

OUTLINE DRAFT SEQUENTIAL TEST NOTE

Three Rivers District Council

February 2009

Halcrow Group Ltd

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Introduction

In February 2009 Three Rivers District Council instructed Halcrow to undertake a Sequential Test of 2 broad areas and 8 individual sites within the Council's area. The purpose of the Sequential Test was to inform the preparation of the Three Rivers Core Strategy by establishing that there were no sequentially preferable sites in flood risk terms.

The following sections sets out the methodology applied in the sequential testing of 2 broad areas and 8 individual sites (hereafter referred as Study Sites) for Three Rivers District Council and our findings. The following sections of this report cover:

- Relevant National, Regional and Local Policies
- The Sequential Test
- Competing Sites
- Sequential Test Findings, and
- Conclusions

Relevant Planning Policy Framework

National Planning Policy

Planning Policy Statement 25: Development and Flood Risk (2006)

PPS25 sets out a plan led approach to flood risk. It confirms that all forms of flooding and their impact on the natural and built environment are material planning considerations. It clarifies the sequential test that matches types of development to degrees of flood risk and strengthens the requirement to include flood risk assessments at all levels of the planning process. Regional planning bodies and local planning authorities (LPA) should, inter alia, reduce flood risk by safeguarding land from development that is required for current and future flood management e.g. conveyance and storage of flood water and flood defences.

The Sequential Test and Exception Test

Annex D of PPS25 and The PPS 25: Practice Guide provide clear guidance on how to apply the sequential approach in relation to flood risk. Flood Zones are the starting point. The Sequential Test is a simple decision-making tool that aims to steer development to sites with little or no risk of flooding i.e. Flood Zone 1 (low probability of flooding).

Where no Zone 1 sites are reasonably available, taking into account flood risk vulnerability of land uses (See Annex D Table D.2 Flood Risk Vulnerability Classification) decision makers should identify reasonably available Flood Zone 2 sites, applying the Exception Test if required i.e. in the case of highly vulnerable uses e.g. police stations (See Annex D Table D.3 Flood Risk Vulnerability and Flood Zone 'Compatibility')

Where there are no Zone 1 or Zone 2 sites reasonably available, taking into account flood risk vulnerability of land uses (See Annex D Table D.2 Flood Risk Vulnerability Classification) decision makers should identify reasonably available Flood Zone 3 sites, applying the Exception Test if required i.e. in the case of highly vulnerable uses e.g. essential transport infrastructure (See Annex D Table D.3 Flood Risk Vulnerability and Flood Zone 'Compatibility')

Within each Flood Zone, development should be directed to sites with the lowest probability of flooding. Higher vulnerability uses should be located on the part of the site with the lowest probability of flooding.

There are three considerations for the Exception Test to be passed:

(1) It must be demonstrated that development provides community sustainability benefits that outweigh flood risk e.g. a town centre site very well located for public transport, services and facilities (lower emissions, higher employment, etc). If a Development Plan Document (DPD) is at 'submission' stage the benefits should contribute to the Core Strategy's Sustainability Appraisal.

(2) Development should be on developable previously-developed land (PDL) or, if it is not, there should be no reasonably available sites on developable PDL (PPS3 para. 54 to 56 defines developable as: available (now), suitable (close to facilities) and achievable (within 5 years)).

(3) A Flood Risk Assessment (FRA) is required to demonstrate that development will be safe, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall. One possible way of making development safe would be to design raised access and egress, buildings on 'stilts' with raised living accommodation, etc.

Regional Policy

The Regional Spatial Strategy for the East of England (2008)

The Regional Spatial Strategy, known as the East of England Plan, sets out vision and objectives to enable development in the region. It identifies strategies under various sectors such as housing and employment.

The East of England Plan provides a framework for the region to 2021. It seeks to bring together policies for development with other policies and programmes that influence the nature of places and how they function, including health, social issues, the economy, culture, skills and the environment.

Policy H1 sets out the additional housing requirement that each local authority is expected to provide for in its Local Development Framework for the period 2001 to 2021. At Three Rivers the requirement is 4000 new homes (an average of 200 per annum).

Policy WAT4: Flood Risk Management refers to flooding being a significant risk in parts of the region. It encourages Local Development Documents to use Strategic Flood Risk Assessments to guide development away from floodplains and other areas at high or medium risk from flooding. Departures from these principles will be the exceptions, where suitable land at lower risk of flooding is not available the benefits of development outweigh flood risk and appropriate mitigation measures are incorporated.

Local Policy

Three Rivers Local Development Framework

The Local Development Framework is a series of documents that set out the policies for the local area. The Core Strategy is the most strategic of the documents being prepared. It sets out the spatial vision for the District.

The Development Policies and Site Allocations Development Plans Document (DPD) will contain development control policies and site allocations.

Three Rivers Core Strategy

Based on results from the Strategic Housing Land Availability Assessment (2008) study, the Core Strategy Preferred Option Development Plans Document (DPD) (2009) identifies a number of sites of which 2 broad areas: East Kings Langley and Maple Cross; and 8 individual sites for residential and employment use are located in Flood Zones 1, 2, 3a and 3b. These sites are identified as being suitable to help the District in achieving the regional housing target and employment land requirement. PPS 25 requires sites that are proposed for allocation to be sequentially tested early on in the preparation of an LDD development.

Four Councils (including Three Rivers) Strategic Flood Risk Assessment (SFRA)

The Four Councils (Dacorum, St Albans, Three Rivers and Watford) commissioned Halcrow to conduct a Level 1 SFRA study in 2007. This study identified areas at risk of flooding and their flood zone classification. It recommended that development sites within areas at 'medium' and 'high' risk of flooding should be sequentially tested to establish that there are no sequentially preferable sites at lower risk of flooding.

The SFRA identified a few sites at risk from fluvial flooding close to the River Colne. Two sites in Rickmansworth were identified to be at risk of ground water flooding. Seven sites were at risk of surface water flooding. Specific recommendations for Three Rivers include protection of functional floodplains, appropriate stakeholder engagement to manage surface water flood risk, implement policies for development behind defences to ensure residual risk of flooding is managed.

The Sequential Test

This section sets out the findings of the sequential testing of the Study Sites. It follows the steps outlined in PPS25 using a procedure devised in consultation with the Environment Agency.

It was agreed with Three Rivers District Council planning officers that the area of search should only include sites in Three Rivers District Council.

Site and Development Information

The Core Strategy Preferred Option DPD, currently subject to public consultation, identifies broad areas and individual sites to meet regional and district housing targets and employment land requirements. Of these sites, 2 broad areas – East Kings Langley and Maple Cross, and 8 individual sites, are at 'medium' or 'high' risk of flooding.

Detailed site and development information on the Study Sites are set out in Table 1. It also includes Flood Zone, flood defence information, and existing and proposed uses. The flood vulnerability classification in column 9 is based on guidance in Table D3 Flood Risk Vulnerability and Flood Zone 'Compatibility' of PPS 25:.

Table 1 Broad Areas and 8 Individual Sites - Flood Risk Data

Site No	Site ID as on SHLAA	Site address	Site size (ha)	Flood Zone (approx percentage)	Existing Flood Defences – based on NFCDD ¹ data	Existing Uses	Proposed Uses (indicative capacity)	Flood Vulnerability Classification
1	2	3	4	5	6	7	8	9
1	EKL	East Kings Langley	31.67	1 (45%) 2 (5%) 3a (20%) and 3b (30%)	Raised man made defence (Minor) along right bank - between site and canal (private – not maintained by the Environment Agency).	Industrial and warehousing	Residential – 180 units	More vulnerable
2	NEMC	Maple Cross	3.27	1 (50%) 2 (50%)	Raised man made defence (Major) along the River Colne (to right of site). Maple Embankment Wall - Brick wall set back 2m from channel (part of Lower Colne Improvement Scheme) – maintained by the Environment Agency.	Open land	Employment floor space	Less vulnerable
3	CP 10	Delta Gain	0.43	2 (5%) 3a (95%)	No formal defences – culverted channel.	Vacant industrial land and car parking	Residential – 25 units	More vulnerable
4	R 9	Langwood House, High Street, Rickmansworth	0.17	1 (>90%) 2 (<10%)	Raised man made defence (Minor) – raised footpath/concrete wall (part of Chess Flood Defence Scheme) – Approx 115m from site. Maintained by the Environment Agency.	Offices and car parking	Residential- 10 units	More vulnerable
5	R 13a	Bridge Motors	0.09	2 (25%) 3a (5%) and 3b (70%)	Raised man made defence (Minor) – raised footpath/concrete wall (part of Chess Flood Defence Scheme) – Approx 40m from site. Maintained by the Environment Agency.	Car/ Petrol sales	Residential- 20 units	More vulnerable
6	R 53	Depot, Harefield Road, Rickmansworth	0.37	1 (60%) 2 (5%) 3a (5%) and 3b (30%)	Raised man made defence (Minor) – sheet piled wall (part of Lower Colne Improvement Scheme). Runs along the right side of the site. Maintained by the	Waste Depot	Residential – 25 units	More vulnerable

¹ National Flood and Coastal Defence Database

Site No	Site ID as on SHLAA	Site address	Site size (ha)	Flood Zone (approx percentage)	Existing Flood Defences – based on NFCDD ¹ data	Existing Uses	Proposed Uses (indicative capacity)	Flood Vulnerability Classification
1	2	3	4	5	6	7	8	9
					Environment Agency.			
7	R56b	Salters Close Gas Works, Rickmansworth	0.13	2 (25%) 3a and 3b (75%)	Raised man made defence (Minor) – embankment (part of River Colne Flood defence scheme). Maintained by the Environment Agency.	Gas Works	Residential – 20 units	More vulnerable
8	CGS 28	Croxley Green Station, Croxley Green	0.80	1 (55%) 2 (35%) 3a (10%)	No formal defences.	Disused rail station	Residential- 35 units	More vulnerable
9	E 19	South Tolpits Lane	6.74	1 (85%) 2 (4%) 3a (1%) and 3b (10%)	No formal defences.	Open land	Residential – 50 units	More vulnerable
10	R 74	Depot, Stockers Farm Road, Rickmansworth	0.95	1 (100%)	No formal defences.	Water depot hardstanding, storage, staff accommodation	Residential- 60 units	More vulnerable

Sequential Testing

In introducing the sequential and exception tests in PPS25, the Department for Communities and Local Government (DCLG) does not intend to prevent development on all sites that are liable to flooding. The DCLG accepts that some form of development may have to take place on sites that are liable to flooding. However, due to the risks of developing on sites that are liable to flooding, the PPS25 policy requirement is to minimise the risk from flooding to people and property.

The overall aim of decision-makers should be to steer new development to Flood Zone 1 (see PPS25 Table D.1 Flood Zones). Where no Zone 1 sites are reasonably available, taking into account flood risk vulnerability of land uses (See PPS25 Table D.2 Flood Risk Vulnerability Classification) decision makers should identify reasonably available Flood Zone 2 sites, applying the Exception Test if required i.e. in the case of highly vulnerable uses (See PPS25 Table D.3 Flood Risk Vulnerability and Flood Zone 'Compatibility')

Where there are no Zone 1 or Zone 2 sites reasonably available, taking into account flood risk vulnerability of land uses (See PPS25 Table D.2 Flood Risk Vulnerability Classification) decision makers should identify reasonably available Flood Zone 3 sites, applying the Exception Test if required i.e. in the case of highly vulnerable uses (See PPS25 Table D.3 Flood Risk Vulnerability and Flood Zone 'Compatibility').

Within each Flood Zone, new development should be directed first to sites with the lowest probability of flooding. The flood risk vulnerability of the intended use should be matched to the flood risk of the site e.g. higher vulnerability uses located on the parts of the site with the lowest probability of flooding.

Competing Sites

Three Rivers District Council Sites

The Sequential Test requires an examination of alternative sites (competing sites) that are at less or equal risk of flooding to the Study Sites. This note identifies 20 major competing sites within the Three Rivers District Council area. Most of these sites were identified in the recently completed SHLAA study. All sites identified within the SHLAA underwent a multi-criteria assessment to identify their suitability, including the environmental and economic impacts of development. Based on this information and considering the sites against relevant national and regional planning policy considerations, the competing sites have been assessed in this Sequential Test. Table 2 presents information about the competing sites and the main reasons for not considering them to be preferable alternatives to the Study Sites.

Table 2: Competing Sites

Site No. (SHLAA ID)	Site Address	Existing use	Planning Status	Proposed Development	Site Size (ha)	Flood Zone	Comments
LV3	Bucknalls Lane, Garston	Golf course/ farmland	Unallocated but identified in SHLAA	Residential- 233 units	7.83	2	Development is likely to have a cumulative impact on infrastructure in the area
AB36	The Retreat, Abbots Langley	Open land	Unallocated but identified in SHLAA	Residential – 148 units	2.66	1	Development may have an impact on Green Belt and the site has poor access to services
CGN5	Little Green Playing Fields, Croxley Green	Playing Fields	Unallocated but identified in SHLAA	Residential-153 units	4.5	1	Development is likely to have an impact on the Green Belt
CW27	Hall Farm, Berry Lane, Chorleywood	Farmland	Unallocated but identified in SHLAA	Residential- 81 units	1.87	1	Development is likely to have an impact on the Green Belt and site has poor access to services
BP28	Egg Farm, Kings Langley	Open land	Unallocated but identified in SHLAA	Residential- 49 units	0.62	1	Development is likely to have an impact on Green Belt
NW9	Henbury Way	Car Parking	Unallocated but identified in SHLAA	Residential- 63 units	0.51	1	Site is required to provide parking and access to town centre
AS44	East of Lytham Avenue, South Oxhey	Open land	Unallocated but identified in SHLAA	Residential- 30 units	0.66	1	Access to site is difficult and there is no intention to develop
MC31	West Hyde Residential Centre, Maple Cross	Residential Centre	Unallocated but identified in SHLAA	Residential – 4 units	0.12	1	Development is likely to have an impact on Green Belt and site has poor access to services
OH11	Oxhey Pavillion, Green Lane, Oxhey	Pub and car parking	Unallocated but identified in SHLAA	Residential- 46 units	0.98	1	Development is likely to have an impact on Green Belt and site has poor access to services. Additionally, there is no intention to develop this site
CW6	Ferry Car Park, Chorleywood	Car park	Unallocated but identified in SHLAA	Residential- 13 units	0.32	1	Site will be required to provide parking and access to town centre. Additionally, there is no intention to develop this site
CGS13	Croxley LUT station	Car parking and	Unallocated but identified in	Residential –	0.69	1	Impact of railway line, required to

Site No. (SHLAA ID)	Site Address	Existing use	Planning Status	Proposed Development	Site Size (ha)	Flood Zone	Comments
		timber yard	SHLAA	11 units			provide parking for station. No intention to develop this site
MC1	Buttlehide, Maple Cross	Open space	Unallocated but identified in SHLAA	Residential- 12 units	0.35	1	Site required for open space. Site has poor access to services. There is no intention to develop the site
R25	Car Park, Northway	Car parking	Unallocated but identified in SHLAA	Residential – 5 units	0.15	1	Site required for car parking
CG8	Back land to New Parade, The Green, Croxley Green	Backlands	Unallocated but identified in SHLAA	Residential- 6 units	0.11	1	No intention to develop
P23	Mill End Community Centre, Mill End	Community Centre	Unallocated but identified in SHLAA	Residential- 28 units	0.49	1	Retention of the Community Centre facilities will be required. There is no intention to develop the site
E18	The Roughs, Eastbury	Open Land	Unallocated, identified and rejected in SHLAA	Residential- 99 units	3.32	1	Development at site will impact wildlife site and have impact on LNR. The site comprises of fauna with Tree Preservation Order
AB32	Off Tibbs Hill Road, Abbots Langley	Builders yard	Unallocated but identified in SHLAA	Residential- 7units	0.21	1	Access to site is an issue. No intention to develop the site
CG11	Elmcote House, Croxley Green	House and grounds	Unallocated but identified in SHLAA	Residential- 3 units	0.51	1	Development will have an impact on Conservation Area. No intention to develop the site
CG20	Parrotts Close, Croxley Green	House and grounds	Unallocated but identified in SHLAA	Residential- 2 units	0.84	1	Development will impact Conservation Area
CW26	Wearings Field, Stag Lane, Chorleywood	Field	Unallocated, identified and rejected in SHLAA	Residential- 68 units	2.28	1	Development may impact wildlife site, ancient woodland and public open space near the site. It also suffers from poor access to services

Sequential Test Findings

The Planning Policy Statement 25: Development and Flood Risk Practice Guide provides a flow chart indicating how to apply the Sequential Test at the local level in Figure 4.1. While the above tables provide required information on study sites and the competing sites, the following questions and answers summarise the sequential testing process.

The Study Sites and the Competing Sites

The following questions consider the Study Sites and the Competing Sites in sequence.

Question 1- Are the proposed locations for development in Flood Zone 1 (Low Probability of Flooding)?

YES

Study Sites

Stockers Farm Road Depot, Rickmansworth- fully in Flood Zone 1
East Kings Langley (about 45% of site area)
Maple Cross (about 50% of site area)
Langwood House (about >90% of site area)
Depot at Harefield Road (about 60% of site area)
Croxley Green Station (about 55% of site area)
South Tolpits Lane (about 85% of site area)

Competing Sites

The competing sites are identified in Table 2. These Flood Zone 1 sites collectively have a housing capacity of 595 dwellings.

NO

Study Sites

East Kings Langley (part)- Flood zones 2,3a and 3b
Maple Cross (part) - Flood zone 2
Delta Gain - Flood zones 2 and 3a
Langwood House (part) - Flood zone 2
Bridge Motors - Flood zones 2,3a and 3b
Harefield Road Depot (part) - Flood zones 2,3a and 3b
Salters Close Gas Works- Flood zones 2,3a and 3b
Croxley Green Station (part) -Flood zones 2 and 3a
South Tolpits Lane (part) -Flood zones 2,3a and 3b

Competing Sites

Bucknalls Lane, Garston - Flood zone 2

Question 2- Could the proposed locations for development in Flood Zone 2 (Medium Probability of Flooding) and Flood Zone 3 (High Probability of Flooding) be located in Flood Zone 1- Low Probability of Flooding?

a) Identify alternative sites that were considered and explain why they were dismissed:

Competing Sites – Flood Zone 1 sites from the Strategic Housing Land Availability Assessment Study are identified in Table 2 above. Based on a multi-criteria assessment (see Appendix 3- Housing Sites Selection Criteria of the Core Strategy Preferred Option DPD), these sites were not taken forward for the following reasons:

- The multi-criteria assessment results indicate these locations to be less sustainable because they may have adverse impacts on Green Belt, accessibility, infrastructure, open spaces, Conservation Areas, parking for Town Centre use and Community Amenities. Refer to Table 2 for individual competing site information.
- PPS1, PPS3, PPS6, PPG 2 and PPG 13 seek to promote sustainable development and recommend that priority is given to the use of brownfield sites in sustainable locations.

b) Explain why the proposals cannot be directed to Flood Zone 1

- Competing sites are in a less sustainable locations with access or other development constraints
- Limited regeneration sites in sustainable locations
- No sufficient interest exhibited by developers to take forward some competing sites

If the site is in Flood Zone 2- proceed to Question 3

Question 3 – How do the proposed uses relate to the Essential Infrastructure, More Vulnerable, Less Vulnerable and Water- compatible Development Flood Risk Vulnerability Classifications set out in PPS25 Table D.2?

YES

Study Sites

More Vulnerable use in the following sites as they are proposed for residential land-use:

- East Kings Langley
- Delta Gain
- Langwood House, High Street, Rickmansworth
- Bridge Motors
- Depot, Harefield Road, Rickmansworth
- Salters Close Gas Works, Rickmansworth
- Croxley Green Station, Croxley Green
- South Tolpits Lane

Less Vulnerable use at Maple Cross as it is proposed for employment land use.

These proposed uses are appropriate if located in Flood Zone 2

Question 4- Can the proposed locations for development in Flood Zone 3 be redirected to Flood Zone 2?

NO

Explain why the development cannot be redirected

Alternative sites are likely to have an impact on the Green Belt, existing infrastructure, open spaces and on community facilities, therefore they are not considered sustainable.

However, subject to Exception Test results and viability considerations, land-use reorganisation between identified sites is recommended. For example, Maple Cross, identified in Flood Zone 2 for employment use (Less Vulnerable) could be allocated for residential use and the proposed employment use re-directed to a Flood Zone 3a site currently identified for residential use, subject to a review of the multi-criteria assessment.

Is the development Highly Vulnerable?

NO

Question 5 - Will the proposed development type be acceptable in Flood Zone 3a?

Subject to Exception Test results, More Vulnerable development may be acceptable in Flood Zone 3a. Essential Infrastructure also may be acceptable in Flood Zone 3a.

Flood Zone 3b is not for More Vulnerable development, however Flood Zone 3b is an acceptable location for Water Compatible development. Subject to Exception Test results, Essential Infrastructure may be acceptable in Flood Zone 3b.

Conclusions

The East of England Plan recommends that Three Rivers District Council should provide at least 4000 new dwellings in the period 2001 to 2021. 1341 dwellings were completed between 2001 and 2007, leaving a residual requirement of 2659.

In order to meet this requirement, a thorough search of suitable sites has been carried out by Three Rivers District Council. The Study Sites have been tested using the PPS25 Sequential Test methodology to examine their suitability for residential or employment development.

The Sequential Test results indicate that the Study Sites are sequentially preferable sites in flood risk terms and have a role to play in meeting the East of England Plan dwelling and employment land requirement.

Given the Green Belt constraints on Three Rivers District Council and the limited availability of other regeneration sites in urban areas, the Study Sites are considered to offer the best available site. Specific recommendations for the individual sites are provided in Table 3.

Table 3: Further steps following Sequential Test on the study sites

S.No	Site ID as on SHLAA	Site address	Comment on next steps
1	EKL	East Kings Langley	An assessment of residual risk of overtopping or breach should be undertaken (exception test)
2	NEMC	Maple Cross	An assessment of residual risk of overtopping or breach should be undertaken (exception test).
3	CP 10	Delta Gain	More vulnerable uses only permitted in flood zone 3a if the exception test is passed.
4	R 9	Langwood House, High Street, Rickmansworth	An assessment of residual risk of overtopping or breach of the Chess Wall should be undertaken (exception test)
5	R 13a	Bridge Motors	An assessment of residual risk of overtopping or breach of the Chess Wall should be undertaken (exception test).
6	R 53	Depot, Harefield Road, Rickmansworth	An assessment of residual risk of overtopping or breach of the Lower Colne Improvement Scheme raised defences should be undertaken(exception test).
7	R56b	Salters Close Gas Works, Rickmansworth	An assessment of residual risk of overtopping or breach of the Lower Colne Improvement Scheme raised defences should be undertaken (exception test)
8	CGS 28	Croxley Green Station, Croxley Green	A sequential approach should be adopted for the master planning of the site – less vulnerable uses in flood zones 3a. More vulnerable uses permitted in flood zone 1 and 2 (exception test recommended).
9	E 19	South Tolpits Lane	A sequential approach should be adopted for the master planning of the site – less vulnerable uses in flood zones 3a/3b. More vulnerable uses permitted in flood zones 1 and 2 (exception test recommended).
10	R 74	Depot, Stockers Farm Road, Rickmansworth	No further Sequential Test or Exception Test work required – will require a surface water drainage strategy.

Next Step

This note focuses on the Sequential Test for the Study Sites. Although these sites are considered sequentially preferable in flood risk terms, it is recommended that each Study Site (apart from the Flood Zone 1 Depot at Stockers Farm Road, Rickmansworth) should undergo an Exception Test as part of a Level 2 SFRA.