

Sequential Flood Risk Test for the Mid Sussex District Plan 2014 - 2031

August 2016

Introduction

This Sequential Test relates to the allocations for new development in Mid Sussex within the pre-submission District Plan 2014 - 2031. The sequential test draws upon information gathered and detailed within the District Council's Strategic Flood Risk Assessment (SFRA) (June 2015). The tests follow the steps outlined in the National Planning Policy Framework and accompanying technical guidance, and follows examples of best practice as highlighted by the Environment Agency. The sequential approach is explained in section 2.4 of the Strategic Flood Risk Assessment¹.

The National Planning Policy Framework (paragraph 100) requires Local Plans such as the District Plan to “apply a sequential, risk-based approach to the location of development to avoid where possible flood risk to people and property and manage any residual risk, taking account of the impacts of climate change, by applying the **Sequential Test**, and, if necessary, applying the **Exception Test**”

The Mid Sussex District Plan has been prepared to provide a vision for how Mid Sussex wants to evolve and a delivery strategy for how that will be achieved. In preparing a District Plan the Council are required to undertake a flood risk test. A sequential approach is used to steer new development to areas at the lowest risk of flooding.

The District Plan sets a housing provision figure of 800 dwellings per annum and seeks to allocate 3 strategic development sites to provide 4,580 of these homes. In addition to these sites and homes already committed but not yet implemented, new homes are also to be delivered through Neighbourhood Plans. To date, ten Neighbourhood Plans have been made (Ardingly, Ashurst Wood, Burgess Hill, Cuckfield, Hurstpierpoint and Sayers Common, Lindfield and Lindfield Rural, Turners Hill, Twineham and West Hoathly). Each can potentially allocate land for development and has been subject to a separate Sequential Test where doing so. A further 10 communities in Mid Sussex are preparing their own Neighbourhood Plans which are at various stages of completion.

The Strategic Flood Risk Assessment should identify the possible risk of flooding from all sources. The Assessment identified that approximately 8 sq kilometres of the District is at high risk of fluvial (river) flooding. Watercourses associated with these areas of fluvial flood risk include the River Adur, the River Ouse, the Scrase Bridge Stream, the River Medway and tributaries of the Upper Mole. The risk of river

¹ <http://www.midsussex.gov.uk/8322.htm>

flooding of an area is categorised by the probability of flooding occurring in that area in any given year and these categories are summarised below:

Flood Zone	Risk of Fluvial Flooding
1	Low probability – land assessed as having a less than 1 in 1,000 annual probability of flooding (<0.1%)
2	Medium probability – land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of flooding (1% - 0.1%)
3a	High probability – land assessed as having a 1 in 100 or greater annual probability of flooding (>1%)
3b	This zone comprises land where water has to flow or be stored in times of flood. This includes land that would naturally flood with an annual probability of 1 in 20 (5%) or greater in any year but may include other land as well.

Table 1: Summary of Flood Risk Zones

It should be noted that flooding from surface water, groundwater, sewers, reservoirs and other artificial sources is not classified into these flood zones however as part of the Strategic Flood Risk Assessment the District Council has collected information on flood risk from all sources and this will be referred to ensure that development is directed to areas with a lower probability of flooding. For example, modelling may show an area at risk of surface water flooding with an annual probability of 1 in 20 and this should therefore be treated as areas of Flood Zone 3b.

Technical Guidance to the National Planning Policy Framework classifies types of development into five categories of flood risk vulnerability;

- essential infrastructure
- highly vulnerable
- more vulnerable
- less vulnerable
- water-compatible development.

Appendix A lists the types of development that are classified under each flood risk vulnerability classification.

Table 2 contains the following:

- The policies within the District Plan that identify allocations and broad locations for new development.
- The existing flood risk characteristics of these locations.
- The existing land use(s) of each area.
- The proposed use(s) of each area.
- The flood risk vulnerability classification for each existing and proposed use (see Appendix A for definitions of these classifications).

Table 2: Analysis of proposed development areas identified for housing and employment development

Policy No.	Development Area	Flood risk zone(s)	Existing Flood Defences	Existing Uses	Proposed Development	Flood vulnerability classification
DP2	West of Burgess Hill	1, 2, 3a	None	Agriculture	Science park	Less vulnerable
DP8	Land to the east of Burgess Hill at Kings Way	1	None	Agriculture	Residential Community use Informal public open space	More vulnerable Less vulnerable Water-compatible development
DP9	Land to the north and north west of Burgess Hill	1, 2, 3a	None	Agriculture	Residential Retail Employment Business Park (30ha) Community use (inc. schools and leisure buildings) Informal public open space	More vulnerable Less vulnerable Less vulnerable Less vulnerable Less/more vulnerable Water-compatible development
DP9a	Land at Hardriding Farm, Pease Pottage	1	None	Agriculture	Residential Community use (inc. schools and leisure buildings) Informal public open space	More vulnerable Less/more vulnerable Water-compatible development

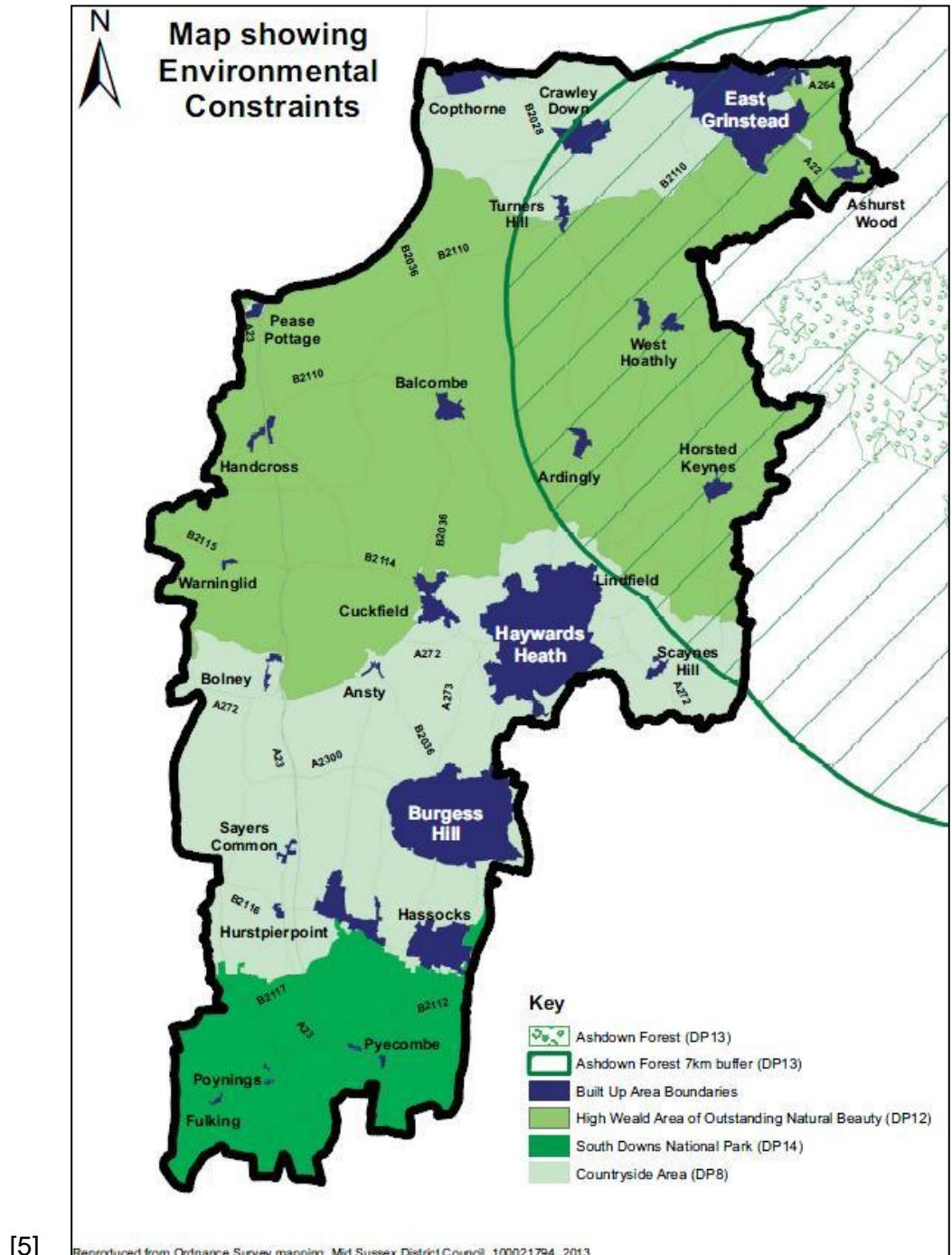
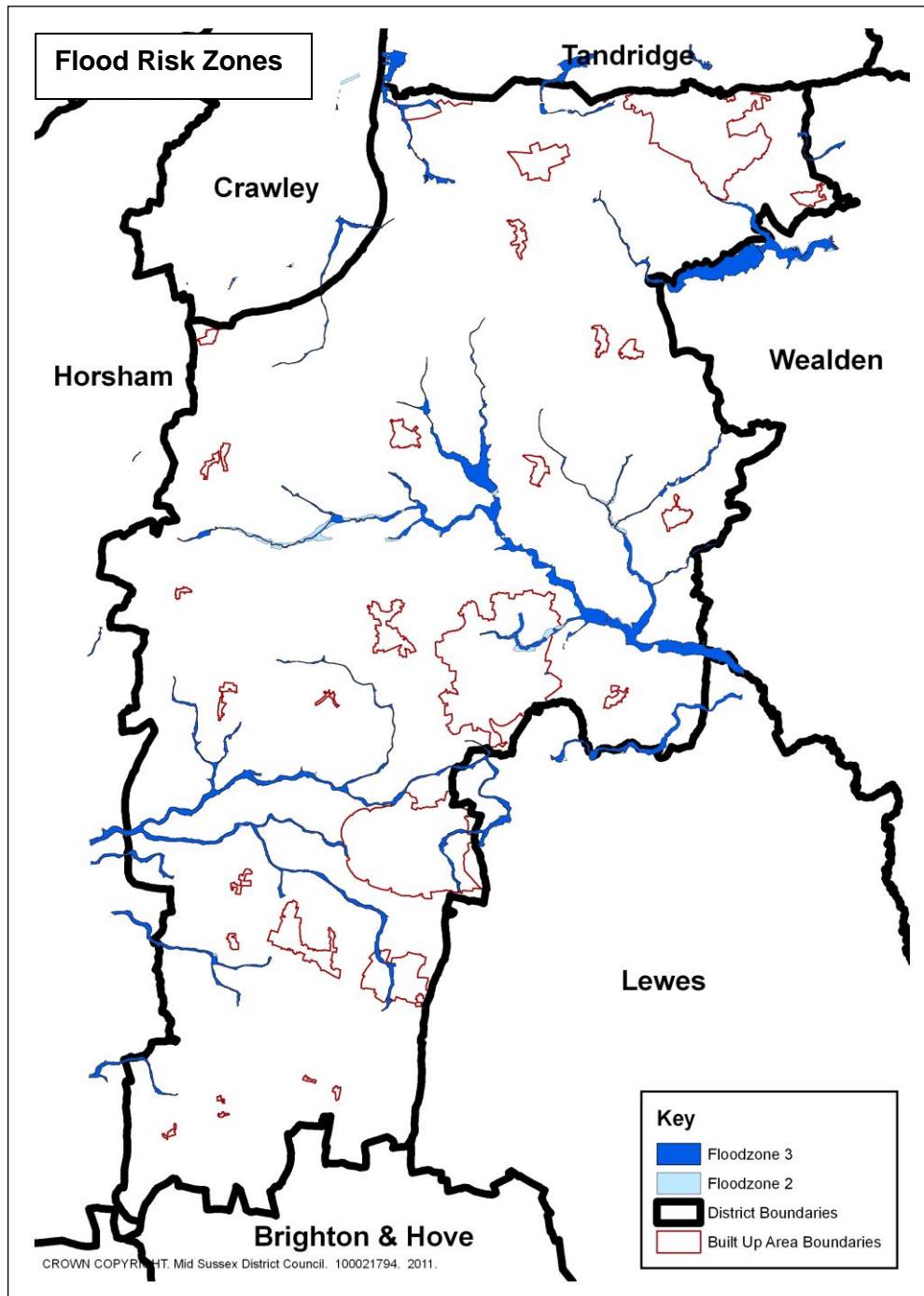
Note: Areas identified as having historically flooded in the District Council's Strategic Flood Risk Assessment, but have not been identified as either Flood Zones 2 or 3 on the Environment Agency's flood map, have been defined as areas of Flood Zone 3b for the purposes of this exercise.

Table 3 shows which type of development can be appropriately located in each flood zone, and where the Exception Test is required.

Flood risk vulnerability classification	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Flood Zone	Zone 1	✓	✓	✓	✓
	Zone 2	✓	Exception test required	✓	✓
	Zone 3a	Exception test required	X	Exception test required	✓
	Zone 3b functional floodplain	Exception test required	X	X	X

Key: ✓ Development is appropriate.
X Development should not be permitted.

Table 3: Flood risk Vulnerability and flood zone compatibility



The Sequential Test

Within each flood zone, new development should be directed first to sites at the lowest probability of flooding and the flood vulnerability of the intended use matched to the flood risk of the site, i.e. higher vulnerability uses should be located on parts of the site at lowest probability of flooding. The Sequential Test is the process to ensure that this happens.

The Sequential and Exception Test are national planning policy requirements. These tests are not intended to prevent all development on sites liable to flooding; accepting that some form of development may have to be located here.

The Exception Test is only appropriate when there are large areas in flood risk areas, where the Sequential Test alone cannot deliver acceptable sites but where some continuing development is necessary for wider sustainable development reasons. It may also be appropriate where restrictive national designations such as landscape, heritage and nature conservation designations prevent the availability of unconstrained sites in lower risk areas.

The Mid Sussex District Plan 2014 - 2031 includes allocations and broad locations that cover areas of Flood Zones 1, 2 and 3.

Sequential Test for the District Plan

1. Are the proposed development areas in Flood Zone 1 – Low probability of flood risk?	
Yes	<p>Development areas wholly within Flood Zone 1:</p> <p>Land to the east of Burgess Hill at Kings Way (DP8) Land at Hardriding Farm, Pease Pottage (DP9a)</p> <p>Locations primarily in Flood Zone 1:</p> <p>Land to the north and north west of Burgess Hill (DP9) Land to the west of Burgess Hill (DP2)</p> <p>For locations and sites detailed above, development will be directed away from the peripheral locations outside Flood Zone 1 (as demonstrated in Appendix B). Therefore, for the purposes of development these sites can be considered as being in Flood Zone 1. Modelling indicates limited areas that are at higher risk of surface water flooding and development proposals will need to take account of the movement of water and integrate sustainable drainage solutions to manage areas of flood risk.</p>
No	None.

2. Could the following proposed development areas in Flood Zones 2 and 3 be alternatively located in Flood Zone 1?	
	<p>Land to the north and north west of Burgess Hill (DP9) – partly located outside Flood Zone 1 Land to the west of Burgess Hill (DP2) – Flood Zone 1 but bordered by areas of Flood Zone 2 and 3 to the north and south</p>
No	<p>a) Identify alternative sites that were considered and explain why they were dismissed</p> <p>A number of locations were submitted as alternatives to proposed housing sites, the vast majority of these were small in scale (mostly 1-500 units) and did not represent realistic alternatives in comparison to the much larger scale development which was appraised in the District Plan 2014 – 2031 Sustainability Appraisal. It is expected that these sites will be considered by Town and Parish Councils in identifying sites that could be brought forward through Neighbourhood Plans, or in the forthcoming Site</p>

Allocations DPD rather than at a strategic level through the District Plan. No alternative broad locations for a Science Park proposal have been identified or submitted to the Council at this time.

Fifteen options for development were assessed through the Sustainability Appraisal as strategic location options that could accommodate large-scale (strategic) housing growth:

- a) Land to the North of Burgess Hill (known as the 'Northern Arc') – approx. 3,500 dwellings. SHLAA ref : #493
- b) Land to the East of Burgess Hill (East of Kings Way) – approx. 500 dwellings. SHLAA ref: #233
- c) Land to the South of Burgess Hill (South of Folders Lane) – approx. 1,000 dwellings SHLAA ref: #557
- d) Land to the West of Burgess Hill (West of Jane Murray Way) – approx. 1,500 dwellings.
- e) Land to East/South of Crawley (Crabbet Park) – approx. 2,300 dwellings. SHLAA ref: #18
- f) New Market Town (Sayers Common area) – approx. 10,000 dwellings. SHLAA ref: #678
- g) Land North of Cuckfield Bypass (Cuckfield) – approx. 500 dwellings. SHLAA ref: #240
- h) Land adj. Great Harwood Farm (East Grinstead) – approx. 600 dwellings. SHLAA ref: #17
- i) Land north east of Lindfield (Lindfield) – approx. 1,200 dwellings. SHLAA ref: #498
- j) Land east of Northlands Brook and south of Scamps Hill (Lindfield) – approx. 500 dwellings. SHLAA ref: #483
- k) Haywards Heath Golf Course (Haywards Heath) – approx. 500 dwellings. SHLAA ref: #503
- l) Eastlands, Lewes Road (Scaynes Hill) – approx. 630 dwellings. SHLAA ref: #515
- m) Hardriding Farm, Brighton Road (Pease Pottage) – approx. 600 dwellings. SHLAA ref: #666
- n) Land South of Pease Pottage (Pease Pottage) – approx. 660 dwellings. SHLAA ref: #603
- o) Land at Lower Tilgate (Pease Pottage) – approx. 1,750 dwellings. SHLAA ref: #243
- p) Broad Location North and East of Ansty – approx. 2,000 dwellings. SHLAA ref: #736
- q) Imberhorne Farm, East Grinstead – approx. 550 dwellings. SHLAA ref: #770

The proposed development areas are considered to have less environmental, transportation and ecological constraints and barriers to delivery than other options. Options (f) and (i) contain significant areas identified as being at risk from flooding and would therefore not be suitable alternatives in terms of flood risk. Options (a), (d), (e), (h), (j) all contain smaller areas in designated Flood Zones 2 and 3, however – aside from options (a), (b) and (m) all other options have been assessed as not being deliverable/developable within the plan period. There is uncertainty around the deliverability of (d), (e) and (p) within the Plan period. There could be negative economic impacts from (e), (f), (o) and (p) predominantly due to their locations and the impact on existing communities.

	<p>b) explain why the proposals cannot be directed to Flood Zone 1</p> <p>The development areas are primarily within Flood Zone 1 and development will be directed towards these areas. Where development does occur near areas of Flood Zones 2 and 3 it is intended that these will be less vulnerable types of development. This could include sports pitches, improved open space and school fields adjacent to these Flood Zones. Residential development would be kept within Flood Zone 1.</p>
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3. For sites in ‘Flood Zone 2 Medium Probability’ of flood risk.	
Locations in Flood Zone 2 include, in whole or in part:	
<p>Land to the north and north west of Burgess Hill (DP9) – partly located outside Flood Zone 1</p> <p>Land to the west of Burgess Hill (DP2) – broad location for a development that could be accommodated within Flood Zone 1 but there are areas of Flood Zone 2 and 3 to the north and south that would need to be avoided using the sequential approach once more detailed proposals are identified</p>	
3a. Are the proposed uses in the ‘Water Compatible’, ‘Less Vulnerable’, ‘More Vulnerable’, or ‘Essential Infrastructure’ Flood Risk Vulnerability Classifications set out in Table D2?	
Yes	<p>List the proposed uses in these classifications within Flood Zone 2:</p> <ul style="list-style-type: none"> • Water Compatible – open space, outdoor sports • Less Vulnerable – none • More Vulnerable – none • Essential Infrastructure – none <p>These proposals are appropriate if located in Flood Zone 2. Hence, there is no need to proceed with the Exception Test.</p>
No	<p>List the proposed uses not in these classifications:</p> <ul style="list-style-type: none"> • None <p>For these proposed uses proceed to Question 3b.</p>
3b. Can the more flood sensitive development types ('highly vulnerable' and 'more vulnerable') be directed to parts of the site where the risks are lower for both the occupiers and the premises themselves?	
N/A - Question not applicable as no flood sensitive development types are proposed within the Flood Zone 2 area.	

4. For broad locations in ‘Flood Zone 3a High Probability’ of flood risk.

Locations in Flood Zone 3a include, in whole or in part:

Land to the north and north west of Burgess Hill (DP9) – partly located outside Flood Zones 1 and 2

4a. Can the development proposal be redirected to ‘Flood Zone 2 Medium Probability’?

Possibly	Explain why: <ul style="list-style-type: none">• See response to question 3b.• The District Council will seek to ensure that new development is located in areas of Flood Zone 2 and 1 that exist within the site area. This will be determined through a site specific Flood Risk Assessment during the planning application process and guided by advice contained within the Strategic Flood Risk Assessment.
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4b. Are the development proposals in the ‘Water Compatible’ or ‘Less Vulnerable’ classifications?

Yes	List the proposed uses in these classifications: <ul style="list-style-type: none">• Water Compatible – open space, outdoor sports• Less Vulnerable – none <p>These proposals are appropriate in Flood Zone 3a and there is no need to proceed with the Exception Test.</p>
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No	List the proposed uses not in these classifications: <ul style="list-style-type: none">• None <p>For these proposed uses proceed to Question 4d.</p>
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4c. Is the development proposal in the ‘Highly Vulnerable’ classification?	
No	<ul style="list-style-type: none"> • Proceed to Question 4d.
4d. Can the more flood sensitive development use types (‘highly vulnerable’ and ‘more vulnerable’ be directed to parts of the site where the risks are lower for both the occupiers and the premises themselves.	
	<ul style="list-style-type: none"> • Not applicable – there are no ‘highly vulnerable’ or ‘more vulnerable’ development types proposed as part of the proposals for areas of Flood Zone 3a within the site

Conclusion

As the proposals in the District Plan 2014 – 2031 do not involve development of vulnerable uses in Flood Zones 2/3, and development is focused towards areas with a lower probability of flooding (as per the aim of the Sequential Test), development in these areas can be considered appropriate (from a flood risk point of view) and there is no requirement to carry out the Exception Test. Development proposals at these locations will need to take a sequential approach to flood risk and apply suitable mitigation measures in accordance with advice contained within the Council’s Strategic Flood Risk Assessment and the ‘Water. People. Places.’ sustainable drainage guidance.

The District Plan’s preferred housing strategy is for part of the total housing requirement to be delivered through Neighbourhood Plans, therefore this part of the overall housing provision proposed in the District Plan has not yet been subject to the Sequential Flood Risk Test. A separate Sequential Test should be undertaken for each Neighbourhood Plan and/or any Site Allocations Development Plan Document produced to deliver the required amount of development to ensure that all development is focused towards areas with a lower probability of flooding.

APPENDIX A – Flood Risk Vulnerability Classification (as per “Technical Guidance to the National Planning Policy Framework”)

Essential infrastructure

- 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.

Highly vulnerable

- Police stations, ambulance stations and fire stations and command centres and 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”).

More vulnerable

- 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*.

Less vulnerable

- Police, ambulance and fire stations which are *not* required to be operational during flooding.
- Buildings used for shops, financial, professional and other services, restaurants and cafes, hot food takeaways, offices, general industry, storage and distribution, non-residential institutions not included in “more vulnerable”, 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*.

APPENDIX B

Development Area	Total area of the site (hectares)	What is proposed?	Area / percentage of the site / location at risk from flooding	Potential net developable area (excludes areas of flood risk & areas covered by other environmental constraints)	Can the proposed development be located in the net developable area?
Land to the west of Burgess Hill	Broad location only	A science park to support research and development and provide employment for the wider area	None	Broad location only	Yes, The location provided within the District Plan is a broad location and although the area has flood risk zones in the north and south the science park could be located within Flood Zone 1.
Land to the east of Kings Way	31.54ha	- Up to 480 new homes; - High quality and accessible informal public open space; - A local hub serving the site and the wider community	None	31.54ha	Yes; the site is located within Flood Zone 1. Some areas of surface water flood risk are indicated near to existing watercourses (ditches and channels) running through the lowest parts of the site. Using the sequential test these areas should be avoided.
Land to the north and north west of Burgess Hill	233.02ha	- 3,500 new homes and a new neighbourhood centre area, including retail, education, health, employment, leisure and community uses;	10.74ha (4.6%)	222.28ha	Yes; those parts of the site situated within Flood Risk Zones 2 and 3 can be used for less vulnerable and water-compatible development without reducing the potential of the site to provide 3,500 new homes and other more vulnerable types of development.

		<ul style="list-style-type: none"> - 30 hectares of land for high quality business use; - new primary schools and a new secondary school campus; and - a Centre for Community Sport in the vicinity of the Triangle Leisure Centre. 			<p>Modelling also indicates some areas of surface water flood risk near to watercourses running through the site and West Sussex County Council have identified historic records of isolated surface water flooding. This flood risk should be investigated as part of any site-specific Flood Risk Assessment and areas at higher risk of flooding should be avoided using the sequential approach.</p>
Land at Hardriding Farm, Pease Pottage	44.36ha	<ul style="list-style-type: none"> - 600 new homes - new primary school - hospice and community café 	None	44.36ha	<p>Yes; the site is located within Flood Zone 1. Some very small areas of surface water flood risk are indicated on some parts of the site but these would not affect the developable area.</p>