

Breckland Local Plan 2016

Flood Risk – Sequential Test Report

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1. Introduction

- 1.1. Breckland District Council is preparing a new Local Plan which will guide development in the district and set planning policies for the plan period (to 2036). The Local Plan will eventually replace most of the policies in the current adopted Core Strategy, Site Specific Policies and Proposals Document and Thetford Area Action Plan. A number of supporting documents have been produced to support the strategic policies of the emerging plan. This report demonstrates how Breckland Council have taken flood risk into account in the Local Plan, prioritising the selection of sites for development in areas at low risk of flooding.

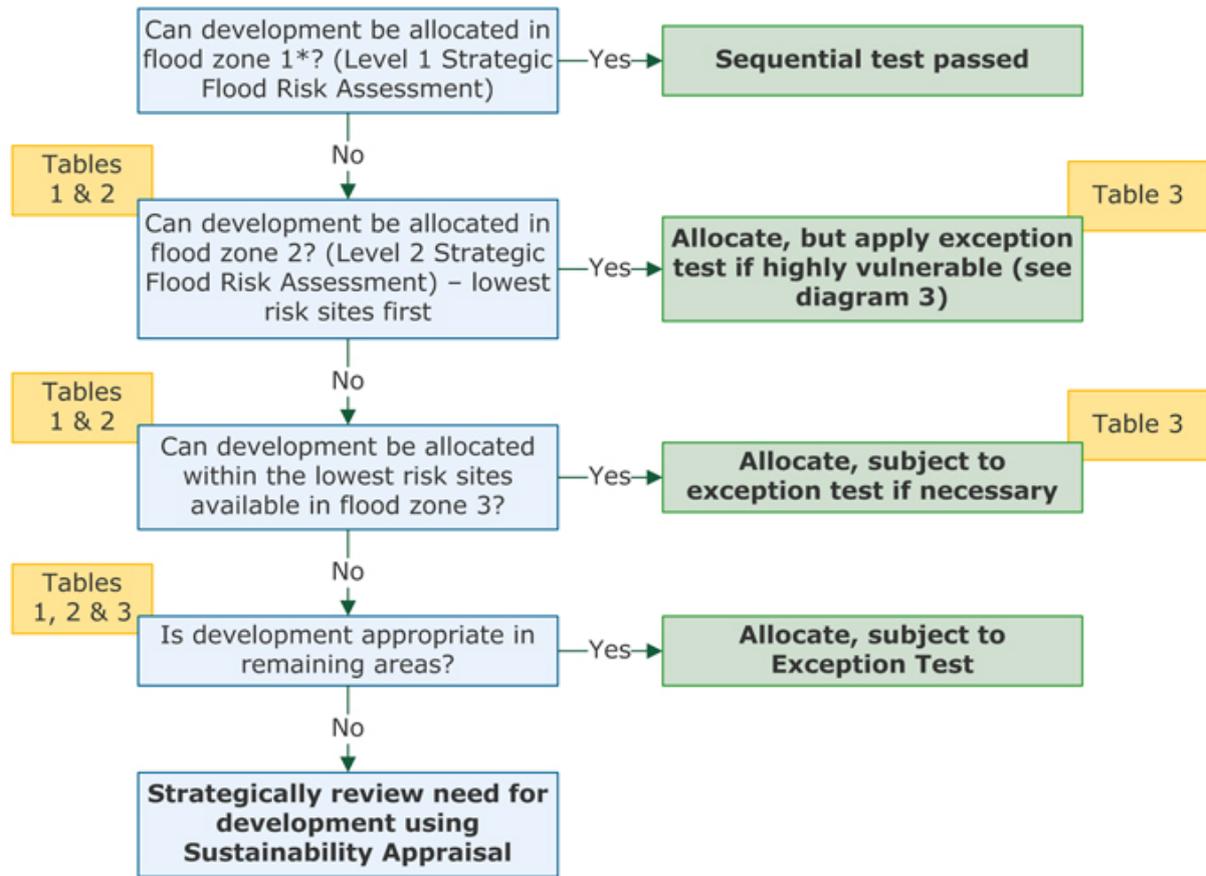
2. National Policy and the Sequential Test

- 2.1. The National Planning Policy Framework (NPPF) sets clear guidance on how Local Planning Authorities should take flood risk into account when assessing locations and sites for development. Paragraph 101 of the NPPF explains the purpose of the sequential test:

“The aim of the Sequential Test is to steer new development to areas with the lowest probability of flooding. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower probability of flooding. The Strategic Flood Risk Assessment will provide the basis for applying this test. A sequential approach should be used in areas known to be at risk from any form of flooding”.

- 2.2. The flood risk categories define the probability of flooding in zones which can be shown on maps. Flood Zone 1 is the lowest probability of flooding, Flood Zone 2 is medium risk, Flood Zone 3 is high risk and Flood Zone 3b is the functional floodplain. The figure below is taken from National Planning Practice Guidance and demonstrates the process of undertaking the sequential test. The tables referred to in the figure are shown in appendix A for reference and include:

- Table 1 – Flood Risk Zones
- Table 2 – Flood Risk Vulnerability Classification
- Table 3 – Flood Risk Vulnerability and Flood Zone Compatibility



3. Local policy context

- 3.1. The Breckland Core Strategy was adopted in 2009, and the Site Specific Policies & Proposals DPD was adopted in 2012 covering the plan period 2001-2026. The adopted Core Strategy sets a local policy on Flood Risk: DC 13 outlining the sequential test process, which built upon National Planning Policy Statement 25: Development and Flood Risk.
- 3.2. The new Local Plan will supersede the current local plan documents once adopted, and covers the period 2011-2036. The Local Plan sets a spatial development strategy for the district providing; a minimum of 14,925 dwellings (of which approximately 5,000 dwellings will be located in Thetford and 4,000 in Attleborough spanning beyond the plan period) and; a minimum of 67 hectares of new employment floor space (of which approximately 22 hectares will be located in Thetford; 20 hectares in Snetterton, and 10 hectares in Attleborough).
- 3.3. Proposed Local Plan Policy PD 03 Locational Strategy sets out three tiers of settlement hierarchy. It identifies Attleborough and Thetford as Key Settlements; Dereham, Swaffham and Watton as Market Towns; and 18 Local Service Centre villages. It sets out that the greatest proportion of new housing, employment and other development will take place in

the Key Settlements of Attleborough and Thetford (50%), followed by a further 30% in the remaining Market Towns of Dereham, Swaffham and Watton, with 15% distributed throughout the 18 Local Service Centres.

- 3.4. A new policy on Flood Risk & Surface Water Drainage (ENV 09) has been proposed in the Local Plan Preferred Directions consultation document, (Dec 2015). The policy seeks to ensure that all new development will be located to minimise flood risk and sets criteria for mitigation measures and use of sustainable drainage systems (SuDS).

4. Sustainability Appraisal

- 4.1. The risk of flooding was considered at the earliest stage of the site assessment process in the Sustainability Appraisal. All submitted sites for development were assessed in the Sustainability Appraisal against the defined fluvial and tidal flood zones. The Sustainability Appraisal (SA) is a key tool in the plan making process. The SA helps to identify the most sustainable locations for development by comparing all submitted sites against set sustainability appraisal objectives. Sites which perform well against the criteria are more sustainable choices for allocation in the Local Plan.
- 4.2. One of the Sustainability Appraisal Objectives is 'to adapt to climate change and avoid, reduce and manage flood risk'. Each site was scored against this criterion in the initial stages of plan preparation. The SA forms the first stage of the sequential test as sites where the majority of the developable area was within flood zones 2, 3 and 3b were not selected for allocation. The detailed scores for each submitted site are contained in the Sustainability Appraisal Report. Maps of the flood risk zones are available in the SFRA for comparison.
- 4.3. The decision making questions to assist scoring each site is provided below for the category on climate change and flood risk. This is an extract of the much wider range of SA objectives used to determine the sustainability of each site.

Table 1 Extract of Breckland Sustainability Appraisal criteria

Sustainability Appraisal Objective	Decision making (appraisal) questions	Decision making criteria
to adapt to climate change and avoid, reduce and manage flood risk'	Will it increase the risk of flooding?	Is the site within an EA flood zone 2 or 3 or a SFRA defined flood zone (1 in 100 yr risk)? Y=-, N=+
	Will it contribute to a higher risk elsewhere?	Is the site adjacent to an EA flood zone 2 or 3 or a SFRA defined flood zone (1 in 100 yr risk)? Y=-, N=+
	Will it attenuate the flow and run off of water?	Dependent on type and design of development, not location.

5. Applying the Sequential Test to Breckland Local Plan

- 5.1. Breckland District Council originally commissioned a Strategic Flood Risk Assessment (SFRA) to identify the flood risk zones for the district which was published in 2005. An update was published in 2007 and a Level 2 SFRA which focused on Thetford was produced to support the Thetford Area Action Plan in 2009. The latest SFRA Level 1 Report has updated the original data and mapping and has been published to support the Local Plan. The SFRA provides detailed maps of the flood zones which illustrate the potential risk of fluvial and tidal flooding. The SFRA also provides an overview of flooding from other sources, which are not taken into account in the definition of flood zones.
- 5.2. The SFRA data has been used to assess all sites submitted for consideration for inclusion in the Local Plan to determine which flood zone they are sited in for the purpose of applying the sequential test. The risk of surface water flooding has also been considered. Part 4 of the SFRA outlines the methodology for applying the sequential test for plan making, as illustrated in the table below.

Table 2 Flood Risk Classifications for Sequential Test, source: Breckland SFRA 2017

Table 4-1 Flood Risk Classifications for Sequential Test

Risk	Source of Flooding				
	Fluvial	Surface Water	Groundwater	Sewer	Reservoir
Low	Flood Zone 1	uFMfSW Very Low	AStGWF (<25%)	Anglian Water to assess the sewer network for each site	Use EA Flooding from Reservoirs map
Medium	Flood Zone 2	uFMfSW Low to Medium	AStGWF (25-50%) AStGWF (50-75%) AStGWF (>75%)		N/A
High	Flood Zone 3a	uFMfSW High	Historic records of groundwater flooding		N/A
Very High	Flood Zone 3b	N/A	N/A		N/A

Overview of flood risk in Breckland

Tidal Flooding

- 5.3. The SFRA identifies that tidal flooding is not considered to be an issue in Breckland. Of the settlements being studied in the Breckland district, only Narborough is considered to be under any risk of being affected by sea level rise. However, the outfall from the River Nar into the River Great Ouse is protected by a gated structure. This means that the River Nar is not directly affected by the tide.

Fluvial Flooding

- 5.4. Parts of Breckland are subject to risk from fluvial flooding. The SFRA identifies that the large majority of the district is defined as Flood Zone 1, low probability of flooding from fluvial sources. However due to the lowland nature of the landscape, floodplains associated with principal watercourses are broad. There are large extents of Flood Zone 2 and 3 associated with the River Thet throughout the south of the district, extending from the area to the south west of Attleborough, through Snetterton, Harling, Brettenham and Thetford. The floodplain associated with the River Wensum is also broad, flowing through Guist, North Elmham, to the north of Swanton Morley and Lyng, and then out of the district towards Norwich.

Surface water flooding

- 5.5. The SFRA details that overland flow and surface water flooding typically arise following periods of intense rainfall, often of short duration, that is unable to soak into the ground or enter drainage systems. It can run quickly off land and result in localised flooding. In Breckland this chiefly consists of localised road flooding. The SFRA identifies areas at risk from surface water flooding and drainage issues, taking account of the surface water flood risk published by the Environment Agency as well other available information.
- 5.6. Table 1 presents the results of the analysis of sites against the updated map for surface water flooding (SFRA, Appendix A, figure 6). The map is based on the Environment Agency's updated Flood Map for Surface Water (uFMfSW) data.

Groundwater flooding

- 5.7. The SFRA details that groundwater flooding usually occurs in low lying areas underlain by permeable rock and aquifers that allow groundwater to rise to the surface through the permeable subsoil following long periods of wet weather. Low lying areas may be more susceptible to groundwater flooding because the water table is usually at a much shallower depth and groundwater paths tend to travel from high to low ground. Groundwater flooding is identified at a potential issue in Breckland due to the underlying chalk aquifer.
- 5.8. The Environment Agency Areas Susceptible to Groundwater Flooding (AStGWF) dataset is a strategic scale map showing groundwater flood areas on a 1km square grid. It is primarily of use to Local Lead Flood Authorities (LLFA) for use in Preliminary Flood Risk Assessments as required under the Flood Risk Regulations. As the data is not specific it would not result in the exclusion of any one site but would indicate where further site specific investigation is required.
- 5.9. Table 1 presents the results of the analysis of sites against the areas susceptible to groundwater flooding (SFRA, Appendix A, figure 7). The map is based on the Environment Agency's AStGWF dataset. Additionally the LLFA's comments on the sites provided during the Interim Local Plan Consultation (Sept 19th – 31st Oct 2016) are also included in Table 1 to clarify where further investigation is required.

Flooding from reservoirs

- 5.10. There is no record of flooding from reservoirs in Breckland. The Environment Agency dataset 'Risk of Flooding from Reservoirs' available online identifies areas that could be flooded if a large reservoir were to fail and release the water it holds. The mapping shows that Breckland is largely free from risk of flooding aside from a small area between Attleborough and Thetford and to the south east of Swaffham. The potentially affected areas are away from existing and planned development and therefore this source of flooding has not been further considered in table 3.

Flooding from sewers

- 5.11. Sewer flooding occurs when a sewer is full and overflows occur at manholes or drains in gardens (referred to as external flooding); or even inside of the building from toilets and drains (referred to as internal flooding). Basement conversions are particularly prone to sewer flooding, where they lie low relative to the depth of the public sewer.
- 5.12. The Breckland SFRA lists historic records of sewer flooding based on data provided from Anglian Water (AW) in 2007 (AW have not provided more recent data). There is limited information and as the flood risk has been identified by AW it is possible that the issue has since been resolved through additional engineering works or drainage clearance, for example. Therefore the relevance of the data to the present day situation in each settlement is questioned. However, the SFRA provides a summary of the historical records for the Key Settlement, Market Towns and Local Service Centres and this has been reviewed in the site selection process.
- 5.13. In undertaking the sequential test, the SFRA recommends that Anglian Water assess the sewer network for each site. In planning for growth Anglian Water made detailed representations on a number of consultation stages for the Breckland Local Plan. Whilst AW have not specifically noted areas at risk of flooding from sewers, they have identified areas where growth will impact on the existing foul network and further infrastructure and investment is required.
- 5.14. **Ashill, Garboldisham and Dereham:** Infrastructure upgrades, or mitigation, to the foul network are likely to be required to serve the proposed growth.
- 5.15. **Snetterton Heath:** The foul flows from future growth will have an impact on the existing foul sewerage network. All sites will require a local connection to the existing sewerage network. There is insufficient capacity in the foul sewerage network to accommodate the proposed major employment site allocations; as such substantial off-site infrastructure will be required. It is therefore crucial that the timing of the development is understood and if necessary phased to ensure Anglian Water can make timely improvements in order to meet the additional demand.
- 5.16. **Other Areas:** The impact of each of the proposed sites on the foul water network can often be dependent on specific connection points and proposed rates of flow. It is likely that for many of the developments some form of mitigation will be required to serve the proposed growth.

5.17. **SuDs:** Anglian Water state that disposal to surface water sewers should be seen as the last option when all sustainable urban drainage solutions (SUDs) and discharge direct to watercourses have been investigated and proven to be non viable. Anglian Water strongly recommends that there is inclusion of a district wide or site specific policy regarding SUDs in the Local Plan. This recommendation has been taken forward as Policy ENV 09 Flood Risk and Surface Water Drainage.

6. Sequential Test

- 6.1. Table 3, 'Sequential Test: Proposed residential allocations, reasonable alternative sites and new sites identified in Breckland Local Plan', presents the outcome of the recommended SFRA sequential test process which has been undertaken for all preferred sites and reasonable alternatives. This has also been carried out on new sites within settlements where a further call for sites was undertaken during the last consultation.
- 6.2. The table has been colour coded to illustrate the sites that are currently assessed as preferred and alternative sites within the Local Plan and is illustrated in the following key:

Key for Table 3	
Preferred	
Alternative	
New Site	

Table 3 Sequential Test: Proposed residential allocations, reasonable alternative sites and new sites identified in Breckland Local Plan.

Settlement	Site ref	Area (Ha)	No of Dwellings	Flood zone	Adj. flood zone 2/3/3b	Surface water flood risk	Surface Water Flood Risk % site affected (est.)	Ground-water vulnerability	LLFA Comments
Dereham LP[025]	007	2.3	60	1	N	1 in 1000 years	2%	N/A	We welcome that the site has been reduced in its extent from the original allocation and now does not include areas at risk of flooding from surface water. An assessment of the actual risk of flooding should be undertaken by any development on this site.
	011	5.8	130	1	Y (2&3a)	1 in 100 and 1 in 1000 years	3%	<25	We welcome that the extent of the site has since been reduced and is now further away from a risk of flooding from the ordinary watercourse. No direct connection to the watercourse (in relation to SuDS hierarchy if infiltration is not possible), although a connection may be possible across adjacent land.
	023	11.2	210	1 & 3a (Less than 5% on east and southern boundaries)	N	1 in 100 and 1 in 1000 years	15%	N/A	We are aware of historical flooding incidents downstream where any development should demonstrate that flood risk elsewhere is not increased. Ideally any development would see if any land could be allocated to improve the flood risk elsewhere. Surface water flow path through the site in a 1:100 even as indicated on the Updated Flood Maps for Surface Water.
	029	2.4	60	1	N	1 in 100 and 1 in 1000 years	5%	N/A	No apparent connection to the watercourse (in relation to SuDS hierarchy if infiltration is not possible).
	030	21.4	290	1	Y (2&3a)	1 in 1000 years	1%	<25	
	001	3.4	119	1	N	1 in 100 and 1 in 1000 years	2%	<25	Small areas of ponding from surface water in 1 in 100 and 1 in 1000 year flood map which would need to be taken account of during any planning application.
	003	17.1	598	1 & 3a (approx. 10%)	Y (3a)	1 in 100 and 1 in 1000 years	0.5%	<25 > = 50<75	There are isolated areas of ponding from service water in 1 in 100 and 1 in 1000 year flood map.
	005	0.5	14	1	N	N/A	N/A	<25	Watercourse not apparent (in relation to SuDS hierarchy if

									infiltration is not possible)
	024	4.2	147	1	N	1 in 100 and 1 in 1000 years	0.5%	<25	1/5 site existing Nurseries (Partial Brownfield) isolated areas of ponding from surface water in 1 in 100 and 1 in 1000 year flood map that would need to be taken into account at during any planning application. Watercourse not apparent (in relation to SuDS
Swaffham LP[097]	006	2.1	51	1	N	N/A	N/A	N/A	No apparent flood risk in relation to the Updated flood Map for surface Water identified for this site. No apparent connection to a watercourse (in relation to SuDS hierarchy, if infiltration is not possible).
	009	9.6	175	1	N	1 in 100 and 1 in 1000 years	15%	N/A	There is a significant surface water flow path through the site in a 1 in 100 and 1 in 1000 year event as indicated on the Updated Flood Maps for Surface Water. Any development at this location must demonstrate that the areas of flooding can be avoided to ensure that new development would be free from a risk of flooding and that there would be no increase risk of flooding elsewhere. The site is split into two and the connection of the two parts of the site should be considered in a sustainable way where both can be accessed during a flood event. No watercourse apparent (in relation to SuDS hierarchy, if infiltration is not possible). We would expect the same level of detail and consideration for the local flood risk constraints for any development at this location (if planning permission has not been granted or a current permission has lapsed).
	010	6.8	185	1	N	1 in 100 and 1 in 1000 years	30%	N/A	There is a significant surface water flow path through the site in 1 in 100 and 1 in 1000 year event as indicated on the Updated Flood Maps for Surface Water. The applicant at the time produced information with a layout plan which demonstrated that the areas of flooding could be avoided to ensure that new development would be free from a risk of flooding and that there would be no increase risk of flooding elsewhere. It was also shown how access would be achieved between the two areas split by the surface water flow path. Access and egress in the time of a flood needs to be considered. Infiltration was proved to be favourable on this location for shallow infiltration SuDS to be proposed. We would expect the same level of detail and

									consideration for the local flood risk constraints for any development at this location (if planning permission has not been granted or a current permission has lapsed).
	013	6	130	1	N	1 in 1000 years	0.3%	N/A	No watercourse apparent (in relation to SuDS hierarchy, if infiltration is not possible).
	018	5.9	165	1	N	N/A	N/A	N/A	We are also aware of anecdotal reports of flooding close by (a disconnected ditch / watercourse) which needs to be considered. Infiltration testing has not yet been proven on the site and there is no watercourse apparent if this is not achievable. Any development would need to consider the same issues at this location.
	008	3	75	1	N	N/A	N/A	N/A	No apparent flood risk in relation to the Updated flood Map for Surface Water identified for this site. No apparent connection to a water course (in relation to SuDS hierarchy, if infiltration is not possible).
	014	12.34	431	1	N	1 in 1000 years	1%	N/A	
Watton LP[104]	001	1.4	49	1	N	1 in 100 and 1 in 1000 years	10%	<25	Some areas identified within the site at risk of surface water flooding from 1 in 100 and 1 in 1000 year as indicated on the updated surface water flood maps. We are aware of historical flooding (29 July 2016) adjacent to this site which is yet to be fully investigated by the LLFA. There are several reports of flooding in Watton in July 2016 which is not associated with areas identified at risk of flooding from surface water (from the updated flood map) which may indicate there are other sources of local flood risk that would need to be considered at a planning application stage. No apparent connection to a watercourse (in relation to SuDS hierarchy, if infiltration is not possible).
	008	4.4	154	1	N	N/A	N/A	> = 75	There is an ordinary watercourse running through the middle of the site, this would need to be assessed and any flood risk avoided during a planning application stge. We would only support culverting to as a means of access and this should be considered when developing a layout. There are several reports of flooding in Watton in July 2016 which are not associated with areas identified at risk of flooding from surface water (from the updated flood map) which may indicate there are other sources

									of local flood risk that would need to be considered at a planning application stage. No apparent connection to a watercourse (in relation to SuDS hierarchy, if infiltration is not possible).
	015	2.8	98	1	N	1 in 1000 years	1%	<25 >= 75	Some areas identified within the site at risk of surface water flooding from 1 in 1000 year as indicated on the updated surface water flood maps. There are several reports of flooding in Watton in July 2016 which are not associated with areas identified at risk of flooding from surface water (from the updated flood map) which may indicate there are other sources of local flood risk that would need to be considered at a planning application stage. No apparent connection to a watercourse (in relation to SuDS hierarchy, if infiltration is not possible).
	017	4.7	164	1	N	1 in 1000 years	1%	Slightly falls into <25	There are several reports of flooding in Watton in July 2016 which are not associated with areas identified at risk of flooding from surface water (from the updated flood map) which may indicate there are other sources of local flood risk that would need to be considered at a planning application stage.
Ashill LP[001]	008	5.1	20	1	N	N/A	N/A	N/A	No apparent flood risk in relation to the updated flood Map for Surface Water identified for this site.
	005	0.18	4	1	N	N/A	N/A	N/A	A flow path associated with the updated surface water flood map runs down road adjacent the site but site appears to be flood free. Access and egress to the site during a flood event may need to be considered. Watercourse not apparent (in relation to SuDS hierarchy if infiltration is not possible).
	009	0.8	16	1	N	1 in 1000 years	1%	N/A	New site – no LLFA comments at present
Banham LP[003]	003	1.2	15	1 & 3a (30% approx.)	Y (3a)	1 in 100 and 1 in 1000 years	50%	<25	Significant flood risk associated with the site as indicated by the updated flood map for Surface Water in a 1 in 100 and a 1 in 1000 year. This flow path splits the site and may or may not be associated with an ordinary watercourse on site.
	004	0.1	2	1	N	1 in 100 and 1 in 1000 years	100%	<25	Site almost entirely inundated in 1 in 100 year (flood zone 3), significant areas of ponding even in 1 in 30 event in surface water flood maps.
	005	0.21	4	1	N	N/A	N/A	<25	Watercourse not apparent (in relation to SuDS hierarchy if infiltration is not possible)
	012	1.2	24	1	N	N/A	N/A	<25	New site – no LLFA comments at present

Bawdeswell LP[004]	008	1.6	36	1	N	1 in 100 and 1 in 1000 years	15%	N/A	No apparent connection to a watercourse (in relation to SuDs hierarchy if infiltration is not possible). Small element of ponding of surface water on the site in the 1 in 100 year with respect to the Updated Flood Maps for Surface Water which would need to be considered at a planning application stage.
	005	2.2	55	1	N	1 in 1000 years	5%	<25	Small areas of ponding from surface water in 1 in 1000 year. Watercourse not apparent (in relation to SuDs hierarchy if infiltration is not possible).
	007	1.79	44	1	N	1 in 1000 years	5%	N/A	Small areas of ponding from surface water in 1 in 1000 year. Watercourse not apparent (in relation to SuDs hierarchy if infiltration is not possible).
Garboldisham LP[031]	004	1	25	1	N	1 in 100 and 1 in 1000 years	30%	> = 25<50	Surface water flow path along the western boundary of the site in a 1 in 100 year and 1 in 1000 year as indicated on the Updated Flood Maps for Surface Water which is indicating a risk of fluvial flooding from the ordinary watercourse. This would need to be taken into account of during any planning application and mitigated for.
	005	0.46	10	1	N	1 in 100 and 1 in 1000 years	25%	> = 25<50	Surface water flow path along the western boundary of the site in a 1 in 100 year and 1 in 1000 year as indicated on the Updated Flood Maps for Surface Water which is indicating a risk of fluvial flooding from the ordinary watercourse. This would need to be taken into account of during any planning application and mitigated for.
Great Ellingham LP[037]	004	0.59	10	1	N	N/A	N/A	> = 25<50	We are currently awaiting more information from the application to ensure that development does not increase the risk of flooding elsewhere and surface water drainage can be achieved on the site.
	015	0.4	10	1	N	N/A	N/A	<25	No apparent connection to a watercourse (in relation to SuDS hierarchy, if infiltration is not possible).
	019	1.9	20	1	N	1 in 1000 years	5%	0 <25 > = 25<50	No apparent connection to a watercourse (in relation to SuDS hierarchy, if infiltration is not possible).
	016	1.44	37	1	N	1 in 1000 years	1%	0	No apparent connection to a watercourse (in relation to SuDS hierarchy, if infiltration is not possible).
	020	1.43	59	1	N	N/A	N/A	N/A	No apparent connection to a watercourse (in relation to SuDS hierarchy, if infiltration is not possible).

Harling LP[042]	001	5.3	85	1	N	1 in 1000 years	1%	<25 >= 75	No apparent connection to a watercourse (in relation to SuDS hierarchy, if infiltration is not possible). No apparent flood risk in relation to the Updated flood Map for Surface Water identified for this site.
	008	0.4	14	1	N	1 in 100 and 1 in 1000 years	10%	>= 25<50 >= 75	There are some areas of surface water flooding indicated within the site for the 1 in 100 and 1 in 1000 year updated surface water flood map. This would need to be taken account of in any planning application and mitigation (including avoidance) considered.
Hockering LP[044]	004B	0.81	25	1	N	1 in 1000 years	0.5%	<25	No apparent connection to a watercourse (in relation to SuDS hierarchy, if infiltration not possible).
	004A	0.82	25	1	N	1 in 100 and 1 in 1000 years	60%	<25 >= 25<50	There are two ordinary watercourses on the boundary of the site. Around half of site is shown to be at risk from affected by ponding from surface water flow path in 1 in 1000 year and part of the site is at risk from surface water in 1 in 100 year.
Kenninghall LP[051]	003	0.6	15	1	N	1 in 1000 years	5%	<25	No apparent direct connection a watercourse (in relation to SuDS hierarchy, if infiltration is not possible). Permission may be needed to cross third party land.
	008	3.62	20	1	N	N/A	N/A	<25	No apparent direct connection a watercourse (in relation to SuDS hierarchy, if infiltration is not possible). Permission may be needed to cross third party land.
	004	0.25	6	1	N	N/A	N/A	>= 25<50	No apparent direct connection a watercourse (in relation to SuDS hierarchy, if infiltration is not possible). Permission may be needed to cross third party land.
	005	0.77	19	1	N	N/A	N/A	>= 25<50	No apparent direct connection a watercourse (in relation to SuDS hierarchy, if infiltration is not possible). Permission may be needed to cross third party land.
	010	1.98	49	1	N	N/A	N/A	<25	There is a significant surface water flow path indicated to flow through the site at both the 1 in 100 (flood zone 3) an 1 in 1000 (flood zone 2) year event as show on the updated surface water flood map. This may indicate risk from fluvial flooding from the ordinary watercourse and larger catchment.
Litcham LP[054]	005B	2.8	20	1	N	N/A	N/A	>= 25<50	No apparent flood risk in relation to the Updated flood Map for Surface Water identified for this site. No apparent connection to a watercourse) in relation to SuDS hierarchy, if infiltration is not possible).

	005A	1.12	10	1	N	N/A	N/A	> = 25<50	No apparent flood risk in relation to the Updated flood Map for Surface Water identified for this site. No apparent connection to a watercourse) in relation to SuDS hierarchy, if infiltration is not possible).
	006	13.8	276	1	N	1 in 1000 year	5%	>= 25% <50%	New site – no LLFA comments at present
	007	7.5	150	1	N	N/A	N/A	>= 25% <50%	New site – no LLFA comments at present
Mattishall LP[061]	015	0.33	10	1	N	1 in 100 and 1 in 1000 years	10%	> = 25<50	Some flood risk identified in the 1 in 30, 1 in 100 and 1 in 100 year updated surface water flood map on the adjacent road and possible into the site. This would need to be considered in any planning application. No apparent connection to a watercourse (in relation to SuDS hierarchy, if infiltration is not possible).
	019	0.4	65	1	N	1 in 100 and 1 in 1000 years	40%	> = 75	We highlighted significant constraints on this site due to flood risk from the ordinary watercourse (as highlighted in the 1 in 100 and 1 in 1000 year history on this site including flooding on the 7 January 2016. Careful consideration should be given for safe access / egress to the site from the main road (as any entrance will cross the area at risk of flooding)
	022	0.27	6	1	N	1 in 100 and 1 in 1000 years	90%	> = 75	Almost entire site covered by 1 in 1000 surface water flooding but shown clear of flooding in 1 in 100 event. LP[061]013 assessed as heavily constrained. This site must be given very careful consideration that it could be developed with mitigation (not to increase the risk of flooding elsewhere or to the development) if included within the local plan.
	025	0.71	17	1	N	1 to 100 and 1 to 1000 years	25%	> = 75	Half of site covered by 1 in 1000 surface water flooding and localised flooding in 1 in 10 event. LP[061]013 assessed as heavily constrained. This site must be given very careful consideration that it could be developed with mitigation (not to increase the risk of flooding elsewhere or to the development) if included within the local plan.
Narborough LP[065]	008	1.7	40	1	N	1 to 100 and 1 to 1000 years	2%	> = 25<50	No apparent connection to a watercourse (in relation to SuDS hierarchy).
Necton LP[067]	007	1.47	30	1 & 3a (approx.	Y (3a)	1 to 100 and 1 to	70%	> = 25<50 > = 75	There is a significant surface water flow path indicated to flow through the site at both the 1 in 100 (flood zone 3) and 1 in 1000

				10%)		1000 years			year (flood zone 2) from the updated surface water flood map. This may indicate risk from fluvial flooding from the ordinary watercourse and larger catchment. We previously provided comments on this site as part of the response to the Local Plan Assessment in 2015 and categorised as severely constrained. Additional information is required to show that this site could be included within the plan, including how development downstream would not be adversely affected. We also do not see how the two areas that may be developable (split by the surface water flood map) could be connected in a sustainable way. The number and density of housing achievable at this location may be significantly restricted.
010	1.66	20	1	N	1 to 100 and 1 to 1000 years	5%	> = 25<50 > = 75	Number of water features evident on site i.e. ponds, which need to be considered in any planning application. There is no watercourse apparent (in relation to SuDS hierarchy, if infiltration is not possible).	
011	1.2	25	1	N	1 to 100 and 1 to 1000 years	10%	> = 25<50	A small area adjacent the site is at risk out a 1 in 30 and 1 in 100 year event as indicated on the updated surface water flood map. No watercourse apparent (in relation to SuDS hierarchy /	
003	0.6	15	1	N	1 to 100 and 1 to 1000 years	30%	> = 25<50	Some of the site shown affected by ponding in a 1 in 100 year and a flow path in a 1 in 1000 year (flood zone 2) from the updated surface water flood map. This may indicate surface water flooding or fluvial flooding from the ordinary watercourse adjacent the site. Any development would need to carefully consider how this site could be developed without increasing the risk of flooding elsewhere or to any new housing. A detailed flood risk assessment is likely to be required. We are aware of historical flooding downstream of the site in Necton.	
004	0.3	7	1 & 3a (approx. 20%)	Y (3a)	1 to 100 and 1 to 1000 years	98%	> = 25<50	This site is almost entirely within the 1 in 100 (flood zone 3) and 1 in 1000 (flood zone 2) of the updated surface water flood maps. We do not see how this site can be developed without increasing the risk of flooding elsewhere or creating flood risk to new housing.	
005	3.8	100	1	N	1 to 100 and 1 to 1000 years	45%	> = 25<50	Half of site shown affected by ponding in a 1 in 100 year and a flow path in a 1 in 1000 (flood zone 3) from the updated surface water flood map. This may indicate surface water flooding or	

									fluvial flooding from the ordinary watercourse adjacent the site. Any development would need to carefully consider how this site could be developed without increasing the risk of flooding elsewhere or to any new housing. A detailed flood risk assessment is likely to be required. We are aware of historical flooding downstream of the site in Necton.
	005a	1.1	20	1	N	1 to 100 and 1 to 1000 years	60%	> = 25<50	Half of site shown affected by ponding in a 1 in 100 year and a flow path in a 1 in 1000 (flood zone 3) from the updated surface water flood map. This may indicate surface water flooding or fluvial flooding from the ordinary watercourse adjacent the site. Any development would need to carefully consider how this site could be developed without increasing the risk of flooding elsewhere or to any new housing. A detailed flood risk assessment is likely to be required. We are aware of historical flooding downstream of the site in Necton.
North Elmham LP[070]	001	2.4	16	1, 2 & 3a (approx. 10% flood zone 2 and 5% flood zone 3a)	Y (2 & 3a)	1 to 100 and 1 to 1000 years	15%	<25	We note that part of the site may be at risk of fluvial flooding from the adjacent ordinary watercourse. This would have to be considered at a planning application stage along with any requirement for surface water discharge (SuDS).
	008	1.7	40	1	N	1 to 1000 years	0.5%	<25 > = 75	No apparent flood risk in relation to the Updated flood Map for surface Water identified for this site. No apparent connection to a watercourse (in relation to SuDS hierarchy, if infiltration is not possible).
	007	0.96	24	1	N	1 to 100 and 1 to 1000 years	5%	> = 75	Any development here should consider the same comments made on this planning application.
	013	1.4	28	1	N	1 in 1000 years	5%	>= 75	New site – no LLFA comments at present
Old Buckenham LP[074]	006	0.3	10	1	N	1 to 100 and 1 to 1000 years	30%	<25	Some areas of the site are at flood risk in a 1 in 1000 year as indicated by the updated surface water map. Any planning application at this location would consider this within the development

	014	0.9	20	1	N	1 to 100 and 1 to 1000 years	1%	<25 > = 25<50	No watercourse apparent (in relation to SuDS hierarchy, if infiltration is not possible).
	015	3.4	68	1	N	1 in 1000, 1 in 100 and 1 in 30	5%	<25	New site – no LLFA comments at present
Shipdham LP[085]	002	1	23	1	N	1 to 1000 years	5%	> = 25<50	This should be considered during any planning application at this location as it may indicate local flood risk issues. No watercourse apparent (in relation to SuDS hierarchy).
	006	2.4	55	1	N	1 to 1000 years	2%	<25 > = 25<50	No watercourse apparent (in relation to SuDS hierarchy, if infiltration is not possible).
	009	3.36	83	1	N	1 to 100 and 1 to 1000 years	10%	<25	There is a small area of ponding in the north east corner of the site from surface water in 1 in 100 and 1 in 1000 year as indicated within the in updated surface water flood maps. There is also a historical record of flooding close by from July 2016 which is yet to be fully investigated by the LLFA which could be considered along with ponding of water on the site during a site specific planning application at the site.
Sporle LP[092]	005	2.1	35	1	N	1 to 100 and 1 to 1000 years	30%	N/A	There is a surface water flow path within the site boundary as indicated in the 1 in 30, 1 in 100 and 1 in 1000 year updated surface water flood map. This risk of flooding may be associated with the ordinary watercourse which runs between the road and the site. We would expect any development to consider the risks of flooding from the ordinary watercourse, how the site would be accessed without increasing the risk of flooding elsewhere or to the new development and if there could be safe access / egress to the site during a flood event.
	004	2.64	66	1	N	1 to 100 and 1 to 1000 years	10%	N/A	There is a surface water flow path on the adjacent road to the development site as indicated in the 1 in 30, 1 in 100 and 1 in 1000 year updated surface water flood map. This risk of flooding may be associated with the ordinary watercourse which runs between the road and the site. We would expect any development to consider the risks of flooding from the ordinary watercourse, how the site would be accessed without increasing the risk of flooding elsewhere or to the new development and if

									there could be safe access / egress to the site during a flood event.
Swanton Morley LP[098]	013	4.2	85	1	N	1 to 100 and 1 to 1000 years	5%	<25	There is an area of surface water ponding at a 1 in 30, 1 in 100 and 1 in 1000 year as indicated by the updated surface water flood map. This could be considered at a planning application stage in any development layout. No apparent connection to a watercourse (in relation to SuDS hierarchy, if infiltration is not possible).
	002	1.8	45	1	N	N/A	N/A	N/A	No apparent connection to a watercourse (in relation to SuDS hierarchy, if infiltration is not possible).
	003	2.9	73	1	N	1 to 1000 years	5%	0 <25	No apparent connection to a watercourse (in relation to SuDS hierarchy, if infiltration is not possible).
	014	3.7	92	1	N	1 to 1000 years	2%	<25	No apparent connection to a watercourse (in relation to SuDS hierarchy, if infiltration is not possible).
	016	1.9	47	1	N	1 to 1000 years	4%	<25	No apparent connection to a watercourse (in relation to SuDS hierarchy, if infiltration is not possible).
Yaxham LP[113]	007	1.3	25	1	N	N/A	N/A	<25	There are some small areas identified at risk of surface water flooding within the site at a 1 in 100 and 1 in 100 year as indicated on the updated surface water flood map. We noted that there was a watercourse potentially on the western boundary which may be associated with the areas identified at risk of flooding on the surface water flood map. Information on local flood risk and SuDS would be expected for any development here (if planning permission as not granted or this current planning permission lapsed).
	005	1	20	1	N	1 to 100 and 1 to 1000 years	15%	<25	No watercourse apparent (in relation to SuDS hierarchy, if infiltration is not possible).

7. Discussion

7.1. Of the Preferred and Alternative sites within the Preferred Site Options and Settlement Boundaries consultation document, 5 fall within Flood Zones 2 or 3a, while a further to this 22 sites are subject to more than 10% surface water flooding.

7.2. Site profiles have been prepared for these sites in order to assess the level of flood risk on these sites in more detail. These site profiles are presented below.

Dereham LP[025]003: Land off Yaxham Road	
Preferred Use	Residential
Current assessment	Reasonable Alternative
Site Flood Zone	1 and 3a (less than 10% area zone 3a)
Does the site lie in the functional floodplain? (Zone 3b)	no
Is the proposed use acceptable in this Flood Zone?	Yes – excluding the small part of the site which is within zone 3a
Is the site considered to be at risk from other forms of flooding?	Small pockets of surface water flooding 1 in 100 years and 1 in 1000 years – areas could be excluded from development
<p>Consideration: The LLFA and the surface water flood map indicate small isolated pockets of surface water flooding which would need to be taken into account in any planning application.</p> <p>A small part of the site is within fluvial flood zone 3a, mainly aligning with the field boundary edge running north-south at the eastern part of the site; the majority of the site is not at risk of flooding.</p> <p>The site has not been preferred for allocation. If the site were to be allocated; a site specific flood risk assessment should address identified issues and the use of SUDs should be implemented to manage increased run off from new development. The site is a large greenfield site and it is not envisaged that any solutions would be constrained by viability or layout issues.</p> <p>The overwhelming majority of the site is within Flood Zone 1. As such, it should be possible to ensure that built development is directed away from parts of the site that are within Flood Zone 3a.</p> <p>Recommendation: Update the Sustainability Appraisal assessment of the site to include surface water flooding. The site is a reasonable alternative option. Should the site be selected for allocation policy wording should ensure that a site specific flood risk assessment address identified issues and the use of SUDs should be implemented to manage increased run off from new development.</p>	

Dereham LP[025]023: Land off Swanton Road	
Preferred Use	Residential
Current assessment	Preferred
Site Flood Zone	1 and 3a (less than 5% area zone 3a)
Does the site lie in the functional floodplain? (Zone 3b)	no
Is the proposed use acceptable in this Flood Zone?	Yes – excluding the small part of the site which is within zone 3a
Is the site considered to be at risk from other forms of flooding?	Approx 15% of site subject to surface water flooding 1 in 100 & 1 in 1000 year event. A small proportion of the site is subject to 1 in 30 year event.
<p>Consideration: The LLFA and the surface water flood map indicate that a small part of the site is subject to surface water flooding and a small area of flood zone 3a, which would need to be taken into account in any planning application.</p> <p>The area of fluvial flood risk is situated to the southern and eastern boundaries of the site. It is envisaged that this would neither have an impact upon access to the site, nor substantially reduce the developable area of the site. The site is currently a preferred site within the Local Plan and if the site were to be allocated it would have to be demonstrated that any development would not increase flood risk elsewhere; ideally allocating land to reduce the risk of flooding elsewhere.</p> <p>There is also a larger area of surface water flooding towards the south west of the site, which would need to be considered during policy wording of the site were this to be brought forward for allocation through the Local Plan. As the overwhelming majority of the site is within Flood Zone 1, it should be possible to ensure that built development is directed away from parts of the site that are within Flood Zone 3a.</p> <p>Recommendation: Update the Sustainability Appraisal assessment of the site to include surface water flooding and ensure that policy wording sets outs that a site specific flood risk assessment should address identified issues and the use of SUDs should be implemented to manage increased run off from new development.</p>	

Swaffham LP[097]009: Land to the east of Brandon Road	
Preferred Use	Residential
Current Assessment	Preferred
Site Flood Zone	1
Does the site lie in the functional floodplain? (Zone 3b)	No
Is the proposed use acceptable in this Flood Zone?	Yes
Is the site considered to be at risk from other forms of flooding?	1 in 100 and 1 in 100 year surface water flood event.
<p>Consideration: The LLFA and the surface water flood map indicate small isolated pockets of surface water flooding which would need to be taken into account in any planning application.</p> <p>The site is split into two by the surface water flooding east to west and the LLFA consider that connection of the two parts of the site should be considered in a sustainable way where both can be accessed during a flood event.</p> <p>The site is currently a preferred site within the emerging Local Plan; however, the site is a large greenfield site and it is not envisaged that any solutions would be constrained by viability or layout issues.</p> <p>Recommendation: Update the Sustainability Appraisal assessment of the site to include surface water flooding and ensure that policy wording sets outs that a site specific flood risk assessment should address identified issues and the use of SUDs should be implemented to manage increased run off from new development.</p>	

Swaffham LP[097]010: Land to the south of Norwich Road	
Preferred Use	Residential
Current Assessment	Preferred
Site Flood Zone	1
Does the site lie in the functional floodplain? (Zone 3b)	No
Is the proposed use acceptable in this Flood Zone?	Yes
Is the site considered to be at risk from other forms of flooding?	1 in 30, 1 in 100 and 1 in 1000 year surface water flooding covering approximately 30% of the site.
<p>Consideration: The LLFA and the surface water flood map indicate that there is a significant surface water flow through approximately 30% of the site.</p> <p>Planning permission is currently being sought on the site and through this process the applicant has demonstrated that the areas of flooding can be avoided to ensure that new development would be free from a risk of flooding and that there would be not increase risk of flooding elsewhere.</p> <p>The site is currently a preferred site for allocation and a site specific flood risk assessment should address identified issues and the use of SUDs should be implemented to manage increased run off from new development. The site is a large greenfield site and it is not envisaged that any solutions would be constrained by viability or layout issues.</p> <p>Recommendation: Update the Sustainability Appraisal assessment of the site to include surface water flooding and ensure that policy wording sets outs that the developable area of the site would be reduced in order to ensure that new development would be free from a risk of flooding and that there would not be an increased risk of flooding elsewhere.</p>	

Watton LP[104]001: Land off Norwich Road	
Preferred Use	Residential
Current Assessment	Reasonable Alternative
Site Flood Zone	1
Does the site lie in the functional floodplain? (Zone 3b)	No
Is the proposed use acceptable in this Flood Zone?	Yes
Is the site considered to be at risk from other forms of flooding?	Approx. 10% of site subject to 1 in 1000 year flood event. Smaller areas subject to 1 in 100 and 1 in 30 year event.
<p>Consideration: The LLFA and the surface water flood map indicate that some areas of the site are at risk of 1 in 100 and 1 in 1000 year flood events.</p> <p>The area of surface water flood risk is located to the north of the site along church walk and would reduce the developable area of the site.</p> <p>The site is currently considered to be a reasonable alternative within the Local Plan. The LLFA highlight that historic flood events in Watton are not associated with areas identified at risk of flooding from surface water which may indicate there are other sources of local flood risk that would need to be considered if this site were to be allocated or at a planning application stage.</p> <p>Recommendation: Update the Sustainability Appraisal assessment of the site to include surface water flooding. The site is currently not preferred for allocation in the Local Plan. If the site were to be allocated it is recommended that policy wording sets out that the developable area of the site would be reduced in order to ensure that new development would be free from a risk of flooding and that there would not be an increased risk of flooding elsewhere.</p>	

Banham LP[003]003: Land south of Greyhound Lane	
Preferred Use	Residential
Current Assessment	Preferred
Site Flood Zone	1 and 3a (approx. 30%)
Does the site lie in the functional floodplain? (Zone 3b)	No
Is the proposed use acceptable in this Flood Zone?	Yes
Is the site considered to be at risk from other forms of flooding?	Site subject to 1 in 100 and 1 in 1000 year surface water flooding
<p>Consideration: The LLFA and the surface water flood map indicate that there is a significant surface water flow through approximately 50% of the site and that approximately 30% of the site is situated within Flood Zone 3a.</p> <p>The area of Flood Zone 3a dissects the site west to east reducing the developable area of the site to frontage development along Greyhound lane. The 1 in 30 and 1 in 100 year flood event surface water flooding essentially mirrors the fluvial flood zone; however, the 1 in 1000 year flood event does have a further impact upon the developable area to the north of the site.</p> <p>The site is constrained in terms of size and flood risk on the site; however, the proposed allocation within the local plan seeks to reduce numbers and allow for frontage development that would be situated within Flood zone 1.</p> <p>The site is currently a preferred site within the Local Plan. If the site were to be allocated a site specific flood risk assessment should address identified issues and the use of SUDs should be implemented to manage increased run off from new development.</p> <p>Recommendation: Update the Sustainability Appraisal assessment of the site to reflect surface water flooding. Reconsider options for the site and proposed alternatives, taking into consideration the likelihood that the level of development allocated for the site may be restricted on account of both fluvial and surface water flood risk.</p>	

Banham LP[003]004: Land south of Heath Road	
Preferred Use	Residential
Current Assessment	Reasonable Alternative
Site Flood Zone	1
Does the site lie in the functional floodplain? (Zone 3b)	No
Is the proposed use acceptable in this Flood Zone?	Yes
Is the site considered to be at risk from other forms of flooding?	Site subject to 1 in 1000, 1 in 100 and 1 in 30 year surface water flooding
<p>Consideration: The LLFA and the surface water flood map indicates that the site is almost entirely inundated in 1 in 100 year flood event, while significant areas of the site are subject to 1 in 30 year flood event. The LLFA have also assessed the constraints on the site as “Significant migration required for severe constraints” and recommended a review of the site and potential removal from the Local Plan.</p> <p>The site is currently a reasonable alternative within the Local Plan; however, any development of this site may increase the risk of flooding to adjacent properties.</p> <p>Recommendation: Update the Sustainability Appraisal assessment of the site to reflect surface water flooding. Due to the level of flood risk on the site, it is recommended that the site is not allocated for development in the Local Plan unless there were no more reasonable alternative options available for development.</p>	

Bawdeswell LP[004]008: Land off Hall Road	
Preferred Use	Residential
Current Assessment	Preferred
Site Flood Zone	1
Does the site lie in the functional floodplain? (Zone 3b)	No
Is the proposed use acceptable in this Flood Zone?	Yes
Is the site considered to be at risk from other forms of flooding?	Approx. 10% of site subject to 1 in 100 and 1 in 1000 year flood
<p>Consideration: The LLFA and the surface water flood map indicate that the site is subject to a small element of ponding of surface water on the site in the 1 in 100 year.</p> <p>The surface water flooding is limited to the south east of the site and would not have an impact upon the deliverability of the site.</p> <p>The site is considered a preferred site within the emerging Local Plan. If the site were to be allocated then this would need to be mitigated against before development could come forward on site.</p> <p>Outline planning permission has been granted for residential development on the site.</p> <p>Recommendation: Update the Sustainability Appraisal assessment of the site to include surface water flooding. The site has full planning permission for 36 dwellings subject to section 106. Local Plan policy wording will require any subsequent application to address identified surface water flood risk.</p>	

Garboldisham LP[031]004: Land to the west of Hopton Road (south)	
Preferred Use	Residential
Current Assessment	Preferred
Site Flood Zone	1
Does the site lie in the functional floodplain? (Zone 3b)	No
Is the proposed use acceptable in this Flood Zone?	Yes
Is the site considered to be at risk from other forms of flooding?	Approx. 25% of the site subject to 1 in 100 and 1 in 1000 year flood event.
<p>Consideration: The LLFA and the surface water flood map indicate that the western boundary of the site is subject to 1 in 1000 and, to a lesser extent, 1 in 100 year flood events.</p> <p>The site is currently considered to be a preferred site within the emerging Local Plan and prior to development of the site a site specific flood risk assessment should address identified issues and the appropriate mitigation. The extent and location of the surface water flooding should not bring into question the viability of the site, but may have an impact upon the layout.</p> <p>Recommendation: Update the Sustainability Appraisal assessment of the site to include surface water flooding and ensure the policy wording sets out that a site specific flood risk assessment should address identified issues and the use of SUDs should be implemented to manage increased run off from new development.</p>	

Garboldisham LP[031]005: Land to the west of Hopton Road (north)	
Preferred Use	Residential
Current Assessment	Preferred
Site Flood Zone	1
Does the site lie in the functional floodplain? (Zone 3b)	No
Is the proposed use acceptable in this Flood Zone?	Yes
Is the site considered to be at risk from other forms of flooding?	Approx. 30% of the site subject to 1 in 100 and 1 in 1000 year flood event.
<p>Consideration: The LLFA and the surface water flood map indicate that the western boundary of the site is subject to 1 in 1000 and, to a lesser extent, 1 in 100 year flood events.</p> <p>The site is currently considered to be a preferred site within the emerging Local Plan and prior to development of the site a site specific flood risk assessment should address identified issues and the appropriate mitigation. The extent and location of the surface water flooding should not bring into question the viability of the site, but may have an impact upon the layout.</p> <p>Recommendation: Update the Sustainability Appraisal assessment of the site to include surface water flooding and ensure that the policy wording sets out that a site specific flood risk assessment should address identified issues and the use of SUDs should be implemented to manage increased run off from new development.</p>	

Harling LP[042]008: Land west of Gardboldisham Road	
Preferred Use	Residential
Current Assessment	Alternative
Site Flood Zone	1
Does the site lie in the functional floodplain? (Zone 3b)	No
Is the proposed use acceptable in this Flood Zone?	Yes
Is the site considered to be at risk from other forms of flooding?	Approx. 10% of the site subject to 1 in 100 and 1 in a 1000 year flood event.
<p>Consideration: The LLFA and the surface water flood map indicate that the western and southern boundaries of the site are subject to 1 in 100 and 1 in 1000 year flood events.</p> <p>The site is currently considered as a reasonable alternative option through the Local Plan; however, if the site were to be brought forward a site specific flood risk assessment should address identified issues and appropriate mitigation prior to development of the site. The extent and location of the surface water flooding should not bring into question the viability of the site, but may have an impact upon the layout.</p> <p>Recommendation: Update the Sustainability Appraisal assessment of the site to include surface water flooding and ensure that policy wording sets out that the developable area of the site would be reduced in order to ensure that new development would be free from a risk of flooding and that there would not be an increased risk of flooding elsewhere.</p>	

Hockering LP[044]004A: Land off the Street	
Preferred Use	Residential
Current Assessment	Alternative
Site Flood Zone	1
Does the site lie in the functional floodplain? (Zone 3b)	No
Is the proposed use acceptable in this Flood Zone?	Yes
Is the site considered to be at risk from other forms of flooding?	Approx. 60% of the site subject to 1 in 100, 1 in 1000 and to a lesser extent 1 in 30 year flood event.
<p>Consideration: The LLFA and the surface water flood map indicate that approximately 60% of the site is situated within 1 in 100, 1 in 1000 year flood event and, to a lesser extent, 1 in 30 year flood event.</p> <p>The location of the surface water flooding is predominantly along the southern and south east edge of the site, which would provide the access to the site.</p> <p>The site is currently considered as a reasonable alternative through the Local Plan; however if this site were to be taken forward then, in line with LLFA comments, it would need careful consideration in order to be taken forward.</p> <p>Recommendation: Update the Sustainability Appraisal assessment of the site to reflect surface water flooding and, on the back of this, consider the status of the allocation within the Local Plan.</p>	

Mattishall LP[061]015: Malthouse Buildings, Norwich Road	
Preferred Use	Residential
Current Assessment	Preferred
Site Flood Zone	1
Does the site lie in the functional floodplain? (Zone 3b)	No
Is the proposed use acceptable in this Flood Zone?	Yes
Is the site considered to be at risk from other forms of flooding?	Approx. 10% of the site subject to surface water 1 in 1000 year extent and, to a lesser extent, 1 in 100 and 1 in 30 year extent.
<p>Consideration: The LLFA and the surface water flood map indicate that approximately 10% of the site is situated within 1 in 1000 year flood event and, to a lesser extent, 1 in 100 and 1 in 30 year flood event. The surface water flooding on the site affects an area to the north east of the site along the Norwich Road.</p> <p>The site is currently considered preferred through the Local Plan. Only a small proportion of the site is affected by a low risk of surface water flooding. This is unlikely to constrain the developable area of the site but will require further assessment should the site be subject to a planning application.</p> <p>Recommendation: Update the Sustainability Appraisal assessment of the site to include surface water flooding. Local Plan policy wording should ensure that any planning application has regard to identified surface water flood risk.</p>	

Mattishall LP[061]019: Land west of Rayner's Farm	
Preferred Use	Residential
Current Assessment	Preferred
Site Flood Zone	1
Does the site lie in the functional floodplain? (Zone 3b)	No
Is the proposed use acceptable in this Flood Zone?	Yes
Is the site considered to be at risk from other forms of flooding?	Approx. 40% of the site subject to 1 in 1000 and 1 in 100 year flood events with smaller areas of the site subject to pockets of 1 in 30 year flood events.
<p>Consideration: The LLFA and the surface water flood map indicate that approximately 40% of the site is situated within 1 in 1000 year flood event and, to a lesser extent, 1 in 100 and 1 in 30 year flood event.</p> <p>The majority of the flood risk on the site is situated along the north east and north west of the site. This would need to be reflected in the developable area of the site.</p> <p>The site is currently a preferred site within the Local Plan and if the site were to be brought forward the developable area may have to be reduced and mitigation considered. Furthermore careful consideration should be given for access/egress to the site from the main road.</p> <p>Recommendation: Update the Sustainability Appraisal assessment of the site to include surface water flooding and ensure that policy wording sets out that a site specific flood risk assessment should address identified issues and the use of SUDs should be implemented to manage increased run off from new development.</p>	

Mattishall LP[061]022: Land off Rayner's Way	
Preferred Use	Residential
Current Assessment	Alternative
Site Flood Zone	1
Does the site lie in the functional floodplain? (Zone 3b)	No
Is the proposed use acceptable in this Flood Zone?	Yes
Is the site considered to be at risk from other forms of flooding?	Approx. 90% of the site is subject to 1 in 1000 with a small area of the boundary of the site subject to 1 in 100 year flood event.
<p>Consideration: The LLFA and the surface water flood map indicate that approximately 90% of the site is situated within 1 in 1000 year flood event and, to a lesser extent, 1 in 100 year flood event.</p> <p>The site is currently an alternative site within the Local Plan and if the site were to be brought forward then careful consideration would need to be given to mitigation in order to ensure that the risk of flooding were not increased elsewhere.</p> <p>Recommendation: Update the Sustainability Appraisal assessment of the site to reflect surface water flooding and, on the back of this, consider the status of the allocation within the Local Plan.</p>	

Mattishall LP[061]025: Land south of Dereham Road	
Preferred Use	Residential
Current Assessment	Alternative
Site Flood Zone	1
Does the site lie in the functional floodplain? (Zone 3b)	No
Is the proposed use acceptable in this Flood Zone?	Yes
Is the site considered to be at risk from other forms of flooding?	Approx. 25% of the site is subject to 1 in 1000 with a small area of the site subject to 1 in 100 year flood event.
<p>Consideration: The LLFA and the surface water flood map indicate that approximately 25% of the site is situated within 1 in 1000 year flood event and, to a lesser extent, 1 in 100 year flood event.</p> <p>The area at risk of surface water flooding is situated to the north of the site.</p> <p>The site is currently an alternative site within the Local Plan and if the site were to be brought forward then careful consideration would need to be given to mitigation in order to ensure that the risk of flooding were not increased elsewhere.</p> <p>Recommendation: Update the Sustainability Appraisal assessment of the site to reflect surface water flooding and, on the back of this, consider the status of the allocation within the Local Plan.</p>	

Necton LP[067]003: Land off Brackenwoods	
Preferred Use	Residential
Current Assessment	Alternative
Site Flood Zone	1
Does the site lie in the functional floodplain? (Zone 3b)	No
Is the proposed use acceptable in this Flood Zone?	Yes
Is the site considered to be at risk from other forms of flooding?	Approx. 30% of the site subject to 1 in 1000 year, 1 in 100 year and 1 in 30 year surface water flooding event.
<p>Consideration: The LLFA and the surface water flood map indicate that approximately 30% of the site is situated within 1 in 1000 year flood event and, to a lesser extent, 1 in 100 and 1 in 30 year flood event.</p> <p>The area of surface water flooding is situated primarily along the western edge of the site. This would need to be reflected in the developable area of the site.</p> <p>The site is currently an alternative site within the Local Plan and if the site were to be brought forward then careful consideration would need to be given to mitigation in order to ensure that the risk of flooding were not increased elsewhere. A detailed flood risk assessment is likely to be required if the site were to come forward.</p> <p>Recommendation: Update the Sustainability Appraisal assessment of the site to reflect surface water flooding and, on the back of this, consider the status of the allocation within the Local Plan.</p>	

Necton LP[067]004: Land to the north of School Road	
Preferred Use	Residential
Current Assessment	Alternative
Site Flood Zone	Partially within Flood Zone 3a
Does the site lie in the functional floodplain? (Zone 3b)	No
Is the proposed use acceptable in this Flood Zone?	Yes
Is the site considered to be at risk from other forms of flooding?	95% of the site subject to 1 in 1000 year surface water flood event with a smaller area subject to 1 in 100 and 1 in 30 year flood event.
<p>Consideration: The LLFA and the surface water flood map indicate that approximately 95 % of the site is situated within 1 in 1000 year flood event and, to a lesser extent, 1 in 100 and 1 in 30 year flood event. The LLFA have also assessed the constraints on the site as “Significant migration required for severe constraints” and recommended a review of the site and potential removal from the Local Plan.</p> <p>The site is currently an alternative site within the Local Plan, but the LLFA consider that the site cannot be developed without increasing the risk of flooding elsewhere or creating flood risk to new housing.</p> <p>Recommendation: Update the Sustainability Appraisal assessment of the site to reflect surface water flooding. Due to the level of flood risk on the site, it is recommended that the site is not allocated for development in the Local Plan unless there were no more reasonable alternative options available for development.</p>	

Necton LP[067]005: Land to the east of Brackenwoods	
Preferred Use	Residential
Current Assessment	Alternative
Site Flood Zone	1
Does the site lie in the functional floodplain? (Zone 3b)	No
Is the proposed use acceptable in this Flood Zone?	Yes
Is the site considered to be at risk from other forms of flooding?	45% of the site subject to 1 in 1000 year surface water flood event with a smaller area subject to 1 in 100 and 1 in 30 year flood event.
<p>Consideration: The LLFA and the surface water flood map indicate that approximately 45% of the site is situated within 1 in 1000 year flood event and, to a lesser extent, 1 in 100 and 1 in 30 year flood event.</p> <p>The surface water flooding runs from the south west of the site to the north east. This would need to be considered if the site were taken forward as an allocation.</p> <p>The site is currently an alternative site within the Local Plan and if the site were to be brought forward then careful consideration would need to be given to mitigation in order to ensure that the risk of flooding were not increased elsewhere. A detailed flood risk assessment is likely to be required if the site were to come forward.</p> <p>Recommendation: Update the Sustainability Appraisal assessment of the site to reflect surface water flooding and, on the back of this, consider the status of the allocation within the Local Plan.</p>	

Necton LP[067]005a: Land to the east of Brackenwoods	
Preferred Use	Residential
Current Assessment	Alternative
Site Flood Zone	1
Does the site lie in the functional floodplain? (Zone 3b)	No
Is the proposed use acceptable in this Flood Zone?	Yes
Is the site considered to be at risk from other forms of flooding?	60% of the site subject to 1 in 1000 year surface water flood event with a smaller area subject to 1 in 100 and 1 in 30 year flood event.
<p>Consideration: The LLFA and the surface water flood map indicate that approximately 60% of the site is situated within 1 in 1000 year flood event and, to a lesser extent, 1 in 100 and 1 in 30 year flood event.</p> <p>The surface water flooding is predominantly along the eastern and western edges of the site with further ponding to the south west of the site. This would need to be reflected in the developable area of the site.</p> <p>The site is currently an alternative site within the Local Plan and if the site were to be brought forward then careful consideration would need to be given to mitigation in order to ensure that the risk of flooding were not increased elsewhere. A detailed flood risk assessment is likely to be required if the site were to come forward.</p> <p>Recommendation: Update the Sustainability Appraisal assessment of the site to reflect surface water flooding and, on the back of this, consider the status of the allocation within the Local Plan.</p>	

Necton LP[067]007: Land off Hale Road	
Preferred Use	Residential
Current Assessment	Preferred
Site Flood Zone	1 and partially 3a (approx. 10% of the site)
Does the site lie in the functional floodplain? (Zone 3b)	No
Is the proposed use acceptable in this Flood Zone?	Yes
Is the site considered to be at risk from other forms of flooding?	70% of the site subject to 1 in 1000 year surface water flood event with a smaller area subject to 1 in 100 and 1 in 30 year flood event.
<p>Consideration: The LLFA and the surface water flood map indicate that approximately 70% of the site is situated within 1 in 1000 year flood event and, to a lesser extent, 1 in 100 and 1 in 30 year flood event. Furthermore, approximately 10% of the site is situated within flood zone 3a. The LLFA have also assessed the constraints on the site as “Significant migration required for severe constraints” and recommended a review of the site and potential removal from the Local Plan.</p> <p>The area subject to Fluvial flooding extends from the south east through the middle of the site. The areas of surface water flooding cover the majority of the site. This is likely to restrict the developable area of the site.</p> <p>The site is currently considered a preferred site within the Local Plan, but the LLFA consider that additional information is required to show that this site could be included within the plan, including how development would not be put at risk and existing development downstream would not be adversely affected. Further information would be required to show how the two parts of the site can be connected in a sustainable way. The number and density of housing achievable at this location may be significantly restricted.</p> <p>Recommendation: Update the Sustainability Appraisal assessment of the site to reflect surface water flooding. Due to the level of flood risk on the site, it is recommended that the site is not allocated for development in the Local Plan unless there were no more reasonable alternative options available for development.</p>	

North Elmham LP[070]001: Land at Holt Road	
Preferred Use	Residential
Current Assessment	Preferred
Site Flood Zone	1, 2 and 3a (approx. 10% flood zone 2 and 5% 3a)
Does the site lie in the functional floodplain? (Zone 3b)	No
Is the proposed use acceptable in this Flood Zone?	Yes
Is the site considered to be at risk from other forms of flooding?	Approx. 15% of the site is situated within 1 in 1000 year flood event and, to a lesser extent, 1 in 100 and 1 in 30 year flood event.
<p>Consideration: The LLFA and the surface water flood map indicate that approximately 15 % of the site is situated within 1 in 1000 year flood event and, to a lesser extent, 1 in 100 and 1 in 30 year flood event. Furthermore, approximately 10% of the site is situated within flood zone 2 and 3a.</p> <p>The areas of fluvial flooding and surface water flooding are situated along the southern most boundary of the site, with the area of flood zone 3a being situated to the south west of the site. A planning application on the site indicates that access can be achieved to the east of the site, avoiding the flood risk area; the majority of the site is situated within Flood Zone 1.</p> <p>The site is currently considered a preferred site within the Local Plan. A small part of the site may be at risk of fluvial flooding from the adjacent ordinary watercourse. This would have to be considered if the site were to be brought forward.</p> <p>Recommendation: Update the Sustainability Appraisal assessment of the site to include surface water flooding. Ensure that policy wording sets outs that a site specific flood risk assessment should address identified issues and the use of SUDs should be implemented to manage increased run off from new development.</p>	

Old Buckenham LP[074]006: Land west of Attleborough Road	
Preferred Use	Residential
Current Assessment	Preferred
Site Flood Zone	1
Does the site lie in the functional floodplain? (Zone 3b)	No
Is the proposed use acceptable in this Flood Zone?	Yes
Is the site considered to be at risk from other forms of flooding?	Approx. 30% of the site situated within 1 in 1000 year flood event and, to a lesser extent 1 in 100 year flood event.
<p>Consideration: The LLFA and the surface water flood map indicate that approximately 30 % of the site is situated within 1 in 1000 year flood event and, to a lesser extent, 1 in 100 flood event.</p> <p>The area of surface water flooding runs from south to north through the middle of the site and also runs along the access road. However; the majority of this is 1 in 1000 year and the LLFA have Assessed the site as having “Few or No Constraints”.</p> <p>The site is currently considered a preferred option within the local plan; additional information would be required were the site to come forward for development.</p> <p>Recommendation: Update the Sustainability Appraisal assessment of the site to include surface water flooding. Ensure that policy wording sets out that a site specific flood risk assessment should address identified issues and the use of SUDs should be implemented to manage increased run off from new development.</p>	

Shipdham LP[085]009: 31 Market Street and Land west of Swan Lane	
Preferred Use	Residential
Current Assessment	Alternative
Site Flood Zone	1
Does the site lie in the functional floodplain? (Zone 3b)	No
Is the proposed use acceptable in this Flood Zone?	Yes
Is the site considered to be at risk from other forms of flooding?	Approx. 10% of the site situated within 1 in 1000 year flood event and, to a lesser extent 1 in 100 and 1 in 30 year flood event.
<p>Consideration: The LLFA and the surface water flood map indicate that approximately 10 % of the site is situated within 1 in 1000 year flood event and, to a lesser extent, 1 in 100 and 1 in 30 year flood event.</p> <p>The extent of surface water flooding is situated along the northern boundary of the site with an area of 1 in 100 and 1 in 30 year flood event in the north east corner of the site.</p> <p>The site is currently considered an alternative option within the Local Plan; prior to development coming forward on the site an assessment would need to be carried out to assess the historical flooding (July 2016) close by to the site.</p> <p>Recommendation: Update the Sustainability Appraisal assessment of the site to include surface water flooding.</p>	

Sporle LP[092]005: Land to the north of Essex Farm	
Preferred Use	Residential
Current Assessment	Preferred
Site Flood Zone	1
Does the site lie in the functional floodplain? (Zone 3b)	No
Is the proposed use acceptable in this Flood Zone?	Yes
Is the site considered to be at risk from other forms of flooding?	Approx. 30% of the site situated within 1 in 1000 year flood event and, to a lesser extent 1 in 100 and 1 in 30 year flood event.
<p>Consideration: The LLFA and the surface water flood map indicate that approximately 30 % of the site is situated within 1 in 1000 year flood event and, to a lesser extent, 1 in 100 and 1 in 30 year flood event.</p> <p>Part of the site is subject to surface water flooding running north to south near the frontage; additional information would be required were the site to come forward for development.</p> <p>The site is currently considered a preferred option within the local plan. The LLFA expect any development to consider the risks of flooding from the ordinary watercourse, how the site would be accessed without increasing the risk of flooding elsewhere or the new development if there could be safe access/egress to the site during a flood event.</p> <p>Recommendation: Update the Sustainability Appraisal assessment of the site to include surface water flooding. Ensure the Local Plan policy wording specifies that new development would be free from a risk of flooding and that there would not be an increased risk of flooding elsewhere and to ensure that safe access can be achieved during a flood event.</p>	

Yaxham LP[113]005: Land to the north of Norwich Road	
Preferred Use	Residential
Current Assessment	Alternative
Site Flood Zone	1
Does the site lie in the functional floodplain? (Zone 3b)	No
Is the proposed use acceptable in this Flood Zone?	Yes
Is the site considered to be at risk from other forms of flooding?	1 in 1000 and 1 in 100 year surface water flood event.
<p>Consideration: The LLFA and the surface water flood map indicate that approximately 15 % of the site is situated within 1 in 1000 year flood event and, to a lesser extent, 1 in 100 year flood event.</p> <p>Part of the site is subject to surface water flooding running north to south near the frontage of the western boundary; additional information would be required were the site to come forward for development.</p> <p>The site is currently considered an alternative option within the local plan. The LLFA indicated that information on local flood risk and SuDs would be expected for any development in this location.</p> <p>Recommendation: Update the Sustainability Appraisal assessment of the site to reflect surface water flooding and, on the back of this, consider the status of the allocation within the Local Plan.</p>	

8. The Exception Test

- 8.1. If, following the application of the Sequential Test, it is not possible for the development to be located in zones with a lower probability of flooding (Zone 1); the Exception Test can be applied.
- 8.2. Table 3, in Appendix A, sets out the instances where an Exception Test will be required. As indicated in this table, it is necessary to apply the Exception Test when it is proposed to allocate a site in Flood Zone 3a for a 'more vulnerable' use, such as housing. An Exception Test is not required when a 'less vulnerable' uses, such as offices, industry and storage or distribution uses, is proposed on a site in Flood Zone 3a.
- 8.3. The following parishes contain sites that are preferred within the Local Plan that are for residential use and are situated within flood zone 3a.
 - Banham, Land South of Greyhound lane
 - Dereham, Land off Swanton Road
 - Necton, Land off Hale Road
 - North Elmham, Land at Holt Road
- 8.4. The following parishes contain sites that are reasonable alternatives within the Local Plan that are for residential use and are situated within flood zone 3a.
 - Dereham, Land off Yaxham Road
 - Necton, land to the north of School Road
- 8.5. If it is proposed to direct housing to the part of these sites that fall within Flood Zone 3a or within areas subject to surface water flooding, it will be necessary for the sites to pass the exception test.
- 8.6. For the exception test to be passed it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk and a site-specific Flood Risk Assessment must demonstrate that the development will be safe for its lifetime without increasing flood risk elsewhere.
- 8.7. In regard to the first part of this assessment each of the sites has been subject to a Sustainability Appraisal (SA) and have all performed well against the sustainability criteria. However, in regard to the second element of the Exception Test a site specific Flood Risk Assessment has not been prepared for the sites.
- 8.8. The following sets out a detailed assessment of each settlement where a site falls within Flood Zone 3a and the potential requirement for conducting an exception test.

Banham

- 8.9. The current preferred site in Banham, Land South of Greyhound Lane, is partially situated within Flood Zone 3a and is subject to approximately 50% 1 in 1000 year surface water flooding event, and, to a lesser extent, 1 in 100 and 1 in 50 year event (Appendix B). The current allocation within the Local Plan seeks to avoid the areas at risk of flood risk and to develop along the frontage of Greyhound lane. The sustainability appraisal (SA) for the site indicated that the benefits regarding the site include improving health and wellbeing, creating inclusive communities and reducing carbon emissions due to the proximity of the site to key services and facilities.
- 8.10. During the Preferred Sites and Settlement Boundaries Consultation, which was conducted in September and October 2016, a further, targeted, call for sites was conducted for sites in Banham. On the back of this it is considered that the new sites would create equal benefits when measured against the SA criteria, whilst being outside of the flood zone and not being subject to surface water flooding. If the Land South of Greyhound Lane were to be taken forward then an exception test would be required in order to justify the allocation of this site; however, if the allocation is to be removed then it is considered that the exception test would not be required in Banham.

Dereham

- 8.11. Both the Preferred Site, Land off Swanton Road, and the alternative site, Land off Yaxham Road, are partially within Flood Zone 3a (approximately 5% and 10% respectively). The sites scored positively against the SA criteria, particularly in respect to distance from services and facilities. Furthermore, the sites are large greenfield sites on the edge of the settlement, and, therefore, it is considered that subject to avoiding the flood risk areas, an exception test would not be required.

Necton

- 8.12. The Local Plan currently identifies the sites Land off Hale Road and Land to the north of School Road as preferred and alternative sites respectively. The LLFA has recommended a review and the potential removal of these sites from the local plan (Appendix B illustrates the issues regarding LP[067]007). Through the sequential test it is proposed that both of these sites are removed in line with LLFA recommendations as there are other sites that are less at risk from fluvial and surface water flooding. As a result an exception test would not be required.

North Elmham

- 8.13. The preferred site in North Elmham, land at Holt Road, is subject to a small area of fluvial and surface water flooding. The site scores positively against the SA criteria, particularly in respect to inclusive communities. Furthermore, the application on the site provides further open space and avoids the flood risk area of the site. Subject to any development avoiding the flood risk area of the site an exception test would not be required.

9. Conclusion

- 9.1. The report has assessed the sites proposed for allocation by the Local Plan in terms of the proposed use against the vulnerability of the site to flooding. The report has considered the level of flood risk at each of the preferred and alternative sites along with new sites that were submitted during the previous consultation. A number of these sites contain pockets of land that susceptible to surface water flooding. Six of the proposed residential allocations also contain land that is within Flood Zone 2 and/or 3a.
- 9.2. Following the sequential test, it is recommended that the status of the following preferred sites is reconsidered in the Local Plan:
- Banham LP[003]003
 - Necton LP[067]007
- 9.3. It is recommended that the status of the following reasonable alternative sites is reconsidered in the Local Plan:
- Banham LP[003]004
 - Hockering LP[004]004A
 - Mattishall LP[061]022
 - Necton LP[067]004
 - Necton LP[067]005a
- 9.4. The report has also considered the need to apply the Exception Test to the proposed allocations. The report has highlighted that six housing sites contain some land within Flood Zone 3a and that residential development in these locations would need to pass the Exception Test if housing is to be directed to the parts of the site that are within Flood Zone 3a. However, this report has shown that four of these sites are subject to only a relatively small amount of Flood Zone 3a and it should be possible for the housing on these sites to be directed away from the parts of the site that have a high probability of flooding which would negate the need for the Exception Test to be applied to these sites. The further two sites have been proposed to be removed from the Local Plan, which would also negate the need for the Exception Test to be applied.

Appendix A

Table 1: Flood Zones

Paragraph: 065 Reference ID: 7-065-20140306

These Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defences. They are shown on the Environment Agency's Flood Map for Planning (Rivers and Sea), available on the Environment Agency's web site, as indicated in the table below.

Flood Zone	Definition
Zone 1 Low Probability	Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or Land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)
Zone 3b The Functional Floodplain	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

Note: The Flood Zones shown on the Environment Agency's Flood Map for Planning (Rivers and Sea) do not take account of the possible impacts of climate change and consequent changes in the future probability of flooding. Reference should therefore also be made to the Strategic Flood Risk Assessment when considering location and potential future flood risks to developments and land uses.

Table 2: Flood Risk Vulnerability Classification

Paragraph: 066 Reference ID: 7-066-20140306

<p>Essential Infrastructure</p> <ul style="list-style-type: none">• Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk.• Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood.• Wind turbines.
<p>Highly Vulnerable</p> <ul style="list-style-type: none">• Police and ambulance stations; fire stations and command centres; telecommunications installations required to be operational during flooding.• Emergency dispersal points.• Basement dwellings.• Caravans, mobile homes and park homes intended for permanent residential use.• Installations requiring hazardous substances consent. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as 'Essential Infrastructure').
<p>More Vulnerable</p> <ul style="list-style-type: none">• Hospitals• Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels.• Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.• Non-residential uses for health services, nurseries and educational establishments.• Landfill* and sites used for waste management facilities for hazardous waste.• Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.
<p>Less Vulnerable</p> <ul style="list-style-type: none">• Police, ambulance and fire stations which are not required to be operational during flooding.• Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'More Vulnerable' class; and assembly and leisure.• Land and buildings used for agriculture and forestry.• Waste treatment (except landfill* and hazardous waste facilities).• Minerals working and processing (except for sand and gravel working).• Water treatment works which do not need to remain operational during times of flood.

- Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place.

Water-Compatible Development

- Flood control infrastructure.
- Water transmission infrastructure and pumping stations.
- Sewage transmission infrastructure and pumping stations.
- Sand and gravel working.
- Docks, marinas and wharves.
- Navigation facilities.
- Ministry of Defence defence installations.
- Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location.
- Water-based recreation (excluding sleeping accommodation).
- Lifeguard and coastguard stations.
- Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms.
- Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.

* Landfill is as defined in Schedule 10 to the Environmental Permitting (England and Wales) Regulations 2010.

Table 3: Flood risk vulnerability and flood zone ‘compatibility’

Paragraph: 067 Reference ID: 7-067-20140306

Flood Risk Vulnerability Classification
Zones

	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	X	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	X	X	X	✓*

Key:

✓ Development is appropriate

X Development should not be permitted.

Notes to table 3:

This table does not show the application of the Sequential Test which should be applied first to guide development to Flood Zone 1, then Zone 2, and then Zone 3; nor does it reflect the need to avoid flood risk from sources other than rivers and the sea;

The Sequential and Exception Tests do not need to be applied to minor developments and changes of use, except for a change of use to a caravan, camping or chalet site, or to a mobile home or park home site;

Some developments may contain different elements of vulnerability and the highest vulnerability category should be used, unless the development is considered in its component parts.

† In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.

* In Flood Zone 3b (functional floodplain) essential infrastructure that has to be there and has passed the Exception Test, and water-compatible uses, should be designed and constructed to:

- remain operational and safe for users in times of flood;
- result in no net loss of floodplain storage;
- not impede water flows and not increase flood risk elsewhere.

Appendix B

Maps of Preferred Sites to be removed

