CC012

Chelmsford Local Plan

Evidence Base Document

Sequential and Exception Test completed

May 2024

Our Planning Strategy 2022 to 2041

Chelmsford Local Plan

Local Plan Preferred Options
Updated Flood Sequential and Exception Tests of Site Allocations
May 2024

Introduction

The purpose of this report is to set out the Flood Sequential and Exception tests undertaken to inform the Preferred Options Local Plan.

Policy Context

The Chelmsford Local Plan was adopted in 2020 and is being reviewed to consider new and updated national policy, changing local circumstances and to ensure that the Local Plan continues to meet the needs of the area. As such, a number of changes are proposed to the Local Plan, this includes changes to the spatial strategy and proposed new site allocations in order to accommodate new growth up to 2041.

The existing site allocations in the adopted plan which are not yet built are carried forward in the Preferred Options Local Plan. Many of these sites are coming forwards, with masterplans being approved and planning applications decided or in progress and some sites have started building. To accommodate the identified additional growth up to 2041, there are new development sites proposed for both homes and employment land.

The tables below set out the status for the allocated and proposed new allocations and whether they have been assessed as part of this report.

The existing allocated sites which have not been reviewed as part of this report should be referred to the previous report EB105 Chelmsford Local Plan Sequential and Exception Tests (December 2017) within the evidence base for the adopted Local Plan.

Table 1: List of adopted Site Allocations (Refer to EB105)

Site Allocation	Status	Included within the report
Strategic Growth Site 1b – Former St Peter's College, Fox Crescent	Existing Allocation - Approved Masterplan (21/00002/MAS) and planning application in progress	Refer to EB105
Strategic Growth Site 1e – Civic Centre Land, Fairfield Road	Existing Local Plan allocation located in Flood Zone 1.	Refer to EB105
Strategic Growth Site 1f – Eastwood House Car Park, Glebe Road	Existing Local Plan allocation - The site has planning permission (Ref: 19/01618/FUL)	Refer to EB105
Growth Site 1h – Ashby House Car Parks, New Street	Existing Local Plan allocation located in Flood Zone 1. Defences close to the site, some surface water risk which has the potential to impact access/egress, but most of the site remains low risk. Will require a site-specific FRA demonstrating safe access and egress and/or a Flood Warning and Evacuation Plan.	Refer to EB105

Site Allocation	Status	Included within the report
Growth Site 1i – Rectory Lane Car Park West	Existing Local Plan allocation located in Flood Zone 1	Refer to EB105
Growth Site 1k – Former Chelmsford Electrical and Car Wash, Brook Street	Existing Local Plan allocation located in Flood Zone 1	Refer to EB105
Growth Site 1l – BT Telephone Exchange, Cottage Place	Existing Local Plan allocation located in Flood Zone 1	Refer to EB105
Growth Site 1m – Rectory Lane Car Park East	Existing Local Plan allocation located in Flood Zone 1	Refer to EB105
Growth Site 1o – Church Hall Site, Woodhall Road	Existing Local Plan allocation – The Site has planning permission (Ref: 19/01579/FUL) and has been constructed.	Refer to EB105
Growth Site 1p – British Legion, New London Road	Existing Local Plan allocation located in Flood Zone 1	Refer to EB105
Growth Site 1q – Rear Of 17 To 37 Beach's Drive	Existing Local Plan allocation - The site has planning permission (Ref: 23/00116/FUL)	Refer to EB105
Growth Site 1r – Garage Site, St Nazaire Road	Existing Local Plan allocation located in Flood Zone 1	Refer to EB105
Growth Site 1s – Garage Site and Land Medway Close	Existing Local Plan allocation - The site has planning permission (Ref: 23/00195/FUL)	Refer to EB105
Growth Site 1t – Car Park R/O Bellamy Court, Broomfield Road	Existing Local Plan allocation - located in Flood Zone 1. Defences close to the site, some surface water risk, but most of the site remains low risk. Will require a site-specific FRA.	Refer to EB105
Strategic Growth Site 2 – West Chelmsford	Existing Local Plan allocation - The site has an approved masterplan (Ref: 18/00001/MAS) and outline planning permission submitted (Ref:21/01545/OUT) including a site-specific Flood Risk Assessment	Refer to EB105
Strategic Growth Site 3a: East Chelmsford – Manor Farm	Existing Local Plan allocation - The site has an approved masterplan (21/00003/MAS) and planning applications have been submitted (Ref:22/01732/FUL and 22/01732/OUT)	Refer to EB105
Strategic Growth Site 3b: East Chelmsford – Land North of Maldon Road (Employment Site)	Existing Local Plan allocation - The site has an approved masterplan (Ref:20/00003/MAS) and a planning application submitted (Ref:22/00916/FUL)	Refer to EB105
Strategic Growth Site 3c: East Chelmsford – Land South of Maldon Road	Existing Local Plan allocation - The site has an approved masterplan (Ref: 20/00003/MAS) and a planning application has been submitted (Ref: 22/00916/FUL)	Refer to EB105

Site Allocation	Status	Included within the report
Strategic Growth Site 3d: East Chelmsford – Land North of Maldon Road (Residential Site)	Existing Local Plan allocation - The site has an approved masterplan (Ref:20/00003/MAS) and a planning application has been submitted (Ref:22/00916/FUL)	Refer to EB105
Growth Site 4 – Land North of Galleywood Reservoir	Existing Local Plan allocation - The site has outline planning permission (Ref: 22/00397/OUT)	Refer to EB105
Growth Site 5 – Land Surrounding Telephone Exchange, Ongar Road, Writtle	Existing Local Plan allocation located in Flood Zone 1	Refer to EB105
Strategic Growth Site Policy 6 – North-East Chelmsford – Chelmsford Garden Community	Existing Local Plan allocation - The development has an approved masterplan (Ref:22/00001/MAS) and outline planning applications have been submitted (Refs:22/01950/FUL, 22/01950/OUT, 23/00124/FUL and 23/00124/OUT)	Refer to EB105
Strategic Growth Site 7a: Great Leighs – Land at Moulsham Hall	Existing Local Plan allocation - The site has an approved masterplan (Ref:20/00002/MAS) and a planning application has been submitted (Ref:23/01583/OUT) and (23/01583/FUL). Land east of the Racecourse has planning permission for 10 Travelling Showperson plots. This site is located in Flood Zone 1.	Refer to EB105
Strategic Growth Site 7b: Great Leighs – Land East of London Road	Existing Local Plan Allocation - The site has outline planning permission (21/02490/OUT)	Refer to EB105
Strategic Growth Site 7c: Great Leighs – Land North and South of Banters Lane	Existing Local Plan allocation located in Flood Zone 1	Refer to EB105
Strategic Growth Site 8 – North of Broomfield	Existing Local Plan Allocation - The site has an approved masterplan (Ref:20/0001/MAS) and outline planning permission submitted (Ref:20/02064/OUT)	Refer to EB105
Strategic Growth Site 10 – North of South Woodham Ferrers	Existing Local Plan allocation - Resolution to grant planning permission subject to a S106 Agreement (Ref: 21/01961/FUL)	Refer to EB105
Growth Site 11a – South Of Bicknacre	Existing Local Plan Allocation - This site has planning permission (Ref: 20/01507/FUL) and is under construction	Refer to EB105

Site Allocation	Status	Included within the report
Strategic Growth Site 13 – Danbury	Existing Local Plan allocation – The specific site allocation will be identified by emerging Danbury Neighbourhood Plan and further testing work undertaken once site is identified.	N/A

Table 2: New Proposed Site Allocations and Adopted Site Allocations assessed as part of this report

Site Allocation	Status	Included within the report
Strategic Growth Site 1a – Chelmer Waterside o CW1a Former Gas Works o CW1c Lockside o CW1d Baddow Road Car Park and Land to the East of the Car Park o CW1e Travis Perkins o CW1f Navigation Road Sites	Existing Local Plan allocation	Yes
Strategic Growth Site 1w – Meadows Shopping Centre and Meadows Surface Car Park	New proposed allocation	Yes
Growth Site 1aa – Coval Lane Car Park	New proposed allocation located in Flood Zone 1. Defences close to site	No
Strategic Growth Site 1x – Former Kay-Metzeler Premises, Brook Street	New proposed allocation	Yes
Strategic Growth Site 1d – Riverside Ice and Leisure Land, Victoria Road	Existing Local Plan allocation. Located in Flood Zones 2 & 3	Yes
Strategic Growth Site 1y – Land Between Hoffmans Way and Brook Street (Marriage's Mill)	New proposed allocation	Yes
Growth Site 1g – Chelmsford Social Club, Springfield Road	Existing Local Plan allocation. Located in Flood Zone 2	Yes
Growth Site 1z – Granary Car Park, Victoria Road	New proposed allocation	Yes
Growth Site 1n – Waterhouse Lane Depot and Nursery	Existing Local Plan allocation. Located in Flood Zone 1 but at risk of surface water flooding	Yes
Growth Site 1bb – Glebe Road Car Park	New proposed allocation - This site has planning permission (Ref: 22/02196/FUL)	No
Growth Site 1u – Rivermead, Bishop Hall Lane	Existing Local Plan allocation - The site has planning permission (Ref: 18/01326/FUL). This planning permission covers both the north and south of the site. The north island work	Yes

Site Allocation	Status	Included within the report
	is complete. Site located in Flood Zones 1, 2 & 3.	
Growth Site 1v – Railway Sidings, Brook Street	Existing Local Plan allocation at significant risk from surface water flooding	Yes
Growth Site 9a – Waltham Road Employment Area	New proposed allocation for employment land. Located in Flood Zone 1. Watercourse flows close to northern boundary of the site. Topography suggests the site is unlikely to be at risk, but this should be confirmed through a site-specific flood risk assessment including modelling.	No
Strategic Growth Site 15 – Little Boyton Hall Farm Employment Area	New proposed allocation for employment land. Located in Flood Zone 1. Defences close to site	No
Strategic Growth Site 16a – East Chelmsford Garden Community (Hammonds Farm)	New proposed allocation	Yes
Strategic Growth Site 16b – Land Adjacent to A12 Junction 18 Employment Area	New proposed allocation - employment land	Yes
Growth Site 12 - St Giles, Moor Hall Lane, Bicknacre	Existing Local Plan allocation at significant risk from surface water flooding	Yes

Table 3: Proposed new small sites

National Planning Policy requires councils to identify land in local plans to accommodate ten percent of their housing requirement figure on sites no larger than one hectare. Allocated small sites are often built out relatively quickly and need to be identified separately from the supply generated through small windfall sites.

For the purposes of this Preferred Options consultation the site is indicated on the Policies Map with a symbol near its site vehicular access point. The precise boundary of the site will be determined at the Pre-Submission consultation (Regulation 19) but shall be no larger than 1 hectare (which for context is equivalent to 100 metres x 100 metres) in size.

There are two sites in Bicknacre (Locations 11b and 11c) and in East Hanningfield (Locations 17a and 17b) and additional sites at Ford End. These are shown below.

Site Allocation	Status	Included within the report
Growth Site 14a – Land West of Back Lane Ford End	New proposed small site allocation – no development boundary to assess at this time.	No

Site Allocation	Status	Included within the report
Growth Site 14b – Land South of Ford End Primary School	New proposed small site allocation – no development boundary to assess at this time.	No
Growth Site 11b – Land At Kingsgate, Bicknacre Road, Bicknacre	New proposed small site allocation – no development boundary to assess at this time.	No
Growth Site 11c – Land West of Barbrook Way, Bicknacre	New proposed small site allocation – no development boundary to assess at this time.	No
Growth Site 17a – Land North of Abbey Fields, East Hanningfield	New proposed small site allocation. The site is classified as 'More Vulnerable' and is at significant risk from surface water flooding.	Yes
Growth Site 17b – Land East of Highfields Mead, East Hanningfield	New proposed small site allocation – no development boundary to assess at this time.	No

Assessment of flood risk for the Local Plan

The Local Plan includes a number of related evidence base documents which should be read in conjunction with this report, this includes:

- Level 1 Strategic Flood Risk Assessment (SFRA), February 2024
- Level 2 Strategic Flood Risk Assessment (SFRA), May 2024
- Preferred Options Integrated Impact Assessment (IIA), May 2024
- Chelmsford Local Plan Sequential and Exception Test, December 2017

These documents can be found on the Local Plan website www.chelmsford.gov.uk/lp-review.

National Planning Policy for Flood Risk

Section 14 of the NPPF[1] 'Meeting the challenge of climate change, flooding and coastal change', paragraphs 165 to 167 set out the guidance for planning and flood risk.

Paragraph 165 states that 'inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere'.

Paragraph 166 sets out that strategic policies should be informed by a strategic flood risk assessment. The Preferred Options Local Plan is supported by a SFRA Level 1 and Level 2 undertaken by consultants JBA. This evidence base can be found on the Local Plan website www.chelmsford.gov.uk/lp-review.

[1] December 2023

Paragraph 167 states that 'all plans should apply a sequential, risk-based approach to the location of development – taking into account all sources of flood risk and the current and future impacts of climate change – so as to avoid, where possible, flood risk to people and property'.

The NPPF is supported by the National Planning Guidance section on Flood Risk and Coastal Change. Table 2 of the NPPG sets out when an exception test is likely to be required, this is also shown below:

Table 2: Flood risk vulnerability and flood zone 'incompatibility'

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✔	✔	✔	✔	✔
Zone 2	✔	Exception Test required	✔	✔	✔
Zone 3a †	Exception Test required †	X	Exception Test required	✔	✔
Zone 3b *	Exception Test required *	X	X	X	✔ *

Key:

✔ Exception test is not required

X Development should not be permitted

Sequential Test

Paragraph 168 of the NPPF sets out that 'the aim of the sequential test is to steer new development to areas with the lowest risk of flooding from any source. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding. The strategic flood risk assessment will provide the basis for applying this test. The sequential approach should be used in areas known to be at risk now or in the future from any form of flooding'.

As part of the evidence base for the Local Plan, the Council has applied the sequential test and this is evidenced below.

Exception Test

Once the sequential test is completed, the exception test aims to provide a method of managing flood risk whilst allowing necessary development to occur in the interests of sustainable development.

In terms of the exception test, paragraph 169 states that 'If it is not possible for development to be located in areas with a lower risk of flooding (taking into account wider sustainable development objectives), the exception test may have to be applied. The need for the exception test will depend on the potential vulnerability of the site and of the development proposed, in line with the Flood Risk Vulnerability Classification set out in Annex 3'.

Paragraph 170 sets out that to pass the exception test it should be demonstrated that a) the development would provide wider sustainability benefits to the community that outweigh the flood risk; and b) the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall. Paragraph 171 states that both elements of the exception test should be satisfied for development to be allocated or permitted.

The Level 2 SFRA Assessment, May 2024 states that 'consideration should be given to the surface water risk within Chelmsford as all sources of flooding should be considered in the Sequential Test. Whilst the Exception Test is only explicitly required for sites at fluvial risk, it is important to recognise that there exist sites that are at significant risk of flooding from other sources, and CCC should carefully consider the benefits of developing these high risk sites against the risk. Care should be taken with use of the national EA RoFSW (Risk of Flooding from Surface Water) map as it does not account for culverts, structures, channel hydraulics, or sewer capacity, and therefore can provide an overestimated risk. It is recommended that developers investigate surface water risk in more detail at the planning application stage and may need to consider undertaking integrated modelling.' There are some sites which have been considered in this regard are noted in the tables below.

Outcomes

The tables below set out the sequential and exception tests outcomes. The information within the tables have been informed by the site information provided within the Level 2 SFRA (May 2024), including site tables and mapping. This evidence base can be found on the Local Plan website www.chelmsford.gov.uk/lp-review.

Site Name:	Strategic Growth Site 1a – Chelmer Waterside - Former Gas Works			
Local Plan Reference:	CW1a Former Gas Works			
Site Area: (Ha)	3.29ha			
Proposed Allocation/Use:	Residential			
Capacity:	Around 450 homes			
Flood Zone:	1	2	3	
	0%	100%	93.8%	
Flood Risk Vulnerability:	Residential - More Vulnerable			
Sources of Flood Risk:				
Surface Flooding	3.3% AEP – 0.8% 1% AEP – 3.4% 0.1% AEP – 55.3% For the 3.3% AEP event there is minimal surface water flooding, with some ponding on the northeast boundary. For the 1% event, ponding increases at the northeastern area to 0.15-0.30m. At the 0.1% AEP event, there is substantial flooding covering half the site. The highest hazard is Danger to Most in the centre of the site and down the southwestern boundary.			
Critical Drainage Area	The site is not in a Critical Drainage Area.			
Reservoir Flooding	The site is at risk in the Dry Day and Wet Day scenario from Chignal Hall Farm Reservoirs upstream west of Chelmsford. The risk has not yet been determined and in the very unlikely event that it may occur there may be risk to life.			
Fluvial and Tidal flooding	The defended scenario outputs have been reported as the most accurate representative of flood risk in Chelmsford. In the 3.3% AEP event, shows a small amount of fluvial flooding on the southwestern boundary up to a maximum depth of 0.1m. In the 1% AEP almost all the site is inundated with a depth up to 1.6m. In the 0.1% AEP event the majority of the site is inundated at 1.8m. Whilst hazard scores are not available for this model, the site is considered to be at significant danger to all users in the 0.1% AEP event. The site is not at risk of tidal flooding.			
Groundwater	The whole of the site is shown to be at negligible risk of groundwater flooding.			

Sequential Test	
Are there reasonable alternative locations within the site boundary available in same or lower flood zone?	Yes. The opportunities are limited but these should be taken to ensure that residential land use – Most Vulnerable – is placed wherever possible in the lowest flood risk category. Good site planning will assist here.
Are there reasonable alternative site allocation(s) available in same or lower flood zone?	No. This is a key previously developed urban site within a comprehensive city centre regeneration area. Given most of the larger strategic brownfield sites in the urban area have already been developed, there is limited opportunity and less availability for larger scale redevelopment. Therefore, smaller scale brownfield sites have been identified and there are no reasonable alternatives in the city or urban area beyond those proposed for allocation in the Local Plan.
Conclusion - Will the proposed development type be acceptable in this flood zone?	Yes. The proposed use of this site is residential. Residential development is classed as More Vulnerable and therefore should be located towards the lowest flood zone areas. As the entire site is either in Flood Zones 2 and 3, this will prove to be a challenge, but should be feasible with the appropriate site planning. Overall, this is part of a much larger and masterplanned regeneration area within the city centre. It is in a highly sustainable location and on sustainability grounds should proceed.
Sequential Test passed?	Yes
Exception Test required?	Yes
Exceptions Test	
Sustainability	This allocation is a major development that can accommodate around 450 homes. It is in a highly sustainable location which allows for excellent connectivity with local neighbourhoods and the city centre. It is part of a wider city centre regeneration site to make more efficient and beneficial use of brownfield land. The site helps to meet the need for new homes in a highly sustainable location. In addition, the site is close to employment sites and key services. The site has good access to GP surgeries, local schools, open spaces (the Chelmer and Blackwater Canal) and public transport (Chelmsford Bus Station and mainline Railway Station) and gives an opportunity to conserve and enhance landscape and townscape character (Chelmer & Blackwater Navigation Conservation Area).
Safety	The site is wholly in Flood Zones 2 and 3 and at significant risk of fluvial and surface water flooding. It is shown to be highly sensitive to climate change. At the planning stage, site-specific flood risk assessments will be needed to address the following: • Developers will need to show, through the Flood Risk Assessment, that all sources of flood risk have been considered and future users of the site will not be placed in danger from flood hazards throughout is lifetime. • The area along the southwestern border is left undeveloped, given it falls within the 3.3% AEP area of risk.

	• Development is steered away from the former gasworks in the north of the site as these are at risk of severe ponding in the 1% and 0.1% AEP surface water and fluvial events. • Safe access and egress can be demonstrated in the surface water 1% AEP and 1% AEP plus climate change events. This includes measures to reduce flood risk along these routes such as raising access, but not displacing floodwater elsewhere. If safe access and egress cannot be provided, an adequate flood warning and evacuation plan should be prepared. • A carefully considered and integrated flood resilient and sustainable drainage design is put forward, with development steered away from the areas identified to be at risk of surface water flooding across the site, such as the centre and southern border. • A site-specific FRA demonstrates site users will be safe throughout the lifetime of the development and that development of the site does not increase the risk of surface water flooding on the site and to neighbouring areas. • If flood mitigation measures are implemented then they are tested to check that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).
Exception Test passed?	Yes.
Recommendation	**Allocate the site**

Site Name:	Strategic Growth Site 1a – Chelmer Waterside - Lockside			
Local Plan Reference:	CW1c Lockside			
Site Area: (Ha)	3.12ha			
Proposed Allocation/Use:	Residential			
Capacity:	Around 130 homes			
Flood Zone:	1	2	3	
	18.6%	81.4%	46.8%	
Flood Risk Vulnerability:	Residential - More Vulnerable			
Sources of Flood Risk:				
Surface Flooding	3.3% AEP – 7.2% 1% AEP – 15.4% 0.1% AEP - 40.2% In the 3.3% AEP ponding expected to occur along Hill Road South. In the 1% AEP event flooding remains along roads and low-lying areas albeit to a greater extent. In the 0.1% AEP over 40% of the site is inundated. The maximum hazard is Danger to Most.			
Critical Drainage Area	The site is not in a Critical Drainage Area.			
Reservoir Flooding	The site is at risk in the Dry Day and Wet Day scenario from Chignal Hall Farm Reservoirs upstream west of Chelmsford. The risk has not yet been determined and in the very unlikely event that it may occur there may be risk to life.			
Fluvial and Tidal flooding	The defended scenario outputs have been reported as the most accurate representative of flood risk in Chelmsford. In the 3.3% AEP event, flood water encroaches approximately 20m into the site from the eastern border up to a maximum depth of 0.14m. In the 1% AEP nearly half the site is inundated with a depth up to 0.67m. In the 0.1% AEP event the majority of the site is inundated. Whilst hazard scores are not available for this model, the site is considered to be at significant danger to most users in the 0.1% AEP event. Whilst hazard scores are not available for this model, the site is considered to be at significant danger to most users in the 0.1% AEP event. The site is not at risk of tidal flooding			
Groundwater	The southern section is shown to have negligible risk of groundwater emergence. The northeast section groundwater levels are either at or very near the surface. Within the northwest section some groundwater emergence is possible.			

Sequential Test	
Are there reasonable alternative locations within the site boundary available in same or lower flood zone?	Yes. The opportunities are limited but these should be taken to ensure that residential land use – Most Vulnerable – is placed wherever possible in the lowest flood risk category. Good site planning will assist here.
Are there reasonable alternative site allocation(s) available in same or lower flood zone?	No. This is a key previously developed urban site within a City Centre comprehensive regeneration area. Given most of the larger strategic brownfield sites in the urban area have already been developed, there is limited opportunity and less availability for larger scale redevelopment. Therefore, smaller scale brownfield sites have been identified and there are no reasonable alternatives in the city or urban area beyond those proposed for allocation in the Local Plan.
Conclusion - Will the proposed development type be acceptable in this flood zone?	Yes. The proposed use of this site is residential. Residential development is classed as More Vulnerable and therefore should be located towards the lowest flood zone areas. As over 80% of this site is in Flood Zones 2 and 3, this will prove to be a challenge, but should be feasible with the appropriate site planning. Overall, this is part of a much larger and masterplanned regeneration area within the city centre. It is in a highly sustainable location and on sustainability grounds should proceed.
Sequential Test passed?	Yes
Exception Test required?	Yes
Exceptions Test	
Sustainability	This allocation is one of the modest sized city centre sites and can accommodate around 130 homes. It is in a highly sustainable location which allows for excellent connectivity with local neighbourhoods and the city centre. It is part of a wider city centre regeneration site to make more efficient and beneficial use of brownfield land. The site helps to meet the need for new homes in a highly sustainable location. In addition, the site is close to employment sites and key services. The site has good access to GP surgeries, local schools, open spaces (the Chelmer and Blackwater Canal) and public transport (Chelmsford Bus Station and mainline Railway Station) and gives an opportunity to conserve and enhance landscape and townscape character (Chelmer & Blackwater Navigation Conservation Area).
Safety	The site is partly in Flood Zones 2 and 3 and at significant risk of fluvial in the 3.3% AEP event flooding and also from surface water flooding. It is shown to be highly sensitive to climate change. At the planning stage, site-specific flood risk assessments will be needed to address the following: • Developers will need to show, through the Flood Risk Assessment, that all sources of flood risk have been considered and future users of the site will not be placed in danger from flood hazards throughout is lifetime.

	• Development is steered away from area of fluvial flood and surface water flood risk along the southern borders and lower lying central areas of the site and the small flow paths / areas of surface water ponding are incorporated into site planning. • The risk from groundwater and surface water should be quantified and as part of the site-specific SFRA and demonstrated that water can be managed safely. • Safe access and egress can be demonstrated in the surface water 1% AEP and 1% AEP plus climate change events. This includes measures to reduce flood risk along these routes such as raising access, but not displacing floodwater elsewhere. If safe access and egress cannot be provided, an adequate flood warning and evacuation plan should be prepared. • A carefully considered and integrated flood resilient and sustainable drainage design is put forward, with development steered away from the areas identified to be at risk of surface water flooding across the site, such as the centre and southern border. • A site-specific FRA demonstrates site users will be safe throughout the lifetime of the development and that development of the site does not increase the risk of surface water flooding on the site and to neighbouring areas. • If flood mitigation measures are implemented then they are tested to check that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).
Exception Test passed?	Yes
Recommendation	**Allocate the site**

Site Name:	Strategic Growth Site 1a – Chelmer Waterside - Baddow Road Car Park and Land to the East of the Car Park			
Local Plan Reference:	CW1d Baddow Road Car Park and Land to the East of the Car Park			
Site Area: (Ha)	1.15ha			
Proposed Allocation/Use:	Residential			
Capacity:	Around 190 homes			
Flood Zone:	1	2	3	
	0%	100%	97.6%	
Flood Risk Vulnerability:	Residential - More Vulnerable			
Sources of Flood Risk:				
Surface Flooding	3.3% AEP – 4.8% 1% AEP – 13.4% 0.1% AEP – 81.6% The 3.3% AEP only ponds in an area of lower elevation at the southeastern exit of Baddow Road some 40m by 16m. In the 1% AEP, ponding occurs in the same location but greater depth and velocity. In the 0.1% AEP, the majority of the site is inundated, except for the north of the site.			
Critical Drainage Area	The site is not in a Critical Drainage Area.			
Reservoir Flooding	The site is at risk in the Dry Day and Wet Day scenario from Chignal Hall Farm Reservoirs upstream west of Chelmsford. The risk has not yet been determined and in the very unlikely event that it may occur there may be risk to life.			
Fluvial and Tidal flooding	The defended scenario outputs have been reported as the most accurate representative of flood risk in Chelmsford. In the 3.3% AEP event, flood water encroaches approximately 48m into the site from the southeastern border up to a maximum depth of 0.39m. In the 1% AEP most of the site is inundated with a depth up to 0.56m. In the 0.1% AEP event, apart from a small section by the Bailey Bridge – which has now been removed as part of the Waterside Access Road and Bridge project, the entire site is inundated. Whilst hazard scores are not available for this model, the site is considered to be at significant danger to most users in the 0.1% AEP event. The site is not at risk of tidal flooding			
Groundwater	The whole site is shown to have negligible risk of groundwater emergence in this area.			

Sequential Test	
Are there reasonable alternative locations within the site boundary available in same or lower flood zone?	Yes. However, opportunities are extremely limited given that that over 97% is in Flood Zone 3.
Are there reasonable alternative site allocation(s) available in same or lower flood zone?	No. This is a key previously developed urban site within a City Centre comprehensive regeneration area. Given most of the larger strategic brownfield sites in the urban area have already been developed, there is limited opportunity and less availability for larger scale redevelopment. Therefore, smaller scale brownfield sites have been identified and there are no reasonable alternatives in the city or urban area beyond those proposed for allocation in the Local Plan.
Conclusion - Will the proposed development type be acceptable in this flood zone?	Yes. The proposed use of this site is residential. Residential development is classed as More Vulnerable and therefore should be located towards the lowest flood zone areas. As an overwhelming majority of this site is in Flood Zone 3, this will prove to be a challenge but should be feasible with the appropriate site planning. Overall, this is part of a much larger and masterplanned regeneration area within the city centre. It is in a highly sustainable location and on sustainability grounds should proceed.
Sequential Test passed?	Yes
Exception Test required?	Yes
Exceptions Test	
Sustainability	This allocation is one of the modest sized city centre sites and can accommodate around 190 homes. It is in a highly sustainable location which allows for excellent connectivity with local neighbourhoods and the city centre. It is part of a wider city centre regeneration site to make more efficient and beneficial use of brownfield land. The site helps to meet the need for new homes in a highly sustainable location. In addition, the site is close to employment sites and key services. The site has good access to GP surgeries, local schools, open spaces (the Chelmer and Blackwater Canal) and public transport (Chelmsford Bus Station and mainline Railway Station) and gives an opportunity to conserve and enhance landscape and townscape character (Chelmer & Blackwater Navigation Conservation Area).
Safety	The site is at significant risk of fluvial and surface water flooding and is shown to be highly sensitive to climate change. At the planning stage, site-specific flood risk assessments will be needed to address the following: • Developers will need to show, through the Flood Risk Assessment, that all sources of flood risk have been considered and future users of the site will not be placed in danger from flood hazards throughout is lifetime. • Development is steered away from area of fluvial flood along the eastern side of the site and the small flow paths / areas of surface water ponding are incorporated into site planning.

	• The risk from groundwater and surface water should be quantified and as part of the site-specific SFRA and demonstrated that water can be managed safely. • Safe access and egress can be demonstrated in the surface water 1% AEP and 1% AEP plus climate change events. This includes measures to reduce flood risk along these routes such as raising access, but not displacing floodwater elsewhere. If safe access and egress cannot be provided, an adequate flood warning and evacuation plan should be prepared. • A carefully considered and integrated flood resilient and sustainable drainage design is put forward, with development steered away from the areas identified to be at risk of surface water flooding across the site, such as the centre and southern border. • A site-specific FRA demonstrates site users will be safe throughout the lifetime of the development and that development of the site does not increase the risk of surface water flooding on the site and to neighbouring areas. • If flood mitigation measures are implemented then they are tested to check that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).
Exception Test passed?	Yes
Recommendation	**Allocate the site**

Site Name:	Strategic Growth Site 1a – Chelmer Waterside - Travis Perkins			
Local Plan Reference:	CW1e Travis Perkins			
Site Area: (Ha)	3.12ha			
Proposed Allocation/Use:	Residential			
Capacity:	Around 75 homes			
Flood Zone:	1	2	3	
	18.6%	81.4%	46.8%	
Flood Risk Vulnerability:	Residential – More Vulnerable			
Sources of Flood Risk:				
Surface Flooding	3.3% AEP – 7.2% 1% AEP – 15.4% 0.1% AEP – 40.2% In the 3.3% AEP scenario ponding is expected to occur on Hill Road South resulting in a Danger to Most hazard category. In the 1% AEP event, flood extends along roads and lower lying areas, with the hazard rating remaining at Danger for Most. In the 0.1% event, over 40% of the site is inundated.			
Critical Drainage Area	The site is not in a Critical Drainage Area			
Reservoir Flooding	The site is at risk in the Dry Day and Wet Day scenario from Chignal Hall Farm Reservoirs upstream west of Chelmsford. The risk has not yet been determined and in the very unlikely event that it may occur there may be risk to life.			
Fluvial and Tidal flooding	The defended scenario outputs have been reported as the most accurate representative of flood risk in Chelmsford. In the 3.3% AEP event, flood water encroaches approximately 20m into the site from the eastern border up to a maximum depth of 0.14m. In the 1% AEP nearly half the site is inundated with a depth up to 0.67m. In the 0.1% AEP event the majority of the site is inundated. Whilst hazard scores are not available for this model, the site is considered to be at significant danger to most users in the 0.1% AEP event. The site is not at risk of tidal flooding			
Groundwater	The southern area of the site has negligible risk of flooding. However, the northeastern and northwestern section have water that is near or very near the surface with capacity for low lying ponding.			

Sequential Test	
Are there reasonable alternative locations within the site boundary available in same or lower flood zone?	Yes. A significant majority of the site is in Flood Zone 1 and surface water flood risk is constrained to certain areas. With careful and considered site planning it is reasoned that the most at risk land uses – residential – can be accommodated in areas of lowest flood risk.
Are there reasonable alternative site allocation(s) available in same or lower flood zone?	No. This is a key city centre site. It is modest in size, but it forms part of a much wider strategic brownfield regeneration development area in the city centre.
Conclusion - Will the proposed development type be acceptable in this flood zone?	Yes. This is a highly sustainable city centre location, which when taken as part of a large and more comprehensive regeneration project, has the potential to rejuvenate a significant part of the eastern section of the city.
Sequential Test passed?	Yes
Exception Test required?	Yes
Exceptions Test	
Sustainability	This allocation is one of the smaller city centre sites and can accommodate around 75 homes. It is in a highly sustainable location which allows for excellent connectivity with local neighbourhoods and the City Centre. It is part of a wider city centre regeneration site to make more efficient and beneficial use of brownfield land. The site helps to meet the need for new homes in a highly sustainable location. In addition, the site is close to employment sites and key services. The site has good access to GP surgeries, local schools, open spaces (the Chelmer and Blackwater Canal) and public transport (Chelmsford Bus Station and mainline Railway Station) and gives an opportunity to conserve and enhance landscape and townscape character (Chelmer & Blackwater Navigation Conservation Area).
Safety	The site is at significant risk of fluvial and surface water flooding and is shown to be highly sensitive to climate change. At the planning stage, site-specific flood risk assessments will be needed to address the following: • Developers will need to show, through the Flood Risk Assessment, that all sources of flood risk have been considered and future users of the site will not be placed in danger from flood hazards throughout is lifetime. • Development is steered away from area of fluvial flood and surface water flood risk along the northwestern and southwestern borders of the site and the small flow paths / areas of surface water ponding are incorporated into site planning.

	• The risk from groundwater and surface water should be quantified and as part of the site-specific SFRA and demonstrated that water can be managed safely. • Safe access and egress can be demonstrated in the surface water 1% AEP and 1% AEP plus climate change events. This includes measures to reduce flood risk along these routes such as raising access, but not displacing floodwater elsewhere. If safe access and egress cannot be provided, an adequate flood warning and evacuation plan should be prepared. • A carefully considered and integrated flood resilient and sustainable drainage design is put forward, with development steered away from the areas identified to be at risk of surface water flooding across the site, such as the centre and southern border. • A site-specific FRA demonstrates site users will be safe throughout the lifetime of the development and that development of the site does not increase the risk of surface water flooding on the site and to neighbouring areas. • If flood mitigation measures are implemented then they are tested to check that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).
Exception Test passed?	Yes
Recommendation	**Allocate the site**

Site Name:	Strategic Growth Site 1a – Chelmer Waterside - Navigation Road Sites			
Local Plan Reference:	CW1f Navigation Road Sites			
Site Area: (Ha)	0.42ha			
Proposed Allocation/Use:	Residential			
Capacity:	Around 35 homes			
Flood Zone:	1	2	3	
	91.8%	8.2%	0%	
Flood Risk Vulnerability:	Residential – More Vulnerable			
Sources of Flood Risk:				
Surface Flooding	3.3% AEP - 0% 1% AEP – 0.1% 0.1% AEP – 12.2% The site is unaffected in the 3.3% AEP event. In the 1% AEP event a large surface water flow path is present in Springfield Road and crosses the site in the northwestern boundary to a maximum extent of 1.0m. The hazard rating is Very Low Hazard / Caution. In the 0.1% AEP event this is exacerbated to 5m within the site. Hazard increases to Danger to Most. Another flow path exists from Navigation Road and ponds in the southern part of the site. The hazard remains Very Low / Caution.			
Critical Drainage Area	The site is not located in a Critical Drainage Area.			
Reservoir Flooding	The site is at risk in the Dry Day and Wet Day scenario from Chignal Hall Farm Reservoirs. The risk has not yet been determined and in the very unlikely event that it may occur there may be risk to life.			
Fluvial and Tidal flooding	The site is not at risk from tidal flooding.			
Groundwater	The whole of the site is shown to have groundwater levels between 0.025m and 0.5m below the surface. Within this zone there is risk of groundwater flooding to both surface and subsurface assets. This will need to be addressed as part of any site-specific flood risk assessment.			
Sequential Test				
Are there reasonable alternative locations within the site boundary available	Yes. This is a small site where the vast majority of the allocation is in Flood Zone 1 and surface water occurs in two flow paths at the upper risk level of 0.1% AEP. Groundwater is a challenge. It is considered that with a careful and considered approach to site planning, the More Vulnerable residential use could be accommodated.			

in same or lower flood zone?	
Are there reasonable alternative site allocation(s) available in same or lower flood zone?	No. This is a key city centre site. It is modest in size but it forms part of a wider strategic brownfield regeneration area in the City Centre.
Conclusion - Will the proposed development type be acceptable in this flood zone?	Yes. A significant proportion of the site is in Flood Zone 1 and surface water flood risk occurs only at the higher risk levels. There are sound spatial planning reasons to allocate this site.
Sequential Test passed?	Yes
Exception Test required?	Yes
Exceptions Test	
Sustainability	This allocation is a smaller city centre site which can accommodate around 35 homes in a location which allows for excellent connectivity with local neighbourhoods and the City Centre. it is part of a wider city centre regeneration site to make more efficient and beneficial use of brownfield land. The site helps to meet the need for new homes in a highly sustainable location. In addition, the site is close to employment sites and key services. The site has good access to GP surgeries, local schools, open spaces (the Chelmer and Blackwater Canal) and public transport (Chelmsford Bus Station and mainline Railway Station) and gives an opportunity to conserve and enhance landscape and townscape character (Chelmer & Blackwater Navigation Conservation Area).
Safety	At the planning stage, site-specific flood risk assessments will be needed to address the following: • A site-specific FRA demonstrates that all sources of flood risk have been considered and site users will be safe throughout the lifetime of the development and that development of the site does not increase the risk of surface water flooding on the site and to neighbouring areas. • Development is steered away from area of fluvial flood and surface water flood risk along the northwestern and southwestern borders of the site and the small flow paths / areas of surface water ponding are incorporated into site planning. • The risk from groundwater can be quantified and as part of the site-specific SFRA and demonstrated that water can be managed safely. • Safe access and egress can be demonstrated in the surface water 1% AEP and 1% AEP plus climate change events. This includes measures to reduce flood risk along these routes such as raising access, but not displacing floodwater elsewhere. If safe access and egress cannot be provided, an adequate flood warning and evacuation plan should be prepared.

	• A carefully considered and integrated flood resilient and sustainable drainage design is put forward, with development steered away from the areas identified to be at risk of surface water flooding across the site, such as the centre and southern border. • If flood mitigation measures are implemented then they are tested to check that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).
Exception Test passed?	Yes
Recommendation	**Allocate the site**

Site Name:	Meadows Shopping Centre and Meadows Surface Car Park			
Local Plan Reference:	Strategic Growth Site 1w			
Site Area: (Ha)	2.83ha			
Proposed Allocation/Use:	Mixed-use			
Capacity:	Around 350 homes			
Flood Zone:	1	2	3	
	0%	100%	87.4%	
Flood Risk Vulnerability:	Residential – More Vulnerable Commercial – Less Vulnerable Parking – Less Vulnerable			
Sources of Flood Risk:				
Surface Flooding	3.3% AEP – 0% 1% AEP 0.1% 0.1% AEP – 20.6% There is no surface water flooding predicted in the 3.3% and 1% AEP events. In the 0.1% AEP event surface water flooding would exist on the southeastern boundary t a maximum depth of 0.48m. The highest hazard value is Danger to Most in a very small section of the northern boundary.			
Critical Drainage Area	The site is not in a Critical Drainage Area			
Reservoir Flooding	The site is at risk in the Dry Day and Wet Day scenario from Chignal Hall Farm Reservoirs. The risk has not yet been determined and in the very unlikely event that it may occur there may be risk to life.			
Fluvial and Tidal flooding	The defended scenario outputs from the Environment Agency's River Chelmer hydraulic model have been reported as more accurate representation of flood risk. In the 3.3% AEP event, there is a very small amount of fluvial flooding in the south of the site. In the 1% AEP the south and southeast of the site have small areas of flooding. In the 0.1% AEP the entire site is inundated. Whilst hazard results are not available maximum depths and velocities suggest flooding is likely to pose a significant danger to all site users in a 0.1% AEP event. The site is not at risk from tidal flooding.			
Groundwater	There is negligible risk of ground water emergence, and any emergence is less than 1%.			
Sequential Test				
Are there reasonable alternative locations within	Yes. Development should avoid the south and northern / southwestern border where deep water is expected in 1% and 0.1% AEP events.			

the site boundary available in same or lower flood zone?	
Are there reasonable alternative site allocation(s) available in same or lower flood zone?	No. This is an important city centre brownfield site. Its regeneration is key to the long-term growth of the city and Chelmsford.
Conclusion - Will the proposed development type be acceptable in this flood zone?	Yes. This a city centre regeneration site in a highly sustainable location.
Sequential Test passed?	Yes
Exception Test required?	Yes
Exceptions Test	
Sustainability	The site is in a highly sustainable location within the city centre. It provides an opportunity to regenerate not only a site that no longer requires the level of shopping provided but offers the chance to reinvigorate this part of the city centre and its High Street. The site has good access to neighbouring schools, GP surgeries, open spaces, including the nearby River Chelmer and Central Park. It is within walking distance of the mainline railway station and bus station and other public transport services. It could have positive effects on landscape character and townscape on this section of the city centre.
Safety	The site is at low risk of surface water flooding but at significant risk from fluvial flooding, with increased risk from climate change. The site may come forward if the following issues are met: • A site-specific FRA demonstrates that all sources of flood risk have been considered and site users will be safe throughout the lifetime of the development and that development of the site does not increase the risk of surface water flooding on the site and to neighbouring areas. • Development is steered away from the south and northern and southwestern borders of the site at risk of dep flooding in both 1% and 0.1% AEP events. • Safe access and egress can be demonstrated in the surface water 1% AEP and 1% AEP plus climate change events. This includes measures to reduce flood risk along these routes such as raising access, but not displacing floodwater elsewhere. If safe access and egress cannot be provided, an adequate flood warning and evacuation plan should be prepared.

	• A carefully considered and integrated flood resilient and sustainable drainage design is put forward, with development steered away from the areas identified to be at risk of surface water flooding across the site, such as the centre and southern border. • If flood mitigation measures are implemented then they are tested to check that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).
Exception Test passed?	Yes
Recommendation	**Allocate the site**

Site Name:	Former Kay-Metzeler Premises, Brook Street			
Local Plan Reference:	Strategic Growth Site 1x			
Site Area: (Ha)	1.43			
Proposed Allocation/Use:	Residential			
Capacity:	Around 185 homes			
Flood Zone:	1	2	3	
	100%	0%	0%	
Flood Risk Vulnerability:	More Vulnerable			
Sources of Flood Risk:				
Surface Flooding	3.3% AEP – 14.2% 1% AEP – 22.0% 0.1% AEP – 31.7%			
Critical Drainage Area	The site is not located within a critical drainage area.			
Reservoir Flooding	The site is not expected to be at risk from reservoir flooding under either a dry or wet day scenario.			
Fluvial and Tidal flooding	FZ1 – 100%. The site is not expected to experience fluvial or tidal flooding for any of the AEP events modelled (including and up to the 0.1% AEP event).			
Groundwater	Groundwater levels, for the majority of the site, are either at or very near (within 0.025m of) the ground surface. In these areas, the site is at risk of groundwater flooding to both surface and subsurface assets. Groundwater may emerge at significant rates and has the capacity to flow overland and/or pond within any topographic low spots. To the southeast of the site, groundwater levels are between 0.025m and 0.5m below the ground surface. Within this zone there is a risk of groundwater flooding to both surface and subsurface assets. There is the possibility of groundwater emerging at the surface locally. The western perimeter of the site is shown to have negligible risk of groundwater emergence, and any groundwater emergence incidence has a chance of less than 1% annual probability of occurrence. This will need to be assessed further as part of a site-specific flood risk assessment and is likely to require ground investigations to determine the true risk to the site (Source: JBA Level 2 Site Forms)			
Sequential Test				
Are there reasonable alternative locations within	No. The site is in Flood Zone 1. Considerations should be had to the groundwater levels as noted above in the site design.			

the site boundary available in same or lower flood zone?	
Are there reasonable alternative site allocation(s) available in same or lower flood zone?	No. This is an urban site and is located within Flood Zone 1. Given most of the larger strategic brownfield sites in the urban area have already been developed, there is limited opportunity and less availability for larger scale redevelopment. Therefore, smaller scale brownfield sites have been identified and there are no reasonable alternatives in the urban area beyond those proposed for allocation in the Local Plan.
Conclusion - Will the proposed development type be acceptable in this flood zone?	Yes. The proposed use of this site is residential. Residential development is classed as 'more vulnerable' and therefore should be located towards the lowest flood zone areas. The development is within Flood Zone 1. A site-specific Flood Risk Assessment (FRA) is required due to the risk of surface water and groundwater flooding and the proposed development constituting a change of use to a more vulnerable class (industrial to residential).
Sequential Test passed?	Yes
Exception Test required?	No. Although, the site is at significant risk from surface water and groundwater flooding. The Exception Test is only required for sites at risk from fluvial and tidal flooding and the significant surface water flood risk have been noted. Developers will need to demonstrate through a site-specific flood risk assessment that users of the site will be safe throughout its lifetime. The Development should ensure that: • Safe access and egress can be demonstrated in the surface water 1% AEP and 1% AEP plus climate change events. This includes measures to reduce flood risk along these routes such as raising access, but not displacing floodwater elsewhere. If safe access and egress cannot be provided, an adequate flood warning and evacuation plan should be prepared. • A carefully considered and integrated flood resilient and sustainable drainage design is put forward, with development steered away from the areas identified to be at risk of surface water flooding across the site, such as the centre and southern border. • Ground investigations will be necessary to confirm groundwater risk. This is also likely to impact upon the types of SuDS that are suitable for the site. • A site-specific FRA demonstrates site users will be safe throughout the lifetime of the development and that development of the site does not increase the risk of surface water flooding on the site and to neighbouring areas. • If flood mitigation measures are implemented then they are tested to check that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).
Recommendation	**Allocate the site**

Site Name:	Riverside Ice and Leisure Land, Victoria Road			
Local Plan Reference:	Strategic Growth Site 1d			
Site Area: (Ha)	1.13ha			
Proposed Allocation/Use:	Residential, Parking and Commercial Development			
Capacity:	Around 150 homes			
Flood Zone:	1	2	3	
	27.4%	72.6%	58.7%	
Flood Risk Vulnerability:	Residential – More Vulnerable Commercial – Less Vulnerable Parking – Less Vulnerable			
Sources of Flood Risk:				
Surface Flooding	3.3% AEP – 23.1% 1% AEP – 41.5% 0.1% AEP - 59.5% Surface water ponds in the south of the site and a smaller spot to the north. At the 3.3% event there is significant ponding on the site of the site which continues in the 1% AEP event. At the 0.1% AEP event there is significant risk across the majority of the site.			
Critical Drainage Area	This site is not located in a Critical Drainage Area.			
Reservoir Flooding	According to Environment Agency reservoir dataset, this site is vulnerable to Wet Day scenario associated with the Chignal Hall Farm Reservoirs upstream west of Chelmsford.			
Fluvial and Tidal flooding	The defended scenario outputs from the Environment Agency's River Chelmer hydraulic model have been reported as more accurate representation of flood risk. In the 3.3% AEP, the River Chelmer does not inundate the site. In the 1% AEP the south of the site is inundated. Similarly in the 0.1% AEP the entire site aside from two spots are inundated. This site is not subject to tidal flood risk.			
Groundwater	The eastern two-thirds of the site have negligible risk of ground water emergence. To the west of the site groundwater levels are close to the surface. Groundwater may exit at significant rates. This will need to be investigated as part of a site-specific flood risk assessment.			
Sequential Test				
Are there reasonable alternative locations within	No. The site is either in Flood Zones 2 or 3.			

the site boundary available in same or lower flood zone?	
Are there reasonable alternative site allocation(s) available in same or lower flood zone?	No. This is a key urban site. The site was identified as a growth site in the Chelmsford Local Plan 2020. Given most of the larger strategic brownfield sites in the city centre have been developed, there is limited opportunity and less availability for larger scale development. Therefore, medium scale brownfield sites have been identified and there are no reasonable alternatives in the city beyond those proposed in the Local Plan.
Conclusion - Will the proposed development type be acceptable in this flood zone?	Yes. The proposed use of this site is mixed use. Residential development is classed as More Vulnerable and therefore should be located towards Flood Zone 2, where this is appropriate. The Local Plan also encourages non-residential uses located on the ground floor which is classed as Less Vulnerable and is appropriate within Flood Zone 3.
Sequential Test passed?	Yes
Exception Test required?	Yes
Exceptions Test	
Sustainability	
Safety	This is a challenging site with significant flood risk from River Chelmer, groundwater and surface water and is shown to be highly sensitive to increased risk from climate change. Development may proceed if the following issues can be met: • A site-specific FRA demonstrates that all sources of flood risk have been considered and site users will be safe throughout the lifetime of the development and that development of the site does not increase the risk of surface water flooding on the site and to neighbouring areas. • Development is steered away from the area of fluvial risk in the south and the small flow paths / ponding of surface water, including that along the western and northern borders. • A carefully considered and integrated flood resilient and sustainable drainage design is needed, with development steered away from areas of highest risk. • A site-specific flood risk assessment should ensure the risk of flooding does not increase elsewhere and does not increase surface water to the site or neighbours. • Safe access and egress can be demonstrated for the fluvial and surface water 1% AEP plus climate change events. • If flood mitigation measures are implemented they tested to ensure water is not displaced elsewhere.
Exception Test passed?	Yes
Recommendation	**Allocate the site**

Site Name:	Land Between Hoffmans Way and Brook Street (Marriage's Mill)			
Local Plan Reference:	Strategic Growth Site 1y			
Site Area: (Ha)	1.53ha			
Proposed Allocation/Use:	Residential and Commercial			
Capacity:	Around 100 homes			
Flood Zone:	1	2	3	
	100%	0	0	
Flood Risk Vulnerability:	Residential – More Vulnerable Commercial – Less Vulnerable			
Sources of Flood Risk:				
Surface Flooding	3.3% - 30.8% 1% - 42.9% 0.1% - 75.7% During the 3.3% AEP event flood water is present on the site from the north along its boundary with Hoffmans Way and along southern border with SGS1v. Under 1% AEP event much of the southern portion of the site is expected to become inundated. In the 0.1% AEP almost all areas are inundated and a maximum hazard of Danger to Most is expected. It is important to note that accuracy of Environment Agency LIDAR Digital Terrain Model used in the surface water flood model has limitations given the urban nature of the site. The risk from surface water will need to be quantified as part of a site-specific flood risk assessment. The latest climate change allowances indicate a 1% AEP plus 40% climate change corresponds to the 1% upper end allowance for peak rainfall for the 2070s epoch and is therefore a design event scenario. Under the design event scenario previously unflooded sections of access road and building footprints are expected to become inundated far greater than 1% AEP. Under this scenario 72.9% would be affected compared to 42.9% under the 1% AEP. Maximum flood depth would increase from 0.9m to 1.1m. Modelling therefore suggests the site is relatively sensitive to climate change. Surface water will need to be assessed further as part of a site-specific flood risk assessment and should ensure that development provides for safe access and egress. In particular, development proposals must address the potential changes associated with climate change and be designed to be safe for the intended lifetime.			
Critical Drainage Area	The site is not within a Critical Drainage Area.			
Reservoir Flooding	The site is not expected to be at risk from reservoir flooding under either wet or dry day scenario.			

Fluvial and Tidal flooding	Despite close proximity to the River Chelmer, the site is not expected to experience fluvial flooding of the AEPs modelled, up to and including 0.1% AEP. Thus, the hazard to the site posed by fluvial flood risk is very low. The site is not at risk from tidal flooding.
Groundwater	The majority of the site has ground water levels between 0.025m and 0.5m below ground surface. The southwest of the site is at greatest risk with ground water levels at or very near (within 0.025m) of the ground surface. As a result, there is a risk to both surface and sub surface assets. The eastern perimeter is at least risk. Ground water will need to be assessed further as part of a site-specific flood risk assessment and is likely to require ground investigations to determine the true risk to the site.
Sequential Test	
Are there reasonable alternative locations within the site boundary available in same or lower flood zone?	No. The site is in Flood Zone 1 and meets the sequential test. However, as all sources of flood risk should be addressed, at the site-specific flood risk assessment stage, careful consideration will also need to be given to risk from surface water and ground water. This evidence will be used to inform site planning and land uses within the site to ensure it is both sustainable and safe.
Are there reasonable alternative site allocation(s) available in same or lower flood zone?	No.
Conclusion - Will the proposed development type be acceptable in this flood zone?	Yes. The site lies entirely within Flood Zone 1 and meets the sequential test. This is a key urban site. As the city becomes more developed there is limited opportunity to provide new commercial and residential developments in highly sustainable brownfield locations. It is acknowledged that the majority of the site is at considerable risk from either surface water or ground water flooding and is sensitive to climate change impacts.
Sequential Test passed?	Yes.
Exception Test required?	No. Although the site is at significant risk from ground and surface water flooding, the Exception Test is only required for sites at risk of fluvial and tidal flooding and the significant risk from groundwater and surface water flood risk has been noted. To ensure the site remains sustainable and safe, it will be necessary for any development to demonstrate that: • A site-specific FRA demonstrates that all sources of flood risk have been considered and site users will be safe throughout the lifetime of the development and that development of the site does not increase the risk of surface water flooding on the site and to neighbouring areas.

	• a carefully considered flood resilient and sustainable drainage design is put forward. That ground investigations confirm the necessary groundwater risk and impact on use of SUDS within the site. • any flood mitigation proposals do not displace water elsewhere. • opportunities should be sought for wider sustainability benefits and integrated flood risk management. In conclusion, all sources of flood risk should be addressed (notably surface water and ground water) and a sequential approach to site planning and land use should be employed to ensure sustainability and safety over its lifetime.
Recommendation	**Allocate the site**

Site Name:	Chelmsford Social Club, Springfield Road			
Local Plan Reference:	Growth Site 1g			
Site Area: (Ha)	0.74ha			
Proposed Allocation/Use:	Residential			
Capacity:	Around 29 homes			
Flood Zone:	1	2	3	
	0%	100%	99.5%	
Flood Risk Vulnerability:	More Vulnerable			
Sources of Flood Risk:				
Surface Flooding	3.3% AEP – 18.5% 1% AEP – 53.2% 0.1% AEP – 99.8%			
Critical Drainage Area	The site is not in a critical drainage area.			
Reservoir Flooding	The site is not at risk from reservoir flooding in the 'Dry Day' scenario. The entirety of the site is at risk of reservoir flooding in the 'Wet Day' scenario from the Chignal Hall Farm Reservoir upstream west of Chelmsford. The risk designation of Chignal Reservoir has not yet been determined; therefore, in the very unlikely event that the reservoirs fail, there may be a risk to life.			
Fluvial and Tidal flooding	The site is at significant risk form fluvial flooding in all modelled scenarios, with the majority of the site being within Flood Zone 3. The site is not considered to be at risk from tidal flooding.			
Groundwater	The whole site is shown to have negligible risk of groundwater emergence.			
Sequential Test				
Are there reasonable alternative locations within the site boundary available in same or lower flood zone?	No.			
Are there reasonable alternative site allocation(s) available in same or lower flood zone?	No, this is a key urban site. Given most of the larger strategic brownfield sites in the urban area have already been developed, there is limited opportunity and less availability for larger scale redevelopment. Therefore, smaller scale brownfield sites have been identified and there are no reasonable alternatives in the urban area beyond those proposed for allocation in the Local Plan.			

Conclusion - Will the proposed development type be acceptable in this flood zone?	The proposed use of this site is residential. Residential development is classed as 'more vulnerable' and therefore should be located towards the lowest flood zone areas. A site-specific FRA will be required as the proposed development site is almost entirely within fluvial Flood Zones 2 and 3 and at risk of from surface water and reservoir sources of flooding.
Sequential Test passed?	Yes
Exception Test required?	Yes
Exceptions Test	
Sustainability	This allocation is a smaller urban site which can accommodate 29 homes in a location which allows for excellent connections with the City Centre, and it can regenerate previously used land. The Integrated Impact Assessment (IIA) notes that the likely effects on IIA Objective 8 (Water) and IIA Objective 9 (Flood Risk) are assessed as minor negative rather than significant negative on basis that the policy identifies the need for flood risk mitigation and SuDS.
Safety	Given the sites location in Flood Zone 2 and 3a and within an area of surface water run-off, flood risk management measures would need to be considered and a site-specific Flood Risk Assessment will be required. Planning applications must draw from the outcomes of the Strategic Flood Risk Assessment (Level 1 and Level 2). The site is at significant risk of fluvial and surface water flooding, and is shown to be highly sensitive to increased risk as a result of climate change. With regards to the flood risk portion of the Exception Test, development may be able to proceed if: • Development is steered away from the north of the site at risk of deepest flooding in the 1% and 0.1% fluvial AEP events. • A carefully considered and integrated flood resilient and sustainable drainage design is put forward, with development steered away from the areas identified to be at risk of surface water flooding across the site. • Safe access and egress can be demonstrated in the fluvial and surface water 1% AEP plus climate change events. This includes measures to reduce flood risk along these routes such as raising access, but not displacing floodwater elsewhere. Given the significant risk to the site a suitable flood warning and evacuation plan will be required. • A site-specific FRA demonstrates that site users will be safe throughout the lifetime of the development and that development of the site does not increase the risk of surface water flooding on the site and to neighbouring areas. • If flood mitigation measures are implemented then they are tested to check that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will

	be required in another). If defences are proposed, plans will need to set out how the defences are to be maintained throughout the lifetime of the development and include an assessment of the risk form breach or overtopping of any proposed defences.
Exception Test passed?	Yes
Recommendation	**Allocate the site.** Given the sites location in Flood Zone 2 and 3a and within an area of surface water run-off, flood risk management measures would need to be considered and a site-specific Flood Risk Assessment will be required

Site Name:	Granary Car Park, Victoria Road			
Local Plan Reference:	Growth Site 1z			
Site Area: (Ha)	0.71ha			
Proposed Allocation/Use:	Residential			
Capacity:	Around 60 homes			
Flood Zone:	1	2	3	
	16.6%	83.4%	43.3%	
Flood Risk Vulnerability:	More Vulnerable			
Sources of Flood Risk:				
Surface Flooding	3.3% AEP – 0.5% 1% AEP – 3.4% 0.1% AEP – 39.3%			
Critical Drainage Area	The site is not in a critical drainage area.			
Reservoir Flooding	The site is not at risk from reservoir flooding in the 'Dry Day' scenario. The majority of the site is at risk of reservoir flooding in the 'Wet Day' scenario from the Chignal Hall Farm Reservoir. The risk designation of Chignal Reservoir has not yet been determined; therefore, in the very unlikely event that the reservoirs fail, there may be a risk to life.			
Fluvial and Tidal flooding	The 3.3% fluvial AEP event shows a small extent of fluvial flooding along the western boundary, immediately adjacent the river. The flooding is shown to be very shallow within the site. In the 1% AEP event fluvial flooding occurs along the northwestern boundary and across the south of the site. The 0.1% fluvial AEP models predict vast fluvial flooding across the majority of the site. The site is not considered to be at risk from tidal flooding.			
Groundwater	The whole site is shown to have negligible risk of groundwater emergence in this area.			
Sequential Test				
Are there reasonable alternative locations within the site boundary available in same or lower flood zone?	This site is located in all flood zones in part providing some flexibility to locate more vulnerable development to the lowest areas of flood risk.			
Are there reasonable alternative site allocation(s)	No. This is an urban site. Given most of the larger strategic brownfield sites in the urban area have already been developed, there is limited opportunity and less availability for larger scale redevelopment. Therefore, smaller scale			

available in same or lower flood zone?	brownfield sites have been identified and there are no reasonable alternatives in the urban area beyond those proposed for allocation in the Local Plan.
Conclusion - Will the proposed development type be acceptable in this flood zone?	The proposed use of this site is residential. Residential development is classed as 'more vulnerable' and therefore should be located towards the lowest flood zone areas. A site-specific FRA will be required as the proposed development site is almost entirely within fluvial Flood Zones 2 and 3 and at risk of from surface water and reservoir sources of flooding.
Sequential Test passed?	Yes
Exception Test required?	Yes
Exceptions Test	
Sustainability	The site is a smaller urban site which has the potential to deliver around 60 homes in a location which allows for excellent connections with local neighbourhoods and the City Centre.
Safety	The site is classified as more vulnerable and is within Flood Zones 2 and 3. It is acknowledged that the site is at varying levels of risk from fluvial and surface water sources and is shown to be highly sensitive to increased risk as a result of climate change. With regards to the flood risk portion of the Exception Test, development may be able to proceed if: • Development is steered away from the south and northwestern boundaries of the site at risk of deep flooding in the 1% and 0.1% fluvial AEP events. • A carefully considered and integrated flood resilient and sustainable drainage design is put forward, with development steered away from the areas identified to be at risk of surface water flooding across the site. • Safe access and egress can be demonstrated in the fluvial and surface water 1% AEP plus climate change events. This includes measures to reduce flood risk along these routes such as raising access, but not displacing floodwater elsewhere. Given the significant risk to the site a suitable flood warning and evacuation plan will be required. • A site-specific FRA demonstrates that site users will be safe throughout the lifetime of the development and that development of the site does not increase the risk of surface water flooding on the site and to neighbouring areas. • If flood mitigation measures are implemented then they are tested to check that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another). At the planning application stage, a site-specific FRA will be required. The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime.
Exception Test passed?	Yes
Recommendation	**Allocate the Site**

Site Name:	Waterhouse Lane Depot and Nursery			
Local Plan Reference:	Growth Site 1n			
Site Area: (Ha)	0.85ha			
Proposed Allocation/Use:	Residential			
Capacity:	Around 20 homes			
Flood Zone:	1	2	3	
	100%	0%	0%	
Flood Risk Vulnerability:	More Vulnerable			
Sources of Flood Risk:				
Surface Flooding	3.3% AEP – 0% 1% AEP – 4.6% 0.1% AEP – 28.8%			
Critical Drainage Area	The site is not located in a critical drainage area.			
Reservoir Flooding	The site is not expected to be at risk from reservoir flooding under either a dry or wet day scenario.			
Fluvial and Tidal flooding	The site is not expected to experience fluvial or tidal flooding for any of the AEPs modelled (including and up to the 0.1% AEP event).			
Groundwater	The whole site is shown to have negligible risk of groundwater flooding in this area, and any groundwater flooding incidence has a chance of less than 1% annual probability of occurrence.			
Sequential Test				
Are there reasonable alternative locations within the site boundary available in same or lower flood zone?	No. The site is in Flood Zone 1.			
Are there reasonable alternative site allocation(s) available in same or lower flood zone?	No. This is an urban site and is located within Flood Zone 1. Given most of the larger strategic brownfield sites in the urban area have already been developed, there is limited opportunity and less availability for larger scale redevelopment. Therefore, smaller scale brownfield sites have been identified and there are no reasonable alternatives in the urban area beyond those proposed for allocation in the Local Plan.			

Conclusion - Will the proposed development type be acceptable in this flood zone?	Yes. The proposed use of this site is residential. Residential development is classed as 'more vulnerable' and therefore should be located towards the lowest flood zone areas. The development is within Flood Zone 1. This type of development is therefore appropriate in accordance with the NPPF. A site-specific Flood Risk Assessment (FRA) is required due to the risk of surface water flooding and the proposed development constituting a change of use to a more vulnerable class (industrial to residential).
Sequential Test passed?	Yes
Exception Test required?	No
Recommendation	**Allocate the site**

Site Name:	Rivermead, Bishop Hall Lane			
Local Plan Reference:	Growth Site 1u			
Site Area: (Ha)	1.61ha			
Proposed Allocation/Use:	Residential			
Capacity:	315 new homes of student accommodation. The north island has full planning permission (Ref: 18/01326/FUL). Work on site was completed after April 2023.			
Flood Zone:	1	2	3	
	76%	24%	60.3%	
Flood Risk Vulnerability:	More Vulnerable			
Sources of Flood Risk:				
Surface Flooding	3.3% AEP – 0.2% 1% AEP – 2.6% 0.1% AEP – 8.5%			
Critical Drainage Area	The site is not in a critical drainage area.			
Reservoir Flooding	There is no risk of flooding in the 'Dry Day' scenario. The bridge and eastern boundary are at risk of reservoir flooding in the 'Wet Day' scenario, from the Chignal Hall Farm Reservoir upstream west of Chelmsford. The risk designation of Chignal Reservoir has not yet been determined; therefore, in the very unlikely event that the reservoirs fail, there may be a risk to life.			
Fluvial and Tidal flooding	The 3.3% AEP fluvial event shows a small extent of fluvial flooding along the site boundaries, but flooding appears to be constrained to the main river channel. In the 1% flooding encroaches slightly further into the site around the boundaries, but remains confined to the channel. In 0.1% AEP fluvial event fluvial flooding inundates the entire south of the site, with the exception of the bridge which has a higher elevation. Flooding also encroaches slightly further into the site around the boundaries of the northern island, however is mostly confined to the channel. The maximum depth on the flooded southern island is approximately 0.4m and the maximum velocity is approximately 0.5m/s. The maximum hazard on the southern island is 'Danger for most'. The site is not considered to be at risk from tidal flooding.			
Groundwater	The whole site is shown to have negligible risk of groundwater emergence in this area, and any groundwater flooding incidence has a chance of less than 1% annual probability of occurrence.			
Sequential Test				

Are there reasonable alternative locations within the site boundary available in same or lower flood zone?	No
Are there reasonable alternative site allocation(s) available in same or lower flood zone?	No, this is a key urban site. Given most of the larger strategic brownfield sites in the urban area have already been developed, there is limited opportunity and less availability for larger scale redevelopment. Therefore, smaller scale brownfield sites have been identified and there are no reasonable alternatives in the urban area beyond those proposed for allocation in the Local Plan.
Conclusion - Will the proposed development type be acceptable in this flood zone?	The site is located on two islands in the centre of the watercourse, the site is classified as more vulnerable and is within Flood Zone 2 and 3 and is at significant risk form fluvial flooding. Therefore, the Exception Test is required for this site. Particular attention will need to be given to ensuring safe access and egress can be provided given the sites location in the middle of the River Chelmer. At the planning application stage, a site-specific FRA will be required showing that future users of the development will not be placed in danger from flood hazards throughout its lifetime.
Sequential Test passed?	Yes
Exception Test required?	Yes.
Exceptions Test	
Sustainability	The site is a smaller urban site which has the potential to provide student accommodation in a location which allows for excellent connections with local neighbourhoods, the adjacent Anglia Ruskin University and the City Centre. It can regenerate brownfield land, presently used as industrial/commercial. The site is adjacent to the River Chelmer. A well-designed site could relate well to the University grounds and there is potential for positive effects on landscape and townscape character.
Safety	The site is located on the River Chelmer on two islands in the middle of the River, connected by a bridge, and is therefore bounded by the River Chelmer to the north, south, east and west of the site (flowing south). The river also runs through the centre of the site. These islands are connected to the mainland by a bridge in the southwest of the site. With regards to the flood risk portion of the Exception Test, development may be able to proceed if: • Development is steered away from the south of the site, at risk of deep flooding in the 1% and 0.1% fluvial AEP events. • A carefully considered and integrated flood resilient and sustainable drainage design is put forward, with development steered away from the areas identified to be at risk of surface water flooding across the site. • Safe access and egress can be demonstrated in the fluvial and surface water 1% AEP plus climate change events. This will need to carefully consider how access can be ensured during extreme events, given the sites

	location across two islands. This includes measures to reduce flood risk along these routes such as raising access, but not displacing floodwater elsewhere. Given the significant risk to the site at the 0.1% AEP events, a suitable flood warning and evacuation plan will be required. • A site-specific FRA demonstrates that site users will be safe throughout the lifetime of the development and that development of the site does not increase the risk of surface water flooding on the site and to neighbouring areas. • If flood mitigation measures are implemented then they are tested to check that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).
Exception Test passed?	Yes
Recommendation	**Allocate the Site**

Site Name:	Railway Sidings, Brook Street			
Local Plan Reference:	Growth Site 1v			
Site Area: (Ha)	1.01			
Proposed Allocation/Use:	Intensification of business or industrial use			
Capacity:	n/a			
Flood Zone:	1	2	3	
	99.5%	0.5%	0.5%	
Flood Risk Vulnerability:	Less Vulnerable			
Sources of Flood Risk:				
Surface Flooding	3.3% AEP – 1.4% 1% AEP – 14.1% 0.1% AEP – 64.1%			
Critical Drainage Area	The site is not located within a critical drainage area.			
Reservoir Flooding	The site is not expected to be at risk from reservoir flooding in the dry or wet day scenario.			
Fluvial and Tidal flooding	For all modelled scenarios, including climate change simulations, the extent of floodwater remains the same, affecting only 0.2% of the site at the eastern perimeter. The site is not expected to be at risk of tidal flooding.			
Groundwater	Groundwater levels in the western section of the site are expected to be between 0.025m and 0.5m below the ground surface. Within this zone there is a risk of groundwater flooding to both surface and subsurface assets. There is the possibility of groundwater emerging at the surface locally. The eastern section of the site is shown to have negligible risk of groundwater flooding in this area, and any groundwater flooding incidence has a chance of less than 1% annual probability of occurrence. Within the centre north of the site, groundwater levels are either at or very near (within 0.025m of) the ground surface. Within this zone there is a risk of groundwater flooding to both surface and subsurface assets. Groundwater may emerge at significant rates and has the capacity to flow overland and/or pond within any topographic low spots. This will need to be investigated further through a site-specific flood risk assessment and is likely to require ground investigations to determine the true risk to the site (Source: JBA Level 2 Site Forms).			
Sequential Test				
Are there reasonable alternative locations within the site boundary available in same or lower flood zone?	No. The site is predominantly in Flood Zone 1. Considerations should be had to the groundwater levels as noted above in the site design.			

Are there reasonable alternative site allocation(s) available in same or lower flood zone?	No, this is previously-used site located within the lowest flood risk area.
Conclusion - Will the proposed development type be acceptable in this flood zone?	The site is proposed for a 'less vulnerable' use, located predominantly within Flood Zone 1. This development is considered appropriate. A site-specific Flood Risk Assessment (FRA) is required due to the risk of surface water flooding and the proposed development constituting a change of use to a more vulnerable class (industrial to residential).
Sequential Test passed?	Yes
Exception Test required?	No. Although, the site is at significant risk from surface water and groundwater flooding. The Exception Test is only required for sites at risk from fluvial flooding and the significant surface water flood risk have been noted. Developers will need to demonstrate through a site-specific flood risk assessment that users of the site will be safe throughout its lifetime. The development should ensure that: • Flood vulnerable uses are likely to require additional protection measures, beyond relocating them to a specific area of the site, due to the numerous overlapping sources of flood risk to the site. • Safe access and egress can be demonstrated in the surface water 1% AEP and 1% AEP plus climate change events. This includes measures to reduce flood risk along these routes such as raising access, but not displacing floodwater elsewhere. If safe access and egress cannot be provided, an adequate flood warning and evacuation plan should be prepared. • A carefully considered and integrated flood resilient and sustainable drainage design is put forward, with development steered away from the areas identified to be at risk of surface water flooding across the site, such as the centre and southern border. • Ground investigations will be necessary to confirm groundwater risk. This is also likely to impact upon the types of SuDS that are suitable for the site. • A site-specific FRA demonstrates site users will be safe throughout the lifetime of the development and that development of the site does not increase the risk of surface water flooding on the site and to neighbouring areas. • If flood mitigation measures are implemented then they are tested to check that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).
Recommendation	**Allocate the site**

Site Name:	East Chelmsford Garden Community (Hammonds Farm)			
Local Plan Reference:	Strategic Growth Site 16a(S)			
Site Area: (Ha)	229.53ha			
Proposed Allocation/Use:	Residential and Employment – Garden Community			
Capacity:	Around 3,000 homes to 2041 (plus 1,500 homes post 2041)			
Flood Zone:	1	2	3	
	91.9%	8.1%	6.7%	
Flood Risk Vulnerability:	Residential - More Vulnerable Schools – More Vulnerable Employment, community uses, commercial, shops – Less Vulnerable Open space – Water Compatible			
Sources of Flood Risk:				
Surface Flooding	3.3% AEP – 0.1% 1% AEP – 0.5% 0.1% AEP – 3.4% In all events surface water risk is limited.			
Critical Drainage Area	The site is not in Critical Drainage Area.			
Reservoir Flooding	The risk designation of Hanningfield Reservoir is not yet determined, but in the very unlikely event that the reservoir fails there may be a risk to life.			
Fluvial and Tidal flooding	The site is not at risk from tidal flooding. Flood risk associated with Sandon Brook impacts along the length of the eastern border of the site. Fluvial modelling matches the flood zones, with the greatest depths present in the immediate vicinity of the channel. Flood Zones 2 and 3 encroach a maximum of 206m and 172m respectively into the site in the southeastern corner. To the northeast of the site, Flood Zones 2 and 3 only encroach by 17m and 6m respectively. Maximum depths outside the main channel reach up to 0.5m in 3.3% AEP, up to 0.7m in the 1% AEP and 0.9m in 0.1% AEP. The remainder of the site remains at low risk and fluvial risk is unlikely to pose a barrier to development provided development is located away from the area within the flood zones.			

Groundwater	The east of the site is at negligible risk of groundwater flooding. At the southwest of the site there is risk to subsurface assets. The risk from groundwater should be confirmed and quantified as part of the site-specific flood risk assessment. Development should be steered away from those areas identified as being of risk groundwater flooding or overland flows.
Sequential Test	
Are there reasonable alternative locations within the site boundary available in same or lower flood zone?	Yes. For more flood risk sensitive land uses, such as residential and schools, with careful site planning it is feasible to place these uses in the lowest flood risk areas.
Are there reasonable alternative site allocation(s) available in same or lower flood zone?	No. This is a key strategic scale allocation that requires proximity to the city centre and urban area of Chelmsford.
Conclusion - Will the proposed development type be acceptable in this flood zone?	Yes. The proposed development is residential led mixed use allocation that includes schools, commercial and open space. At over 90%, the allocation is overwhelmingly in Flood Zone 1. It is entirely feasible that with appropriate site planning, land uses can be placed in those areas of least risk pertinent to their flood risk classification.
Sequential Test passed?	Yes.
Exception Test required?	Yes.
Exceptions Test	
Sustainability	This allocation is a key strategic site offering new homes at scale and with a range of supporting uses. It will not only create its own highly sustainable garden community, but will be well positioned to benefit and support the city centre of Chelmsford and its urban area.
Safety	The site is classified as More Vulnerable and is partly within Flood Zones 2 and 3. It is also at risk from surface water flooding. Developers will need to demonstrate through site-specific flood risk assessment that all sources of flood risk have been considered and that the users of the allocation will be safe throughout its lifetime. The site-specific flood risk assessment should consider the following issues: • All sources of flood risk, including residual risk from a failure or overtopping of Hanningfield Reservoir. • Ground investigations will be needed to assess risk posed by ground water. • Climate change outputs for the 0.1% AEP were not available for the Chelmer 2010 model. The Environment Agency is currently updating modelling. If climate change scenarios for latest allowances are not available, developers will need to conduct their own site-specific flood risk assessments to determine risk for this scenario.

	• Post development site layout, including drainage features, should account for surface water risk. • Development should be designed with mitigation measures in place where required.
Exception Test passed?	Yes.
Recommendation	**Allocate the site**

Site Name:	Land Adjacent to A12 Junction 18 Employment Area			
Local Plan Reference:	Strategic Growth Site 16b			
Site Area: (Ha)	22.1ha			
Proposed Allocation/Use:	Employment			
Capacity:	Around 43,000 sqm			
Flood Zone:	1	2	3	
	82.7%	17.3%	13.6%	
Flood Risk Vulnerability:	Employment - Less Vulnerable			
Sources of Flood Risk:				
Surface Flooding	3.3% - 4.7% 1% - 12.9% 0.1% - 19.4% In all events, surface water is channelled by the lower typography of the fluvial watercourse. Sandon Brook flows along the eastern border of the site and is a carrier for most of the surface water. The maximum depth in each event is 1.2m. There is isolated ponding resulting from variations in the site topography. In the 1% AEP plus climate change event, ponding extends by an additional 98m and depth, hazard and velocity all increase. Development proposals must address potential changes associated with climate change and be designed to be safe for the lifetime of the development. Provisions for safe access and egress must address the potential increase in severity and frequency of flooding.			
Critical Drainage Area	The site is not located in a Critical Drainage Area			
Reservoir Flooding	The entirety of the site is impacted by the Dry Day and Wet Day scenarios. Hanningfield Reservoir would inundate this site. The risk designation of Hanningfield Reservoir has not been determined, but in the very unlikely event that the reservoir fails, there may be a risk to life.			
Fluvial and Tidal flooding	Flood risk from Sandon Brook impacts the length of the eastern border of the site. FZ2 and FZ3 encroach a maximum of 174m and 126m respectively in the northeastern corner of the site. To the northeast of the site FZ2 and FZ3 encroach 41m and 9m respectively. In all modelled scenarios flooding is limited to the area within flood zones. Flood depths are 0.1m in the 3.33% AEP, 0.4m in 1% AEP and 0.7m in 0.1% AEP. All other areas are unaffected. The site is not at risk from tidal flooding.			

Groundwater	The majority of the site is shown to have negligible risk of groundwater emerging in this area and any groundwater emergence has less than 1% probability of occurrence. There will be a remote possibility that groundwater flooding could lead to damage to property or harm to other sensitive receptors at or near this location. The northwest part of the site is shown to have groundwater levels between 0.5m and 5.0m below the surface and there is a risk of flooding to subsurface assets. This will need to be assessed as part of a site-specific flood risk assessment.
Sequential Test	
Are there reasonable alternative locations within the site boundary available in same or lower flood zone?	Yes. At over 22ha there is scope within the site to accommodate the proposed development, and notably more flood sensitive land uses such as residential and schools, as well as access and egress, in a sustainable and safe manner that is consistent with sound sequential principles.
Are there reasonable alternative site allocation(s) available in same or lower flood zone?	No. This a strategic scale development required to be in proximity to the city centre and urban area of Chelmsford, as well as the national trunk road network.
Conclusion - Will the proposed development type be acceptable in this flood zone?	Yes.
Sequential Test passed?	Yes.
Exception Test required?	Yes.
Exceptions Test	
Sustainability	The site is classified as Less Vulnerable and partially within Flood 2 and Flood Zone 3. The site is also at significant risk from surface water flooding. This site is consistent with the Council's spatial strategy to support the growth of Chelmsford city and its urban area. Equally the land use requires a location served by the trunk road network, in this instance the A12.
Safety	The development will need to demonstrate that: • A site-specific FRA demonstrates that all sources of flood risk have been considered and site users will be safe throughout the lifetime of the development and that development of the site does not increase the risk of surface water flooding on the site and to neighbouring areas. • Development is steered away from areas of fluvial and surface water flood risk, such as adjacent to Sandon Brook

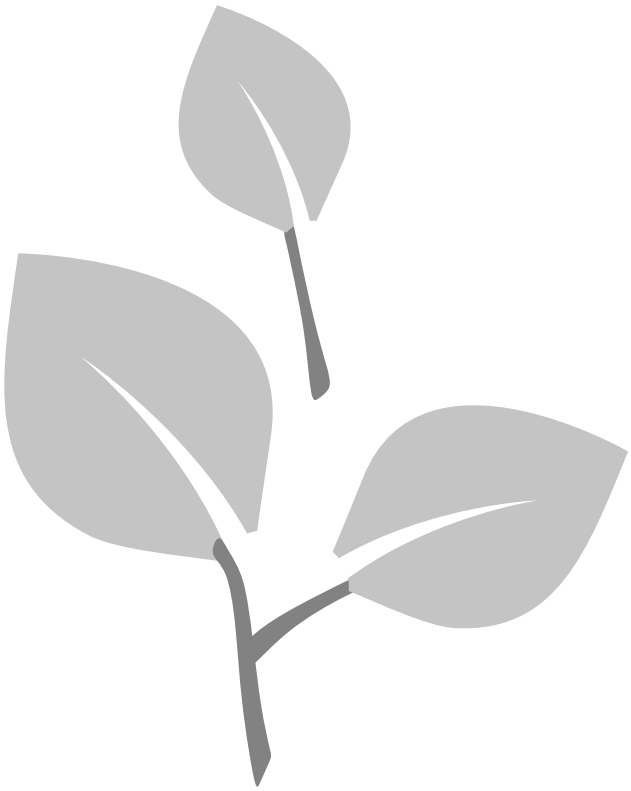
	• A carefully considered and integrated and flood resilient and sustainable drainage design is put forward, with development steered away from areas identified to be at risk • Safe access and egress can be demonstrated with fluvial and surface water 1% AEP plus climate change events • If flood mitigation measures are implemented, they are tested to ensure water is not displaced elsewhere.
Exception Test passed?	Yes.
Recommendation	**Allocate the site**

Site Name:	St Giles, Moor Hall Lane, Bicknacre			
Local Plan Reference:	Growth Site 12			
Site Area: (Ha)	2.89ha			
Proposed Allocation/Use:	Specialist Residential			
Capacity:	Around 32 homes			
Flood Zone:	1	2	3	
	100%	0%	0%	
Flood Risk Vulnerability:	More Vulnerable			
Sources of Flood Risk:				
Surface Flooding	3.3% AEP – 13.2% 1% AEP – 25.1% 0.1% AEP – 58.6%			
Critical Drainage Area	The site is not located within a Critical Drainage Area.			
Reservoir Flooding	The site is not impacted by the 'Dry Day' or 'Wet Day' scenarios			
Fluvial and Tidal flooding	The site does not lie within either of the flood zones, or within any modelled flood outlines. Flood Zone 2 extents associated with the unnamed tributary reach approximately 130m from the southeast of the site. Flood Zones are not available for smaller ordinary watercourses with a catchment size below 3km^2, and there may be a risk to the site posed by the drainage ditch to the west and south.			
Groundwater	The whole site is shown to have negligible risk of groundwater emergence in this area, and any groundwater emergence incidence has a chance of less than 1% annual probability of occurrence. There will be a remote possibility that incidence of groundwater flooding could lead to damage to property or harm to other sensitive receptors at, or near, this location.			
Sequential Test				
Are there reasonable alternative locations within the site boundary available in same or lower flood zone?	No. The site is in Flood Zone 1.			
Are there reasonable alternative site allocation(s)	No. This site allocation represents a sustainable and sound development allocation which has been subject to previous Independent Examination and is allocated in adopted Local Plan.			

available in same or lower flood zone?	
Conclusion - Will the proposed development type be acceptable in this flood zone?	Yes. The proposed use of this site is residential use. Residential development is classed as 'more vulnerable' and therefore should be located towards the lowest flood zone areas. The development is located within flood zone 1. A site-specific Flood Risk Assessment (FRA) is required due to the risk of surface water and groundwater flooding and the proposed development constituting a change of use to a more vulnerable class (industrial to residential). The site layout and detailed design at the planning application stage, will need to address issues of surface water flood risk.
Sequential Test passed?	Yes
Exception Test required?	No. Although, the site is at significant risk from surface water and is shown to be highly sensitive to increased risk as a result of climate change. The significant surface water flood risk have been noted. The Exception Test will need to be passed before the site can be bought forwards. Developers will need to demonstrate through a site-specific flood risk assessment that users of the site will be safe throughout its lifetime. Development may be able to proceed if: • Development is steered away from areas surface water flood risk, and ponding/flow routes such as that against Moor Hall Farm on the southeastern border are incorporated and considered within a sustainable development drainage design. • Safe access and egress can be demonstrated in the fluvial and surface water 1% AEP plus climate change events. This includes measures to reduce flood risk along these routes such as raising access, but not displacing floodwater elsewhere. Given the significant risk to the site a suitable flood warning and evacuation plan will be required if access/egress cannot be demonstrated. • A site-specific FRA demonstrates that site users will be safe throughout the lifetime of the development and that development of the site does not increase the risk of surface water flooding on the site and to neighbouring areas. This will require site-specific modelling to determine the risk to the site and demonstrate that proposals adequately manage the risk. • If flood mitigation measures are implemented then they are tested to check that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another). In conclusion, all sources of flood risk should be addressed (notably surface water) and a sequential approach to site planning and land use should be employed to ensure sustainability and safety over its lifetime.
Recommendation	**Allocate the site**

Site Name:	Land North of Abbey Fields, East Hanningfield			
Local Plan Reference:	Growth Site 17a			
Site Area: (Ha)	0.85			
Proposed Allocation/Use:	Residential			
Capacity:	Around 15 homes			
Flood Zone:	1	2	3	
	100%	0%	0%	
Flood Risk Vulnerability:	More Vulnerable			
Sources of Flood Risk:				
Surface Flooding	3.3% AEP – 4.2% 1% AEP – 10.2% 0.1% AEP – 68.4%			
Critical Drainage Area	The site is not in a critical drainage area.			
Reservoir Flooding	There is no risk of flooding in the 'Dry Day' or 'Wet Day' scenarios.			
Fluvial and Tidal flooding	This site is not at risk from fluvial flooding from Main Rivers. Close to the site's northern boundary and south-eastern boundary are the sources of two Ordinary Watercourses. These are unlikely to pose significant risk to the site, but as there is no detailed modelling available, the risk should be confirmed as part of a site-specific Flood Risk Assessment. The site is not at risk from tidal flooding.			
Groundwater	The whole site is shown to have negligible risk of groundwater emergence in this area, and any groundwater emergence incidence has a chance of less than 1% annual probability of occurrence.			
Sequential Test				
Are there reasonable alternative locations within the site boundary available in same or lower flood zone?	No. The site is in Flood Zone 1.			
Are there reasonable alternative site allocation(s) available in same or lower flood zone?	No. This is proposed for a small-scale site located within Flood Zone 1.			

Conclusion - Will the proposed development type be acceptable in this flood zone?	Yes. The proposed use of this site is residential. Residential development is classed as 'more vulnerable' and therefore should be located towards the lowest flood zone areas. The development is within Flood Zone 1. A site-specific Flood Risk Assessment (FRA) is required due to the risk of surface water flooding.
Sequential Test passed?	Yes
Exception Test required?	No. Although, the site is not at risk from fluvial flooding, even when taking climate change into account. The site is at significant risk from surface water flooding, even during relatively frequent events. The Exception Test is only required for sites at risk from fluvial flooding and the significant surface water flood risk have been noted. Developers will need to demonstrate through a site-specific flood risk assessment that users of the site will be safe throughout its lifetime. With regards to managing the flood risk, development may be able to proceed if: • Development is steered away from the southwestern border of the site which is at risk from deep surface water flooding in the 3.3%, 1% and 0.1% AEP events. • A carefully considered and integrated flood resilient and sustainable drainage design is put forward, with development steered away from the areas identified to be at risk of surface water flooding across the site. • Safe access and egress can be demonstrated in the fluvial and surface water 1% AEP plus climate change events. This includes measures to reduce flood risk along these routes such as raising access, but not displacing floodwater elsewhere. Given the significant risk to the site at the 0.1% AEP events, a suitable flood warning and evacuation plan will be required. • A site-specific FRA demonstrates that site users will be safe throughout the lifetime of the development and that development of the site does not increase the risk of surface water flooding on the site and to neighbouring areas. • If flood mitigation measures are implemented then they are tested to check that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another). In conclusion, all sources of flood risk should be addressed (notably surface water) and a sequential approach to site planning and land use should be employed to ensure sustainability and safety over its lifetime.
Recommendation	**Allocate the site**



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Please call 01245 606330

Spatial Planning Services
Directorate for Sustainable Communities
Chelmsford City Council
Civic Centre
Duke Street
Chelmsford
Essex
CM1 1JE

Telephone 01245 606330
planning.policy@chelmsford.gov.uk
www.chelmsford.gov.uk

Document published by
Planning and Housing Policy

Chelmsford City Council