

CHELMSFORD TOMORROW



Chelmsford Town Centre Area Action Plan

Topic Paper 5 Managing Flood Risk

March 2008

Chelmsford Town Centre Area Action Plan Examination Hearings 22.04.08 to 01.05.08

Topic Paper 5 – Managing Flood Risk

I Purpose and scope of topic paper

- 1.1 This Topic Paper is one of six produced by Chelmsford Borough Council to provide context and baseline information to assist the Council's evidence into the Independent Examination of the Chelmsford Town Centre Area Action Plan DPD (CTAAP), which will commence on 22 April 2008.
- 1.2 This Topic Paper anticipates the main issues that the Inspector is likely to examine and addresses the representations that have been received at the Submission stage. Evidence-related papers the Council will provide for the Examination, include:-
 - the Council's *Self Assessment of Soundness* [CD/CFD/035] which sets out the reasons why it is the Council's belief that the submitted Chelmsford Town Centre Area Action Plan DPD is 'sound' in relation to each of the nine tests of soundness set out at Paragraph 4.24 of PPS12 [BD/NAT/017].
 - Six interrelated topic papers; *Topic Paper 1: The Strategy for Chelmsford Town Centre*, *Topic Paper 2: Delivering Infrastructure*, *Topic Paper 3 Transportation Strategy*, *Topic Paper 4 Retail Strategy*, *Topic Paper 5 Managing Flood Risk* and *Topic Paper 6 Other Matters*.
 - Written Statement of Evidence related to the matters and issues identified by the Inspector for debate at the Examination.
- 1.3 Each of the Topic Papers provides the context and broad basis for the Council's evidence in relation to the topics identified. They should be treated as an inter-related suite of papers, which should be read together to give a strategic overview. Throughout the Topic Papers, references are made in square brackets [XXXXX] to documents referenced in the Related Documents List and held in the Independent Examination Public Library.
- 1.4 In essence, the Topic Papers identify the relevant evidence base work, which has supported the evolution of the policy or issues, assess the main issues that arose from consultation responses and examine the information and guidance provided by the Strategic Environmental and Sustainability Assessments (SEA/SA). The Topic Papers, where appropriate, include succinct responses to the issues raised within representations made at the Submission stage. They also address the main issues that have been raised in the Inspector's Matters and Issues for Examination and provide the Council's initial and general responses to those matters.

2 Flood Risk in Chelmsford Town Centre

- 2.1 This Topic Paper on Flood Risk covers the following aspects of the Chelmsford Town Centre Area Action Plan DPD:
 - The Origins of Flood Risk in Chelmsford
 - Evidence on flood risk for the TCAAP submission document
 - Progress with a flood risk reduction scheme for Chelmsford
 - Working relationship with Environment Agency on site specific development matters.
- 2.2 While there have been no issues raised by representors in regard to the Council's approach to flood risk, there is interest in the work being progressed by the Council and the Environment Agency, as flood risk understanding and management underlies the delivery of major development. This statement focuses on the Rivers Chelmer and Can in Chelmsford town centre which has relevance to the Council's overall strategy.

3 Understanding the flood risk and its origins in Chelmsford Town Centre

3.1 In Chelmsford town centre flood risk is as follows:

- Fluvial, arising from the River Chelmer and River Can which converge at the east side of the town centre – with implications for Chelmsford Town Centre, the Key Centre within the Borough Spatial Strategy;
- Surface water run off from existing and new development contributes to the risk.

3.2 Recent changes to the Flood Maps

3.3 The flood risk posed by the Rivers Chelmer and Can has always been appreciated by the Local Planning Authority and has informed many planning briefs and development schemes. Flood risk on the Rivers Chelmer and Can is now understood in the light of the 2006 changes to the EA flood maps and the updated modelling in the Strategic Flood Risk Assessment. While the extent of Flood Zone 3 has slightly reduced, the water depth levels have significantly increased. The reasons for the differences are more accurate ground terrain information and incomplete data for the previous survey as the 1947 and recent floods were not included in statistical estimates.

3.4 Flood risk Zone Maps

3.5. The flood zone map for the Rivers Chelmer and Can were last amended in 2006, following surveys and modelling carried out for the EA which used new topographic survey data and modelling that took account of the 2000 and 2001 flood events. Due to concerns relating to the unprecedented size of these events and the factors causing them, the Environment Agency commissioned Black & Veatch Ltd to undertake data collection, initial modelling and study into the flood risk in the Chelmer catchment. The revised flood zone maps are now used as the basis for technical advice on planning and development and provided a basis for Plan preparation pending the Strategic Flood Risk Assessment (SFRA) completion.

3.6 Nature of the Risk

3.7 The statistical event level has risen, meaning the likelihood of more frequent flood events. The standard of protection within Flood Zone 3 is inadequate to achieve a 1:100 year (1% per annum) probability of flooding. In Chelmsford there are 689 residential properties and 107 commercial properties at risk in the 100 year flood. Six of the fourteen flood cells have an existing Standard of Protection below Defra's indicative guidance. The highest risk is of flood flows in the two rivers peaking at the same time in the town centre. This is unpredictable because there is no consistent sequence of the rivers peaking. The modelling of the rivers and the identification of flood risk is based on a coincident peaking of the rivers, because the severe flood risk occurs when the rivers Chelmer and Can are in full flood together.

3.8 The Chelmer Flood Risk Study [BD/CFD/067] states the flood risk problem as follows: the flood events of 2000 and 2001 were each initially assessed by the EA to have a 200 year return period; the recent studies suggest that the events have return periods of between 20 and 50 years.

4 Chelmsford's Local Development Framework and Planning Policy Statement 25

4.1 Strategic Flood Risk Assessment

4.2 The Council commissioned a Strategic Flood Risk Assessment (SFRA) jointly with four other district councils, which was completed in 2007 following further modelling of climate change requested by the EA. The document was received in February 2008 for final checking.

4.3 PPS25 Sequential Tests and Exception Tests

- 4.4 PPS25 [BD/NAT/029] was published, after a delay, on 7 December 2006, after the Town Centre Area Action Plan had been submitted in November 2006 and well after work originally commenced in 2004. To keep abreast of anticipated policy requirements, the Council developed a methodology for the sequential tests in consultation with the EA while PPS25 was in draft.
- 4.5 The SFRA will form the basis of sequential testing and site specific Flood Risk Assessments. Work by CBC on sequential testing has advanced ahead of the SFRA and has been completed and made available as part of the evidence base.
- 4.6 The sequential test document for the Chelmsford Town Centre Area Action Plan (CTCAAP) assesses the proposed site allocations. These were placed in the evidence base on 2 August 2007. The CTCAAP allocates 37 sites, of which 20 lie wholly or partly within Flood Zones 2 and 3. These sites are listed in Annex 5. The sequential tests ensure the development proposals are compliant with PPS25.
- 4.7 The Sequential Tests undertaken for the CTCAAP [BD/CFD/123] addresses the principle of the proposed uses for each individual Opportunity Site. Further Sequential Tests specific to the development proposals for a site will be undertaken as and when proposals are brought forward by developers. The developer for each site will be required to undertake a site and development specific Flood Risk Assessment, in compliance with PPS25, which should identify risks, be used to influence the design to minimise risk, identify residual risk and identify the necessary mitigation measures required.
- 4.8 **Water Cycle Study**
- 4.9 A Water Cycle Study will enable an understanding of the link between fluvial flood risk and surface water drainage management. Although Anglian Water did not make representations on the Core Strategy they informally advised the Council on drainage infrastructure after the Inspectors Panel Report of the East of England Plan in June 2006 stated a requirement for water cycle studies. As consequence, the Borough Council commissioned a water cycle study in May 2007 with the EA's and Anglian Water's involvement as a key stakeholder. Phase I of the Water Cycle Study is now complete [BD/CFD/TC/017].
- 4.10 The Key Issues of the Water Cycle Study are:
- The water cycle strategy has identified no ultimate environmental constraints to growth within Chelmsford Borough.
 - Partnership working between CBC, the Environment Agency, the water companies and other stakeholders in the growth process will facilitate the selection and implementation of suitable technical solutions and enable growth to proceed in sustainable manner.
 - Essex and Suffolk Water have stated that it is confident that they can maintain supplies into the future such that water resource availability will not be a constraint to development within Chelmsford Borough.
 - Chelmsford WmTW is operating close to capacity and will require capital investment estimated at £12m to accommodate flows from additional housing in Chelmsford. The foul water trunk sewer to the north of Chelmsford does not have the capacity to serve the North Chelmsford AAP and it is recommended that a new strategic sewer is provided to serve this development. This will ensure that any available capacity within the existing sewer network is retained for town centre development and to accommodate peaks thus helping to minimise the risk of increased foul flooding.
 - There are no significant known failures of water quality objectives within Chelmsford Borough and water quality is not thought to be a constraint to housing growth.
 - The study has not identified an immediate need for a detailed phase 2 WCS.

4.11 A Representations to the Chelmsford Town Centre Area Action Plan on flood risk

The Environment Agency (EA) made representations to the Town Centre Area Action Plan in early 2006 and the Council is prepared to make amendments accordingly as the Council accepts its obligations under PPS25.

5 Proposed Flood Risk Reduction Measures

5.1 The Need for Flood Risk Reduction

5.2 The Chelmer Flood Risk Study 2006 says that the revised data has made flood risk reduction for Chelmsford necessary and urgent for the protection of existing residential, retail and other commercial property and for the future development on regenerated brownfield land in the centre of Chelmsford, key to the realisation of Chelmsford's regional role and long-term sustainability of Chelmsford Town Centre. These sites are now more seriously constrained on the basis of the revised flood map as provision of on-site mitigation associated with each development may make the sites uneconomic, or impossible if flood water storage is to be maintained on site.

5.3 The Chelmer Flood Risk Study assessed the benefit-cost of a range of options for the most appropriate and deliverable flood risk reduction scheme.

5.4 The Preferred Option – an Upstream Barrier with Supplementary Walls and/or Banks

The EA has advised that the preferred option is the creation of an embankment and flood storage area upstream on the River Wid, which will provide a general standard of protection of 1:75, together with the construction of an earth bund close to the Sewage Treatment Works in Chelmer Village and additional walls or bunds in the town centre, which will raise the standard of protection to 1:100. These would be designed to have a combined effect to reduce flood water flows through Chelmsford, to generally keep flows within channel, and ensure flood peaks on the River Chelmer and the River Can no longer coincide. This would result in lower river levels on the Chelmer as well as the Can through Chelmsford Town Centre.

5.5 The effect of a Scheme will be to protect 796 properties, restoring a 1:100 Standard of Protection to land in Flood Zone 3 in the town centre.

5.6 Project Viability

5.7 The Environment Agency commissioned a preliminary study (Viability Report) from Halcrow Group Ltd to provide sufficient confidence to proceed with a detailed project appraisal report (PAR). The Viability Study addresses the following:

- A review of the preferred option within the River Chelmer Flood Risk Study.
- An update of the economic and technical aspects of the River Chelmer Flood Risk Study, including estimated costings for the preferred option.
- A review of the flooding mechanisms within the catchment and the links at the confluence of the Chelmer, Can and Wid.
- An assessment of the condition of present defences and the level of protection afforded currently to the town.
- An up to date Priority Score for the defence scheme.
- Identification of any environmental and planning considerations of the identified options e.g. 'showstoppers'

5.8 A summary of the findings of the viability study of the preferred option is attached in Annexe I.

5.9 Project Programme

- 5.10 The EA have provided an estimated programme for the progress of the project which will continue to be developed and refined. The current programme is attached at Annexe 2 indicates completion of the scheme in 2012.

5.11 Funding Strategy

- 5.12 It is for EA and the Regional Flood Defence Committee (RFDC) to decide how to prioritise flood risk works. The final delivery of the Scheme will rely on Chelmsford Borough Council and the EA using their joint efforts to pursue all potential funding sources. The Borough Council is assembling a funding strategy to use various funding sources, in particular:

Regional Flood Defence Committee funding – approximately £300,000 has been made available to the EA to prepare options and viability studies and consequent modelling work, towards a detailed project appraisal report.

DEFRA Grant in Aid – The flood alleviation scheme achieves a priority score of 15.6, which is well below the threshold qualifying for Grant in Aid from DEFRA. There is no certainty of funding being made available. It is unrealistic to expect the Scheme to be funded from Grant in Aid and the EA has said that it will promote the scheme based on external funding.

Developer contributions – private sector funding through planning obligations will be necessary to secure the Scheme and some funds have already been secured. CBC is preparing a system of standard charges as part of its LDF, which will contain a component for strategic infrastructure including the flood risk reduction scheme.

Capital programmes – A capital contribution will be made by Chelmsford Borough Council. Funding is being discussed with Essex County Council. The Council successfully applied for Growth Area Funding for various capital projects including the construction of the flood risk reduction scheme. The Council, together with its bid partners, are currently assessing how much of the funds to allocate to the flood risk reduction scheme.

- 5.13 The Funding Strategy is set out in Annex 4.

6 Flood Risk and Planning Strategy for Chelmsford Town Centre

- 6.1 A key point of the Spatial Strategy is the concentration of economic development within Chelmsford Town Centre and substantial residential development in the Town Centre and surrounding built up area. This is in line with PPS6 Planning for Town Centres [BD/NAT/01 I] the East of England Plan [CD/REG/01,/02 & /03] and supported by the Sustainability Appraisal [CD/CFD/026]. A significant part of Chelmsford Town Centre lies within flood zones 2 and 3.

- 6.2 The revised flood maps and options study for a flood risk reduction scheme have necessitated constructive liaison between the Borough Council and EA and the formulation of a working protocol. The need for a protocol was agreed when the flood maps were changed in 2006.

6.3 Protocol

- 6.4 The Agency and the Borough Council have agreed a protocol for working together to promote flood risk reduction measures and enable lines of communication to remain open on key development sites. The Protocol was signed on 2 August 2007. It deals with the arrangements for planning development in the context of the revised flood maps and it addresses the anticipated

standards of protection that will prevail with a defence scheme in place. The Protocol is attached in Annexe 3.

6.5 In February 2008 the Environment Agency Area Planning and Development Control Teams met with the Environment Agency National Team. The National Team agreed that the Area Team could begin to discuss development proposals in the Chelmsford town centre on the basis of the residual risk, post construction of the flood alleviation scheme, subject to the development scheme not preceding the construction of the flood alleviation scheme. The Protocol has been amended to reflect this.

6.6 *Site specific work*

6.7 On the basis of the SFRA, the flood risk maps, the sequential tests, the emerging planning strategy and the protocol, the Borough Council is addressing flood risk in conjunction with the EA on two fronts:

- progressing flood reduction measures for Chelmsford Town Centre;
- bringing forward development of key sites for the implementation of the spatial strategy and AAP allocations. In this respect, meetings with landowners and developers are being coordinated.

6.8 The Borough Council commissioned and received, in January 2008, supplementary studies for key proposed site allocations in the town centre, which elaborates on the information in the SFRA, to assist in the promotion of suitable developments and assists the preparation of site specific Flood Risk Assessments.

6.9 The Council has an agreement with the Environment Agency and developers that discussions relating to flood risk on sites in Flood Zones 2 and 3 in Chelmsford Town Centre, should be undertaken jointly with all three parties involved. This ensures a satisfactory working relationship to bring forward development on town centre sites in Flood Zones 2 and 3.

6.10 *Chelmer Viaduct and Eastern Gateway Access Road*

6.11 The Highways Agency is preparing a scheme for a replacement viaduct structure carrying Chelmer Road (A138, former A12) across the eastern water meadows. The proposed eastern access road from Springfield Road to Chelmer Road, to enable regeneration of Chelmer Waterside, would connect with the A138 Chelmer Road at the replacement viaduct. The flood risk reduction scheme would also have implications for the design of a replacement or refurbished Chelmer Road viaduct, in particular relating to the necessary height and the amount of open structure required to store flood waters downstream from Chelmsford Town Centre. The HA and EA are coordinating modelling work for this.

Annexe 1

CHELMSFORD FLOOD ALLEVIATION SCHEME VIABILITY STUDY

MAIN FINDINGS

A summary of the main findings of the draft Viability Study (2007) is given below.

- The Rivers Chelmer, Can and Wid have burst their banks on many occasions over the years with severe flooding occurring in 1947, 1958 and 1968. The most recent widespread flooding occurred in October 2000 and October 2001, although properties in the centre of Chelmsford were unaffected and these events were classed as a ‘near miss’, as river levels were just below bankfull in places. The 2000 and 2001 flood events were assessed as having a return period of between 1 in 5 and 1 in 20 years.
- Within the town of Chelmsford there are 1082 properties at risk from flooding (920 residential and 162 non-residential) as a result of a 1 in 200 year flood event occurring under the Do Nothing Option (i.e. the walk-away option). The Present Value damages associated with the Do Nothing Option are approximately £91m.
- The current level of service provided to residents within the town of Chelmsford has been determined to be as low as 1 in 20 within the town centre and 1 in 10 years around the extension to Chelmer Village. This is below the minimum indicative standard of protection of 1 in 50 years recommended by Defra for properties in Land Use Band A (typically intensively developed urban areas at risk from flooding and/or erosion).
- Five options providing different levels of service have been assessed, including the “Do Nothing” and “Do Minimum” Options. The “Do Something” options consider the use of upstream flood storage individually (on the River Can, Chelmer and Wid) and in combination, and channel works through Chelmsford with and without upstream flood storage components.
- The preferred option (following PAG3 Decision Rules) involves the construction of a flood storage area on the River Wid (designated as a Statutory Reservoir under the Reservoirs Act 1975), providing a minimum 1 in 75 year standard of protection to the town centre, combined with an earth bund close to the Sewage Treatment Works, providing 1 in 200 year standard of protection to Chelmer Village. This option would reduce the risk of flooding to around 796 properties (107 commercial properties and 689 residential properties).
- The Present Value Cost of the preferred scheme is estimated at about of £13m with a benefit/ cost ratio of 6.3. However at 15.6, the Defra Priority Score is below the current threshold required for National Review Group approval and Grant Aid. Unless the threshold is significantly reduced and/or the scheme’s score increases following production of the Project Appraisal Report, other funding streams will need to be considered.
- A review of health and safety, construction, land acquisition, environmental, ecological and engineering risks have been undertaken as part of the Viability Study. Although no ‘showstoppers’ are apparent at this stage of the project a number of major risks have been identified – notably in relation to the A414, A1016 and the railway line in the Wid FSA. The “Do Something” flood storage options do provide opportunities for environmental

enhancement, in particular habitat creation. However, the requirement for mitigation of some of the impacts will need to be addressed through sensitive design and close links with the EIA team.

- The effect of the preferred option on 20 of the proposed town centre development sites was investigated and the results are summarised in the Table below. This shows the minimum SoP of each site “before” and “after” the scheme, and possible mitigation strategies to achieve a minimum SoP of 1 in 100 years plus climate change. It should be noted that these possible mitigation measures are from a purely technical perspective. They do not take into account any environmental issues, they have not been discussed with the Environment Agency’s Development Control, and do not necessarily reflect the policy, aims and objectives of PPS25.

Site No.	Site Name	Min. Existing SoP	Min. Scheme SoP	Recommended Mitigation Strategies				
				Raised Defence (Cost)	Stilts	Layout	None Required	Residual Risk
1	Bollingbroke and Wenley Moulsha	20	20			X		Yellow
2	Jewsons Site	100CC	100CC				X	Green
3	Baddow Road Car Park	75	100CC				X	Green
4	Former Alders Store	20	100CC				X	Green
5	ECC Cricket Club and CBC Car Park	20	20	X (£790k)				Red
6	EEV Factory and Adjoining Land	20	75	X (£190k)		X		Yellow
7	Meadows Surface Car Park	50	100	X (£450k)				Yellow
8	Land Rear of High Street	50	50		X			Red
9	Riverside Ice and Leisure Complex	50	50		X			Red
10	Riverside Retail Park	100CC	100CC				X	Green
11	University	100CC	100CC			X	X	Green
12	Peninsular Site	50	100CC				X	Yellow
13	Land at Hill Road	100CC	100CC				X	Green
14	Lockside Lockley Road	50	50	X (£490k)	X			Yellow
15	Travis Perkins	50	100	X (£490k)		X		Yellow
16	Former Gas Works Site	20	75	X (£490k)		X		Yellow
17	Car Park Waterfront Place	50	75	X (£490k)	X			Yellow
18	Tesco and Chelmer Social	20	20			X		Red
19	Victoria Road Service Station	100CC	100CC				X	Green
20	Old Egg Packing Factory	20	20		X			Red

A key to the recommended mitigation strategies in the Table is given below below:

Raised Defences – these consist of either raising the existing defence walls or building new defence walls set back from the river edge up to a 1 in 100 year plus climate change design standard. A broad cost estimate for these is provided in brackets. The cost estimates include all construction risks, but do not include land costs. As a proportion of the overall cost, land costs will be relatively small (note: many of the defence walls would be constructed within the boundary of the proposed developments).

Stilts – where raised defences are deemed unviable (either technically or as a result of the remaining residual flood risk), recommendations are provided for raising future development on stilts. This has the significant benefit of maintaining (or improving) the storage and conveyance functions of the floodplain, which is critical for sites where it is not possible to compensate for the loss of floodplain. Examples of this approach include the old leisure centre building (with ground floor parking) and the new development at Site 8 (Land to Rear of the High Street).

Layout – in certain cases, only a small proportion of the total site area is affected by flooding. For these sites, it is recommended that the master planning process guides the form and layout of the development to avoid increasing flood risk. Typically, this involves setting aside flood prone areas for open space and amenity. This can also provide opportunities for environmental enhancement.

None Required – in this instance the site will already be protected to the required design standard and no additional defence works will be required. There will, however, still be a requirement to provide a freeboard of 300mm above the predicted 100 year plus climate change water level to building thresholds.

Risk – There are residual risks which will remain following the implementation of the preferred mitigation strategy. These risks reflect the likelihood and consequence of breaching or overtopping of a raised defence, the ease with which safe pedestrian egress can be provided, the flood hazard rating (a function of depth and velocity), and the potential impact of the mitigation strategy on flood risk upstream or downstream of the development. A red, amber, green colour code is used to denote high, medium and low risk, respectively.

- It is recommended that a detailed Project Appraisal Report (PAR) is undertaken which will review the options, update the technical, economic and environmental aspects and identify a “PAR Preferred Option”. Opportunities to optimise the scheme to protect more of Chelmsford Borough Council’s proposed development sites should be fully explored. Under current Defra guidelines, it is unlikely that this “PAR Preferred Option” will include any additional works to protect the town centre development sites. These, however, will be investigated in addition to the “PAR Preferred Option”, an economic analysis undertaken and recommendations made accordingly. Furthermore, early discussions should be held during the production of the PAR to identify the most effective approach to scheme promotion and funding.

Annexe 2

Likely timetable for delivery of the Chelmsford flood alleviation scheme

Environment Agency Eastern Area

March 2008	Completion of Viability Study.
March 2008	Commence Project Appraisal Report
July 2009	Submit PAR to NRG
Sept 2009	NRG review PAR and recommend approval
Dec 2009	EA approve PAR and sign off
Jan 2010	Detailed design initiated
Jan 2011	Engineering construction initiated
April 2011	Site construction start
March 2012	Scheme completed

The EA consider a more streamlined process is possible and will review it with the Council. CBC will need to add the planning permission process to this programme.

Annexe 3

Working together in Chelmsford town centre

A Protocol for the Environment Agency and Chelmsford Borough Council

Jointly signed on Thursday 2 August 2007 (*Revision a 25th March 2008*)

I. Purpose

This protocol sets out how the Environment Agency (EA) and Chelmsford Borough Council (CBC) will work together to manage development planning during the preparation and implementation of a flood risk reduction scheme for the Chelmsford river systems.

The strategic importance of Chelmsford town centre is expressed in the Regional Spatial Strategy, CBC Core Strategy and town centre Area Action Plan. While new development proposals must pay proper regard to flood risk, it would be contrary to the interests of the town to delay formulation of development proposals for key regeneration sites, pending a flood alleviation scheme. The Environment Agency and Chelmsford Borough Council therefore jointly wish to ensure planning permissions address the anticipated flood risks of the location before and after the alleviation scheme is completed and help to generate funding for the alleviation project.

A background information paper provides the context for this protocol and other planning work for the benefit of interested parties.

2. Joint EA and CBC objectives

- To protect against current flood risk.
- To expedite delivery of an appropriate flood alleviation scheme.
- To enable progress with the development of town centre brownfield land in line with government policy and guidance in PPS25 as well as PPS3, PPS6 and PPG13.
- To design development to achieve appropriate standards of protection.
- To obtain financial contributions to help fund the scheme.

3. Delivering a flood risk reduction scheme for Chelmsford

An upstream flood alleviation scheme is accepted as the preferred option to provide a 1:100 standard of protection to land within Chelmsford. Both EA and CBC are actively committed to progressing delivery of a scheme, as quickly as possible, as follows:

The Environment Agency	Chelmsford Borough Council
Progress at its own cost, studies for an appropriate Flood Risk Reduction Scheme.	Place flood risk reduction at the top of the Council's infrastructure priorities.
Provide a project programme, updated regularly.	Progress a new planning obligations regime, whereby contributions to strategic infrastructure can be generated.
Advise on project management for scheme implementation.	Work in partnership with EA, Essex County

<p>Through the Regional Flood Defence Committee, obtain capital funding for the scheme development studies.</p> <p>If required, facilitate a 'round table' meeting hosted by Go-East to explore policy and development issues and ways forward.</p> <p>Advise the Highways Agency on the Chelmer viaduct replacement in relation to a completed flood alleviation scheme.</p>	<p>Council, private sector and regional bodies to put in place a secure funding strategy.</p> <p>Investigate other means of financial commitment including prudential borrowing mechanisms in accordance with the Local Government Act 2003.</p> <p>Facilitate land ownership negotiations related to the upstream barriers.</p>
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4. Working arrangements for development guidance and control

Working arrangements for development control, agreed between the EA and CBC, are necessary to deal with ongoing and new development proposals for brownfield land allocated in the Area Action Plan, lying within flood zones 2 and 3 while work progresses on the flood alleviation scheme.

Sequential and exception tests will establish whether development is acceptable in principle on brownfield sites.

The EA and CBC development control teams will engage in pre-application discussions and development proposals on a site-by-site basis.

The Council and EA will be mindful of the circumstances relating to each site, including the existence of site specific flood studies, whether the site is identified in the Area Action Plan, whether there is an adopted planning brief, existing uses, the history of ongoing discussions, and the anticipated development programme.

Schemes may be designed and brought forward to planning permission before completion of the flood alleviation scheme. Unless the completion of the proposed development precedes the completion of the Flood Alleviation Scheme, negotiations can proceed on the basis of the residual risks pertaining after the construction of the Flood Alleviation Scheme. In any event, developments have to be safe through design and, if necessary appropriate conditions and/or legal agreements will be attached to permissions which may control the phasing of development and occupation.

Pre- and post-application discussions to be conducted in three-way communications (EA, LPA and developer).

If planning permission is granted before completion of the flood alleviation scheme, a planning obligation to contribute towards the cost of the alleviation scheme will be linked to the permission.

5. Design solutions for development sites

The EA and CBC development control teams will jointly discuss reasonable and appropriate design solutions for sites in the light of the various planning objectives for Chelmsford. EA and CBC will clarify their respective sources of guidance and best practice for achieving solutions. CBC will ensure planning permissions have conditions and s106 provisions ensuring reasonable practical safeguards are in place to maintain the effectiveness of the flood management measures.

Flood plans and emergency procedures (where required) will be discussed and agreed with CBC Emergency Planners prior to planning permission being granted.

6. Formal processes

As a statutory consultee with powers of direction, the EA will discuss objections to development proposals with CBC and the means, if any, by which such objections can be overcome with a view to avoiding, if possible, applications being called-in for decision by a minister, such that the town centre regeneration programme is delayed.

Nothing in this protocol prejudices, limits or affects the exercise by CBC and the EA of their respective statutory powers and duties whatsoever nor imposes any obligation on either party to exercise its functions in a particular way, or at all.

Signatures

Charles Beardall, Area Manager Eastern, Environment Agency

Steve Packham, Chief Executive, Chelmsford Borough Council

Annexe 4

Chelmsford Flood Risk Reduction Scheme – Draft Funding Strategy

Cost Estimates

Total Scheme Cost:	£14,115,000
Wid Barrier	£6.5m Base Costs £3.5m Optimism Bias £3m Land Costs (assuming CBC land is free)
Wid Barrier Total	£13m
Increased Embankment	£1.115m
Feasibility/Design Work	£307,000 committed by EA outside total cost

Committed Monies from Planning Obligations

Manor Road	£70,000
Jeep Garage	£105,000 (Split between other infrastructure yet to be determined)
St Johns	£456,713 (Split between other infrastructure yet to be determined)
Coval Works	£32,883 (Split between other infrastructure yet to be determined)
Total	£625,000

Future Revenue

Growth Fund 2008-2011

Proportion of £11m to be allocated

CBC Capital Investment

Total **£2m assumption** (from receipt from land sales)

Development sites and planning obligation initial estimates 2008-2013

TOTAL £5m

GRAND REVENUE TOTAL £7.625m plus Growth Fund

Annexe 5

List of Opportunity Sites in Flood Zones 2 and 3

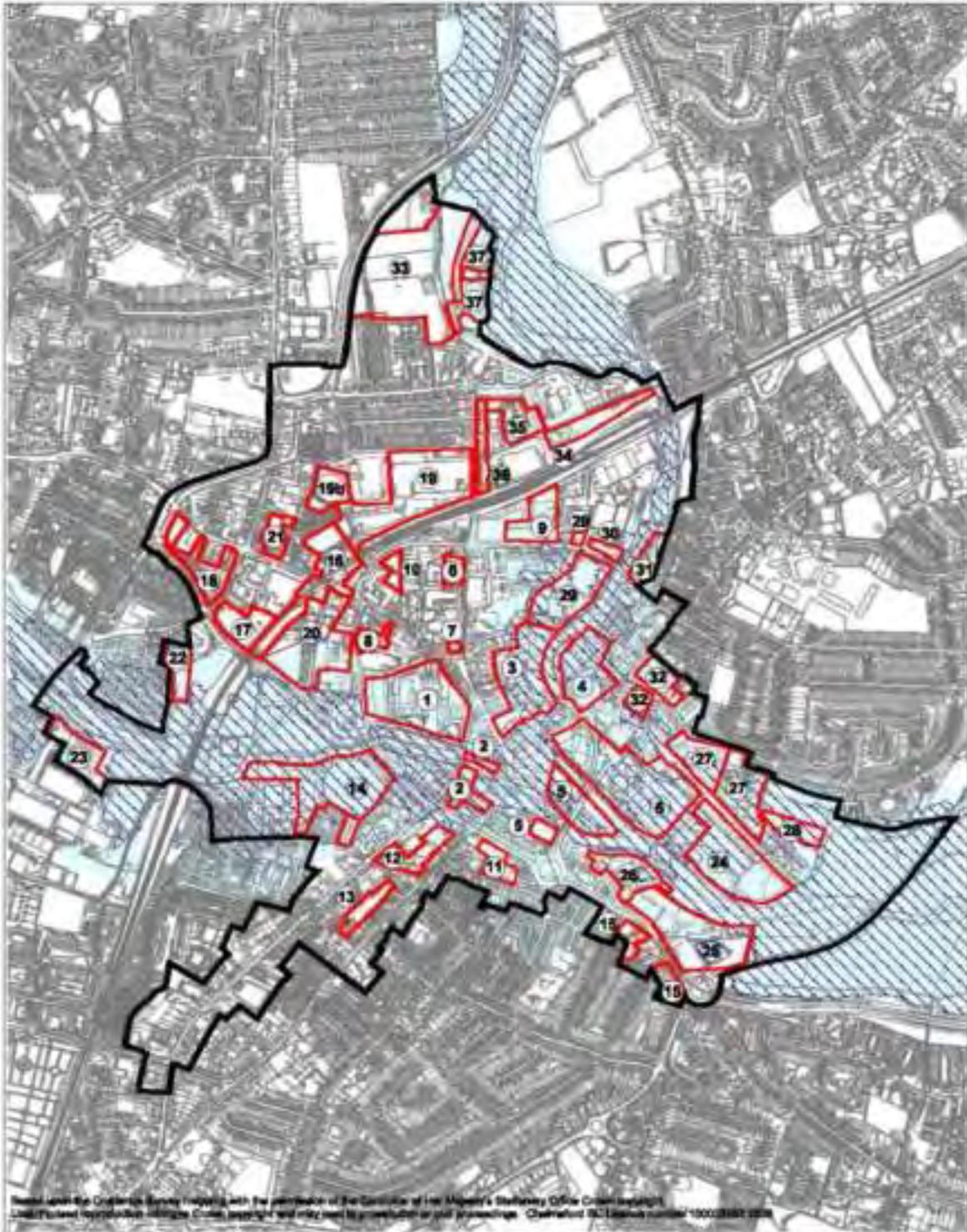
Table 2 – TCAAP Opportunity Sites within Flood Zones 2 and 3: Proposed uses, Flood Vulnerability Classification and flood zone compatibility							
Notes:							
<ul style="list-style-type: none"> Flood Risk Zones are identified in the Environment Agency Flood Maps and Chelmsford Borough Council's Strategic Flood Risk Assessment 							
Site No.	Address	Flood Risk Zone	Proposed Uses	Flood Vulnerability Classification	Zone 2 Compatibility	Zone 3 Compatibility	
1	High Chelmer shopping centre, car park and market	2 & 3a	shopping	less vulnerable	Yes	Yes	
			leisure	less vulnerable			
			market	less vulnerable			
			car park	less vulnerable			
			business	less vulnerable			
			eating and drinking	less/more vulnerable			Exception test
residential	more vulnerable	Exception test					
2	Barrack Square, River Can riverside, Marks and Spencer	3a	shopping	less vulnerable	None	Yes	
			leisure	less vulnerable			
			offices	less vulnerable			
			eating and drinking	Less/more vulnerable			Exception test
			residential	more vulnerable			Exception test
3	Land east of High Street	2 & 3a	shopping	less vulnerable	Yes	Yes	
			eating and drinking	less/more vulnerable			Exception test
			residential	more vulnerable			Exception test
4	Tesco and adjoining land	2 & 3a	shopping	less vulnerable	Yes	Yes	
			leisure	less vulnerable			
			community uses	more vulnerable			
			car park	less vulnerable			
			residential	more vulnerable		Exception test	
5	Meadows shopping and car park, former gas works and adjoining land	2 & 3a	river users (canoe club and sea cadets)	water compatible	Yes	Yes	
			shopping	less vulnerable			
			leisure	less vulnerable			
			Eating and drinking	less/more vulnerable			Exception test
			residential	more vulnerable			Exception test
9	Royal Mail, Victoria Road	2	business	less vulnerable	Yes	None	
			secondary retail	less vulnerable			

			community use	more vulnerable		
			residential	more vulnerable		
11	Parkway car park, rear of 23-27 Moulsham Street and Essex Water, Hall Street	2	eating and drinking	less vulnerable	Yes	None
			small business units	less vulnerable		
			retail	less vulnerable		
			residential	more vulnerable		
12	103-105 New London Road and adjoining land on New Writtle Street, including Megazone	1 & 2	offices	less vulnerable	Yes	None
			vehicle servicing	less vulnerable		
			retail	less vulnerable		
			residential	more vulnerable		
14	Cricket Ground, New Writtle Street	2 & 3b	sports ground and spectator facilities	water compatible	Yes	Yes
			sports academy	water compatible / less vulnerable		Exception test
			commercial uses linked to the sporting events	less vulnerable		Exception test
			other sports supporting uses	less vulnerable		Exception test
			business	less vulnerable		Exception test
			eating and drinking	less/more vulnerable		Exception test
			residential	more vulnerable		Exception test
20	Anglia Ruskin University, Central Campus	2 & 3a	public space	water compatible	Yes	Yes
			offices	less vulnerable		
			arts and cultural	less vulnerable		
			convenience retail	less vulnerable		
			small business units	less vulnerable		
			artists workspace	less vulnerable		
			community uses	more vulnerable		Exception test
			hotel	more vulnerable		Exception test
			residential	more vulnerable		Exception test
22	The ambulance depot, Coval Lane	2	offices	less vulnerable	Yes	None
			residential	more vulnerable		
23	Meteor Way sites	2 & 3a	leisure	less vulnerable	Yes	Yes
			office	less vulnerable		

			residential	more vulnerable		Exception test
24	Peninsula	2 & 3a	leisure	less vulnerable	Yes	Yes
			small business premises	less vulnerable		
			community facilities	more vulnerable		Exception test
			hotel sharing conference facilities with Essex Records Office residential	more vulnerable		Exception test
			residential	more vulnerable		Exception test
25	Former Jewsons, former Bolingbroke and Wenley and Moulsham Mill	2 & 3a	food shopping	less vulnerable	Yes	Yes
			small business units	less vulnerable		
			craft related business	less vulnerable		
			conference and meeting space	less vulnerable		
			eating and drinking	less vulnerable		
			office	less vulnerable		
			leisure	less vulnerable		
26	Baddow Road car park	2 & 3a	public open space	water compatible	Yes	Yes
			public car park	less vulnerable		
			shopping	less vulnerable		
			eating and drinking	less vulnerable		
			residential	more vulnerable		Exception test
27	Navigation Road sites	2 & 3a	business	less vulnerable	Yes	Yes
			live-work units	more vulnerable		
			residential	more vulnerable		Exception test
28	Hill Road South allotments	2, 3a & 3b	relocation of plant from gas works	essential infrastructure	Exception test	Exception test
			other limited development	less/more vulnerable	Yes	Exception test
29	Riverside Ice and Leisure	2 & 3a	leisure	less vulnerable	Yes	Yes
			offices	less vulnerable		
			retail	less vulnerable		
			car parking	less vulnerable		
			eating and drinking	less/more vulnerable		Exception test
			hotel	more vulnerable		Exception test
			residential	more vulnerable		Exception test
30	Riverside Retail Park	2	shopping	less vulnerable	Yes	None
			leisure	less vulnerable		

			office	less vulnerable		
			car park	less vulnerable		
			residential	more vulnerable		
31	Former egg packing factory, Victoria Road	2 & 3a	business	less vulnerable	Yes	Yes
			eating and drinking	less/more vulnerable		Exception test
			residential	more vulnerable		Exception test
32	Springfield Road and Navigation Road	2 & 3a	offices	less vulnerable	Yes	Yes
			retail	less vulnerable		
			small business premises	less vulnerable		
			residential	more vulnerable		Exception test
34	Railway sidings, Brook Street	2	business	less vulnerable	Yes	None
			industry	less vulnerable		
37	Rivermead industrial area	2	business	less vulnerable	Yes	None
			residential.	more vulnerable		
10.7	New link road access onto peninsula, junction alignment	2, 3a & 3b	road	Essential infrastructure	None	Exception test
10.7	Bond Street / Waterloo Lane link	3a	road	Essential infrastructure	None	Exception test
10.6	Baddow Road / peninsula link	2 & 3a	road	Essential infrastructure	None	Exception test
10.7	Chelmer Road viaduct	3b	road	Essential infrastructure	None	Exception test
	Regulation 32 Alternative site and boundary changes					
10.7	Peninsula Route of access road from the east	2 & 3a	Road	Essential infrastructure	None	Exception test
10.6	Peninsula Route of access route from the south	2 & 3a	Road	Essential infrastructure	None	Exception test
1 + 20	Land between site 1 and site 20, west of High Chelmer	2 & 3a	Retail	Less vulnerable	None	Yes

Flood zones 2 and 3 indicative at 2007



Planning and Building Control Services

Civic Centre, Duke Street
Chelmsford, Essex, CM1 1JE

Notation

-  Town centre boundary
-  Development sites
-  Flood zone 2
-  Floodzone 3



Chelmsford
BOROUGH COUNCIL

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Quality of the Built Environment

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