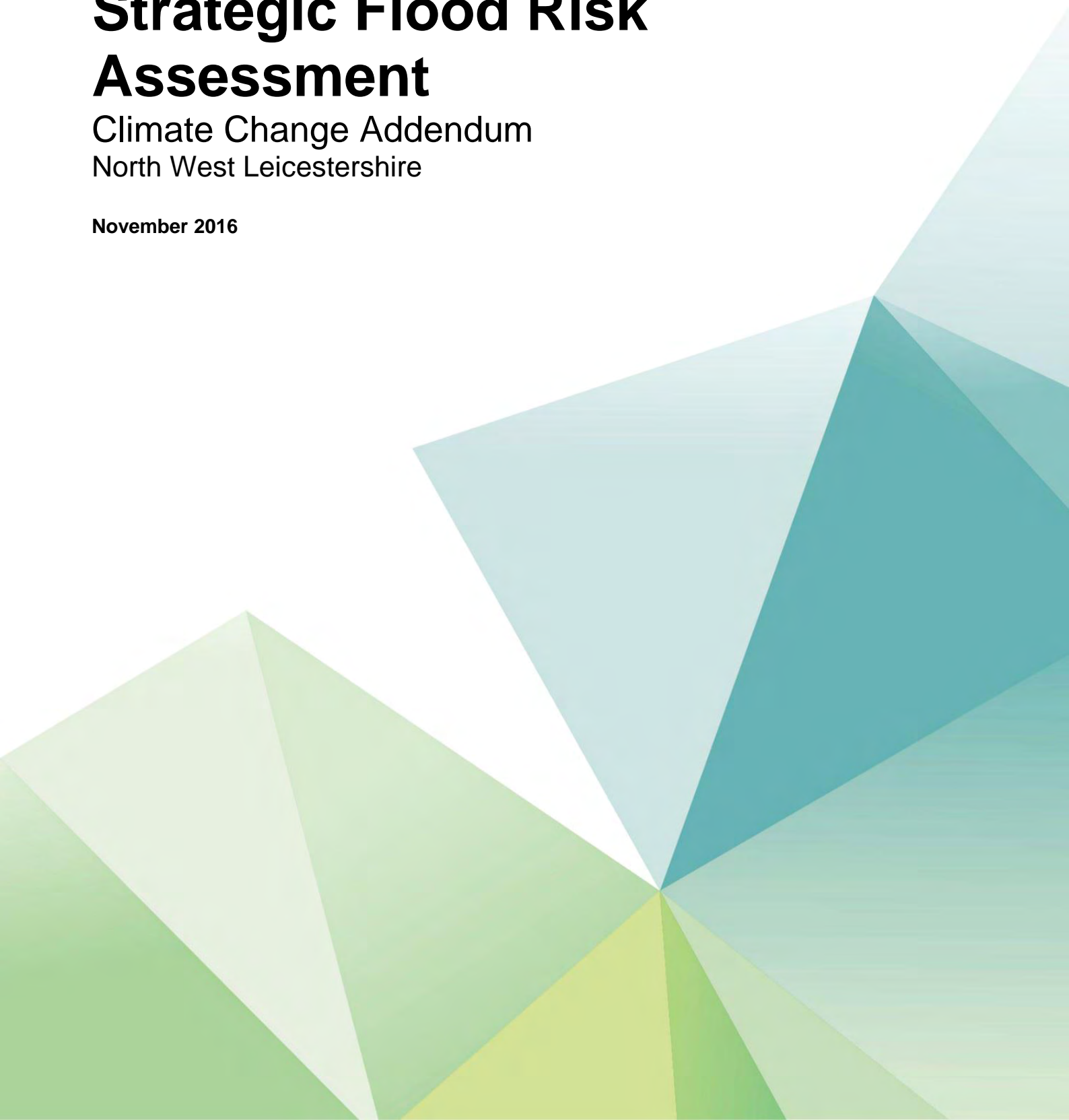


North West Leicestershire Strategic Flood Risk Assessment

Climate Change Addendum
North West Leicestershire

November 2016



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Executive summary

The North West Leicestershire Strategic Flood Risk Assessment (SFRA) was updated in 2015 to inform the development of the Local Plan for North West Leicestershire and its implementation. The 2015 SFRA assessed 34 potential sites for residential or commercial development in relation to flood risk in order to support the Sequential Test for development planning in the district. The SFRA also included a flow chart for the assessment of flood risk on windfall sites.

Since the completion of the 2015 SFRA the Environment Agency has published updated guidance on the climate change allowances that should be used when assessing flood risk. The updated guidance requires the application of a river basin district approach and utilising different climate change factors based on development vulnerability. A SFRA is a live document that should be reviewed following the emergence of improved assessment methodology and policy changes. It was not considered appropriate to undertake a full rewrite of the SFRA. Therefore this addendum has been completed to outline the updates to the 2015 SFRA, the updated Sequential Test for potential development sites and the potential future flood risk arising from the application of the Environment Agency climate change guidance.

The focus of the addendum is:

- to outline how climate change should be applied in the North West Leicestershire District based on the updated climate change guidance;
- a reassessment of the potential development sites based on flood risk (including an assessment of climate change);
- an update to the windfall development site flood risk flow chart; and
- to provide details of where the 2015 SFRA is superseded by this addendum.

The Sequential Test was been applied to 27 potential development sites identified by North West Leicestershire District Council within the 2015 SFRA; seven sites assessed in the 2015 SFRA have since been granted planning permission or built and hence have been discounted from this addendum. The results of the Sequential Test were that 13 commercial sites and 10 residential sites that are classed at an acceptable level of flood risk and pass the Sequential Test. Two residential sites classed as at a medium risk and two commercial sites at a high risk, that would not pass the Sequential Test at this stage and hence further information and assessment would be required in an attempt to allow the development to proceed.

This result remains unchanged from the 2015 SFRA because the Sequential Test is based on current flood risk rather than the predicted risk over the anticipated development lifetime. However, the aim of the re-assessment of potential development sites was to identify if sites currently located in Flood Zone 1 (hence currently sequentially acceptable) would be located in Flood Zone 2 or 3 in the future as a result of increased climate change allowances. This assessment identified that none of the 23 sites in Flood Zone 1 would be significantly affected by a change in fluvial flood risk owing to climate change.

Furthermore, there is no or minimal change in fluvial Flood Zones at the potential development sites, since the previous assessment, and hence the Sequential Test results presented in the 2015 SFRA remain unaltered. This Sequential Test assessment fully supersedes chapter 5.4 '*results of the Sequential Test on potential land allocations*' in the 2015 SFRA.

The assessment of windfall sites, including generic developer guidance and information to support the windfall development flow chart provided in the 2015 SFRA has been updated. This update has been informed by the North West Leicestershire District Council planning team.

1. Introduction

1.1. Background

In 2015 the North West Leicestershire Strategic Flood Risk Assessment (SFRA) was refreshed as required to inform the draft Local Plan for North West Leicestershire. The SFRA provided an overview of the planning context in relation to flood risk and development for North West Leicestershire. SFRAs are considered live documents and should be revised periodically when updated information becomes available, following policy changes or when it is required to inform Local Plans.

The 2015 SFRA identified 15 potential sites for residential development and 19 sites for non-residential development. These sites were assessed in relation to flood risk and a traffic light system was created to show the level of risk. This traffic light system indicates where further assessment of flood risk is required if each potential site is taken forward for development.

In February 2016 the Environment Agency published updated climate change guidance (Environment Agency, 2016) to support the National Planning Policy Framework (NPPF) and therefore it must be considered for new development. The guidance defines the climate change allowances that should be applied when assessing flood risk. A review of the SFRA is required to accommodate this change in climate change guidance.

1.2. Purpose of this addendum

The new climate change guidance was released that changes how climate change impacts are taken into account when assessing flood risk to new development, over the lifetime of the development. The new approach may have significant consequences for new development, and therefore it is important to understand these potential implications at the earliest opportunity. Therefore a review of potential sites for development, listed in the 2015 SFRA has been carried out, identifying the change in flood risk in light of the updated guidance.

The updated climate change guidance also has the potential to impact on the assessment of windfall sites and the application of the Sequential Test, and therefore this addendum outlines these changes and how it will affect associated planning in North West Leicestershire.

In summary the purpose of this addendum is to:

1. Update the site assessment and developer guidance for the potential sites for development listed in the 2015 SFRA;
2. Provide updated generic developer guidance for windfall application sites; and
3. Provide an update to the Sequential Test flow diagram.

The addendum should be read in conjunction with the 2015 SFRA. This addendum supersedes Section 5.4 and Table 5-1 of the SFRA. It is assumed that the reader of this addendum is already familiar with the context of planning in North West Leicestershire, including the application of Sequential and Exception Testing and is aware of the flood risks discussed in the 2015 SFRA. This background is therefore not repeated in this addendum.

2. Climate change guidance

2.1. Background

The application of the updated climate change guidance (Environment Agency, 2016) will minimise flood risk vulnerability and provide resilience to flooding over the lifetime of the development.

The climate change guidance provides allowance for change in risk from:

- peak river flow;
- peak rainfall intensity;
- sea level rise; and
- offshore wind speed and extreme wave height.

The North West Leicestershire District is not considered to be at risk from tidal flooding and therefore only the first two bullets in the list above have been considered for this addendum. Furthermore the updated guidance does not explicitly outline how to assess the increase in flood risk from other sources, such as groundwater, and therefore the risk from other sources of flooding (in additional to fluvial and surface water) have not been included in this addendum.

2.2. Climate change and fluvial flood risk

The guidance states that the impact on peak river flows as a result of climate change must now be considered geographically, based on river basin districts. North West Leicestershire falls within the Humber River Basin District. The climate change allowance factors, on peak river flow, for this district are shown in Table 2-1, which is an excerpt from the climate change guidance. The values represent the percentage change in peak river flow,

Table 2-1 Peak river flow climate change allowances

River Basin District	Allowance category*	Total potential change anticipated for each epoch		
		2020s (2015-2039)	2050s (2040-2069)	2080s (2070-2115)
Humber	Upper end	20%	30%	50%
	Higher central	15%	20%	30%
	Central	10%	15%	20%
	High++	20%	35%	65%

*allowance category is based on percentiles:

- Upper end is based on 90th percentile
- Higher central is based on 70th percentile
- Central allowance is based on the 50th percentile

The high++ allowance should only be applied for developments that are classed as very sensitive to flood risk, with a design life of beyond 2115. This may include infrastructure projects or for development such as urban extensions and new development (hence significantly changing current areas of settlement).

The decision as to which allowance category to consider when assessing new development is based on both the current flood risk at the site location and the vulnerability classification (vulnerability classifications are outlined in the SFRA, chapter 3.3.1 and Appendix A, and therefore are not repeated in this addendum). The recommended allowance categories for each development type and Flood Zone are presented in Table 2-2. These climate change allowances must be considered for the development design for any sites requiring planning permission which are located in Flood Zone 2 or 3.

Table 2-2 Fluvial flood risk climate change allowance requirements

Flood Zone	Development vulnerability	Climate change allowance
Flood Zone 2	Essential infrastructure	Higher central and upper end
	Highly vulnerable	Higher central and upper end
	More vulnerable	Central and Higher central
	Less vulnerable	Central
	Water compatible	Do not need to use the climate change allowances
Flood Zone 3a	Essential infrastructure	Upper end
	Highly vulnerable	Development should not be permitted*
	More vulnerable	Higher central and upper end
	Less vulnerable	Central and Higher central
	Water compatible	Central
Flood Zone 3b	Essential infrastructure	Upper end
	Highly vulnerable	Development should not be permitted*
	More vulnerable	Development should not be permitted*
	Less vulnerable	Development should not be permitted*
	Water compatible	Central

*According to the climate change guidance 'if (exceptionally) development is considered appropriate when not in accordance with flood zone vulnerability categories, then it would be appropriate to use the upper end allowance'.

2.3. Climate change and surface water flood risk

Climate change will cause an increase in surface water flood risk through higher rainfall intensities. The updated climate change guidance does not provide separate climate change allowances for geographical areas, but an upper end and central allowance which covers England and Wales. The guidance recommends that SFRAs assess both the central and upper end allowance to determine the range of climate change impact. Table 2-3 is taken directly from the updated climate change guidance. The values represent the percentage increase in extreme rainfall intensity.

Table 2-3 Peak rainfall intensity climate change allowances

Allowance category*	Total potential change anticipated for each epoch		
	2020s (2015-2039)	2050s (2040-2069)	2080s (2070-2115)
Upper end	10%	20%	40%
Central	5%	10%	20%

3. Methodology

Sites which have previously been granted planning permission are exempt from the new climate change guidance and therefore have not been considered for this assessment. Six of the sites assessed in the 2015 SFRA have been identified by North West Leicestershire as already having been granted planning permission and therefore have been excluded as shown in Table 4-1. One additional site has already been developed and hence this too has also been excluded from this assessment.

The mapping provided in Appendix A is an update to the mapping provided in the 2015 SFRA showing the current fluvial Flood Zones and surface water flooding. Where Flood Zones are not available a conservative approach has been used, consistent with the methodology in the 2015 SFRA. Specifically this is to represent Flood Zone 3b by using Flood Zone 3a where the 1 in 20 (5%) or 1 in 25 (4%) annual probability flood extents are not available.

The mapping also shows flood extents with an allowance for climate change. In order to obtain predicted fluvial and surface water flood extents as a result of climate change, in line with the new guidance, hydraulic modelling would need to be rerun. Given the size of the area and the number of models it is not considered feasible or necessary to undertake the additional modelling for this climate change addendum. Therefore the modelled flood extents shown in the mapping represent flood risk with a 20% allowance for climate change as this is currently the only climate change allowance hydraulically modelled. Where climate change modelled flood extents are not available, Flood Zone 2 has been used to represent Flood Zone 3 with an allowance for climate change as there is not alternative method more appropriate at this stage. This is considered a standard approach for FRAs, and has been previously accepted by the Environment Agency as a substitute.

Furthermore, the potential development sites assessed in this addendum would require planning permission and hence climate change impacts would need to be assessed in detail for site specific FRAs necessary to support the planning process. The level of detail required, and could be achieved, for the FRA would be greater than the detail that could be realistically presented in this addendum.

The methodology adopted to assess the impact of the change in guidance is outlined below.

3.1. Fluvial flood risk

As outlined in Section 2 there are different climate change allowances for fluvial flood risk based on development type and Flood Zone. The first step of the methodology was to determine which allowance should be used for each potential development site. For development which has a life time past 2070, or the development life time is unknown, the allowance category for the '2080s' epoch should be adopted to ensure climate change is considered through the entire life time of the development. If the development lifetime is unknown, this approach represents a precautionary approach. This approach should be the basis for FRAs and is supported by regulators.

Climate change allowances are only recommended for sites in Flood Zones 2 and 3. Where two climate change allowances are suggested in the climate change guidance, the most conservative value should be taken forward for assessment. The upper end allowance should be applied to assess whether the Exception Test could be passed for development recommended as unsuitable through the Sequential Test. Commercial development is classed as less vulnerable and residential development is classed as more vulnerable.

However without detailed hydraulic modelling it is not possible to assess the impact of climate change to the detail outlined above. Given the scale of the modelling needed for the area covered in this addendum it is not considered feasible or necessary to undertake modelling at this stage, and hence an alternative approach has been taken.

The assessment provides a subjective description of the anticipated fluvial flood risk changes as a result of climate change, and provides recommendations for development design. This assessment has been made based on three criteria:

1. The shortest distance between the proposed site boundary and the nearest Flood Zone 2 extent.
2. The difference between the lowest ground level elevation on site and an approximate level for the 1 in 1000 (0.1%) flood event. Site levels have been determined through LiDAR and an approximation of flood level has also been determined through LiDAR interrogation. Although this approach is considered relatively crude it is acceptable for the purposes and high level nature of this assessment. Further detail maybe needed for detailed FRAs to support planning applications.
3. If there is a small difference identified in point 2, then the approximate increase in flood level between the 1 in 100 (1%) annual probability event and the 1 in 1000 (0.1%) annual probability event has been taken into consideration. These approximated flood levels have also been determined through LiDAR interrogation and similarly further assessment would be required for detailed FRAs to support planning applications.

3.2. Surface water flood risk

There are two climate change allowances for surface water flood risk and the guidance recommends that both are used in FRAs and SFRA. Therefore for the purposes of this addendum, and as a conservative approach the higher allowance has been used for this assessment.

To assess the potential changes in surface water flood risk as a result of climate change, an approach of using higher risk flood outlines for the lower risk areas with an allowance for climate change has been employed. Without re-running surface water models this approach is considered the most suitable in determining an approximate change in surface water flood risk. The flood outlines used for this approach are shown in Table 3-1.

Table 3-1 Surface water flood risk climate change impact

Environment Agency flood extent	Current flood risk	Predicted future flood risk as a result of climate change
No extent	Very low risk	Depending on proximity to 1 in 1000 (0.1) annual probability flood extent.
1 in 1000 (0.1) annual probability flood extent	Low risk	Medium risk
1 in 100 (1%) annual probability flood extent	Medium risk	High risk
1 in 30 (3.3%) annual probability flood extent	High risk	Very high risk

4. Sequential Testing

4.1. Overview

This addendum assumes that the reader is familiar with the Sequential Testing process as described in Chapter 5 of the 2015 SFRA and is not further explained here.

The results of the updated Sequential Test on potential land allocations is provided in Table 4-1. This table also provides a summary of the updated Sequential Test for each of the development sites, together with a description of surface water flood risk and the changes in risk as a result of climate change

The application of the Sequential Test to each of these sites and the intended land uses has resulted in 3 groupings:

1. Sites where proposed land use is appropriate (highlighted green in Table 4-1);
2. Sites which require application of the Exception Test, or where the sequential approach should be applied to determine the layout of the site (highlighted amber in Table 4-1); and
3. Sites where the intended land use is not considered appropriate at this stage and further justification as to why the development of the site would have benefits that outweigh the flood risk (highlighted red in Table 4-1).

4.2. Site specific results

The following section outlines the individual sites assessed for the Sequential Test, the associated results of the Sequential Test (from both the 2015 SFRA and this review) and an indication of flood risk considerations that should be made through the planning process.

Fluvial flood risk is considered the main factor in determining whether a site is considered sequentially acceptable, and it is fluvial flood risk which is particularly impacted as a result of the updated climate change guidance. This section outlines the current fluvial flood risk to each site; the climate change allowance that should be applied during detailed assessment as required for planning (where a potential fluvial flood risk has been identified); and also a subjective prediction of the change in fluvial flood risk to the site as a result of climate change.

The climate change guidance also revised the change factors for surface water and hence this section outlines the current and predicted surface water flood risk at each site. This does not take into account possible increases in flood risk as a result of potential development. For all sites the recommended climate change allowance is 40%.

The impact on groundwater flood risk as a result of climate change is not discussed in the 2016 climate change guidance and therefore this source of risk has not been reassessed for this addendum. The section supersedes the Sequential Test provided in the 2015 SFRA and hence the assessment of groundwater flood risk has been repeated here to prevent unnecessary cross referencing.

The existing fluvial and surface water flood risk to the potential development sites has been determined based on fluvial and surface water flood risk mapping available from the Environment Agency (September 2016) and hence superseded the flood risk assessment to each site reported in the 2015 SFRA.

For many of the sites small isolated areas are identified to be at a risk from surface water flooding. These isolated areas are likely to represent small depressions in the topography, where surface water may collect following storm events. The potential for this source of flooding should be considered within the design of the development, although this risk would not render the site inappropriate for development or result in the site being considered sequentially unacceptable.

In summary Table 3-1 shows that there is no change in the results of the Sequential Test between this addendum and the 2015 SFRA. This is because the assessment of development suitability is based on current flood risk rather than the predicted risk over the anticipated development lifetime. The assessment was revisited as it had the potential to highlight sites currently located in Flood Zone 1 (hence currently sequentially acceptable) that would be located in Flood Zone 2 or 3 in the future as a result of increased climate change allowances. However, this assessment identified that none of the 23 sites in Flood Zone 1 would be significantly affected by a change in fluvial flood risk owing to climate change.

The mapping provided in Appendix A shows the potential development sites, current flood risk (based on mapping data sets available September 2016) and the results of this Sequential Test. The mapping provided in Appendix A supersedes the mapping provided in Appendix B of the 2015 SFRA.

E1 – South of Pegasus Business Park, East Midlands Airport

This site has been put forward for consideration for commercial development.

The site is located within Flood Zone 1 and therefore considered sequentially acceptable. The site is at least 1km from Flood Zone 2 and at an elevation over 50m higher than the 1 in 1000 (0.1%) annual probability flood level. Therefore the fluvial flood risk is considered to remain low over the lifetime of the development.

There is one small area identified to be at risk from surface water flooding within this site, however this area at risk is associated with a pond. Therefore in general the site is currently considered to be at a very low risk from surface water flooding. As a result of climate change the surface water flood risk is likely to increase, to a low risk associated with localised depressions in topography.

As outlined in the SFRA, the site is also within an area considered to have a low susceptibility to groundwater flooding. Whilst development below the existing ground level should consider the potential for groundwater ingress, the overall risk from this source of flooding is considered low.

Overall the site is considered sequentially acceptable.

E4 – Donington Park Race Circuit, Castle Donington

This site has been put forward for consideration for commercial development.

The site is located within Flood Zone 1 and therefore considered sequentially acceptable. The site is at least 0.4km from Flood Zone 2 and at an elevation over 10m higher than the 1 in 1000 (0.1%) annual probability flood level. Therefore the fluvial flood risk is considered to remain low over the lifetime of the development.

There are areas at risk from surface water flooding, which are predominately categorised as low risk, although there are also areas at high risk. These areas at low to high risk appear to follow a flow path before discharging into Ramsley Brook, although they are not defined as Flood Zones 2 or 3. The potential for this source of flooding should be considered within the design of the development, although this risk would not render the site inappropriate for development or result in the site being considered sequentially unacceptable. As a result of climate change the surface water flood risk is likely to increase to a medium risk with small areas at very high risk.

As outlined in the SFRA, the site is also within an area considered to have a low susceptibility to groundwater flooding, with approximately 5% of the site within a medium risk area. Whilst development below the existing ground level should consider the potential for groundwater ingress, the overall risk from this source of flooding is considered low.

Overall the site is considered sequentially acceptable. However it is recommended that the developer carefully considers surface water flood risk, and the potential overland flow paths, at this site.

E5 – Land south of Packington Nook, Measham Road, Ashby de la Zouch

This site has been put forward for consideration for commercial development.

The site is located within Flood Zone 1 and therefore considered sequentially acceptable. The site is at least 0.4km from Flood Zone 2 and at least 20m above the 1 in 1000 (0.1%) flood level. Therefore it is anticipated that the development will remain at a low risk over its lifetime.

There is an area at low risk from surface water flooding in the southern area of the site, with some small areas identified to be at a medium risk. This area at risk appears to follow a flow path to a tributary of Gilwiskaw Brook, although this flow path is not defined as Flood Zones 2 or 3. The potential for this source of flooding should be considered within the design of the development, although this risk would not render the site inappropriate for development or result in the site being considered sequentially unacceptable. As a result of climate change the surface water flood risk is likely to increase to a medium and with some areas at a high risk.

As outlined in the SFRA, the site is also within areas considered to have a low and medium susceptibility to groundwater flooding. Whilst development below the existing ground level should consider the potential for groundwater ingress, the overall risk from this source of flooding is considered medium. However it may be prudent to undertake a groundwater assessment to inform the development design.

Overall the site is considered sequentially acceptable. However it is recommended that the developer carefully considers surface water flood risk, and the potential overland flow paths, at this site.

E6a – Land north of Pretoria Road, Whitehill Road, Ellistown

This site has been put forward for consideration for commercial development.

The site is located within Flood Zone 1 and therefore considered sequentially acceptable. The site is at least 1km from Flood Zone 2 and is at least 15m above the 1 in 1000 (0.1%) flood level. Therefore it is anticipated that the development will remain at a low risk over its lifetime.

There are areas at risk from surface water flooding, which are predominately categorised as low risk, although there are also areas at high risk. These areas at low to high risk appear to follow various flow paths although they are not defined as Flood Zones 2 or 3. The potential for this source of flooding should be considered within the design of the development, although this risk would not render the site inappropriate for development or result in the site being considered sequentially unacceptable. As a result of climate change the surface water flood risk is likely to increase to a medium and with some areas at very high risk.

As outlined in the SFRA, the site is also within an area considered to have a low susceptibility to groundwater flooding. Whilst development below the existing ground level should consider the potential for groundwater ingress, the overall risk from this source of flooding is considered low.

Overall the site is considered sequentially acceptable. However it is recommended that the developer carefully considers surface water flood risk, and the potential overland flow paths, at this site.

E6b – Land south of Pretoria Road, Whitehill Road, Ellistown

This site has been put forward for consideration for commercial development.

The site is located within Flood Zone 1 and therefore considered sequentially acceptable. The site is at least 1km from Flood Zone 2 and is at least 20m above the 1 in 1000 (0.1%) flood level. Therefore it is anticipated that the development will remain at a low risk over its lifetime.

There is an area at low risk from surface water flooding, which appears to follow a flow path although is not defined as Flood Zones 2 or 3. The potential for this source of flooding should be considered within the design of the development, although this risk would not render the site inappropriate for development or result in the site being considered sequentially unacceptable. As a result of climate change some areas of the site would be classed as at a medium risk from surface water.

As outlined in the SFRA, the site is also within an area considered to have a low susceptibility to groundwater flooding. Whilst development below the existing ground level should consider the potential for groundwater ingress, the overall risk from this source of flooding is considered low.

Overall the site is considered sequentially acceptable. However it is recommended that the developer carefully considers surface water flood risk, and the potential overland flow paths, at this site.

E9 – Land at Ryecroft Road, Hemington

This site has been put forward for consideration for commercial development.

The site is almost fully located in Flood Zone 3b, with the remainder of the site located in either Flood Zone 2 or 3a, and therefore within the highest fluvial flood risk area. The level of risk will increase over the life time of the development owing to climate change. The climate change allowance that must be applied when assessing future flood risk to the site is the upper end allowance of 50%. The high fluvial flood risk indicates that the site is not sequentially acceptable. Further justification including a passed Exception Test would be required if the site is to be taken forward for development.

Small isolated areas are identified to be at a low risk from surface water flooding. As a result of climate change this low risk would increase to a medium risk.

As outlined in the SFRA, the site is located within an area at high susceptibility to groundwater flooding. The potential risk associated with this classification is not considered to impact on the Sequential test and a high susceptibility classification does not necessarily identify a high risk from this source. However this classification does highlight where further assessment in relation to groundwater is considered necessary to determine the implications for development design.

Overall the site would not be considered sequentially acceptable. If the site is to be taken forward it must be justified that the need for the development outweighs flood risk, i.e. a passed Exception Test would need to be demonstrated. Should the development be proposed based on merits irrespective of flood risk, then mitigation (including flood resilience) should take into account peak fluvial flood levels and associated increases as a result of climate change.

E10 – Stephenson College, Thornborough Road, Coalville

This site has been put forward for consideration for commercial development.

The site is located within Flood Zone 1 and therefore considered sequentially acceptable. The site is at least 0.9km from Flood Zone 2 and the elevation of the site is over 10m higher than the approximate 1 in 1000 (0.1%) flood level. Therefore the site is predicted to remain at low fluvial flood risk over the lifetime of the development.

Small isolated areas are identified to be at a low risk from surface water flooding. As a result of climate change this low risk would increase to a medium risk.

As outlined in the SFRA, the site is also within an area considered to have a low susceptibility to groundwater flooding. Whilst development below the existing ground level should consider the potential for groundwater ingress, the overall risk from this source of flooding is considered low.

Overall the site is considered sequentially acceptable.

E11 – TNT Premises, Lount

This site has been put forward for consideration for commercial development.

The site is located within Flood Zone 1 and therefore considered sequentially acceptable. The site is at least 0.7km from Flood Zone 2. There is no suitable topography readily available for this addendum at this site. However, owing to Flood Zone 2 and 3 have almost identical extents at this locality, and based the general topography (land levels) of the area (steep a sided valley) it is anticipated that the site will remain at low fluvial flood risk through the development lifetime

Small isolated areas are identified to be at a low risk from surface water flooding. As a result of climate change this low risk would increase to a medium risk.

As outlined in the SFRA, the site is also within an area considered to have a low susceptibility to groundwater flooding. Whilst development below the existing ground level should consider the potential for groundwater ingress, the overall risk from this source of flooding is considered low.

Overall the site is considered sequentially acceptable.

E12 – Land at Bardon Road, Coalville

This site has been put forward for consideration for commercial development.

The site is located within Flood Zone 1 and therefore considered sequentially acceptable. The site is at least 0.3km from Flood Zone 2 and the elevation of the site is over 10m higher than the approximate 1 in 1000 (0.1%) flood level. Therefore the site is predicted to remain at low fluvial flood risk over the lifetime of the development.

The northern boundary of the site is identified to be at a low and medium risk from surface water flooding. This risk is associated with a tributary of the River Sence, although this reach is not defined as Flood Zones 2 or 3. The potential for this source of flooding should be considered within the design of the development,

although this risk would not render the site inappropriate for development or result in the site being considered sequentially unacceptable. As a result of climate change the surface water flood risk will increase to a medium risk with some areas of high risk.

As outlined in the SFRA, the site is also within an area considered to have a medium susceptibility to groundwater flooding. Whilst development below the existing ground level should consider the potential for groundwater ingress, the overall risk from this source of flooding is considered medium. However it may be prudent to undertake a groundwater assessment to inform the development design.

Overall the site is considered sequentially acceptable. However it is recommended that the developer carefully considers surface water flood risk, and the potential overland flow paths, at this site.

E13 – Land off Gracedieu Road, Whitwick

This site has been put forward for consideration for commercial development.

The site is located within Flood Zone 1 and therefore considered sequentially acceptable. The site is at least 0.15km from an area of Flood Zone 2, thus is anticipated to remain at a low risk over the lifetime of the development.

The site is currently considered to be within an area at very low risk from surface water flooding. As a result of climate change the surface water flood risk is likely to increase at the site, however it is anticipated to be low over the lifetime of the development.

As outlined in the SFRA, the site is also within an area considered to have a low susceptibility to groundwater flooding. Whilst development below the existing ground level should consider the potential for groundwater ingress, the overall risk from this source of flooding is considered relatively low. This assessment has not been reassessed for the purposes of this climate change addendum.

Overall the site is considered sequentially acceptable.

E14 – Land south of Sawley Marina, Tamworth Road, Long Eaton

This site has been put forward for consideration for commercial development.

The site is fully located within Flood Zone 3, and almost fully within Flood Zone 3b and therefore within the highest fluvial flood risk area. The level of risk will increase over the life time of the development owing to climate change. This indicates that the site is not sequentially acceptable. Further justification, such as development type, would be required if the site is to be taken forward for development. This justification needs to demonstrate that there are wider benefits that outweigh flood risk, and the development design would need to demonstrate no adverse impact on flood risk, both on site and elsewhere, as a result of the development.

Small isolated areas are identified to be at a low risk from surface water flooding. As a result of climate change this risk is predicted to increase to a medium risk from surface water.

As outlined in the SFRA, the site is located within an area at high susceptibility to groundwater flooding. The potential risk associated with this classification is not considered to impact on the Sequential Test and a high susceptibility classification does not necessarily identify a high risk from this source. However this classification does highlight where further assessment in relation to groundwater is considered necessary to determine the implications for development design.

Overall the site would not be considered sequentially acceptable. If the site is to be taken forward it must be justified that the need for the development outweighs flood risk, i.e. a passed Exception Test would need to be demonstrated. Should the development be proposed based on merits irrespective of flood risk, then mitigation (including flood resilience) should take into account peak fluvial flood levels and associated increases as a result of climate change.

E16 – TNT Premises, Lount

This site has been put forward for consideration for commercial development.

The site is located within Flood Zone 1 and therefore considered sequentially acceptable. The site is at least 0.7km from Flood Zone 2. There is no suitable topography (land levels) readily available for this addendum at this site. However, owing to Flood Zone 2 and 3 have almost identical extents at this locality, and based the general topography of the area (steep sided valley) it is anticipated that the site will remain at low fluvial flood risk through the development lifetime.

The site is currently considered to be within an area at very low risk from surface water flooding. As a result of climate change the surface water flood risk is likely to increase to a low risk.

As outlined in the SFRA, the site is also within an area considered to have a low susceptibility to groundwater flooding. Whilst development below the existing ground level should consider the potential for groundwater ingress, the overall risk from this source of flooding is considered low.

Overall the site is considered sequentially acceptable.

E17 – Money Hill Site, north of Ashby

This site has been put forward for consideration for commercial development.

The site is located within Flood Zone 1 and therefore considered sequentially acceptable. The site is in close proximity to Flood Zones 2 and 3 (within 0.1km). Flood Zones 2 and 3 cover almost the same extent at this location and the majority of the site is at least 6m above the 1 in 1000 (0.1%) annual probability flood level. It is therefore anticipated that the majority of the site will remain at a low risk from fluvial flooding through the lifetime of the development. The western area of the site is 1m above the 1 in 1000 (0.1%) flood level and therefore even if inundated the flood depth is likely to be low. Although there is no requirement for the developer to manage this risk, as best practice this fluvial flood risk should be considered for the site layout. The fluvial flood risk climate change allowance applicable to the site is the central allowance of 20%.

There are areas at risk from surface water flooding, which are predominately categorised as low risk, although there are also areas at high risk. These areas at low to high risk appear to follow various flow paths although are not defined as Flood Zones 2 or 3. The potential for this source of flooding should be considered within the design of the development, although this risk would not render the site inappropriate for development or result in the site being considered sequentially unacceptable. As a result of climate change the surface water flood risk is likely to increase to a medium risk with some areas at very high risk.

As outlined in the SFRA, the site is also within an area considered to have a low susceptibility to groundwater flooding. Whilst development below the existing ground level should consider the potential for groundwater ingress, the overall risk from this source of flooding is considered low.

Overall the site is considered sequentially acceptable. However it is recommended that the developer carefully considers surface water flood risk, and the potential overland flow paths, at this site.

E18 – Swains Park, Occupation Road, Albert Village

This site has been put forward for consideration for commercial development. Through comment form North West Leicestershire District Council (3/11/16) an area in the north western part of the site and the southern part of the site have been developed and therefore are omitted from the assessment.

The site is located within Flood Zone 1 and therefore considered sequentially acceptable. The site is in close proximity to Flood Zones 2 and 3 (within 0.1km). However, the area of the site proposed for development is over 1m above the 1 in 1000 (0.1%) flood level and therefore it is anticipated to remain at a low risk of fluvial flooding over the life time of the development.

There is a low risk from surface water flooding to the site. The potential for this source of flooding should be considered within the design of the development, although this risk would not render the site inappropriate for development or result in the site being considered sequentially unacceptable. As a result of climate change the surface water flood risk is likely to increase to a medium risk.

As outlined in the SFRA, the site is also within an area considered to have a medium susceptibility to groundwater flooding. Whilst development below the existing ground level should consider the potential for groundwater ingress, the overall risk from this source of flooding is considered medium. However it may be prudent to undertake a groundwater assessment to inform the development design.

Overall the site is considered sequentially acceptable.

E19 – North of Derby Road, Kegworth

This site has been put forward for consideration for commercial development.

The site is located within Flood Zone 1 and therefore considered sequentially acceptable. The site is within 0.1km from Flood Zone 2. Some areas of the site are at elevations estimated to be less than 200mm higher than flood levels for the 1 in 1000 (0.1%) annual probability flood event or 400mm from the 1 in 100 (1%) annual probability flood level. Given the existing Flood Zone 2 and 3 are similar at this location it is anticipated that even with a 30% allowance for climate change, flooding will at most inundate a small area (at the northern boundary only) and to shallow depths. . Although there is no requirement for the developer to manage this risk, as best practice this fluvial flood risk should be considered for the site layout. The fluvial flood risk climate change allowance applicable to the site is the central allowance of 20%.

There is a small isolated area at low risk from surface water flooding along the eastern boundary of the site. As a result of climate change the surface water flood risk is likely to increase to a medium risk.

As outlined in the SFRA, the site is located within an area at high susceptibility to groundwater flooding. The potential risk associated with this classification is not considered to impact on the Sequential Test and a high susceptibility classification does not necessarily identify a high risk from this source. However this classification does highlight where further assessment in relation to groundwater is considered necessary to determine the implications for development design.

Overall the site is considered sequentially acceptable.

A5 – Ashby de la Zouch

This site covers a similar area to E17

This site has been put forward for consideration for residential development.

The site is located within Flood Zone 1 and therefore considered sequentially acceptable. The site is in close proximity to Flood Zones 2 and 3 (within 0.1km). Flood Zones 2 and 3 cover almost the same extent at this location and the majority of the site is at least 6m above the 1 in 1000 (0.1%) annual probability flood level. It is therefore anticipated that the majority of the site will remain at a low risk from fluvial flooding through the lifetime of the development. The western area of the site is 1m above the 1 in 1000 (0.1%) flood level and therefore even if inundated the flood depth is likely to be low. Although there is no requirement for the developer to manage this risk, as best practice this fluvial flood risk should be considered for the site layout. The fluvial flood risk climate change allowance applicable to the site is the central higher allowance of 30%.

There are areas at risk from surface water flooding, which are predominately categorised as low risk, although there are also areas at high risk. These areas at low to high risk appear to follow various flow paths although they are not defined as Flood Zones 2 or 3. The potential for this source of flooding should be considered within the design of the development, although this risk would not render the site inappropriate for development or result in the site being considered sequentially unacceptable. As a result of climate change the surface water flood risk is likely to increase to a medium with some areas at very high risk.

As outlined in the SFRA, the site is also within an area considered to have a low susceptibility to groundwater flooding. Whilst development below the existing ground level should consider the potential for groundwater ingress, the overall risk from this source of flooding is considered low.

Overall the site is considered sequentially acceptable. However it is recommended that the developer carefully considers surface water flood risk, and the potential overland flow paths, at this site.

A7 – Ashby de la Zouch

This site has been put forward for consideration for residential development.

The majority of the site is located within Flood Zone 1, with most of the rest of the site located within Flood Zone 2 and 3a associated with the Gilwiskaw Brook. Only a very small proportion of the site is located within Flood Zone 3b. It is not considered that the site has passed the Sequential Test, as a proportion of the site is within an area at risk from fluvial flooding, although it is not considered appropriate to rule out the site for development at this stage. Alternatively it is considered necessary for a sequential approach to be applied within the site boundary, locating vulnerable development within Flood Zone 1. It would be necessary for the applicant to further assess fluvial flood risk in order to confirm the areas on site where development should be avoided. As a result of climate change, flood risk to the site will increase over the lifetime of the development, however it is anticipated that the majority of the site would remain at a low risk. The fluvial flood risk climate change allowance applicable to the site is the upper end allowance of 50%.

There is an area at low risk of surface water flooding in the eastern area of the site. This area at risk appears to follow the Gilwiskaw Brook and flow paths to this watercourse. The majority of this area at risk is also covered by Flood Zones 2 and 3 and therefore consideration of fluvial flood risk for the development is likely to incorporate surface water flood risk in this area. There are also isolated areas at a medium risk of surface water flooding. As a result of climate change the surface water flood risk is likely to increase to a medium risk with some areas at high risk.

As outlined in the SFRA, the site is also within an area considered to have a low susceptibility to groundwater flooding. Whilst development below the existing ground level should consider the potential for groundwater ingress, the overall risk from this source of flooding is considered low.

The site as a whole is not considered sequentially acceptable, but much of the site is within Flood Zone 1 and therefore development could be proposed if a sequential approach is implemented for the site layout design. It is recommended that the fluvial flood zones and surface water risk areas, with an allowance for climate change, are determined and used to inform the site layout.

C18 – Coalville

This site has been put forward for consideration for residential development.

The majority of the site is located within Flood Zone 1, with a small area in the eastern area of the site located within Flood Zone 2 and 3a (the site is not located within Flood Zone 3b). It is not considered that the site has passed the Sequential Test, as a proportion of the site is within an area at risk from fluvial flooding, although it is not considered appropriate to rule out the site for development at this stage. Alternatively it is considered necessary for a sequential approach to be applied within the site boundary, locating vulnerable development within Flood Zone 1. It would be necessary for the applicant to further assess fluvial flood risk in order to confirm the areas on site where development should be avoided. As a result of climate change, flood risk to the site will increase over the lifetime of the development, however it is anticipated that the majority of the site would remain at a low risk. The fluvial flood risk climate change allowance applicable to the site is the upper end allowance of 50%.

Small isolated areas are identified to be at low or medium risk from surface water flooding. As a result of climate change the surface water flood risk is likely to increase to a medium risk with some areas at high risk.

As outlined in the SFRA, the site is also within an area considered to have a low susceptibility to groundwater flooding, with approximately 5% of the site within a medium risk area. Whilst development below the existing ground level should consider the potential for groundwater ingress, the overall risk from this source of flooding is considered low.

The site as a whole is not considered sequentially acceptable, but much of the site is within Flood Zone 1 and therefore development could be proposed if a sequential approach is implemented for the site layout design. It is recommended that the fluvial flood zones and surface water risk areas, with an allowance for climate change, are determined and used to inform the site layout.

C19 – Coalville

This site has been put forward for consideration for residential development.

The site is located within Flood Zone 1 and therefore considered sequentially acceptable. The site is at least 0.2km from Flood Zone 2 and the elevation of the site is over 10m higher than the approximate 1 in 1000 (0.1%) flood level. Therefore the site is predicted to remain at low fluvial flood risk over the lifetime of the development.

There are areas at risk from surface water flooding, which are predominately categorised as low risk, although there are also areas at high risk. These areas at low to high risk appear to follow various flow paths although they are not defined as Flood Zones 2 or 3. The potential for this source of flooding should be considered within the design of the development, although this risk would not render the site inappropriate for development or result in the site being considered sequentially unacceptable. As a result of climate change the surface water flood risk is likely to increase to a medium risk with some areas at very high risk.

As outlined in the SFRA, the site is located within an area at low, medium and high susceptibility to groundwater flooding. The potential risk associated with this classification is not considered to impact on the Sequential Test and a high susceptibility classification does not necessarily identify a high risk from this source. However this classification does highlight where further assessment in relation to groundwater is considered necessary to determine the implications for development design.

Overall the site is considered sequentially acceptable. However it is recommended that the developer carefully considers surface water flood risk, and the potential overland flow paths, at this site.

C46 – Coalville

This site has been put forward for consideration for residential development.

The site is located within Flood Zone 1 and therefore considered sequentially acceptable. The site is at least 0.6km from Flood Zone 2 and the elevation of the site is over 6m higher than the approximate 1 in 1000 (0.1%) flood level. Therefore the site is predicted to remain at low fluvial flood risk over the lifetime of the development.

There are areas at risk from surface water flooding, which are predominately categorised as low risk, although there are also areas at high risk. These areas at low to high risk appear to follow various flow paths although they are not defined as Flood Zones 2 or 3. The potential for this source of flooding should be considered within the design of the development, although this risk would not render the site inappropriate for development or result in the site being considered sequentially unacceptable. As a result of climate change the surface water flood risk is likely to increase to a medium risk with some areas at very high risk.

As outlined in the SFRA, the site is located within an area at low, medium and high susceptibility to groundwater flooding. The potential risk associated with this classification is not considered to impact on the Sequential Test and a high susceptibility classification does not necessarily identify a high risk from this source. However this classification does highlight where further assessment in relation to groundwater is considered necessary to determine the implications for development design.

Overall the site is considered sequentially acceptable. However it is recommended that the developer carefully considers surface water flood risk, and the potential overland flow paths, at this site.

C48 – Coalville

This site has been put forward for consideration for residential development.

The site is located within Flood Zone 1 and therefore considered sequentially acceptable. The site is at least 0.5km from Flood Zone 2 and the elevation of the site is over 5m higher than the approximate 1 in 1000 (0.1%) flood level. Therefore the site is predicted to remain at low fluvial flood risk over the lifetime of the development.

Small isolated areas are identified to be at a low or medium risk from surface water flooding. As a result of climate change the surface water flood risk is likely to increase to a medium risk with some areas of high risk.

As outlined in the SFRA, the site is also within an area considered to have a low susceptibility to groundwater flooding. Whilst development below the existing ground level should consider the potential for groundwater ingress, the overall risk from this source of flooding is considered low.

Overall the site is considered sequentially acceptable.

IB7 – Ibstock

This site has been put forward for consideration for residential development.

The site is located within Flood Zone 1 and therefore considered sequentially acceptable. The site is at least 0.2km from Flood Zone 2 and the elevation of the site is over 17m higher than the approximate 1 in 1000 (0.1%) flood level. Therefore the site is predicted to remain at low fluvial flood risk over the lifetime of the development.

The site is currently considered to be within an area at very low risk from surface water flooding. As a result of climate change the surface water flood risk is likely to increase to a low risk.

As outlined in the SFRA, the site is also within an area considered to have a low susceptibility to groundwater flooding. Whilst development below the existing ground level should consider the potential for groundwater ingress, the overall risk from this source of flooding is considered low.

Overall the site is considered sequentially acceptable.

IB18 – Ibstock

This site has been put forward for consideration for residential development.

The site is located within Flood Zone 1 and therefore considered sequentially acceptable. The site is at least 0.2km from Flood Zone 2 and the elevation of the site is over 6m higher than the approximate 1 in 1000 (0.1%) flood level. Therefore the site is predicted to remain at low fluvial flood risk over the lifetime of the development.

There are areas at risk from surface water flooding, which are predominately categorised as low risk, although there are also areas at high risk. These areas at low to high risk appear to follow a distinct flow path before discharging to the River Sence although they are not defined as Flood Zones 2 or 3. The potential for this source of flooding should be considered within the design of the development, although this risk would not render the site inappropriate for development or result in the site being considered sequentially unacceptable. As a result of climate change the surface water flood risk is likely to increase to a medium and very high risk.

As outlined in the SFRA, the site is also within an area considered to have a low susceptibility to groundwater flooding. Whilst development below the existing ground level should consider the potential for groundwater ingress, the overall risk from this source of flooding is considered low.

Overall the site is considered sequentially acceptable. However it is recommended that the developer carefully considers surface water flood risk, and the potential overland flow paths, at this site.

K11 – Kegworth

This site has been put forward for consideration for residential development.

The site is located within Flood Zone 1 and therefore considered sequentially acceptable. The site is at least 0.3km from Flood Zone 2 and at an elevation over 2m higher than the 1 in 1000 (0.1%) annual probability flood level and 3m higher than the 1 in 100 (1%) annual probability flood event. Therefore the fluvial flood risk is considered to remain low over the lifetime of the development.

Two small isolated areas are identified to be at a low or medium risk from surface water flooding along the north eastern boundary of the site. As a result of climate change the surface water flood risk is likely to increase to a medium and high risk.

As outlined in the SFRA, the site is located within an area at high susceptibility to groundwater flooding. The potential risk associated with this classification is not considered to impact on the Sequential Test and a high susceptibility classification does not necessarily identify a high risk from this source. However this classification does highlight where further assessment in relation to groundwater is considered necessary to determine the implications for development design.

Overall the site is considered sequentially acceptable.

M6 – Measham

This site has been put forward for consideration for residential development.

The site is located within Flood Zone 1 and therefore considered sequentially acceptable. The site is at least 0.2km from Flood Zone 2, although there is a small area of Flood Zone 2 within 0.1km of the site, however this is disconnected from the watercourse and therefore dis-regarded for the purposes of this assessment. The site is at an elevation over 5m higher than the 1 in 1000 (0.1%) annual probability flood level. Therefore the fluvial flood risk is considered to remain low over the lifetime of the development.

Small isolated areas are identified to be at low or medium risk from surface water flooding. As a result of climate change the surface water flood risk is likely to increase medium or high risk.

As outlined in the SFRA, the site is also within areas considered to have a low and medium susceptibility to groundwater flooding. Whilst development below the existing ground level should consider the potential for groundwater ingress, the overall risk from this source of flooding is considered medium. However it may be prudent to undertake a groundwater assessment to inform the development design.

Overall the site is considered sequentially acceptable. However it is recommended that the developer carefully considers surface water flood risk, and the potential overland flow paths, at this site.

M11 – Measham

This site has been put forward for consideration for residential development.

The site is located within Flood Zone 1 and therefore considered sequentially acceptable. The site is at least 1km from Flood Zone 2 and at an elevation over 20m higher than the 1 in 1000 (0.1%) annual probability flood level. Therefore the fluvial flood risk is considered to remain low over the lifetime of the development.

Although there are small isolated areas at low risk of surface water flooding, the vast majority of the site is currently considered to be within an area at very low risk from surface water flooding. As a result of climate change the surface water flood risk is likely to increase to a low to medium risk.

As outlined in the SFRA, the site is also within an area considered to have a low susceptibility to groundwater flooding. Whilst development below the existing ground level should consider the potential for groundwater ingress, the overall risk from this source of flooding is considered low.

Overall the site is considered sequentially acceptable.

M12 – Measham

This site has been put forward for consideration for residential development.

The site is located within Flood Zone 1 and therefore considered sequentially acceptable. The site is at least 1km from Flood Zone 2 and at an elevation over 20m higher than the 1 in 1000 (0.1%) annual probability flood level. Therefore the fluvial flood risk is considered to remain low over the lifetime of the development.

There is a small isolated area identified to be at predominately low risk from surface water flooding with some areas at a medium risk. As a result of climate change the surface water flood risk is likely to increase to a medium risk with some areas at a high risk.

As outlined in the SFRA, the site is also within an area considered to have a low susceptibility to groundwater flooding. Whilst development below the existing ground level should consider the potential for groundwater ingress, the overall risk from this source of flooding is considered low.

Overall the site is considered sequentially acceptable.

Table 4-1 Sequential Test results

Type of development	Site reference	Permission granted	SFRA Sequential Test**	Updated fluvial Flood Zone***	Change in fluvial flood risk****	Updated surface water flood risk***	Change in surface water flood risk****	Results of the Sequential Test
Commercial	E1	No*		1	Low risk.	Very low risk	Low risk	
Commercial	E2	Yes	Permission has been granted for this site and therefore the site has not been assessed for this addendum.					
Commercial	E3	Yes	Permission has been granted for this site and therefore the site has not been assessed for this addendum.					
Commercial	E4	No*		1	Low risk.	Predominately located in areas at low and very low risk, with some areas at high risk.	Medium risk with some areas of very high risk	
Commercial	E5	No*		1	Low risk.	Predominately low and very low, with some areas at medium risk.	Medium risk with some areas of high risk	
Commercial	E6a	No*		1	Low risk.	Predominately low and very low, with some areas at high risk.	Medium risk with some areas of very high risk	
Commercial	E6b	No*		1	Low risk.	Low risk	Medium risk	
Commercial	E8	Yes	Permission has been granted for this site and therefore the site has not been assessed for this addendum.					
Commercial	E9	No*		3b	The site is in the highest fluvial flood risk band based on present day scenarios. The flood levels in this area are likely to rise as a result of climate change over the lifetime of the development.	Low risk	Medium risk	
Commercial	E10	No*		1	Low risk.	Low risk	Medium risk	

Type of development	Site reference	Permission granted	SFRA Sequential Test**	Updated fluvial Flood Zone***	Change in fluvial flood risk****	Updated surface water flood risk***	Change in surface water flood risk****	Results of the Sequential Test
Commercial	E11	No*		1	Low risk.	Low risk	Medium risk	
Commercial	E12	No*		1	Low risk.	Predominately low and very low, with a small area at medium risk.	Medium risk with some areas of high risk	
Commercial	E13	No*		1	Low risk.	Very low risk	Low risk	
Commercial	E14	No*		3b	The site is in the highest fluvial flood risk band based on present day scenarios. The flood levels in this area are likely to rise as a result of climate change over the lifetime of the development.	Low risk	Medium risk	
Commercial	E16	No*		1	Low risk.	Very low risk	Low risk	
Commercial	E17	No*		1	Low to medium risk	Predominately low and very low, with a small area at high risk.	Medium risk with some areas of very high risk	
Commercial	E18	No*		1	Low to medium risk	Low risk	Medium risk	
Commercial	E19	No*		1	Low to medium risk	Very low risk, with a very small area at low risk in the eastern area of the site.	Low risk with some areas of medium risk	
Residential	A5	No*		1	Low to medium risk	Predominately low and very low, with a small area at high risk.	Medium risk with some areas of very high risk	

Type of development	Site reference	Permission granted	SFRA Sequential Test**	Updated fluvial Flood Zone***	Change in fluvial flood risk****	Updated surface water flood risk***	Change in surface water flood risk****	Results of the Sequential Test
Residential	A7	No*		Predominately 1, with small areas in Flood Zones 2, 3a and 3b (site coverage 11%, 7% and 5% respectively)	It is likely that the majority of the site will remain at low risk from fluvial flooding (Flood Zone 1) over the lifetime of the development, with the exception of the eastern area of the site.	Outside the areas identified to be at fluvial flood risk, the site is predominately at low risk from surface water, with a few small isolated areas at medium risk.	Medium risk with some areas of high risk	
Residential	C18	No*		Predominately 1, with small areas in Flood Zones 3a (3% site coverage)	It is likely that the majority of the site remains at a low risk from flooding, with the exception being the north east corner of the site.	Outside the areas identified to be at fluvial flood risk, the site is predominately at low risk from surface water, with a few small isolated areas at medium risk.	Medium risk with some areas of high risk	
Residential	C19	No*		1	Low risk	Predominately low and very low, with some areas at high risk.	Medium risk with some areas of very high risk	
Residential	C23	Yes	Permission has been granted for this site and therefore the site has not been assessed for this addendum.					
Residential	C46	No*		1	Low risk	Predominately low and very low, with some areas at high risk.	Medium risk with some areas of very high risk	
Residential	C48	No*		1	Low risk	Predominately low risk with some isolated areas of medium risk.	Medium risk with some areas of high risk	
Residential	IB7	No*		1	Low risk	Very low risk	Low risk	

Type of development	Site reference	Permission granted	SFRA Sequential Test**	Updated fluvial Flood Zone***	Change in fluvial flood risk****	Updated surface water flood risk***	Change in surface water flood risk****	Results of the Sequential Test
Residential	IB18	No*		1	Low risk	Predominately low and very low, with some areas at high risk.	Medium risk with some areas of very high risk	
Residential	K5	Yes	Permission has been granted for this site and therefore the site has not been assessed for this addendum.					
Residential	K10	Yes	Permission has been granted for this site and therefore the site has not been assessed for this addendum.					
Residential	K11	No*		1	Low risk	Very low risk with a very small area at medium risk.	Low risk with a small isolated area at high risk	
Residential	M6	No*		1	Low risk	Predominately low risk with some isolated areas of medium risk.	Medium risk with some areas of high risk	
Residential	M11	No*		1	Low risk	Very low	Low risk	
Residential	M12	No*		1	Low risk	Predominately low risk with some isolated areas of medium risk.	Generally medium risk, although there is an area in the centre of the site which is at a high risk.	

* the list of those with permission has been provided by I. Nelson (27/08/16). All other potential land allocations (outlined in this addendum) are assumed to have not yet been given permission. This climate change addendum does not include the review of the allocated sites and whether permission has already been granted. Should permission have been granted since the list was provided and/or during the completion of this addendum, then the assessment provided in this list is considered not applicable.

** the 2015 SFRA included percentage coverage of each site by flood risk mapping. The flood mapping currently available (fluvial and surface water) does not cover significantly different proportions of the sites since the 2105 SFRA and hence the percentage values have not been repeated here.

***the updated fluvial and surface water flood risks have been based on Environment Agency information available in September 2016. This is owing to the potential for flood risk data being updated since the SFRA completion in 2015.

****change in flood risk as a result of climate change is based on the climate change factors and methodology outlined in Section Climate change guidance.

4.3. Windfall sites

Not all proposed development will fall within areas allocated for development within the Local Plan and therefore a Sequential Test should also be applied to windfall sites. To assist the Local Planning Authority development control team a flow chart identifying how the Sequential Test should be applied to windfall sites was created for the SFRA. This flow chart has been updated based on comments provided by the North West Leicestershire District Council planning team and is included in Appendix B of this addendum.

Some development types in certain flood risk areas will require the Exception Test to be passed and approved through the planning system. In order to pass the Exception Test, the NPPF technical guidance requires that the development will:

1 'Provide wider sustainability benefits to the community that outweigh flood risk and

2 That it will be safe for its lifetime without increasing flood risk elsewhere and where possible reduce flood risk overall'.

There is potential that some development proposals will not satisfy the above criteria and therefore would not be considered as appropriate development.

Based on the NPPF technical guidance, the Sequential and Exception Tests do not need to be applied to minor development 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. Minor development, is classed in the NPPF technical guidance as:

- *Minor non-residential extensions: industrial/commercial/leisure etc. extensions with a footprint less than 250 square metres.*
- *Alterations: development that does not increase the size of buildings e.g. alterations to external appearance.*
- *Householder development: For example; sheds, garages, games rooms etc. within the curtilage of the existing dwelling, in addition to physical extensions to the existing dwelling itself. This definition excludes any proposed development that would create a separate dwelling within the curtilage of the existing dwelling e.g. subdivision of houses into flats.*

It is therefore recommended that the flow chart provided in Appendix B is also utilised for change of use development proposals.

5. Conclusions and recommendations

5.1. Conclusions

The conclusions that can be made from this SFRA climate change addendum are:

1. A Sequential Test has been applied to 27 potential development sites, as provided by North West Leicestershire District Council, making use of the new climate change guidance. Of these 27 sites, this assessment has identified that there are 13 commercial sites and 10 residential sites that are classed at an acceptable level of flood risk and pass the Sequential Test. There are two residential sites classed as at a medium risk and two commercial sites at a high risk, that would not pass the Sequential Test at this stage and hence further information and assessment is required in an attempt to allow the development to proceed;
2. The results of the Sequential Test have not changed from those presented in the 2015 SFRA because the Sequential Test is based on current flood risk, and there are no sites assessed in this addendum that would be at a significantly higher risk (i.e. currently located in Flood Zone 1, but would be located in Flood Zone 3 as a result of climate change) over the development lifetime;

3. The re-assessment for the potential development sites had the potential to highlight sites currently located in Flood Zone 1 (hence currently sequentially acceptable) that would be located in Flood Zone 2 or 3 in the future as a result of increased climate change allowances. This assessment identified that none of the 23 sites in Flood Zone 1 would be significantly affected by a change in fluvial flood risk owing to climate change;
4. The two residential sites (A7 and C18) that do not pass the Sequential Test must be assessed in line with the upper end climate change allowance of 50% as part of detailed development planning at these sites;
5. The two commercial sites (E9 and E14) that do not pass the Sequential Test are not considered suitable for development. However if these sites are considered vital for wider economic and development benefits that may outweigh flood risk, then the upper end climate change allowance of 50% must be taken into account as part of detailed development planning at these sites; and
6. The Flood Zones have not been updated, or there are no changes in the Flood Zones at the location of the development sites, since the 2015 SFRA. Therefore there are no associated changes to the results of the Sequential Test outlined in the 2015 SFRA.

5.2. Recommendations

The recommendations that have been made from this SFRA climate change addendum are:

1. This addendum should support the completion of site specific FRAs. FRAs are required for submission with the associated planning application for all development located within areas at risk from flooding as defined in the fluvial flood mapping provided in the Appendices to this report (and as shown on the Environment Agency's website) and those classed as major development.
2. The Sequential Test will need to be carried out for windfall sites and applicants should provide sufficient information to the Local Planning Authority to be able to assess it. It is recommended that the flow chart provided in this addendum, which has been updated since the 2015 SFRA, for assessing windfall sites is a 'live' document.
3. The necessary climate change allowance factors outlined in this addendum should be determined early on in a scheme development as high allowances factors could have a significant impact on how flood risk is managed over the lifetime of a development.

6. References

Environment Agency. (2016). *Flood risk assessments: climate change allowances - guidance*.

Appendices

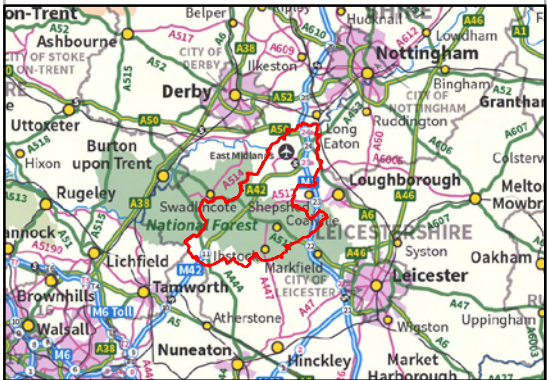
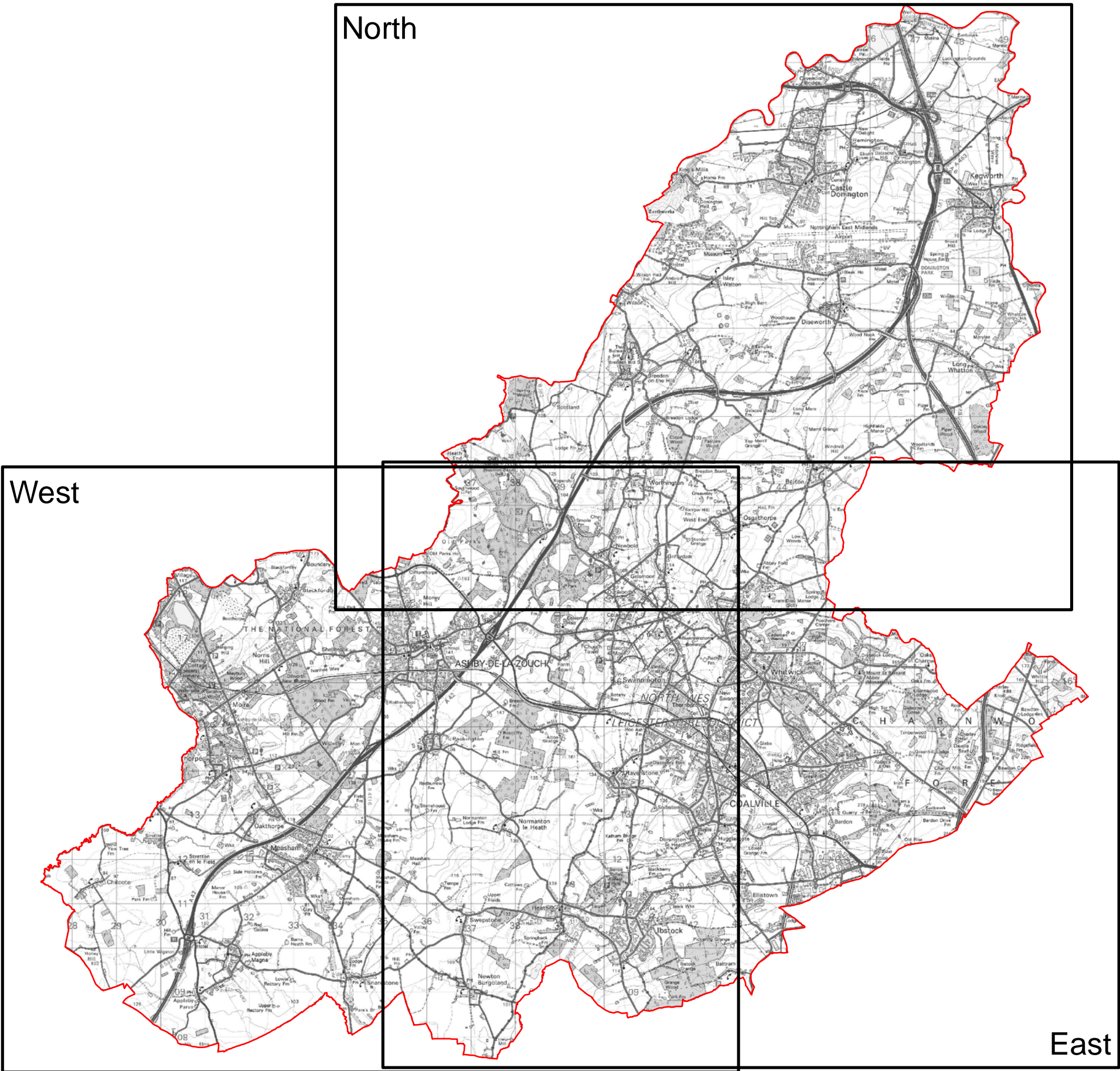


Appendix A. Potential development site mapping



Legend

Study Boundary



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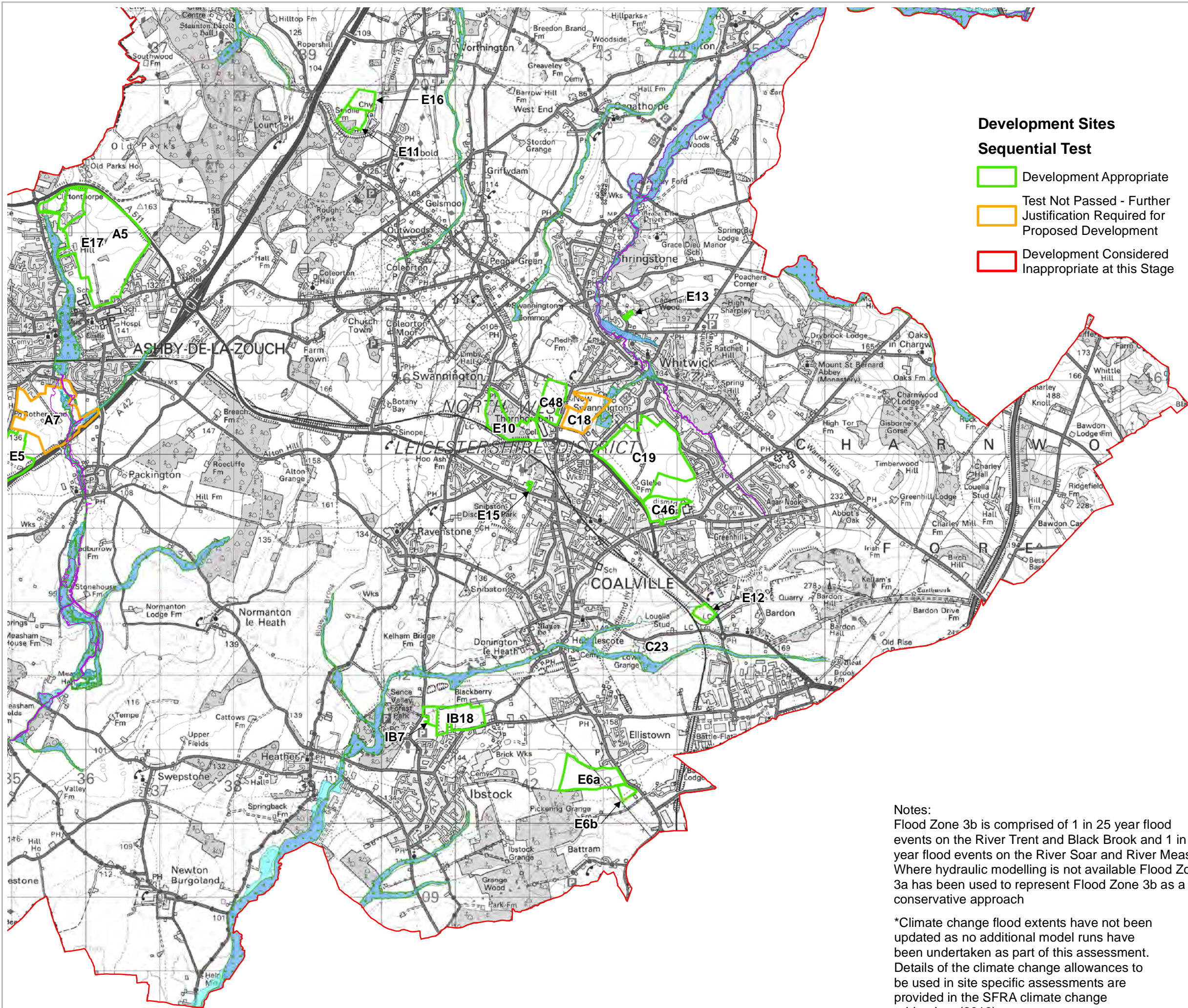
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Figure A:
Study Area

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





SCALE	DRAWN	CHECKED	AUTHORISED
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REF NUMBER	DATE	DATE	DATE
65/03/A_Rev C	17/10/16	17/10/16	17/10/16

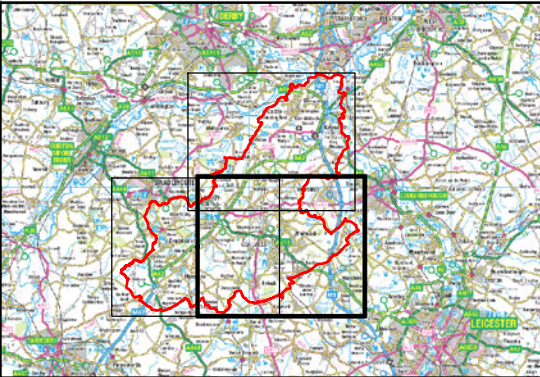




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Legend


-  Study Boundary
-  Hydraulic Modelling
-  Areas Benefiting from Flood Defences
-  Flood Zone 3b
-  Flood Zone 3a
-  Flood Zone 3a plus climate change*
-  Flood Zone 2
-  Defences



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Figure C East:
Areas at risk from Fluvial Flooding and
Sequential Test Results

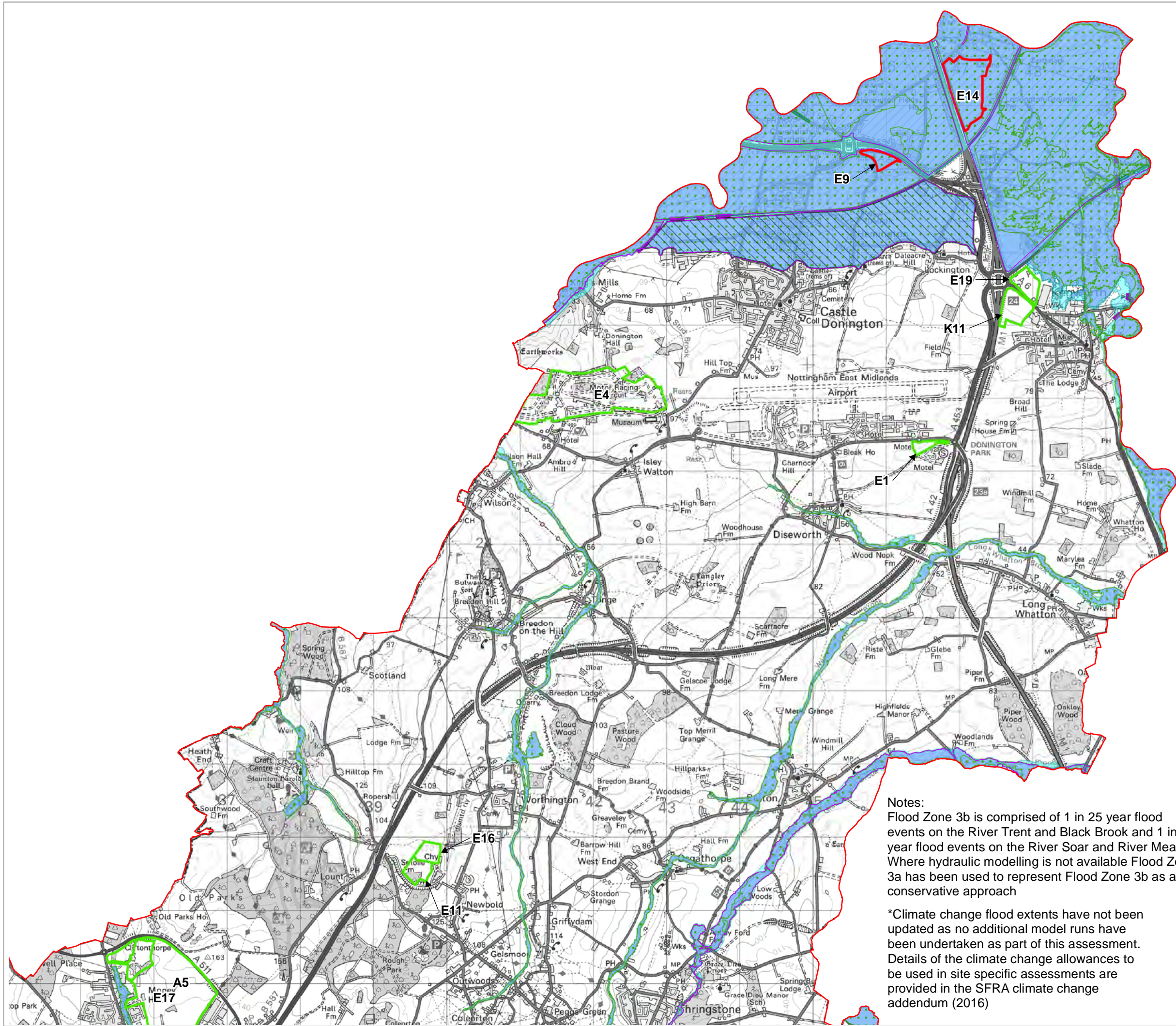
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REF NUMBER	DATE	DATE	DATE
65/03/C East_Rev B	17/10/16	17/10/16	17/10/16

Notes:
Flood Zone 3b is comprised of 1 in 25 year flood events on the River Trent and Black Brook and 1 in 20 year flood events on the River Soar and River Mease Where hydraulic modelling is not available Flood Zone 3a has been used to represent Flood Zone 3b as a conservative approach

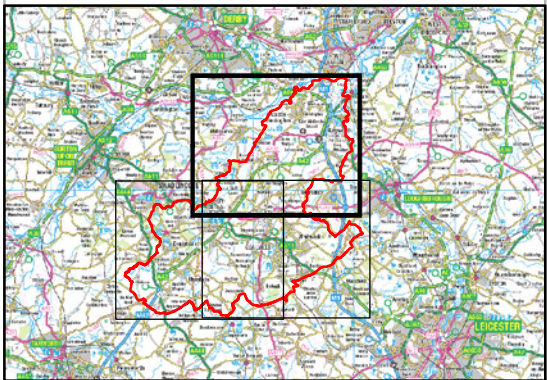
*Climate change flood extents have not been updated as no additional model runs have been undertaken as part of this assessment. Details of the climate change allowances to be used in site specific assessments are provided in the SFRA climate change addendum (2016)



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Legend

- Study Boundary
- Hydraulic Modelling
- Areas Benefiting from Flood Defences
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 3a plus climate change
- Flood Zone 2
- Defences



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Figure C North:
Areas at risk from Fluvial Flooding and
Sequential Test Results

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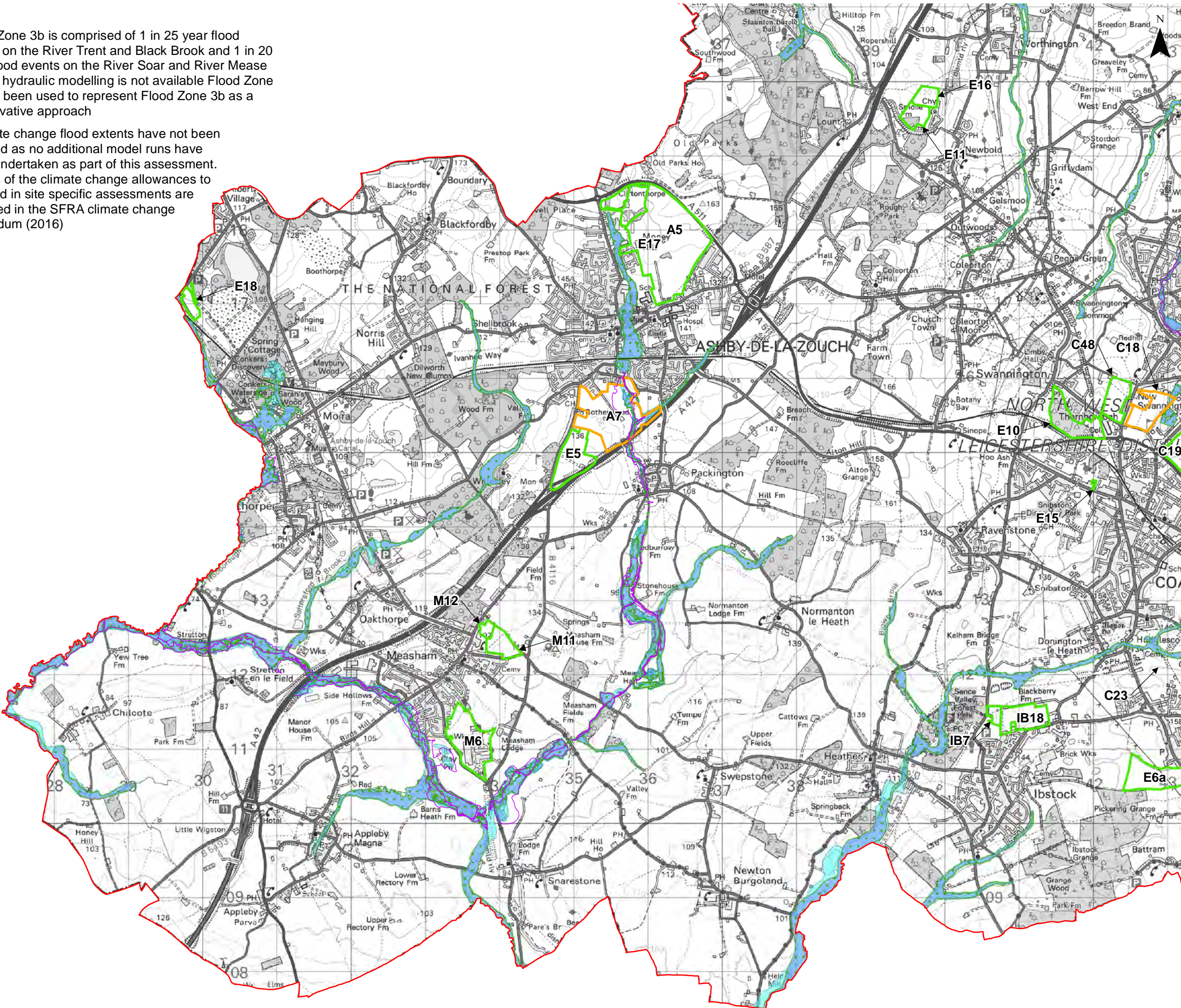
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REF NUMBER	DATE	DATE	DATE
65/03/C North_Rev C	17/10/16	17/10/16	17/10/16

Notes:
Flood Zone 3b is comprised of 1 in 25 year flood events on the River Trent and Black Brook and 1 in 20 year flood events on the River Soar and River Mease Where hydraulic modelling is not available Flood Zone 3a has been used to represent Flood Zone 3b as a conservative approach

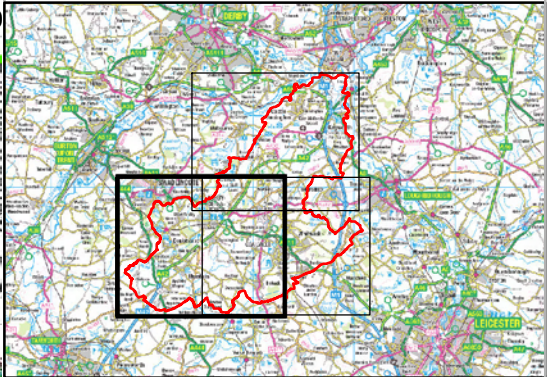
*Climate change flood extents have not been updated as no additional model runs have been undertaken as part of this assessment. Details of the climate change allowances to be used in site specific assessments are provided in the SFRA climate change addendum (2016)

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*Climate change flood extents have not been updated as no additional model runs have been undertaken as part of this assessment. Details of the climate change allowances to be used in site specific assessments are provided in the SFRA climate change addendum (2016)



- Legend**
- Study Boundary
 - Hydraulic Modelling
 - Areas Benefiting from Flood Defences
 - Flood Zone 3b
 - Flood Zone 3a
 - Flood Zone 3a plus climate change
 - Flood Zone 2
 - Defences



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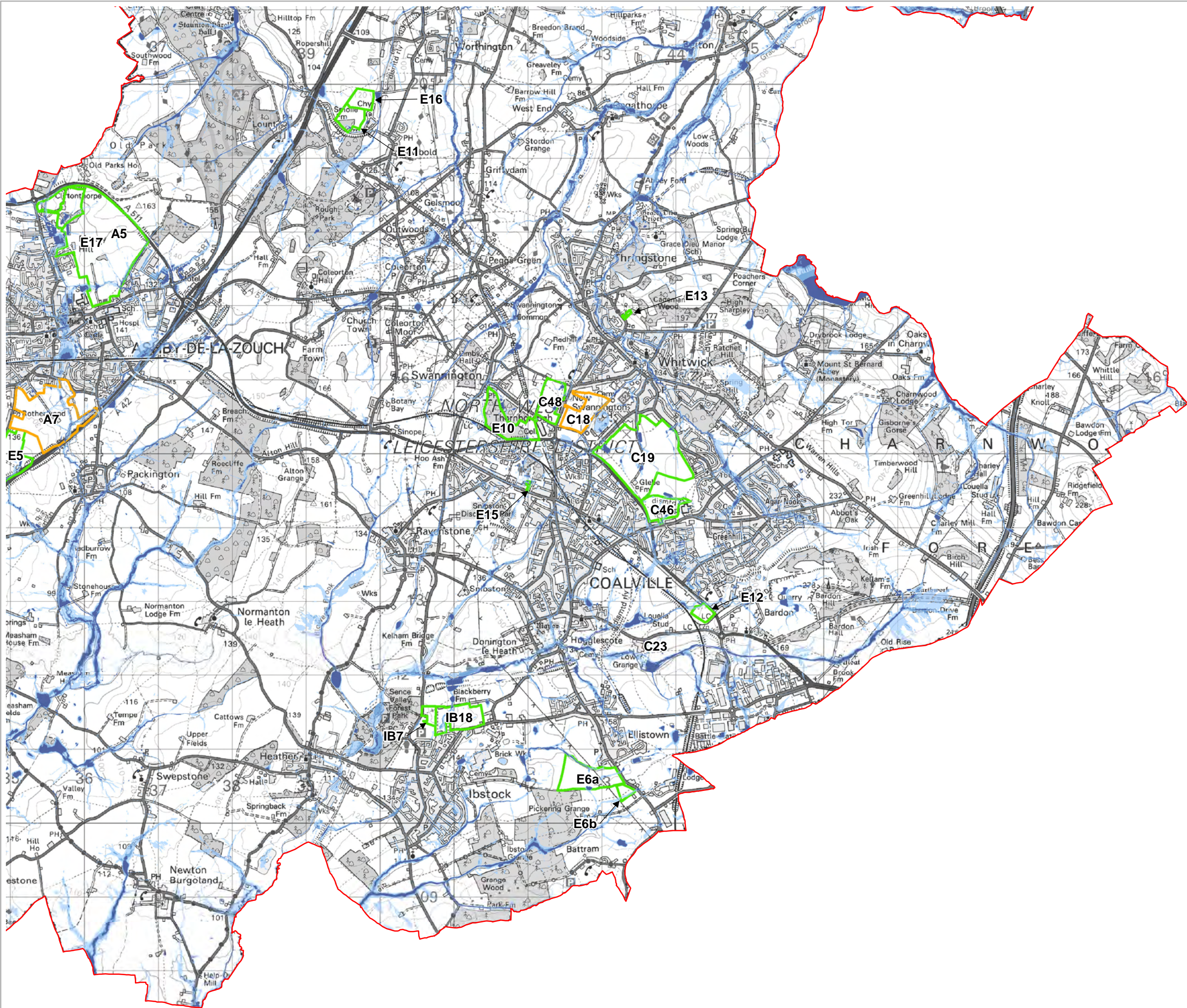
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Strategic Flood Risk Assessment Update

TITLE
Figure C West:
Areas at risk from Fluvial Flooding and
Sequential Test Results

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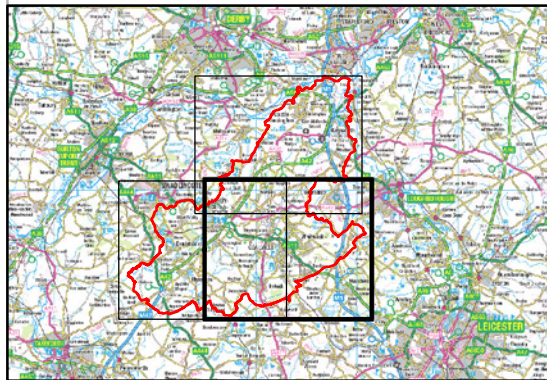
Legend

- Study Boundary
- RoFSW* 1 in 30 flood extent
- RoFSW* 1 in 100 flood extent
- RoFSW* 1 in 1000 flood extent

Sequential Test

- Development Appropriate
- Test Not Passed - Further Justification Required for Proposed Development
- Development Considered Inappropriate at this Stage

* Risk of Flooding from Surface Water (May, 2016)



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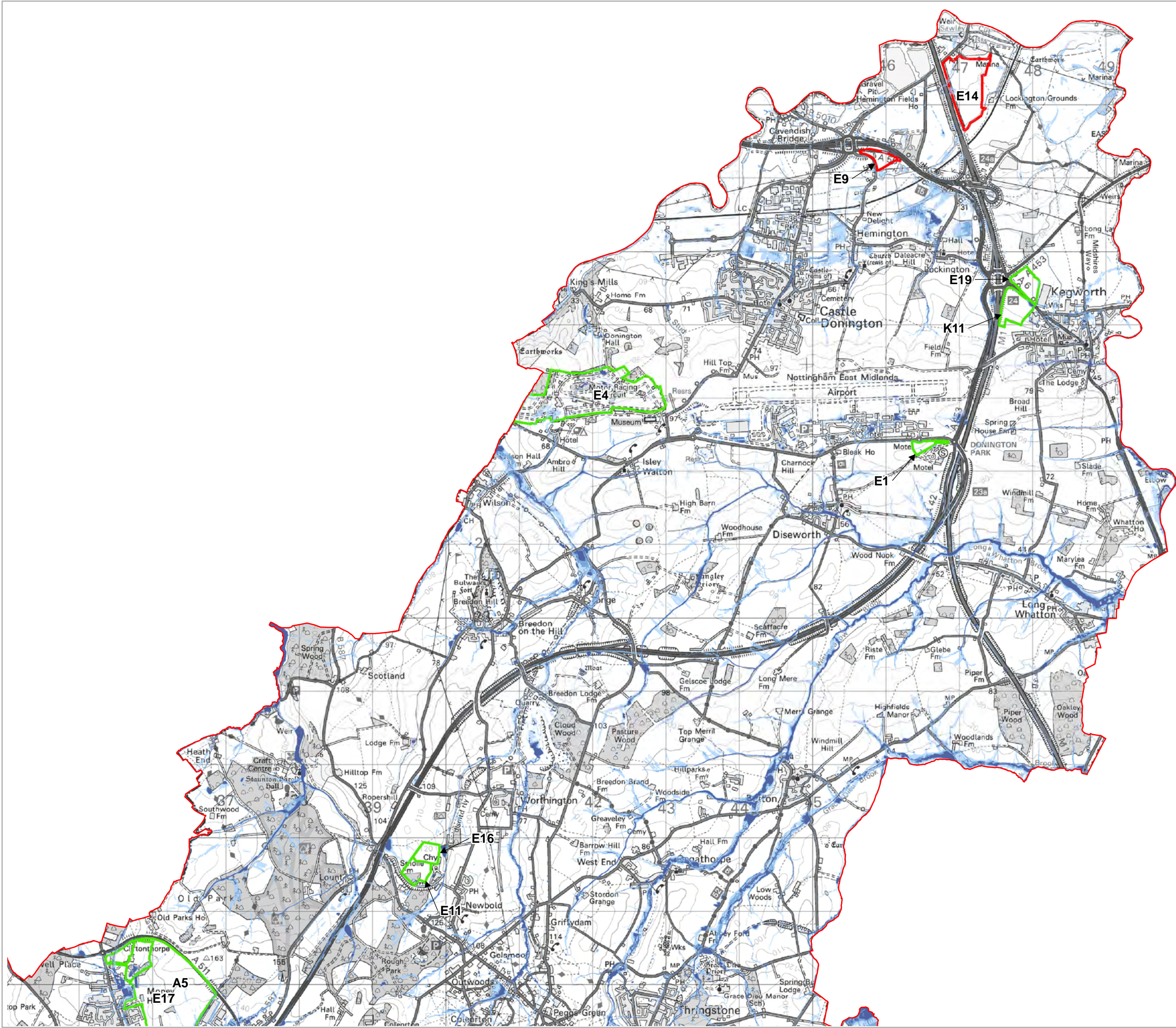
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Strategic Flood Risk Assessment Update

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Figure D East:
Areas at Risk from Surface Water Flooding and
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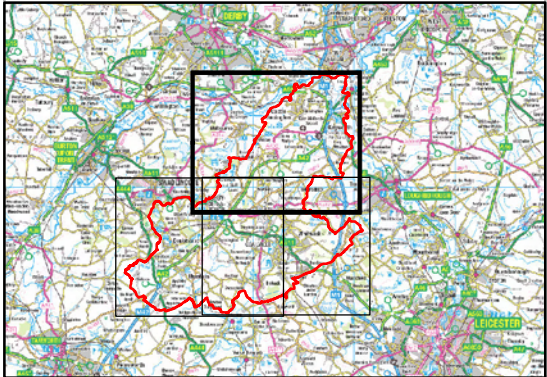
Legend

- Study Boundary
- RoFSW* 1 in 30 flood extent
- RoFSW* 1 in 100 flood extent
- RoFSW* 1 in 1000 flood extent

Sequential Test

- Development Appropriate
- Test Not Passed - Further Justification Required for Proposed Development
- Development Considered Inappropriate at this Stage

* Risk of Flooding from Surface Water (May, 2016)



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Figure D North:
Areas at Risk from Surface Water Flooding and
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65/03/D North_Rev C	17/10/16	17/10/16	17/10/16

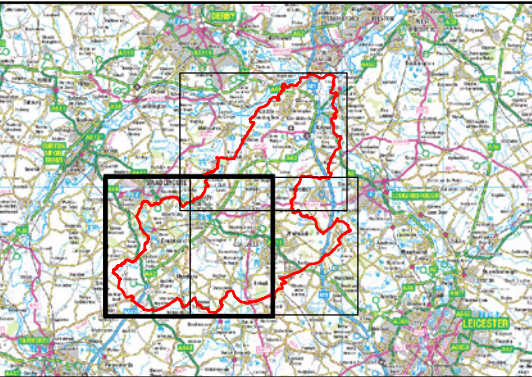
Legend

- Study Boundary
- RoFSW* 1 in 30 flood extent
- RoFSW* 1 in 100 flood extent
- RoFSW* 1 in 1000 flood extent

Sequential Test

- Development Appropriate
- Test Not Passed - Further Justification Required for Proposed Development
- Development Considered Inappropriate at this Stage

* Risk of Flooding from Surface Water (May, 2016)



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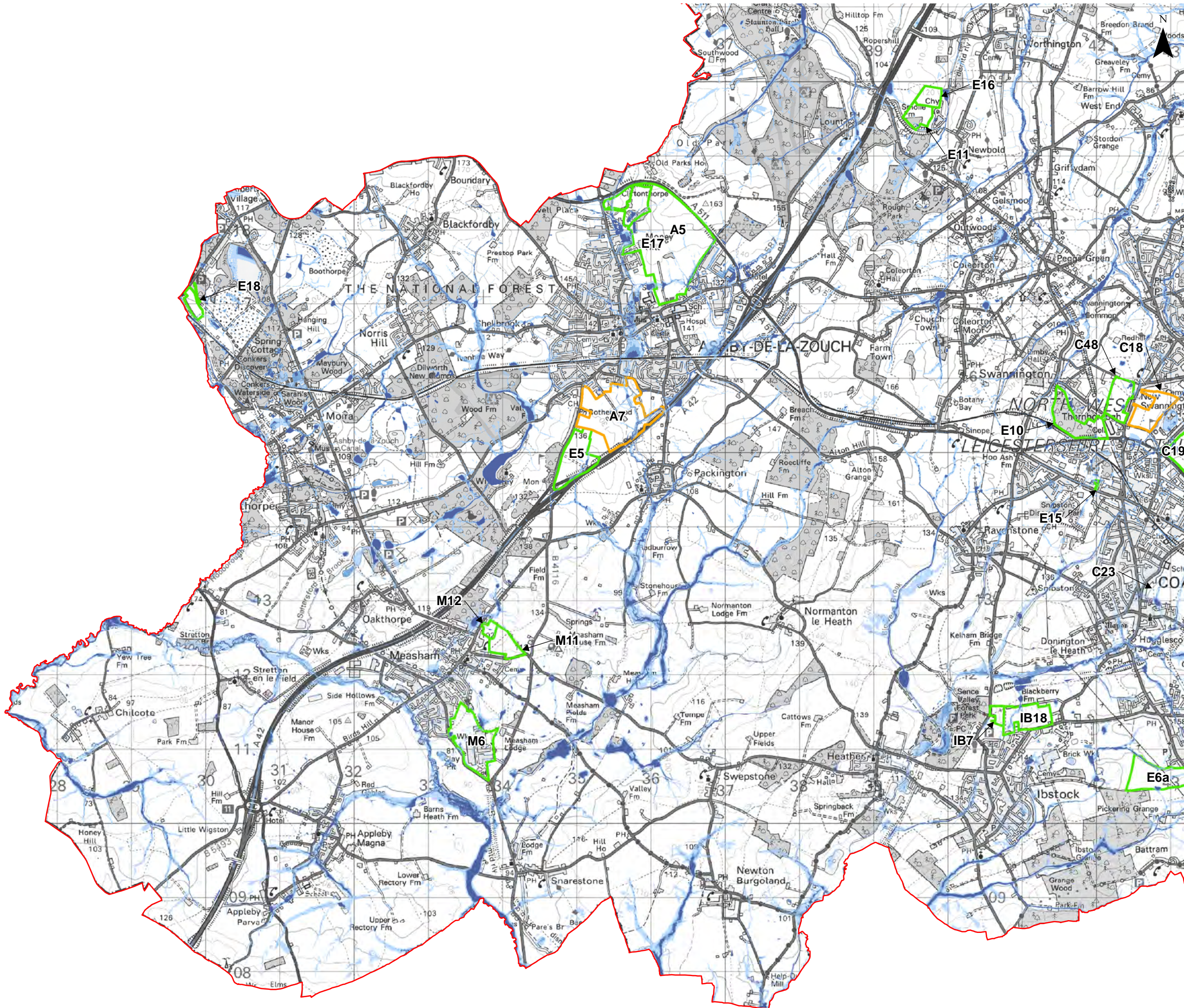
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Figure D West:
Areas at Risk from Surface Water Flooding and
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Appendix B. Windfall site flow chart

Notes

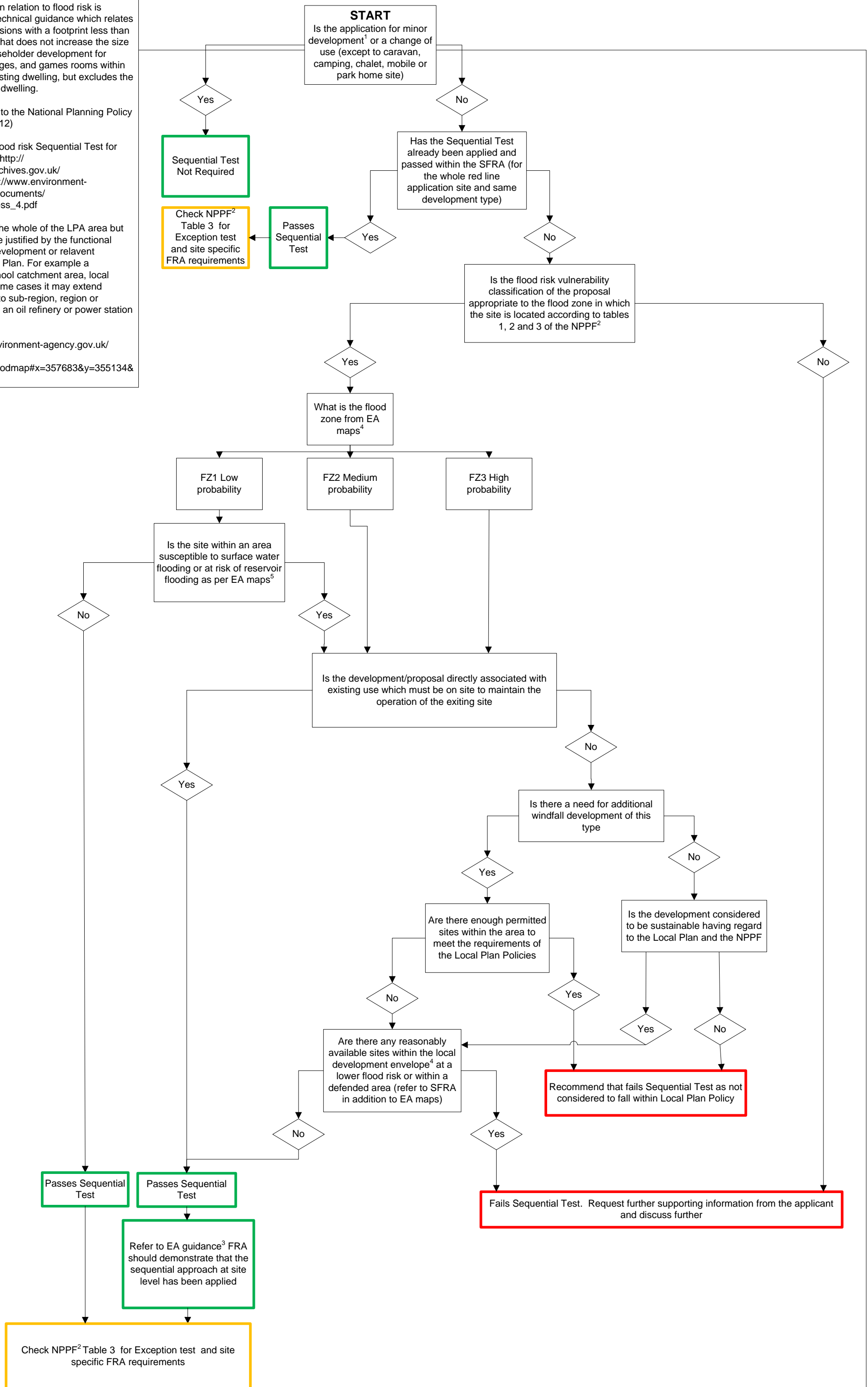
1 Minor development in relation to flood risk is defined in the NPPF technical guidance which relates to no-residential extensions with a footprint less than 250m²; development that does not increase the size of a building; and householder development for examples sheds, garages, and games rooms within the curtilage of the existing dwelling, but excludes the creation of a separate dwelling.

2 Technical Guidance to the National Planning Policy Framework (March 2012)

3 Demonstrating the flood risk Sequential Test for Planning Applications http://webarchive.nationalarchives.gov.uk/20140328084622/http://www.environment-agency.gov.uk/static/documents/Sequential_test_process_4.pdf

4 This will usually be the whole of the LPA area but may be reduced where justified by the functional requirements of the development or relevant objectives in the Local Plan. For example a regeneration area, school catchment area, local parish boundary. In some cases it may extend beyond the LPA area to sub-region, region or national. For example an oil refinery or power station may be national.

5 <http://watermaps.environment-agency.gov.uk/wiyby/wiyby.aspx?&topic=floodmap#x=357683&y=355134&scale=2>



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