MBC_001_15 - Land at Home Farm, Ab Kettleby						
OSNGR:	472733,323052	Area: 1.3ha Greenfield				
Flood Zone Coverage:		<b>FZ3b</b> 1%	<b>FZ3a</b> 0%	<b>FZ2</b> 0%	<b>FZ1</b> 99%	

A small area of the site is at risk of fluvial flooding from an unamed water course located immediately to the east of the south eastern site boundary. This corner is located in Flood Zone 3a. The vast majority of the site is in Flood Zone 1 and not at risk of fluvial flooding within a 1-in-100 year return period, factoring in climate change at 30% does not significantly increase the area at risk. The site is at limited risk of surface water flooding adjacent to the unnamed water course and in the vacinity of the south western boundary on site.

#### **Exception Test Required?**

Unlikely, as the majority of the site is located in Flood Zone One.

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2. Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b. More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b. Essential Infrastructure in Flood Zone 3b will require the Exception Test.

## NPPF Guidance:

The majority of the site is located within Flood Zone One, therefore by ensuring development is placed away from the watercourses and outside of the flood zones, the Exception test will not be required.
However, sites over one hectare will require a site specific flood risk assessment, in which the vulnerability to flooding from other sources should be considered. If development is placed in the flood zones then, depending on the type of the development, the Exception test may be required.
To pass Part 'b' of the Exception Test, a FRA should demonstrate that the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.













• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

# Flood Defences:

There are no flood defences at this site.

# Flood Warning:

There are currently no flood warning areas covering this site.

# Access & Egress:

The site is bounded by the A606 immediately on its western boundary offering the possibility of access and egress. Surface water flooding may limit the possibility of access and egress from the site..

#### Climate Change:

Increased storm intensities.

• Increased water levels in the unnamed water course close to site.

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the unnamed water course to the east of the site should be considered when considering drainage.

• Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the unamed watercourse to ensure flows are not exacerbated downstream within the catchment.

· Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

- o Reducing volume and rate of runoff
- o Relocating development to zones with lower flood risk
- o Creating space for flooding.
- o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

MBC_001_16 - Newleigh Farm and land to the east.						
OSNGR:	471117,319474	Area: 2	24.4ha	Greenfield / Brownfield		
Flood Zone Coverage:		FZ3b 7%	FZ3a 1%	<b>FZ2</b> 1%	<b>FZ1</b> 91%	

There are two unamed watercourses that flow through the site from the north before converging immediately south of the site forming the Asfordby Relief Channel. They both pose a fluvial flood risk running from FZ3 to FZ2. Their impact would be localised to the land imediately adjcent to both watercourses. The site is at risk of surface water flooding adjacent to the unnamed watercourses. The flood hazard indicates some areas of the site will be dangerous to most in 100-year flood events.

# **Exception Test Required?**

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2. Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b. More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b. Essential Infrastructure in Flood Zone 3b will require the Exception Test.

#### NPPF Guidance:

To pass Part 'b' of the Exception Test, a FRA should demonstrate that: the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

• Risks to development could be reduced by using sequential design to locate development outside of the Flood Zones.

• Development could potentially be made safe through building design, and by meeting drainage requirements. In view of the possible flooding from the unnamed watercourses detailed hydraulic modelling should be undertaken. The results of this modelling will inform development design and confirm whether housing proposals can pass the Exception Test.

• To avoid increasing flood risk elsewhere, surface water management techniques should be adopted.













Hazard Map		
	76 0.18 0.3	ASEOREBY CP Party of the state
Reproduced from Ord	nance Survey mapping with th copyr	he permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office. © Crown right and database rights 2015 Ordance Survey 100019651.
Borough	boundary Haz	Card Rating     Danger for some     Danger for all       Very low hazard - caution     Danger for most
SuDS & the d	levelopment site:	
SuDS Type	Suitability	Comments
Source Control		Most source control techniques are likely to be suitable. Mapping suggests that permeable paving may have to use non- infiltrating systems given the possible risk from groundwater.
Infiltration		Infiltration may be suitable. Mapping suggests a medium risk of groundwater flooding and underlying soils may be permeable. Further site investigation should be carried out to assess potential for drainage by infiltration. If infiltration is suitable it should be avoided in areas where the depth to the water table is <1m.
Detention		Mapping suggests that the site slopes are suitable for all forms of detention. A liner maybe required to prevent the egress of groundwater.
Filtration		All filtration techniques are likely to be suitable. A liner maybe required to prevent the egress of groundwater.
Conveyance		All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. A liner maybe required to prevent the egress of groundwater.



• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

# Flood Defences:

There are no flood defences at this site.

# Flood Warning:

There are currently no flood warning areas covering this site.

# Access & Egress:

Access and egress to and from the site can be achieved from the A6006 to the south; however, this option may be limited due to surface water flooding along the A6006.

## Climate Change:

• Increased storm intensities.

• Increased water levels in the two unnamed water courses.

# Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood 3 or 2, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the two unnamed watercourses that flow through the site should be considered when considering drainage.

• Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the two

unamed watercourses to ensure flows are not exacerbated downstream within the catchment. • Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

- o Relocating development to zones with lower flood risk
- o Creating space for flooding.
- o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

MBC_040_16 - Land off Hoby Road, Asfordby						
OSNGR:	469931,318693	Area: 3.1ha Greenfield				
Flood Zone Coverage:		FZ3b	FZ3a	FZ2	FZ1	
		5%	0%	24%	71%	

# **Proposed Development Details:**

The majority of the site is located within Flood Zone 1 and is considered at very low risk of fluvial flooding. The fluvial risk is located to the south the site. The fluvial flooding is from the Wreake River that lies to the south of the site. Factoring in climate change at 30% or 50% does not result in significantly more fluvial flooding to the site within the 100-year period. Surface water flooding is shown to occur along the area adjacent to the southern boundary as well as in a small pocket in the north.

# **Exception Test Required?**

Unlikely, as the majority of the site is located in Flood Zone One.

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2. Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b. More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b. Essential Infrastructure in Flood Zone 3b will require the Exception Test.

#### NPPF Guidance:

• The majority of the site is located within Flood Zone One, therefore by ensuring development is placed away outside of the flood zones, the Exception test will not be required.

• However, sites over one hectare will require a site specific flood risk assessment, in which the vulnerability to flooding from other sources should be considered.

• If development is placed in the flood zones then, depending on the type of the development, the Exception test may be required.

To pass Part 'b' of the Exception Test, a FRA should demonstrate that the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.









Climate Change Map

0.0275

Borough boundary

0.055

0.11

Lodgé







Hazard Map					
Lodgé Path					
Reproduced from Ord	nance Survey mapping with t copy	he permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office. © Crown ight and database rights 2015 Ordance Survey 100019651.			
Borough	boundary <b>Haz</b> Site boundary	Ard Rating Danger for some Danger for all Very low hazard - caution Danger for most			
SuDS & the d	levelopment site				
SuDS Type	Suitability	Comments			
Source Control		Most source control techniques are likely to be suitable. Mapping suggests that permeable paving may have to use non- infiltrating systems given the possible risk from groundwater.			
Infiltration		Infiltration may be suitable. Mapping suggests a medium risk of groundwater flooding and underlying soils may be permeable. Further site investigation should be carried out to assess potential for drainage by infiltration. If infiltration is suitable it should be avoided in areas where the depth to the water table is <1m.			
Detention		Mapping suggests that the site slopes are suitable for all forms of detention. A liner maybe required to prevent the egress of groundwater.			
Filtration		All filtration techniques are likely to be suitable. A liner maybe required to prevent the egress of groundwater.			
Conveyance		All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. A liner maybe required to prevent the egress of groundwater.			



• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

#### Flood Defences:

There are no flood defences at this site.

# Flood Warning:

This site is partically covered by the River Wreake at Ashfordby and the River Wreake at Thrussington and Ratcliffe on the Wreake Flood Warning Areas

#### Access & Egress:

Access to and egress from the site is possible via Hoby Road off the north west site boundary. Access and egress should not be affected by flooding.

# Climate Change:

• Increased storm intensities.

Increased water levels in the River Wreake.

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the River Wreake should be considered when considering drainage.

· Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the River Wreake to ensure flows are not exacerbated downstream within the catchment.

• Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

o Relocating development to zones with lower flood risk

o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

MBC_104_13 - Land south of A6006						
OSNGR:	470760,319341	Area: 3.19ha Greenfield				
Flood Zone Coverage:		<b>FZ3b</b> 4%	<b>FZ3a</b> 1%	<b>FZ2</b> 0%	<b>FZ1</b> 95%	

There is an unnamed watercourse that flows to the north of the site that poses a fluvial flood risk. The impact would be localised to an area of land in the east of the site. The site is also at risk of surface water flooding. The flood hazard indicates some areas of the site will be dangerous to most in 100-year flood events.

## **Exception Test Required?**

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2. Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b. More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b. Essential Infrastructure in Flood Zone 3b will require the Exception Test.

#### NPPF Guidance:

The majority of the site is located within Flood Zone One, therefore by ensuring development is placed away from the watercourses and outside of the flood zones, the Exception test will not be required.
However, sites over one hectare will require a site specific flood risk assessment. The site specific flood risk assessment should consider the vulnerability to flooding from all sources. If development is placed in the flood zones then, depending on the type of the development, the Exception test may be required.
To pass Part 'b' of the Exception Test, a FRA should demonstrate that the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.













Hazard Map						
Reproduced from Ord	nance Survey mapping with t copy	the permission of Ordnance Survey on behalf right and database rights 2015 Ordance Surv	of the Controller of Her Majesty's Stationary Office. © Crown ey 100019651.			
Borough	boundary Haz	zard Rating	Danger for some Danger for all			
Strategie	c Site boundary	Very low hazard - caution	Danger for most			
SuDS & the d	levelopment site	:				
SuDS Type	Suitability	Comments				
Source Control		Most source control techniques a permeable paving may have to risk	re likely to be suitable. Mapping suggests that use non-infiltrating systems given the possible from groundwater.			
Infiltration		Infiltration may be suitable. Mapping suggests a medium risk of groundwater flooding and underlying soils may be permeable. Further site investigation should be carried out to assess potential for drainage by infiltration. If infiltration is suitable it should be avoided in areas where the depth to the water table is <1m.				
Detention		Mapping suggests that the site slopes are suitable for all forms of detention. A liner maybe required to prevent the egress of groundwater.				
Filtration		All filtration techniques are likely to be suitable. A liner maybe required to prevent the egress of groundwater.				
Conveyance		All forms of conveyance are like features should follow contour maybe required to p	ely to be suitable. Where the slopes are >5% s or utilise check dams to slow flows. A liner revent the egress of groundwater.			



• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

# Flood Defences:

There are no flood defences at this site.

# Flood Warning:

There are currently no flood warning areas covering this site.

#### Access & Egress:

Access and egress to and from the site can be achieved from the A6006 to the north; however, this option may be limited due to surface water flooding along the A6006.

#### **Climate Change:**

· Increased storm intensities.

• Increased water levels in the unnamed watercourse.

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood 3 or 2, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area. Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the unnamed watercourse that flows through the site should be considered when considering drainage.

• Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the unamed watercourse to ensure flows are not exacerbated downstream within the catchment.

· Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

- o Reducing volume and rate of runoff
- o Relocating development to zones with lower flood risk
- o Creating space for flooding.
- o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

MBC_148_14 - Land to the south of Klondyke Way, Asfordby					
OSNGR:	470130,318728	Area:	5.7ha	Greenfield	
Flood Zone Coverage:		FZ3b	<b>FZ3a</b>	FZ2	<b>FZ1</b>

The southern part of the site is at medium risk of flooding from the River Wreake.

The site is also shown to be at risk from surface water flooding. The flow path follows the River Wreake.

#### **Exception Test Required?**

Yes, for Highly Vulnerable development located in FZ2. However; through sequential design, this is unlikely as the majority of the site is located within Flood Zone One.

### NPPF Guidance:

To pass Part 'b' of the Exception Test, a FRA should demonstrate that: the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

• Over three quarters of the strategic site is within Flood Zone 1. Risks to development could be reduced by using sequential design to locate development outside of the Flood Zones.

• However, for development proposals on sites comprising one hectare or above in Flood Zone 1 the vulnerability of flooding from other sources as well as from river flooding should be incorporated into a FRA.

• The potential to increase flood risk elsewhere through the addition of hard surfaces and the effect of the new developmenton surface water run-off should be considered.

• Developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area and beyond through the layout and form of the development and through appropriate sustainable drainage techniques.

## Flood Zone Map













• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

#### Flood Defences:

There are no flood defences at this site.

#### Flood Warning:

This site is partially covered by the, River Wreake at Asfordby Flood Warning Area (034FWFWRASFRDBY).

#### Access & Egress:

The main route to and from the site (Station Lane) is largely unaffected by flooding.

## Climate Change:

· Increased storm intensities.

· Increased water levels in the River Wreake.

# Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the River Wreake should be considered when considering drainage.

Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the River Wreake to ensure flows are not exacerbated downstream.

• Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

o Relocating development to zones with lower flood risk

o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 as public open space.

MBC_008_13 - Land off Barkestone Lane, Bottesford						
OSNGR:	479992,338323	Area:	4.2ha	Greenfield		
Flood Zone Coverage:		<b>FZ3b</b> 73%	<b>FZ3a</b> 8%	<b>FZ2</b> 8%	<b>FZ1</b> 11%	

The vast majority of the site is located within Flood Zone 3a with extensive fluvial flooding taking place from Winter Brook immediately to the south of the site boundary. There is limited surface water flooding across the site in 30 and 100-year return events, which becomes extensive across the site in a 1,000-year return event. The hazard risk on site is dangerous for some across the site and dangerous for most in the south east corner.

### Exception Test Required?

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2.

Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b and More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b.

Essential Infrastructure in Flood Zone 3b will require the Exception Test

#### NPPF Guidance:

To pass Part 'b' of the Exception Test, a FRA should demonstrate that: the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

• The majority of the strategic site is within Flood Zone 3a whilst 19% remains in Flood Zones 1 and 2. Risks to development could be reduced by using sequential design to locate certain development outside of the Flood Zone 3.

• Development could potentially be made safe through building design, and by meeting drainage requirements. In view of the possible flooding from the Winter Beck detailed hydraulic modelling should be undertaken. The results of this modelling will inform development design and confirm whether housing proposals can pass the Exception Test.

• To avoid increasing flood risk elsewhere, surface water management techniques should be adopted.

## Flood Zone Map













• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

# Flood Defences:

There are no flood defences at this site.

# Flood Warning:

There are currently no flood warning areas covering this site.

#### Access & Egress:

Access and egress to site is available from Barkestone Lane along the eastern site boundary. However, this is extensively affected by fluvial flooding and is located in FZ3, additionally it will be affected by surface water flooding in 1-1,000 year return events. Therefore access and egress is therefore highly likely to be compromised by flooding

#### **Climate Change:**

· Increased storm intensities.

• Increased water levels in the Winter Beck

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zone 3 or 2, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area. Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the Winter Beck that flow through the site should be considered when considering drainage.

· Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the Winter Beck to ensure flows are not exacerbated downstream within the catchment.

• Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

o Relocating development to zones with lower flood risk

- o Creating space for flooding.
- o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

MBC_009_13 - Castle View Farm, Easthorpe, Bottesford						
OSNGR:	481218,338220	Area:	3.8ha	Greenfield / Brownfield		
Flood Zone Coverage:		<b>FZ3b</b> 16%	<b>FZ3a</b> 3%	<b>FZ2</b> 6%	<b>FZ1</b> 75%	

# **Proposed Development Details:**

Parts of the site are at risk from fluvial flooding, believed to be from an unnamed drain located beyond the site to the north west and the River Devon located to the north. When 30% climate change is factored into the 1-in-100-year event significantly more of the western portion of the site is affected. Surface water flooding to the vast majority of the site is low risk with only small sections in the vacinity of the northern boundary affected whilst the site is only more widely affected by 1,000-year return events. The hazard to people across the site is considered to be very low.

#### **Exception Test Required?**

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2.

Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b.

More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b.

Essential Infrastructure in Flood Zone 3b will require the Exception Test.

# NPPF Guidance:

To pass Part 'b' of the Exception Test, a FRA should demonstrate that: the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

• With three quarters of the strategic site within Flood Zone 1. Risks to development could be reduced by using sequential design to locate development outside of the Flood Zones.

• Development could potentially be made safe through building design, and by meeting drainage

requirements. In view of the possible flooding from the unnamed drain and River Devon, detailed

hydraulic modelling should be undertaken. The results of this modelling will inform development design and confirm whether housing proposals can pass the Exception Test.

• To avoid increasing flood risk elsewhere, surface water management techniques should be adopted.

## Flood Zone Map











Hazard Map					
Plazard Map					
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Borough	boundary Haz	ard Rating Danger for some Danger for all			
Strategie	c Site boundary	Very low hazard - caution Danger for most			
SuDS & the d	levelopment site				
SuDS Type	Suitability	Comments			
Source Control		Most source control techniques are likely to be suitable. Mapping suggests that permeable paving may have to use non- infiltrating systems given the possible risk from groundwater.			
Infiltration		Mapping suggests that there is a high risk of groundwater flooding at this location, therefore it is likely infiltration techniques will not be suitable. This should be confirmed via site investigations to assess the potential for inflitration.			
Detention		This option may be feasible provided site slopes are < 5% at the location of the detention feature. A liner maybe required to prevent the egress of groundwater.			
Filtration		This feature is probably suitable provided site slopes are <5% and the depth to the water table is >1m. A liner maybe required to prevent the egress of groundwater.			
Conveyance		All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. A liner maybe required to prevent the egress of groundwater.			



• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

#### Flood Defences:

There are no flood defences at this site.

#### Flood Warning:

This site is partially covered by the River Devon at Bottesford including Easthorpe, Muston and Woolsthorpe Flood Warning Area (034FWFDVBOTTSFRD)

#### Access & Egress:

Access to and egress from the site is possible via either the A52 to the south or Castle View Road to the east. Despite partial flooding of Castle View Road adjcent to the north of the site, safe access and egress is shown to be maintained in the event of flooding.

#### **Climate Change:**

Increased storm intensities.

• Increased water levels in the unnamed drain to the north-west and the River Devon.

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the unnamed drain and River Devon should be considered when considering drainage.

· Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the unnamed drain and River Devon to ensure flows are not exacerbated downstream within the catchment.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

o Relocating development to zones with lower flood risk

o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public

open space.

MBC_010_15 - Land to the west of Easthorpe Road, Bottesford						
OSNGR:	480908,338776	Area:	1.6ha	Greenfield		
Flood Zone Coverage:		<b>FZ3b</b> 1%	<b>FZ3a</b> 0%	<b>FZ2</b> 3%	<b>FZ1</b> 96%	

The vast majority of the site is located within Flood Zone 1 and is considered at very low risk of fluvial flooding. The risk located along the southern and south-eastern boundary. The fluvial flooding is from an unnamed drain to the south. Factoring in climate change at 30% or 50% results in significantly more of the site being affected by fluvial flooding within the 100-year return period. Surface water flooding is shown to occur as a relatively small, isolated pocket centrally in the site within a 1-100-year event, with several pockets emerging in a 1-1,000-year return period. There is a very small area along the southern boundary with a low hazard to people rating.

## **Exception Test Required?**

Unlikely, as the majority of the site is located in Flood Zone One.

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2. Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b. More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b. Essential Infrastructure in Flood Zone 3b will require the Exception Test.

#### NPPF Guidance:

• The majority of the site is located within Flood Zone One, therefore by ensuring development is placed away outside of the flood zones, the Exception test will not be required.

 However, sites over one hectare will require a site specific flood risk assessment, in which the vulnerability to flooding from other sources should be considered.

• If development is placed in the flood zones then, depending on the type of the development, the Exception test may be required.

To pass Part 'b' of the Exception Test, a FRA should demonstrate that the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

# Flood Zone Map






Hazard Map				
0_0.0 Reproduced from Ord	hance Survey mapping with the copyrest of the	Image: constraint of the controller of Her Majesty's Stationary Office. 9 Certaint of the controller of Her Majesty's Stationary Office. 9 Certaint of the controller of Her Majesty's Stationary Office. 9 Certaint of the controller of Her Majesty's Stationary Office. 9 Certaint of the controller of Her Majesty's Stationary Office. 9 Certaint of the controller of Her Majesty's Stationary Office. 9 Certaint of the controller of Her Majesty's Stationary Office. 9 Certaint of the controller of Her Majesty's Stationary Office. 9 Certaint of the controller of Her Majesty's Stationary Office. 9 Certaint of the controller of Her Majesty's Stationary Office. 9 Certaint of the controller of Her Majesty's Stationary Office. 9 Certaint of the controller of Her Majesty's Stationary Office. 9 Certaint of the controller of Her Majesty's Stationary Office. 9 Certaint of the controller of Her Majesty's Stationary Office. 9 Certaint of the controller of Her Majesty's Stationary Office. 9 Certaint of the controller of Her Majesty's Stationary Office. 9 Certaint of the controller of Her Majesty's Stationary Office. 9 Certaint of the controller of Her Majesty's Stationary Office. 9 Certaint of the controller of Her Majesty's Stationary Office. 9 Certaint of the controller of Her Majesty's Stationary Office. 9 Certaint of the controller of Her Majesty's Ce		
SuDS & the d	levelopment site	Commente		
Source Control	Suitability	Most source control techniques are likely to be suitable. Mapping suggests that permeable paving may have to use non- infiltrating systems given the possible risk from groundwater.		
Infiltration	Infiltration Mapping suggests that there is a high risk of groundwater flooding at this location, therefore it is likely infiltration techniques will not be suitable. This should be confirmed via site investigations to assess the potential for inflitration.			
Detention		This option may be feasible provided site slopes are < 5% at the location of the detention feature. A liner maybe required to prevent the egress of groundwater.		
Filtration		This feature is probably suitable provided site slopes are <5% and the depth to the water table is >1m. A liner maybe required to prevent the egress of groundwater.		
Conveyance		All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. A liner maybe required to prevent the egress of groundwater.		



• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

### Flood Defences:

There are no flood defences at this site.

# Flood Warning:

This site is partially covered by the River Devon at Bottesford including Easthorpe, Muston and Woolsthorpe, FWD\_TACODE 034FWFDVBOTTSFRD

## Access & Egress:

Access to and egress from the site is possible via Easthorpe Road / Manor Road along the south-eastern site boundary. The possibility for access and egress may be limited in the event of fluvial flooding with much of the Easthorpe Road / Manor Road located within FZ 3.

## Climate Change:

• Increased storm intensities.

Increased water levels in the unnamed drain to the south.

### Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the unnamed drain should be considered when considering drainage.

• Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the unnamed drain to the south to ensure flows are not exacerbated downstream within the catchment.

· Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

o Relocating development to zones with lower flood risk

o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public

open space.

MBC_012_13 - Land East of Belvoir Road, Bottesford						
OSNGR:	480730,338287 Area: 20.3ha Greenfield					
Flood Zone Coverage:		<b>FZ3b</b> 15%	<b>FZ3a</b> 5%	<b>FZ2</b> 7%	<b>FZ1</b> 73%	

The vast majority of the site is located within Flood Zone 1 and is considered at low risk of fluvial flooding with approximately a quarter within FZ2 and 3. The FZ2 and 3 areas are located at the south and southeast and north of the site. The fluvial flooding sources are Winter Beck to the south and an unnamed drain to the north. Factoring in climate change at 30% or 50% results in additional areas of the site being affected by fluvial flooding within the 100-year period. Surface water flooding is shown to occur along the areas adjacent to the southern and northern site boundaries in a 1,000-year event withi smaller pockets in the south for 100 and 30-years.

### **Exception Test Required?**

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2.

Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b.

More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b.

Essential Infrastructure in Flood Zone 3b will require the Exception Test.

#### NPPF Guidance:

• The large proportion of the site is located within Flood Zone One, therefore by ensuring development is placed away outside of the flood zones, the Exception test will not be required.

• However, sites over one hectare will require a site specific flood risk assessment, in which the vulnerability to flooding from other sources should be considered.

• If development is placed in the flood zones then, depending on the type of the development, the Exception test may be required.

To pass Part 'b' of the Exception Test, a FRA should demonstrate that the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

### Flood Zone Map













• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

## Flood Defences:

There are no flood defences at this site.

### Flood Warning:

This site is partially covered by the River Devon at Bottesford including Easthorpe, Muston and Woolsthorpe Flood Warning Area (034FWFDVBOTTSFRD)

#### Access & Egress:

Access to and egress from the site is possible via Belvorr Road to the west of the site. The possibility for access and egress may be limited in the event of fluvial flooding with much of the Road and site parallel to it located within FZ 3.

### Climate Change:

· Increased storm intensities.

• Increased water levels in the Winter Beck and unnamed drain.

### Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the Winter Beck and unnamed drain should be considered when considering drainage.

• Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the Winter Beck and unnamed drain to ensure flows are not exacerbated downstream within the catchment.

· Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

- o Relocating development to zones with lower flood risk
- o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface

water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

MBC_013_16 - Vacant land south of Deven Farm						
OSNGR:	480696,338822	Area: 1.0ha Greenfield / Brownfield				
Flood Zone Coverage:		<b>FZ3b</b> 4%	<b>FZ3a</b> 1%	<b>FZ2</b> 2%	FZ1 93%	

The vast majority of the site is located within Flood Zone 1 and is considered at very low risk of fluvial flooding. The fluvial risk is located along the southern and western site boundaries The fluvial flooding is from an unnamed drain to the south. Factoring in climate change at 30% or 50% does not result in significantly more of the site being affected by fluvial flooding within the 100-year return period. Surface water flooding is shown to occur within a relatively small southern band.

#### **Exception Test Required?**

Unlikely, as the majority of the site is located within Flood Zone One.

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2.

Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b.

More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b.

Essential Infrastructure in Flood Zone 3b will require the Exception Test.

#### NPPF Guidance:

• The majority of the site is located within Flood Zone One, therefore by ensuring development is placed away outside of the flood zones, the Exception test will not be required.

 However, sites over one hectare will require a site specific flood risk assessment, in which the vulnerability to flooding from other sources should be considered.

• If development is placed in the flood zones then, depending on the type of the development, the Exception test may be required.

To pass Part 'b' of the Exception Test, a FRA should demonstrate that the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

### Flood Zone Map









Hazard Map						
Acacia Farm Hall Bot						
Reproduced from Ord	nance Survey mapping with th copyr	he permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office. © Crown ight and database rights 2015 Ordance Survey 100019651.				
Borough	boundary <b>Haz</b> Site boundary	Aard Rating Danger for some Danger for all   Very low hazard - caution Danger for most				
SuDS & the d	evelopment site					
SuDS Type	Suitability	Comments				
Source Control		Most source control techniques are likely to be suitable. Mapping suggests that permeable paving may have to use non- infiltrating systems given the possible risk from groundwater.				
Infiltration	Infiltration Mapping suggests that there is a high risk of groundwater flooding at this location, therefore it is likely infiltration techniques will not be suitable. This should be confirmed via site investigations to assess the potential for inflitration.					
Detention		This option may be feasible provided site slopes are < 5% at the location of the detention feature. A liner maybe required to prevent the egress of groundwater.				
Filtration		This feature is probably suitable provided site slopes are <5% and the depth to the water table is >1m. A liner maybe required to prevent the egress of groundwater.				
Conveyance		All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. A liner maybe required to prevent the egress of groundwater.				



• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

#### Flood Defences:

There are no flood defences at this site.

## Flood Warning:

This site is partially covered by the River Devon at Bottesford including Easthorpe, Muston and Woolsthorpe Flood Warning Area (034FWFDVBOTTSFRD)

## Access & Egress:

Access to and egress from the site is possible via an unnamed lane to the south of the site. This lane is shown to be affected by both fluvial and surfacewater flooding in low return period events.

### Climate Change:

· Increased storm intensities.

· Increased water levels in the unnamed drain

### Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the unnamed drain should be considered when considering drainage.

• Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the unnamed drain to the south to ensure flows are not exacerbated downstream within the catchment.

· Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

o Relocating development to zones with lower flood risk

o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface

water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

MBC_057_13 - Rectory Farm, Bottesford					
OSNGR:	480289,339391	Area: 14.2ha Greenfield / Brownfield			
Flood Zone Coverage:		<b>FZ3b</b> 7%	<b>FZ3a</b> 13%	<b>FZ2</b> 30%	<b>FZ1</b> 50%

Half of the site is located within Flood Zone 1 and is considered at low risk of fluvial floodin. The fluvial flood risk is located at the south and south-east and north of the site and adjacent to the River Devon that flows through the site. Factoring in climate change at 30% or 50% results in signicant additional areas of the site being affected by fluvial flooding within the 100-year period. Surface water flooding is shown to occur across the south and west of the site.

## **Exception Test Required?**

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2.

Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b.

More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b. Essential Infrastructure in Flood Zone 3b will require the Exception Test.

#### Essential Infrastructure in Flood Zone Sp will require the Exce

# NPPF Guidance:

To pass Part 'b' of the Exception Test, a FRA should demonstrate that: the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

• Half of the strategic site is within Flood Zone 1. Risks to development could be reduced by using sequential design to locate certain development outside of Flood Zone 2 and 3.

• Development could potentially be made safe through building design, and by meeting drainage requirements. In view of the possible flooding from the River Devon detailed hydraulic modelling should be undertaken. The results of this modelling will inform development design and confirm whether housing proposals can pass the Exception Test.

• To avoid increasing flood risk elsewhere, surface water management techniques should be adopted.















• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

### Flood Defences:

There are no flood defences at this site.

## Flood Warning:

This site is partially covered by the River Devon at Bottesford including Easthorpe, Muston and Woolsthorpe Flood Warning Area (034FWFDVBOTTSFRD)

#### Access & Egress:

Access to and egress from the site is via an unnamed lane to the north east of the site that leads to Normanton Lane. The possibility for access and egress onto Normanton Lane should be available at all times an not affected by flooding.

#### Climate Change:

• Increased storm intensities.

• Increased water levels in the River Devon.

### Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the River Devon should be considered when considering drainage.

• Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the River Devon to ensure flows are not exacerbated downstream within the catchment.

• Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

o Relocating development to zones with lower flood risk

o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface

water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

MBC_076_13 - Land Adjacent 17 Easthorpe Road, Bottesford						
OSNGR:	481161,338695	Area: 6.1ha Greenfield				
Flood Zone Coverage:		<b>FZ3b</b> 9%	<b>FZ3a</b> 7%	<b>FZ2</b> 39%	<b>FZ1</b> 45%	

## Proposed Development Details:

Just under half of the site is located within Flood Zone 1 and is considered at low risk of fluvial flooding. Fluvial flood risk is located in the east of the site and along the southern boundary. Fluvial flooding is from two drains, one to the south west of the site and one to the east. Factoring in climate change at 30% or 50% results in significant additional areas of the site being affected by fluvial flooding within the 100year period. Surface water flooding is shown to occur in a pockets in the east and centre of the site in low return period events and sporadically thereafter in a 1000-year event.

## **Exception Test Required?**

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2.

Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b.

More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b.

Essential Infrastructure in Flood Zone 3b will require the Exception Test.

### NPPF Guidance:

To pass Part 'b' of the Exception Test, a FRA should demonstrate that: the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

• 45% of the strategic site is within Flood Zone 3a. Risks to development could be reduced by using sequential design to locate certain development outside of Flood Zone 2 and 3.

• Development could potentially be made safe through building design, and by meeting drainage requirements. In view of the possible flooding from the unnamed drains detailed hydraulic modelling should be undertaken. The results of this modelling will inform development design and confirm whether housing proposals can pass the Exception Test.

• To avoid increasing flood risk elsewhere, surface water management techniques should be adopted.

# Flood Zone Map









Hazard Map		
Coro Coro Coro Coro Coro Coro Coro Coro	d d d d d d d d d d d d d d d d d d d	Allot   Weir     Gdns   Weir     Manor   Mercer     Mano
SuDS & the d	levelopment site:	
SuDS Type	Suitability	Comments
Source Control		Most source control techniques are likely to be suitable. Mapping suggests that permeable paving may have to use non- infiltrating systems given the possible risk from groundwater.
Infiltration		Mapping suggests that there is a high risk of groundwater flooding at this location, therefore it is likely infiltration techniques will not be suitable. This should be confirmed via site investigations to assess the potential for inflitration.
Detention		This option may be feasible provided site slopes are < 5% at the location of the detention feature. A liner maybe required to prevent the egress of groundwater.
Filtration		This feature is probably suitable provided site slopes are <5% and the depth to the water table is >1m. A liner maybe required to prevent the egress of groundwater.
Conveyance		All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. A liner maybe required to prevent the egress of groundwater.



• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

## Flood Defences:

There are no flood defences at this site.

## Flood Warning:

This site is partially covered by the River Devon at Bottesford including Easthorpe, Muston and Woolsthorpe Flood Warning Area (034FWFDVBOTTSFRD)

### Access & Egress:

Access to and egress from the site is possible via Easthorpe Road to the west of the site or Manor Road to the south. The possibility for access and egress may be limited in the event of flooding onto Manor Road but shown to always be possible for Easthorpe Road.

## Climate Change:

Increased storm intensities.

· Increased water levels in the two unnamed drains.

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the two unnamed drains should be considered when considering drainage.

• Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the two unnamed drains to ensure flows are not exacerbated downstream within the catchment.

• Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

o Relocating development to zones with lower flood risk

o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public

open space.

MBC_142_13 - Land adjacent to 18 Grantham Road Bottesford							
OSNGR:	480761,338814	Area:	Area: 0.8ha Greenfield				
Flood Zone Coverage:		<b>FZ3b</b> 3%	<b>FZ3a</b> 0%	<b>FZ2</b> 1%	<b>FZ1</b> 96%		

The vast majority of the site is located within Flood Zone 1 and is considered to be at low risk of fluvial flooding. Flood risk is located along the southern most boundary. The fluvial flooding is from an unnamed drain to the south. Factoring in climate change at 30% or 50% does not result in significantly more of the site being affected by fluvial flooding within the 100-year return period. Surface water flooding is shown to occur as a relatively small, isolated pockets centrally in the site within a 100-year event, with several pockets emerging in a 1,000-year return period.

# **Exception Test Required?**

Unlikely, as the majority of the site is located in Flood Zone One.

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2. Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b. More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b. Essential Infrastructure in Flood Zone 3b will require the Exception Test.

## NPPF Guidance:

• The majority of the site is located within Flood Zone One, therefore by ensuring development is placed away outside of the flood zones, the Exception test will not be required.

• If development is placed in the flood zones then, depending on the type of the development, the Exception test may be required.

To pass Part 'b' of the Exception Test, a FRA should demonstrate that the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

#### Flood Zone Map













Hazard Map						
Acacia Farm Hall Bottesfo						
Reproduced from Ord	nance Survey mapping with ti copyi	he permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office. © Crown right and database rights 2015 Ordance Survey 100019651.				
Borough	boundary <b>Haz</b> c Site boundary	Card Rating Danger for some Danger for all   Very low hazard - caution Danger for most				
SuDS & the d	levelopment site					
SuDS Type	Suitability	Comments				
Source Control		Most source control techniques are likely to be suitable. Mapping suggests that permeable paving may have to use non- infiltrating systems given the possible risk from groundwater.				
Infiltration	Infiltration Mapping suggests that there is a high risk of groundwater flooding at this location, therefore it is likely infiltration techniques will not be suitable. This should be confirmed via site investigations to assess the potential for infiltration.					
Detention	Detention This option may be feasible provided site slopes are < 5% at the location of the detention feature. A liner maybe required to prevent the egress of groundwater.					
Filtration		This feature is probably suitable provided site slopes are <5% and the depth to the water table is >1m. A liner maybe required to prevent the egress of groundwater.				
Conveyance		All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. A liner maybe required to prevent the egress of groundwater.				



• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

### Flood Defences:

There are no flood defences at this site.

### Flood Warning:

There are currently no flood warning areas covering this site.

## Access & Egress:

Access to and egress from the site is possible via unnamed lane along the southern site boudary. The possibility for access and egress may be limited in the event of fluvial flooding with much of the lane located within FZ 3.

#### **Climate Change:**

· Increased storm intensities.

• Increased water levels in the unnamed drain

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the unnamed drain should be considered when considering drainage.

• Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the unnamed drain to the south to ensure flows are not exacerbated downstream within the catchment.

· Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

- o Relocating development to zones with lower flood risk
- o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface

water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

MBC_143_13 - Land to the rear 47-49 High Street, Bottesford						
OSNGR:	480229,338896	Area: 0.4ha Greenfield / Brownfield				
Flood Zone Coverage:		<b>FZ3b</b> 20%	<b>FZ3a</b> 5%	<b>FZ2</b> 15%	<b>FZ1</b> 60%	

## Proposed Development Details:

Fluvial flood risk is located in the north of the site. The fluvial flooding is from an unnamed drain to the north of the site. Factoring in climate change at 30% or 50% does not result in significantly more of the site being affected by fluvial flooding within the 100-year return period. Surface water flooding is shown to occur as a relatively small, isolated pocket in the north of the site within a 100-year event, with more extensive coverage emerging in a 1000-year return period.

# **Exception Test Required?**

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2.

Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b.

More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b.

Essential Infrastructure in Flood Zone 3b will require the Exception Test.

## NPPF Guidance:

To pass Part 'b' of the Exception Test, a FRA should demonstrate that: the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

• Risks to development could be reduced by using sequential design to locate development outside of the Flood Zones.

• Development could potentially be made safe through building design, and by meeting drainage requirements. In view of the possible flooding from the unnamed watercourse detailed hydraulic modelling should be undertaken. The results of this modelling will inform development design and confirm whether housing proposals can pass the Exception Test.

• To avoid increasing flood risk elsewhere, surface water management techniques should be adopted.

# Flood Zone Map













Hazard Map					
Strategie	c Site boundary	Very low hazard - caution Danger for most			
SuDS & the d	levelopment site	1			
SuDS Type	Suitability	Comments			
Source Control		Most source control techniques are likely to be suitable. Mapping suggests that permeable paving may have to use non- infiltrating systems given the possible risk from groundwater.			
Infiltration	Infiltration Mapping suggests that there is a high risk of groundwater flooding at this location, therefore it is likely infiltration techniques will not be suitable. This should be confirmed via site investigations to assess the potential for inflitration.				
Detention	Detention This option may be feasible provided site slopes are < 5% at the location of the detention feature. A liner maybe required to prevent the egress of groundwater.				
Filtration		This feature is probably suitable provided site slopes are <5% and the depth to the water table is >1m. A liner maybe required to prevent the egress of groundwater.			
Conveyance		All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. A liner maybe required to prevent the egress of groundwater.			



• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

#### Flood Defences:

There are no flood defences at this site.

#### Flood Warning:

This site is covered by the River Devon at Bottesford including Easthorpe, Muston and Woolsthorpe Flood Warning Area (034FWFDVBOTTSFRD)

#### Access & Egress:

Access to and egress from the site is possible via High Street to the north of the site. The possibility for access and egress may be limited in the event of fluvial flooding with much of the High Street located within FZ3b.

#### **Climate Change:**

· Increased storm intensities.

• Increased water levels in the unnamed drain.

### Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the unnamed drain should be considered when considering drainage.

• Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrograph of the unnamed drain to ensure flows are not exacerbated downstream within the catchment.

· Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

- o Relocating development to zones with lower flood risk
- o Creating space for flooding.
- o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public

open space.

MBC_156_15 - Land to the south of Greenacres Farm						
OSNGR:	479541,338535	Area: 15.3ha Greenfield				
Flood Zone Coverage:		FZ3b 44%	FZ3a	<b>FZ2</b> 42%	FZ1	

The Winter Beck flows through the centre of the site. There may also be some interection between the Winter Beck and the River Devon. The north of the site is shown to be within Flood Zone 3b with the remainder of the site predominantly in Flood Zone 2.

Surface water flood is mostly located in the north of the site.

#### **Exception Test Required?**

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2. Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b. More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b. Essential Infrastructure in Flood Zone 3b will require the Exception Test.

#### NPPF Guidance:

To pass Part 'b' of the Exception Test, a FRA should demonstrate that: the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

• Risks to development could be reduced by using sequential design to locate development outside of the Flood Zones.

• Development could potentially be made safe through building design, and by meeting drainage requirements. In view of the possible flooding from the Winter Beck, detailed hydraulic modelling should be undertaken. The results of this modelling will inform development design and confirm whether housing proposals can pass the Exception Test.

• To avoid increasing flood risk elsewhere, surface water management techniques should be adopted.
















• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

## Flood Defences:

There are no flood defences at this site.

## Flood Warning:

There are currently no flood warning areas covering this site.

## Access & Egress:

The main access route, Notttingham Road, is at risk from fluvial flooding in the 1 in 1,000yr event.

## Climate Change:

Increased storm intensities.

• Increased water levels in the Winter Beck.

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 3 or 2, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the Winter Beck that flows through the site should be considered when considering drainage.

• Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the Winter Beck to ensure flows are not exacerbated downstream within the catchment.

· Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

- o Relocating development to zones with lower flood risk
- o Creating space for flooding.
- o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

MBC_011_15 - Land to the east of Easthorpe View, Easthorpe						
OSNGR:	481535,338754	Area: 2.9ha Greenfield				
Flood Zone Coverage:		<b>FZ3b</b> 20%	<b>FZ3a</b> 14%	<b>FZ2</b> 18%	<b>FZ1</b> 48%	

The site is bounded by the River Devon to the south. Fluvial flooding from the River Devon means just over a third of the site is within Flood Zone 3, the areas affected being in the western and southern coners. Climate change at 30% and 50% would see more of FZ2 fall into FZ3. Surface water flooding takes place in a few pockets during the 100-year events. Surface water flooding would affect much of the south of the site in a 1,000-year event.

## **Exception Test Required?**

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2.

Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b.

More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b.

Essential Infrastructure in Flood Zone 3b will require the Exception Test.

### NPPF Guidance:

To pass Part 'b' of the Exception Test, a FRA should demonstrate that: the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

• Risks to development could be reduced by using sequential design to locate development outside of the Flood Zones.

• Development could potentially be made safe through building design, and by meeting drainage requirements. In view of the possible flooding from the River Devon, detailed hydraulic modelling should be undertaken. The results of this modelling will inform development design and confirm whether housing proposals can pass the Exception Test.

• To avoid increasing flood risk elsewhere, surface water management techniques should be adopted.

## Flood Zone Map













Hazard Map		
		38m
Reproduced from Ord	nance Survey mapping with t copy	he permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office. © Crown right and database rights 2015 Ordance Survey 100019651.
Borough	boundary Haz	card Rating Danger for some Danger for all   Very low hazard - caution Danger for most
SuDS & the d	levelopment site	:
SuDS Type	Suitability	Comments
Source Control		Most source control techniques are likely to be suitable. Mapping suggests that permeable paving may have to use non- infiltrating systems given the possible risk from groundwater and risk of contaminated lands from designated landfill within the site boundary.
Infiltration		Mapping suggests that there is a high risk of groundwater flooding at this location, therefore it is likely infiltration techniques will not be suitable. This should be confirmed via site investigations to assess the potential for inflitration. Additionally, areas of the site have been designated as containing historic landfill therefore, further site investigation should be carried out to assess potential for drainage by infiltration. If infiltration is suitable it should be avoided in areas where the depth to the water table is <1m.
Detention		This option may be feasible provided site slopes are < 5% at the location of the detention feature. If the site has contamination or groundwater issues; a liner will be required.
Filtration		This feature is probably suitable provided site slopes are <5% and the depth to the water table is >1m. If the site has contamination or groundwater issues; a liner will be required.
Conveyance		All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. If the site has contamination or groundwater issues; a liner will be required.



• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

## Flood Defences:

There are no flood defences at this site.

## Flood Warning:

There are currently no flood warning areas covering this site.

## Access & Egress:

Access and egress for the site is possible from Grantham Road to the north. The road is unaffected by flooding.

## Climate Change:

· Increased storm intensities.

Increased water levels in the River Devon.

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the River Devon should be considered when considering drainage.

· Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the River Devon to the south to ensure flows are not exacerbated downstream within the catchment.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

- o Reducing volume and rate of runoff
- o Relocating development to zones with lower flood risk
- o Creating space for flooding.
- o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public

open space.

MBC_026_16 - Land to the south of Green Lane						
OSNGR:	SNGR: 481032,338278 Area: 2.6ha Greenfield					
Flood Zone Coverage:		<b>FZ3b</b> 5%	<b>FZ3a</b> 0%	<b>FZ2</b> 1%	<b>FZ1</b> 94%	

The vast majority of the site is located within Flood Zone 1 and is considered at low risk of fluvial flooding. The flood risk is located along the northern boundary. The fluvial flooding is from an unnamed drain to the north of the site. Factoring in climate change at 30% or 50% results in significantly more of the site being affected by fluvial flooding within the 100-year return period. Surface water flooding is shown to occur as a relativly small, isolated pocket in the north of the site within a 100-year event, with several pockets emerging in a 1,000-year return period.

### **Exception Test Required?**

Unlikely, as the majority of the site is located in Flood Zone One.

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2. Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b. More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b. Essential Infrastructure in Flood Zone 3b will require the Exception Test.

## NPPF Guidance:

• The majority of the site is located within Flood Zone One, therefore by ensuring development is placed away outside of the flood zones, the Exception test will not be required.

• However, sites over one hectare will require a site specific flood risk assessment, in which the vulnerability to flooding from other sources should be considered.

• If development is placed in the flood zones then, depending on the type of the development, the Exception test may be required.

To pass Part 'b' of the Exception Test, a FRA should demonstrate that the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

## Flood Zone Map











• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

## Flood Defences:

There are no flood defences at this site.

## Flood Warning:

There are currently no flood warning areas covering this site.

## Access & Egress:

Access to and egress from the site is possible via Green Lane on the north site boundary. The possibility for access and egress may be limited in the event of fluvial or surface water flooding with much of the Green Lane affected..

## **Climate Change:**

· Increased storm intensities.

• Increased water levels in the unnamed drain.

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the unnamed drain should be considered when considering drainage.

Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the unnamed drain to the south to ensure flows are not exacerbated downstream within the catchment.

· Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

- o Relocating development to zones with lower flood risk
- o Creating space for flooding.
- o Green infrastructure should be considered within the mitigation measures for surface

water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

MBC_027_16 - land to the west of Green Lane						
OSNGR:	481027,338486	027,338486 Area: 1.4ha Greenfield / Brownfield				
Flood Zone Coverage:		<b>FZ3b</b> 2%	<b>FZ3a</b> 1%	<b>FZ2</b> 7%	<b>FZ1</b> 90%	

The vast majority of the site is located within Flood Zone 1 and is considered at very low risk of fluvial flooding. The flood risk is located along the northern and eastern boundary edges. The fluvial flooding is from an unnamed drain to the south and the River Devon to the north. Factoring in climate change at 30% or 50% results in significantly more of the site being affected by fluvial flooding within the 100-year return period. Surface water flooding is shown not to affect the site within a 100-year event, with several isolated pockets emerging in a 1,000-year return period.

#### **Exception Test Required?**

Unlikely, as the majority of the site is located in Flood Zone One.

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2. Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b. More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b. Essential Infrastructure in Flood Zone 3b will require the Exception Test.

## NPPF Guidance:

• The majority of the site is located within Flood Zone One, therefore by ensuring development is placed away outside of the flood zones, the Exception test will not be required.

• However, sites over one hectare will require a site specific flood risk assessment, in which the vulnerability to flooding from other sources should be considered.

• If development is placed in the flood zones then, depending on the type of the development, the Exception test may be required.

To pass Part 'b' of the Exception Test, a FRA should demonstrate that the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

## Flood Zone Map









Hazard Map					
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	соруг	right and database rights 2015 Ordance Survey 100019651.			
Borough	boundary <b>Haz</b> Site boundary	Card Rating Danger for some Danger for all   Very low hazard - caution Danger for most			
SuDS & the d	evelopment site	Commonts			
Source Control	Suitability	Most source control techniques are likely to be suitable. Mapping suggests that permeable paving may have to use non- infiltrating systems given the possible risk from groundwater.			
Infiltration	Infiltration Mapping suggests that there is a high risk of groundwater flooding at this location, therefore it is likely infiltration techniques will not be suitable. This should be confirmed via site investigations to assess the potential for infiltration.				
Detention		This option may be feasible provided site slopes are < 5% at the location of the detention feature. A liner maybe required to prevent the egress of groundwater.			
Filtration		This feature is probably suitable provided site slopes are <5% and the depth to the water table is >1m. A liner maybe required to prevent the egress of groundwater.			
Conveyance		All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. A liner maybe required to prevent the egress of groundwater.			



• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

## Flood Defences:

There are no flood defences at this site.

## Flood Warning:

This site is partially covered by the River Devon at Bottesford including Easthorpe, Muston and

# Access & Egress:

Access to and egress from the site is possible via Manor Road to the north or Green Lane to the east. The possibility for access and egress may be limited in the event of fluvial flooding with both Manor Road and Green Lane affected.

## **Climate Change:**

• Increased storm intensities.

• Increased water levels in the River Devon and unnamed drain.

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the River Devon and unnamed drain should be considered when considering drainage.

• Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the River Devon and unnamed drain to ensure flows are not exacerbated downstream within the catchment.

• Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

o Relocating development to zones with lower flood risk

o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

MBC_028_16 - Land to the east of Green Lane						
DSNGR: 481127,338469 Area: 1.1ha Brownfield						
Flood Zone Coverage:		<b>FZ3b</b> 1%	<b>FZ3a</b> 1%	<b>FZ2</b> 6%	<b>FZ1</b> 92%	

The majority of the site is located within Flood Zone 1 and is considered to be at very low risk. Flood risk is most prominent in the north-west corner or the site, with Flodo Zone 3 in the north-west and south-west corners. The fluvial flooding appears is from an unnamed drain to the south of the site and the River Devon to the north of the site. Factoring in climate change at 50% results in significantly more of the site being affected by fluvial flooding within the 100-year return period. Surface water flooding is limited to just several small isolated pockets only present during a 1,000-year event.

### **Exception Test Required?**

Unlikely, as the majority of the site is located in Flood Zone One.

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2. Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b. More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b. Essential Infrastructure in Flood Zone 3b will require the Exception Test.

#### NPPF Guidance:

• For development proposals on sites comprising one hectare or above in Flood Zone 1 the vulnerability of flooding from other sources as well as from river flooding should be incorporated into a FRA.

• The potential to increase flood risk elsewhere through the addition of hard surfaces and the effect of the new developmenton surface water run-off should be considered.

• Developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area and beyond thrugh the layout and form of the development and through appropriate sustainable drainage techniques.











Hazard Map				
a_ 0.0	175 0.035 0.07			
Reproduced from Ord	nance Survey mapping with t copy	he permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office. © Crown right and database rights 2015 Ordance Survey 100019651.		
Borough	boundary Haz	card Rating Danger for some Danger for all   Very low hazard - caution Danger for most		
SuDS & the d	levelopment site			
SuDS Type	Suitability	Comments		
Source Control		Most source control techniques are likely to be suitable. Mapping suggests that permeable paving may have to use non- infiltrating systems given the possible risk from groundwater.		
Infiltration	Infiltration Mapping suggests that there is a high risk of groundwater flooding at this location, therefore it is likely infiltration techniques will not be suitable. This should be confirmed via site investigations to assess the potential for infiltration.			
Detention	Detention This option may be feasible provided site slopes are < 5% at the location of the detention feature. A liner maybe required to prevent the egress of groundwater.			
Filtration		This feature is probably suitable provided site slopes are <5% and the depth to the water table is >1m. A liner maybe required to prevent the egress of groundwater.		
Conveyance		All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. A liner maybe required to prevent the egress of groundwater.		



• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

### Flood Defences:

There are no flood defences at this site.

### Flood Warning:

There are currently no flood warning areas covering this site.

## Access & Egress:

Access to and egress from the site is possible via Manor Road to the north or Green Lane to the west. The possibility for access and egress may be limited in the event of fluvial or surface water flooding with both Manor Road and Green Lane affected.

#### Climate Change:

• Increased storm intensities.

• Increased water levels in the unnamed drain and River Devon.

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the unnamed drain and River Devon should be considered when considering drainage.

• Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the unnamed drain and River Devon to ensure flows are not exacerbated downstream within the catchment.

Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

o Relocating development to zones with lower flood risk

o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

MBC_077_13 - Land south of 15 Castle View Road, Easthorpe						
OSNGR:	481373,338295	Area: 0.9ha Greenfield				
Flood Zone Coverage:		<b>FZ3b</b> 6%	<b>FZ3a</b> 0%	<b>FZ2</b> 3%	<b>FZ1</b> 91%	

## Flood Risk Sources:

The vast majority of the site is located within Flood Zone 1 and is considered at very low risk of fluvial flooding with a further 3% located in FZ2 and 6% in FZ3b. The FZ2 and 3 areas are located in the west of the site. The potential fluvial flooding sources are the River Wreake to the south and an unnamed drain to the west of the site. Factoring in climate change at 30% or 50% results in additional areas of the site being affected by fluvial flooding within the 100-year period. Surface water flooding is shown to occur in the north east of the site in low return period events and in the west of the site in 1000-year events.

## **Exception Test Required?**

Unlikely, as the majority of the site is located in Flood Zone One.

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2. Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b. More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b. Essential Infrastructure in Flood Zone 3b will require the Exception Test.

## NPPF Guidance:

• The majority of the site is located within Flood Zone One, therefore by ensuring development is placed away outside of the flood zones, the Exception test will not be required.

• However, sites over one hectare will require a site specific flood risk assessment, in which the vulnerability to flooding from other sources should be considered.

• If development is placed in the flood zones then, depending on the type of the development, the Exception test may be required.

To pass Part 'b' of the Exception Test, a FRA should demonstrate that the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

## Flood Zone Map







Hazard Map						
Borough	copy	right and database rights 2015 Ordance Survey 100019651.				
SUDS TYPE	evelopment site	Comments				
Source Control	Situbility	Most source control techniques are likely to be suitable. Mapping suggests that permeable paving may have to use non- infiltrating systems given the possible risk from groundwater.				
Infiltration	Infiltration Mapping suggests that there is a high risk of groundwater flooding at this location, therefore it is likely infiltration techniques will not be suitable. This should be confirmed via site investigations to assess the potential for inflitration.					
Detention	DetentionThis option may be feasible provided site slopes are < 5% at the location of the detention feature. A liner maybe required to prevent the egress of groundwater.					
Filtration		This feature is probably suitable provided site slopes are <5% and the depth to the water table is >1m. A liner maybe required to prevent the egress of groundwater.				
Conveyance		All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. A liner maybe required to prevent the egress of groundwater.				

JBA consulting



The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

## Flood Defences:

There are no flood defences at this site.

## Flood Warning:

There are currently no flood warning areas covering this site.

### Access & Egress:

Access to and egress from the site is possible via Castel View Road to the west of the site. The possibility for access and egress may be limited in the event of fluvial or surface water flooding with much of the Road affected.

## **Climate Change:**

• Increased storm intensities.

• Increased water levels in the River Wreake and unnamed drain.

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the River Wreake and unnamed drain should be considered when considering drainage.

• Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the River Wreake and unnamed drain to ensure flows are not exacerbated downstream within the catchment.

· Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

o Relocating development to zones with lower flood risk

o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

MBC_166_15 - Land south of Granham Road, Easthorpe						
OSNGR:	481693,338673	Area: 3.5ha Greenfield				
Flood Zone Coverage:		FZ3b	FZ3a	FZ2	FZ1	
		6%	2%	37%	55%	

The site is at risk of fluvial flooding from the River Devon. Flood risk is located in the south of the site. Surface water flood risk tends to be located in the same areas of the fluvial flooding but to a lesser extent.

## **Exception Test Required?**

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2.

Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b.

More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b.

Essential Infrastructure in Flood Zone 3b will require the Exception Test.

### NPPF Guidance:

To pass Part 'b' of the Exception Test, a FRA should demonstrate that: the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

• The majority of the site is shown to be in Flood Zone 1 or 2. Risks to development could be reduced by using sequential design to locate development outside of the Flood Zones and in the lower risk areas..

• Development could potentially be made safe through building design, and by meeting drainage requirements. In view of the possible flooding from the River Devon, 1 in 100-year flood level (with and

without climate change) results from the detailed modelling of the River Devon, i in 100-year flood level (with and development design and confirm whether housing proposals can pass the Exception Test.

• To avoid increasing flood risk elsewhere, surface water management techniques should be adopted.

# Flood Zone Map













Hazard Map		
	0.065 0.11	South View
Reproduced from Ord	nance Survey mapping with th copyr	he permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office. © Crown ight and database rights 2015 Ordance Survey 100019651.
Borough	boundary <b>Haz</b> Site boundary	ard Rating Danger for some Danger for all   Very low hazard - caution Danger for most
SuDS & the de	evelopment site:	
SuDS Type	Suitability	Comments
Source Control		Most source control techniques are likely to be suitable. Mapping suggests that permeable paving may have to use non-infiltrating systems given the possible risk from groundwater.
Infiltration		Mapping suggests that there is a high risk of groundwater flooding at this location, therefore it is likely infiltration techniques will not be suitable. This should be confirmed via site investigations to assess the potential for inflitration.
Detention		This option may be feasible provided site slopes are < 5% at the location of the detention feature. A liner maybe required to prevent the egress of groundwater.
Filtration		This feature is probably suitable provided site slopes are <5% and the depth to the water table is >1m. A liner maybe required to prevent the egress of groundwater.
Conveyance		All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. A liner maybe required to prevent the egress of groundwater.



• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

### Flood Defences:

There are no flood defences at this site.

## Flood Warning:

There are currently no flood warning areas covering this site.

### Access & Egress:

The main access route, Grantham Road, is unaffected by fluvial flooding; however there are some small pockets of surface water risk along parts of its length.

#### **Climate Change:**

Increased storm intensities.

Increased water levels in the River Devon.

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the River Devon should be considered when considering drainage.

Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the River Devon to ensure flows are not exacerbated downstream within the catchment.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by: o Reducing volume and rate of runoff

o Relocating development to zones with lower flood risk

o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

MBC_004_16 - Land to the west of Frisby on the Wreak						
OSNGR:	469209,317774	9209,317774 Area: 3.3ha Greenfield				
Flood Zone Coverage:		<b>FZ3b</b> 0%	<b>FZ3a</b> 0%	<b>FZ2</b> 67%	<b>FZ1</b> 33%	

Over two-thirds of the site is at fluvial flood risk from the River Wreake and located in Flood Zone 2. The northern two-thirds are located within the FL2 whilst the remaining southern third is located in FZ1. Surface water flooding will be isolated to the north east quarter of the site in 30 and 100-year return events; however, will expand to cover the northern two thirds of the site in a 1000-year return event.

## Exception Test Required?

Yes, if Highly Vulnerable development is located in FZ2.

## NPPF Guidance:

To pass Part 'b' of the Exception Test, a FRA should demonstrate that: the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

• The majority of the strategic site is within Flood Zone 2 but a significant portion remains in Flood Zone 1. Risks to development could be reduced by using sequential design to locate certain development outside of the Flood Zones.

• Development could potentially be made safe through building design, and by meeting drainage requirements. Results from the detailed modelling of the River Wreake should be used to inform development design and confirm whether housing proposals can pass the Exception Test.

• To avoid increasing flood risk elsewhere, surface water management techniques should be adopted.

## Flood Zone Map














• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

## Flood Defences:

There are no flood defences at this site.

# Flood Warning:

There are currently no flood warning areas covering this site.

# Access & Egress:

Access and egress from the site is possible from Water Lane however acess and egress from the site may be affected by both fluvial and surface flooding limiting access.

## Climate Change:

Increased storm intensities.

· Increased water levels in the River Wreake

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zone 2, or for any development greater than 1ha in Flood Zone 1.

· Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the River Wreake should be considered when considering drainage.

· Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the River

Wreake to ensure flows are not exacerbated downstream within the catchment.

· Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

o Relocating development to zones with lower flood risk

o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zone 2 as public open space.

MBC_016_13 - Land off Nether End (north)						
OSNGR:	469183,312875	Area: 8.6ha Greenfield				
Flood Zone Coverage:		FZ3b 6%	<b>FZ3a</b> 0%	<b>FZ2</b> 1%	<b>FZ1</b> 93%	

## Proposed Development Details:

The vast majority of the site is located within Flood Zone 1 and is considered at very low risk of fluvial flooding. The fluvial risk is located centrally and the south running adjcent to the unnamed drain that is a tributary of Gaddesby Brook; the confluence between the drain and the Brook is located within the site boundary. Factoring in climate change at 30% or 50% results in only sightly more of the site being affected by fluvial flooding within the 100-year return period. Surface water flooding is shown to occur adjacent to the unnamed drain and as overland flows in the north of the site.

### **Exception Test Required?**

Unlikely, as the majority of the site is located in Flood Zone One.

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2. Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b. More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b. Essential Infrastructure in Flood Zone 3b will require the Exception Test.

## NPPF Guidance:

• The majority of the site is located within Flood Zone One, therefore by ensuring development is placed away outside of the flood zones, the Exception test will not be required.

• However, sites over one hectare will require a site specific flood risk assessment, in which the vulnerability to flooding from other sources should be considered.

• If development is placed in the flood zones then, depending on the type of the development, the Exception test may be required.

To pass Part 'b' of the Exception Test, a FRA should demonstrate that the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

## Flood Zone Map















• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

## Flood Defences:

There are no flood defences at this site.

# Flood Warning:

There are currently no flood warning areas covering this site.

## Access & Egress:

Access to and egress from the site is possible via Nether End / Ashby Road along the southern site boundary. The possibility for safe access and egress may be limited in the event of fluvial or surface water flooding.

### **Climate Change:**

• Increased storm intensities.

• Increased water levels in the unnamed drain and Gaddesby Brook.

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the unnamed drain and Gaddesby Brook should be considered when considering drainage.

• Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the unnamed drain and Gaddesby Brook to ensure flows are not exacerbated downstream within the catchment.

• Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

o Relocating development to zones with lower flood risk

o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

MBC_193_15 - Land off Nether End (south)						
OSNGR:	469090,312597	Area:	6.3ha	Greenfield		
Flood Zone Coverage:		FZ3b	FZ3a	FZ2	FZ1	
		86%	3%	2%	9%	

### Sources of flood risk:

The site is significantly at risk of flooding from the Gaddesby Brook which flows to the south of the site. Hazard is classed as danger to most in the areas closest to the Brook, becomign danger to some with distance from the watercourse.

The areas shown as flooding from surface water follows a similar pattern to the fluvial flood risk.

### **Exception Test Required?**

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2.

Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b.

More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b.

Essential Infrastructure in Flood Zone 3b will require the Exception Test.

## NPPF Guidance:

To pass Part 'b' of the Exception Test, a FRA should demonstrate that: the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

• Over three quarters of of the strategic site is within Flood Zone 3b. Given the level of risk to the site, the ability to apply the Sequential Approach to site layout is limited.

• Development would need to be made safe through building design, and by meeting drainage

requirements. In view of the possible flooding from the Gaddesby Brook, detailed hydraulic modelling should be undertaken to determine the 1 in 100-year flood level (with and without climate change) as well as any other return periods requested by the Environment Agency. The results of this modelling will inform development design and confirm whether housing proposals can pass the Exception Test.

• To avoid increasing flood risk elsewhere, surface water management techniques should be adopted.

# Flood Zone Map













• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

# Flood Defences:

There are no flood defences at this site.

# Flood Warning:

There are currently no flood warning areas covering this site.

#### Access & Egress:

The main access route Nether End / Ashby Road is shown to be in Flood Zone 3b. The site will need to ensure safe access and egress is possible during times of flood.

# Climate Change:

Increased storm intensities.

Increased water levels in the Gaddesby Brook.

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the Gaddesby Brook should be considered when considering drainage.

Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the Gaddesby Brook to ensure flows are not exacerbated downstream at Gaddesby.

· Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by: o Reducing volume and rate of runoff

o Relocating development to zones with lower flood risk

o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

MBC_125_14 - Land and works off Canal Lane, Hose						
OSNGR:	473285,329566	Area: 4.2ha Greenfield / Brownfield				
Flood Zone Coverage:		FZ3b 4%	<b>FZ3a</b> 0%	<b>FZ2</b> 1%	FZ1 95%	

## Sources of Flood Risk:

The vast majority of the site is located within Flood Zone 1. Flood risk is located in the far south of the site. The fluvial flooding source is a tributary of Wash Dyke to the south of the site. Factoring in climate change at 30% or 50% does not result in any significant additional areas of the site being affected by fluvial flooding within the 100-year period. Surface water flooding is shown to occur near the southern boundary of the site.

### **Exception Test Required?**

Unlikely, as the majority of the site is located in Flood Zone One.

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2. Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b. More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b. Essential Infrastructure in Flood Zone 3b will require the Exception Test.

### NPPF Guidance:

• The majority of the site is located within Flood Zone One, therefore by ensuring development is placed away outside of the flood zones, the Exception test will not be required.

• However, sites over one hectare will require a site specific flood risk assessment, in which the vulnerability to flooding from other sources should be considered.

• If development is placed in the flood zones then, depending on the type of the development, the Exception test may be required.

To pass Part 'b' of the Exception Test, a FRA should demonstrate that the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.



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• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

### Flood Defences:

There are no flood defences at this site.

## Flood Warning:

There are currently no flood warning areas covering this site.

# Access & Egress:

Access to and egress from the site is possible via Belvorr Road to the west of the site. The possibility for access and egress may be limited in the event of fluvial flooding with much of the

## Climate Change:

Increased storm intensities.

• Increased water levels in the Wash Dyke tributary.

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the Wash Dyke tributary should be considered when considering drainage.

• Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the Wash Dyke Tributary to ensure flows are not exacerbated downstream within the catchment.

• Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

- o Reducing volume and rate of runoff
- o Relocating development to zones with lower flood risk
- o Creating space for flooding.
- o Green infrastructure should be considered within the mitigation measures for surface

water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

MBC_163_15 - Land north of Hose Hall						
OSNGR:	DSNGR: 474004,329299 Area: 2.5ha Greenfield					
Flood Zone Coverage:		<b>FZ3b</b> 2%	<b>FZ3a</b> 0%	<b>FZ2</b> 0%	<b>FZ1</b> 98%	

## Sources of Flood Risk:

Flood risk to the site is relatively low with the majority of the site in Flood Zone 1. The main risk to the site is from an unnamed drain that flows past the eastern boundary of the site. Surface water flooding follows a similar path to the fluvial flooding.

## **Exception Test Required?**

Unlikely, as the majority of the site is located in Flood Zone One.

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2. Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b. More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b. Essential Infrastructure in Flood Zone 3b will require the Exception Test.

# NPPF Guidance:

• The majority of the site is located within Flood Zone One, therefore by ensuring development is placed away from the watercourses and outside of the flood zones, the Exception test will not be required.

• However, sites over one hectare will require a site specific flood risk assessment, in which the vulnerability to flooding from other sources should be considered. If development is placed in the flood zones then, depending on the type of the development, the Exception test may be required.

To pass Part 'b' of the Exception Test, a FRA should demonstrate that the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.















• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

## Flood Defences:

There are no flood defences at this site.

# Flood Warning:

There are currently no flood warning areas covering this site.

# Access & Egress:

There are no access or egress issues for the site.

### Climate Change:

Increased storm intensities.

• Increased water levels in the unnamed watercourse.

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zone 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area. Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

 The peak flows on the unnamed watercourse to the east of the site should be considered when considering drainage.

• Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the unamed watercourse to ensure flows are not exacerbated downstream within the catchment.

• Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

- o Reducing volume and rate of runoff
- o Relocating development to zones with lower flood risk
- o Creating space for flooding.
- o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zone 2 and 3 as public open space.

MBC_029_13 - Site at Leicester Road, Melton Mowbray						
OSNGR:	474715,318826	Area: 1.2ha Brownfield				
Flood Zone Coverage:		<b>FZ3b</b>	<b>FZ3a</b>	<b>FZ2</b> 10%	<b>FZ1</b> 90%	

## Proposed Development Details:

The vast majority of the site is located within Flood Zone 1 and is considered to be at low risk of fluvial flooding with just 10% remaining within Flood Zone 2. The flood risk is in the northern corner of the site. The fluvial flooding is from River Wreake to the north of the site. Factoring in climate change at 30% or 50% results in no more of the site being affected by fluvial flooding within the 100-year return period. Surface water flooding is shown to occur in the east and west of the site in lower return periods.

## **Exception Test Required?**

Unlikely, as the majority of the site is located within Flood Zone 1 so only if Highly Vulnerable development is located in FZ2.

# NPPF Guidance:

• The majority of the site is located within Flood Zone One, therefore by ensuring development is placed away outside of the flood zones, the Exception test will not be required.

• However, sites over one hectare will require a site specific flood risk assessment, in which the vulnerability to flooding from other sources should be considered.

• If development is placed in the flood zones then, depending on the type of the development, the Exception test may be required.

To pass Part 'b' of the Exception Test, a FRA should demonstrate that the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

# Flood Zone Map









Hazard Map						
ounc Office						
Reproduced from Ord	nance Survey mapping with th	ne permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office. © Crown ight and database rights 2015 Ordance Survey 100019651.				
Borough	boundary <b>Haz</b> Site boundary	ard Rating Danger for some Danger for all   Very low hazard - caution Danger for most				
SuDS & the d	levelopment site:					
SuDS Type	Suitability	Comments				
Source Control		Most source control techniques are likely to be suitable. Mapping suggests that permeable paving may have to use non- infiltrating systems given the possible risk from groundwater.				
Infiltration	Infiltration may be suitable. Mapping suggests a medium risk of groundwater flooding and underlying soils may be permeable. Further site investigation should be carried out to assess potential for drainage by infiltration. If infiltration is suitable it should be avoided in areas where the depth to the water table is <1m.					
Detention		Mapping suggests that the site slopes are suitable for all forms of detention. A liner maybe required due to the site potential groundwater flooding.				
Filtration		All filtration techniques are likely to be suitable. A liner maybe required to prevent the egress of groundwater				
Conveyance		All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. A liner maybe required to prevent the egress of groundwater.				



• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

### Flood Defences:

There are no flood defences at this site.

### Flood Warning:

This site is partially covered by the River Wreake at Melton Mowbray Flood Warnnig Area (034FWFWRMELTNMOW)

### Access & Egress:

Access to and egress from the site is possible via Leister Road to the north of the site. The possibility for access and egress may be limited in the event of fluvial flooding in 100-year return period events.

## Climate Change:

· Increased storm intensities.

· Increased water levels in the River Wreake.

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the River Wreake should be considered when considering drainage.

• Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the River Wreake to ensure flows are not exacerbated downstream within the catchment.

· Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

o Relocating development to zones with lower flood risk

o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zone 2 as public open

space.

MBC_030_13 - Hilltop Farm, Nottingham Road, Melton Mowbray						
OSNGR:	473815,321118	Area: 27.5ha Greenfield / Brownfield				
Flood Zone Coverage:		<b>FZ3b</b> 1%	<b>FZ3a</b> 0%	<b>FZ2</b> 1%	<b>FZ1</b> 98%	

## Sources of flood risk:

The vast majority of the site is located within Flood Zone 1 and is considered at low risk of fluvial flooding. The fluvial flood risk is adjacent to a tributary of the River Wreake that flows through the site from north to south down the centre. The fluvial flooding source is the tributary to the south and an unnamed drain to the north. Factoring in climate change at 30% or 50% results in additional areas of the site being affected by fluvial flooding within the 100-year period. Surface water flooding is shown to occur along the areas adjacent to the tributary in lower return period events.

#### **Exception Test Required?**

Unlikely, as the majority of the site is located in Flood Zone One.

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2. Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b. More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b. Essential Infrastructure in Flood Zone 3b will require the Exception Test.

## NPPF Guidance:

• The majority of the site is located within Flood Zone One, therefore by ensuring development is placed away outside of the flood zones, the Exception test will not be required.

• However, sites over one hectare will require a site specific flood risk assessment, in which the vulnerability to flooding from other sources should be considered.

• If development is placed in the flood zones then, depending on the type of the development, the Exception test may be required.

To pass Part 'b' of the Exception Test, a FRA should demonstrate that the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

## Flood Zone Map











• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

## Flood Defences:

There are no flood defences at this site.

# Flood Warning:

There are currently no flood warning areas covering this site.

## Access & Egress:

Access to and egress from the site is possible via St. Bartholomens Way to the south, Nottingham Road to the east and an unnamed road to the west. The possibility for access and egress is shown to be maintained in all depicted scenarios.

## Climate Change:

• Increased storm intensities.

· Increased water levels in the River Wreake tributary.

# Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the River Wreake tributary should be considered when considering drainage.

• Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the River Wreake tributary to ensure flows are not exacerbated downstream within the catchment.

· Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

o Relocating development to zones with lower flood risk

o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public

open space.

MBC_033_13 - Land at Nottingham Road, Melton Mowbray						
OSNGR:	474611,320709	Area: 6.4ha Greenfield				
Flood Zone Coverage:		<b>FZ3b</b> 5%	<b>FZ3a</b> 0%	<b>FZ2</b> 1%	<b>FZ1</b> 94%	

## **Proposed Development Details:**

The vast majority of the site is located within Flood Zone 1 and is considered at low risk of fluvial flooding. The flood risk is located adjacent to two drains that flow through the site. Factoring in climate change at 30% or 50% results in only a little more of the site being affected by fluvial flooding within the 100-year period. Surface water flooding is shown to occur adjacent to the tributaries.

### **Exception Test Required?**

Unlikely, as the majority of the site is located in Flood Zone One.

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2. Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b. More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b. Essential Infrastructure in Flood Zone 3b will require the Exception Test.

#### NPPF Guidance:

• The majority of the site is located within Flood Zone One, therefore by ensuring development is placed away outside of the flood zones, the Exception test will not be required.

• However, sites over one hectare will require a site specific flood risk assessment, in which the vulnerability to flooding from other sources should be considered.

• If development is placed in the flood zones then, depending on the type of the development, the Exception test may be required.

To pass Part 'b' of the Exception Test, a FRA should demonstrate that the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.











Hazard Map					
		S Sysonby Lodge			
Reproduced from Ord	nance Survey mapping with copy	the permission of Ordnance Survey on be right and database rights 2015 Ordance \$	half of the Controller of Her Majesty's Stationary Office. © Crown Survey 100019651.		
Borough	boundary <b>Ha</b> z	zard Rating	Danger for some Danger for all		
Strategio	c Site boundary	Very low hazard - caution	Danger for most		
SuDS & the d	levelopment site	:			
SuDS Type	Suitability	Comments			
Source Control		All forms of sourc	e control are likely to be suitable.		
Infiltration		Infiltration likely to be suitable. Mapping suggests a low risk of ground water flooding however, site investigations should be carried out to assess potential for drainage by infiltration.			
Detention		Mapping suggests that the site slopes are suitable for all forms of detention.			
Filtration		All filtration techniques are likely to be suitable. If the site has contamination issues; a liner will be required.			
Conveyance		All forms of conveyand slopes are >5% features dams to slow flows. If th	ce are likely to be suitable. Where the s should follow contours or utilise check he site has contamination issues; a liner will be required.		

JBA consulting


• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

### Flood Defences:

There are no flood defences at this site.

## Flood Warning:

There are currently no flood warning areas covering this site.

## Access & Egress:

Access to and egress from the site is possible via Nottingham Road to the south of the site. Access and egress do not appear to be affected by flooding.

### Climate Change:

Increased storm intensities.

• Increased water levels in the two unnamed drains.

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the two unnamed drains should be considered when considering drainage.

Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the two unnamed drains to ensure flows are not exacerbated downstream within the catchment.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

- o Reducing volume and rate of runoff
- o Relocating development to zones with lower flood risk
- o Creating space for flooding.
- o Green infrastructure should be considered within the mitigation measures for surface

water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

MBC_039_13 - Thorpe Road, Melton Mowbray							
OSNGR:	476442,319950	Area: 1.7ha Greenfield					
Flood Zone Coverage:		<b>FZ3b</b> 70%	<b>FZ3a</b> 8%	<b>FZ2</b> 19%	FZ1 3%		

## **Proposed Development Details:**

The vast majority of the site is located within Flood Zone 3b and is considered at high risk of fluvial flooding. The fluvial flooding source is Thorpe Brook to the west. Factoring in climate change at 30% or 50% results in additional areas of the site being affected by fluvial flooding within the 100-year period. Surface water flooding is shown to occur extensively across the site even in 30-year return periods. A significant central portion of the site becomes dangerous to some with pockets that are dangerous to most people.

## **Exception Test Required?**

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2.

Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b.

More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b.

Essential Infrastructure in Flood Zone 3b will require the Exception Test.

## NPPF Guidance:

To pass Part 'b' of the Exception Test, a FRA should demonstrate that: the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

• Risks to development could be reduced by using sequential design to locate development outside of the Flood Zones.

• Development could potentially be made safe through building design, and by meeting drainage requirements. In view of the possible flooding from the Thorpe Brook, detailed hydraulic modelling should be undertaken. The results of this modelling will inform development design and confirm whether housing proposals can pass the Exception Test.

• To avoid increasing flood risk elsewhere, surface water management techniques should be adopted.

## Flood Zone Map













Hazard Map					
Reproduced from Ord	Inance Survey mapping with t copy	he permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office. © Crown right and database rights 2015 Ordance Survey 100019651.			
Borough	boundary Haz	Tard Rating Danger for some Danger for all Very low hazard - caution Danger for most			
SuDS & the d	levelopment site	:			
SuDS Type	Suitability	Comments			
Source Control		Most source control techniques are likely to be suitable. Mapping suggests that permeable paving may have to use non- infiltrating systems given the possible risk from groundwater.			
Infiltration		Infiltration may be suitable. Mapping suggests a medium risk of groundwater flooding and underlying soils may be permeable. Further site investigation should be carried out to assess potential for drainage by infiltration. If infiltration is suitable it should be avoided in areas where the depth to the water table is <1m.			
Detention		Mapping suggests that the site slopes are suitable for all forms of detention. A liner maybe required to prevent the egress of groundwater.			
Filtration		All filtration techniques are likely to be suitable. A liner maybe required to prevent the egress of groundwater.			
Conveyance		All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. A liner maybe required to prevent the egress of groundwater.			



• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

## Flood Defences:

There are no flood defences at this site.

# Flood Warning:

There are currently no flood warning areas covering this site.

## Access & Egress:

Access to and egress from the site is possible via access road to the A607 to the west of the site. The possibility for access and egress may be limited in the event of fluvial flooding with the boundary running parallel to the A607 inundated with flooding.

## **Climate Change:**

• Increased storm intensities.

• Increased water levels in the Thorpe Brook.

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on Thorpe Brook should be considered when considering drainage.

Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of Thorpe Brook to ensure flows are not exacerbated downstream within the catchment.

• Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

- o Relocating development to zones with lower flood risk
- o Creating space for flooding.
- o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development

MBC_039_16 - Land south of Twinlakes Amusement Park						
OSNGR:	SNGR: 476847,320824 Area: 12.3ha Greenfield					
Flood Zone Coverage:		<b>FZ3b</b> 1%	<b>FZ3a</b> 0%	<b>FZ2</b> 0%	<b>FZ1</b> 99%	

## Proposed Development Details:

The vast majority of the site is located within Flood Zone 1 and is considered at very low risk of fluvial flooding. The flood risk is located to the south of the site. The fluvial flooding source is Thorpe Brook to the south of the site. Factoring in climate change at 30% or 50% does not result in significant additional flooding on site. Surface water flooding is shown to occur in a limited band across the south of the site and largely only in a 1,000-year event.

## **Exception Test Required?**

Unlikely, as the majority of the site is located in Flood Zone One.

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2. Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b. More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b. Essential Infrastructure in Flood Zone 3b will require the Exception Test.

### NPPF Guidance:

• For development proposals on sites comprising one hectare or above in Flood Zone 1 the vulnerability of flooding from other sources as well as from river flooding should be incorporated into a FRA.

• The potential to increase flood risk elsewhere through the addition of hard surfaces and the effect of the new developmenton surface water run-off should be considered.

• Developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area and beyond thrugh the layout and form of the development and through appropriate sustainable drainage techniques.









Hazard Map						
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····.	сору	right and database rights 2015 Ordance Survey 100019651.				
Borough	n boundary Haz	Very low hazard - caution Danger for most				
SuDS & the c	levelonment site					
SuDS Type	Suitability	Comments				
Source Control		Most source control techniques are likely to be suitable. Mapping suggests that permeable paving may have to use non- infiltrating systems given the possible risk from groundwater.				
Infiltration		Infiltration may be suitable. Mapping suggests a medium risk of groundwater flooding and underlying soils may be permeable. Further site investigation should be carried out to assess potential for drainage by infiltration. If infiltration is suitable it should be avoided in areas where the depth to the water table is <1m.				
Detention		Mapping suggests that the site slopes are suitable for all forms of detention. A liner maybe required to prevent the egress of groundwater.				
Filtration		All filtration techniques are likely to be suitable. A liner maybe required to prevent the egress of groundwater.				
Conveyance		All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. A liner maybe required to prevent the egress of groundwater.				



• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

## Flood Defences:

There are no flood defences at this site.

## Flood Warning:

There are currently no flood warning areas covering this site.

## Access & Egress:

Access to and egress from the site is possible via Melton Spinney Road to the west of the site. Access amd egress should not be affected by flooding.

## Climate Change:

· Increased storm intensities.

• Increased water levels in the Thorpe Brook.

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 and 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the Thorpe Brook should be considered when considering drainage.

• Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrograph of the Thorpe Brook to ensure flows are not exacerbated downstream within the catchment.

· Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

- o Reducing volume and rate of runoff
- o Relocating development to zones with lower flood risk
- o Creating space for flooding.
- o Green infrastructure should be considered within the mitigation measures for surface

water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

MBC_049_13 - Spreckleys Farm, Burton Road, Melton Mowbray						
OSNGR:	476702,317962	Area: 84.8ha Greenfield				
Flood Zone Coverage:		<b>FZ3b</b> 5%	<b>FZ3a</b> 1%	<b>FZ2</b> 1%	<b>FZ1</b> 93%	

## Sources of Flood Risk:

The vast majority of the site is located within Flood Zone 1 and is considered at low risk of fluvial flooding. The fluvial flood risk is located at the northern and eastern site boundary and around a drain that flows west to east in the south of the site. The fluvial flooding sources are the unnamed drain in the south and the River Wreake in the east and north. Factoring in climate change at 30% or 50% results in some additional areas of the site being affected by fluvial flooding within the 100-year event. Surface water flooding is shown to occur along the areas adjacent to drain in the south in addition to overland flows in the north, the latter taking place only in 1,000-year events.

## **Exception Test Required?**

Unlikely, as the majority of the site is located in Flood Zone One.

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2. Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b. More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b. Essential Infrastructure in Flood Zone 3b will require the Exception Test.

### NPPF Guidance:

• The majority of the site is located within Flood Zone One, therefore by ensuring development is placed away outside of the flood zones, the Exception test will not be required.

• However, sites over one hectare will require a site specific flood risk assessment, in which the vulnerability to flooding from other sources should be considered.

• If development is placed in the flood zones then, depending on the type of the development, the Exception test may be required.

To pass Part 'b' of the Exception Test, a FRA should demonstrate that the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

## Flood Zone Map













• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

## Flood Defences:

There are no flood defences at this site.

### Flood Warning:

This site is partially covered by the River Wreake at Melton Mowbray Flood Warnnig Area (034FWFWRMELTNMOW)

### Access & Egress:

Access to and egress from the site is possible via Burton Road or Long Lane onto Cross Lane to the south of the site. The possibility for access and egress may be limited in the event of surface water flooding but not affected by fluvial flooding.

### Climate Change:

• Increased storm intensities.

• Increased water levels in the unnamed drain on site and River Wreake

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the unnamed drain and River Wreake should be considered when considering drainage.

· Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

Onsite attenuation schemes would need to be tested against the hydrographs of the unnamed drain and River Wreake to ensure flows are not exacerbated downstream within the catchment.
Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

o Relocating development to zones with lower flood risk

o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface

water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

MBC_116_13 - Travis Perkins trading Co Ltd, 59 Mill Street, Melton Mowbray						
OSNGR: 475561,318990 Area: 0.2ha Brownfield						
Flood Zone Coverage:		<b>FZ3b</b> 0%	<b>FZ3a</b> 0%	<b>FZ2</b> 100%	<b>FZ1</b> 0%	

## Site Flood Sources:

The entirety of the site is located within Flood Zone 2. The source of flooding is Scalford Brook to the east. Factoring in climate change at 30% or 50% does not affect the current classification of the site. Surface water flooding is shown to occur in a small pocket in a 100-year event whilst being extensive across the site in a 1,000-year event.

### **Exception Test Required?**

Depends on the nature of the development on site. Yes, if Highly Vulnerable development located in FZ2.

## NPPF Guidance:

• As the entirety of the site is in Flood Zone 2 a site specific flood risk assessment in which the vulnerability to flooding from all sources should be considered will have to be performed.

• Depending on the type of the development, the Exception test may be required.

• To pass Part 'b' of the Exception Test, a FRA should demonstrate that the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

## Flood Zone Map







Hazard Map						
Reproduced from Ord	nance Survey mapping with t copy	he permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office. © Crown right and database rights 2015 Ordance Survey 100019651.				
Borough	boundary <b>Haz</b> Site boundary	card Rating     Danger for some     Danger for all       Very low hazard - caution     Danger for most				
SuDS & the d	levelopment site	:				
SuDS Type	Suitability	Comments				
Source Control		Most source control techniques are likely to be suitable. Mapping suggests that permeable paving may have to use non- infiltrating systems given the possible risk from groundwater.				
Infiltration		Infiltration may be suitable. Mapping suggests a medium risk of groundwater flooding and underlying soils may be permeable. Further site investigation should be carried out to assess potential for drainage by infiltration. If infiltration is suitable it should be avoided in areas where the depth to the water table is <1m.				
Detention		Mapping suggests that the site slopes are suitable for all forms of detention. A liner maybe required to prevent the egress of groundwater.				
Filtration		All filtration techniques are likely to be suitable. A liner maybe required to prevent the egress of groundwater.				
Conveyance		All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. A liner maybe required to prevent the egress of groundwater.				



• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

### Flood Defences:

There are no flood defences at this site.

## Flood Warning:

This site is covered by the River Wreake at Melton Mowbray Flood Warnnig Area

## Access & Egress:

Access to and egress from the site is possible via Regent Street to the south or Rosebery Avenue to the north and east of the site. The possibility for access and egress may be limited onto Regent Street but should always be possible onto Rosebery Avenue.

## Climate Change:

Increased storm intensities.

• Increased water levels in the Scalford Brook.

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zone 2.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on Scalford Brook should be considered when considering drainage.

• Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

· Onsite attenuation schemes would need to be tested against the hydrographs of Scalford

Brook to ensure flows are not exacerbated downstream within the catchment.

· Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

o Relocating development to zones with lower flood risk

o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2.

MBC_124_13 - 36 - 44 Thorpe End, Melton Mowbray						
OSNGR:	SNGR: 475632,319147 Area: 0.1ha Brownfield					
Flood Zone Coverage:		<b>FZ3b</b> 0%	<b>FZ3a</b> 0%	<b>FZ2</b> 75%	<b>FZ1</b> 25%	

## **Proposed Development Details:**

Three quarters of the site are located within Flood Zone 2. Fluvial flood risk is in the south east of the site. The fluvial flooding source is Scalford Brooke to the east of the site. Surface water flooding only occurs in a 1,000-year event with a small pocket in the north east of the site. There is considered to be a danger to most people in the northern boundary area of the site.

### Exception Test Required?

Unlikely, unless Highly Vulnerable development is located in FZ2.

#### NPPF Guidance:

To pass Part 'b' of the Exception Test, a FRA should demonstrate that: the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

• Approximately a quarter of of the strategic site is within Flood Zone 1. Risks to development could be reduced by using sequential design to locate development outside of the Flood Zones.

• Development could potentially be made safe through building design, and by meeting drainage requirements. In view of the possible flooding from the Scalford Brook, detailed hydraulic modelling should be undertaken to determine the 1 in 100-year flood level (with and without climate change) as well as any other return periods requested by the Environment Agency. The results of this modelling will inform development design and confirm whether housing proposals can pass the Exception Test.

• To avoid increasing flood risk elsewhere, surface water management techniques should be adopted.

## Flood Zone Map











Hazard Map					
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Borough	boundary Haz	Card Rating     Danger for some     Danger for all       Very low hazard - caution     Danger for most			
SuDS & the d	levelopment site				
SuDS Type	Suitability	Comments			
Source Control		Most source control techniques are likely to be suitable. Mapping suggests that permeable paving may have to use non- infiltrating systems given the possible risk from groundwater.			
Infiltration	Infiltration Infiltration may be suitable. Mapping suggests a medium risk of groundwater flooding and underlying soils may be permeable. Further site investigation should be carried out to assess potential for drainage by infiltration. If infiltration is suitable it should be avoided in areas where the depth to the water table is <1m.				
Detention		Mapping suggests that the site slopes are suitable for all forms of detention. A liner maybe required to prevent the egress of groundwater.			
Filtration		All filtration techniques are likely to be suitable. A liner maybe required to prevent the egress of groundwater.			
Conveyance		All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. A liner maybe required to prevent the egress of groundwater.			



• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

## Flood Defences:

There are no flood defences at this site.

### Flood Warning:

This site is covered by the River Wreake at Melton Mowbray Flood Warnnig Area (034FWFWRMELTNMOW)

### Access & Egress:

Access to and egress from the site is possible via Thorpe End A606 to the north and Rosebery Avenue to the south west of the site. The possibility for access and egress may be limited in the event of fluvial flooding with both roads located in Flood Zone 2.

## **Climate Change:**

· Increased storm intensities.

Increased water levels in the Scalford Brook

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zone 2.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on Scalford Brook should be considered when considering drainage.

Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of Scalford Brook to ensure flows are not exacerbated downstream within the catchment.

Brook to ensure nows are not exacerbated downstream within the ca

Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

- o Relocating development to zones with lower flood risk
- o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface

water runoff from potential development and consider using Flood Zone 2 as public open space.

MBC_131_13 - Six Elms, 55 Asfordby Road, Melton Mowbray						
OSNGR:	474719,319339	339 Area: 0.5ha Greenfield / Brownfield				
Flood Zone Coverage:		<b>FZ3b</b> 2%	<b>FZ3a</b> 52%	<b>FZ2</b> 15%	<b>FZ1</b> 31%	

## Sources of Flood Risk:

The majority of the site is located within Flood Zone 3a. The FZ2 and 3 areas are located in the southern two thirds of the site with the northern third being in FZ1. The fluvial flooding source is the River Wreake to the south. Factoring in climate change at 30% or 50% does not result in significant additional areas of the site being affected by fluvial flooding within the 100-year period. Extensive surface water flooding is shown to occur in the south western half of the site. There is a significant area of danger to most found in the centre of the site.

#### **Exception Test Required?**

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2.

Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b.

More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b.

Essential Infrastructure in Flood Zone 3b will require the Exception Test.

## NPPF Guidance:

To pass Part 'b' of the Exception Test, a FRA should demonstrate that: the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

• Risks to development could be reduced by using sequential design to locate development outside of the Flood Zones.

• Development could potentially be made safe through building design, and by meeting drainage requirements. In view of the possible flooding from River Wreake detailed hydraulic modelling should be undertaken. The results of this modelling will inform development design and confirm whether housing proposals can pass the Exception Test.

• To avoid increasing flood risk elsewhere, surface water management techniques should be adopted.

## Flood Zone Map









Hazard Map		
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	<b>FR</b>	
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Borough	boundary <b>Haz</b> Site boundary	Card Rating     Danger for some     Danger for all       Very low hazard - caution     Danger for most
SuDS & the d	levelopment site	
SuDS Type	Suitability	Comments
Source Control		Most source control techniques are likely to be suitable. Mapping suggests that permeable paving may have to use non- infiltrating systems given the possible risk from groundwater. Mapping also suggests that slopes may be unsuitable for selective source control techniques.
Infiltration		Mapping suggests that there is a medium risk of groundwater flooding at this location, therefore it is likely infiltration techniques will not be suitable. This should be confirmed via site investigations to assess the potential for inflitration.
Detention		This option is unlikely to be feasible as mapping suggests mean site slopes are > 5%. Feasibility of such options should be assessed as part of a site specific assessment. If this feature is feasible a liner maybe required to prevent the egress of groundwater.
Filtration		This option is unlikely to be feasible as mapping suggests mean site slopes are > 5%. Feasibility of such options should be assessed as part of a site specific assessment. If this feature is feasible it should be located where the depth to the water table is >1m, additionally a liner maybe required to prevent the egress of groundwater.
Conveyance		All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. A liner maybe required to prevent the egress of groundwater.



• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

## Flood Defences:

There are no flood defences on site

## Flood Warning:

This site is covered by the River Wreake at Melton Mowbray Flood Warnnig Area (034FWFWRMELTNMOW)

### Access & Egress:

Access to and egress from the site is possible via A6006 to the north of the site. Access and egress should always be available based on the flood maps.

### Climate Change:

Increased storm intensities.

Increased water levels in the River Wreake

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the River Wreake should be considered when considering drainage.

· Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the River Wreake to ensure flows are not exacerbated downstream within the catchment.

• Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

o Relocating development to zones with lower flood risk

o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public

open space.

MBC_133_14 - Land and Hospital off the A607 in Melton Mowbray						
OSNGR:	475841,319281	Area: 1.1ha Brownfield				
Flood Zone Coverage:		<b>FZ3b</b> 0%	<b>FZ3a</b> 0%	<b>FZ2</b> 9%	<b>FZ1</b> 91%	

## Sources of Flood Risk:

The vast majority of the site is located within Flood Zone 1 and is considered at low risk of fluvial flooding. Flood risk is located in the south eastern corner of the site. The fluvial flooding source is Scalford Brook to the west of the site. Factoring in climate change at 30% or 50% does not result in any further areas of the site site being affected by fluvial flooding within the 100-year period. Surface water flooding is shown to occur centrally in pockets in lower return period events (30 and 100 years).

### **Exception Test Required?**

Unlikely given the vast majority being within Flood Zone 1.

However, yes, if Highly Vulnerable development is located in FZ2.

### NPPF Guidance:

• The majority of the site is located within Flood Zone One, therefore by ensuring development is placed away outside of the flood zones, the Exception test will not be required.

• However, sites over one hectare will require a site specific flood risk assessment, in which the vulnerability to flooding from other sources should be considered.

• If development is placed in the flood zones then, depending on the type of the development, the Exception test may be required.

To pass Part 'b' of the Exception Test, a FRA should demonstrate that the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

## Flood Zone Map







Hazard Map		
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Borough boundary       Hazard Rating       Danger for some       Danger for all         Strategic Site boundary       Very low hazard - caution       Danger for most		
SuDS & the development site:		
SuDS Type	Suitability	Comments
Source Control		Most source control techniques are likely to be suitable. Mapping suggests that permeable paving may have to use non- infiltrating systems given the possible risk both to and from groundwater.
Infiltration		Infiltration may be suitable. Mapping suggests a medium risk of groundwater flooding and underlying soils may be permeable. Further site investigation should be carried out to assess potential for drainage by infiltration. If infiltration is suitable it should be avoided in areas where the depth to the water table is <1m. Additionally, proposed SuDS should be discussed with relevant stakeholders (LPA, LLFA and EA) at an early stage to understand possible constraints given that the site is located with a Source Protection Zone.
Detention		This option may be feasible provided site slopes are < 5% at the location of the detention feature. If the site has contamination or groundwater issues; a liner will be required.
Filtration		This feature is probably suitable provided site slopes are <5% and the depth to the water table is >1m. If the site has contamination or groundwater issues; a liner will be required.
Conveyance		All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. If the site has contamination or groundwater issues; a liner will be required.



• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

## Flood Defences:

There are no flood defences at this site.

### Flood Warning:

This site is partially covered by the River Wreake at Melton Mowbray Flood Warnnig Area (034FWFWRMELTNMOW)

### Access & Egress:

Access to and egress from the site is possible via the A607 to the west of the site. The possibility for access and egress may be limited in the event of fluvial flooding.

#### Climate Change:

Increased storm intensities.

Increased water levels in Scalford Brook.

Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zone 2, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the Scalford Brook should be considered when considering drainage.

Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of Scalford Brook to ensure flows are not exacerbated downstream within the catchment.

• Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

- o Relocating development to zones with lower flood risk
- o Creating space for flooding.
- o Green infrastructure should be considered within the mitigation measures for surface

water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.
MBC_135_13 - Beebys Yard,Burton Street,Melton Mowbray							
OSNGR:	475373,319012	Area:	Area: 0.2ha Brownfield				
Flood Zone Coverage:		<b>FZ3b</b> 0%	<b>FZ3a</b> 0%	<b>FZ2</b> 100%	<b>FZ1</b> 0%		

## Site Flood Sources:

The entirety of the site is located within Flood Zone 2. The source of flooding is the River Wreake to the south and west of the site. Factoring in climate change at 30% or 50% does not affect the current classification of the site. Surface water flooding is shown only to affect the site in a 1,000-year event.

## **Exception Test Required?**

Depends heavily on the nature of the development on site. Yes, if Highly Vulnerable development located in FZ2.

# NPPF Guidance:

• As the entirety of the site is in Flood Zone 2 a site specific flood risk assessment in which the vulnerability to flooding from all sources should be considered will have to be performed.

• Depending on the type of the development, the Exception test may be required.

• To pass Part 'b' of the Exception Test, a FRA should demonstrate that the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

# Flood Zone Map











Hazard Map							
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Borough	boundary <b>Haz</b> Site boundary	Card Rating     Danger for some     Danger for all       Very low hazard - caution     Danger for most					
SuDS & the d	levelopment site						
SuDS Type	Suitability	Comments					
Source Control		Most source control techniques are likely to be suitable. Mapping suggests that permeable paving may have to use non- infiltrating systems given the possible risk from groundwater.					
Infiltration Infiltration may be suitable. Mapping suggests a medium risk of groundwater flooding and underlying soils may be permeable. Further site investigation should be carried out to assess potential for drainage by infiltration. If infiltration is suitable it should be avoided in areas where the depth to the water table is <1m.							
Detention	Detention Mapping suggests that the site slopes are suitable for all forms of detention. A liner maybe required to prevent the egress of groundwater.						
Filtration		All filtration techniques are likely to be suitable. A liner maybe required to prevent the egress of groundwater.					
Conveyance		All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. A liner maybe required to prevent the egress of groundwater.					



• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

## Flood Defences:

There are no flood defences at this site.

## Flood Warning:

This site is covered by the River Wreake at Melton Mowbray Flood Warning Area

## Access & Egress:

Access to and egress from the site is possible via Burton Street A606 to the west of the site. The possibility for access and egress may be limited due to fluvial flooding.

## Climate Change:

Increased storm intensities.

• Increased water levels in the River Wreake

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zone 2.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on River Wreake should be considered when considering drainage.

· Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the River Wreake to ensure flows are not exacerbated downstream within the catchment.

• Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

- o Reducing volume and rate of runoff
- o Relocating development to zones with lower flood risk
- o Creating space for flooding.
- o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2

MBC_153_15a - Works and surrounding land off Snow Hill, Melton Mowbray							
OSNGR:	SNGR: 475675,319602 Area: 8.6ha Brownfield						
Flood Zone Coverage:		<b>FZ3b</b> 2%	<b>FZ3a</b> 0%	<b>FZ2</b> 6%	<b>FZ1</b> 92%		

The north-eastern part of the site and the southern corner is partially at risk of flooding from the Scalford Brook. The Hazard within the areas at risk is classed as very low to danger to most. The heighest hazard is where water backs up behind existing infrastructure at the site.

The site is also shown to be at risk from surface water flooding. There are two flow paths; one follows the Scalford Brook and the other tends to flow around existing infrastructure at the site.

#### **Exception Test Required?**

Unlikely, as the majority of the site is located in Flood Zone One.

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2. Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b. More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b. Essential Infrastructure in Flood Zone 3b will require the Exception Test.

## NPPF Guidance:

The majority of the site is located within Flood Zone One, therefore by ensuring development is placed away from the watercourses and outside of the flood zones, the Exception test will not be required.
However, sites over one hectare will require a site specific flood risk assessment, in which the vulnerability to flooding from other sources should be considered. If development is placed in the flood zones then, depending on the type of the development, the Exception test may be required.
To pass Part 'b' of the Exception Test, a FRA should demonstrate that the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

## Flood Zone Map











• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

## Flood Defences:

There are no flood defences at this site.

## Flood Warning:

This site is partially covered by the River Wreake at Melton Mowbray Flood Warning Area (034FWFWRMELTNMOW)

#### Access & Egress:

The main routes to and from the site (Egerton Road and Stanley Street) are largely unaffected by fluvial flooding. Parts of Egerton Road are shown to flood from surface water.

## Climate Change:

• Increased storm intensities.

· Increased water levels in the River Wreake.

# Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the Scalford Brook should be considered when considering drainage.

Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the Scalford Brook to ensure flows are not exacerbated downstream.

• Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

o Relocating development to zones with lower flood risk

o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

MBC_153_15b - Plot of land off Kings Road, Melton Mowbray								
OSNGR:	475788,319606	Area:	Area: 0.04ha Brownfield					
Flood Zone Coverage:		<b>FZ3b</b> 0%	<b>FZ3a</b> 0%	<b>FZ2</b> 100%	FZ1 0%			

The entire site is at medium risk of flooding from the Scalford Brook. The Hazard within the areas at risk is classed as very low to danger to all. The highest hazard is found adajcent to the watercourse. The site is also shown to be at risk from surface water flooding. The flow path follows the Scalford Brook.

# Exception Test Required?

Yes, for Highly Vulnerable development located in FZ2.

#### NPPF Guidance:

• The entire strategic site is within Flood Zone 2. Given the level of risk to the site, the ability to apply the Sequential Approach to site layout is limited.

A site-specific flood risk assessment will be required if any development is located within Flood Zones 2.
If development is placed in the flood zones then, depending on the type of the development, the

Exception test may be required. To pass Part 'b' of the Exception Test, a FRA should demonstrate that the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall. • The potential to increase flood risk elsewhere through the addition of hard surfaces and the effect of the new developmenton surface water run-off should be considered.

• Developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area and beyond thrugh the layout and form of the development and through appropriate sustainable drainage techniques.

## Flood Zone Map













Hazard Map						
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Strategie	c Site boundary	Very low hazard - caution Danger for most				
SuDS & the d	levelopment site Suitability	Comments				
Source Control	Concessing	Most source control techniques are likely to be suitable. Mapping suggests that permeable paving may have to use non- infiltrating systems given the possible risk from groundwater.				
Infiltration	Infiltration Infiltration may be suitable. Mapping suggests a medium risk of groundwater flooding and underlying soils may be permeable. Further site investigation should be carried out to assess potential for drainage by infiltration. If infiltration is suitable it should be avoided in areas where the depth to the water table is <1m.					
Detention		Mapping suggests that the site slopes are suitable for all forms of detention. A liner maybe required to prevent the egress of groundwater.				
Filtration		All filtration techniques are likely to be suitable. A liner maybe required to prevent the egress of groundwater.				
Conveyance		All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. A liner maybe required to prevent the egress of groundwater.				



• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

## Flood Defences:

There are no flood defences at this site.

# Flood Warning:

This site is covered by the River Wreake at Melton Mowbray Flood Warning Area (034FWFWRMELTNMOW)

## Access & Egress:

The main routes to and from the site (Limes Avenue and King's Road) are at risk of fluvial and surface water flooding.

#### **Climate Change:**

· Increased storm intensities.

· Increased water levels in the Scalford Brook.

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zone 2.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the Scalford Brook should be considered when considering drainage.

Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the Scalford Brook to ensure flows are not exacerbated downstream.

· Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

o Relocating development to zones with lower flood risk

o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zone 2 as public open space.

MBC_157_15 - Land to the south of the River Eye							
OSNGR:	474231,319003	Area: 12.6ha Greenfield					
Flood Zone Coverage:		FZ3b	FZ3a	FZ2	FZ1		
		3%	89%	3%	5%		

The site is significantly at risk of fluvial flooding from the River Eye (Wreake), with the entire site within the Flood Zones with the exception of the disused railway embankment. Hazard to the site in the 1 in 100 year flood is danger to most.

The site is also at risk from surface water flooding; the risk is mainly from the 1 in 1,000 year event and in the south west of the site.

### **Exception Test Required?**

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2. Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b. More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b. Essential Infrastructure in Flood Zone 3b will require the Exception Test.

#### NPPF Guidance:

To pass Part 'b' of the Exception Test, a FRA should demonstrate that: the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

• Risks to development could be reduced by using sequential design to locate development outside of the Flood Zones.

• Development could potentially be made safe through building design, and by meeting drainage requirements. In view of the possible flooding from the River Eye, detailed hydraulic modelling should be undertaken. The results of this modelling will inform development design and confirm whether housing proposals can pass the Exception Test.

• To avoid increasing flood risk elsewhere, surface water management techniques should be adopted.















• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

## Flood Defences:

There are no flood defences at this site.

# Flood Warning:

This site is covered by the River Wreake at Melton Mowbray Flood Warnnig Area (034FWFWRMELTNMOW)

#### Access & Egress:

There is curently no direct access route to the site.

## Climate Change:

• Increased storm intensities.

• Increased water levels in the River Eye.

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 3 or 2, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area. Green infrastructure should be considered within the mitigation measures for surface water

runoff from potential development.

• The peak flows on the River Eye that flows through the site should be considered when considering drainage.

• Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the River Eye to ensure flows are not exacerbated downstream within the catchment.

· Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

- o Relocating development to zones with lower flood risk
- o Creating space for flooding.
- o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.











• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

## Flood Defences:

There are no flood defences at this site.

## Flood Warning:

There are currently no flood warning areas covering this site.

# Access & Egress:

The main access road, Melton Spinney Road, is unaffected by fluvial flood risk; however, there are some pockets of surface water flooding along the route in the 1 in 1,000-year event.

## **Climate Change:**

Increased storm intensities.

• Increased water levels in the unnamed watercourse.

# Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any

development is located within Flood 3 or 2, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area. • Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the unnamed watercourse that flows through the site should be considered when considering drainage.

• Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

· Onsite attenuation schemes would need to be tested against the hydrographs of the unamed

watercourse to ensure flows are not exacerbated downstream within the catchment.

· Safe access and egress will need to be demonstrated.

New

- development must seek opportunities to reduce overall level of flood risk at the site, for example by: o Reducing volume and rate of runoff
  - o Relocating development to zones with lower flood risk
  - o Creating space for flooding.
  - o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

Melton North							
OSNGR:	475351,321371	Area: 2	Area: 272.7 ha Predominantly Greenfield				
Flood Zone Coverage:		FZ3b	<b>FZ3a</b>	<b>FZ2</b>	FZ1		

Parts of the site are at risk of flooding from the Welby and Scalford Brooks and an unnamed tributary. However, with the exception of Scalford Brook, water is largely confined to the channel and areas immediately adjacent. Hazard is mainly classed as very low although hazard increases to danger for most in the area affected by flooding from the Scalford Brook where it backs up behind the disused railway embankment. Parts of the site are also shown to be affected by surface water flooding; these areas tend to corresponding with the watercourses and a number of smaller drains.

#### **Exception Test Required?**

Unlikely, as the majority of the site is located within Flood Zone One.

If More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2 an Exception test would be required.

Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b.

More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b.

Essential Infrastructure in Flood Zone 3b will require the Exception Test.

#### NPPF Guidance:

The majority of the site is located within Flood Zone One, therefore by ensuring development is placed away from the watercourses and outside of the flood zones, the Exception test will not be required.
However, sites over one hectare will require a site specific flood risk assessment, in which the vulnerability to flooding from other sources should be considered.

• If development is placed in the flood zones then, depending on the type of the development, the Exception test may be required. To pass Part 'b' of the Exception Test, a FRA should demonstrate that the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.















## Access & Egress:

There are a number of roads the could provide access to and from the site; none are shown to be at any significant risk of flooding.

#### **Climate Change:**

· Increased storm intensities.

• Increased water levels in the Welby and Scalford Brooks and the unnamed tributary.

#### Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the Scalford Brook, Welby Brook and the unnamed tributary should be considered when considering drainage.

• Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the Scalford Brook, Welby Brook and the unnamed tributary to ensure flows are not exacerbated downstream in Melton Mowbray.

· Safe access and egress will need to be demonstrated.

 New development must seek opportunities to reduce overall level of flood risk at the site, for example by: o Reducing volume and rate of runoff

o Relocating development to zones with lower flood risk

o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

Melton South						
OSNGR:	475146,317487	Area: 311.9 ha Predominantly Greenfield				
Flood Zone Coverage:		<b>FZ3b</b> 3%	<b>FZ3a</b> 0%	<b>FZ2</b> 3%	<b>FZ1</b> 94%	

The site is at risk of flooding from the Edendale Brook and four unnamed tributaries of the River Wreake. However, with the exception of the unnamed tributary in the west of the site, water is largely confined to the channels and areas immediately adjacent. The site is also shown to be affected by surface water flooding; these areas tend to corresponding with the watercourses and a number of smaller drains.

#### **Exception Test Required?**

Unlikely, as the majority of the site is located within Flood Zone One.

If More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2 an Exception test would be required.

Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b.

More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b.

Essential Infrastructure in Flood Zone 3b will require the Exception Test.

#### NPPF Guidance:

The majority of the site is located within Flood Zone One, therefore by ensuring development is placed away from the watercourses and outside of the flood zones, the Exception test will not be required.
However, sites over one hectare will require a site specific flood risk assessment, in which the vulnerability to flooding from other sources should be considered.

If development is placed in the flood zones then, depending on the type of the development, the Exception test may be required. To pass Part 'b' of the Exception Test, a FRA should demonstrate that the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.















## Access & Egress:

There are a number of roads the could provide access to and from the site; none are shown to be at any significant risk of flooding.

#### **Climate Change:**

• Increased storm intensities.

• Increased water levels in the Edendale Brook and four unnamed tributaries of the River Wreake.

#### Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the Edendale Brook and the unnamed tributaries should be considered when considering drainage.

Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the Edendale Brook and the unnamed tributaries to ensure flows are not exacerbated downstream in Melton Mowbray.

Safe access and egress will need to be demonstrated.

 New development must seek opportunities to reduce overall level of flood risk at the site, for example by: o Reducing volume and rate of runoff

o Relocating development to zones with lower flood risk

o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

MBC_182_15 - Land north of Station Road, Old Dalby						
OSNGR:	467674,324106	Area: 5.1ha Greenfield				
Flood Zone Coverage:		FZ3b	FZ3a	FZ2	FZ1	
		15%	1%	0%	8/%	

The western boundary of the site is at risk from fluvial flooding from the Dalby Brook. Hazard from the Dalby Brook is classed as very low.

The site is also shown to be at risk from surface water flooding. There appears to be two main flow paths; one following the Dalby Brook, the other flowing north to south along the eastern boundary.

#### **Exception Test Required?**

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2.

Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b and More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b.

Essential Infrastructure in Flood Zone 3b will require the Exception Test.

#### NPPF Guidance:

To pass Part 'b' of the Exception Test, a FRA should demonstrate that: the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

• Over three quarters of the strategic site is within Flood Zone 1. Risks to development could be reduced by using sequential design to locate development outside of the Flood Zones.

• Development could potentially be made safe through building design, and by meeting drainage requirements. In view of the possible flooding from the Winter Beck and River Devon, detailed hydraulic modelling should be undertaken to determine the 1 in 100-year flood level (with and without climate change) as well as any other return periods requested by the Environment Agency. The results of this modelling will inform development design and confirm whether housing proposals can pass the Exception Test.

• To avoid increasing flood risk elsewhere, surface water management techniques should be adopted.












• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

## Flood Defences:

There are no flood defences at this site.

#### Flood Warning:

There are currently no flood warning areas covering this site.

#### Access & Egress:

The main access route, Station Lane, is not shown to be affected by fluvial flooding; however, there is some surface water ponding in the 1 in 1,000-year.

#### Climate Change:

Increased storm intensities.

• Increased water levels in the Dalby Brook

### Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the Dalby Brook should be considered when considering drainage.

Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff..

• Onsite attenuation schemes would need to be tested against the hydrographs of the Dalby Brookto ensure flows are not exacerbated downstream at Old Dalby.

• Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by: o Reducing volume and rate of runoff

o Relocating development to zones with lower flood risk

o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

	MBC_012_16 - Point Farm				
OSNGR:	476979,330978	Area:	Area: 2.0ha Green		
Flood Zone Coverage:		<b>FZ3b</b> 11%	<b>FZ3a</b> 0%	<b>FZ2</b> 1%	FZ1 88%

The vast majority of the site is located within Flood Zone 1 and is considered at very low risk of fluvial flooding with just 12% remaining within FZ2 and 3. The fluvial flooding is shown to come from an unnamed drain to the north of the site flowing within the site itself. Factoring in climate change at 30% or 50% results in only marginally more of the site being affected by fluvial flooding within the 100-year return period. Surface water flooding is shown to occur as relatively small, isolated pockets in low return periods but widespread in a 1,000-year event.

### **Exception Test Required?**

Unlikely, as the majority of the site is located in Flood Zone One.

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2. Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b. More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b. Essential Infrastructure in Flood Zone 3b will require the Exception Test.

## NPPF Guidance:

• The majority of the site is located within Flood Zone One, therefore by ensuring development is placed away outside of the flood zones, the Exception test will not be required.

• However, sites over one hectare will require a site specific flood risk assessment, in which the vulnerability to flooding from other sources should be considered.

• If development is placed in the flood zones then, depending on the type of the development, the Exception test may be required.

To pass Part 'b' of the Exception Test, a FRA should demonstrate that the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

## Flood Zone Map









Hazard Map				
Point Farm				
Reproduced from Ord	nance Survey mapping with to copyr	he permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office. © Crown right and database rights 2015 Ordance Survey 100019651.		
Borough	boundary Haz	Card Rating     Danger for some     Danger for all       Very low hazard - caution     Danger for most		
SuDS & the d	levelopment site	:		
SuDS Type	Suitability	Comments		
Source Control		Most source control techniques are likely to be suitable. Mapping suggests that permeable paving may have to use non- infiltrating systems given the possible risk from groundwater.		
Infiltration		Infiltration may be suitable. Mapping suggests a medium risk of groundwater flooding and underlying soils may be permeable. Further site investigation should be carried out to assess potential for drainage by infiltration. If infiltration is suitable it should be avoided in areas where the depth to the water table is <1m.		
Detention		Mapping suggests that the site slopes are suitable for all forms of detention. A liner maybe required to prevent the egress of groundwater.		
Filtration		All filtration techniques are likely to be suitable. A liner maybe required to prevent the egress of groundwater.		
Conveyance		All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. A liner maybe required to prevent the egress of groundwater.		



• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

## Flood Defences:

There are no flood defences at this site.

### Flood Warning:

This site is covered by the River Wreake at Frisby-on-the-Wreake Flood Warning Area (034FWFWRFRISWRKE)

### Access & Egress:

Access to and egress from the site is possible via Main Street along the eastern site boundary. The possibility for access and egress may be limited in the event of surface water flooding with Main Street shown to be affected.

### Climate Change:

· Increased storm intensities.

• Increased water levels in the unnamed drain

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the unnamed drain should be considered when considering drainage.

• Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the unnamed drain to the south to ensure flows are not exacerbated downstream within the catchment.

· Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

o Relocating development to zones with lower flood risk

o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

	MBC_154_15a - Home Farm and cricket ground, Thorpe Arnold				
OSNGR:	476830,320393	Area: 15.3ha Greenfield / Brownfield			
Flood Zone Coverage:		<b>FZ3b</b> 39%	<b>FZ3a</b> 2%	<b>FZ2</b> 4%	<b>FZ1</b> 55%

The site is partially at high risk of flooding from an un-named watercourse which flows through the centre of the site. The Hazard within the areas at risk is classed as very low to danger to all. The highest hazard is found adjacent to the watercourse and where flows back up, behind Thorpe Bridge. The site is also shown to be at risk from surface water flooding.

## **Exception Test Required?**

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2.

Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b.

More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b. Essential Infrastructure in Flood Zone 3b will require the Exception Test.

### NPPF Guidance:

• Approximately half of the strategic site is within Flood Zone 1. Risks to development could be reduced by using sequential design to locate development outside of the Flood Zones.

• For development proposals on sites in Flood Zones 2 and 3 or comprising one hectare or above in Flood Zone 1, the vulnerability of flooding from all sources should be incorporated into a FRA.

If development is placed in the flood zones then, depending on the type of the development, the Exception test may be required. To pass Part 'b' of the Exception Test, a FRA should demonstrate that the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.
The potential to increase flood risk elsewhere through the addition of hard surfaces and the effect of the new developmenton surface water run-off should be considered.

• Developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area and beyond thrugh the layout and form of the development and through appropriate sustainable drainage techniques.

## Flood Zone Map













Hazard Map				
Represented for Defance Surge on behalf of the Controller of Her Mages 'S Stationary Office. 4° Cercom				
Borough	boundary Haz	card Rating     Danger for some     Danger for all       Very low hazard - caution     Danger for most		
SuDS & the d	levelopment site			
SuDS Type	Suitability	Comments		
Source Control		All forms of source control are likely to be suitable.		
Infiltration		Infiltration likely to be suitable. Mapping suggests a low risk of ground water flooding however, site investigations should be carried out to assess potential for drainage by infiltration.		
Detention		Mapping suggests that the site slopes are suitable for all forms of detention.		
Filtration		All filtration techniques are likely to be suitable. If the site has contamination issues; a liner will be required.		
Conveyance		All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. If the site has contamination issues; a liner will be required.		



• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

## Flood Defences:

There are no flood defences at this site.

## Flood Warning:

There are currently no flood warning areas covering this site.

### Access & Egress:

The main route to and from the site (A606) is at risk of fluvial and surface water flooding. The Melton Spunney Road, is largely unaffected by flooding.

## Climate Change:

• Increased storm intensities.

• Increased water levels in the unnamed watercourse.

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the un-named watercourses should be considered when considering drainage.

• Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the un-named watercourses to ensure flows are not exacerbated downstream.

• Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

o Relocating development to zones with lower flood risk

o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.

MBC_154_15b - Land to the west of Linacre Grange, Thorpe Arnold					
OSNGR:	476778,319947	Area: 15ha Greenfield			
Flood Zone Coverage:		<b>FZ3b</b> 0%	<b>FZ3a</b> 1%	<b>FZ2</b> 4%	<b>FZ1</b> 95%

The vast majority of the site is located within Flood Zone 1 and is considered to be at low risk of fluvial flooding. Fluvial risk is located along the western boundary. The fluvial flooding is from Thorpe Brook. Factoring in climate change at 30% or 50% does not result in significantly more of the site being affected by fluvial flooding within the 100-year return period. Surface water flooding is shown to generally affect the western reaches of the site within a 100-year event, with several pockets emerging in a 1,000-year return period.

### **Exception Test Required?**

Unlikely, as the majority of the site is located in Flood Zone One.

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2. Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b. More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b. Essential Infrastructure in Flood Zone 3b will require the Exception Test.

## NPPF Guidance:

• The majority of the site is located within Flood Zone One, therefore by ensuring development is placed away outside of the flood zones, the Exception test will not be required.

• However, sites over one hectare will require a site specific flood risk assessment, in which the vulnerability to flooding from other sources should be considered.

• If development is placed in the flood zones then, depending on the type of the development, the Exception test may be required.

To pass Part 'b' of the Exception Test, a FRA should demonstrate that the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

## Flood Zone Map











Hazard Map				
The second secon				
Reproduced from Ord	Inance Survey mapping with t	he permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office. © Crown		
Borough	boundary <b>Haz</b> c Site boundary	card Rating     Danger for some     Danger for all       Very low hazard - caution     Danger for most		
SuDS & the d	levelopment site			
SuDS Type	Suitability	Comments		
Source Control		Most source control techniques are likely to be suitable. Mapping suggests that permeable paving may have to use non- infiltrating systems given the possible risk from groundwater.		
Infiltration		Infiltration may be suitable. Mapping suggests a medium risk of groundwater flooding and underlying soils may be permeable. Further site investigation should be carried out to assess potential for drainage by infiltration. If infiltration is suitable it should be avoided in areas where the depth to the water table is <1m.		
Detention		Mapping suggests that the site slopes are suitable for all forms of detention. A liner maybe required to prevent the egress of groundwater.		
Filtration		All filtration techniques are likely to be suitable. A liner maybe required to prevent the egress of groundwater.		
Conveyance		All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. A liner maybe required to prevent the egress of groundwater.		



• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

### Flood Defences:

There are no flood defences at this site.

## Flood Warning:

There are currently no flood warning areas covering this site.

### Access & Egress:

Access to and egress from the site is possible via A607 along Thorpe Road / Melton Road along the south-eastern site boundary. The possibility for access and egress should always be available from the site.

## Climate Change:

Increased storm intensities.

Increased water levels in the Thorpe Brook

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on Thorpe Brook should be considered when considering drainage.

• Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of Thorpe Brook to ensure flows are not exacerbated downstream within the catchment.

· Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

o Relocating development to zones with lower flood risk

o Creating space for flooding.

o Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public

open space.

MBC_154_15c - Land to the east of Thorpe Arnold					
OSNGR:	477478,320290	Area: 9.6ha Greenfield			
Flood Zone Coverage:		FZ3b 8%	<b>FZ3a</b> 0%	<b>FZ2</b> 1%	<b>FZ1</b> 91%

The vast majority of the site is located within Flood Zone 1 and is considered to be at low risk of fluvial flooding. Flood risk is located centrally adjacent to an unnamed tributary of the River Wreake that flows through the site. Factoring in climate change at 30% or 50% results in more of the site being affected by fluvial flooding within the 100-year return period. Surface water flooding is shown to occur as a relatively small, isolated pocket centrally in the site within a 100-year event, with several pockets emerging in a 1,000-year return period.

### **Exception Test Required?**

Unlikely, as the majority of the site is located in Flood Zone One.

Yes, if More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2. Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b. More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b. Essential Infrastructure in Flood Zone 3b will require the Exception Test.

## NPPF Guidance:

• The majority of the site is located within Flood Zone One, therefore by ensuring development is placed away outside of the flood zones, the Exception test will not be required.

• However, sites over one hectare will require a site specific flood risk assessment, in which the vulnerability to flooding from other sources should be considered.

• If development is placed in the flood zones then, depending on the type of the development, the Exception test may be required.

To pass Part 'b' of the Exception Test, a FRA should demonstrate that the development will be safe, will avoid increasing flood risk elsewhere, and will reduce flood risk overall.

## Flood Zone Map







Hazard Map					
Thorpe Anold Bold House 0 0.05 0.09 0.18 m					
Reproduced from Ord	nance Survey mapping with copy	the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office. © Crown right and database rights 2015 Ordance Survey 100019651.			
Borough	Borough boundary       Hazard Rating       Danger for some       Danger for all         Strategic Site boundary       Very low hazard - caution       Danger for most				
SuDS & the d	levelopment site	:			
SuDS Type	Suitability	Comments			
Source Control		All forms of source control are likely to be suitable.			
Infiltration		Infiltration likely to be suitable. Mapping suggests a low risk of ground water flooding however, site investigations should be carried out to assess potential for drainage by infiltration.			
Detention		Mapping suggests that the site slopes are suitable for all forms of detention.			
Filtration		All filtration techniques are likely to be suitable. If the site has contamination issues; a liner will be required.			
Conveyance		All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. If the site has contamination issues; a liner will be required.			

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• The site is not located within a groundwater source protection zone.

• Drainage strategies should demonstrate that an appropriate number of treatment stages have been delivered. This depends on the factors such as the type of development, primary source of runoff and likelihood of contamination. Guidance should be sought from LLFA and other guidance documents such as the CIRIA SuDS Manual (C753).

## Flood Defences:

There are no flood defences at this site.

# Flood Warning:

There are currently no flood warning areas covering this site.

## Access & Egress:

Access to and egress from the site is possible via Easthorpe Road / Manor Road along the south-eastern site boundary. The possibility for access and egress may be limited in the event of fluvial flooding with much of the Easthorpe Road / Manor Road located within FZ 3.

## **Climate Change:**

· Increased storm intensities.

• Increased water levels in the unnamed drain.

## Flood Risk Implications for Development:

• At the planning application stage, a site-specific flood risk assessment will be required if any development is located within Flood Zones 2 or 3, or for any development greater than 1ha in Flood Zone 1.

• Resilience measures will be required if buildings are situated in the flood risk area.

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.

• The peak flows on the unnamed drain should be considered when considering drainage.

Assessment for runoff should include allowance for climate change effects.

• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.

• Onsite attenuation schemes would need to be tested against the hydrographs of the unnamed drain to the south to ensure flows are not exacerbated downstream within the catchment.

· Safe access and egress will need to be demonstrated.

• New development must seek opportunities to reduce overall level of flood risk at the site, for example by:

o Reducing volume and rate of runoff

- o Relocating development to zones with lower flood risk
- o Creating space for flooding.
- o Green infrastructure should be considered within the mitigation measures for surface
- water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.