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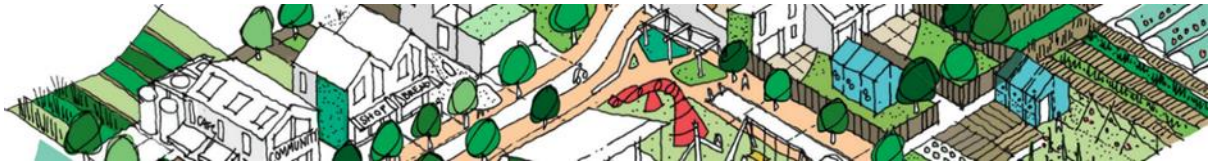


FLOOD RISK SEQUENTIAL TEST REPORT

Tendring Colchester Borders Garden Community (TCBGC)
Development Plan Document (DPD)

April 2024

Tendring District Council

Colchester City Council

1. INTRODUCTION

1.1 Paragraphs 159-173 of the National Planning Policy Framework (NPPF) and the Planning Practice Guidance (PPG) sets out the approach for applying the Flood Risk Sequential Test.

1.2 Application of the Sequential Test and Exception Test helps ensure that development is directed to areas of low flood risk and that more vulnerable development is only located in areas of flood risk in exceptional circumstances.

1.3 The NPPF/PPG recommends applying the Sequential Test as early as possible in the Local Plan making process. Application of the Flood Risk Sequential Test at an early stage of preparation ensures that flood risk is considered early in the process, that sites can be allocated with confidence which means that housing targets can be sustainably delivered, and developers do not waste their time promoting proposals in areas of high flood risk. It also ensures that there is consistency when dealing with flood risk issues at the development management stage.

1.4 The sequential approach is a decision-making tool designed to ensure that areas at little or no risk of flooding are developed in preference to areas at a higher risk of flooding. It is the Local Planning Authority's (LPA) responsibility to make the most appropriate use of land in order to minimise flood risk, ensuring that the most vulnerable uses are located in the lowest flood risk areas. The LPA should also make the most of opportunities to reduce flood risk through the use of sustainable drainage systems (SuDS). Related to this, the NPPF requires LPAs to consider the likelihood of flooding from all sources i.e. flooding from tidal, pluvial, groundwater, surface water, reservoirs as well as from rivers and the sea. The LPA has complied with this requirement by integrating the findings of the Strategic Flood Risk Assessment into the Flood Risk Sequential Test and Sustainability Appraisal and through the inclusion of policies GC2 'Nature' and GC8 'Sustainable Infrastructure' in the DPD. Through the Baseline and Strategic Framework Masterplan process, the policies as noted above in combination with Policy GC1 'Land Use and Spatial Approach' seek to direct development to land at the lowest risk of flooding within the Garden Community area and requires development proposals to incorporate measures for the sustainable management and use of water.

1.5 The Flood Risk Sequential Test is only one part of the process of managing flood risk and more detailed sequential tests may be required at the planning application stage i.e. for where the permission sought differs from the DPD allocation and because application of the Flood Risk Sequential test does not preclude the need for a detailed site specific flood risk assessment (FRA).

1.6 In exceptional circumstances 'more vulnerable' uses, as defined in the PPG, may pass the Sequential Test in higher flood risk areas. Where this is the case the Exception Test must be undertaken and the proposal can only be supported when the Exception Test is passed. There are two parts to the Exception Test. The proposed development must deliver:

1. wider sustainability benefits to the community that outweighs flood risk and
2. be safe over its lifetime.

1.7 For residential development this is 100 years, but the lifespan of non-residential development is more variable dependant on the proposed use. Developers will be expected to justify why

they have adopted a given lifetime for the development, as part of site-specific flood risk assessment.

2. METHODOLOGY AND BACKGROUND

2.1 Colchester City Council (CCC) 'Flood Risk Sequential Test Report – Colchester Local Plan 2017-2033' (October 2017) applied the Sequential Test to sites across Colchester as part of the process to allocate the final sites for inclusion in the Publication draft of the Local Plan. The primary evidence for undertaking this Sequential Test exercise was the Level 1 and Level 2 Strategic Flood Risk Assessment (SFRA) which covers the administrative areas of both CCC and TDC.

2.2 The TCBGC was considered as the 'East Colchester Garden Settlement' site within the Level 2 SFRA and it was this site area that was taken forward into the 'Flood Risk Sequential Test Report' (June 2017). This is a relatively small proportion of the DPD site area, covering land between Bromley Road, Crockleford Heath and the Salary Brook and extending further north-west across open land on the west side of the Brook beyond the current site boundary (Figure 1). The methodology for applying the flood risk sequential test was agreed with the Environment Agency – see Appendix 1.

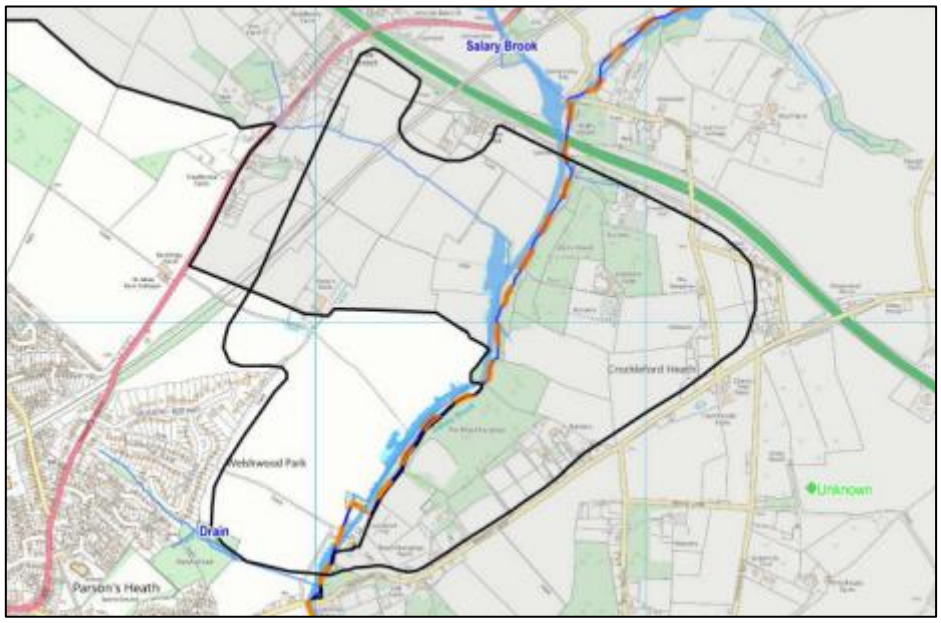


Figure 1: Site boundary for 2017 Sequential Test

2.3 The Level 2 SFRA concludes that "*Based on the strategic assessment of flood risk and the recommendations for mitigation measures set out above, it is considered that proposed development on this site could be designed to satisfy part (2) of the Exception Test".* The referenced mitigation includes *"Residential development should be avoided in areas defined as Flood Zone 3a and 3b of the Salary Brook*", offsets of minimum 8m and 3m from the Salary Brook and ordinary watercourses respectively, and effective surface water management over the site.

2.4 The Sequential Test report conclusion was:

"*Built development (particularly residential) should be contained to flood zone 1 and avoid land in areas defined as Flood Zone 3a or 3b adjacent to the Salary Brook and in areas susceptible to surface water flooding. This land could be used as part of the provision of a SuDS train through the site to help manage surface water. As the site partially falls within a CDA proposals will be required to contribute towards flood risk solutions, in accordance with Flood Risk Management policy DM23 and SWMP recommendations for the CDA. Based on the strategic assessment of flood risk and subject to the recommendations and mitigation measures set out above being implemented, the Sequential and Exceptions Test are passed.* ***Recommendation: Allocate the site****".*

2.5 The Broad Area of Search (Figure 2) that was taken forward into the Section 1 Plan differed from the boundary considered under the Sequential Test undertaken. Through the advancement of the evidence base and development of the DPD, including the Baseline Masterplan and Strategic Framework Masterplan the Garden Community site boundary as defined by the DPD Policies Map has been refined further (Figure 5).

2.6 Whilst the base data used to inform the original Sequential Test remains consistent with current information, in light of the variation in site boundary the Councils have re-applied the Sequential Test in this report. The methodology for applying the sequential test follows that as previously agreed with the Environment Agency and undertaken on the 2017 test.

2.7 The Sequential Test has also drawn on and considered the updated evidence base for the DPD being the 'TCBGC Integrated Water Management Strategy Phase 2' April 2023, the 'TCBGC Baseline Masterplan Report' September 2021 and the 'TCBGC Strategic Framework Masterplan' February 2023.

3. THE SEQUENTIAL TEST

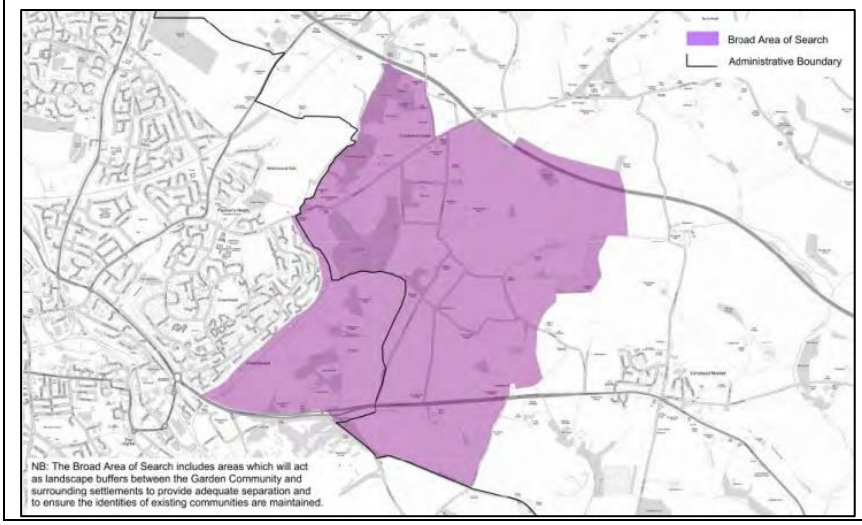
Name of site – Tendring Colchester Borders Garden Community
Preferred use – Garden Community – circa 7,500 dwellings
Figure 1: Section 1 Plan – Broad Area of Search 

Figure 2: Flood Zone Map

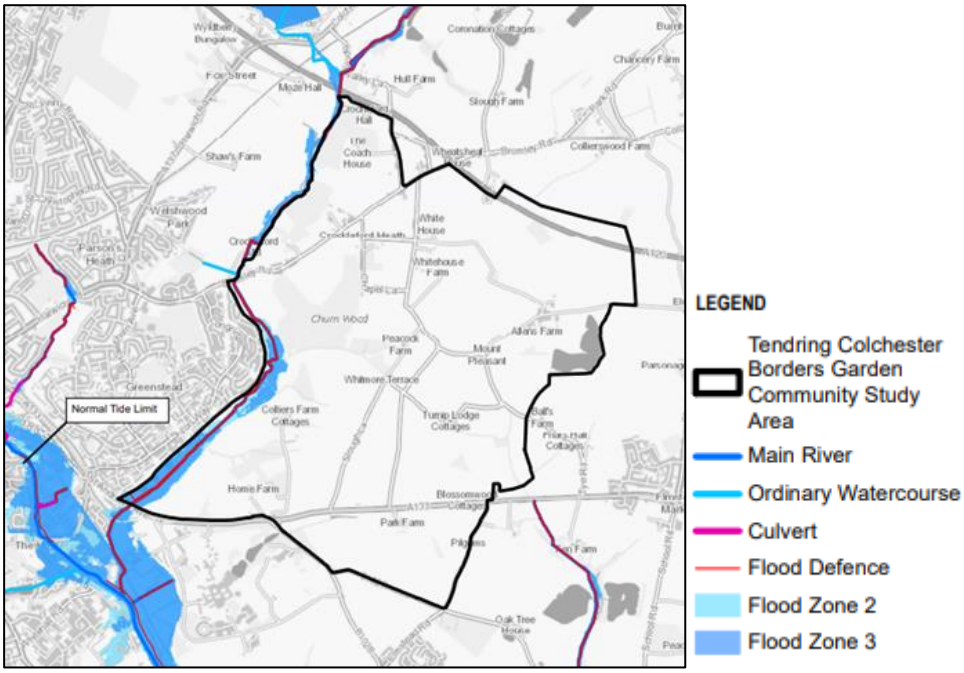


Figure 3: Surface Water Flood Map

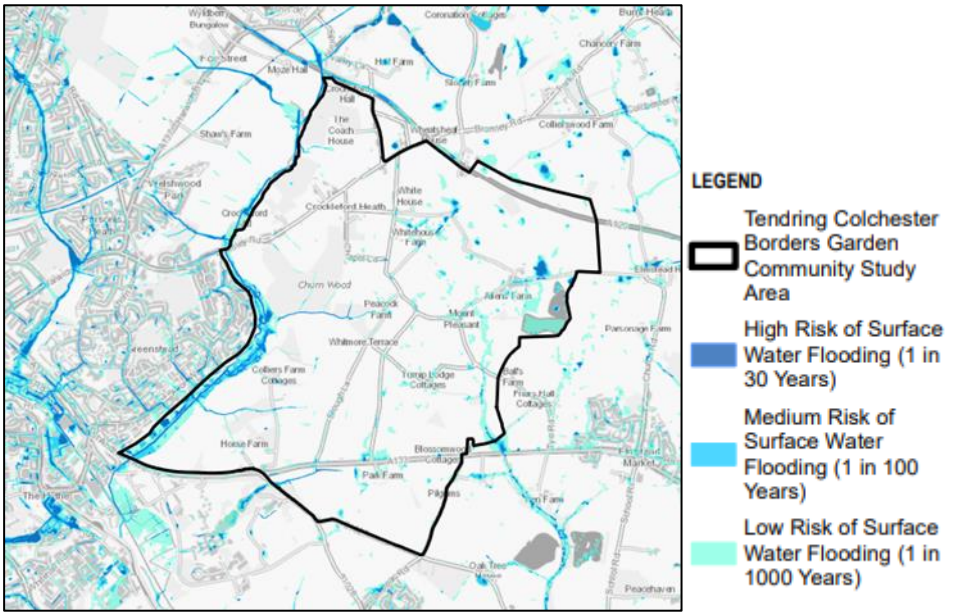


Figure 4: DPD Submission Version Policies Map

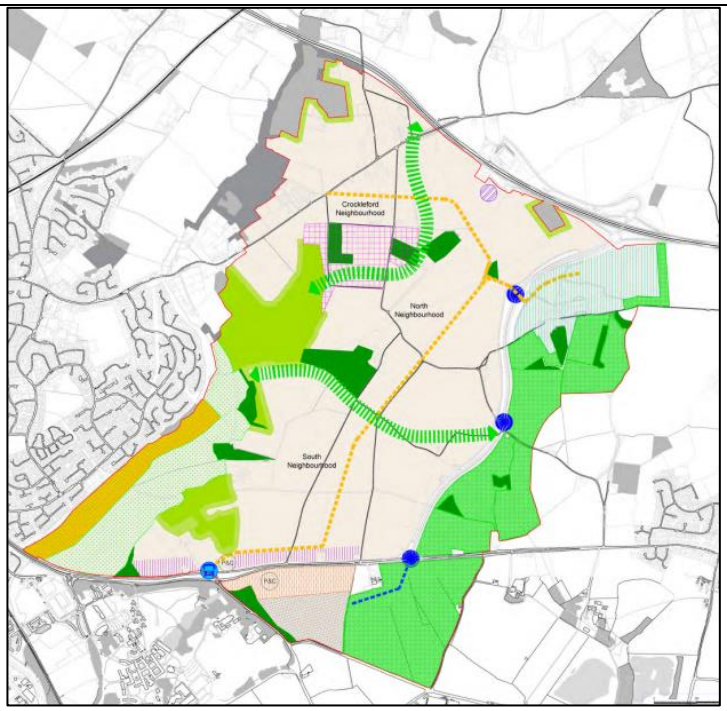


Figure 5: Adjusted Map with Flood Zones 2 and 3

Note that this map includes the triangle of land south of the A120, which was previously excluded from the Broad Area of Search.

Site flood zone	Based on the Figure 5: Adjusted Map (being the most comprehensive site area), the majority of the site (97%) falls within flood zone 1.

	Approximately 1% falls within flood zone 2, and 2% within flood zone 3a.
Is there an alternative reasonably available site in flood zone 1?	Yes, but the majority of the land falls within flood zone 1 and built development will be steered towards the land at lowest risk of flooding.
Is there an alternative reasonably available site in flood zone 2?	Yes, but only 1% of the site falls within flood zone 2 and built development will be steered towards the land at lowest risk of flooding.
Does the site lie in the functional floodplain (zone 3b)?	Outputs for Flood Zone 3b functional floodplain are not currently available for this watercourse. Further modelling is required.
Is the site at risk from Surface water flooding?	The RoFSW mapping indicates that parts of the area are at high risk of surface water flooding (>3.3% AEP). These mainly correlate with the floodplain of the Salary Brook and contributing tributaries, but also show some more localised areas of surface water flooding towards the central and eastern area of the site, and around the A133.
Is the site at area at risk from groundwater flooding?	The AStGWF mapping shows that the site is located across 1km squares of which none, or <25% is susceptible to groundwater emergence. The risk of groundwater flooding in this area is generally considered to be low. This will need to be confirmed during site investigation survey.
Is the area at risk in the event of a failure of a reservoir?	The floodplain of Salary Brook which passes through the site, is at risk of inundation in the event of a failure of the Ardleigh and Abberton Central and Western Arm and Abberton Reservoirs however given the regular inspection of these, flooding from reservoirs is considered a managed risk.
Is the area at risk in the event of a failure of the Colne Barrier?	N/A
Is the site within a Critical Drainage Area?	No.
SFRA comments	<u>Site specific recommendations</u> The management of surface water throughout the entire Garden Settlement area should be considered early in the master planning process to ensure that

	adequate provision is made, taking into account the impact of climate change on the frequency and intensity of future rainfall events. <u>Site design and layout</u> The site layout should be carefully planned to ensure that new development is not placed at surface water flood risk, and not contribute to increased flood risk to neighbouring and/or downstream flow paths and areas. <u>Fluvial Modelling</u> As part of a site specific FRA for this area, a simple hydraulic model should be developed to more accurately determine the probability of flooding from the Salary Brook and its contributing tributaries. As part of this assessment, a range of probability events should be compared to determine impact of climate change on the risk of flooding at this location. <u>Site Layout and Design</u> Residential development should be avoided in areas defined as Flood Zone 3a or 3b adjacent to the Salary Brook. The strategy for surface water management across the Garden Settlement area must be considered early in the site master planning process to ensure adequate inclusion of SuDS. SuDS should be considered in accordance with the hierarchy of SuDS (i.e. considering infiltration measures first wherever possible). <u>Set-back Distance</u> The Salary Brook is a main river, and therefore all development should be set back at least 8m from these watercourses. The Environment Agency will need to be consulted and an Environmental Permit obtained for any works within 8m of the watercourse. Essex CC, as the LLFA, requires at least a 3m set back on one side of ordinary watercourses to provide access for maintenance. Essex CC will need to be consulted and consent obtained for any proposed works that may impact flow within the channel of the watercourse.

	<u>Finished Floor Levels</u> If residential development cannot be avoided within the flood extent for the 1% AEP event including climate change for any of the watercourses in the area, finished floor levels should be set at least 300mm freeboard above the flood level for 1% AEP event including an appropriate allowance for climate change. In this case, for More Vulnerable development in Flood Zone 3a, the higher central (35%) climate change allowance should be used and tested against the upper (65%) climate change allowance also. <u>Access / Egress</u> Safe dry access to and from new development should be provided. Given the general low risk of fluvial flooding through the area this should be achievable. <u>Floodplain Compensation</u> Land raising and any built development should be avoided within the floodplain. Where alterations to the floodplain are proposed, compensatory floodplain storage will need to be provided on a level-for-level and volume-for-volume basis. The land used to provide compensation storage will need to be in hydraulic connectivity with the existing floodplain, but not already part of the floodplain. <u>Emergency Planning</u> The site is not shown to be within an Environment Agency Flood Warning Area. Depending on the proximity of new development to the local watercourses, Flood Response. Plans may need to be prepared by residents of the site.
Phase 2 - Integrated Water Management Study (IWMS) recommendations	<u>Wastewater</u> CBC/TDC should work with Anglian Water to discuss lead time for connection and potential upgrade to existing wastewater network and required upgrades to existing Colchester WRC including timing to deliver increased headroom/capacity and where required, additional treatment processes to accommodate planned development. Where

	TDC/CBC are minded to pursue the intermediate/high approach to integrated water, discussions with potential inset companies should be sought who could provide wastewater treatment infrastructure. <u>Water Re-use</u> If CBC/TDC aspire to achieve partial/total water neutrality rather than compliance with existing policy then CBC/TDC should seek discussions with potential inset companies who could support early discussions with developers to provide multi-plot or community-based systems for rainwater harvesting or greywater re-use. This should include discussion on lead time to set up relevant systems. Developers must ensure buildings are fitted with dual plumbing as standard to provide future resilience for rainwater/greywater re-use systems which could be introduced at a later date. <u>Water Quality</u> It is recommended that for improving surface water quality discharge from the site, treatment steps are integrated within SuDS features and maximise the benefits offered through the use of multifunctional areas (e.g. blue/green corridors). <u>Surface Water Management</u> As the bedrock beneath the site is impermeable, this constrains the potential for infiltration techniques in the management of surface water. It is recommended that infiltration testing is undertaken to understand the potential for infiltration as a SuDS method. Runoff calculations need to be refined to confirm the attenuation volume required to be provided and a holistic approach to management of surface water through the use of SuDS/blue-green infrastructure needs to be implemented. It is recommended that integrated SuDS are considered for water re-use on a sub-

	catchment basis where an Intermediate intervention approach is pursued.
Masterplan Baseline Report and Strategic Framework Masterplan	The Baseline report gives consideration to flooding and surface water drainage, identifying those low lying areas at risk from localised flooding and localised areas of high risk in the north eastern section of the site. Ground re-profiling and accommodating flows within a surface water drainage network is recommended. The avoidance of the Ardleigh reservoir floodplain is recommended with the provision of amenity and ecological benefits. The Link Road will sever natural drainage flows so it will be necessary to consider culverts in certain location. Recommendations are made with regard to green storage and conveyance features and that drainage systems be integrated into a wider green infrastructure strategy. The Strategic Framework Masterplan took forward the findings of the Baseline Report, the Strategic FRA and recommendations of the former Sequential Test. It contains an objective that in managing flood risk applications should follow a sequential risk-based approach to the location of and the uses within the development. The spatial strategy outlined appropriately responds to the findings and encourages the development of natural flood risk management, incorporating SuDS with green and blue spaces integrated throughout the Garden Community. The design guidelines require that proposals must reduce post development run off rate back to the greenfield 1 in 1 year rate with an allowance for climate change.
Will the proposed development type be acceptable in this flood zone?	Yes - as the majority of the land to be allocated falls within flood zone 1. The allocation of land for residential development for schools and hospitals which are classed as 'more vulnerable' are considered compatible with the NPPF. Other proposals

	for economic growth, open space, as less vulnerable uses are also considered compatible uses in this flood zone. The Garden Community proposals will result to the delivery of a highly sustainable new settlement on the borders of Tendring and Colchester designed following the original Garden City principles.

Conclusion

Built development (particularly residential) should be contained to flood zone 1 and avoid land in areas defined as Flood Zone 3a or 3b adjacent to the Salary Brook and in areas susceptible to surface water flooding. This land could be used as part of the provision of a SuDS train through the site to help manage surface water.

Based on the strategic assessment of flood risk and subject to the recommendations and mitigation measures set out above being implemented, the Sequential and Exceptions Test are passed.

Recommendation: Allocate the site.

Appendix 1

creating a better place

Environment Agency

Ms Beverley McClean
Colchester Borough Council
Planning Department
PO Box 889
Colchester
Essex
CO1 1FL

Our ref: AE/2006/000164/OR-04/PO1-L01
Your ref: Flood Risk Sequential Test

Date: 12 May 2017

Dear Bev

Flood Risk Sequential Test methodology

We refer to your letter dated 19 April 2017 which sets out the Council's proposed methodology for carrying out the Sequential Test in relation to the following development areas:

- Garden communities and sustainable settlements, including Colchester Town
- East Colchester/Hythe Special Policy Area

We have considered the contents of your letter and offer the following advice.

Garden communities and sustainable settlements, including Colchester Town
We are in general agreement with your proposed methodology which we consider represents a reasonable approach. The only point we would make is that in the scenario where a development proposal located in Flood Zone 2 or 3 has passed the Sequential Test, we consider that it must still be demonstrated there is a need for the site to be located in the areas of medium to high risk of flooding. This should only require some short explanatory text. It may be the case that the development proposal has an attribute or feature that relates well to sites in these areas and would assist in delivery of the aims and objectives of the areas.

East Colchester/Hythe Special Policy Area
We are also in general agreement with your proposed methodology for these two areas. Given the Council's aim of continuing regeneration for each Colchester/Hythe Special Policy Area, we consider your proposal to restrict the Area of Search on the basis outlined in your letter to represent a wholly reasonable approach. We assume that given the Council has identified the areas for regeneration, it is comfortable with the level of growth to meet the aims and objectives of these policy areas, notwithstanding most of the areas fall within Flood Zone 3.

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As with the garden communities etc, we would expect a development proposal that has passed the Sequential Test to demonstrate there is a need for the site in the areas of medium to high flood risk. Again this could be done through the provision of some short explanatory site. In the case of each Colchester/Hythe Special Policy Area the development proposal may have a particular attribute or feature that relates well to the location of the development within these two areas. The attribute or feature may well contribute to the delivery of the aims and objectives of the policy position.

Although the approach for East Colchester/Hythe Special Area is reasonable and consistent with the previously agreed position, we consider that where a development proposal passes the Sequential Test, we consider it should also be demonstrated by the developer that the site is able to pass, at the allocation stage, the first limb of the Exception Test in paragraph 102 in the National Planning Policy Framework. In other words the developer should set out the benefits and enhancements they would bring to the development site by way of sustainable betterment for the community. This would accords with the aim to bring enhancements to the East Colchester/Hythe Special Area. The Exception Test can in a sense be used to justify the environmental enhancements sought by the Council.

As mentioned in your letter [passing] the Sequential Test does not preclude the need for a detailed site level flood risk assessment (FRA) where necessary. This being the case, the developer should also seek to address, at the allocation stage, the second limb of the Exception Test so that they and the Council are confident the site will be safe for its lifetime.

Sequential Approach
Your letter does not specifically address the situation where a development proposal straddles over Flood Zones. We consider the Council's flood policy should require the developer to carry out the sequential approach. Development with a higher vulnerability classification should be located in the first instance, wherever possible, in the area of lower flood risk followed by the next Flood Zone. Ideally the development should be accommodated wholly in Flood Zone 1, but where this is not possible, it may extend into Flood Zone 2 and ideally Flood Zone 3 should be utilized for amenity / open space purposes. We do, of course, recognise that there may well be reasons for a development to straddle the Flood Zones, excepting Flood Zone 3b the functional floodplain in undeveloped areas where only water-compatible development and essential infrastructure are generally regarded as appropriate uses.

Other comments
Your letter does not appear to specifically address the Sequential Test position for development sites outside the garden communities etc and East Colchester/Hythe Special Policy Area. We assume that the Council will apply a district-wide Area of Search. If so, this should be stated in the Council's flood policy.

We trust that our comments are useful.

Yours sincerely

Andrew Hunter
Sustainable Places - Planning Advisor

Cont/d..

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