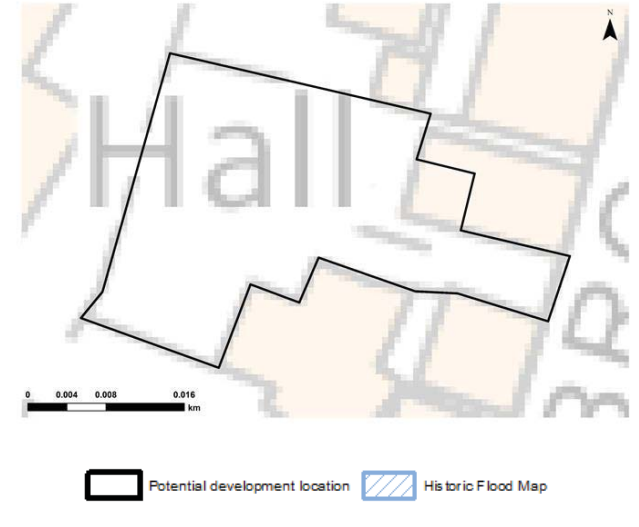
100-year depth



100-year velocity

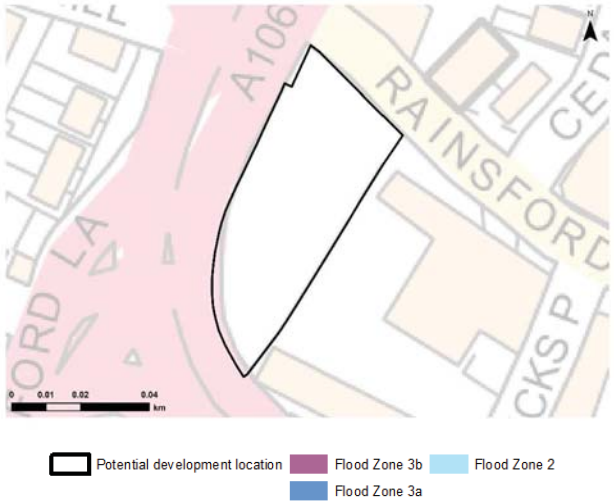


Historic Flood Map

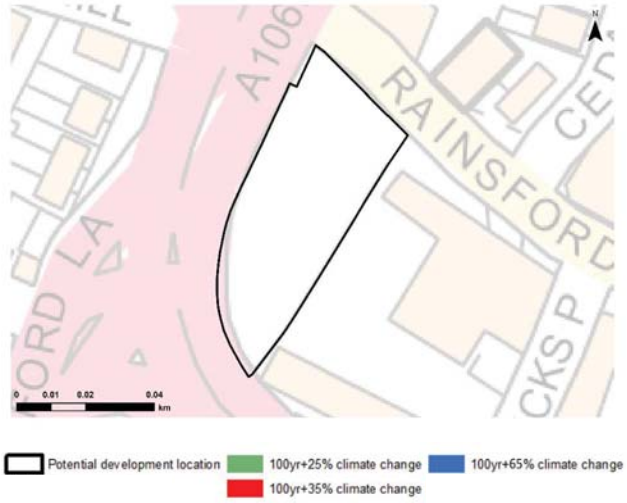


SITE NAME	Car Park West of the County Hotel, Chelmsford	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

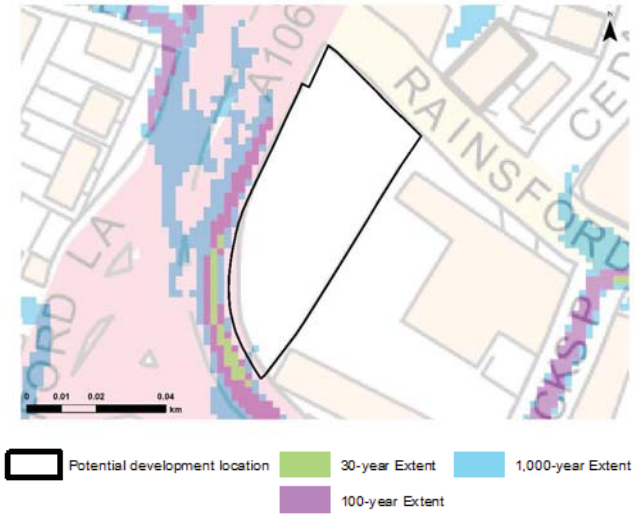
Flood Zones



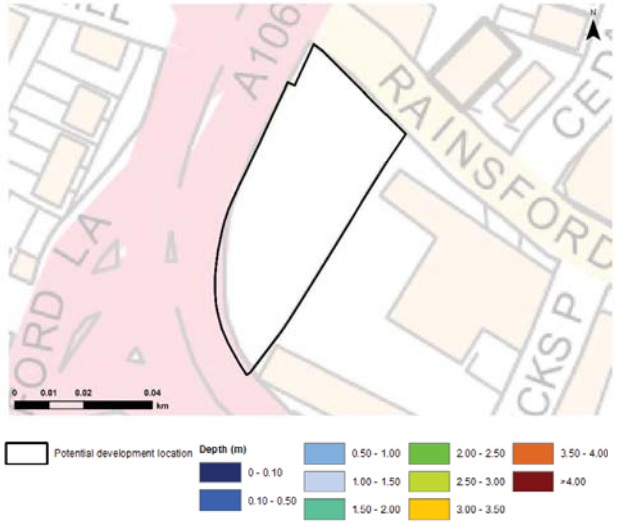
100-year plus climate change (2080s allowances)



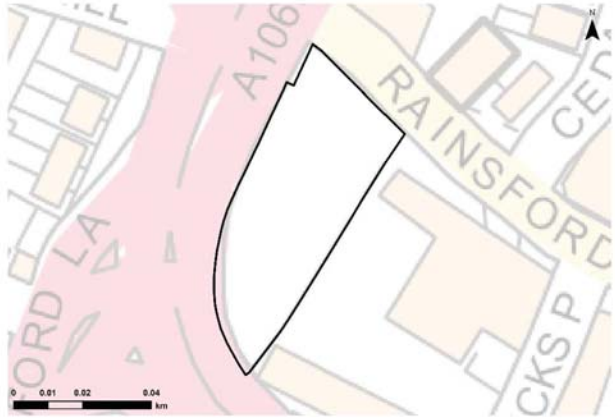
Surface Water (Risk of Flooding from Surface Water)



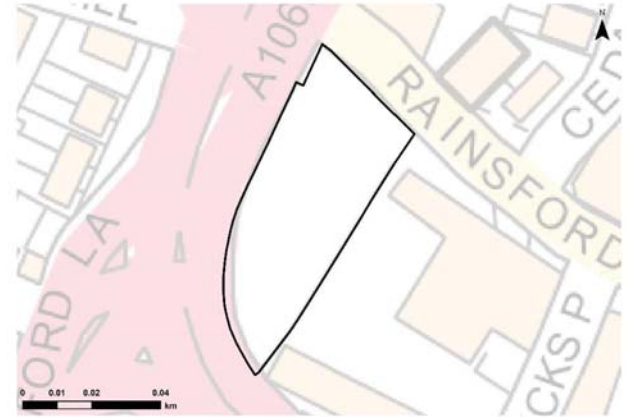
100-year depth



100-year velocity

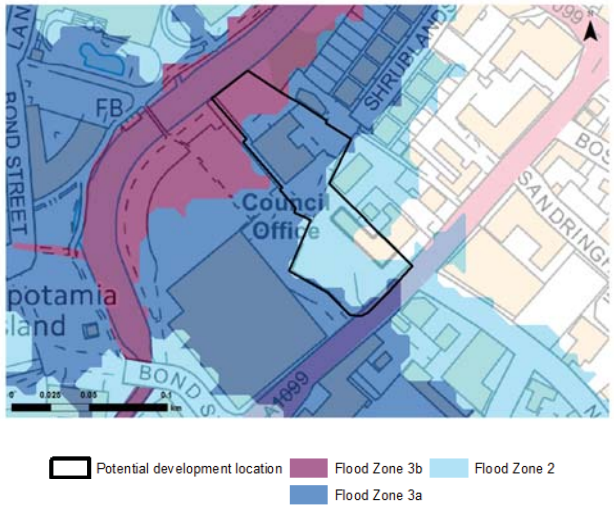


Historic Flood Map

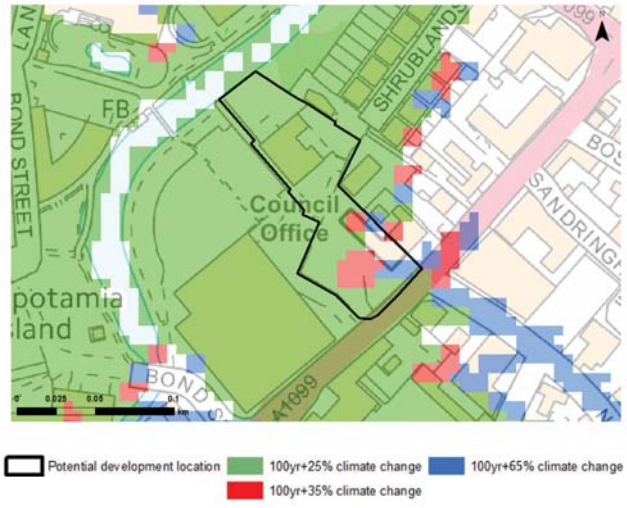


SITE NAME	Chelmsford Social Club	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

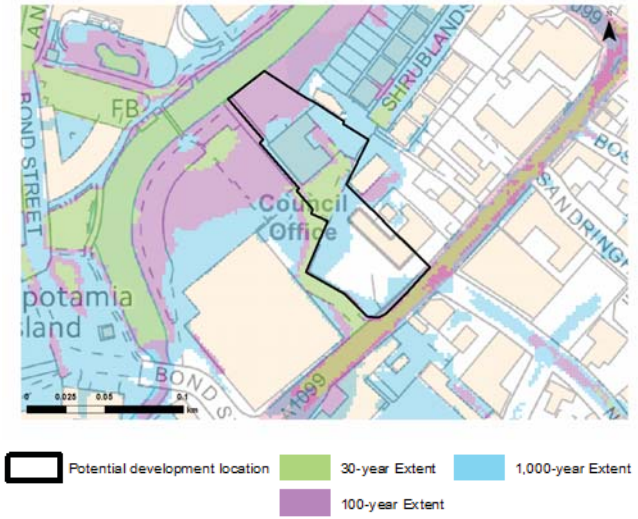
Flood Zones



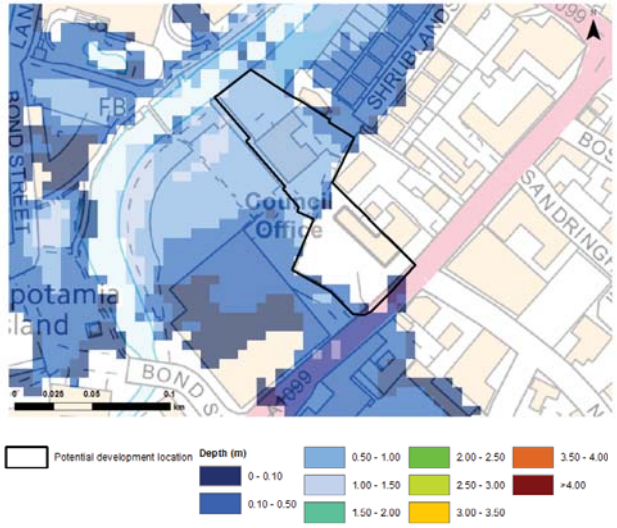
100-year plus climate change (2080s allowances)



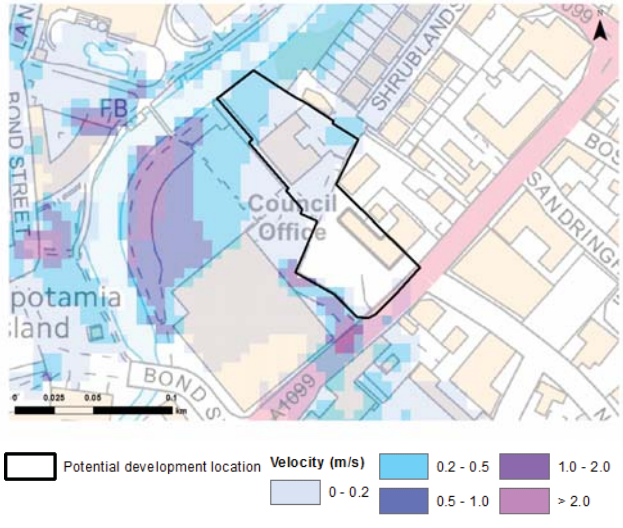
Surface Water (Risk of Flooding from Surface Water)



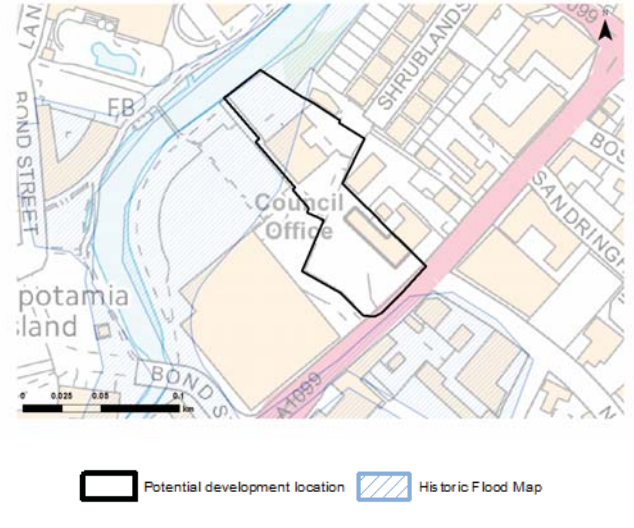
100-year depth



100-year velocity



Historic Flood Map



SITE NAME	Church Hall Site, Woodhall Road, Chelmsford	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

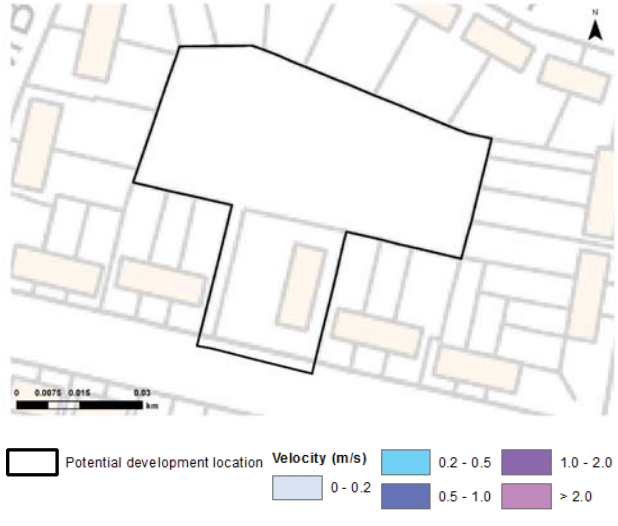
Flood Zones

100-year plus climate change (2080s allowances)

Surface Water (Risk of Flooding from Surface Water)

100-year depth

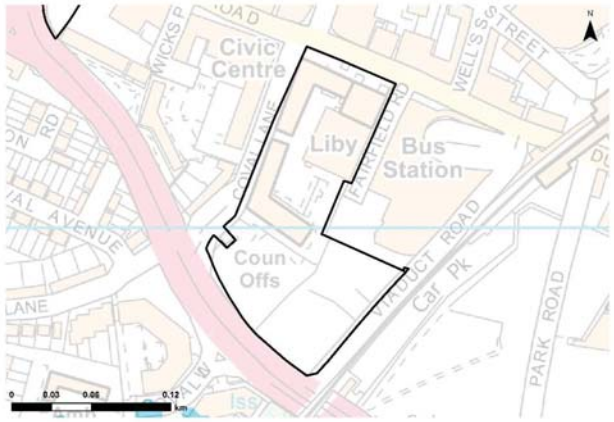
100-year velocity



Historic Flood Map

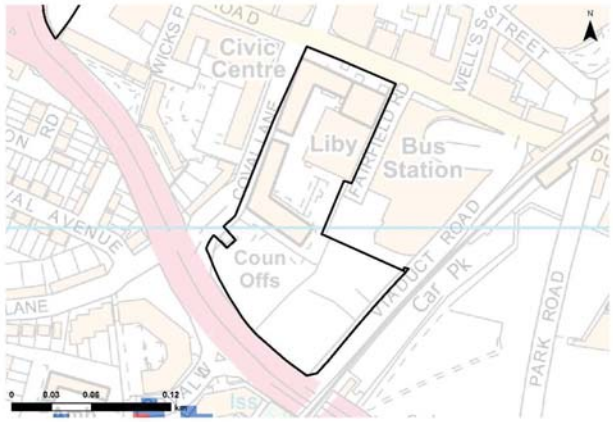
SITE NAME	Civic Centre Land, Fairfield Road, Chelmsford	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

Flood Zones



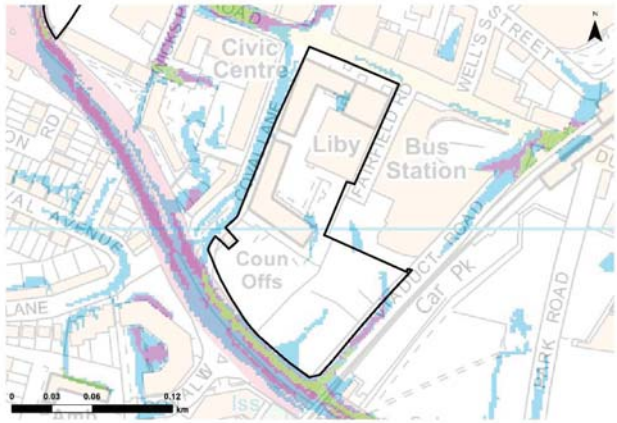
Potential development location | Flood Zone 3b | Flood Zone 2 | Flood Zone 3a

100-year plus climate change (2080s allowances)



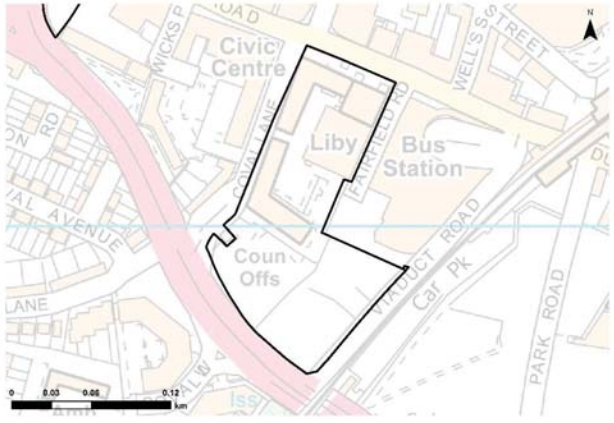
Potential development location | 100yr+25% climate change | 100yr+65% climate change | 100yr+35% climate change

Surface Water (Risk of Flooding from Surface Water)



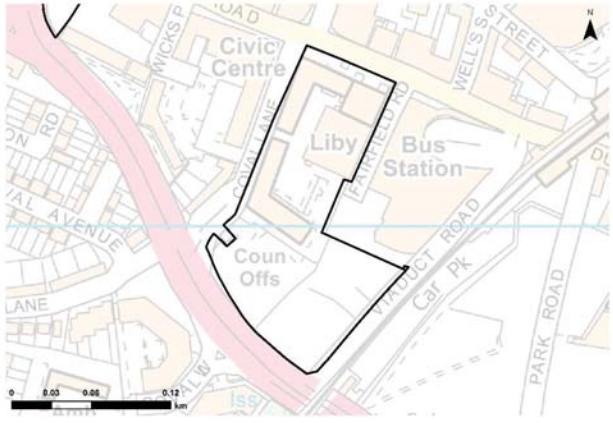
Potential development location | 30-year Extent | 1,000-year Extent | 100-year Extent

100-year depth



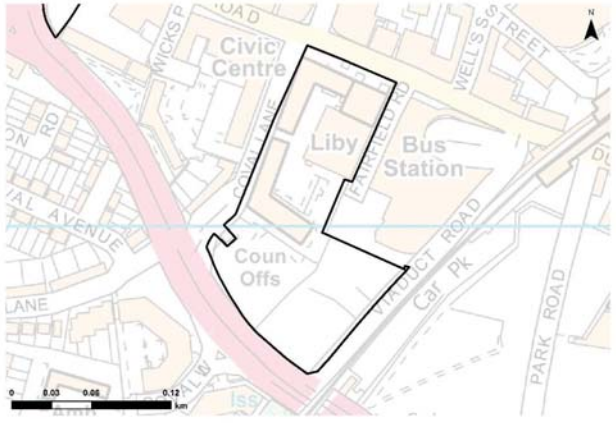
Potential development location | Depth (m) | 0 - 0.10 | 0.10 - 0.50 | 0.50 - 1.00 | 1.00 - 1.50 | 1.50 - 2.00 | 2.00 - 2.50 | 2.50 - 3.00 | 3.00 - 3.50 | 3.50 - 4.00 | >4.00

100-year velocity



Potential development location | Velocity (m/s) | 0 - 0.2 | 0.2 - 0.5 | 0.5 - 1.0 | 1.0 - 2.0 | > 2.0

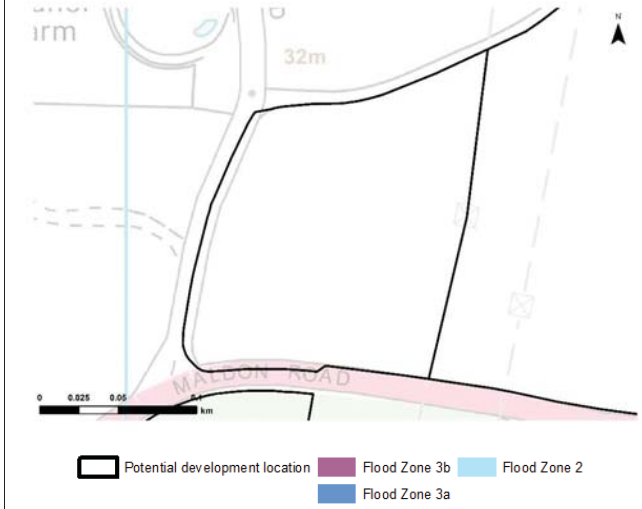
Historic Flood Map



Potential development location | Historic Flood Map

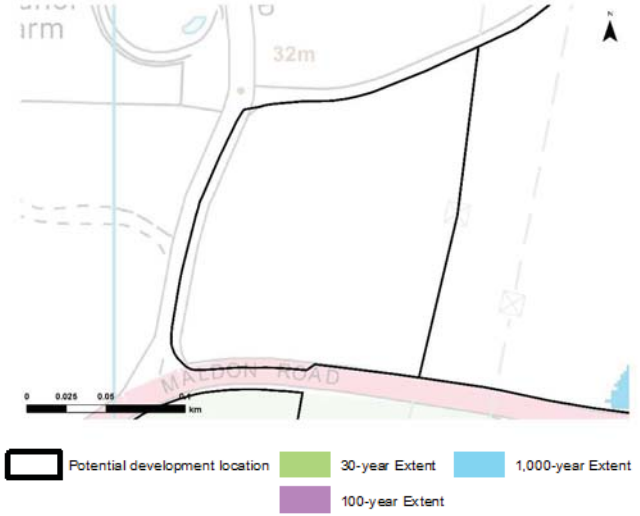
SITE NAME	East Chelmsford – Land North of Maldon Road West	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

Flood Zones



100-year plus climate change (2080s allowances)

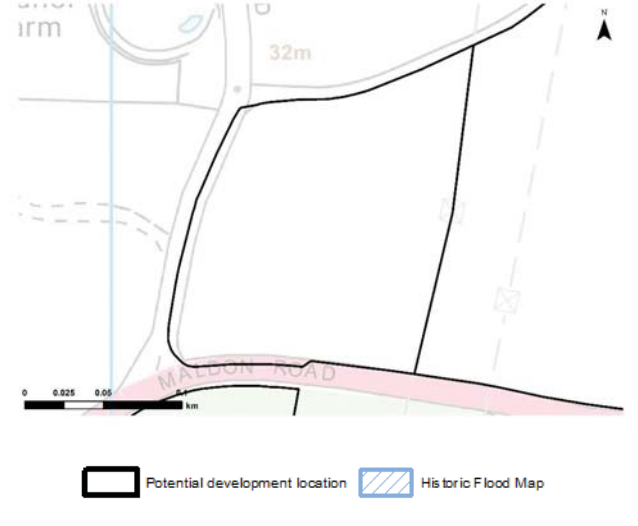
Surface Water (Risk of Flooding from Surface Water)



100-year depth

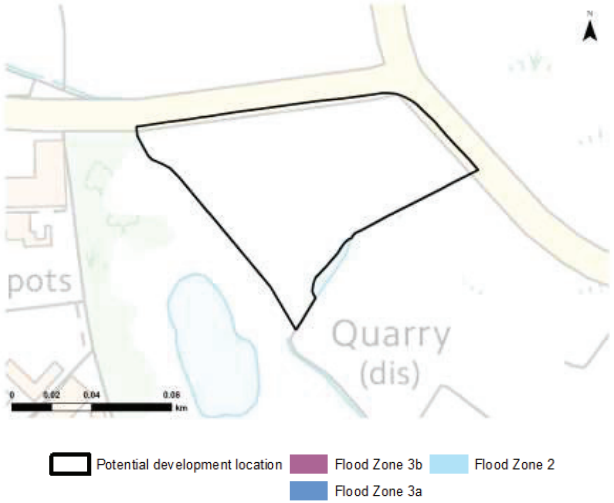
100-year velocity

Historic Flood Map

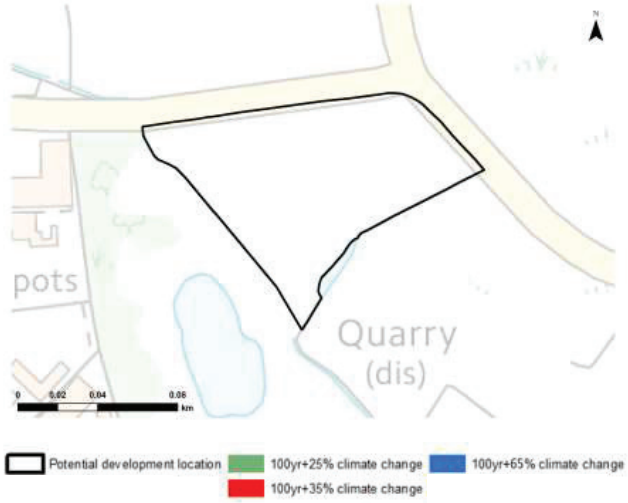


SITE NAME	Drakes Lane Gypsy and Traveller Site	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

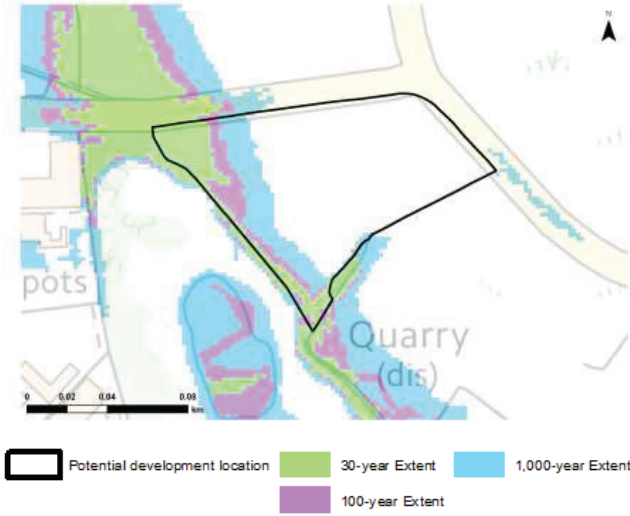
Flood Zones



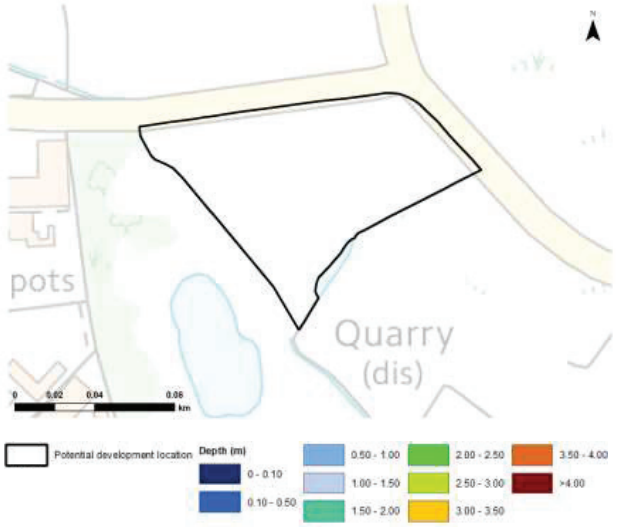
100-year plus climate change (2080s allowances)



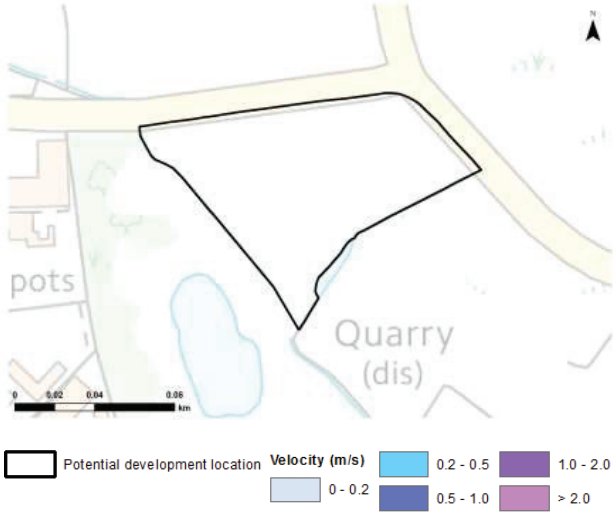
Surface Water (Risk of Flooding from Surface Water)



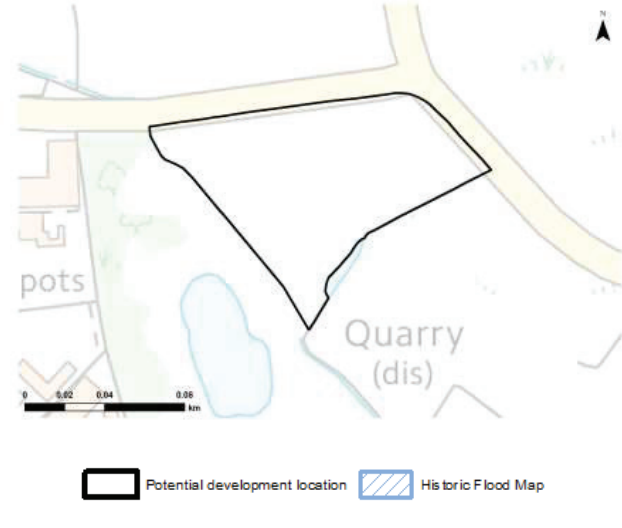
100-year depth



100-year velocity

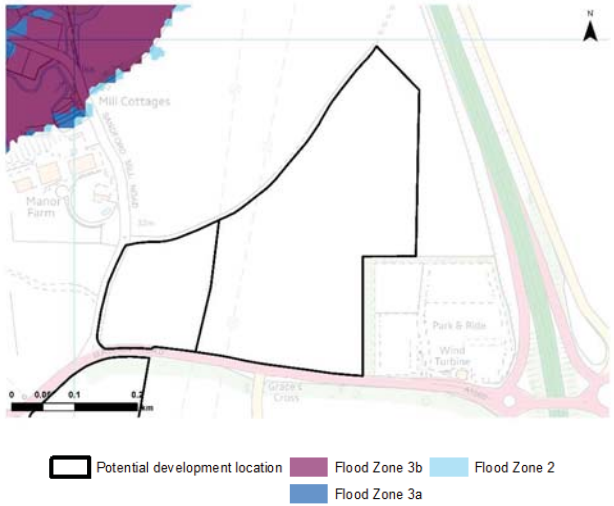


Historic Flood Map

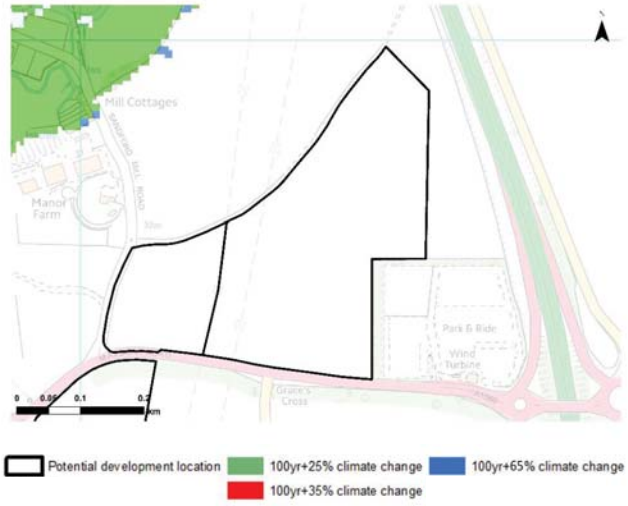


SITE NAME	East Chelmsford - Land North of Maldon Road	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

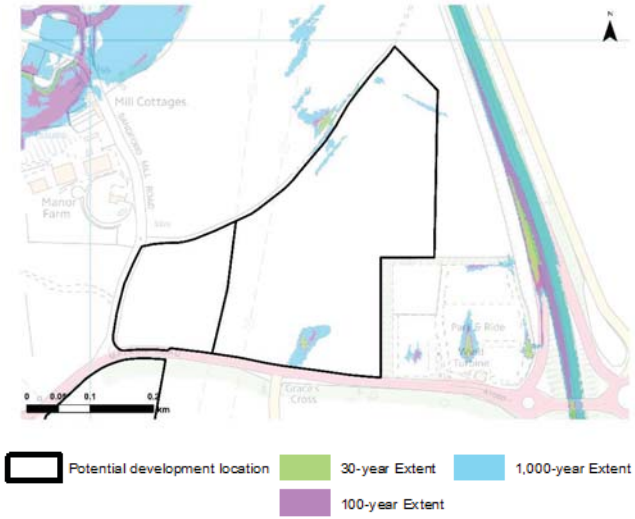
Flood Zones



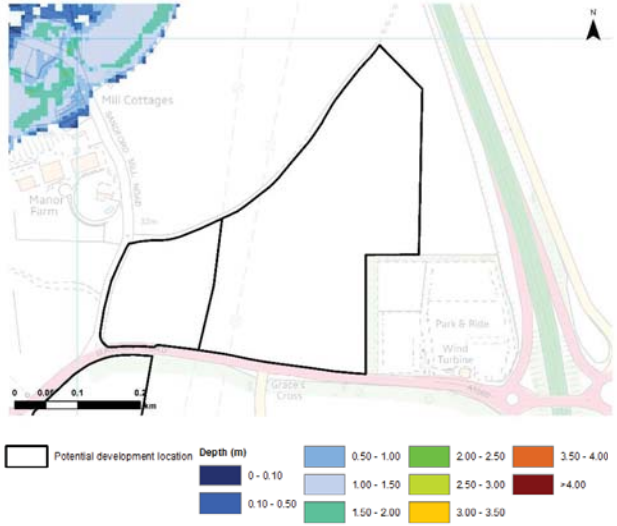
100-year plus climate change (2080s allowances)



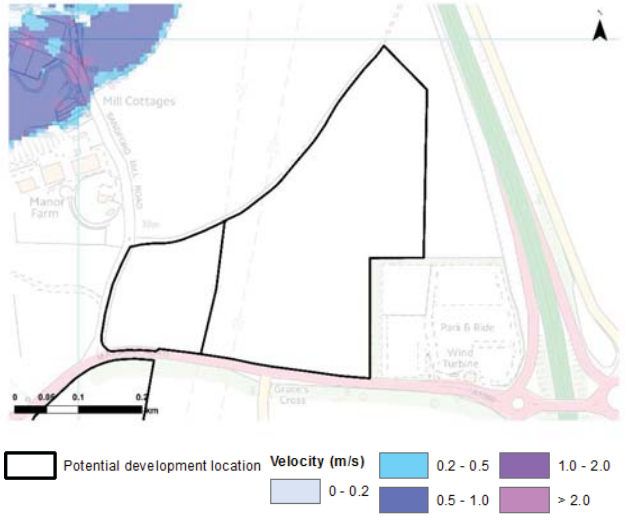
Surface Water (Risk of Flooding from Surface Water)



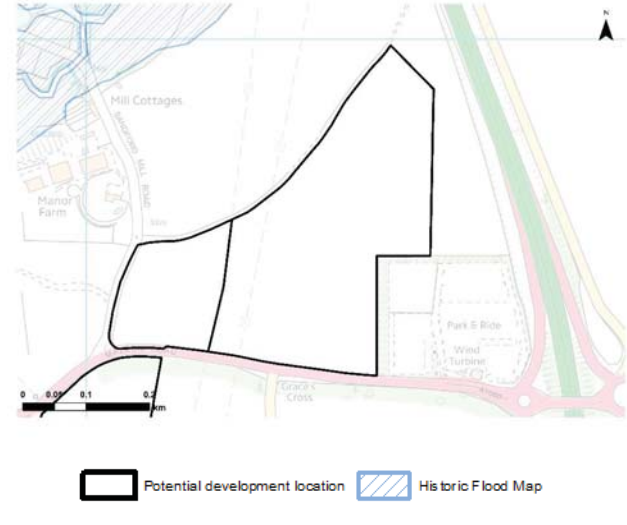
100-year depth



100-year velocity

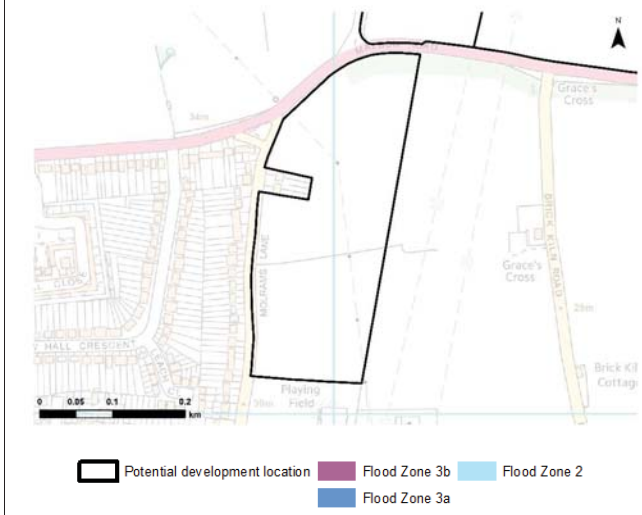


Historic Flood Map

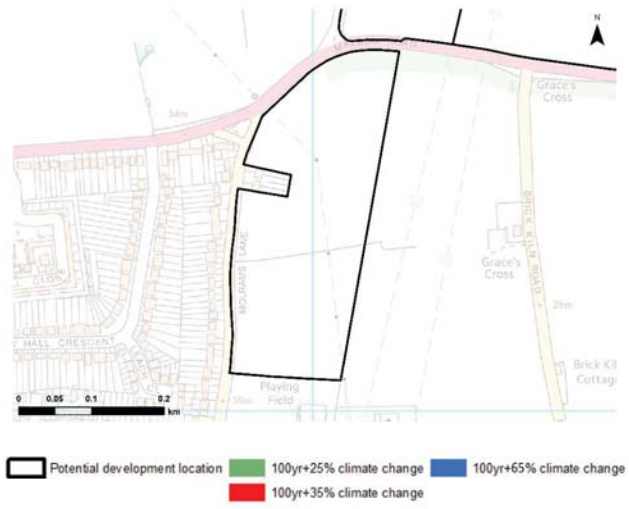


SITE NAME	East Chelmsford, Land South of Maldon Road	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

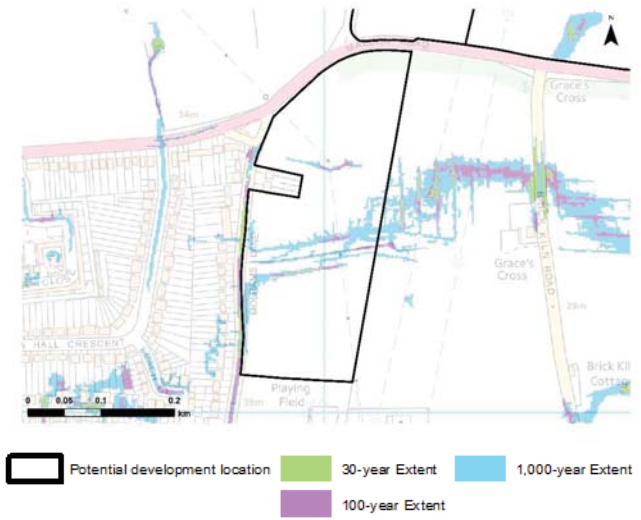
Flood Zones



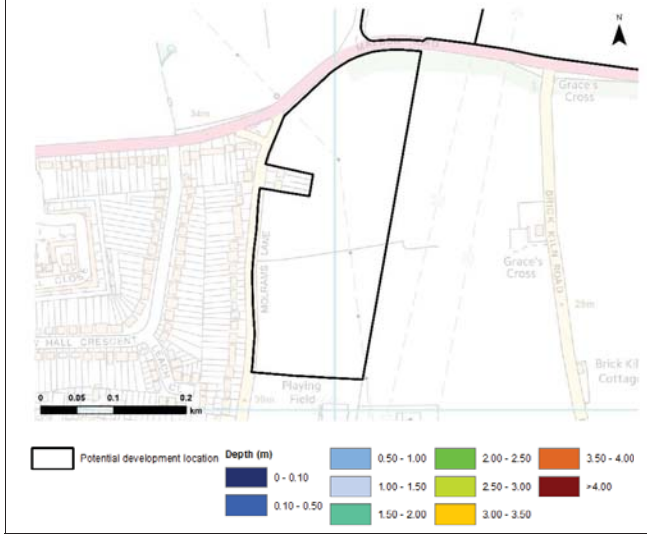
100-year plus climate change (2080s allowances)



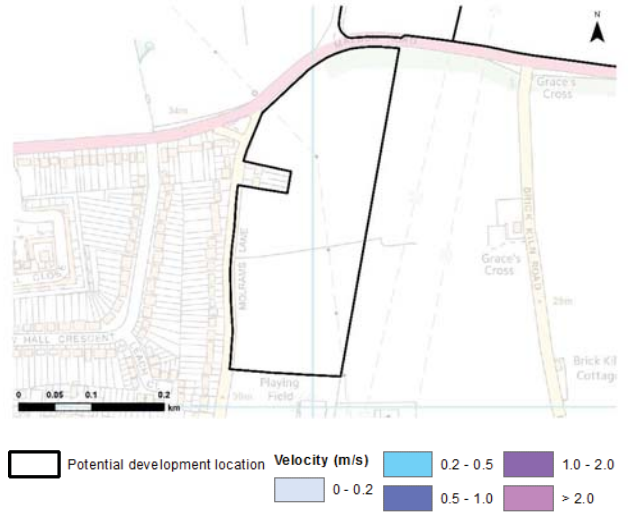
Surface Water (Risk of Flooding from Surface Water)



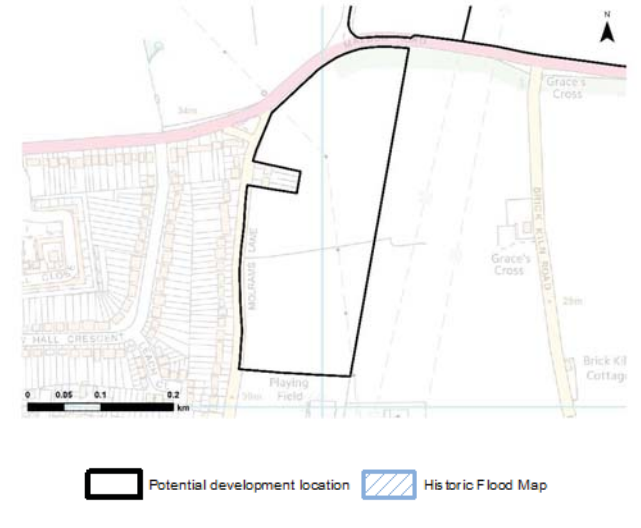
100-year depth



100-year velocity

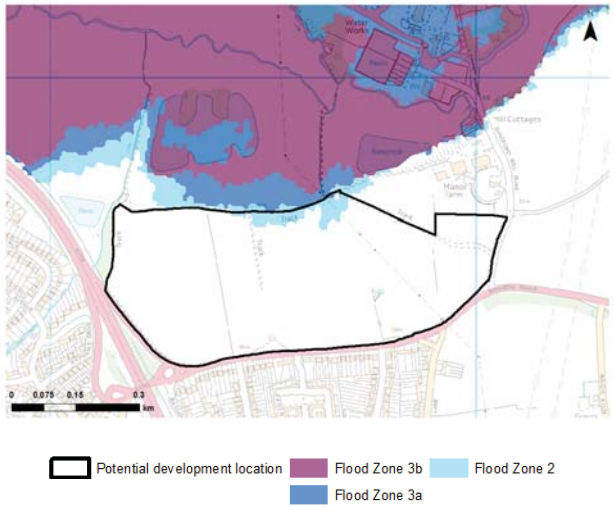


Historic Flood Map

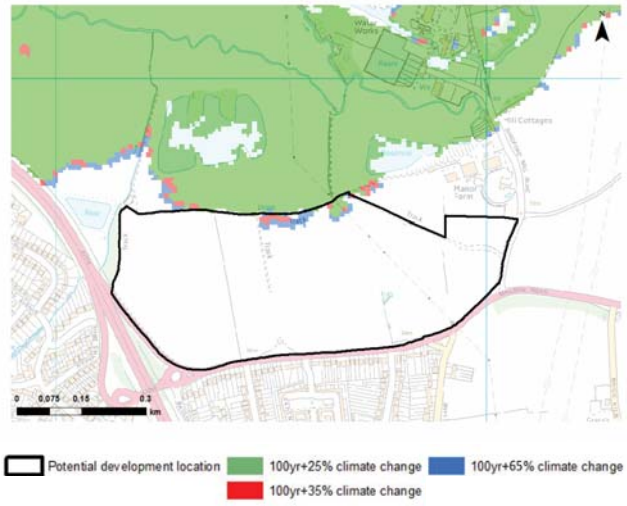


SITE NAME	East Chelmsford – Manor Farm	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

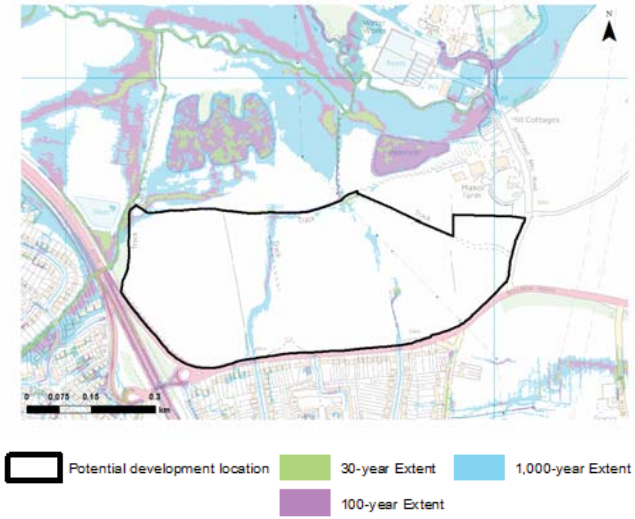
Flood Zones



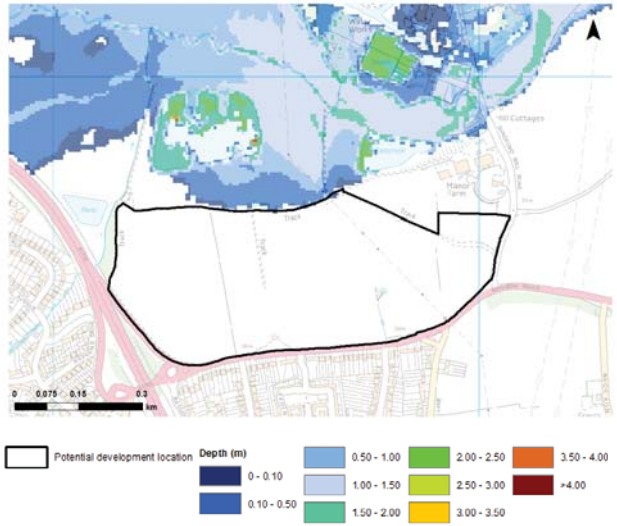
100-year plus climate change (2080s allowances)



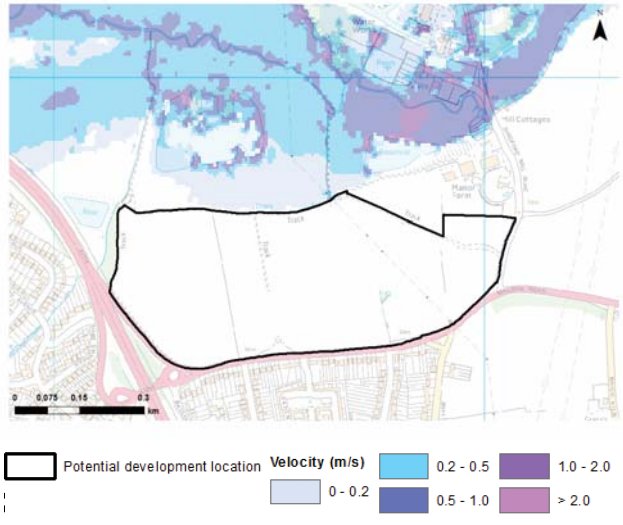
Surface Water (Risk of Flooding from Surface Water)



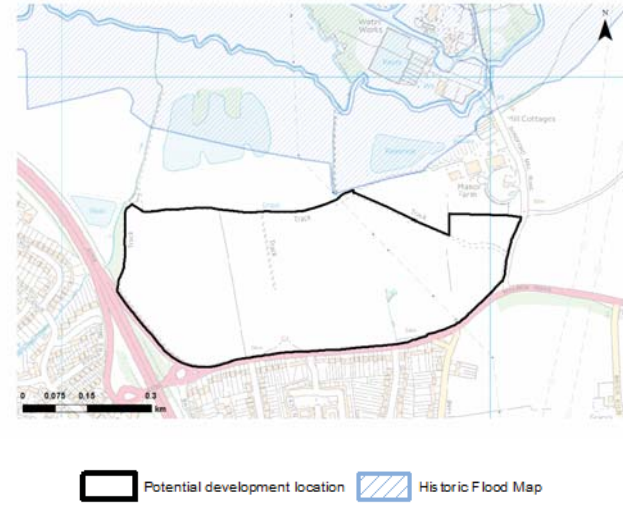
100-year depth



100-year velocity

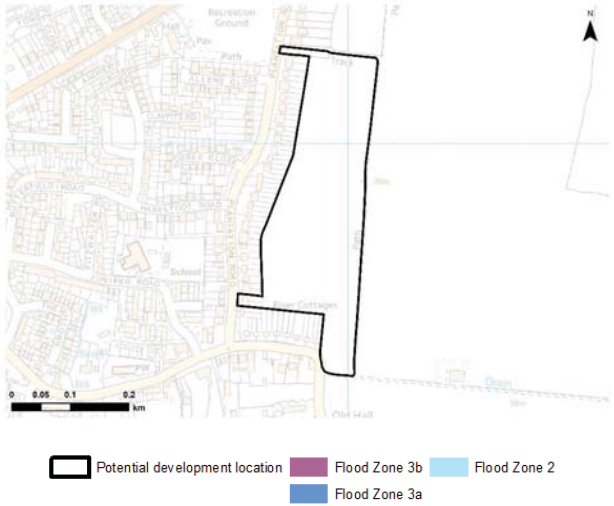


Historic Flood Map

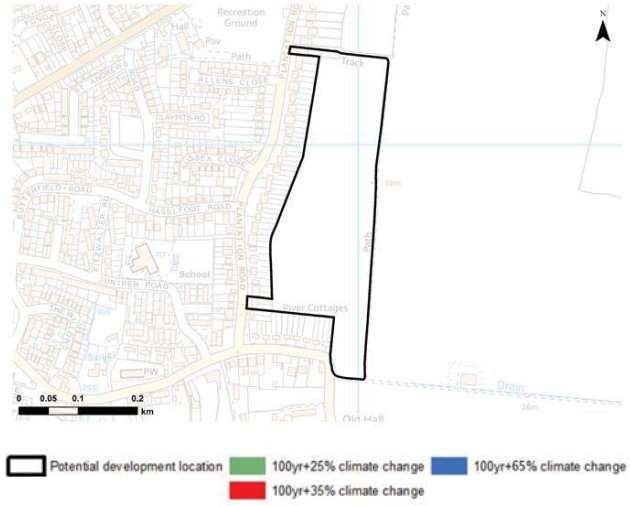


SITE NAME	East of Boreham	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

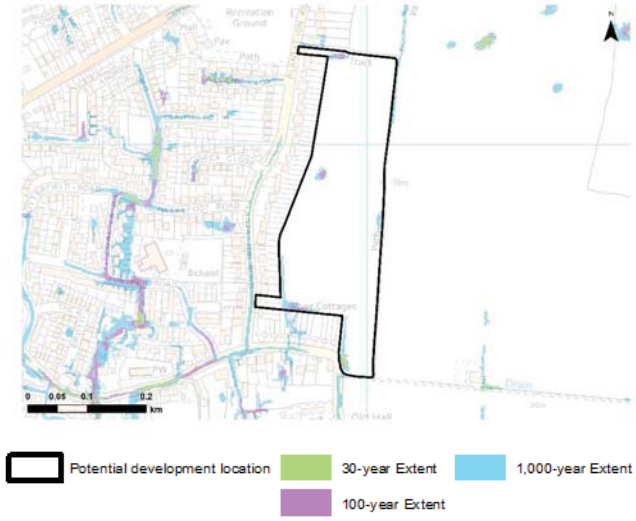
Flood Zones



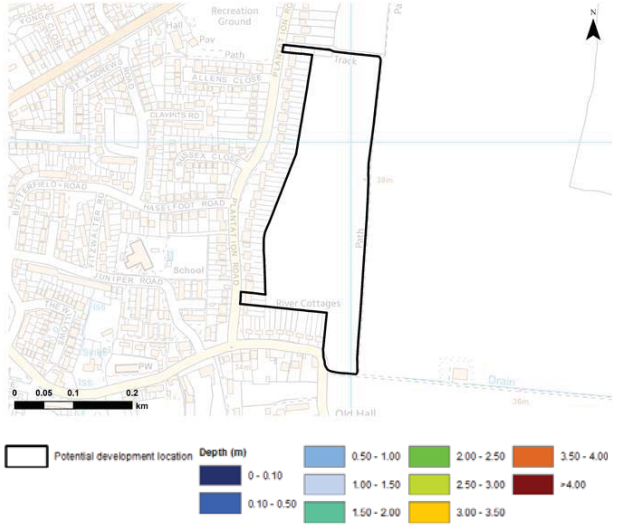
100-year plus climate change (2080s allowances)



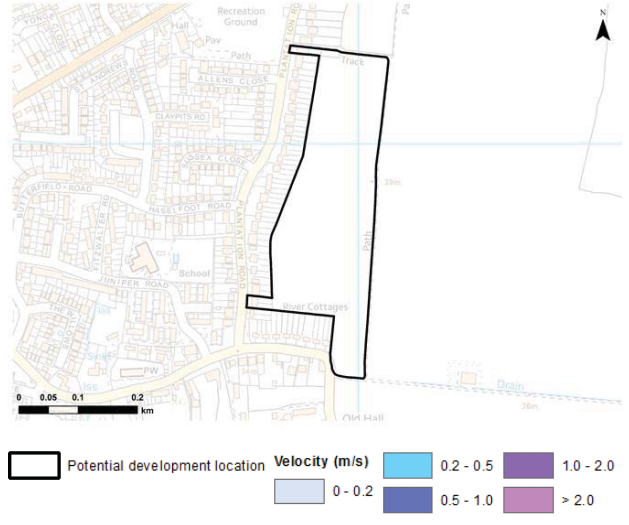
Surface Water (Risk of Flooding from Surface Water)



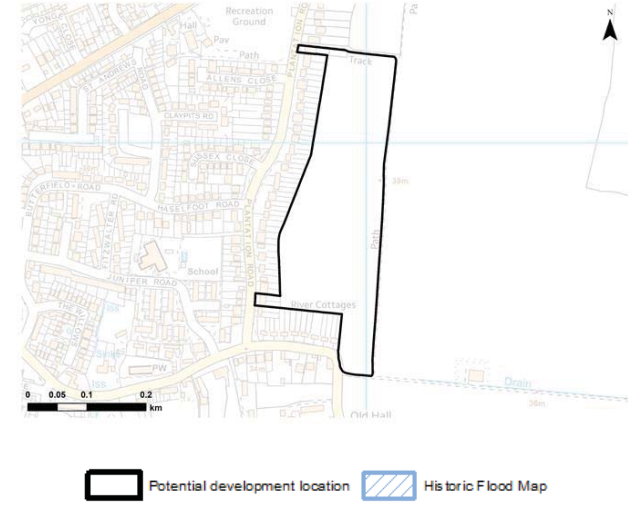
100-year depth



100-year velocity

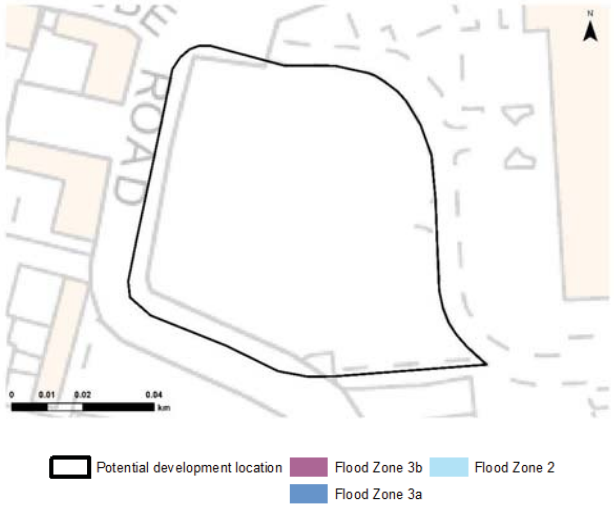


Historic Flood Map

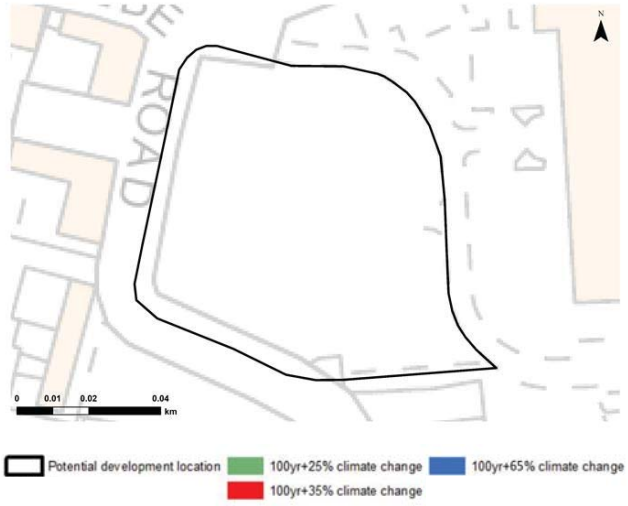


SITE NAME	Eastwood House Car Park, Glebe Road, Chelmsford	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

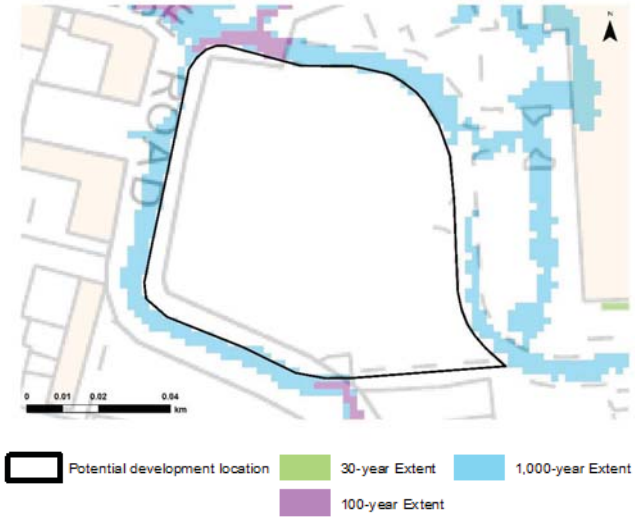
Flood Zones



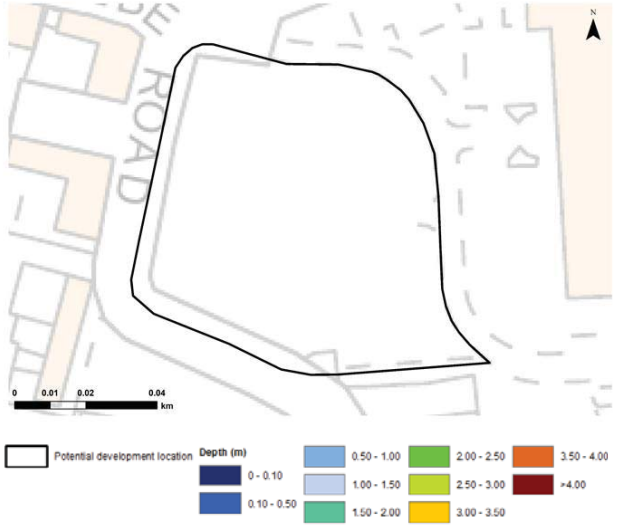
100-year plus climate change (2080s allowances)



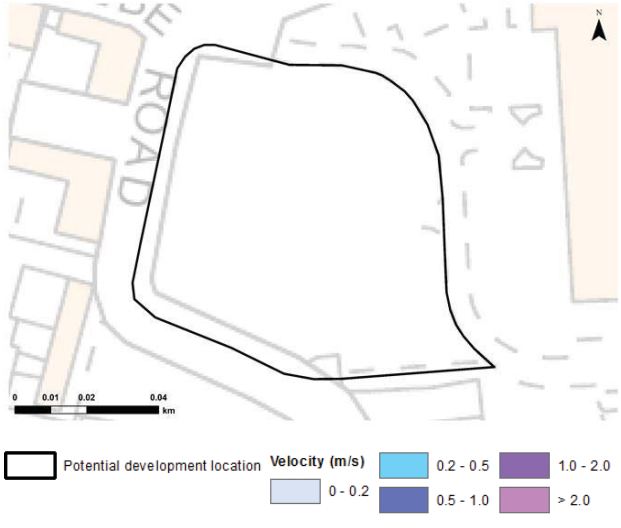
Surface Water (Risk of Flooding from Surface Water)



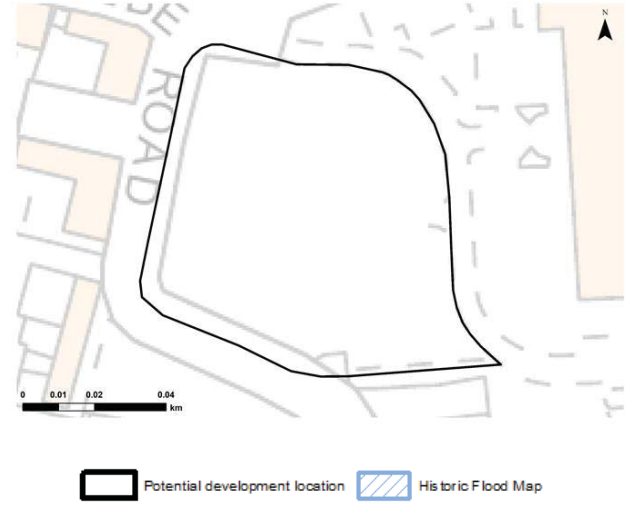
100-year depth



100-year velocity

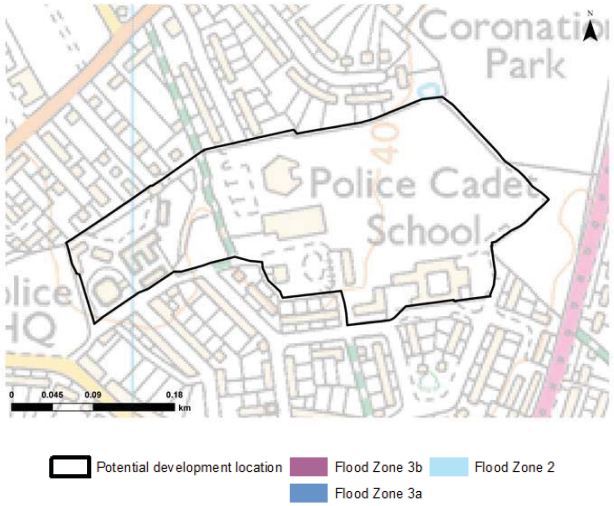


Historic Flood Map

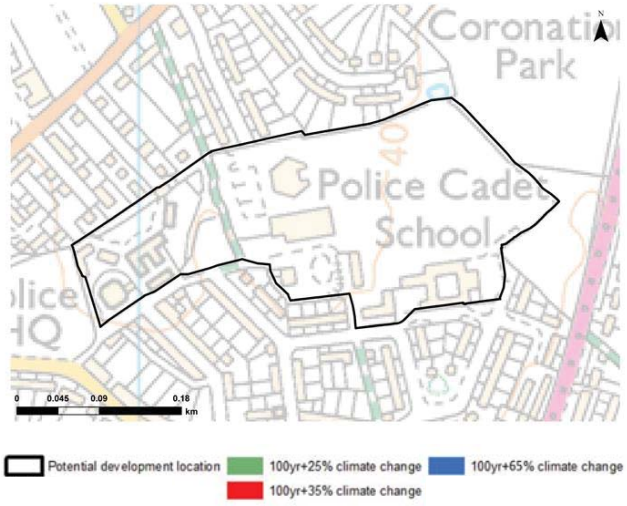


SITE NAME	Essex Police HQ and Sports Ground New Court Road, Chelmsford	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

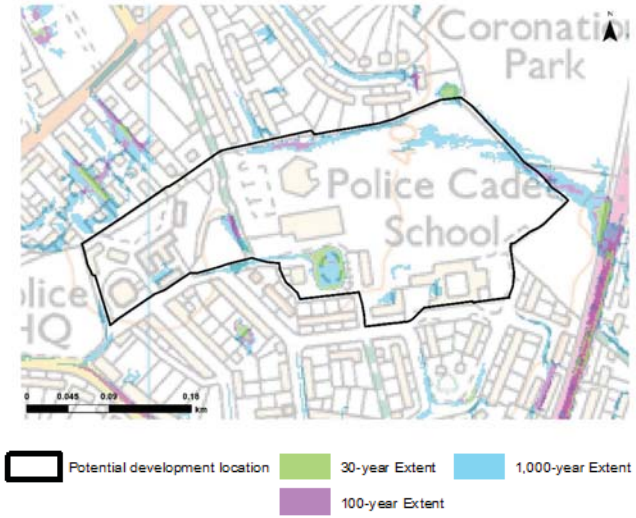
Flood Zones



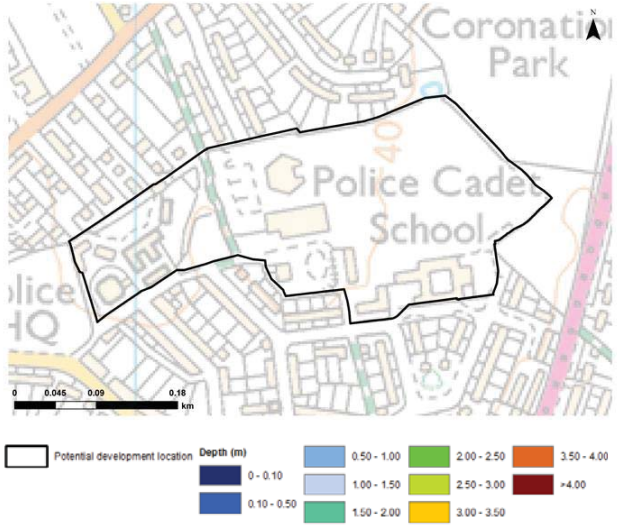
100-year plus climate change (2080s allowances)



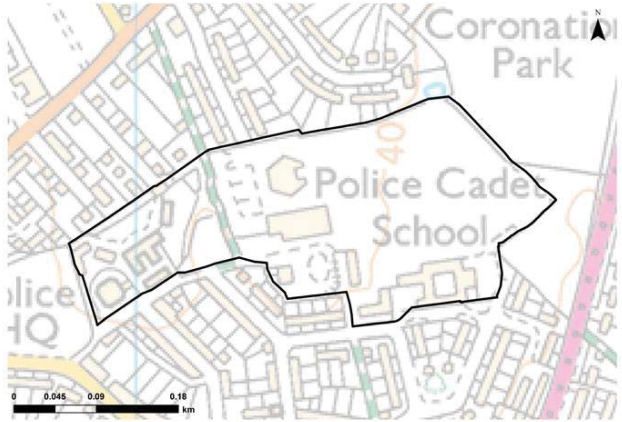
Surface Water (Risk of Flooding from Surface Water)



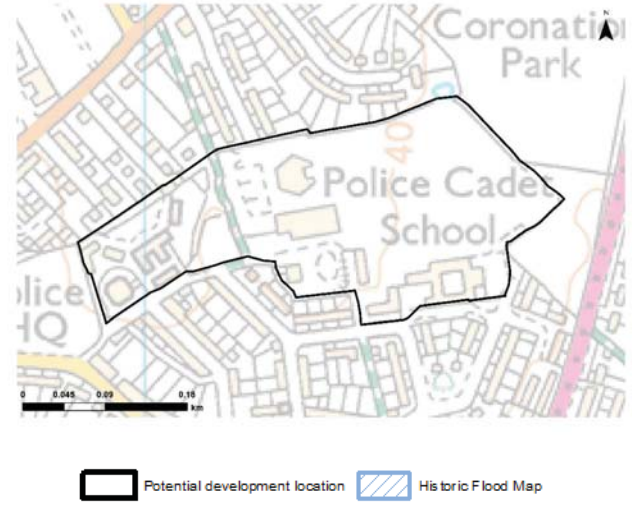
100-year depth



100-year velocity

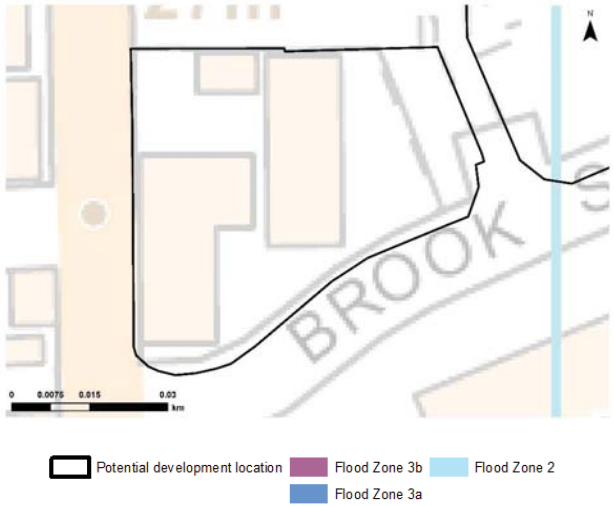


Historic Flood Map

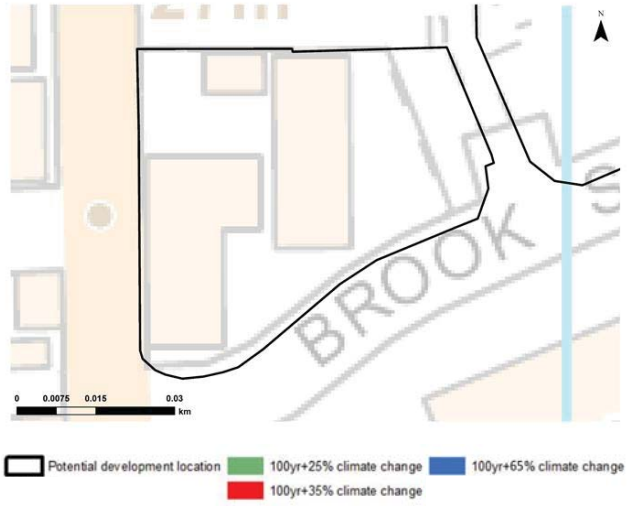


SITE NAME	Former Chelmsford Electrical and Car Wash, New Street, Chelmsford	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

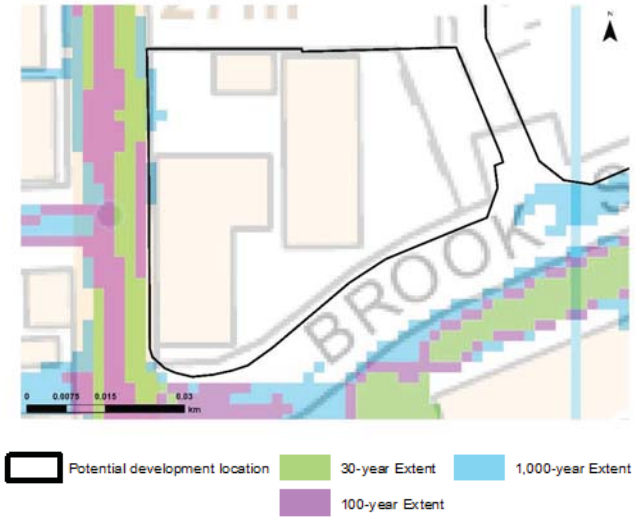
Flood Zones



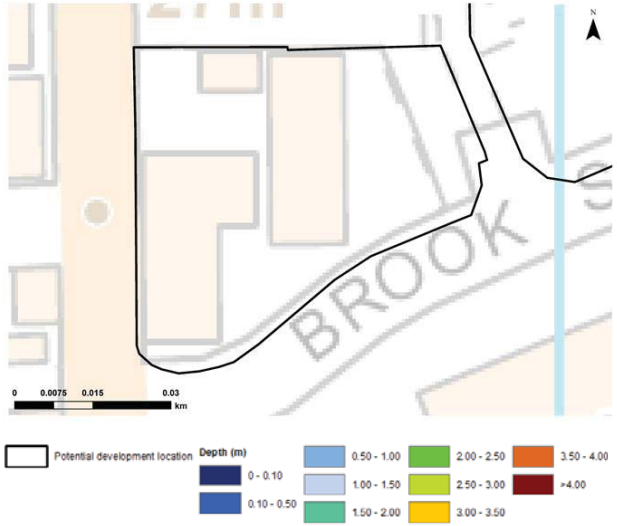
100-year plus climate change (2080s allowances)



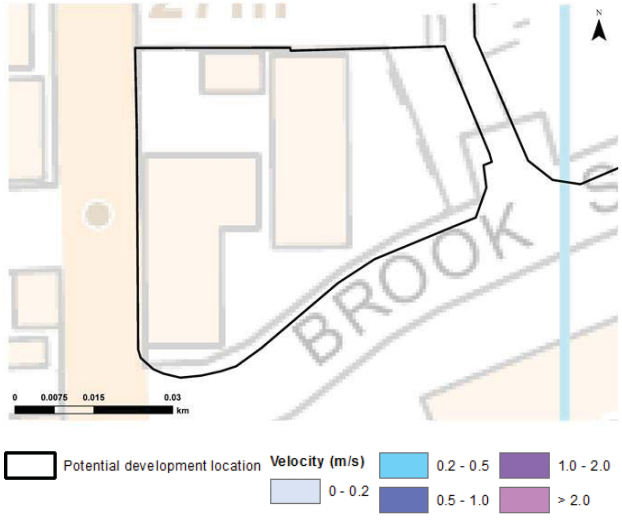
Surface Water (Risk of Flooding from Surface Water)



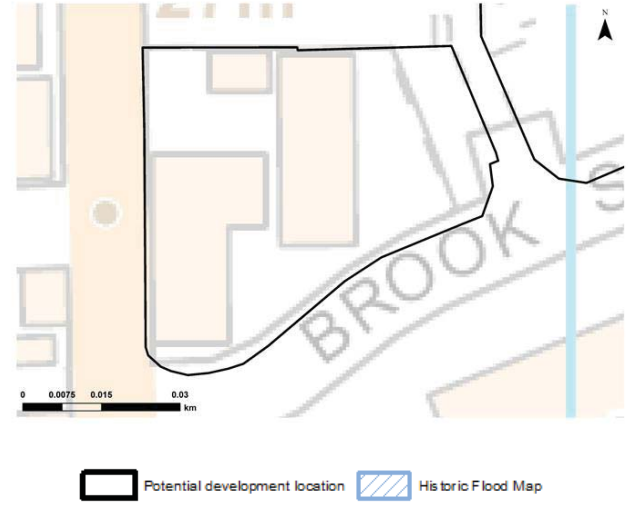
100-year depth



100-year velocity

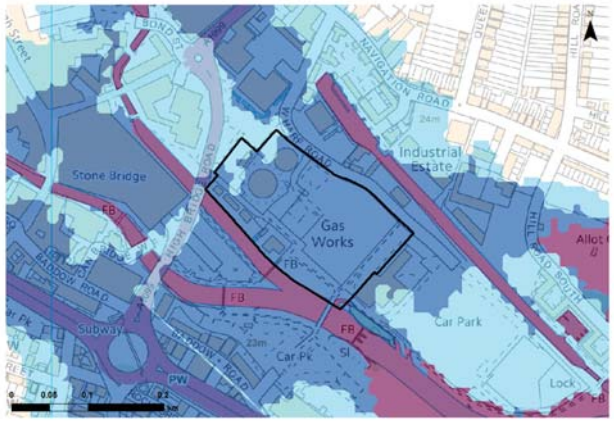


Historic Flood Map

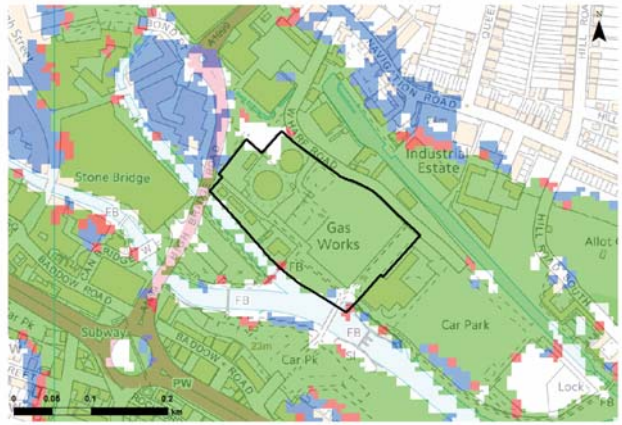


SITE NAME	Former Gas Works Wharf Road	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

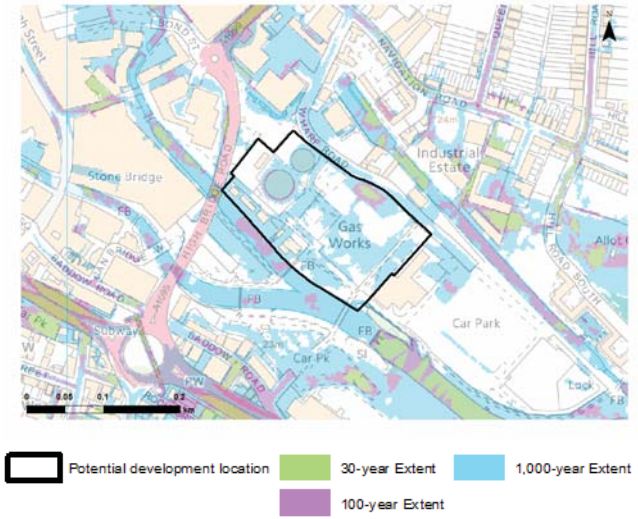
Flood Zones



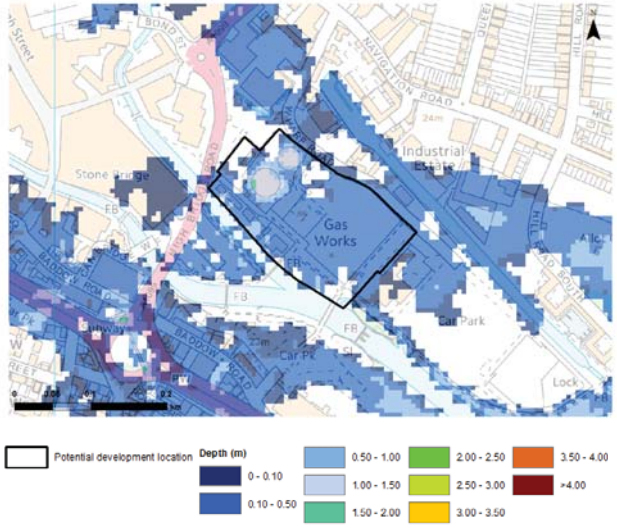
100-year plus climate change (2080s allowances)



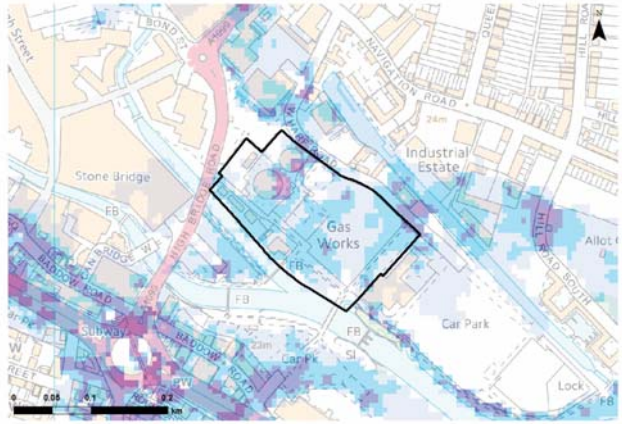
Surface Water (Risk of Flooding from Surface Water)



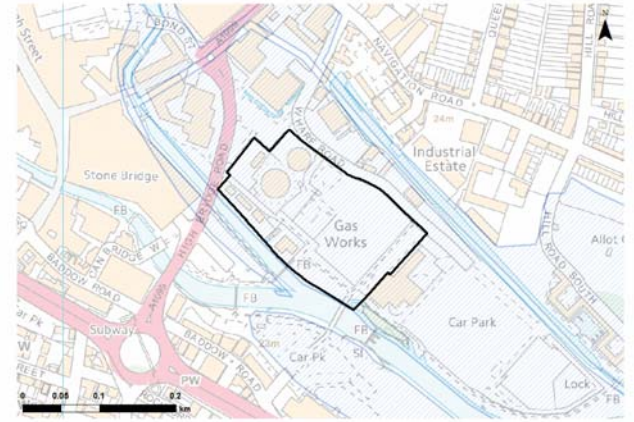
100-year depth



100-year velocity

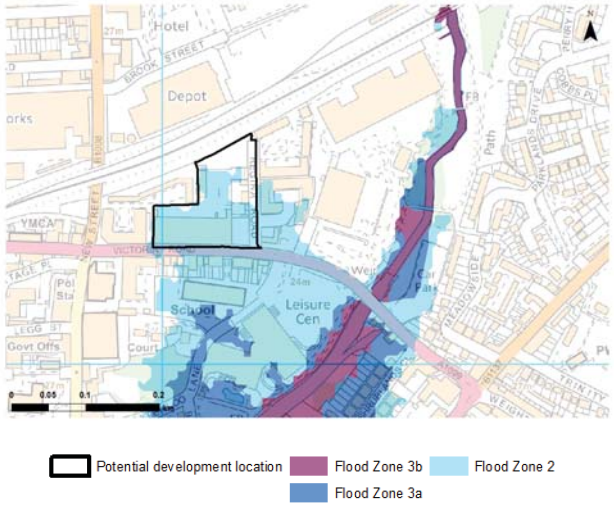


Historic Flood Map

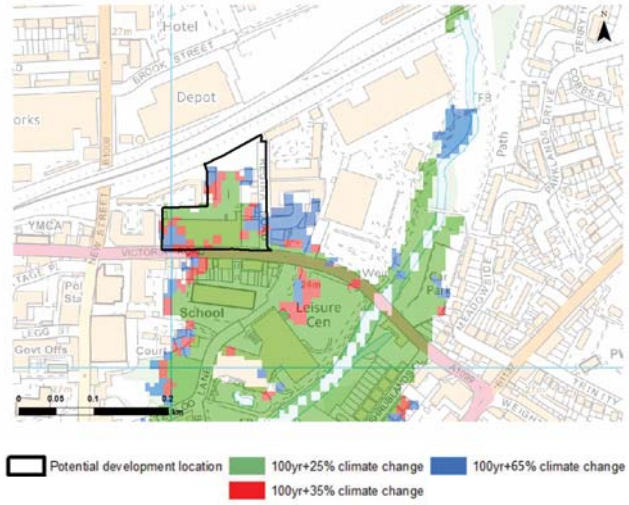


SITE NAME	Former Post Office Sorting Office, Victoria Road	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

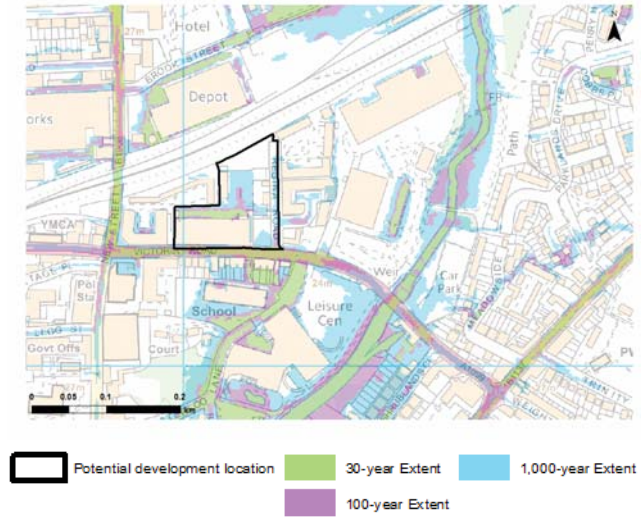
Flood Zones



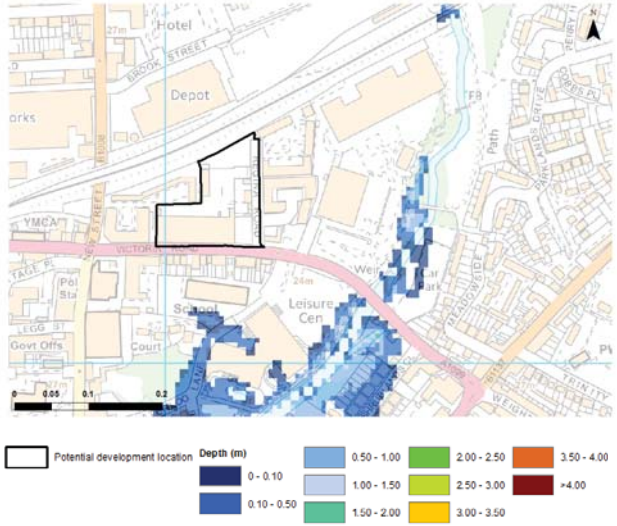
100-year plus climate change (2080s allowances)



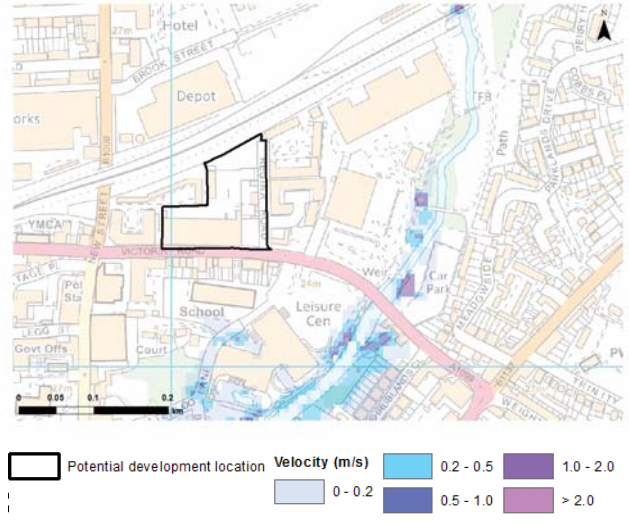
Surface Water (Risk of Flooding from Surface Water)



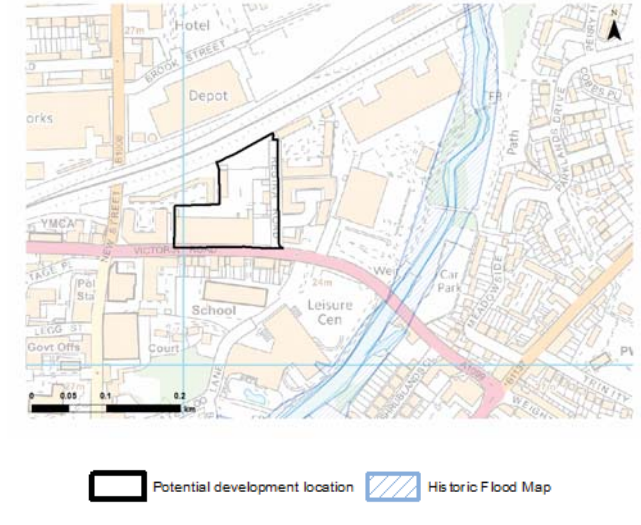
100-year depth



100-year velocity

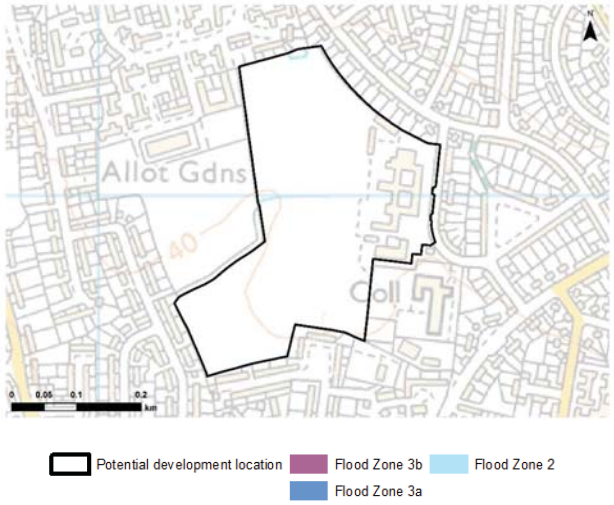


Historic Flood Map

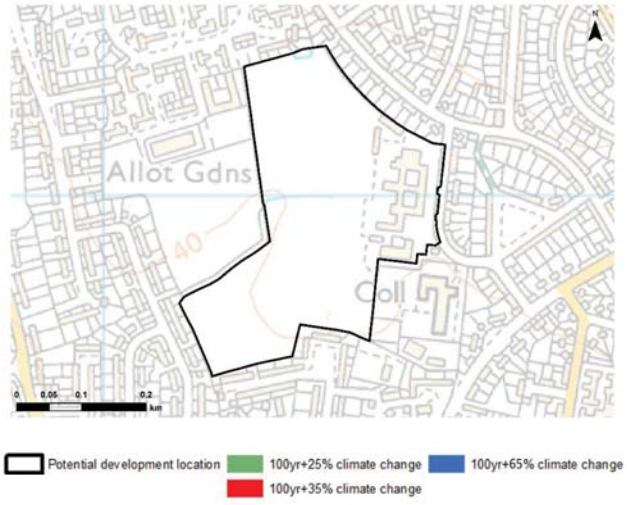


SITE NAME	Former St Peters College, Fox Crescent, Chelmsford	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

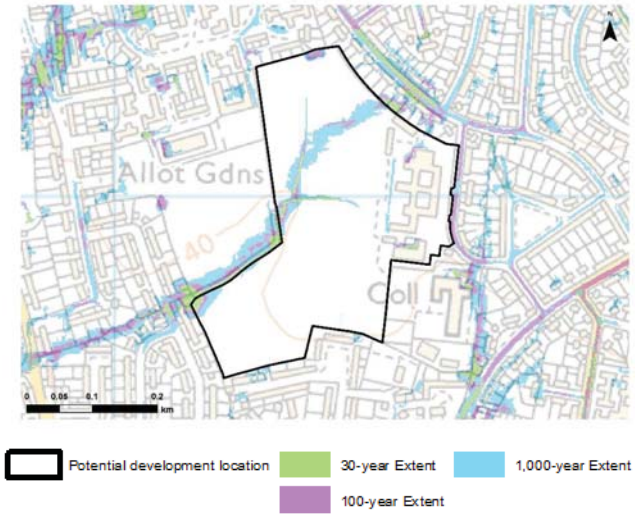
Flood Zones



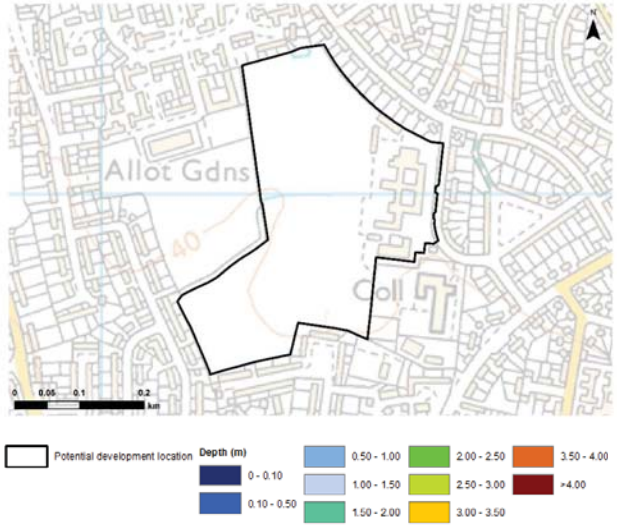
100-year plus climate change (2080s allowances)



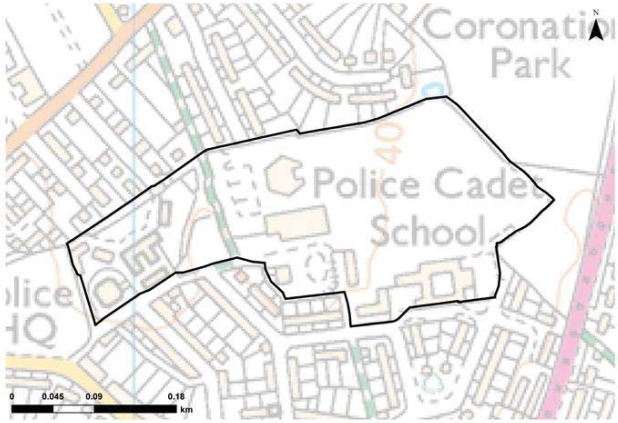
Surface Water (Risk of Flooding from Surface Water)



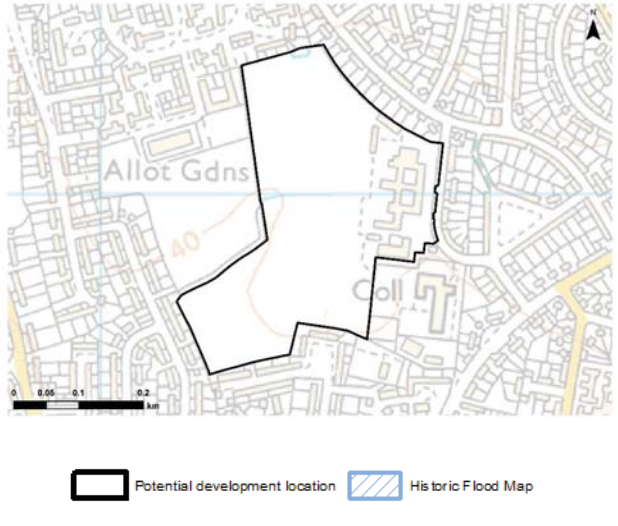
100-year depth



100-year velocity



Historic Flood Map



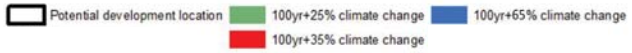
SITE NAME	Garage Site and Land, Medway Close	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

Flood Zones

100-year plus climate change (2080s allowances)

Flood Zones in this area are taken from original 2D (Jflow) modelling; therefore, there are no climate change outputs in this area.

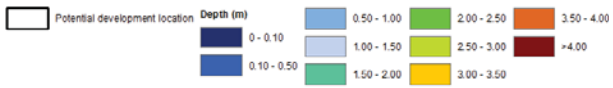
However, modelling undertaken for the other watercourses around Chelmsford show a general trend of the Upper End allowance extents being broadly similar to the extent of Flood Zone 2 in undefended areas. Therefore, it would be a reasonable assumption that the Upper End allowance would result in a similar flood extent as Flood Zone 2 for the site, affected the eastern boundary.



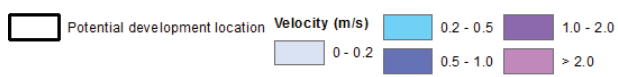
Surface Water (Risk of Flooding from Surface Water)

100-year depth

There is no detailed model in this area (Flood Zones are from original 2D (Jflow) modelling); therefore, there are no depth or velocity outputs in this area.

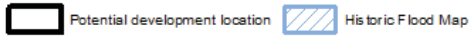


100-year velocity



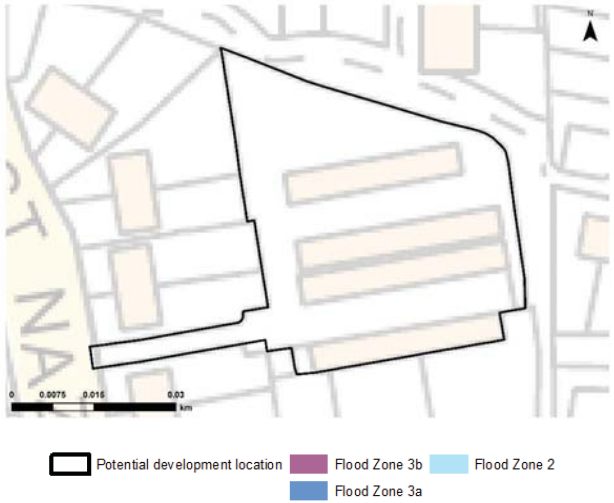
Historic Flood Map

The site is outside of the Environment Agency's historic flood map.



SITE NAME	Garage Site, St Nazaire Road, Chelmsford	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

Flood Zones

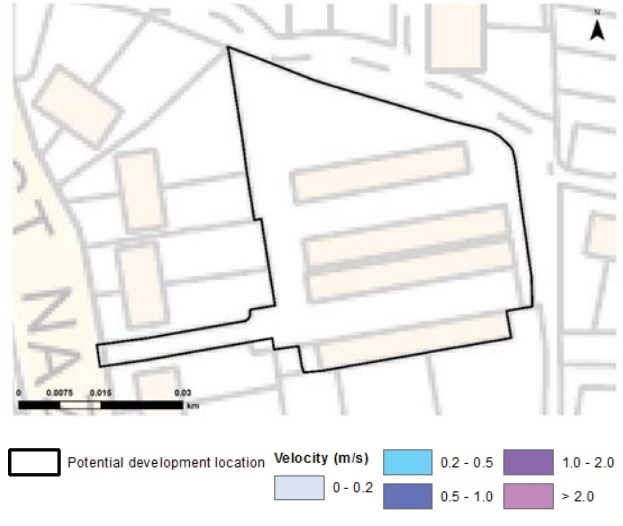


100-year plus climate change (2080s allowances)

Surface Water (Risk of Flooding from Surface Water)

100-year depth

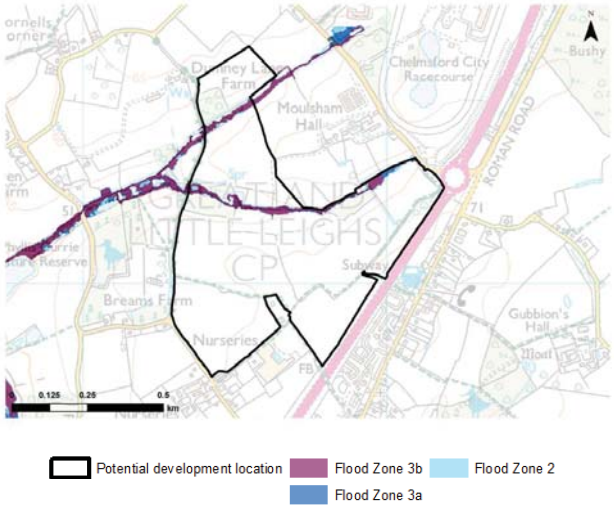
100-year velocity



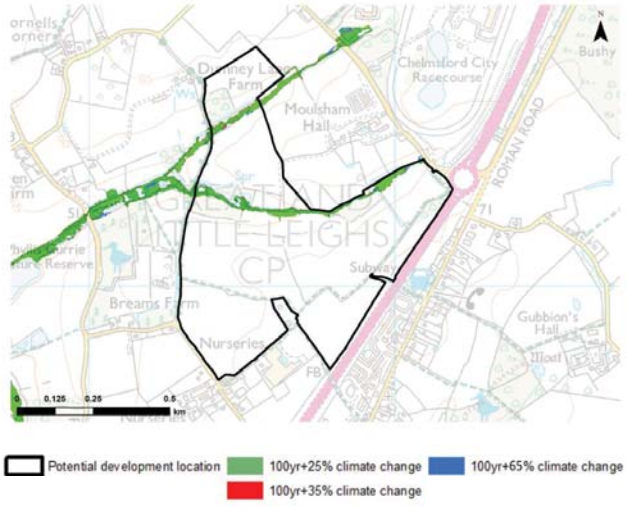
Historic Flood Map

SITE NAME	Great Leighs – Land at Moulsham Hall	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

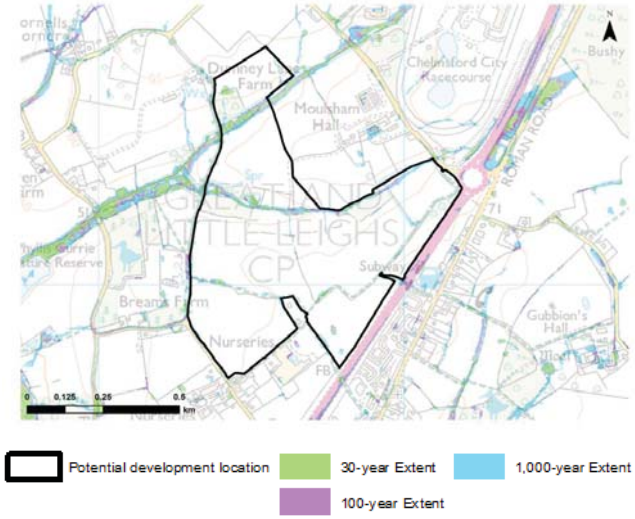
Flood Zones



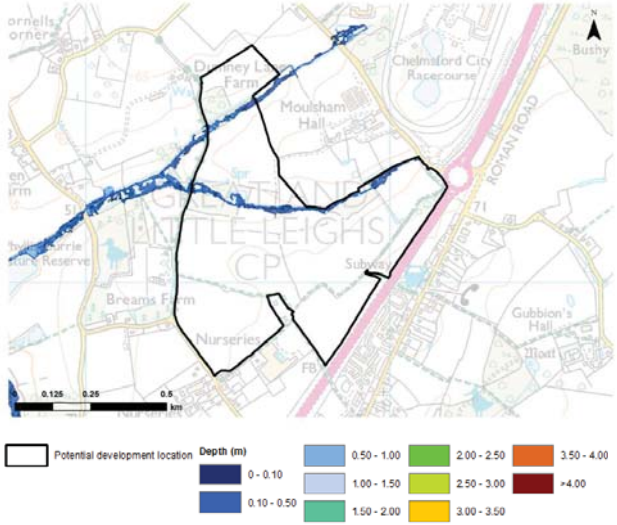
100-year plus climate change (2080s allowances)



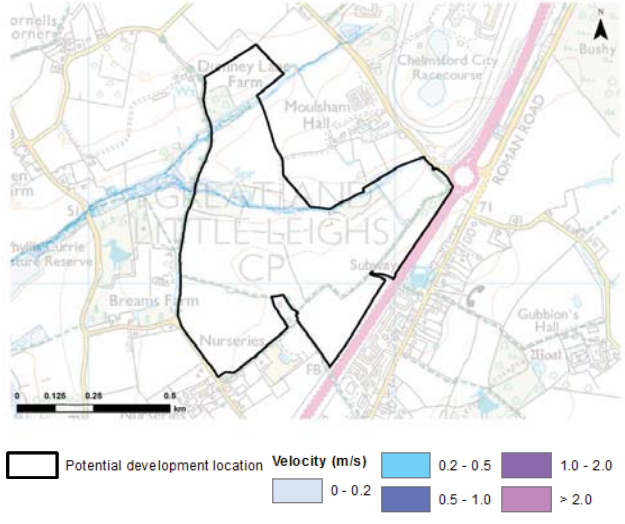
Surface Water (Risk of Flooding from Surface Water)



100-year depth

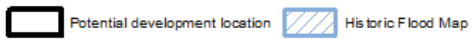


100-year velocity



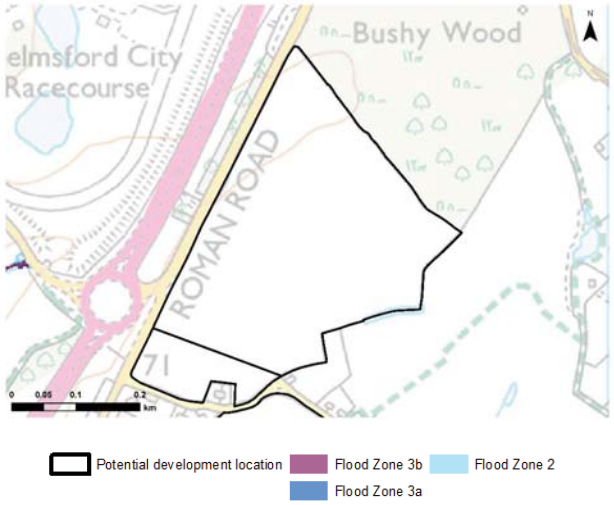
Historic Flood Map

The site is outside of the Environment Agency's historic flood map.

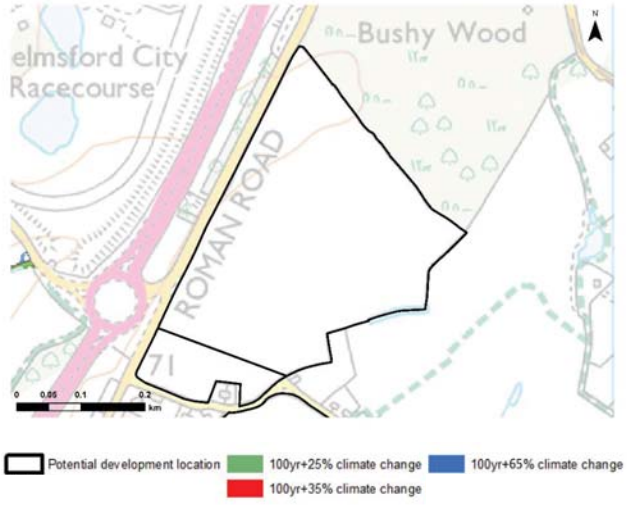


SITE NAME	Great Leighs - Land East of London Road	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

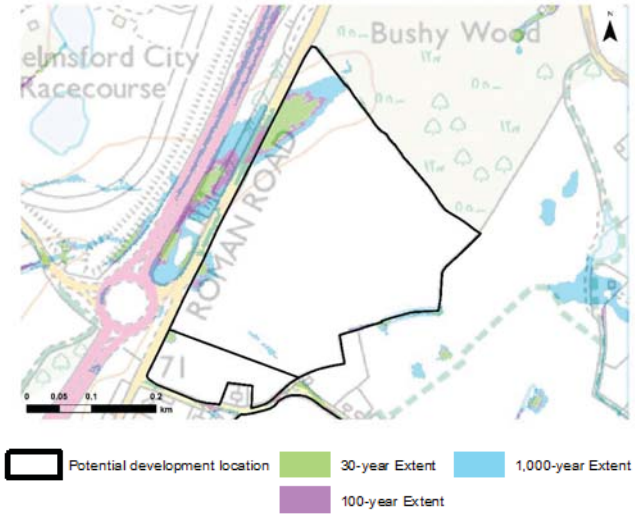
Flood Zones



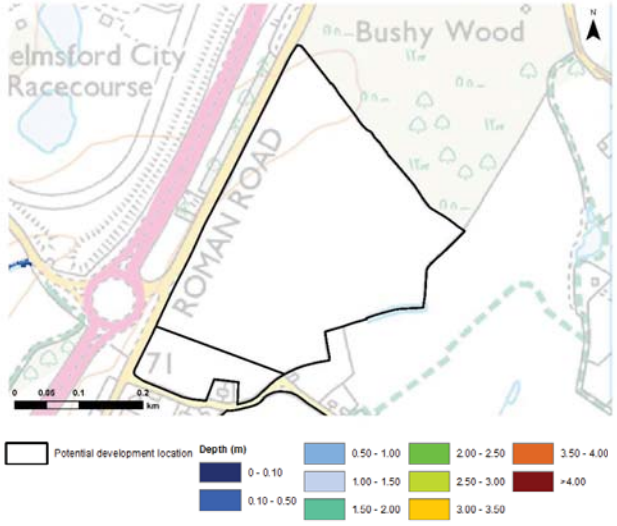
100-year plus climate change (2080s allowances)



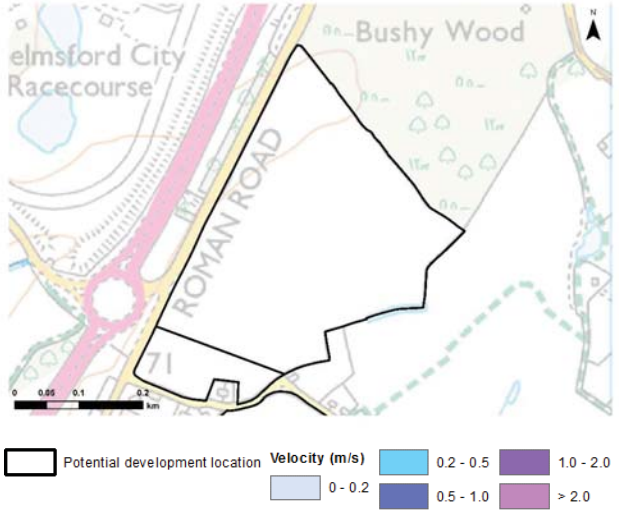
Surface Water (Risk of Flooding from Surface Water)



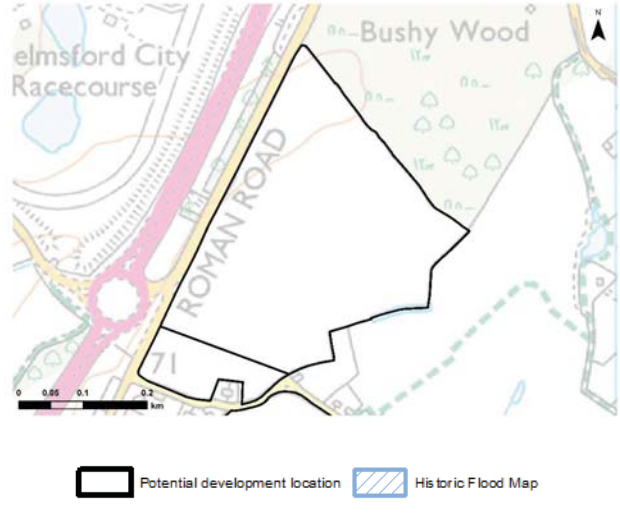
100-year depth



100-year velocity

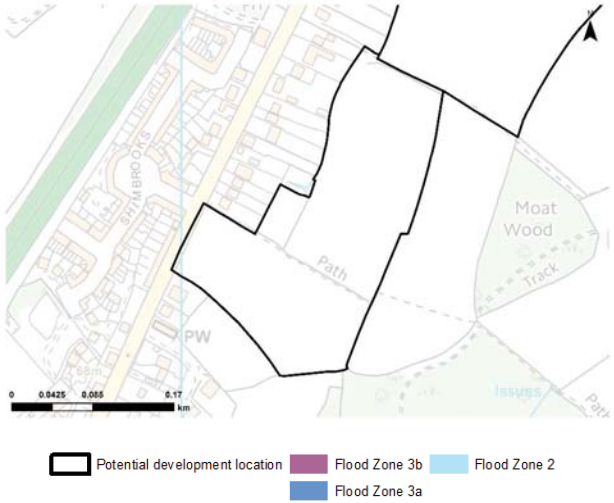


Historic Flood Map

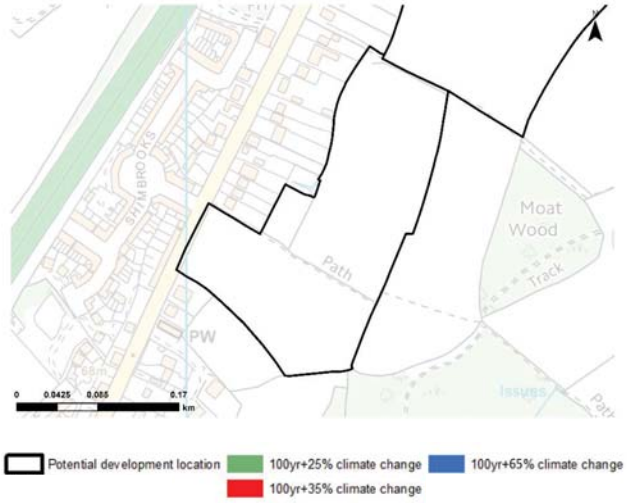


SITE NAME	Great Leighs - Land East of Main Road	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

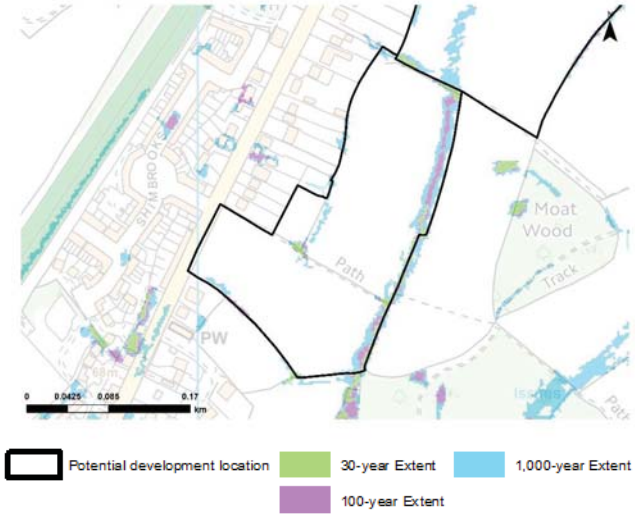
Flood Zones



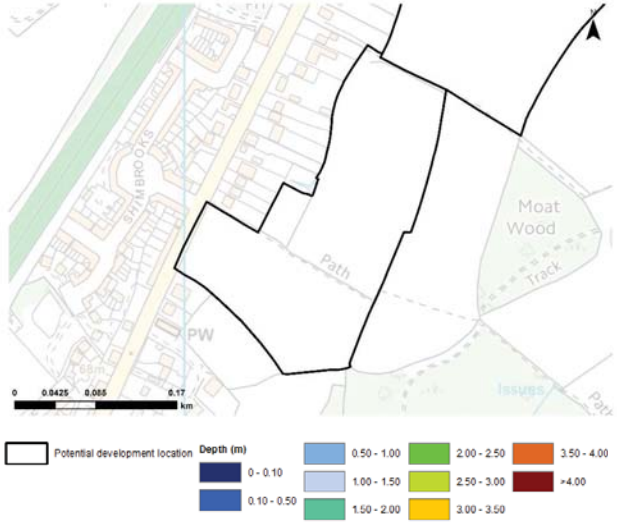
100-year plus climate change (2080s allowances)



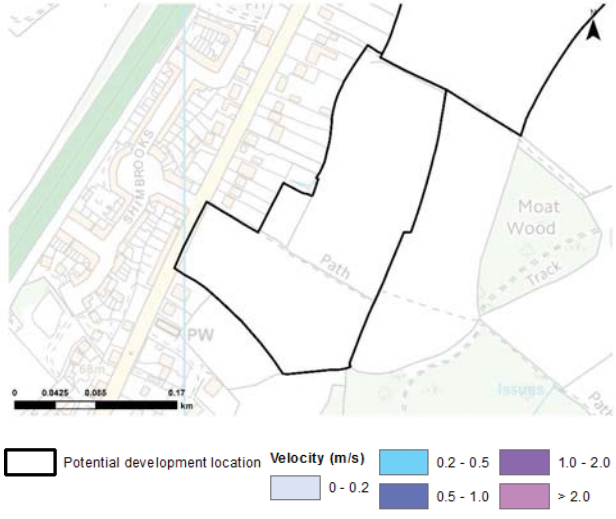
Surface Water (Risk of Flooding from Surface Water)



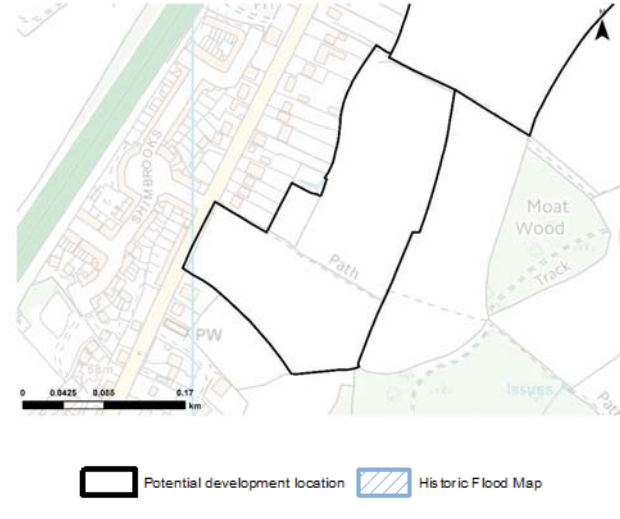
100-year depth



100-year velocity

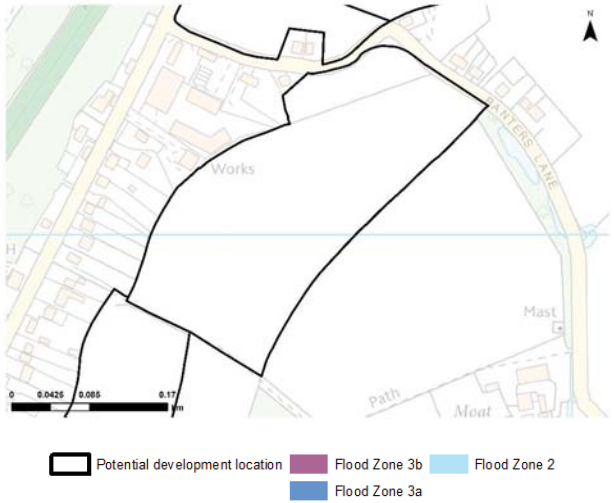


Historic Flood Map

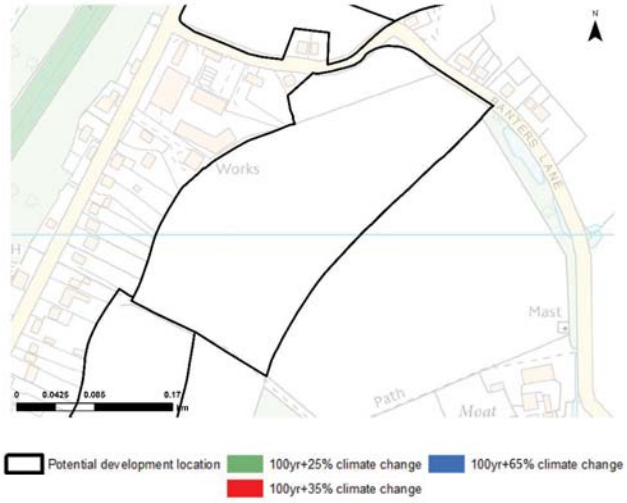


SITE NAME	Great Leighs - Land North and South of Banters Lane 2	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

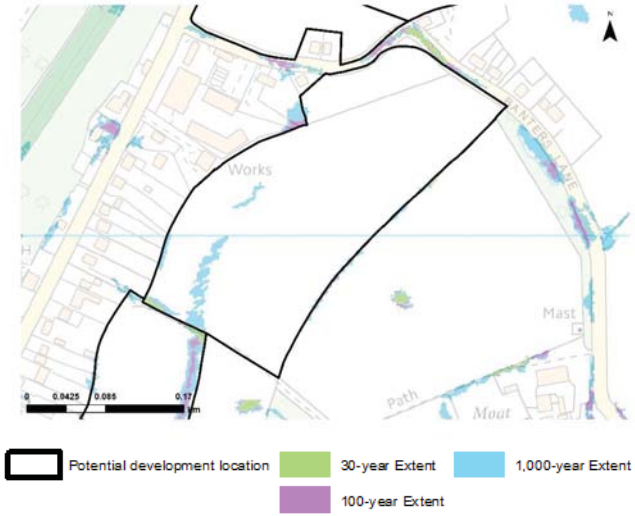
Flood Zones



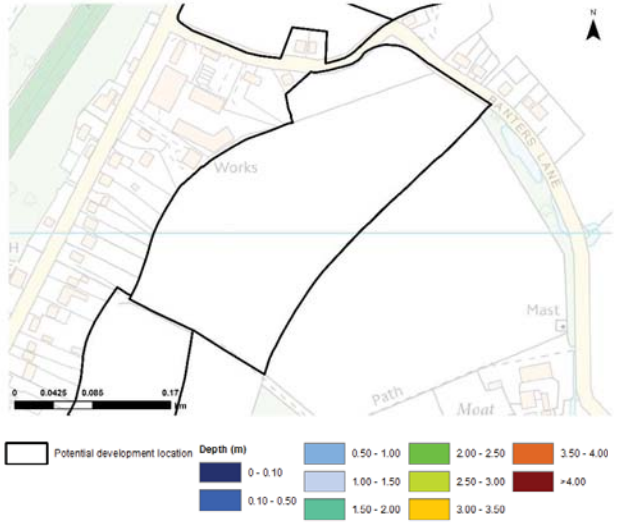
100-year plus climate change (2080s allowances)



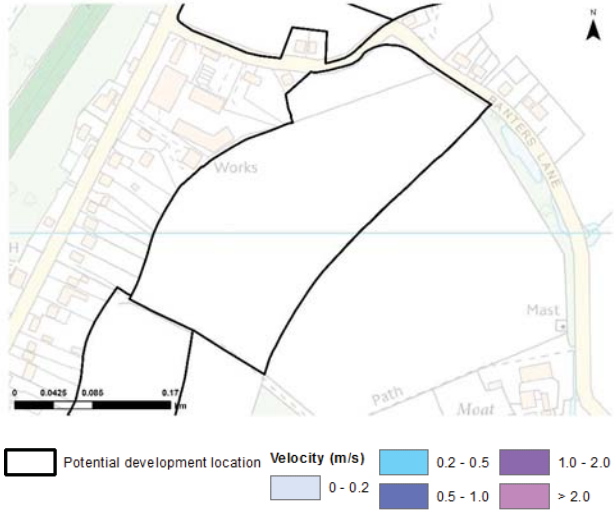
Surface Water (Risk of Flooding from Surface Water)



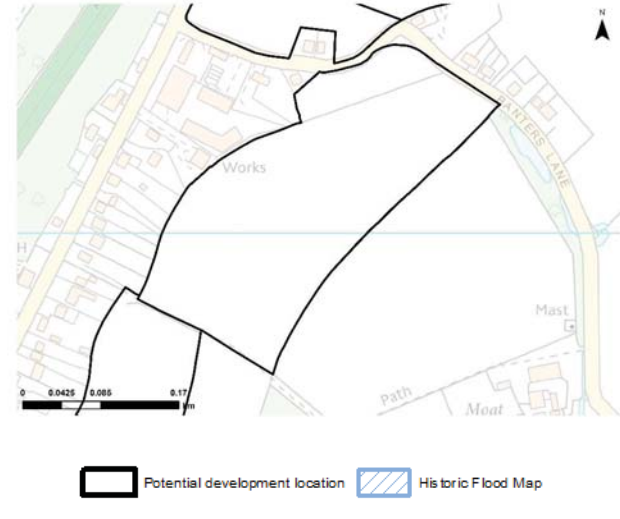
100-year depth



100-year velocity

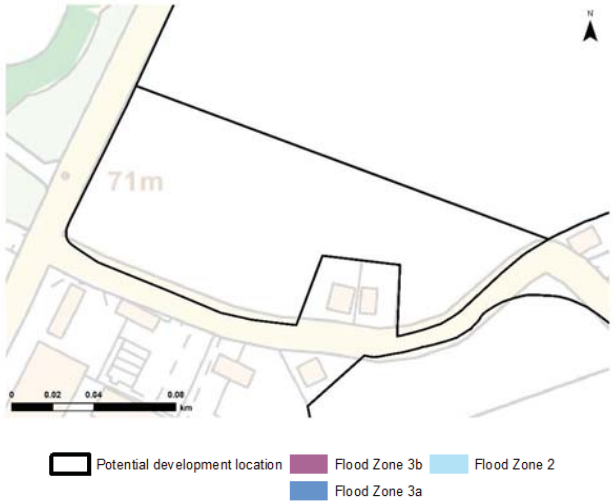


Historic Flood Map

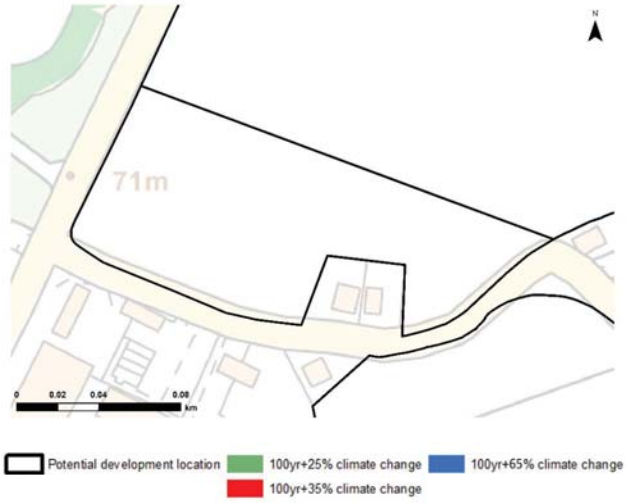


SITE NAME	Great Leighs - Land North and South of Banters Lane	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

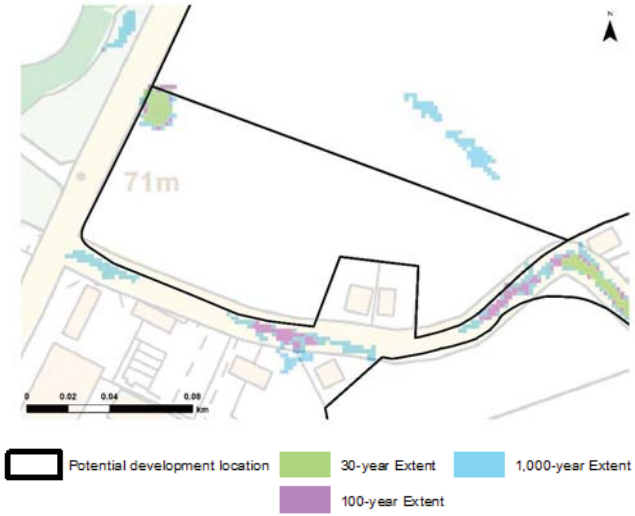
Flood Zones



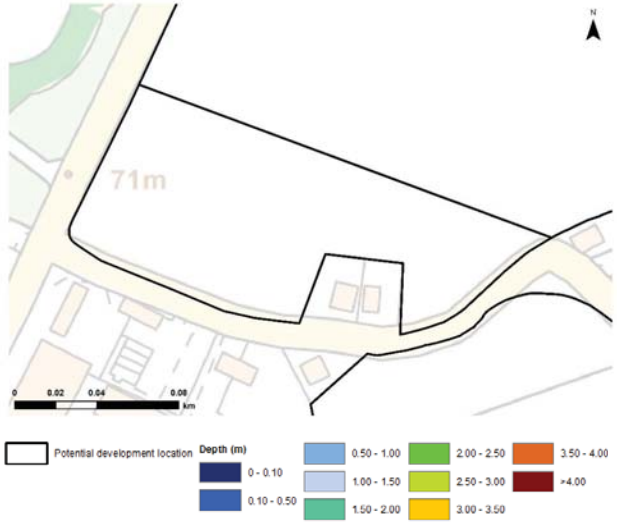
100-year plus climate change (2080s allowances)



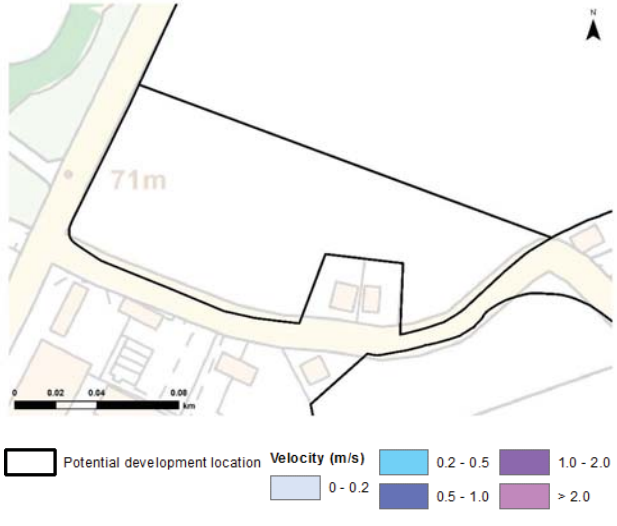
Surface Water (Risk of Flooding from Surface Water)



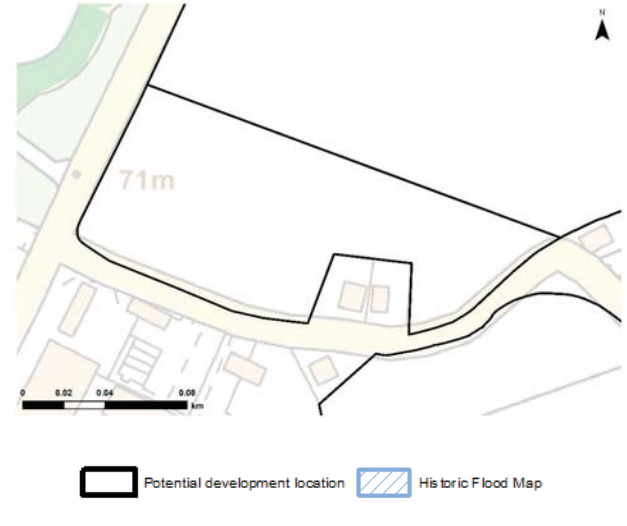
100-year depth



100-year velocity

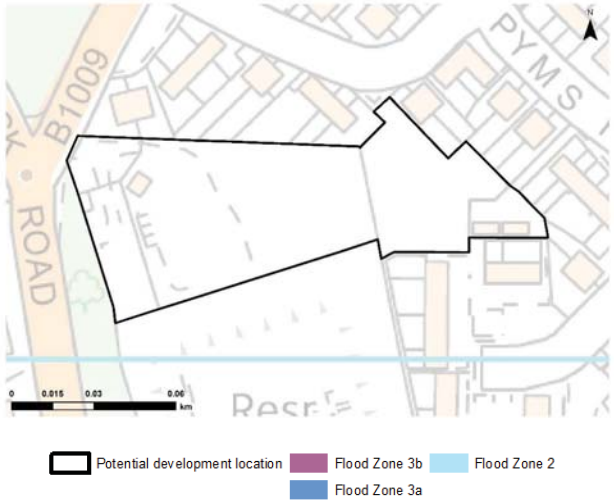


Historic Flood Map

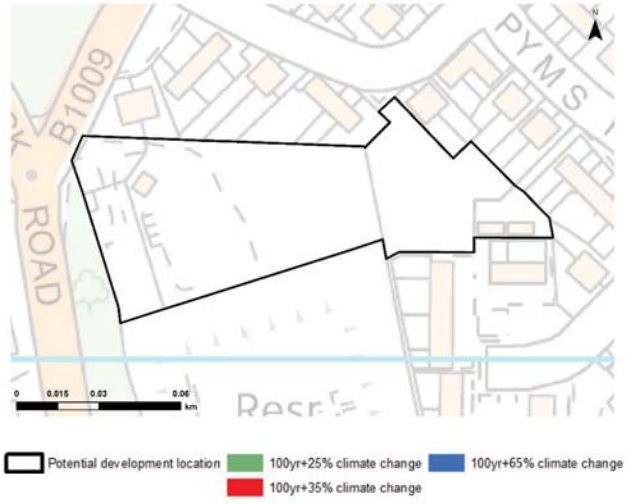


SITE NAME	Land North of Galleywood Reservoir	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

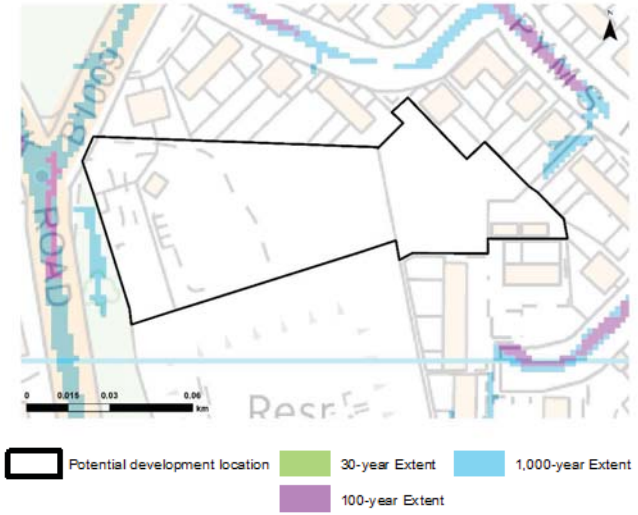
Flood Zones



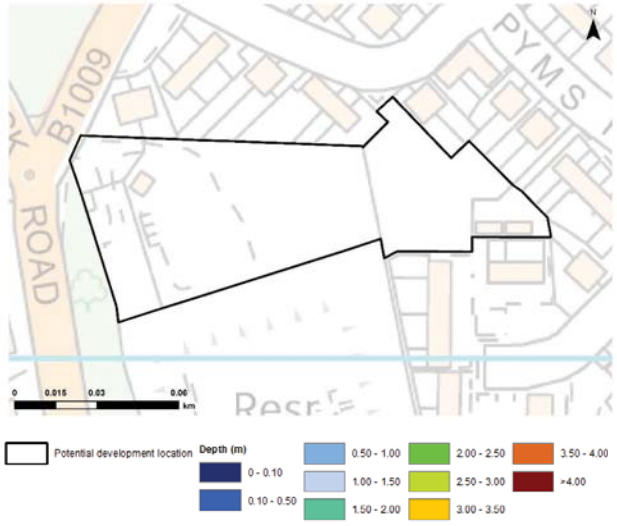
100-year plus climate change (2080s allowances)



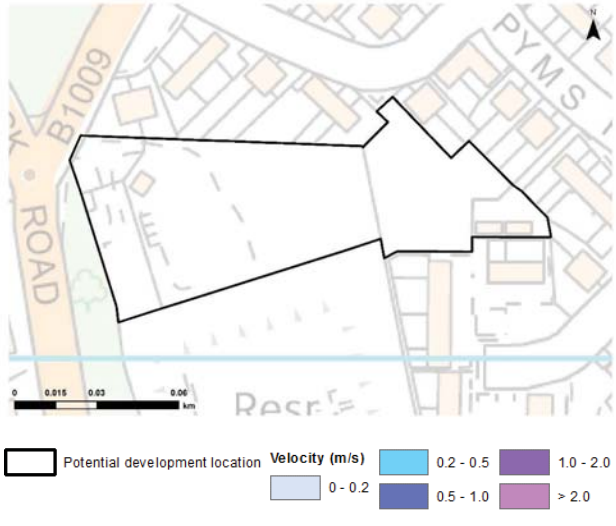
Surface Water (Risk of Flooding from Surface Water)



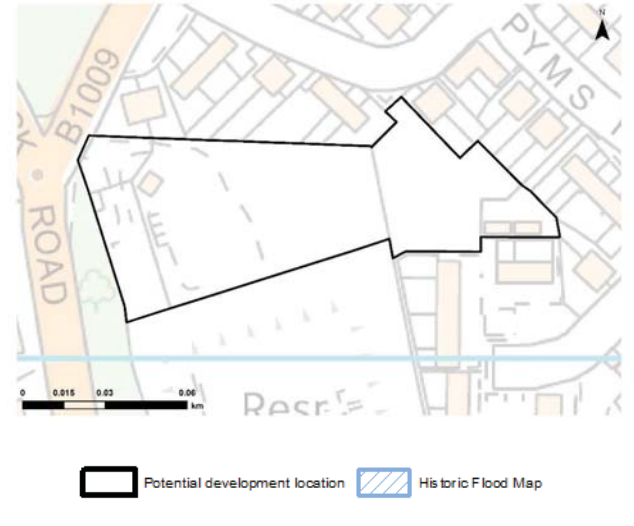
100-year depth



100-year velocity



Historic Flood Map

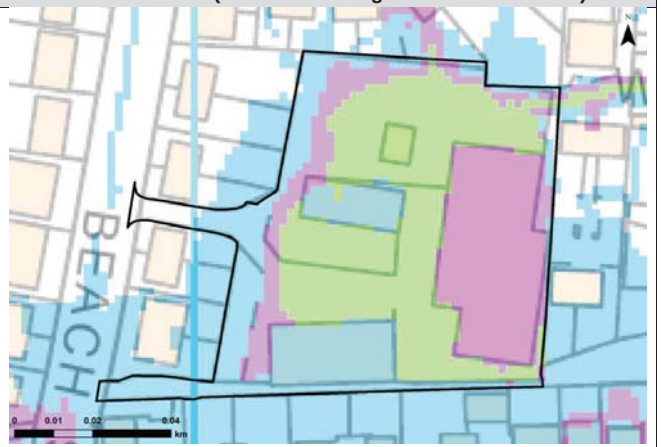


SITE NAME	Land rear of 17 – 37 Beach's Drive	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

Flood Zones

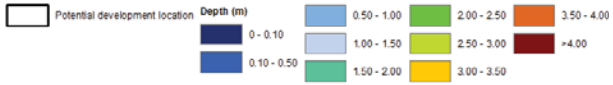
100-year plus climate change (2080s allowances)

Surface Water (Risk of Flooding from Surface Water)



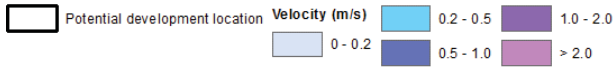
100-year depth

Depth grids for the Chelmer model were not supplied for the 1d domain areas of the model.



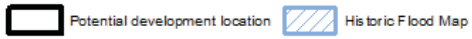
100-year velocity

Velocity grids are only available in areas modelled in 2d. As the site was modelled in an area of the Chelmer 1d domain, velocities are not available.



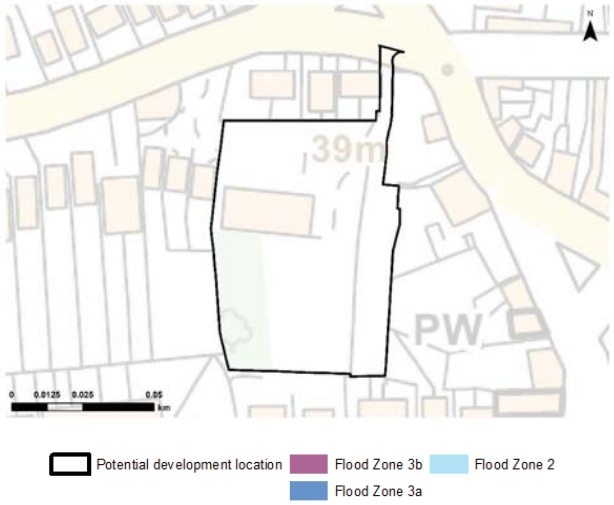
Historic Flood Map

The site is outside of the Environment Agency's historic flood map.

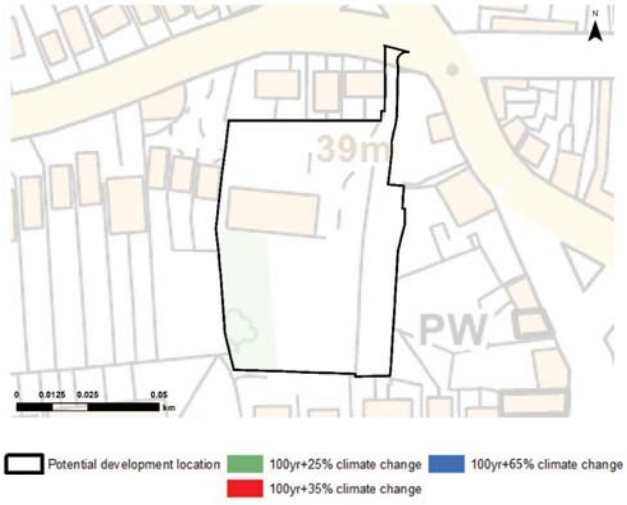


SITE NAME	Land Surrounding Telephone Exchange, Ongar Road, Writtle	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

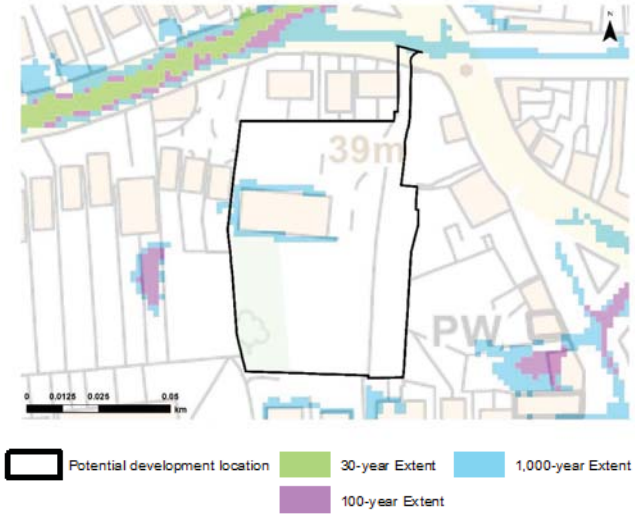
Flood Zones



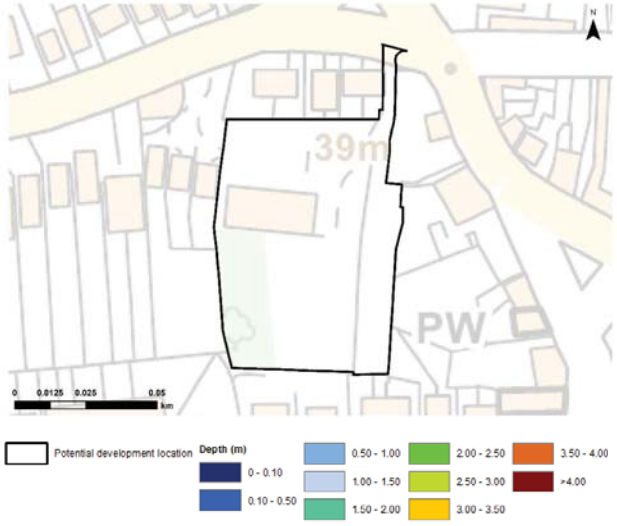
100-year plus climate change (2080s allowances)



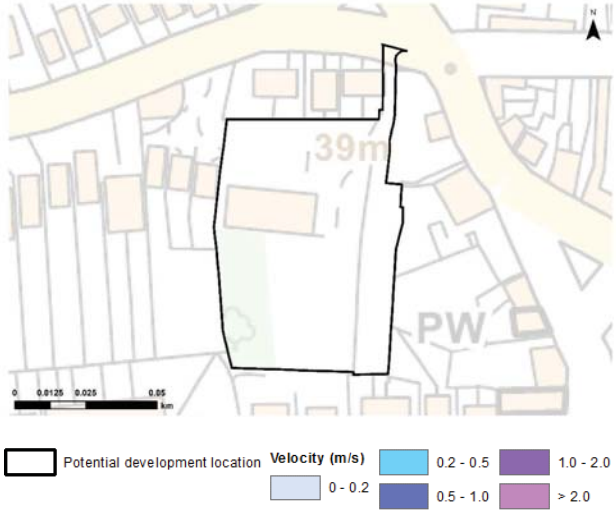
Surface Water (Risk of Flooding from Surface Water)



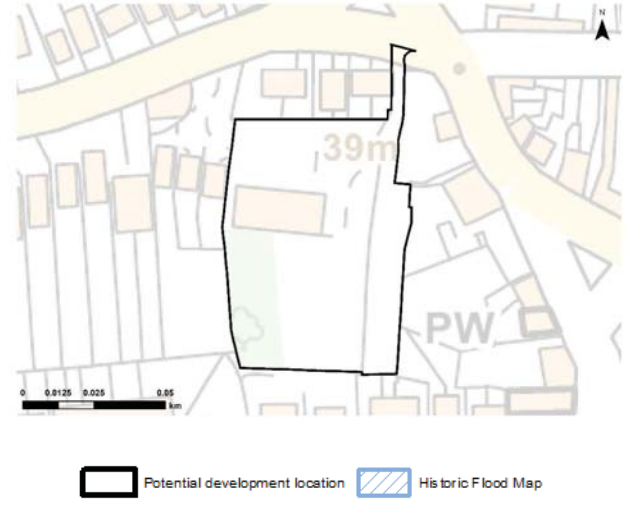
100-year depth



100-year velocity

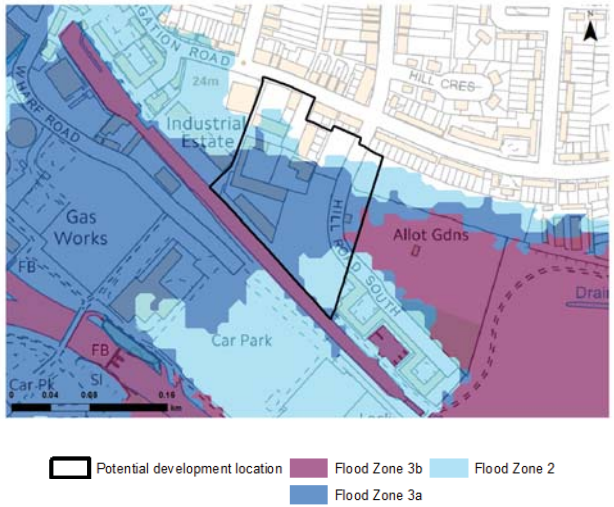


Historic Flood Map

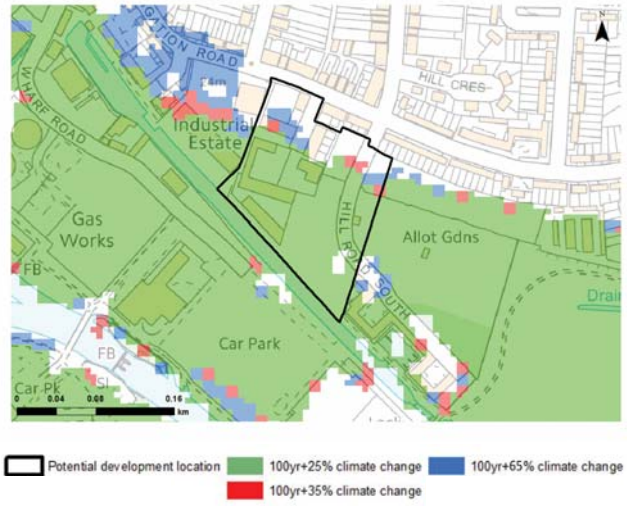


SITE NAME	Lockside, Navigation Road	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

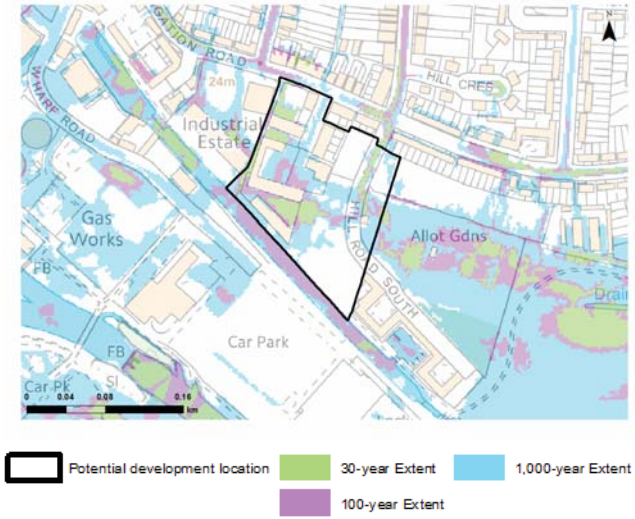
Flood Zones



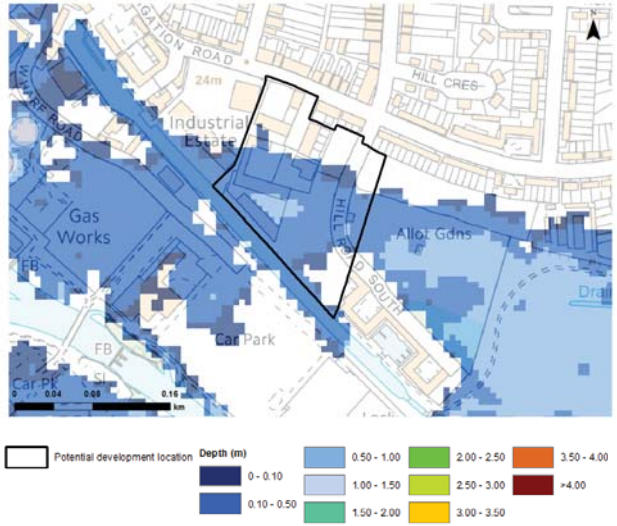
100-year plus climate change (2080s allowances)



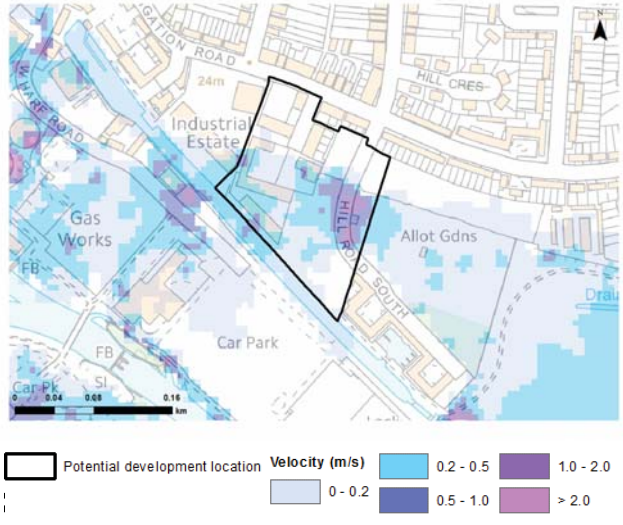
Surface Water (Risk of Flooding from Surface Water)



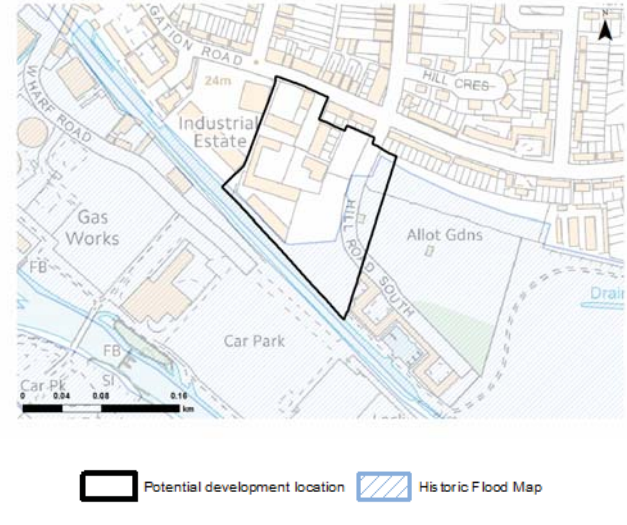
100-year depth



100-year velocity

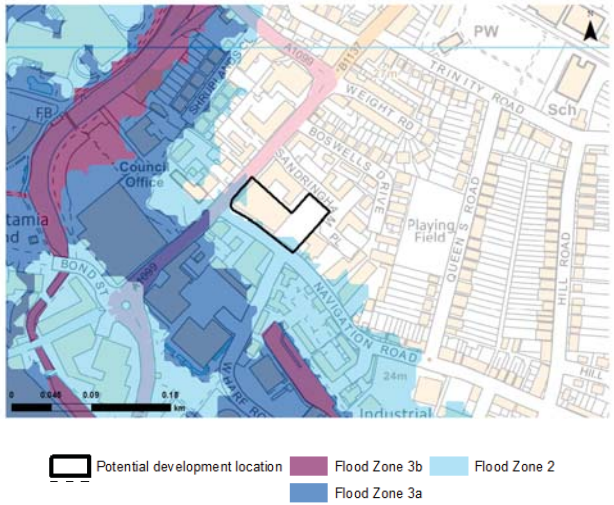


Historic Flood Map

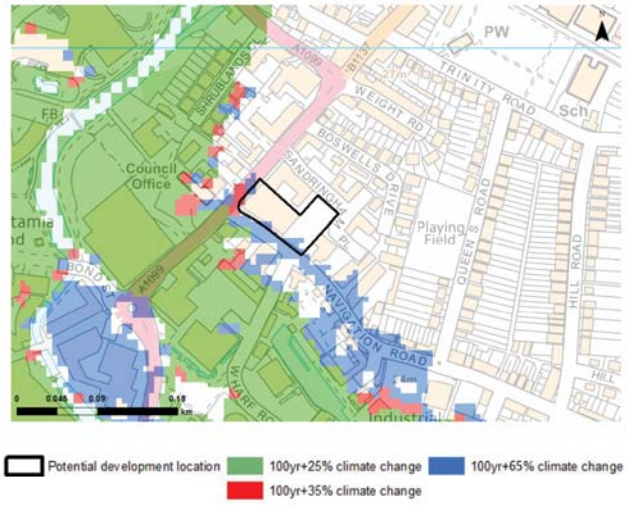


SITE NAME	Navigation Road	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

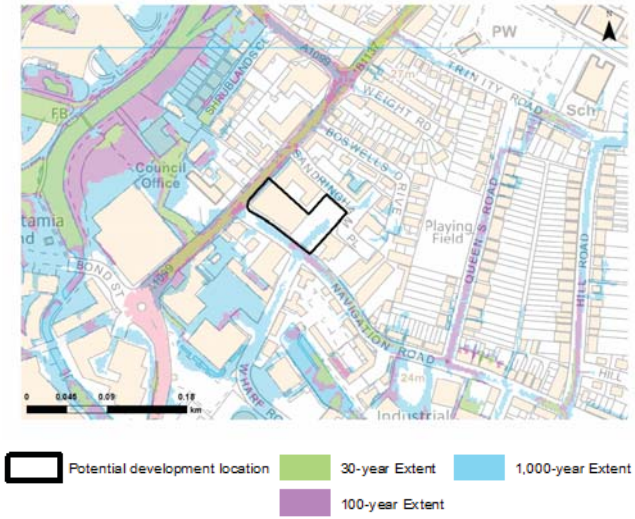
Flood Zones



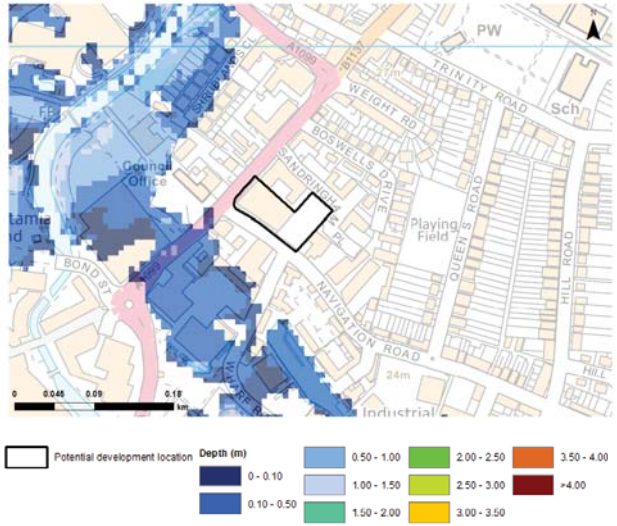
100-year plus climate change (2080s allowances)



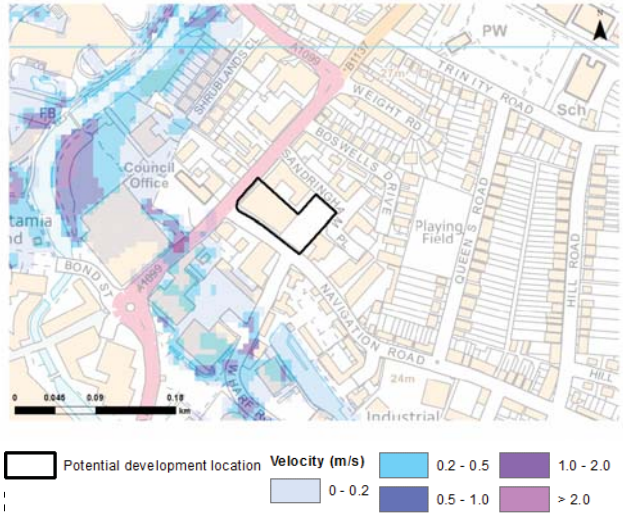
Surface Water (Risk of Flooding from Surface Water)



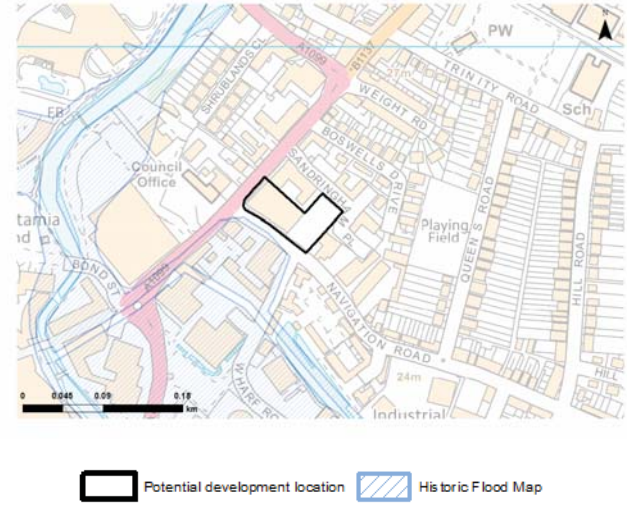
100-year depth



100-year velocity

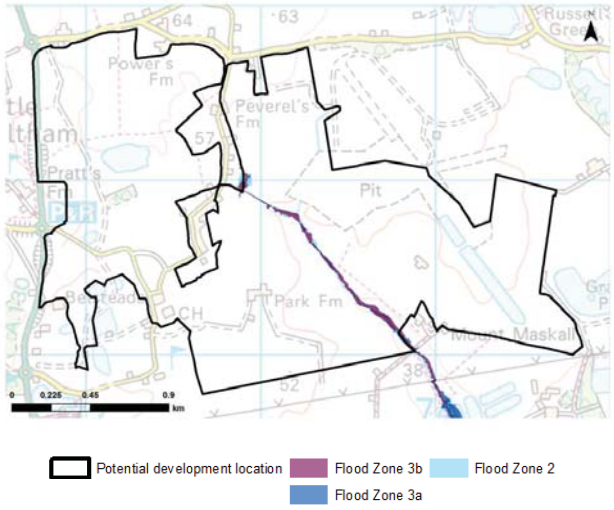


Historic Flood Map

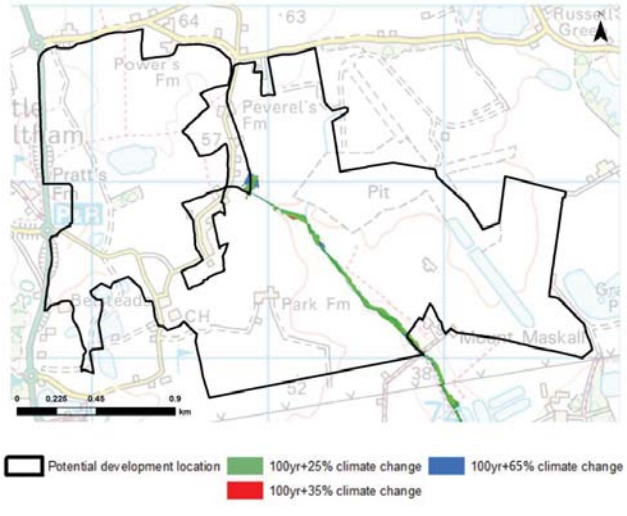


SITE NAME	North East Chelmsford	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

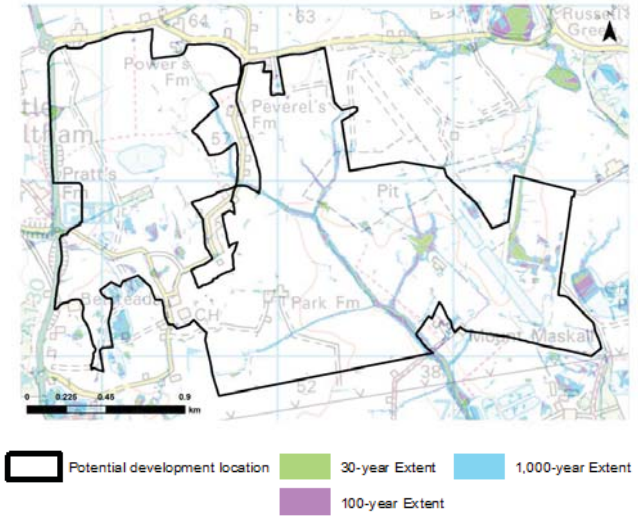
Flood Zones



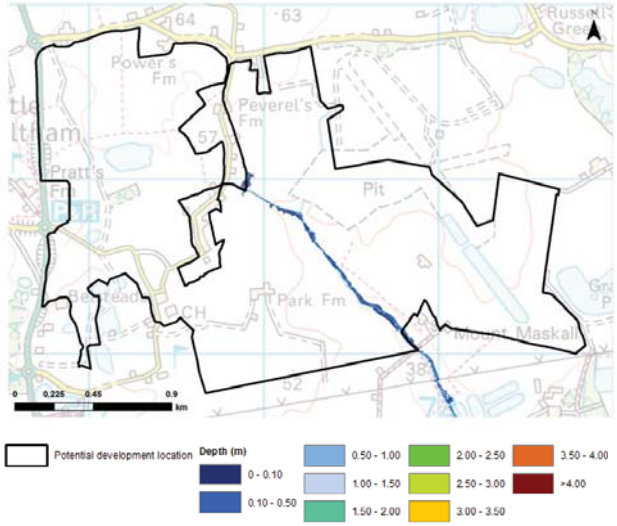
100-year plus climate change (2080s allowances)



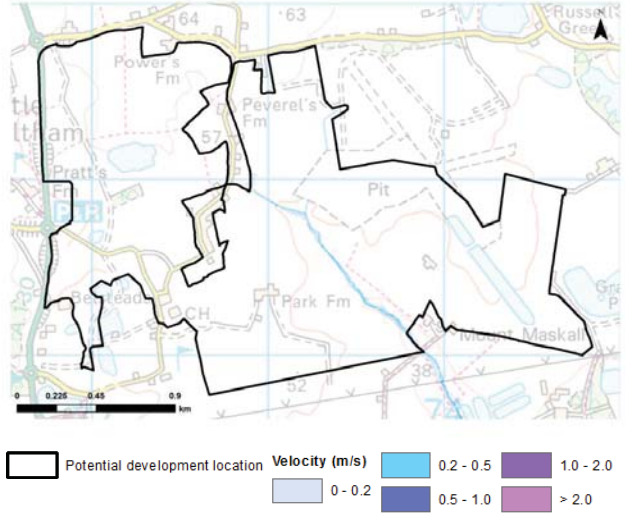
Surface Water (Risk of Flooding from Surface Water)



100-year depth

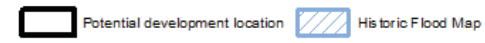


100-year velocity



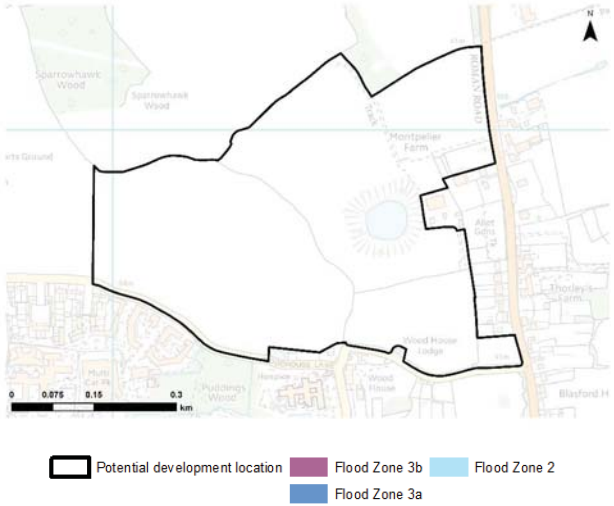
Historic Flood Map

The site is outside of the Environment Agency's historic flood map.

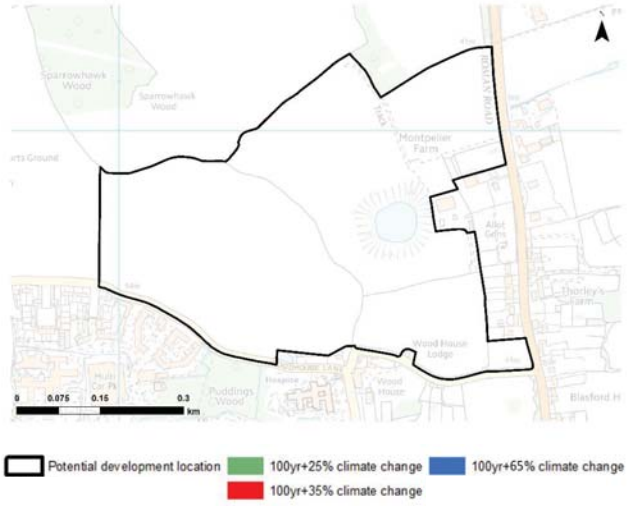


SITE NAME	North of Broomfield	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

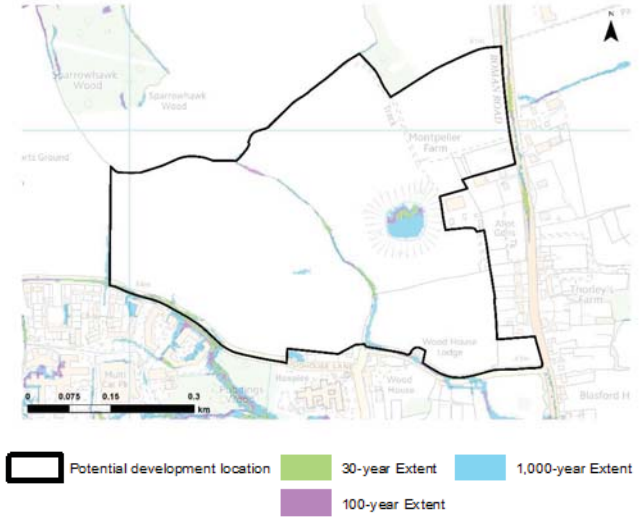
Flood Zones



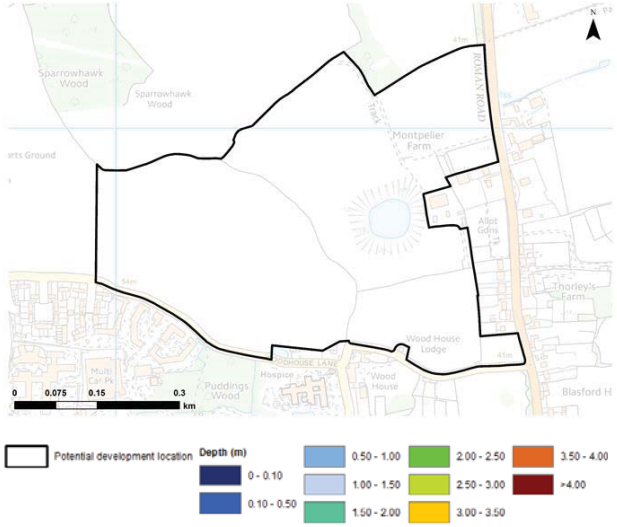
100-year plus climate change (2080s allowances)



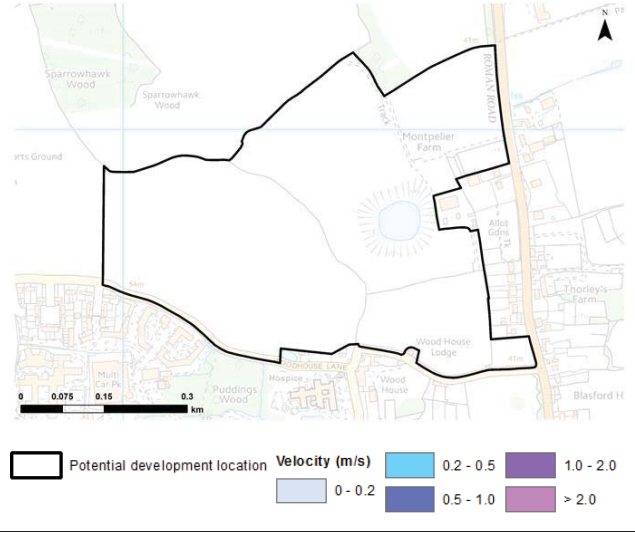
Surface Water (Risk of Flooding from Surface Water)



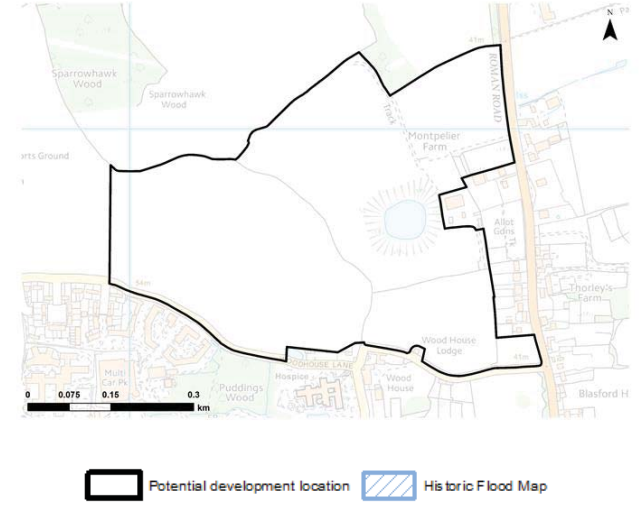
100-year depth



100-year velocity

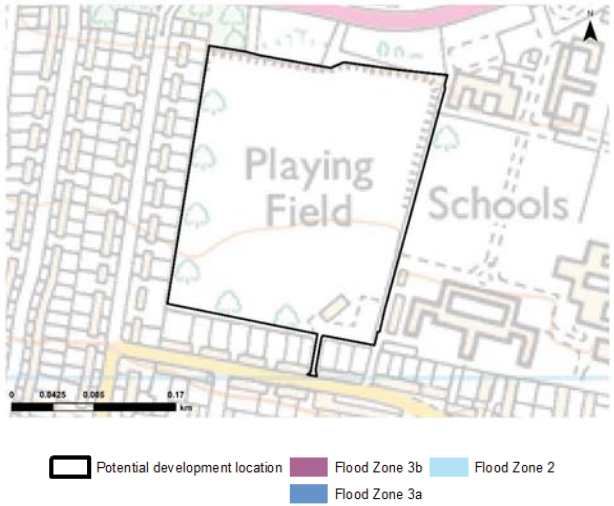


Historic Flood Map

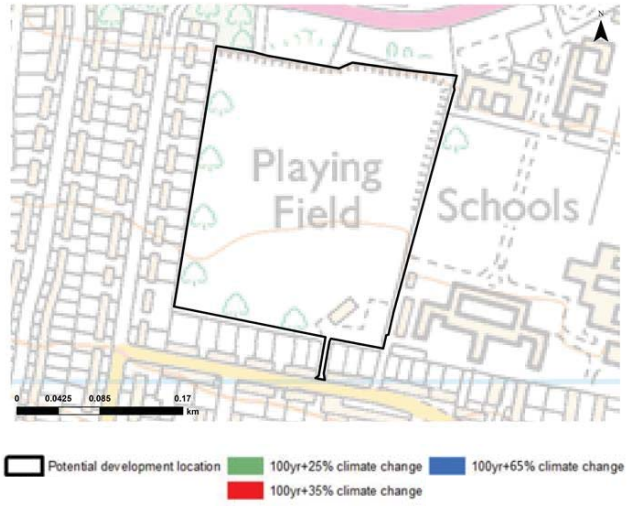


SITE NAME	North of Gloucester Avenue (John Shennan), Chelmsford	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

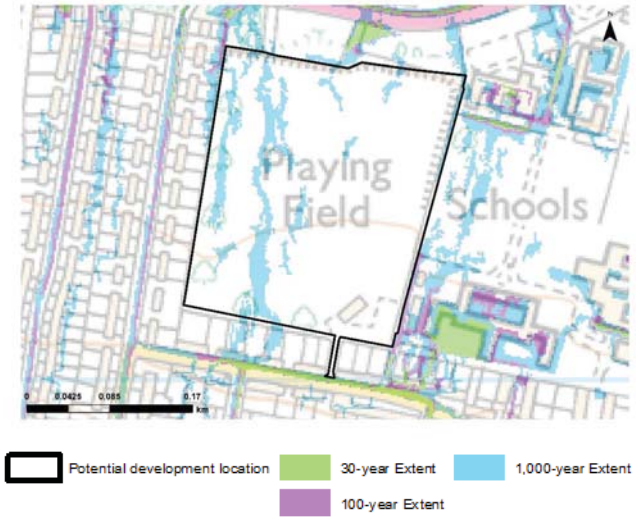
Flood Zones



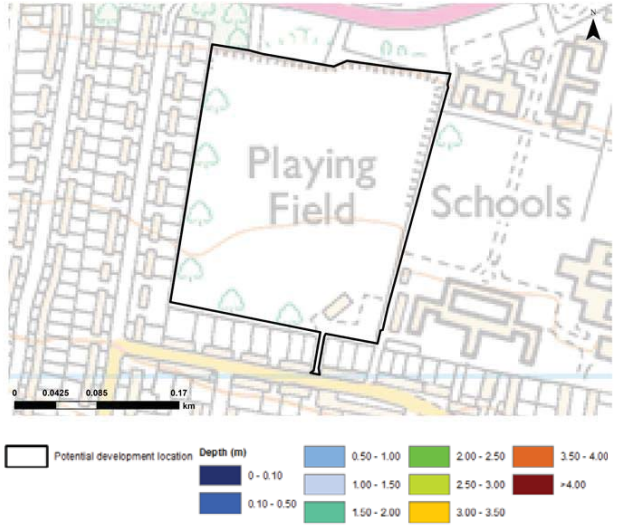
100-year plus climate change (2080s allowances)



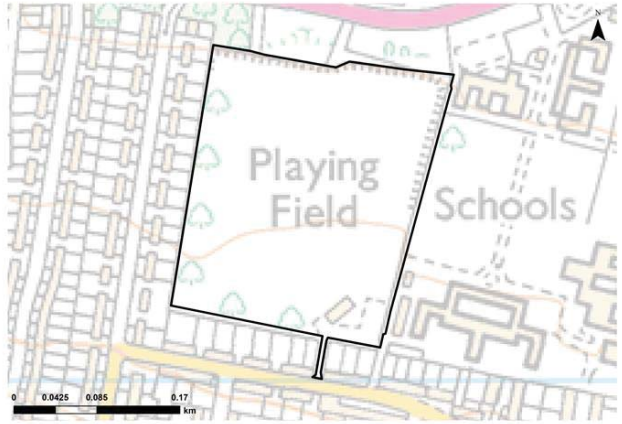
Surface Water (Risk of Flooding from Surface Water)



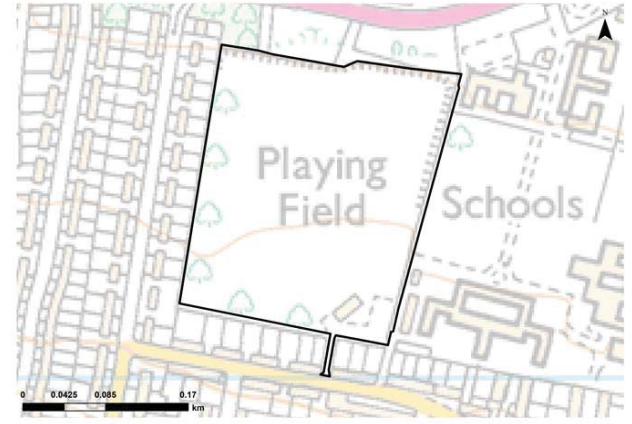
100-year depth



100-year velocity

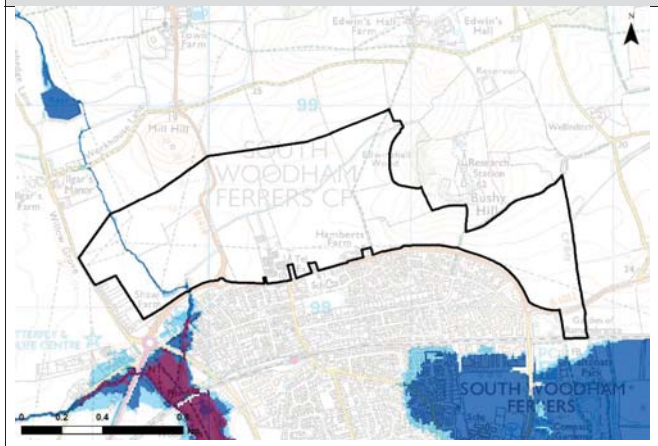


Historic Flood Map

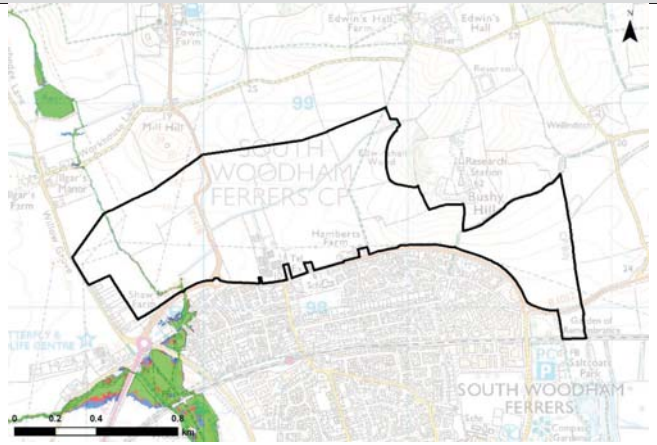


SITE NAME	North of South Woodham Ferrers	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

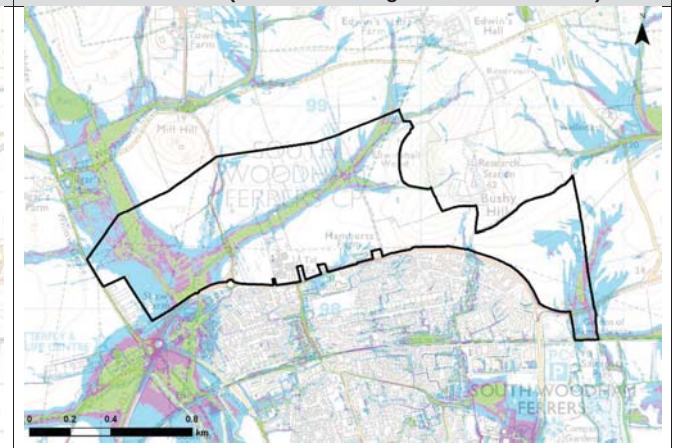
Flood Zones



100-year plus climate change (2080s allowances)

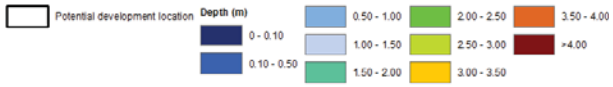


Surface Water (Risk of Flooding from Surface Water)

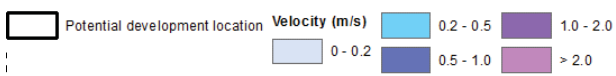


100-year depth

There is no detailed model in this area (Flood Zones are from original 2D (Jflow) modelling); therefore, there are no depth or velocity outputs in this area.

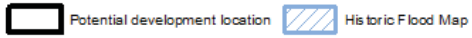


100-year velocity



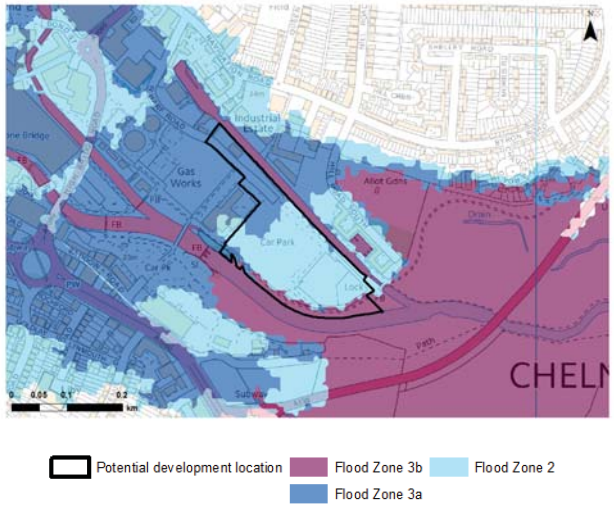
Historic Flood Map

The site is outside of the Environment Agency's historic flood map.

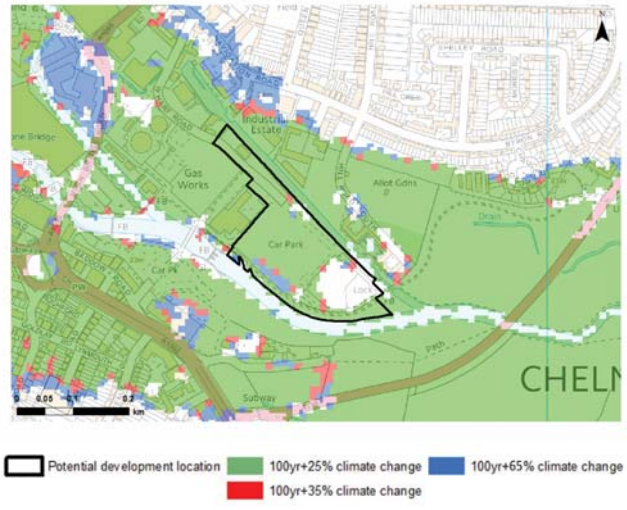


SITE NAME	Peninsula Wharf Road	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

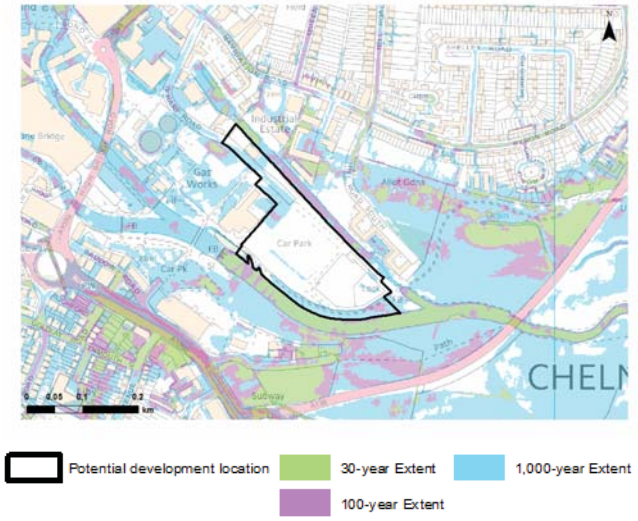
Flood Zones



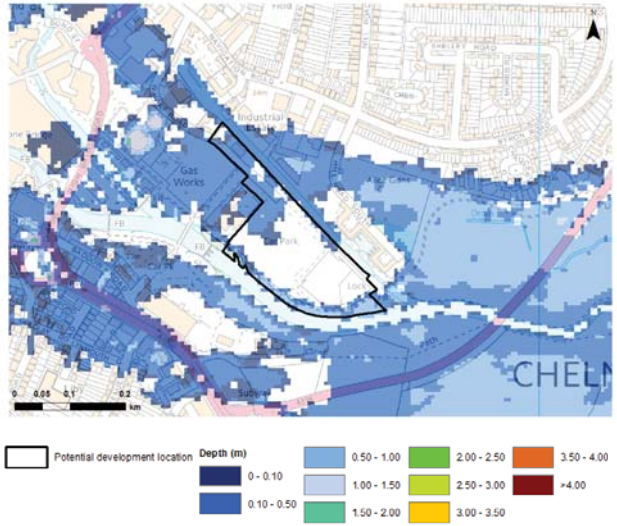
100-year plus climate change (2080s allowances)



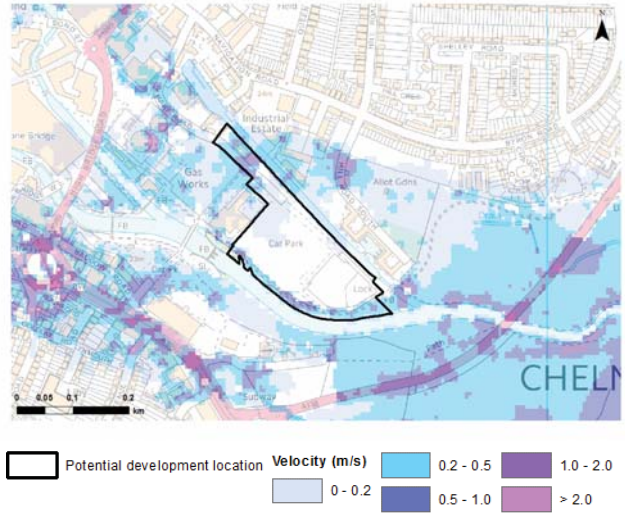
Surface Water (Risk of Flooding from Surface Water)



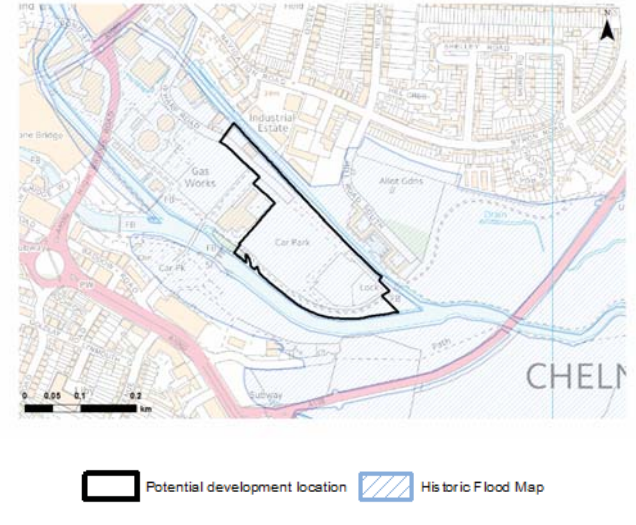
100-year depth



100-year velocity

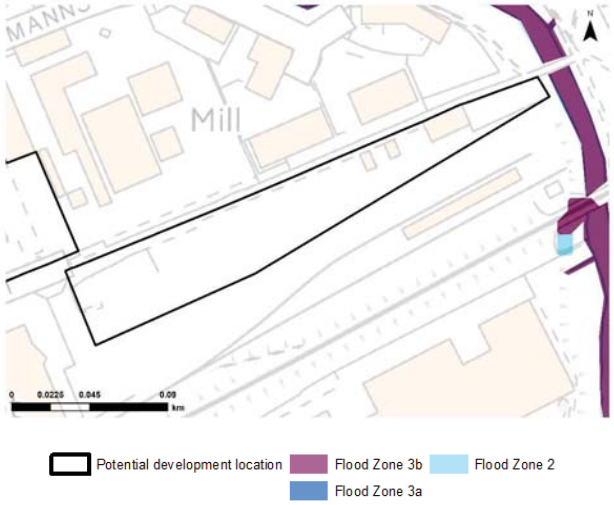


Historic Flood Map



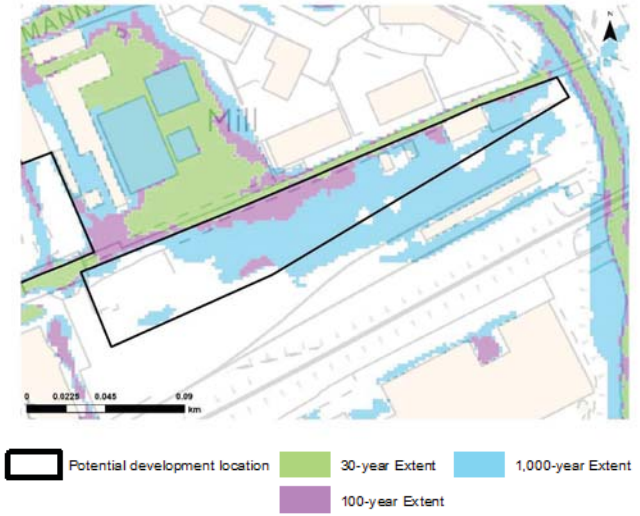
SITE NAME	Railway Sidings, New Street, Chelmsford	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

Flood Zones



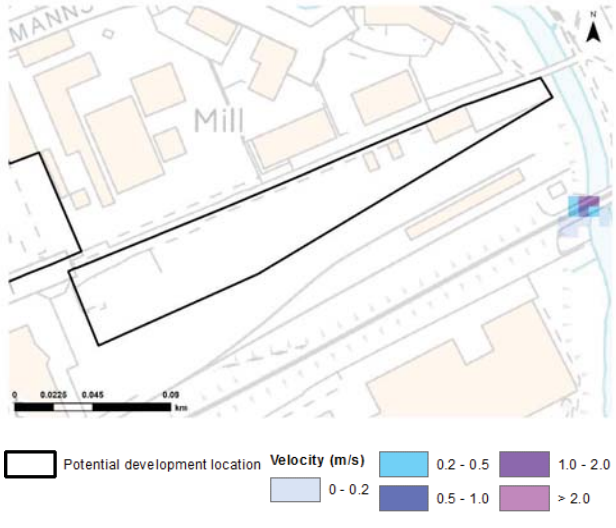
100-year plus climate change (2080s allowances)

Surface Water (Risk of Flooding from Surface Water)

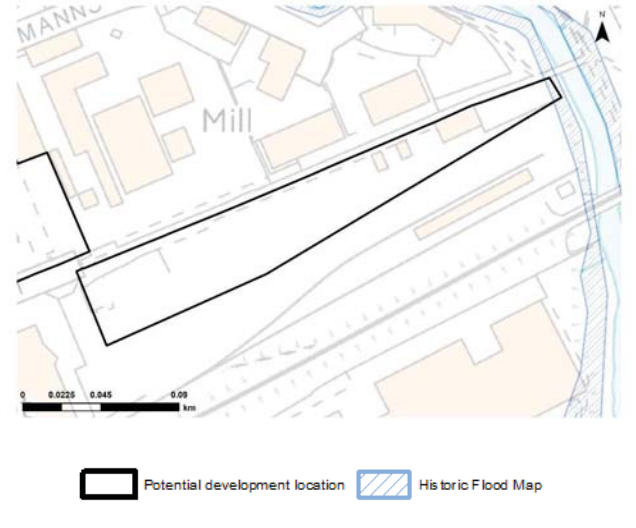


100-year depth

100-year velocity

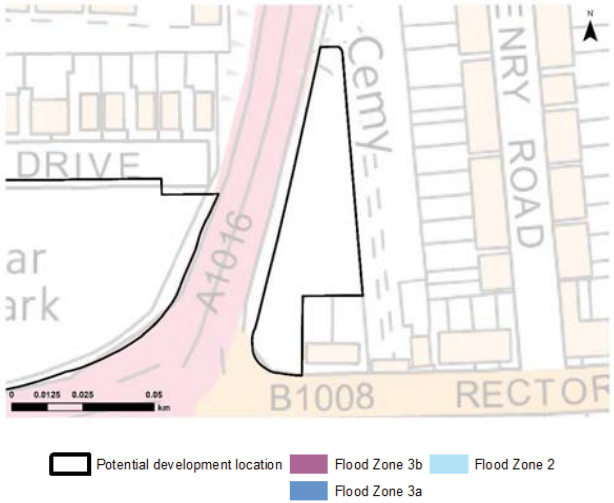


Historic Flood Map

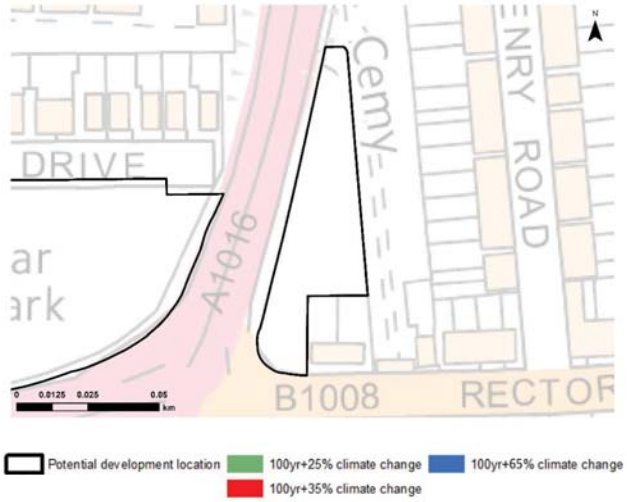


SITE NAME	Rectory Lane East	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

Flood Zones



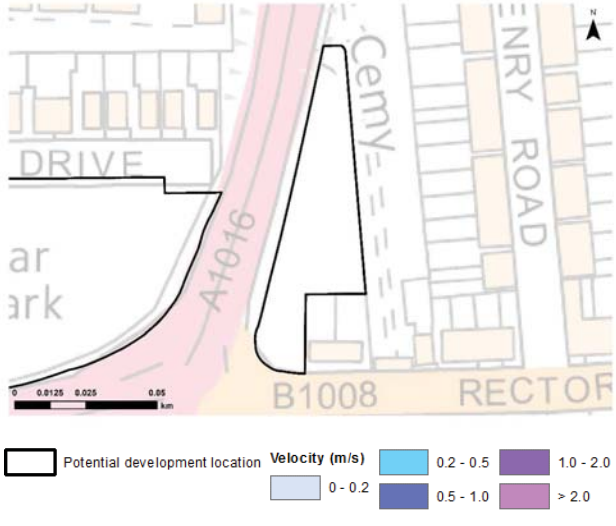
100-year plus climate change (2080s allowances)



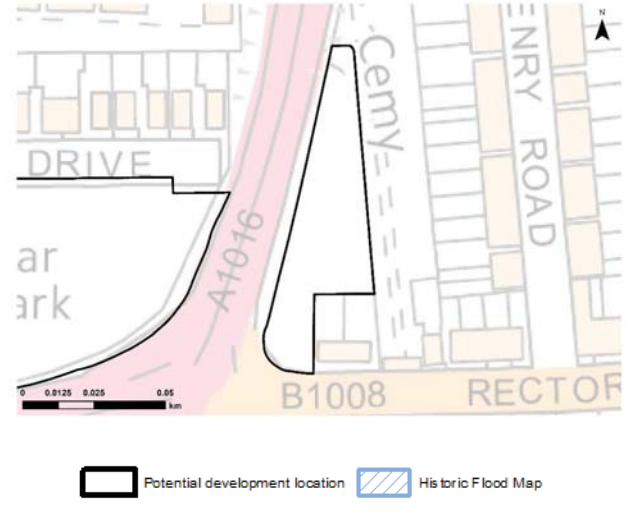
Surface Water (Risk of Flooding from Surface Water)

100-year depth

100-year velocity

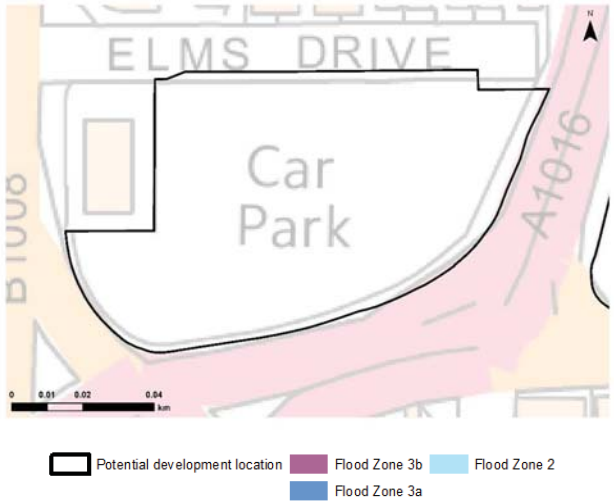


Historic Flood Map

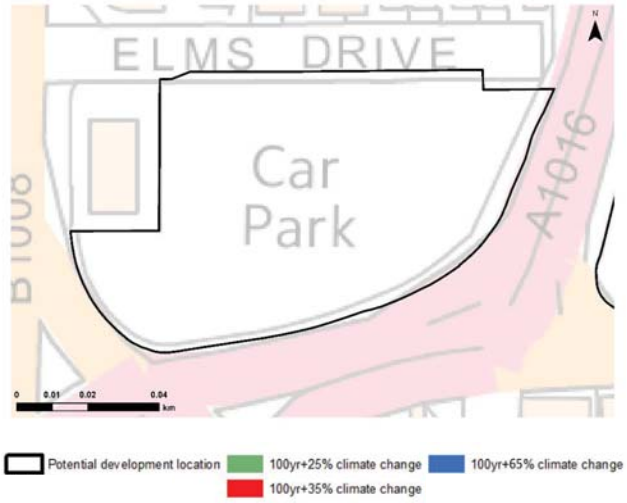


SITE NAME	Rectory Lane West	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

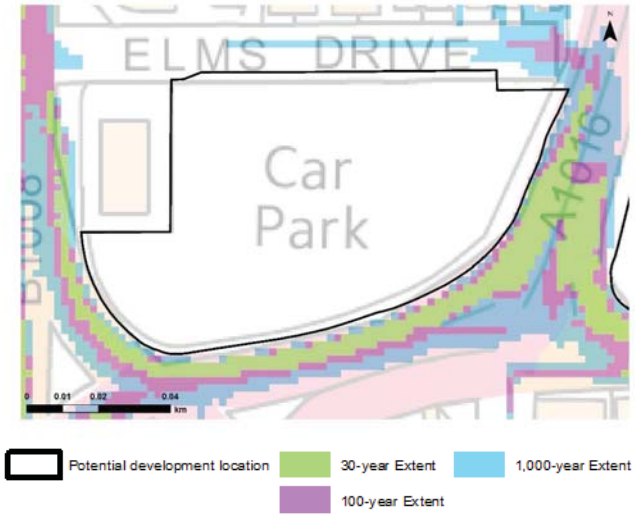
Flood Zones



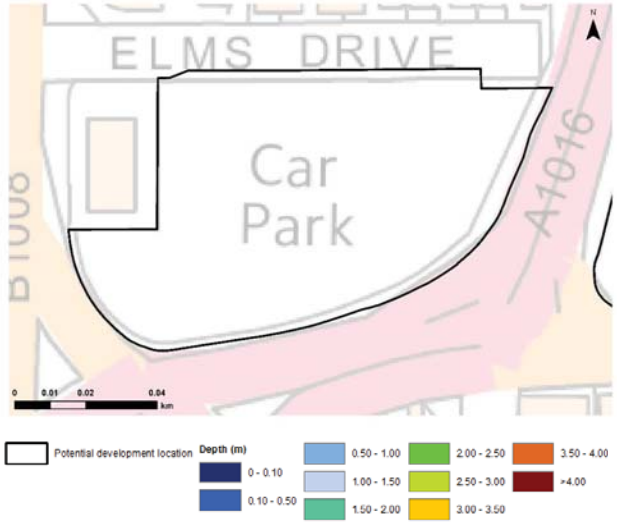
100-year plus climate change (2080s allowances)



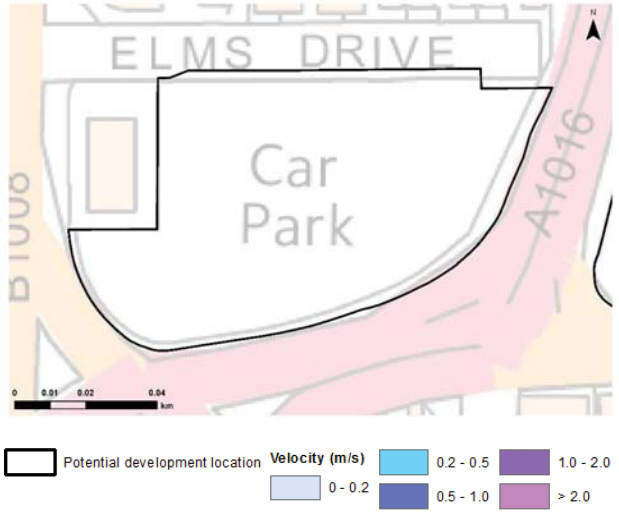
Surface Water (Risk of Flooding from Surface Water)



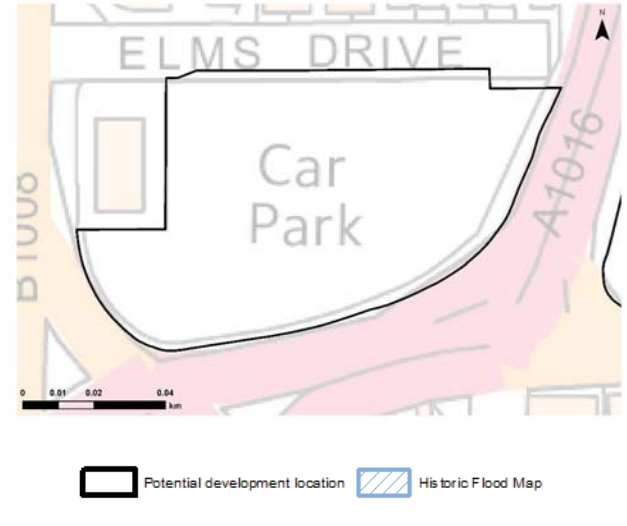
100-year depth



100-year velocity

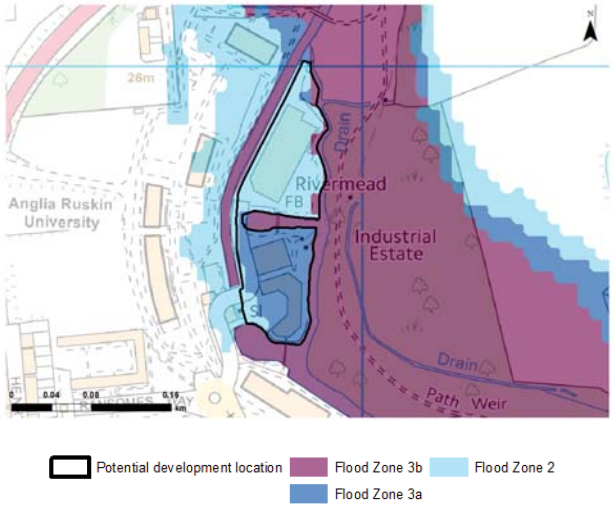


Historic Flood Map

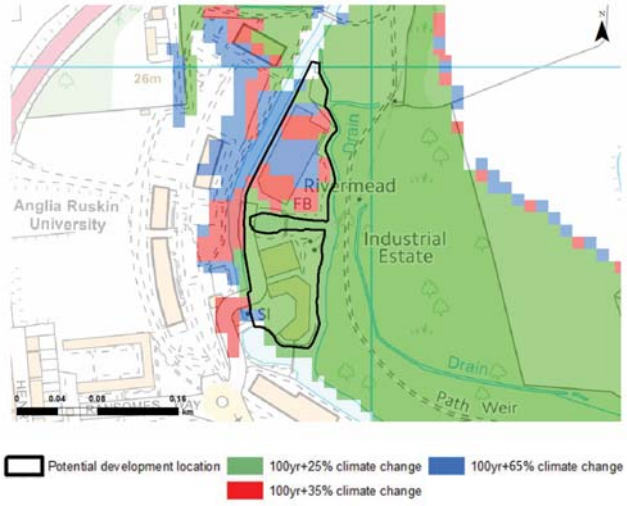


SITE NAME	Rivermead Industrial Estate, Bishop's Hall Lane	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

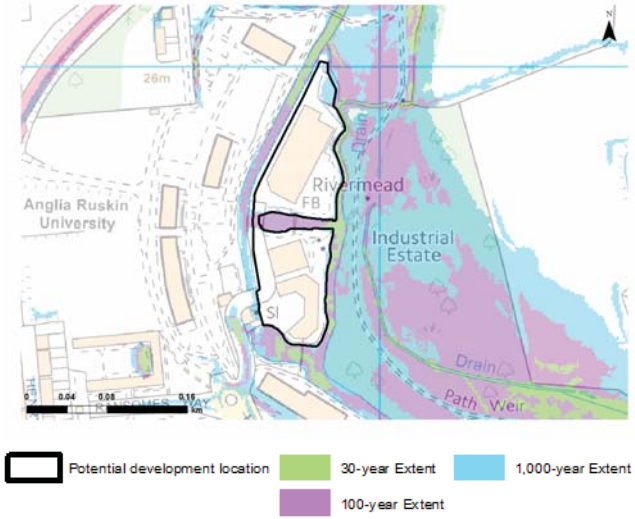
Flood Zones



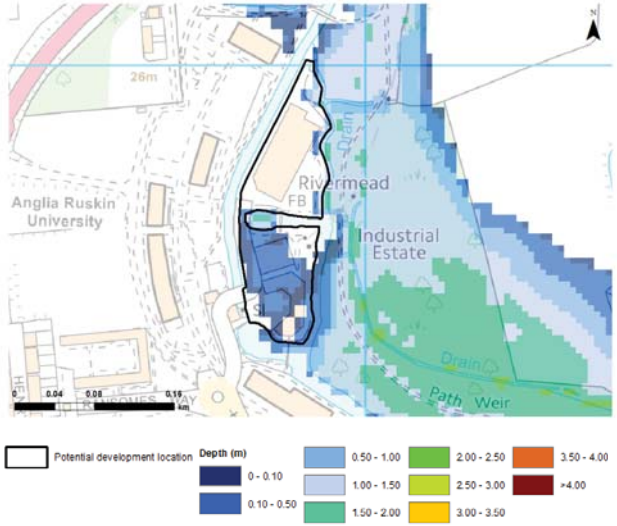
100-year plus climate change (2080s allowances)



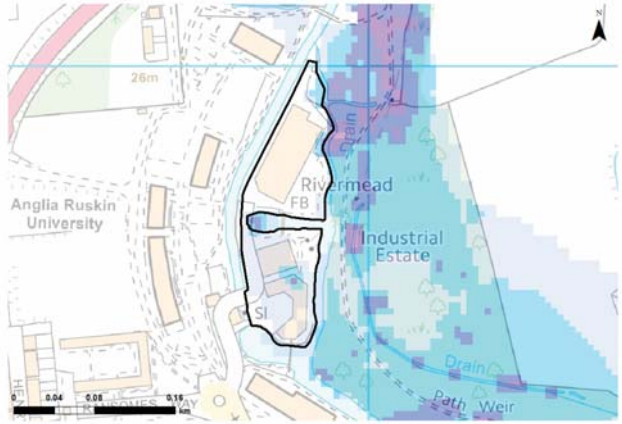
Surface Water (Risk of Flooding from Surface Water)



100-year depth



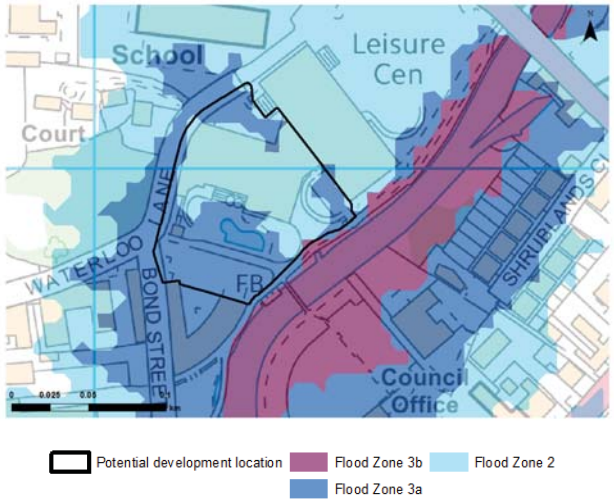
100-year velocity



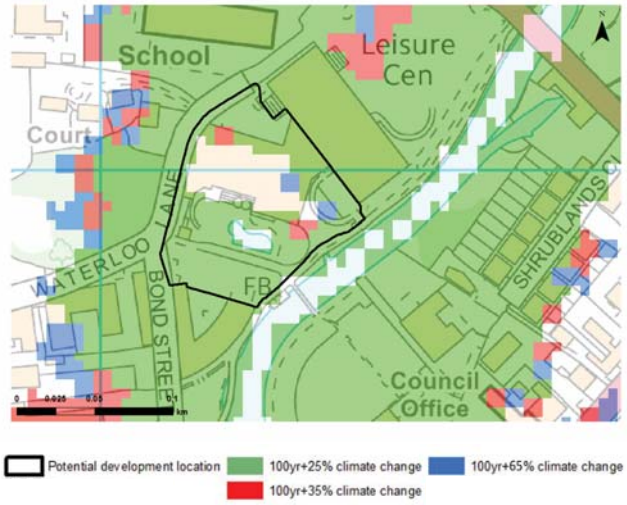
Historic Flood Map

SITE NAME	Riverside Ice and Leisure	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

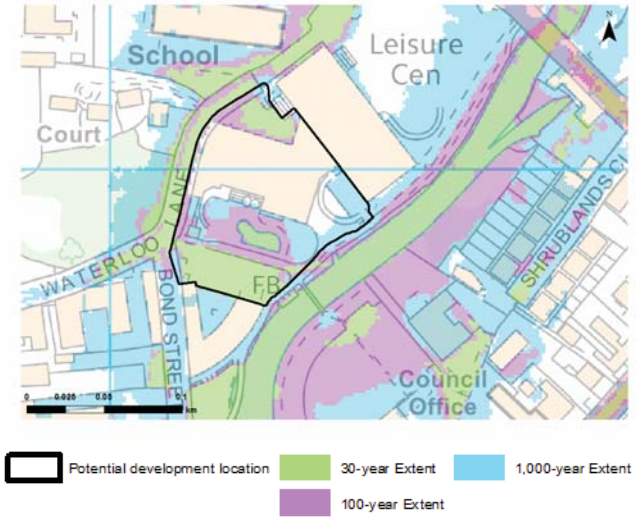
Flood Zones



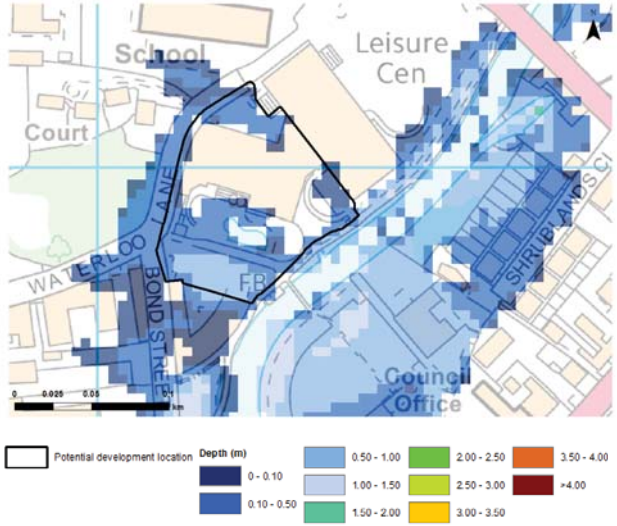
100-year plus climate change (2080s allowances)



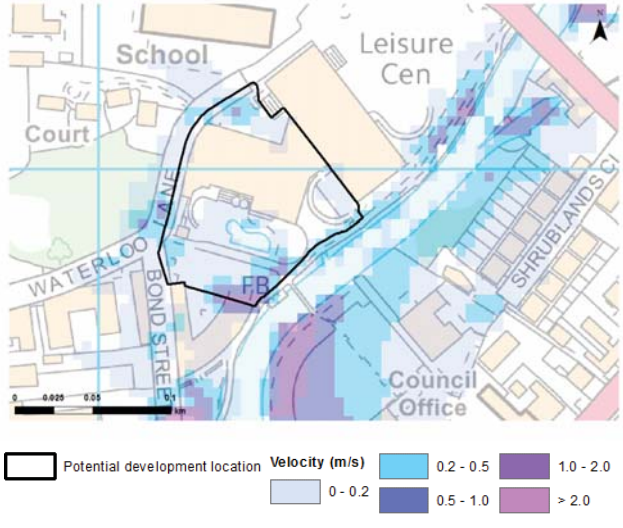
Surface Water (Risk of Flooding from Surface Water)



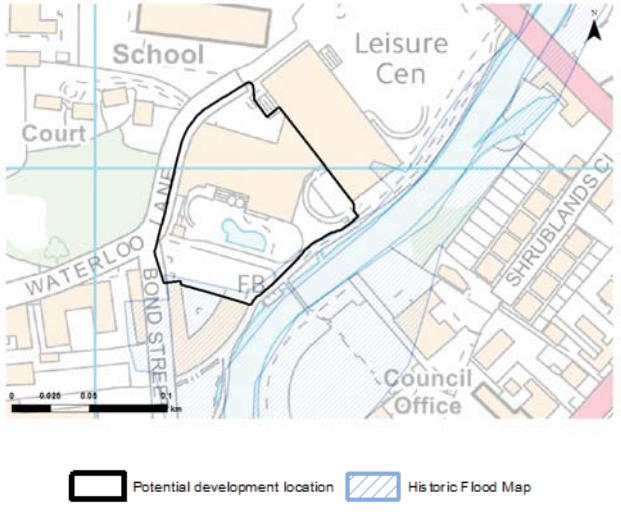
100-year depth



100-year velocity

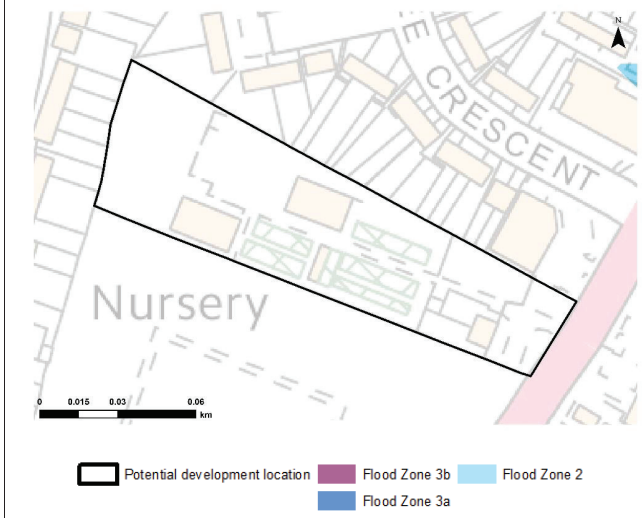


Historic Flood Map

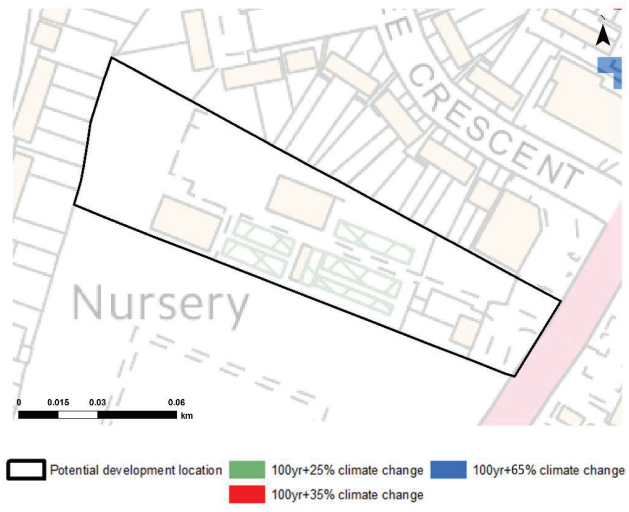


SITE NAME	Waterhouse Lane Depot and Nursery, Chelmsford	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

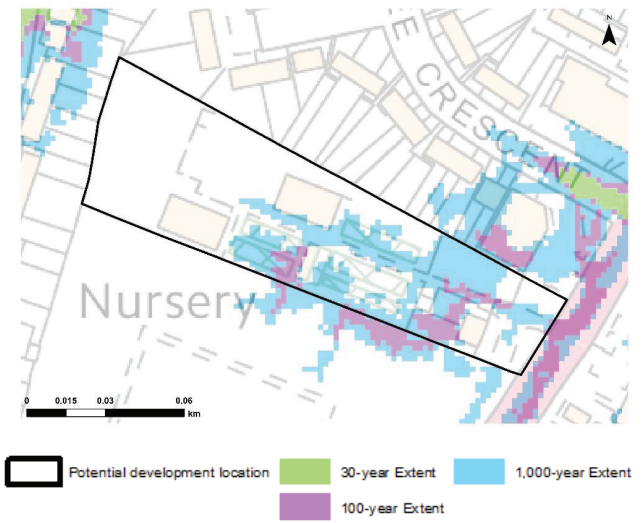
Flood Zones



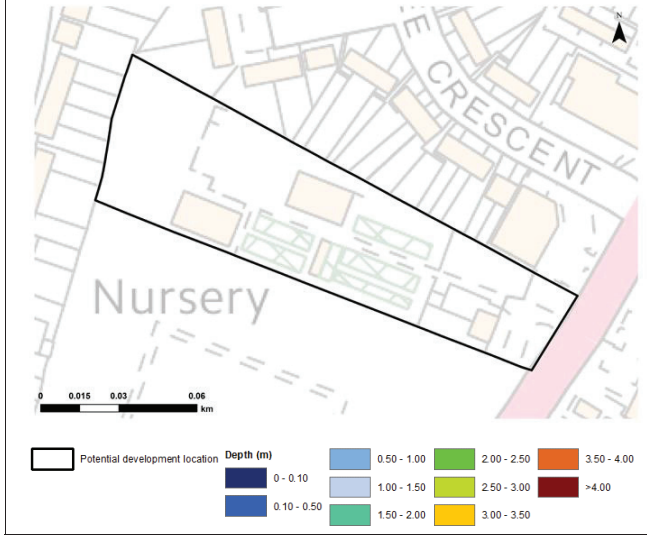
100-year plus climate change (2080s allowances)



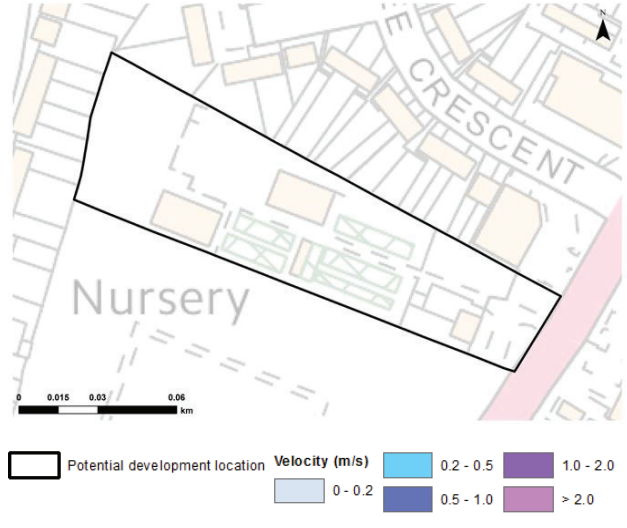
Surface Water (Risk of Flooding from Surface Water)



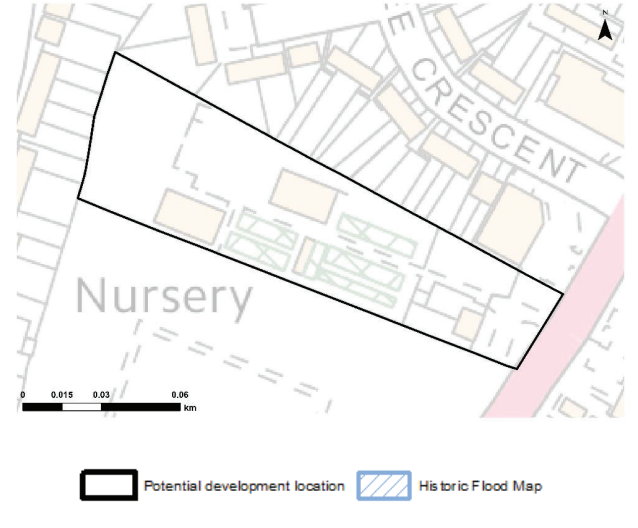
100-year depth



100-year velocity

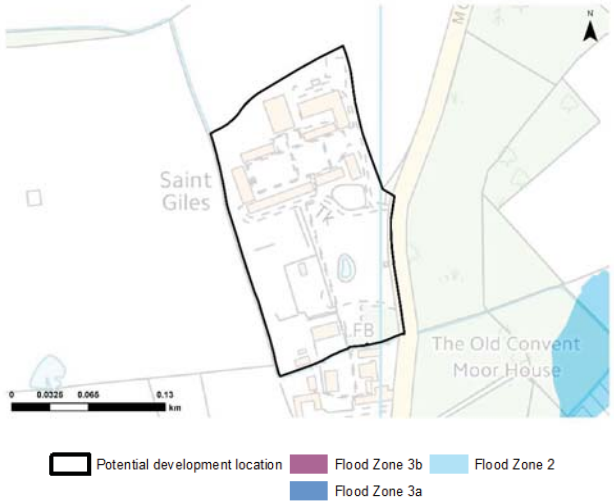


Historic Flood Map

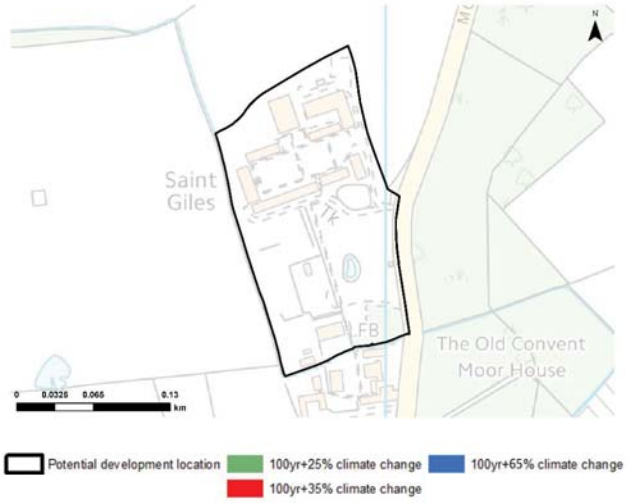


SITE NAME	Saint Giles, Moor Hall Lane, Bicknacre	Chelmsford City Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables	

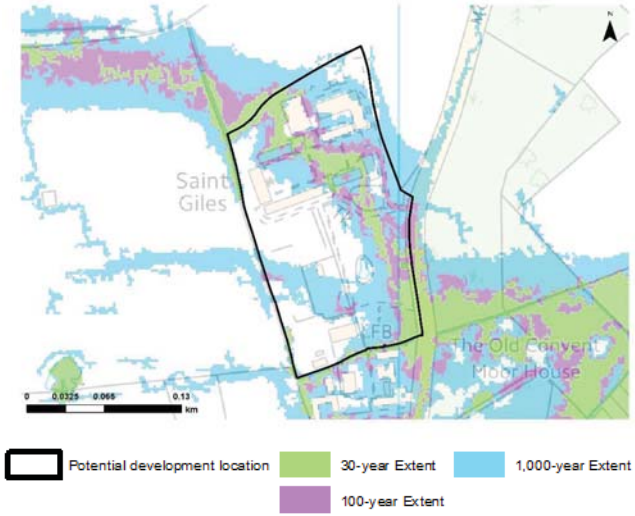
Flood Zones



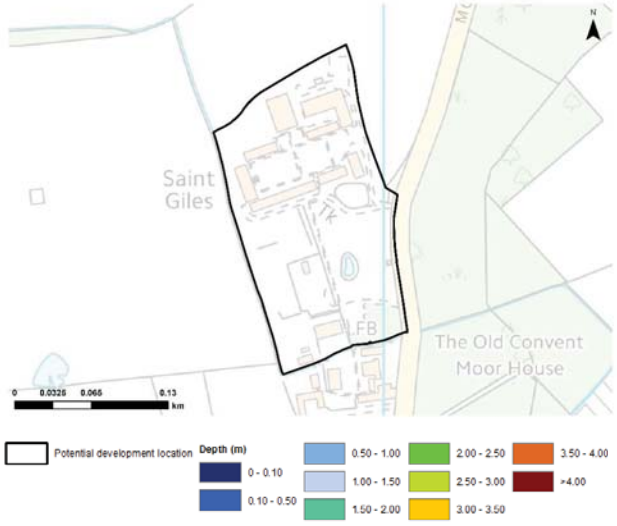
100-year plus climate change (2080s allowances)



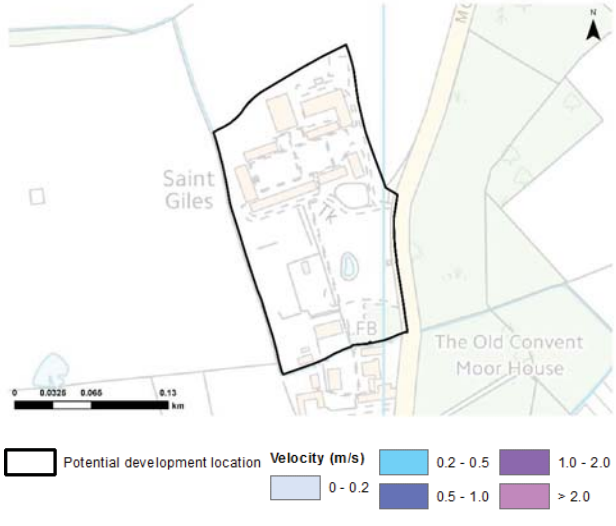
Surface Water (Risk of Flooding from Surface Water)



100-year depth



100-year velocity



Historic Flood Map