HSG1 - North of Nuneaton

OSNGR: 437518,293686	Area: 215.23		Predominately Greenfield	
Flood Zone Coverage:	**FZ3b**	**FZ3a**	**FZ2**	**FZ1**
	3%	2%	1%	94%

Sources of flood risk:

• Primary flood risk fluvial from Change Brook, resulting from overtopping of the watercourse channel. Change Brook flows in a south easterly direction through the northern section of the development site. The Change Brook has several small tributaries that originate in the development site and flow in a southerly direction out of the site boundary.
• There is risk from overtopping of an unnamed drain flowing along the north and western boundary of the development site. An embankment on the western edge of the site appears to hinder water movement through this drain directing it along the edge of the site boundary.
• With further development and creation of impermeable ground surfaces, surface water flooding may become a problem.

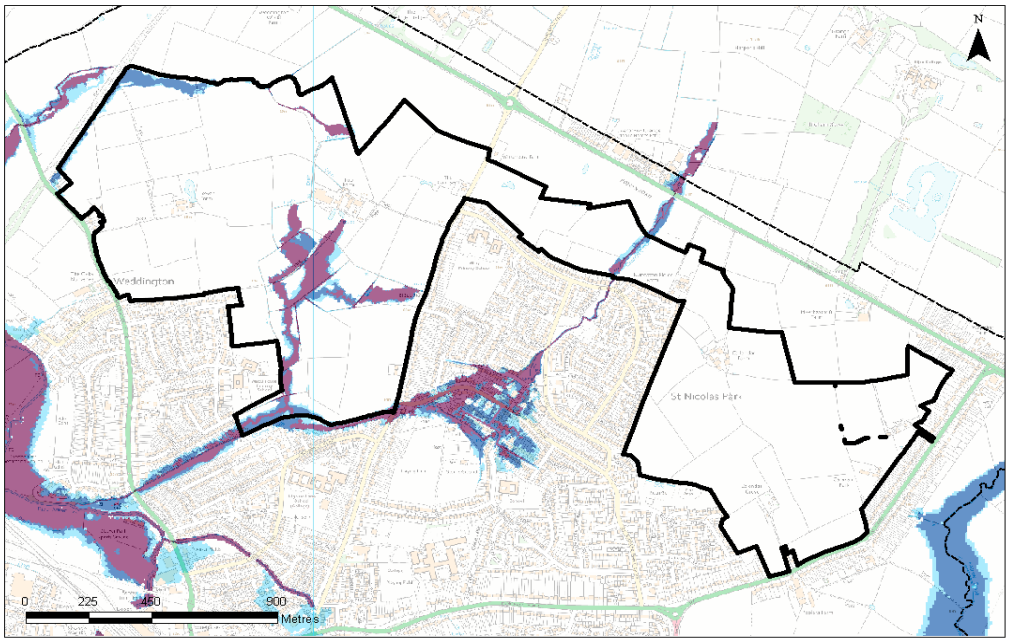
Exception Test Required?

Yes, for Essential infrastructure development in FZ3b, Essential infrastructure and More Vulnerable development in FZ3a and Highly Vulnerable development in FZ2.
Highly Vulnerable infrastructure should not be permitted within FZ3a. Highly Vulnerable, More Vulnerable and Less Vulnerable infrastructure should not be permitted within FZ3b.

Requirements for passing the Exception Test:

• 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.
• Preference should be given to locating development outside the flooded areas, away from Change Brook, its tributaries and the unnamed drain. It should be possible to reduce flood risk at this location by using sequential design to locate more vulnerable development towards higher ground, through building design and by meeting drainage requirements. Some resilience measures may be required if buildings are situated in the flood risk area.
• Consultation with the Local Authority and the Environment Agency should be undertaken at an early stage.

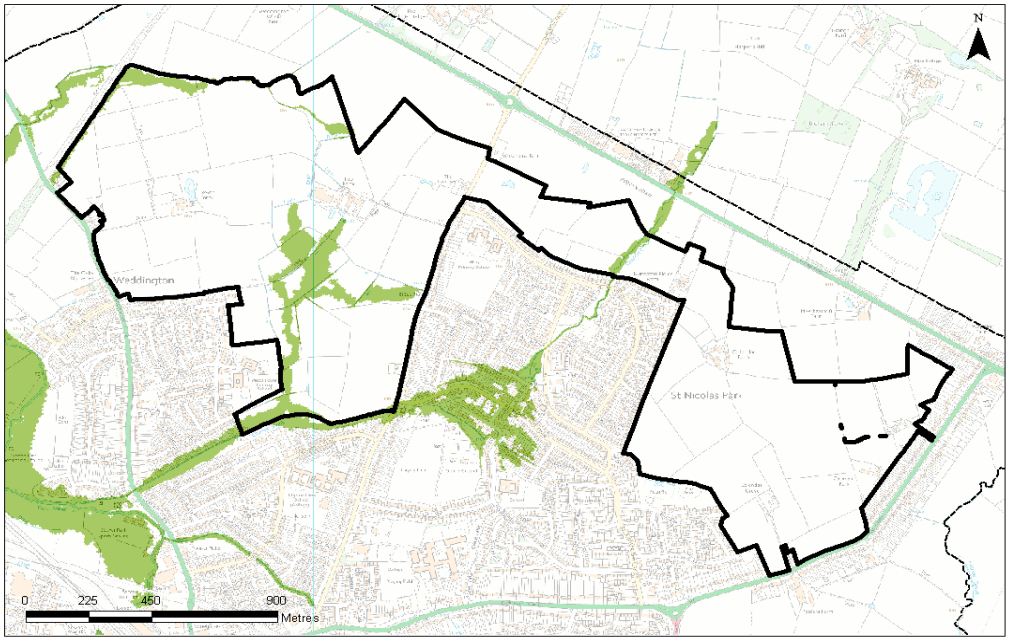
Flood Zone Map



Note: Indicative flood extents have been used to represent FZ3b in certain locations. For more information please refer to section 10 in the main report.

Potential development location
Council boundary
Flood Zone 3b
Indicative Extent of Flood Zone 3b
Flood Zone 3a
Flood Zone 2

Climate Change Map



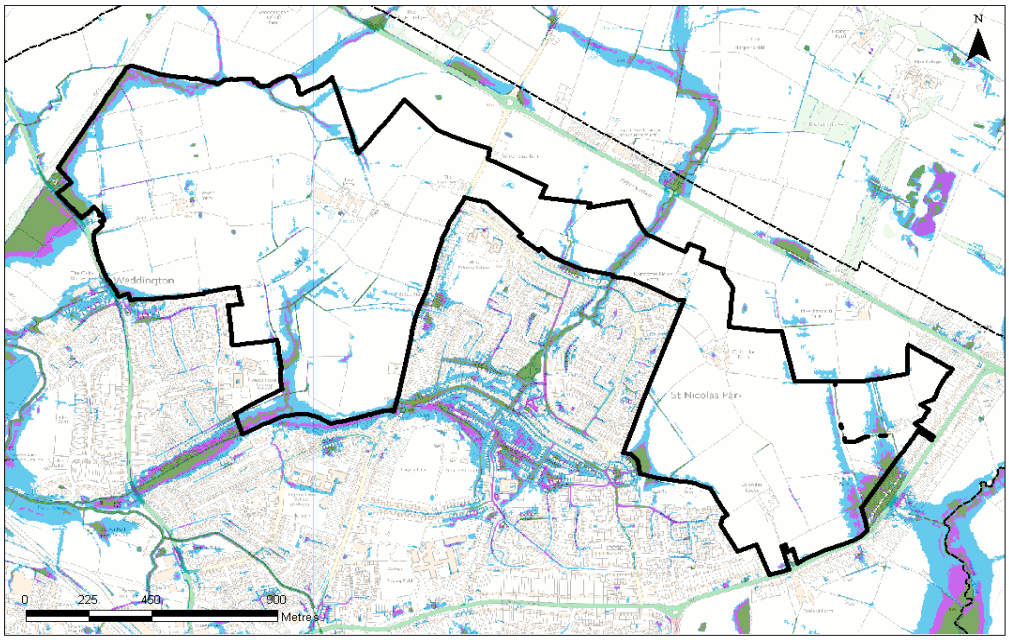
Potential development location

Council boundary

Flood Zone 3 with Climate Change

Indicative Extent of Flood Zone 3 with Climate Change

Surface Water Map



Potential development location

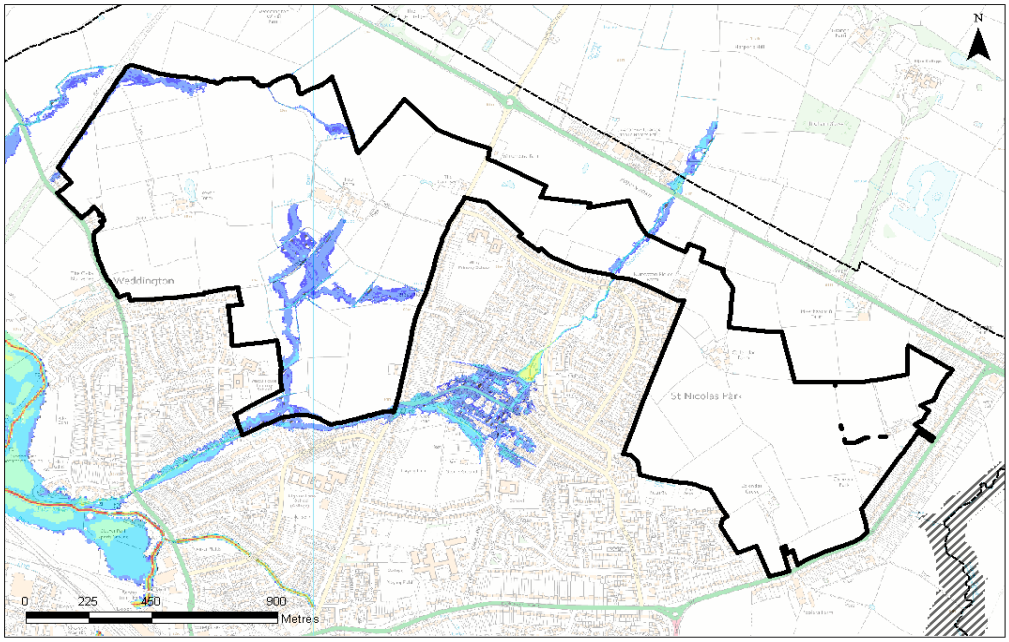
Council boundary

uFMfSW 30-year Extent

uFMfSW 100-year Extent

uFMfSW 1,000-year Extent

Depth Map - fluvial flooding (1 in 100-year event)

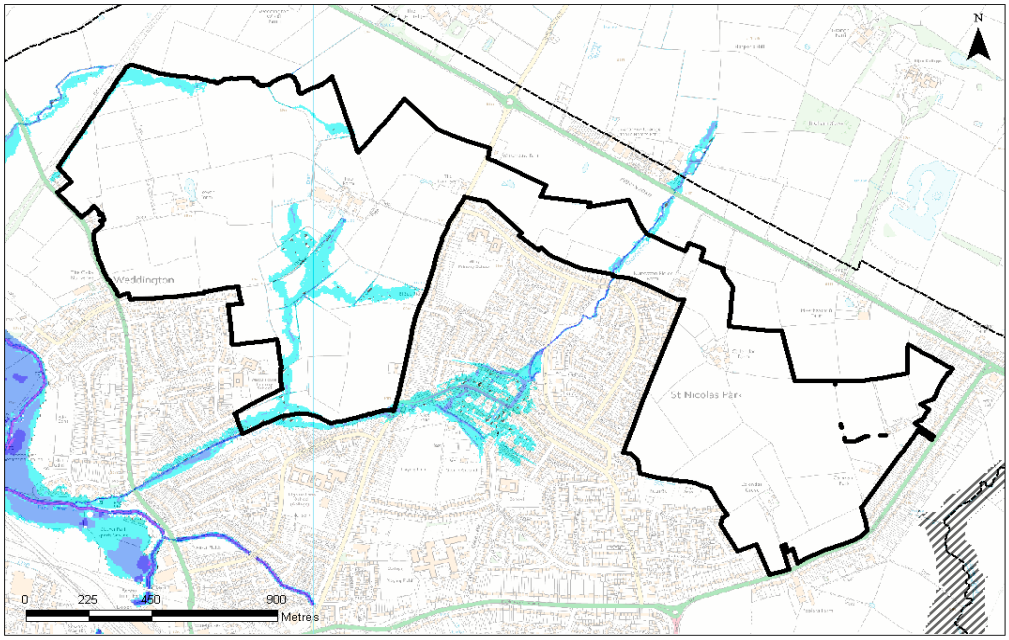


Potential development location
Council boundary

Depth (m)

0 - 0.10	0.50 - 1.00	2.00 - 2.50	3.50 - 4.00
0.10 - 0.50	1.00 - 1.50	2.50 - 3.00	>4.00
	1.50 - 2.00	3.00 - 3.50	

Velocity Map - fluvial flooding (1 in 100-year event)

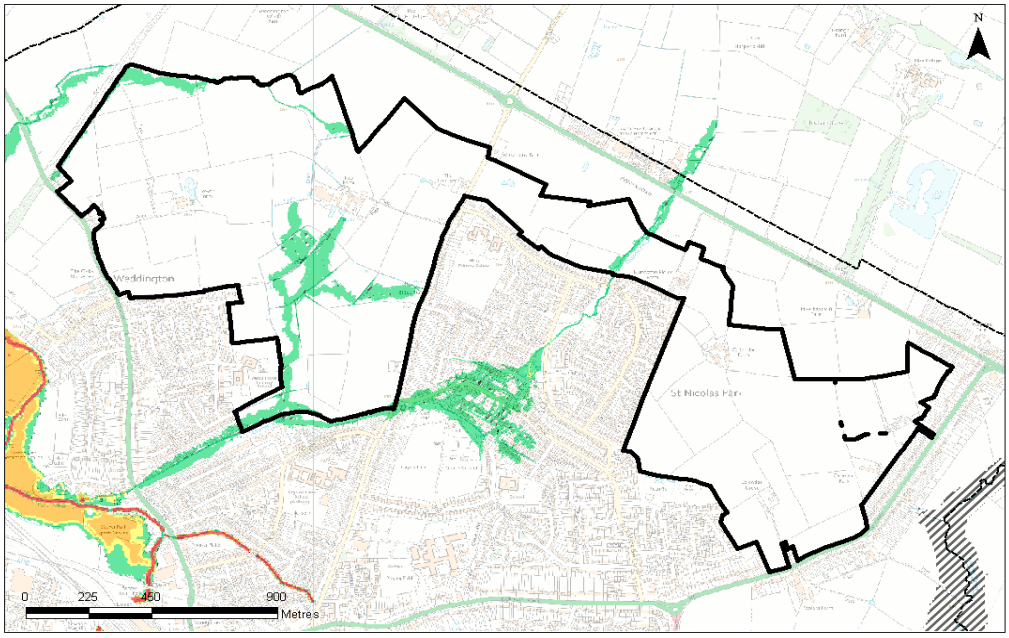


Potential development location
Council boundary

Velocity (m/s)

0 - 0.2	0.2 - 0.5	0.5 - 1.0	1.0 - 2.0
	0.5 - 1.0		> 2.0

Hazard Map - fluvial flooding (1 in 100-year event)



Potential development location
Council boundary

Hazard Rating

Very low hazard - caution
Danger for some
Danger for most
Danger for all

SuDS & the development site:

SuDS Type	Suitability	Comments
Source Control		All forms of source control are likely to be suitable.
Infiltration		Mapping suggests high permeability at this site, 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 contaminated land 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 groundwater contamination issues, a liner will be required.

- *The site is not located in an area designated by the Environment Agency as a landfill site.*
- *The site is not located within any Environment Agency designated ground source protection zones.*

Flood Defences:

There are no flood defences at this site.

Flood Warning:

There are currently no flood warning areas covering this site.

Climate Change:

Increased water levels in Change Brook, its tributaries and the unnamed watercourse. Increased storm intensities.

Flood Risk Implications for Development:

• Only a small proportion of the development site is affected by flood levels, therefore all development should be located within Flood Zone 1, unless appropriate in accordance with NPPF Planning Practice Guidance.
• Consideration of the peak flows on the watercourses within the site and its duration is required when considering drainage.
• A site specific flood risk assessment will be required for any development in Flood Zone 2 and 3.
• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.
• 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 receiving watercourse to ensure flows are not exacerbated downstream within the catchment.
• Demonstration that development at this location can be made safe.
• 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.
• Consider using Flood Zones 2 and 3 as public open space.

HSG2 - Arbury

OSNGR: 434292,290310	Area: 85.82ha	Greenfield

Sources of flood risk:

• Flood risk is from surface water flooding.
• With further development and creation of impermeable ground surfaces, surface water flooding may become more of a problem.

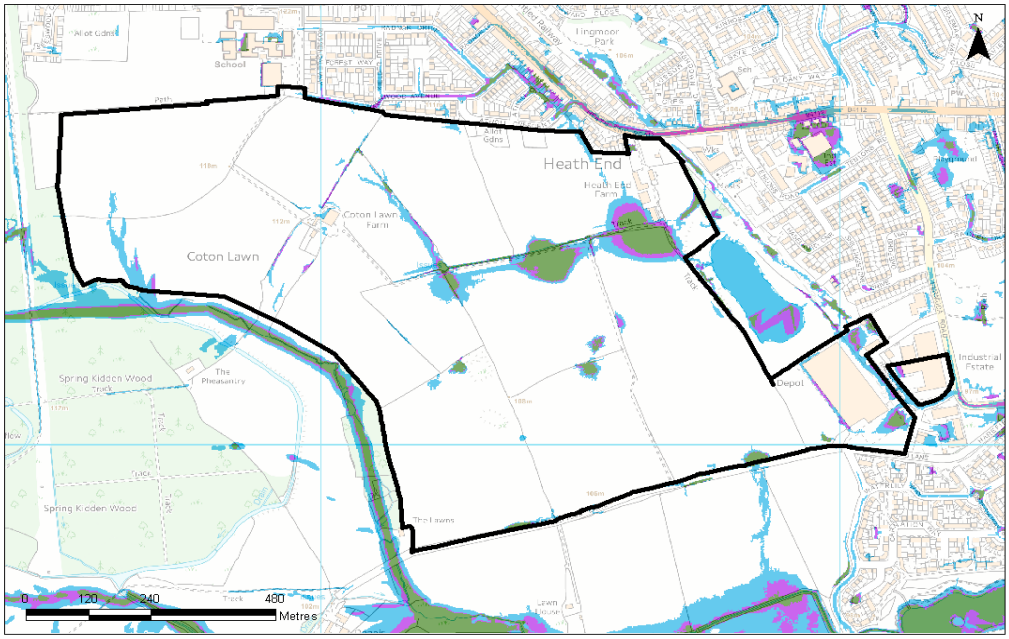
Exception Test Required?

No

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 development on surface water run-off must be included.
• 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.

Surface Water Map



Potential development location
Council boundary
uFMfSW 30-year Extent
uFMfSW 100-year Extent
uFMfSW 1,000-year Extent

SuDS & the development site:

SuDS Type	Suitability	Comments
Source Control		All forms of source control are likely to be suitable.
Infiltration		Mapping suggests high permeability at this site, site investigations should be carried out to assess potential for drainage by infiltration.
Detention		This option may be feasible provided site slopes are < 5% at the location of the detention feature. A liner maybe required if there any ground contamination issues.

Filtration		All filtration techniques are likely to be suitable. If the site has contaminated land 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 groundwater contamination issues, a liner will be required.

- *The site is not located in an area designated by the Environment Agency as a landfill site.*
- *The site is not located within any Environment Agency designated ground source protection zones.*

Flood Defences:

There are no flood defences at this site.

Flood Warning:

There are currently no flood warning areas covering this site.

Climate Change:

- Increased storm intensities.

Flood Risk Implications for Development:

- Developers should consider reservoir flooding during the planning stage, using the EA's reservoir inundation mapping. Where possible, developers should consider using areas at possible risk as public open space.
- Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.
- 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 receiving watercourse to ensure flows are not exacerbated downstream within the catchment.
- Demonstration that development at this location can be made safe.
- New development must seek opportunities to reduce overall level of flood risk at the site for example by:
  - Reducing volume and rate of runoff
  - Relocating development to zones with lower flood risk
  - Creating space for flooding.

HSG3				
OSNGR: 436991,289491	Area: 28.87ha		Greenfield	
Flood Zone Coverage:	**FZ3b** 0%	**FZ3a** 18%	**FZ2** 7%	**FZ1** 75%

Sources of flood risk:

• Primary flood risk is fluvial, resulting from overtopping of the Wem Brook, Griff Brook and Coventry Canal that flow along the eastern, northern and western boundaries of the site.
• Additional flood risk is posed by overland flows from adjacent developments.
• With further development and creation of impermeable ground surfaces, surface water flooding may become a problem.

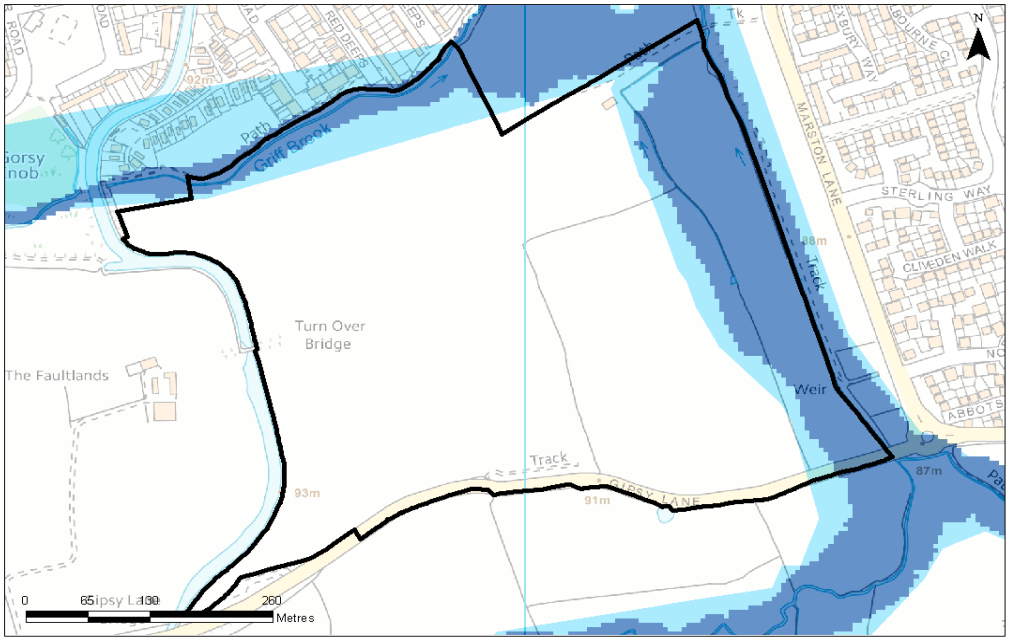
Exception Test Required?

Yes, for Essential Infrastructure and more vulnerable development in FZ3a and Highly Vulnerable development in FZ2. Highly Vulnerable infrastructure should not be permitted within FZ3a.

Requirements for passing the Exception Test:

• 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.
• Preference should be given to locating development in the south eastern parts of the site, outside of flooded areas. It should be possible to reduce flood risk at this development site by using sequential design to locate more vulnerable developments towards higher ground, through building design and by meeting drainage requirements. New developments being located outside of Flood Zone 2 and 3 needs to ensure that no increase in flood risk occurs. Some resilience measures may be required if buildings are situated in the flood risk area.
• Consultation with the Local Authority and the Environment Agency should be undertaken at an early stage

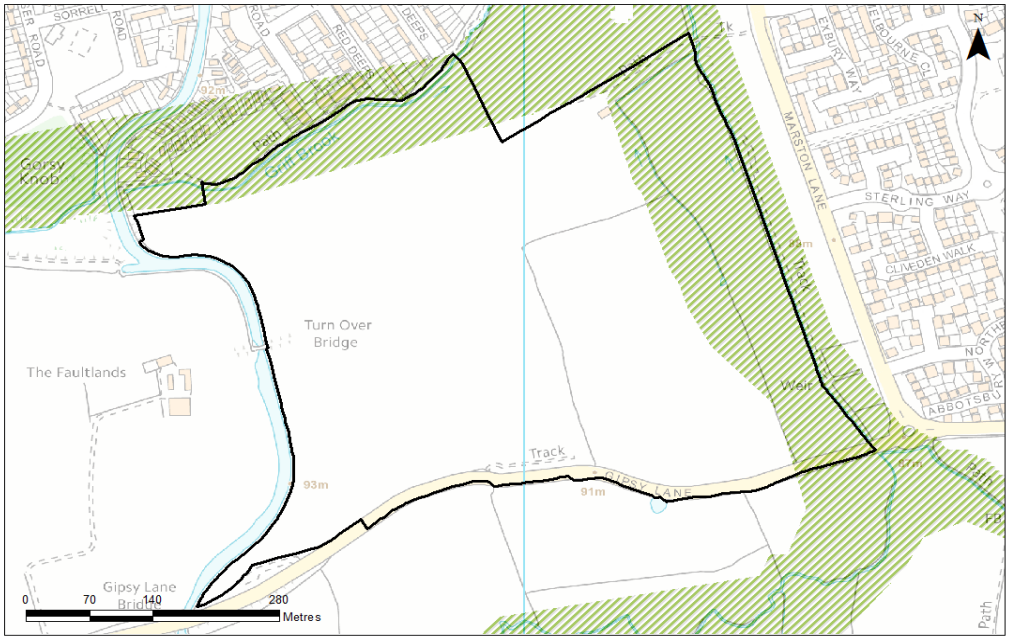
Flood Zone Map



Note: Indicative flood extents have been used to represent FZ3b in certain locations. For more information please refer to section 10 in the main report.

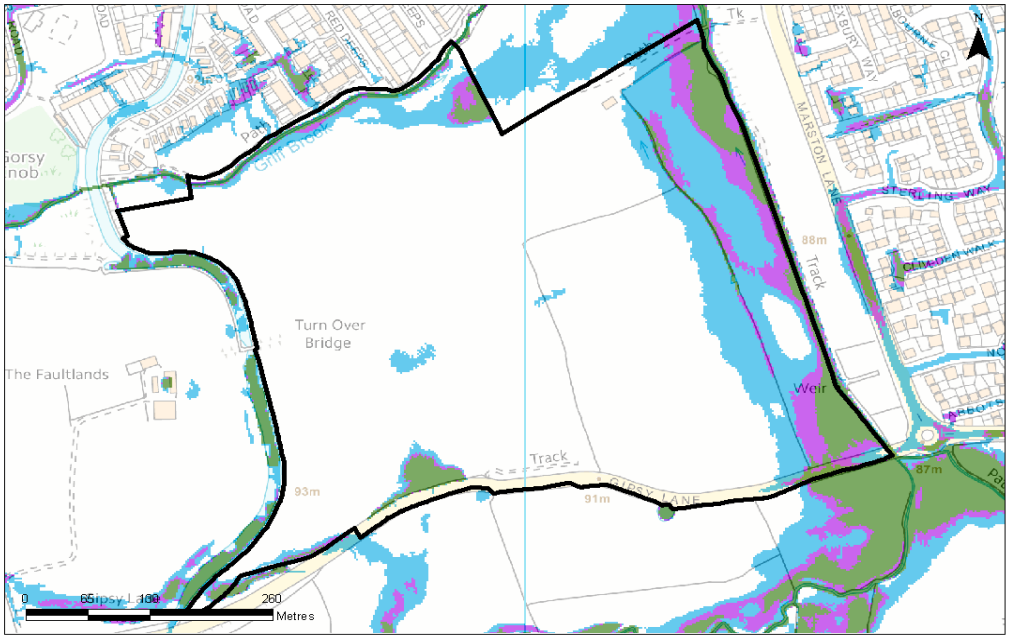
Potential development location
Council boundary
Flood Zone 3b
Indicative Extent of Flood Zone 3b
Flood Zone 3a
Flood Zone 2

Climate Change Map



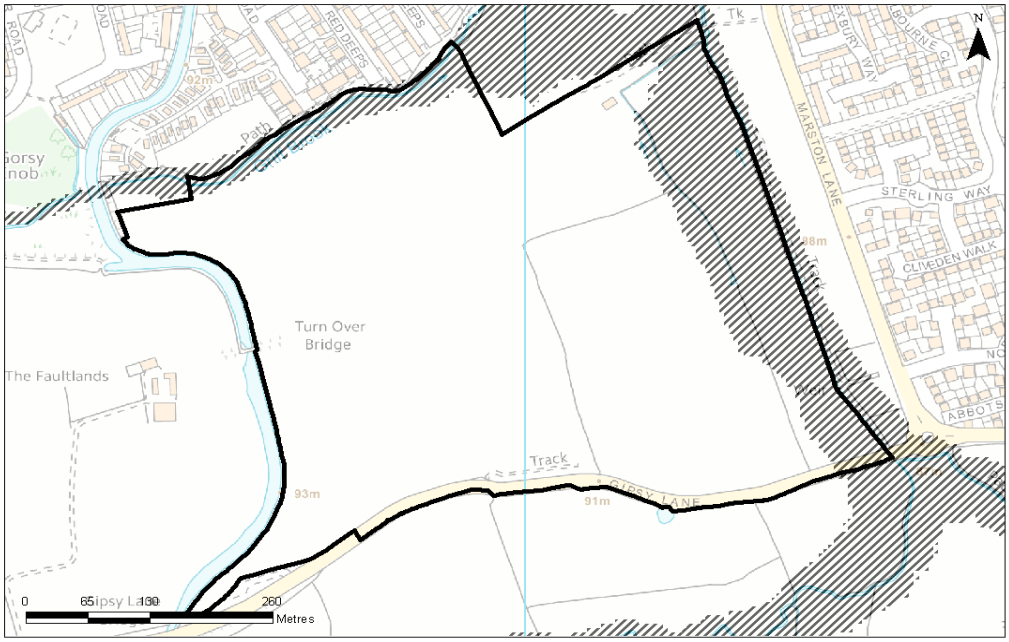
Potential development location
Council boundary
Flood Zone 3 with Climate Change
Indicative Extent of Flood Zone 3 with Climate Change

Surface Water Map



Potential development location
Council boundary
uFMfSW 30-year Extent
uFMfSW 100-year Extent
uFMfSW 1,000-year Extent

Depth Map - fluvial flooding (1 in 100-year event)

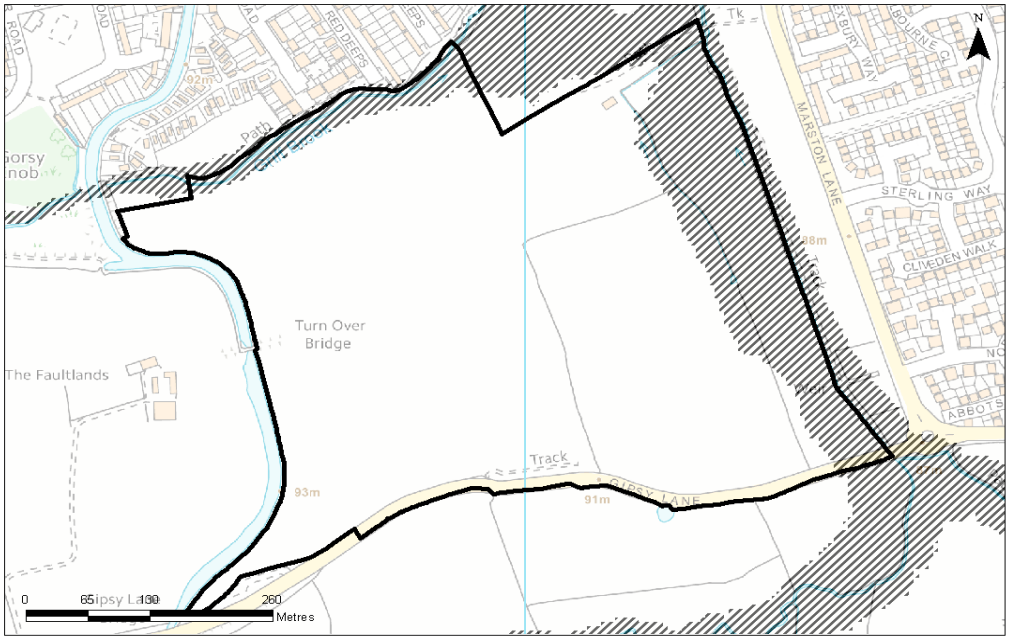


Potential development location
Council Boundary

Depth (m)

0 - 0.01 | 0.01 - 0.1 | 0.1 - 0.5 | 0.5 - 1.0 | 1.0 - 1.5 | 1.5 - 2.0 | 2.0 - 2.5 | 2.5 - 4.5 | Unknown depth rating

Velocity Map - fluvial flooding (1 in 100-year event)

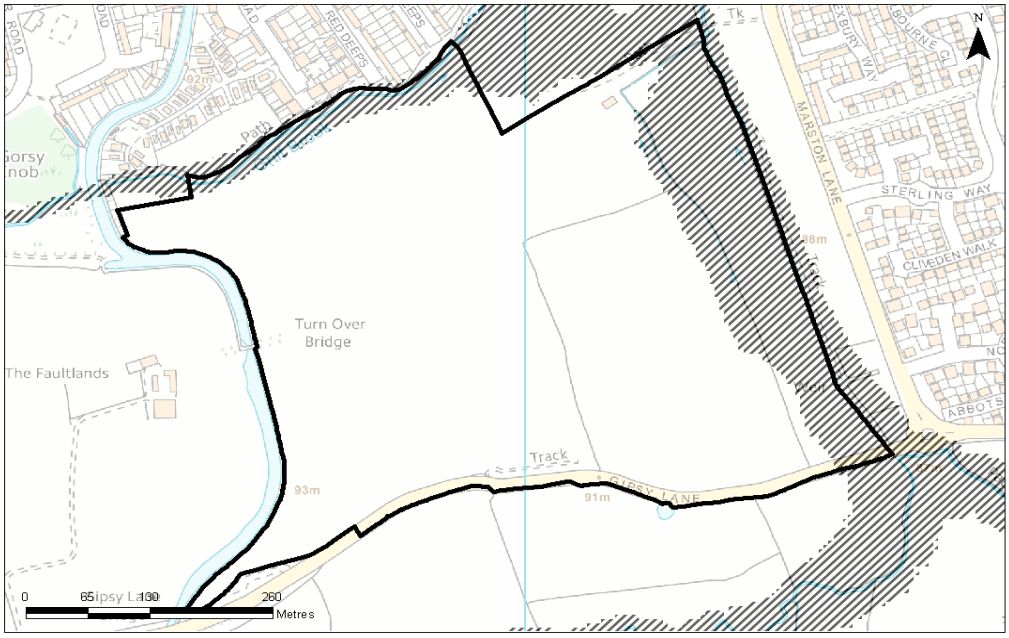


Potential development location
Council Boundary

Velocity (m/s)

0 - 0.2 | 0.2 - 0.5 | 0.5 - 1.0 | 1.0 - 2.0 | > 2.0 | Unknown velocity rating

Hazard Map - fluvial flooding (1 in 100-year event)



Potential development location
Council Boundary

Hazard Rating

Very low hazard - caution
Danger for some
Danger for most
Danger for all
Unknown hazard rating

SuDS & the development site:

SuDS Type	Suitability	Comments
Source Control		All forms of source control are likely to be suitable.
Infiltration		Mapping suggests high permeability at this site, site investigations should be carried out to assess potential for drainage by infiltration.
Detention		This option may be feasible provided site slopes are < 5% at the location of the detention feature. A liner maybe required if there any ground contamination issues.
Filtration		All filtration techniques are likely to be suitable. If the site has contaminated land 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 groundwater contamination issues, a liner will be required.

• This site has areas within its boundary designated by the Environment Agency as being a landfill site. A thorough ground investigation will be required as part of a detailed FRA to determine the extent of the contamination and the impact this may have on SuDS. As such proposed SuDS should be discussed with the relevant stakeholders (LPA, LLFA and EA) at an early stage to understand possible constraints.

• The site is not located within any Environment Agency designated ground source protection zones.

Flood Defences:

There are no flood defences at this site.

Flood Warning:

There are currently no flood warning areas covering this site.

Climate Change:

Increases in water levels for Coventry Canal, Wem Brook and Griff Brook. Increased storm intensities.

Flood Risk Implications for Development:

• Only a small proportion of the development site is affected by flood levels, therefore all development should be located within Flood Zone 1, unless appropriate in accordance with NPPF Planning Practice Guidance.
• Consideration of the peak flows on the Coventry Canal, Wem Brook and Griff Brook and its durations required when considering drainage.
• Broad scale modelling shows this site to be at risk from the Coventry Canal should a breach occur. Developers should be aware that any site that is at or below canal bank level may be subject to canal flooding and this should be taken into account when building resilience into low level properties. Due to the potentially numerous locations for failure scenarios, the canal mapping is considered indicative only and will need to be reviewed and updated as part of any detailed site specific FRA.
• Developers should consider incorporating an eight metre buffer adjacent to the canal to allow access for maintenance and repair.
• A site specific flood risk assessment will be required for any development in Flood Zone 2 and 3.
• The affect of climate change will need to be assessed as part of a detailed site specific SFRA.
• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.
• 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 receiving watercourse to ensure flows are not exacerbated downstream within the catchment.
• Demonstration that development at this location can be made safe.
• 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.
• Consider using Flood Zone 2 and 3 as public open space

HSG4				
OSNGR: 434327,287429	Area: 75.63ha		Greenfield	
Flood Zone Coverage:	**FZ3b** 1%	**FZ3a** 2%	**FZ2** 2%	**FZ1** 96%

Sources of flood risk:

• Primary risk is from the River Sowe, resulting from overtopping of the watercourse channel. The River Sowe flows in easterly direction through the southern region of the development site. Bedworth Slough Brook flows along the northern site boundary following in a south eastern direction. Bedworth Slough Brook does not significantly enter the site boundary. As well as risk from overtopping of the channels there is flood risk from surface water flooding and overland flows.
• With further development and creation of impermeable ground surfaces, surface water flooding may become a problem.

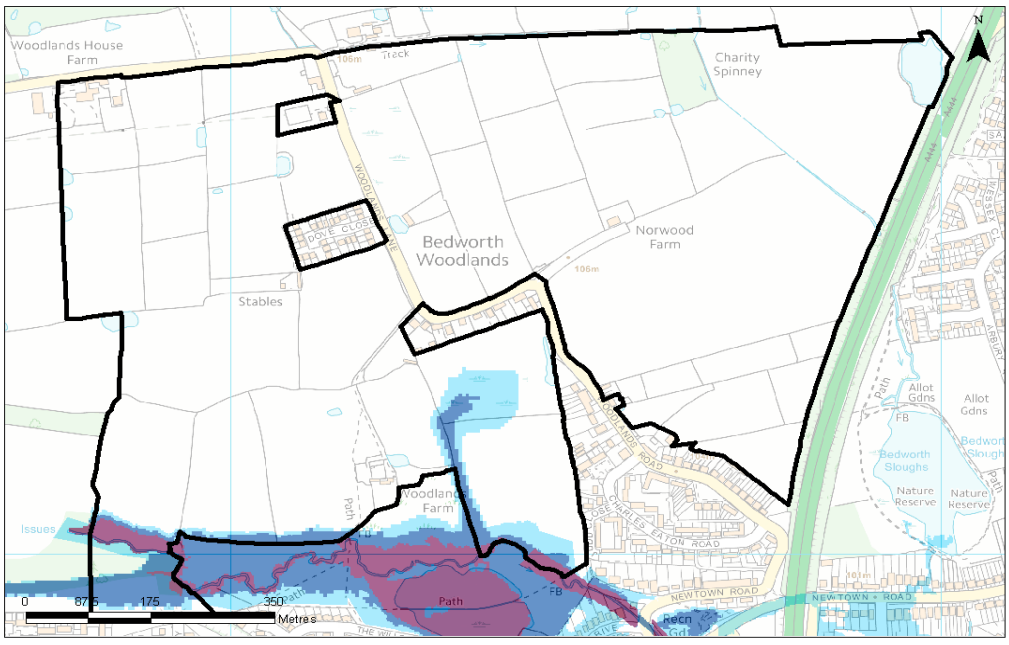
Exception Test Required?

Yes, for Essential infrastructure development in FZ3b, Essential infrastructure and More Vulnerable development in FZ3a and Highly Vulnerable development in FZ2.
Highly Vulnerable infrastructure should not be permitted within FZ3a. Highly Vulnerable, More Vulnerable and Less Vulnerable infrastructure should not be permitted within FZ3b.

Requirements for passing the Exception Test:

• 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.
• Preference should be given to locating development outside the flooded areas, to the north of the River Sowe, which flows through a southern section of the development site. It should be possible to reduce flood risk at this location by using sequential design to locate more vulnerable development towards higher ground, through building design and by meeting drainage requirements. Some resilience measures may be required if buildings are situated in the flood risk area.
• Consultation with the Local Authority and the Environment Agency should be undertaken at an early stage.

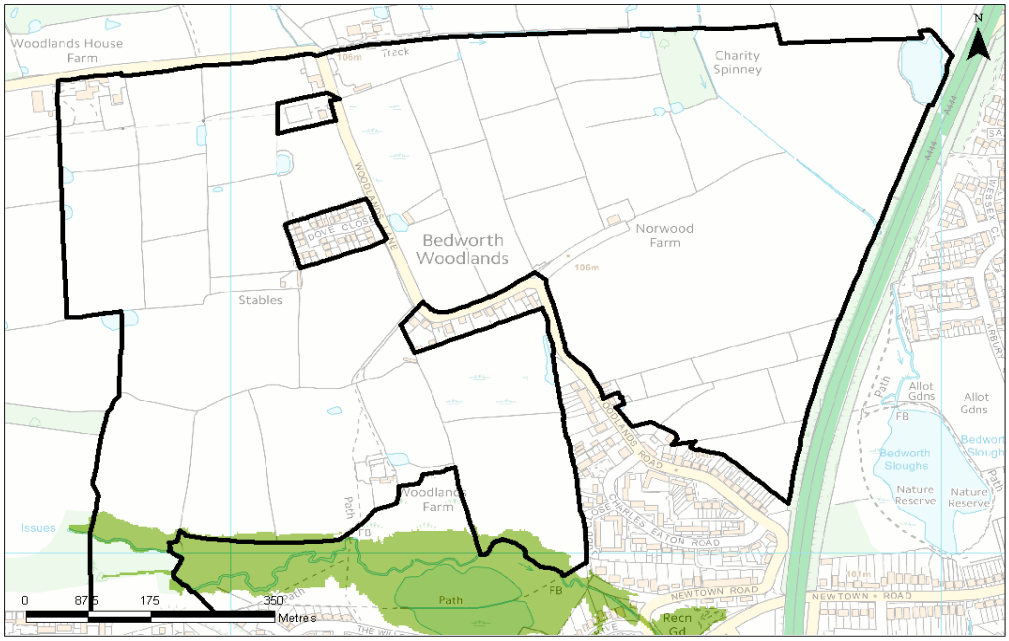
Flood Zone Map



Note: Indicative flood extents have been used to represent FZ3b in certain locations. For more information please refer to section 10 in the main report.

Potential development location | Flood Zone 3b | Flood Zone 3a
Council boundary | Indicative Extent of Flood Zone 3b | Flood Zone 2

Climate Change Map



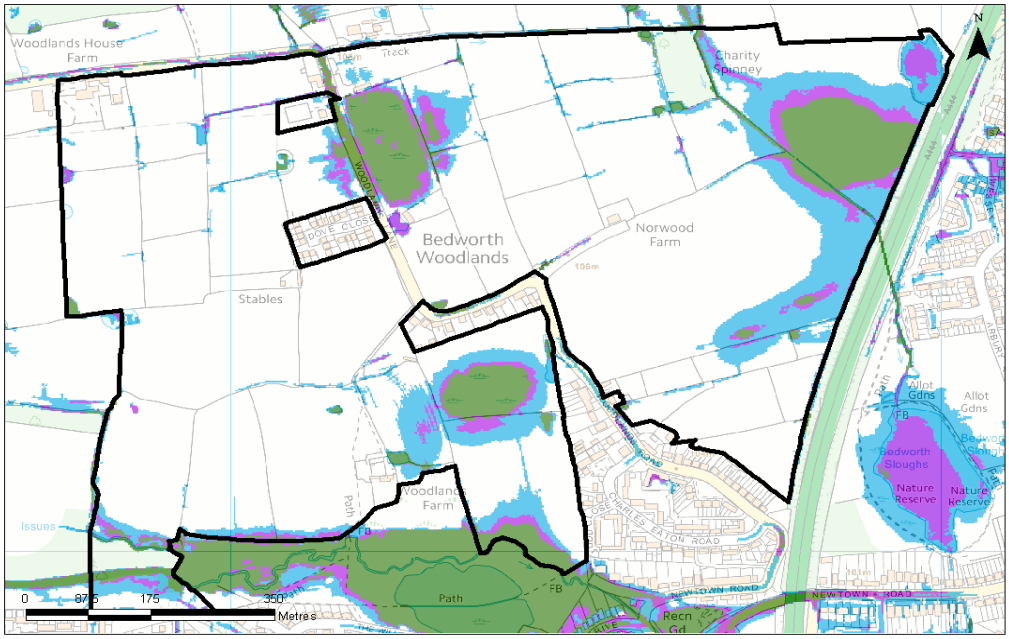
Potential development location

Council boundary

Flood Zone 3 with Climate Change

Indicative Extent of Flood Zone 3 with Climate Change

Surface Water Map



Potential development location

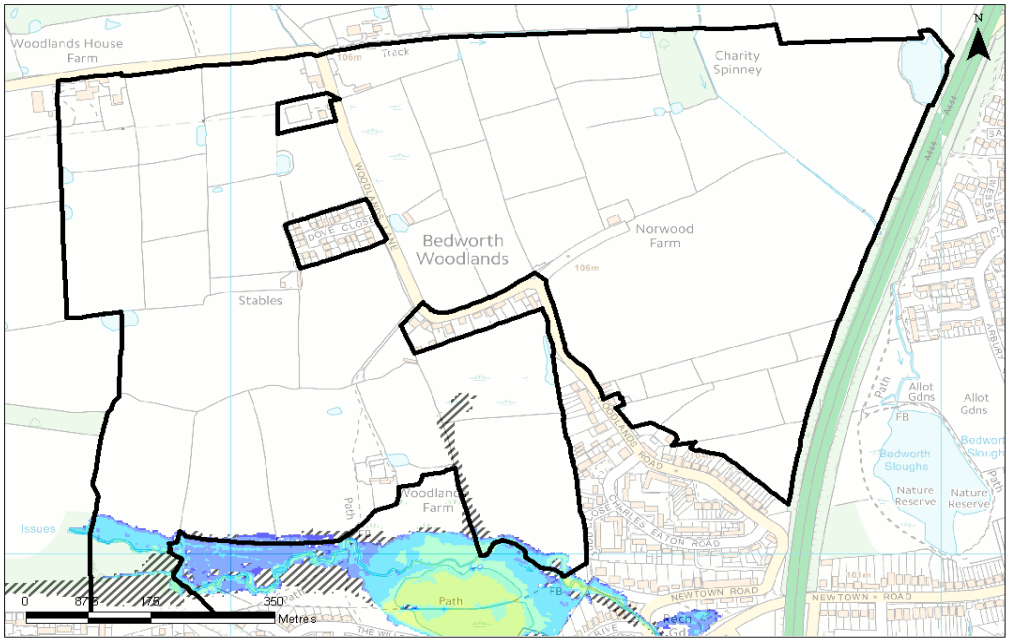
Council boundary

uFMfSW 30-year Extent

uFMfSW 100-year Extent

uFMfSW 1,000-year Extent

Depth Map - fluvial flooding (1 in 100-year event)

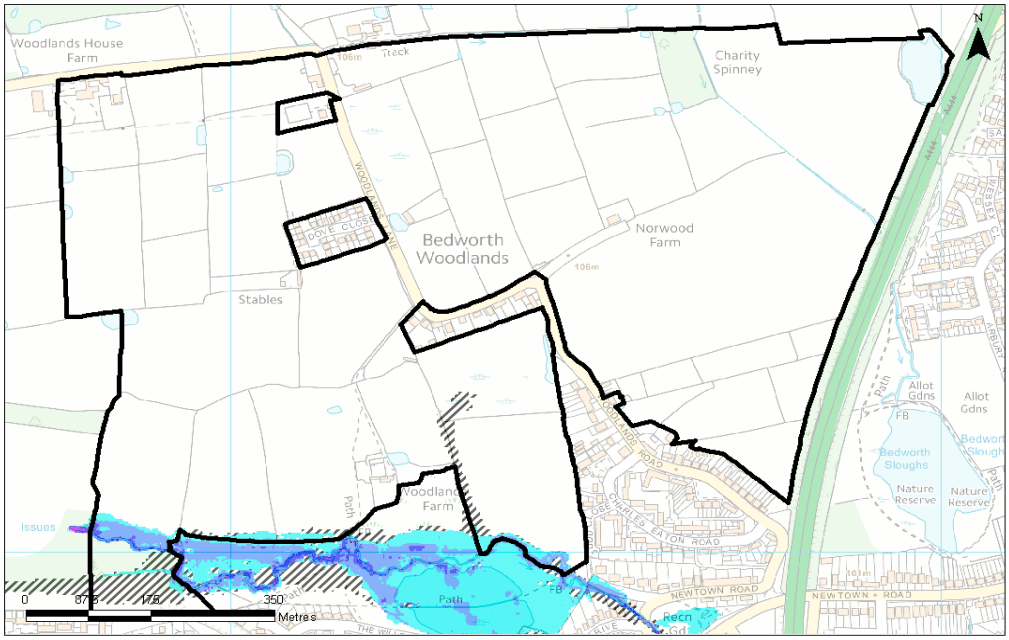


Potential development location
Council boundary

Depth (m)

0 - 0.10	0.50 - 1.00	2.00 - 2.50	3.50 - 4.00
0.10 - 0.50	1.00 - 1.50	2.50 - 3.00	>4.00
	1.50 - 2.00	3.00 - 3.50	

Velocity Map - fluvial flooding (1 in 100-year event)

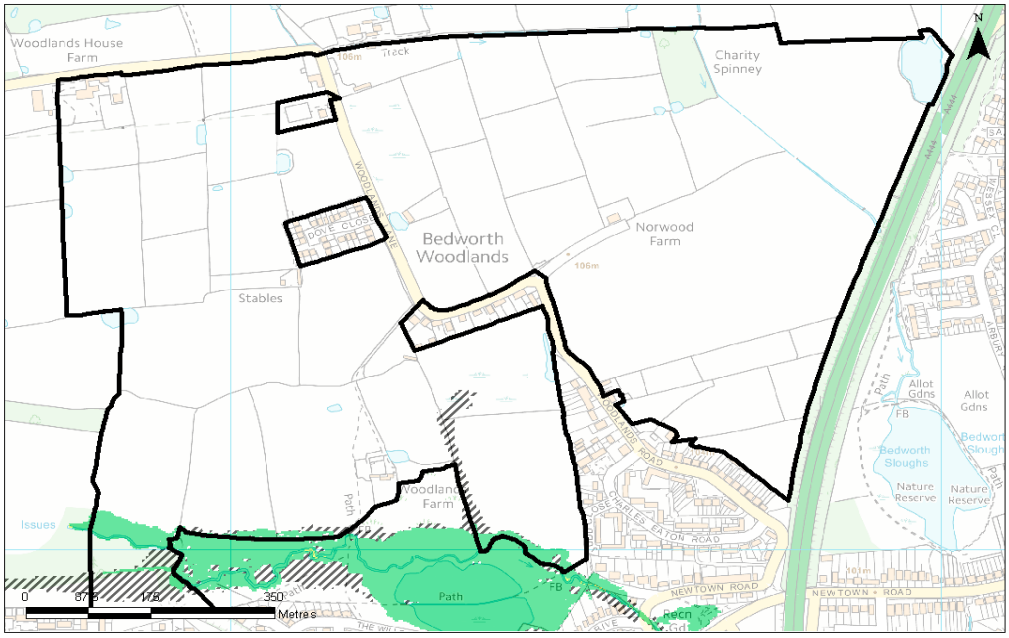


Potential development location
Council boundary

Velocity (m/s)

0 - 0.2	0.2 - 0.5	1.0 - 2.0
	0.5 - 1.0	> 2.0

Hazard Map - fluvial flooding (1 in 100-year event)



Potential development location
Council boundary

Hazard Rating

Very low hazard - caution
Danger for some
Danger for most
Danger for all

SuDS & the development site:

SuDS Type	Suitability	Comments
Source Control		All forms of source control are likely to be suitable.
Infiltration		Mapping suggests high permeability at this site, site investigations should be carried out to assess potential for drainage by infiltration.
Detention		This option may be feasible provided site slopes are < 5% at the location of the detention feature. A liner maybe required if there any ground contamination issues.
Filtration		All filtration techniques are likely to be suitable. If the site has contaminated land 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 groundwater contamination issues, a liner will be required.

- *The site is not located in an area designated by the Environment Agency as a landfill site.*
- *The site is not located within any Environment Agency designated ground source protection zones.*

Flood Defences:

There are no flood defences at this site.

Flood Warning:

There are currently no flood warning areas covering this site.

Climate Change:

Increased water levels in both the River Sowe and the Bedworth Slough Brook. Increased storm intensities.

Flood Risk Implications for Development:

• Only a small proportion of the development site is affected by flood levels, therefore all development should be located within Flood Zone 1, unless appropriate in accordance with NPPF Planning Practice Guidance.
• Consideration of the peak flows on the River Sowe and the Bedworth Slough Brook as well as its durations required when considering drainage.
• A site specific flood risk assessment will be required for any development in Flood Zone 2 and 3.
• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.
• 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 receiving watercourse to ensure flows are not exacerbated downstream within the catchment.
• Demonstration that development at this location can be made safe.
• 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.
• Consider using Flood Zone 2 and 3 as public open space

HSG5 - Hospital Lane

OSNGR: 433326,286055	Area: 22.93ha	Greenfield

Sources of flood risk:

• Primary flood risk is from surface water flooding and overland flows.
• With further development and creation of impermeable ground surfaces, surface water flooding may become a problem.

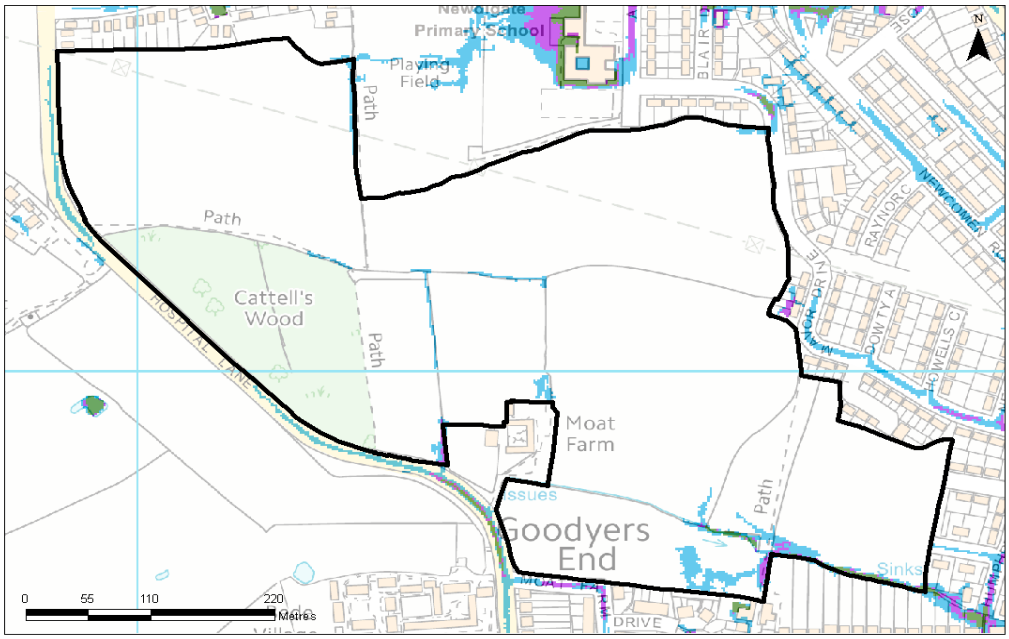
Exception Test Required?

No

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 development on surface water run-off must be included.
• 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.

Surface Water Map



Potential development location
Council boundary
uFMfSW 30-year Extent
uFMfSW 100-year Extent
uFMfSW 1,000-year Extent

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SuDS & the development site:

SuDS Type	Suitability	Comments
Source Control		All forms of source control are likely to be suitable.
Infiltration		Mapping suggests high permeability at this site, site investigations should be carried out to assess potential for drainage by infiltration.

Detention		This option may be feasible provided site slopes are < 5% at the location of the detention feature. A liner maybe required if there any ground contamination issues.
Filtration		All filtration techniques are likely to be suitable. If the site has contaminated land 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 groundwater contamination issues, a liner will be required.

- *The site is not located in an area designated by the Environment Agency as a landfill site.*
- *The site is not located within any Environment Agency designated ground source protection zones.*

Flood Defences:

There are no flood defences at this site.

Flood Warning:

There are currently no flood warning areas covering this site.

Climate Change:

- Increased storm intensities.

Flood Risk Implications for Development:

- Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.
- 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 receiving watercourse to ensure flows are not exacerbated downstream within the catchment.
- Demonstration that development at this location can be made safe.
- New development must seek opportunities to reduce overall level of flood risk at the site for example by:
  - Reducing volume and rate of runoff
  - Relocating development to zones with lower flood risk
  - Creating space for flooding.

HSG6 - School Lane		
OSNGR: 434892,285116	Area: 16.58ha	Greenfield

Sources of flood risk:

• Primary flood risk is from surface water flooding and overland flows.
• With further development and creation of impermeable ground surfaces, surface water flooding may become a problem.

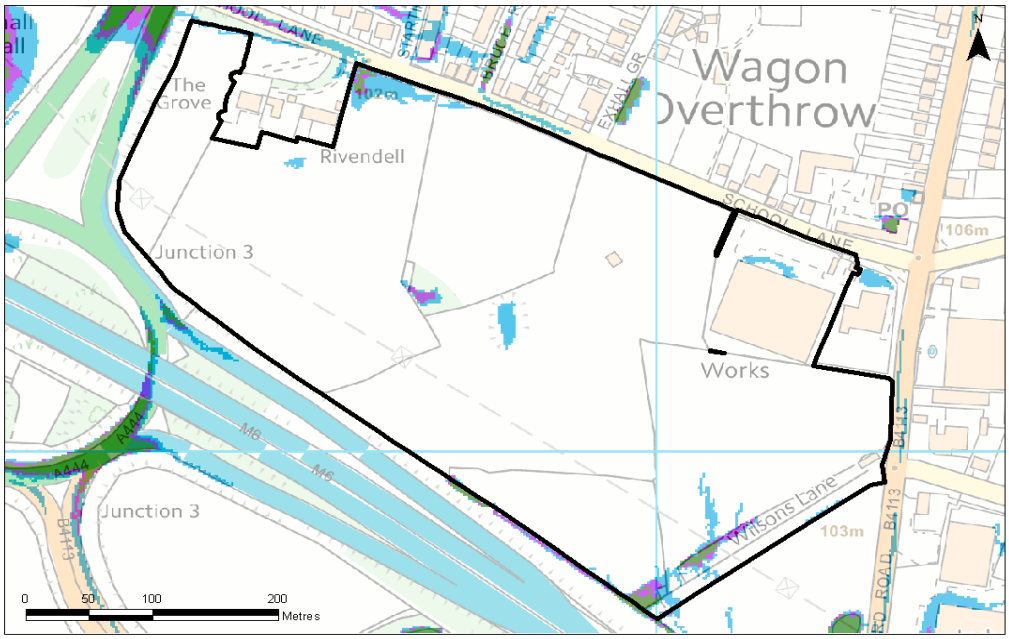
Exception Test Required?

No

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 development on surface water run-off must be included.
• 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.

Surface Water Map



SuDS & the development site:

SuDS Type	Suitability	Comments
Source Control		All forms of source control are likely to be suitable.
Infiltration		Mapping suggests high permeability at this site, site investigations should be carried out to assess potential for drainage by infiltration.
Detention		This option may be feasible provided site slopes are < 5% at the location of the detention feature. A liner maybe required if there any ground contamination issues.

Filtration		All filtration techniques are likely to be suitable. If the site has contaminated land 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 groundwater contamination issues, a liner will be required.

• The site is not located in an area designated by the Environment Agency as a landfill site.
• The site is not located within any Environment Agency designated ground source protection zones.

Flood Defences:

There are no flood defences at this site.

Flood Warning:

There are currently no flood warning areas covering this site.

Climate Change:

• Increased storm intensities.

Flood Risk Implications for Development:

• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.
• 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 receiving watercourse to ensure flows are not exacerbated downstream within the catchment.
• Demonstration that development at this location can be made safe.
• 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.

HSG7 - East of Bulkington

OSNGR: 439481,287096	Area: 10.25ha	Greenfield

Sources of flood risk:

• Primary flood risk is from surface water flooding and overland flows.
• With further development and creation of impermeable ground surfaces, surface water flooding may become a problem.

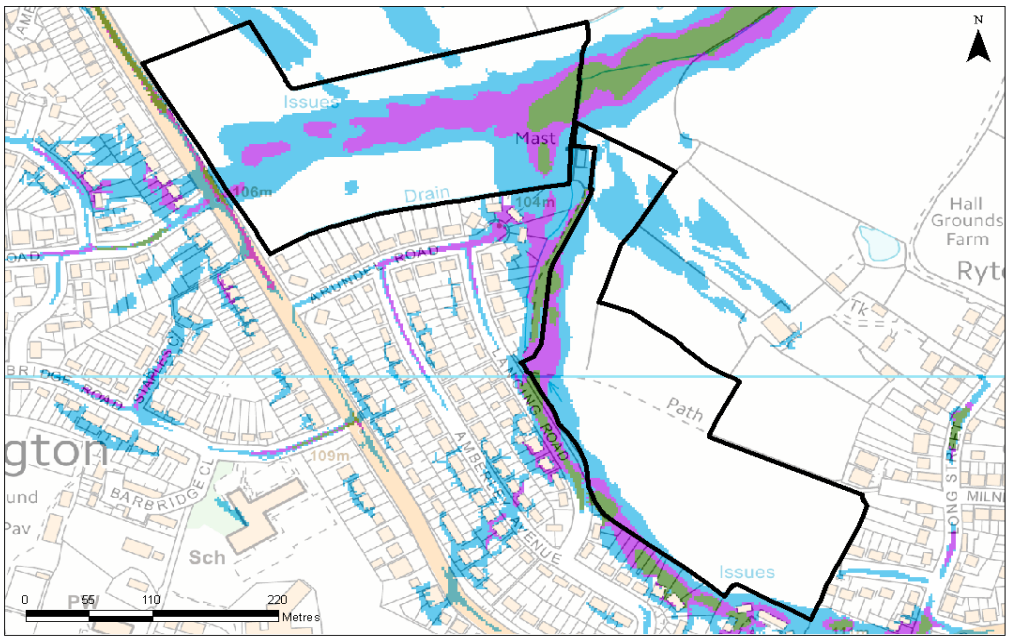
Exception Test Required?

No

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 development on surface water run-off must be included.
• 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.

Surface Water Map



Potential development location
Council boundary
uFMfSW 30-year Extent
uFMfSW 100-year Extent
uFMfSW 1,000-year Extent

SuDS & the development site:

SuDS Type	Suitability	Comments
Source Control		All forms of source control are likely to be suitable.
Infiltration		Mapping suggests high permeability at this site, 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 contaminated land 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 groundwater contamination issues, a liner will be required.

- *The site is not located in an area designated by the Environment Agency as a landfill site.*
- *The site is not located within any Environment Agency designated ground source protection zones.*

Flood Defences:

There are no flood defences at this site.

Flood Warning:

There are currently no flood warning areas covering this site.

Climate Change:

- Increased storm intensities.

Flood Risk Implications for Development:

- Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.
- 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 receiving watercourse to ensure flows are not exacerbated downstream within the catchment.
- Demonstration that development at this location can be made safe.
- New development must seek opportunities to reduce overall level of flood risk at the site for example by:
  - Reducing volume and rate of runoff
  - Relocating development to zones with lower flood risk
  - Creating space for flooding.

HSG8 - West of Bulkington

OSNGR: 438374,286650	Area: 25.81ha	Greenfield

Sources of flood risk:

• Primary flood risk is from surface water flooding and overland flows.
• With further development and creation of impermeable ground surfaces, surface water flooding may become a problem.

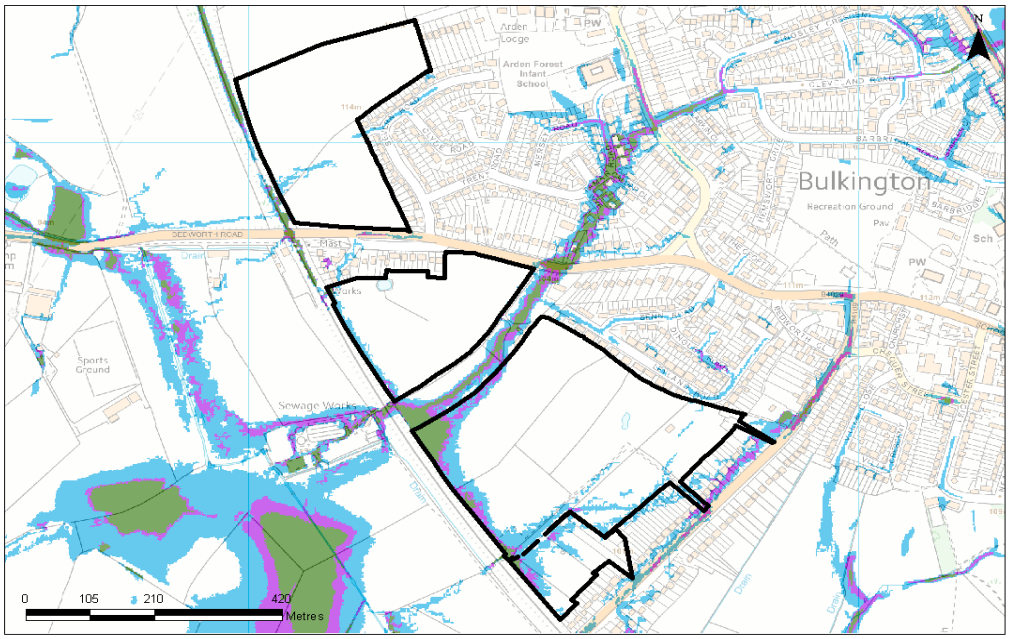
Exception Test Required?

No

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 development on surface water run-off must be included.
• 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.

Surface Water Map



Potential development location
Council boundary
uFMfSW 30-year Extent
uFMfSW 100-year Extent
uFMfSW 1,000-year Extent

SuDS & the development site:

SuDS Type	Suitability	Comments
Source Control		All forms of source control are likely to be suitable.
Infiltration		Mapping suggests high permeability at this site, 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 contaminated land 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 groundwater contamination issues, a liner will be required.

- *The site is not located in an area designated by the Environment Agency as a landfill site.*
- *The site is not located within any Environment Agency designated ground source protection zones.*

Flood Defences:

There are no flood defences at this site.

Flood Warning:

There are currently no flood warning areas covering this site.

Climate Change:

- Increased storm intensities.

Flood Risk Implications for Development:

- Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.
- 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 receiving watercourse to ensure flows are not exacerbated downstream within the catchment.
- Demonstration that development at this location can be made safe.
- New development must seek opportunities to reduce overall level of flood risk at the site for example by:
  - Reducing volume and rate of runoff
  - Relocating development to zones with lower flood risk
- Creating space for flooding.

HSG9 - Golf Drive

OSNGR: 438742,290583	Area: 33.76ha		Greenfield	
Flood Zone Coverage:	**FZ3b** 0%	**FZ3a** 0%	**FZ2** 0%	**FZ1** 100%

Sources of flood risk:

• Primary flood risk is from surface water flooding and overland flows.
• Mapping indicates that there may be unnamed drains along the northern site and eastern boundary which currently is not represented by existing modelling. It is recommended that the existence of the drain is determined and if necessary a detailed site specific assessment conducted to determine flood risk to the site.
• With further development and creation of impermeable ground surfaces, surface water flooding may become a problem.

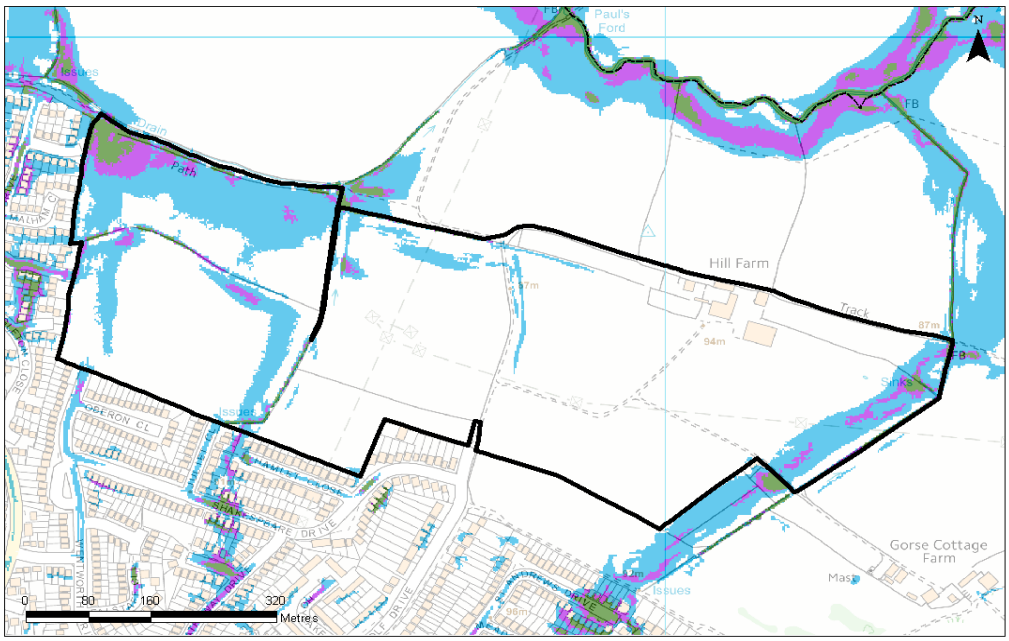
Exception Test Required?

No

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 development on surface water run-off must be included.
• 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.

Surface Water Map



Potential development location
Council boundary
uFMfSW 30-year Extent
uFMfSW 100-year Extent
uFMfSW 1,000-year Extent

SuDS & the development site:

SuDS Type	Suitability	Comments
Source Control		All forms of source control are likely to be suitable.

Infiltration		Mapping suggests high permeability at this site, 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 contaminated land 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 groundwater contamination issues, a liner will be required.

- *The site is not located in an area designated by the Environment Agency as a landfill site.*
- *The site is not located within any Environment Agency designated ground source protection zones.*

Flood Defences:

There are no flood defences at this site.

Flood Warning:

There are currently no flood warning areas covering this site.

Climate Change:

- Increased storm intensities.

Flood Risk Implications for Development:

- Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.
- 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 receiving watercourse to ensure flows are not exacerbated downstream in the catchment.
- Demonstration that development at this location can be made safe.
- New development must seek opportunities to reduce overall level of flood risk at the site for example by:
  - Reducing volume and rate of runoff
  - Relocating development to zones with lower flood risk
- Creating space for flooding.

HSG10 - Attleborough Fields

OSNGR: 437991,291114	Area: 15.30ha		Greenfield	
Flood Zone Coverage:	**FZ3b** 9%	**FZ3a** 3%	**FZ2** 7%	**FZ1** 81%

Sources of flood risk:

• Primary flood risk fluvial from the River Anker, resulting from overtopping of the watercourse channel. The River Anker flows in a westerly direction through the north eastn of the development site.
• With further development and creation of impermeable ground surfaces, surface water flooding may become a problem.

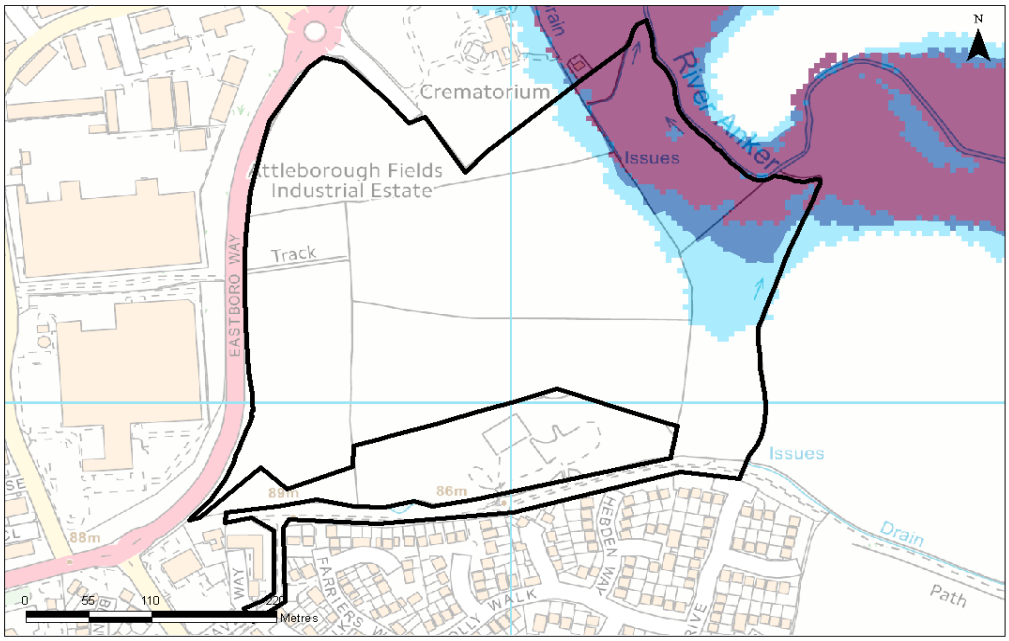
Exception Test Required?

Yes, for Essential infrastructure development in FZ3b, Essential infrastructure and More Vulnerable development in FZ3a and Highly Vulnerable development in FZ2.
Highly Vulnerable infrastructure should not be permitted within FZ3a. Highly Vulnerable, More Vulnerable and Less Vulnerable infrastructure should not be permitted within FZ3b.

Requirements for passing the Exception Test:

• 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.
• Preference should be given to locating development outside the flooded areas, away from Change Brook, its tributaries and the unnamed drain. It should be possible to reduce flood risk at this location by using sequential design to locate more vulnerable development towards higher ground, through building design and by meeting drainage requirements. Some resilience measures may be required if buildings are situated in the flood risk area.
• Consultation with the Local Authority and the Environment Agency should be undertaken at an early stage.

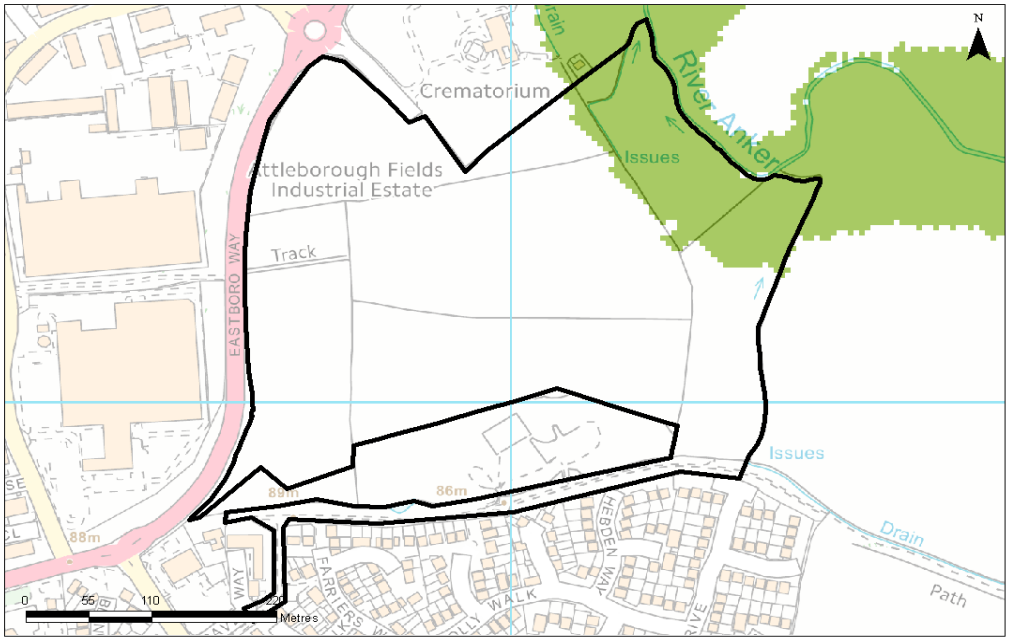
Flood Zone Map



Note: Indicative flood extents have been used to represent FZ3b in certain locations. For more information please refer to section 10 in the main report.

Potential development location
Council boundary
Flood Zone 3b
Indicative Extent of Flood Zone 3b
Flood Zone 3a
Flood Zone 2

Climate Change Map



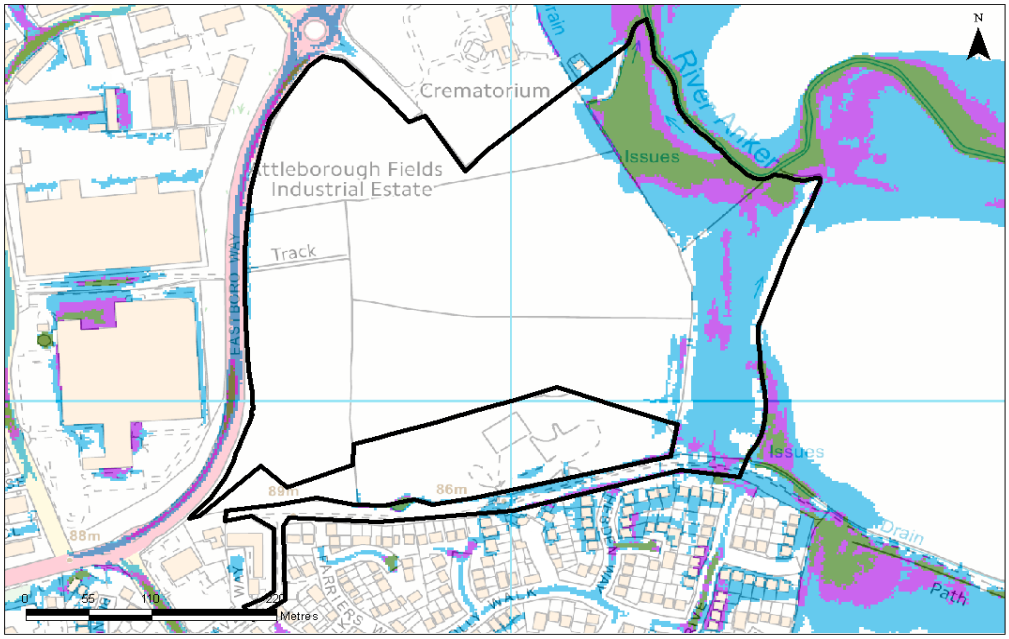
Potential development location

Council boundary

Flood Zone 3 with Climate Change

Indicative Extent of Flood Zone 3 with Climate Change

Surface Water Map



Potential development location

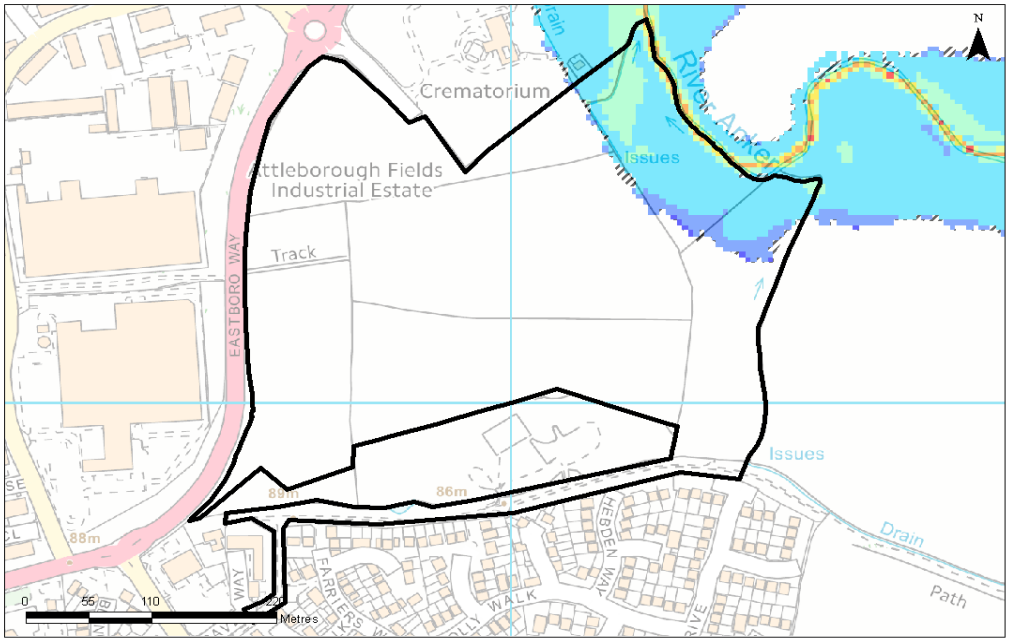
Council boundary

uFMfSW 30-year Extent

uFMfSW 100-year Extent

uFMfSW 1,000-year Extent

Depth Map - fluvial flooding (1 in 100-year event)

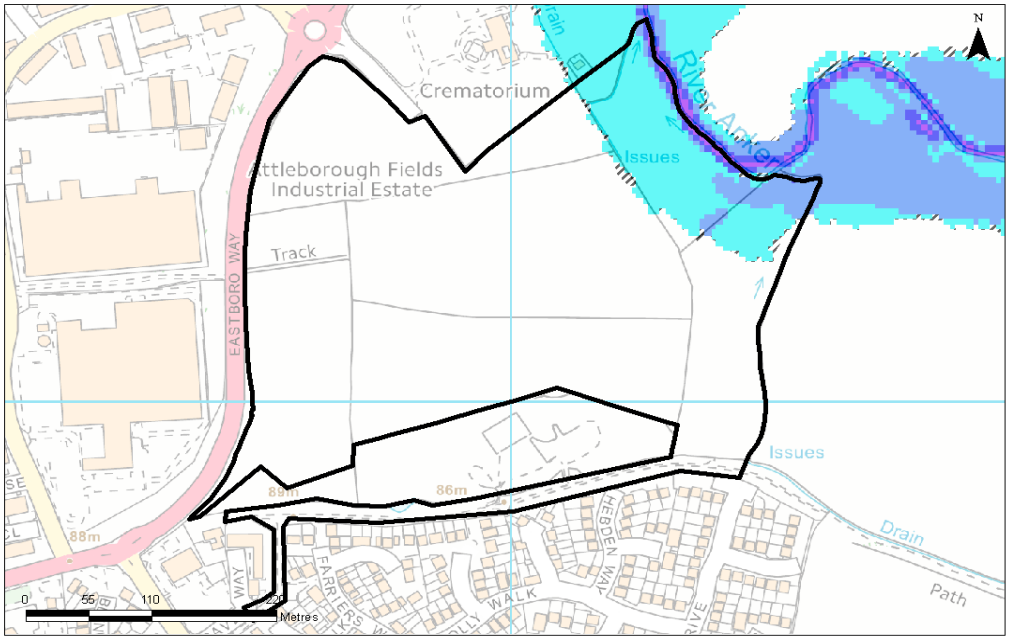


Potential development location
Council boundary

Depth (m)

0 - 0.10	0.50 - 1.00	2.00 - 2.50	3.50 - 4.00
0.10 - 0.50	1.00 - 1.50	2.50 - 3.00	>4.00
	1.50 - 2.00	3.00 - 3.50	

Velocity Map - fluvial flooding (1 in 100-year event)

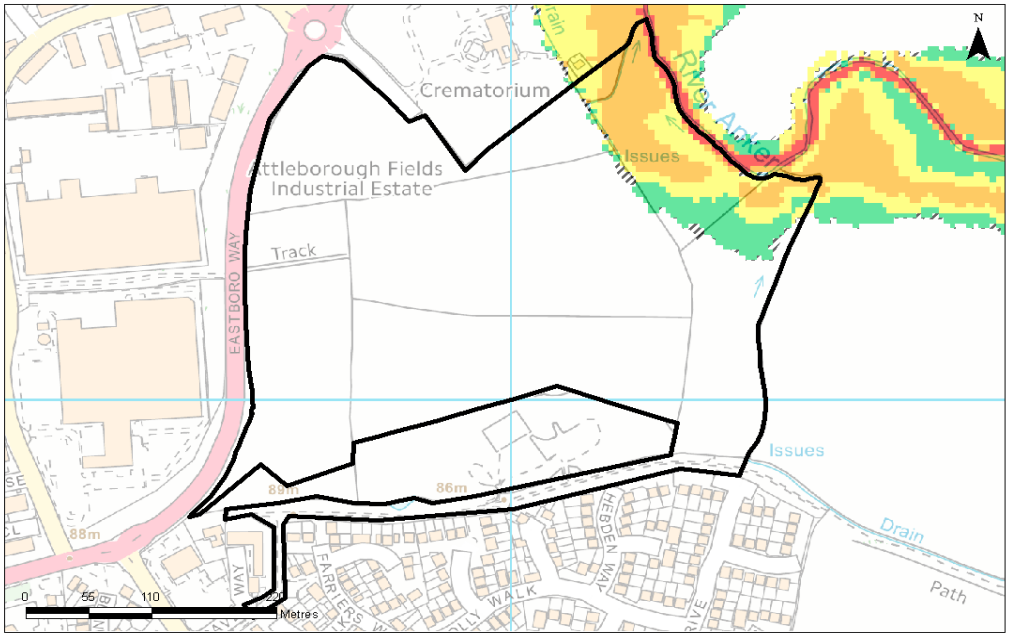


Potential development location
Council boundary

Velocity (m/s)

0 - 0.2	0.2 - 0.5	1.0 - 2.0
	0.5 - 1.0	> 2.0

Hazard Map - fluvial flooding (1 in 100-year event)



Potential development location
Council boundary

Hazard Rating

Very low hazard - caution
Danger for some
Danger for most
Danger for all

SuDS & the development site:

SuDS Type	Suitability	Comments
Source Control		All forms of source control are likely to be suitable.
Infiltration		Mapping suggests high permeability at this site, 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 contaminated land 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 groundwater contamination issues, a liner will be required.

- *The site is not located in an area designated by the Environment Agency as a landfill site.*
- *The site is not located within any Environment Agency designated ground source protection zones.*

Flood Defences:
There are no flood defences at this site.

Flood Warning:
There are currently no flood warning areas covering this site.

Climate Change:
- Increased storm intensities.

Flood Risk Implications for Development:

• Only a small proportion of the development site is affected by flood levels, therefore all development should be located within Flood Zone 1, unless appropriate in accordance with NPPF Planning Practice Guidance.
• Consideration of the peak flows on the River Anker within the site and its duration is required when considering drainage.
• A site specific flood risk assessment will be required for any development in Flood Zone 2 and 3.
• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.
• 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 River Anker to ensure flows are not exacerbated downstream within the catchment.
• Demonstration that development at this location can be made safe.
• 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.
• Consider using Flood Zones 2 and 3 as public open space.

HSG11 - Tuttle Hill

OSNGR: 435371,292834	Area: 12.82ha	Brownfield

Sources of flood risk:

• Primary flood risk is from surface water flooding and overland flows.
• Additional flood risk is posed from the overtopping of the Coventry Canal. Flood risk from the canal should be established as part of a detailed site specific assessment.
• With further development and creation of impermeable ground surfaces, surface water flooding may become a problem.

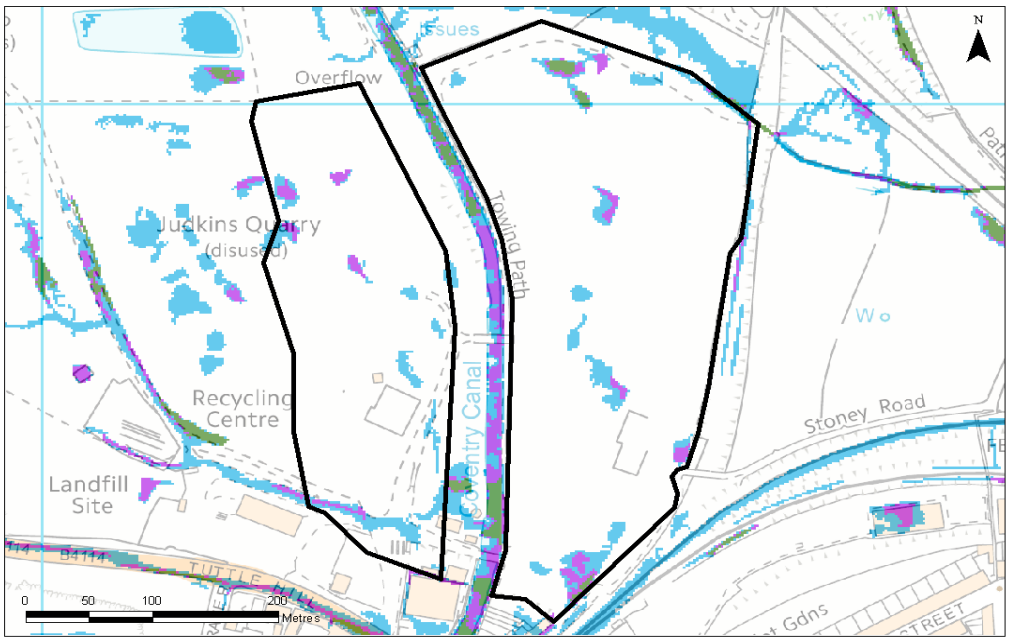
Exception Test Required?

No

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 development on surface water run-off must be included.
• 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.

Surface Water Map



Potential development location
Council boundary
uFMfSW 30-year Extent
uFMfSW 100-year Extent
uFMfSW 1,000-year Extent

SuDS & the development site:

SuDS Type	Suitability	Comments
Source Control		All forms of source control are likely to be suitable.
Infiltration		Mapping suggests high permeability at this site however; landfill deposits in the localised area make infiltration unsuitable without further detailed investigation and consultation with the Environment Agency.

Detention		This option may be feasible provided site slopes are < 5% at the location of the detention feature. A liner maybe required if there any ground contamination issues.
Filtration		This feature is probably suitable provided site slopes are <5% and the depth to the water table is >1m. If the site has contaminated land 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 groundwater contamination issues, a liner will be required.

• The site is bordered by several landfill areas. Investigation and consultation with the Environment Agency may be needed to assess the risk of contamination.
• The site is not located within any Environment Agency designated ground source protection zones.

Flood Defences:
There are no flood defences at this site.

Flood Warning:
There are currently no flood warning areas covering this site.

Climate Change:
• Increased storm intensities.

Flood Risk Implications for Development:
• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.
• Developers should be aware that any site that is at or below canal bank level may be subject to canal flooding and this should be taken into account when building resilience into low level properties. Due to the potentially numerous locations for failure scenarios, a detailed site specific investigation will needed to determine possible flood risk implications to the site.
• 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 receiving watercourse to ensure flows are not exacerbated downstream within the catchment.
• Demonstration that development at this location can be made safe.
• 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
• Creating space for flooding.