

# Appendix H: Sequential and Exception Testing

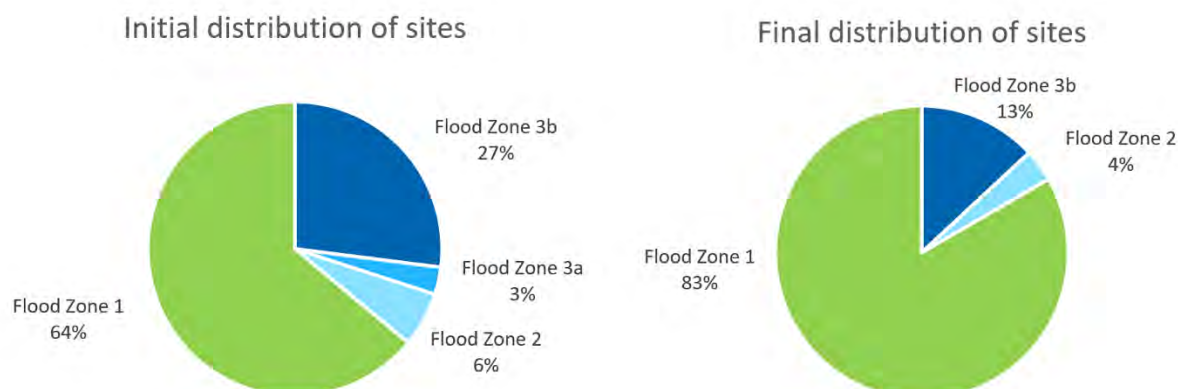
## Application of the flood risk Sequential Test

Development of the Local Plan included the analysis of flood risk data for 271 potential site allocations. The sequential test process outlined in the NPPF practice guidance was applied to the study area and flood risk information on each site fed into the Sustainability Appraisal. Sites wholly located within Flood Zone 3b were rejected at an early stage since more or less vulnerable development would not be appropriate in these areas of high flood risk. The remaining sites were considered on a site-by-site basis including a GIS-based analysis of the extent of flood risk present at each site and a consideration of whether a land allocation could be achieved in practice, given any flood risk constraints present on a site. The site summaries contained in this appendix provide information on the flood risk present to the proposed allocations, based upon strategic-scale flood risk model output. These site summaries do not in any way obviate the need for site-specific Flood Risk Assessments, which must make use of the best data available at the time of the planning application.

Every potential allocation in Leicester was analysed against the full suite of Level 2 SFRA data, including depths and velocities of flooding and flood hazard rating. This ensured that even if sites are not directly affected by flood risk, potential access issues on adjacent land are not overlooked. The process of examining the potential land allocations sequentially against flood risk data shifted the distribution of sites away from the areas of highest flood risk towards Flood Zone 1, in line with the objective of the Sequential Test. However, since there is an insufficient supply of reasonably available sites located wholly within Flood Zone 1 to meet the full development need over the lifetime of the Local Plan, it is not possible to limit land allocations to Flood Zone 1. The sequential test process therefore extended to the end of the process set out in figure 4.1 of the SFRA and flood risk formed one of the criteria in the Sustainability Appraisal.

The distribution of sites in relation to the highest flood risk zone present within the site boundary, both at the start and at the end of the site selection process, is presented in figure H1.

*The information in this document has been used to support the preparation of the Local Plan. If you need assistance reading this document, or require it in a different format, please contact us via [email.planning.policy@leicester.gov.uk](mailto:email.planning.policy@leicester.gov.uk) or call on 0116 454 0085.*



**Figure H1:** Distribution of sites through the Sequential Test process (highest Flood Zone present on any part of the site).

## Exception Testing

The Exception Test has been applied at a strategic level to those sites within Flood Zones 2 and 3 where required. Of those sites which fall partly within Flood Zone 3b (13%), the vast majority (10%) are captured in this figure by virtue of the site boundary incorporating a watercourse which has a modelled 1 in 20 annual chance flood extent that remains in-bank. The remaining sites are site 222 (arguably the most challenging site, approximately 40% at risk), site 580 (<10% at risk) and the CDA (a very large site encompassing the River Soar and city centre, which cannot be excluded for obvious sustainability reasons). Every potential development site carried forward to the allocation stage was considered in detail using the full range of flood risk data available for the study. Following application of the Sequential Test, the following 11 sites were found to be subject to application of the Exception Test:

**Table H1:** Sites subject to application of the Exception Test.

Reference	Site
<b>015</b>	St Augustine Road
<b>190</b>	Lanesborough Road - Former Allotments
<b>222</b>	Evington Valley Road (Former Dunlop Works)
<b>240</b>	114-116 Western Road
<b>580</b>	Land north of Castle Hill Country Park
<b>629</b>	Netherhall Road Open Space
<b>673</b>	St Augustines
<b>960</b>	Open Space West of Bede Island Road (Braunstone Gate)
<b>961</b>	Welford Road Playing Fields, After 614 Welford Road
<b>1037</b>	Spence Street
<b>CDA</b>	Central Development Area

Analysis of each of these sites concluded that provided flood risk issues are adequately accounted for within the design of new developments at these sites, it is *likely* that part (b) of the Exception Test can be passed. It should be noted that at a Local Plan level it is not possible to state with certainty that a future planning application will pass part (b) of the Exception Test, because the safety of a development and its impacts on flood risk elsewhere depend upon the detailed design of the site, including factors such as proposed floor levels, building footprint and site layout. These matters can only be addressed at the planning application stage, with the SFRA and Local Plan level Exception Test taken as an early high level guide.

### Site 015: St Augustine Road

This is a previously developed site adjacent to the Central Development Area. It performs well against SA criteria relating to access to services and utilisation of brownfield land. Redevelopment creates an opportunity to address existing flood risk issues on previously developed sites. Residential and employment development (including through conversion of existing buildings) on the site helps to: (i) limit the need to release open space for housing and other development elsewhere in the City; and (ii) limit the scale of the City's unmet need to be exported to the county. For these reasons it is considered that the development would provide wider sustainability benefits to the community that outweigh the flood risk (Exception Test part (a)).

Buildings currently occupy approximately 1/3<sup>rd</sup> of the site. Whilst only a small proportion of the site falls within Flood Zone 3, the wider site may be vulnerable to increases in the 1 in 100 annual chance flood extent due to climate change. Parts of the site may be suitable for mixed use development provided that the development is designed to be safe over its lifetime without increasing flood risk elsewhere. Flood risk is a notable constraint upon development of this site, but due to its brownfield nature there may be opportunities to reduce the exposure of buildings on the site to flood risk when compared to the existing situation. On balance it is considered that for the right scheme, which limits the extent of *more vulnerable* land uses to lower risk parts of the site and which mitigates flood risk through design, the Exception Test could be passed. This is one of the more challenging sites in flood risk terms and the extent of development, particularly *more vulnerable* development, may need to be limited.

### Site 190: Lanesborough Road Former Allotments

This is decommissioned former allotment site. It performs well against SA criteria relating to access to services, heritage and air quality. Residential development on the site helps to: (i) limit the need to release open space for housing elsewhere in the City; and (ii) limit the scale of the City's unmet need to be exported to the county. For these reasons it is considered that the development would provide wider sustainability benefits to the community that outweigh the flood risk (Exception Test part (a)).

The requirement to apply the Exception Test is triggered by the presence of the Melton Brook which runs along the northern the site boundary, with the 1 in 20 annual chance extent reflecting the top of the left bank of the brook. The majority of this site lies within flood zone 1. Provided that flood risk issues are taken into account in the layout and detailed design of the site, it should be possible for a planning application to pass part (b) of the Exception Test.

### Site 222: Former Dunlop Works, Evington Valley Road

This is a previously developed site. It performs well against SA criteria relating to access to services, ecology, air quality and utilisation of brownfield land. Redevelopment creates an opportunity to address existing flood risk issues on previously developed sites. Residential and employment conversion of the existing building helps to: (i) limit the need to release open space for housing and other development elsewhere in the City; and (ii) limit the scale of the City's unmet need to be exported to the county. For these reasons it is considered that the development would provide wider sustainability benefits to the community that outweigh the flood risk (Exception Test part (a)).

Although the site lies outside the Flood Zones of the Evington Brook, the nearest Main River, the available hydraulic model of the Ethel Brook indicates that approximately 40% of the site lies within the 1 in 20 annual chance flood extent from this watercourse, and the remainder of this site lies within the 1 in 100 or 1 in 1000 annual chance flood extents. For this reason it is considered that the principles of the Exception Test are relevant to the site. There is a degree of uncertainty with the Ethel Brook hydraulic model, which is a catchment-scale model. This would need to be investigated further as part of a Flood Risk Assessment. The site is brownfield and is almost entirely occupied by buildings. As such, there may be opportunities to reduce exposure to flood risk, again depending upon the layout and detailed design. In respect of part (b) of the Exception Test, the brownfield nature of the site and the varying level of flood risk suggests that with refinement of the hydraulic model it should be possible to redevelop at least parts of the site. Allocation of



the site does not alter the requirements set out in the NPPF for a development to be safe over its lifetime and not increase flood risk elsewhere. There may need to be limits on the extent of residential development, subject to the outcome of a more detailed site-specific Flood Risk Assessment.

#### Site 240: 114-116 Western Road

This is a previously developed site. It performs well against SA criteria relating to access to services, air quality and utilisation of brownfield land. Redevelopment creates an opportunity to address existing flood risk issues on previously developed sites. Residential development on the site helps to: (i) limit the need to release open space for housing elsewhere in the City; and (ii) limit the scale of the City's unmet need to be exported to the county. For these reasons it is considered that the development would provide wider sustainability benefits to the community that outweigh the flood risk (Exception Test part (a)).

The requirement to apply the exception test is triggered due to slight encroachment of 1 in 20 annual chance flood extent along the northern boundary of the site, though this is most likely due to approximation of flood mapping output since flood flows are shown to remain in-bank at the 1 in 20 annual chance event within the Environment Agency's hydraulic model. The vast majority of this site falls within Flood Zone 1. As such, it is considered likely that a new development will pass part (b) of the Exception Test provided that flood risk is adequately accounted for in the design. Notably, a buffer free of development may be expected by the RMAs along the top of the bank of the River Soar.

#### Site 580: Land north of Castle Hill Country Park

This is a greenfield site which was considered for residential development and has the potential to help limit the scale of the City's unmet need to be exported to the county. For these reasons it is considered that the development would provide wider sustainability benefits to the community that outweigh the flood risk (exception test part (a)).

The vast majority of this site lies within Flood Zone 1 (>98%), with only a small part of the site in the very south western corner at risk of fluvial flooding. This coincides broadly with the area of surface water flood risk identified on the Risk of Flooding from Surface Water maps. Provided that new development avoids the areas at risk of fluvial and/ or surface water flooding and that sustainable drainage methods are utilised to prevent an increase in runoff, it should be possible to ensure that new development passes the Exception Test.

### Site 629: Netherhall Road Open Space

This is a greenfield site but has potential to make a moderate contribution towards housing supply within the City. It performs well against SA criteria relating to access to services, heritage and air quality. Residential development on part of the site helps to limit the scale of the City's unmet need to be exported to the county. For these reasons it is considered that the development would provide wider sustainability benefits to the community that outweigh the flood risk (Exception Test part (a)).

The Scraftoft Brook flows through the middle of the site. Flood Zones 2 and 3 are limited to the channel. As such, it should be possible for part (b) of the Exception Test to be passed provided that an adequate buffer is left free of development along the watercourse and any that built development avoids associated low parts of the site which are at risk of flooding. There is also an opportunity to enhance the biodiversity and amenity value of the stream.

### Site 673: St Augustines

This is a previously developed site. It performs well against SA criteria relating to access to services, ecological impact and utilisation of brownfield land. Redevelopment creates an opportunity to address existing flood risk issues on previously developed sites. Education development on the site contributes to school place provision in the City and helps to limit the need to release open space for education development elsewhere in the City. For these reasons it is considered that the development would provide wider sustainability benefits to the community that outweigh the flood risk (Exception Test part (a)).

This site falls predominantly within Flood Zone 2. A recent Flood Risk Assessment has been accepted by the Planning Authority and the Environment Agency so it is considered likely that part (b) of the Exception Test can be passed for a development which takes adequate account of flood risk issues.

### Site 960: Open Space West of Bede Island Road

This is partially a previously developed site close to the Central Development Area. Redevelopment creates an opportunity to address existing flood risk issues on previously developed sites. Mixed use development (including through conversion of existing buildings) on part of the site helps to: (i) limit the need to release open space for housing and other development elsewhere in the City; and (ii) limit the scale of the City's unmet need to be exported to the county. For these reasons it is considered that the development would provide wider sustainability benefits to the community that outweigh the flood risk (Exception Test part (a)).

This site straddles the Old River Soar which occupies a significant part of the site and limits the total area of development. With the exception of the river, the majority of the land which is available for development lies within Flood Zones 1 and 2. It is considered likely that a development could pass part (b) of the Exception Test provided that an adequate buffer, free of development, is left alongside the river to meet the requirements of the RMAs and that flood risk is adequately mitigated in the design.

#### Site 961: Welford Road Playing Fields

This is a greenfield site but has potential to make a modest contribution towards housing supply within the City. It performs well against SA criteria relating to access to services and air quality. Residential development on part of the site could facilitate restoration of the playing fields and help to limit the scale of the City's unmet need to be exported to the county. For these reasons it is considered that the development would provide wider sustainability benefits to the community that outweigh the flood risk (Exception Test part (a)).

This site lies partly within Flood Zones 3, 2 and 1. 0.5ha of housing fronting Welford Road is proposed on land which lies in Flood Zone 1. As such, it is considered likely that part (b) of the Exception Test can be passed subject to site layout, which must account for potential risk from the adjacent flood storage area.

#### Site 1037: Spence Street

This is a previously developed site. It performs well against SA criteria relating to access to services, heritage, air quality and utilisation of brownfield land. Redevelopment creates an opportunity to address existing flood risk issues on previously developed sites. Residential development (including through conversion of existing buildings) on the site helps to: (i) limit the need to release open space for housing and other development elsewhere in the City; and (ii) limit the scale of the City's unmet need to be exported to the county. For these reasons it is considered that the development would provide wider sustainability benefits to the community that outweigh the flood risk (Exception Test part (a)).

The majority of the site lies within Flood Zone 1. Part (b) of the Exception Test should be passed provided that adequate mitigation is in place to protect against flooding and an adequate buffer is retained alongside the Bushby Brook

#### Central Development Area (CDA)

The CDA is an extensive, previously developed area of the City. It performs well against SA criteria relating to access to services, utilisation of brownfield land and distance to train

station. Redevelopment opportunities with the CDA provide scope to deliver higher-density residential schemes to help limit the scale of the City's unmet need to be exported to the county, as well as new office development and additional education capacity, all helping to limit the need to release open space for development elsewhere in the City. The CDA also contributes to the regeneration of the City Centre and to the delivery of development in locations that reduce the need to travel and maximise access to more sustainable transport modes. Whilst parts of the CDA are affected by flooding, redevelopment creates an opportunity to address existing flood risk issues on previously developed sites. For these reasons it is considered that the development would provide wider sustainability benefits to the community that outweigh the flood risk (exception test part (a)).

Flood risk varies considerably within the CDA. To the north and west along the river corridor, fluvial flooding is the predominant source of risk. Outside the fluvial floodplain, surface water is the main source of flood risk and much of the area is designated within the SWMP as a critical drainage area. In relation to part (b) of the Exception Test, flood risk is a notable constraint to development in certain locations along the river corridor, but the land is predominantly brownfield with existing developments, some of which are at risk of flooding. Redevelopment is possible and there will be opportunities to reduce flood risk, but the type and form of development will need to take into account the risk of flooding.

A strategic, plan-led approach to new development in key regeneration areas alongside the river is likely to be more successful in flood risk terms than ad-hoc planning applications. Notable areas which may benefit from masterplanning work include Frog Island and land to the west of the River between Rally Park and the A6. Further detail is included in the summary maps at the end of this appendix.

## Site Summaries

The remainder of this document provides brief summaries of flood risk at each of the proposal sites, followed by maps derived from the data supplied by the Environment Agency and Leicester City Council. The guidance is high level and was prepared for the purpose of city-wide land-use planning. Flood risk to individual development sites should be assessed in detail as part of each individual planning application, which may result in different conclusions. Equally, the available flood risk data and planning guidance may change after this report is published. Individual applications should always make use of the best available data, considered within the regulatory context at the time of the application.

## Site 015: Land south of St Augustine Rd/ west of Duns Lane

Current land use: Active non-residential uses

Surface water hotspot: No

Site area (ha): 2.02

Location: Westcotes

Proposed land use: Mixed use

Exception test required: Yes

Critical drainage area: Yes

### **Flood risk summary**

The site lies adjacent to the Old River Soar, a designated main river. In major events floodwater would spill onto the floodplain initially via the left bank which is lower. The river is constructed with engineered walls at this location. The site is vulnerable to the potential impacts of climate change.

Exception Test Part A (sustainability): PASS (refer to Exception Testing text)

Exception Test Part B (flood risk): LIKELY PASS, but dependent upon good design, mitigation and a sequential approach to site layout.

The existing brownfield nature of the site means that there are opportunities to reduce flood risk through design. A flood risk assessment (FRA) will be required to support any redevelopment proposal. This FRA will need to refine the available flood model output using topographic survey and it may be necessary to test the development proposal using the current River Soar hydraulic model.

### **Development Guidance**

The site is currently occupied by a range of commercial buildings. If redeveloping for mixed-use, the following will need to be considered in the design and preparation of a FRA:

- Sequential approach to site layout: More vulnerable land uses should be directed to that part of the site which is at lower flood risk. For example, land lying within Flood Zone 3 would not be a sequentially preferable location for residential development ('more vulnerable') in a mixed use scheme, but it may be possible to convert or re-develop buildings currently within Flood Zone 2 provided that they can be made safe for the lifetime of the development.
- Flood storage capacity: Proposed development must not reduce the capacity of the floodplain to store floodwater. As such, it is unlikely that the existing building footprint could be exceeded unless land is found which can be lowered to provide

compensatory flood storage (on a level-for-level basis).

- Protection of property: Flood resilient design will need to be incorporated, with the primary method being the raising of floor levels above the 1 in 100 central climate change level.
- Safe access: A means of safe access must be provided for any dwellings to land lying entirely outside the floodplain. Flood hazard mapping suggests that this should be possible from those parts of the site within Flood Zone 2, with careful internal configuration of site, but this would need to be reviewed as part of a FRA.
- Sustainable Drainage: The site does not lie in a designated surface water hotspot but it does lie within a critical drainage area identified within the SWMP. Runoff rates should therefore be reduced towards greenfield rates using sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible habitat creation.
- Watercourse buffer: The Old River Soar runs through the site. As such, a buffer between new development and the top of the bank of the river is likely to be a requirement of the Environment Agency.
- Opportunities: There may be opportunities to reduce flood risk in the wider area by preventing water spilling into the surrounding community via Little Holme Street. However, this must not be at the expense of redirecting flow elsewhere. A strategic solution in partnership with Leicester City Council and the Environment Agency may be required for this site if flood risk issues cannot readily be overcome through local measures. Due to the presence of existing development in close proximity to the river, opportunities exist to improve access.



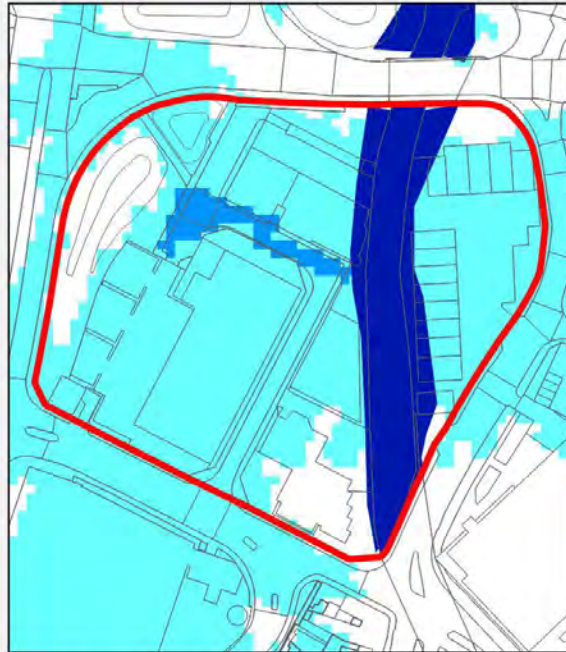
Site number: 15

Site context



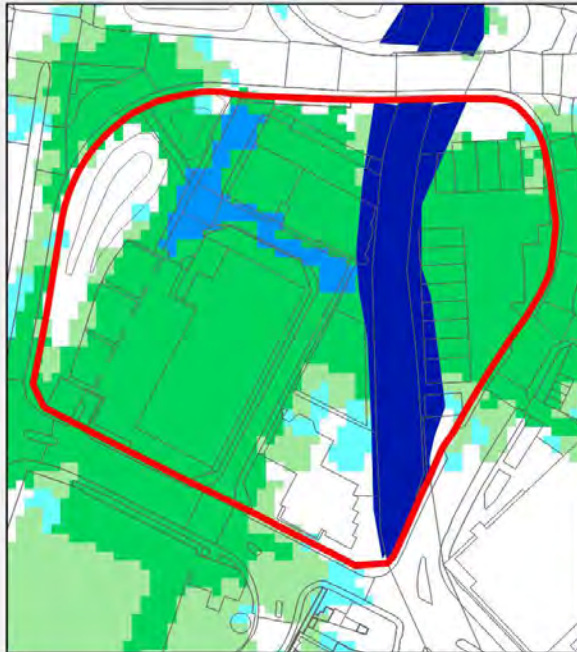
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



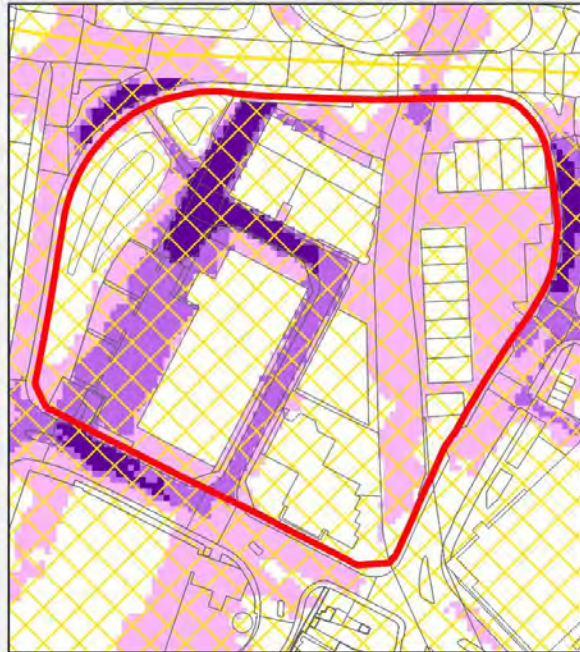
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas



## Site 019: Velodrome

Current land use: Previously developed now vacant

Site area (ha): 1.28

Location: Saffron Lane

Proposed land use: Residential

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: Yes

### **Flood risk summary**

The site lies just outside the floodplain of the Saffron Brook, a Main River which flows to the south of the site. The site is identified as falling within a critical drainage area and surface water hotspot.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

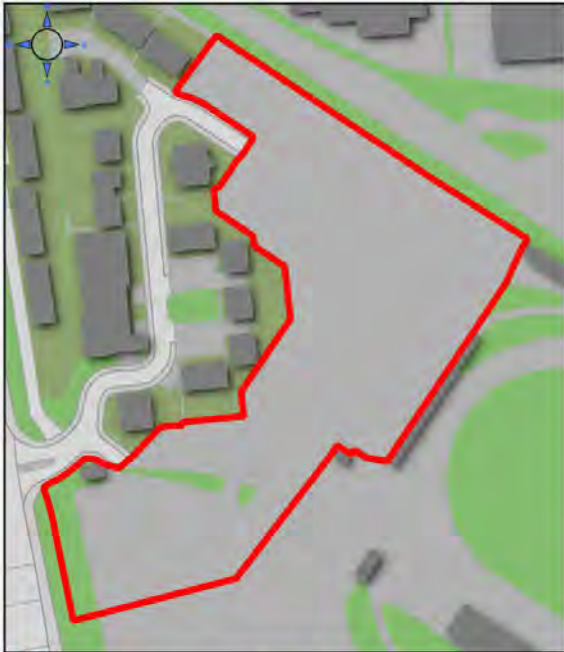
The site should be suitable for residential development in flood risk terms provided that:

- **SuDS:** A comprehensive SuDS scheme is in place to ensure that there is adequate provision for storage and treatment of surface water runoff. The area of surface water flooding identified on the Risk of Flooding from Surface Water maps is limited to the 1 in 1000 annual chance event with a relatively low depth and velocity, and is not part of a wider floodplain. As such it should be possible to accommodate mitigation on site. The SuDS scheme should reduce runoff due to the current brownfield nature of the site, the location of the site within a critical drainage area and the minor flooding identified at the 1 in 1000 annual chance event.
- **ACCESS:** Suitable access in flood conditions must be available for residents due to the presence of higher flood risk on Saffron Lane. Flood hazard data suggests that access along the pavement should be viable and that emergency vehicle access is possible along Saffron Lane, but this will need to be confirmed in a detailed FRA, because the flood hazard mapping is based on strategic scale flood modelling.
- **SAFFRON BROOK BYPASS CULVERT:** To the south of the site, the Saffron Brook (Main River) splits at a tilting gate and flood flows are directed north into a bypass culvert which runs beneath the southern part of the old Velodrome site. This is a key piece of flood risk infrastructure and the exact location should be confirmed with the Environment Agency early in the development process (and through survey if

necessary), to check whether it crosses the site. A standoff- typically 5m to 8m would be required between the culvert and any new structures, measured from the outside of the culvert wall.

Site number: 19

Site context



- Site Boundary
- 8m buffer (approx)
- Ordinary Watercourses
- Main Rivers

Flood Zones



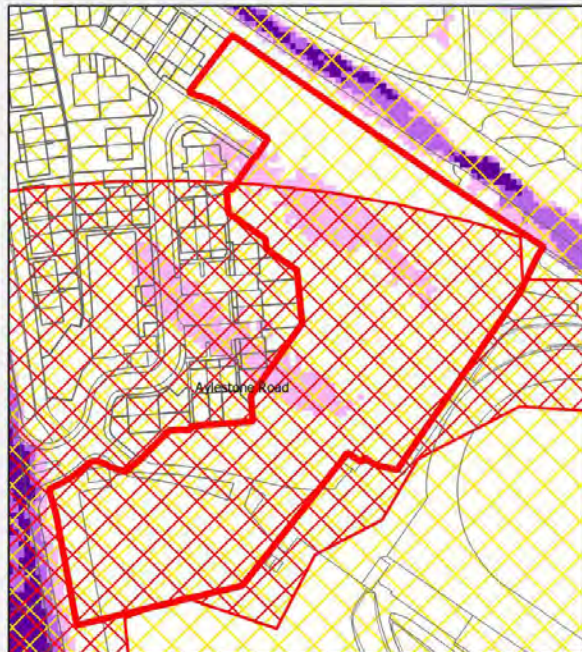
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 190: Former Allotments

Current land use: Disused allotment site

Site area (ha): 2.3

Location: Lanesborough Road

Proposed land use: Residential

Exception test required: Yes

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies adjacent to the Melton Brook, but largely outside the floodplain based upon current Environment Agency flood model output. Due to the location of site near to the confluence of the brook with the River Soar, it is likely that peak flood levels are influenced by both the River Soar and the brook. The Risk of Flooding from Surface Water Maps illustrate a similar flooding pattern on Lanesborough Road, since overland flow is following the local topography.

Exception Test Part A (sustainability): PASS (refer to Exception Testing text)

Exception Test Part B (flood risk): LIKELY PASS DEPENDENT UPON DETAILED DESIGN

### **Development Guidance**

The site is currently greenfield and is appropriate for residential development in flood risk terms, provided that:

- Sequential approach to site layout: More vulnerable land uses should be directed to that part of the site which is at lower flood risk. A suitable buffer (generally 8m) should be left free of development alongside the Melton Brook, measured from top of bank. One of the potential access points into the site is potentially at risk in extreme events. This should be addressed through careful design and potentially the provision of alternative access into the site.
- Flood storage capacity: Proposed development must not reduce the capacity of the floodplain to store floodwater. A small part of the site adjacent to the Melton Brook falls within the 1 in 100 central climate change scenario. Built development should preferably avoid this area. Any reduction in floodplain capacity would need to be compensated for on a level-for-level basis. Land appears to be present within the site on which this could be achieved (in flood risk terms, not accounting for other factors e.g. ground conditions), depending upon site layout.
- Protection of property: Flood resilient design may need to be incorporated, with the

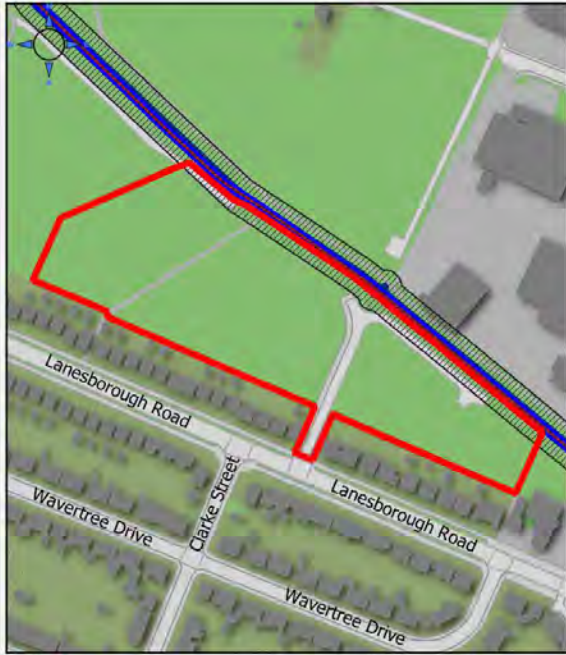
primary method being the raising of ground floor levels above the 1 in 100 central climate change scenario flood level with freeboard.

- Safe access: A means of safe access should be provided for any dwellings constructed within the site to land lying entirely outside the floodplain. Flood hazard mapping suggests that this should be possible at the 1 in 100 central climate change scenario.
- Sustainable Drainage: Greenfield runoff rates should be retained through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible habitat creation. This could be incorporate into a blue-green corridor alongside the brook which would also help address flood risk and maintenance access.



Site number: 190

Site context



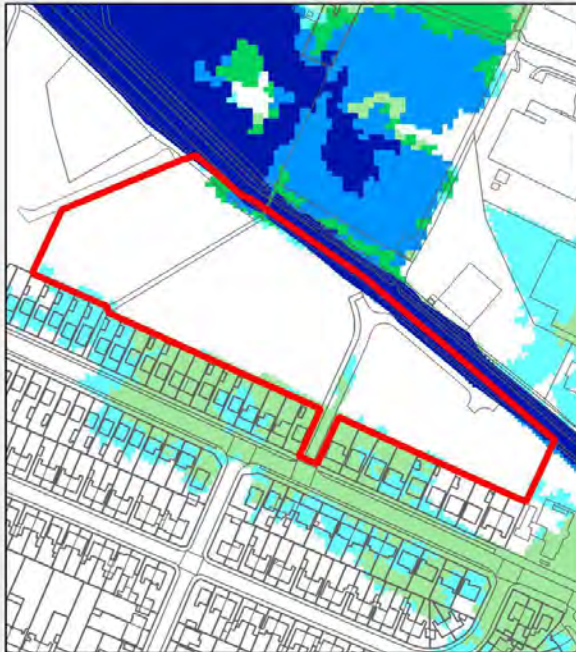
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 219: Land at rear of Rosedale Avenue and Harrison Road allotments

Current land use: Former allotment/ greenfield

Site area (ha): 1.83

Location: Rosedale Avenue/ Harrison Road

Proposed land use: Residential use

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1 and is not affected by fluvial flood risk mapping. The Risk of Flooding from Surface Water maps indicate the potential for very limited flooding in a 1 in 100 annual chance event, increasing significantly in the 1 in 1000 annual chance event, though the depths are generally shallow.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

The site is currently greenfield. The following will need to be considered in the design and preparation of a FRA:

- Sustainable Drainage: Greenfield runoff rates should be retained through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible habitat creation.
- Surface Water Flood Risk: The surface water flooding maps indicate the potential for a shallow flow route across the site in a 1 in 1000 annual chance event, and isolated ponded areas of flooding at the 1 in 100 annual chance event. A more detailed investigation of the local drainage system is warranted for any proposal to develop the site. Prima facie the depths, velocities and hazard associated with the Risk of Surface Water Flooding Maps do not preclude development, but appropriate mitigation may need to be in place. This will include the provision of SuDS and might also include additional measures, such as taking a sequential approach to site layout and raising ground floor level above general ground level, depending upon the outcome of more detailed investigations as part of a FRA.
- On the basis of the evidence available the site should be suitable for residential



development in flood risk terms, provided that adequate consideration is given to the presence and management of surface water flood risk.

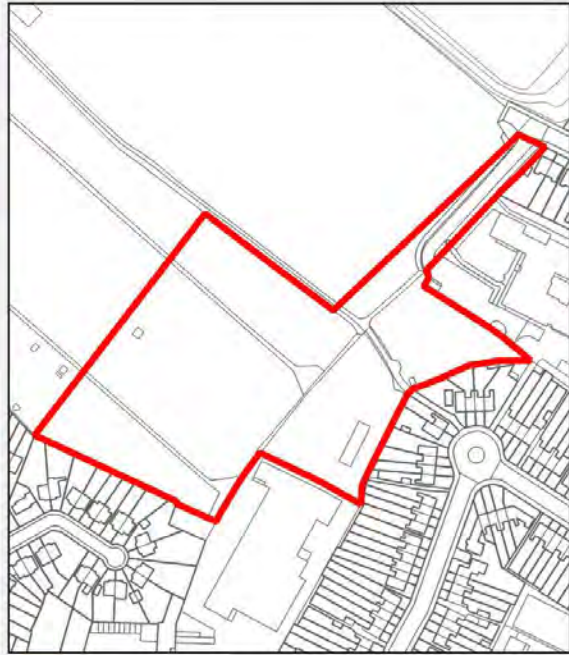
Site number: 219

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



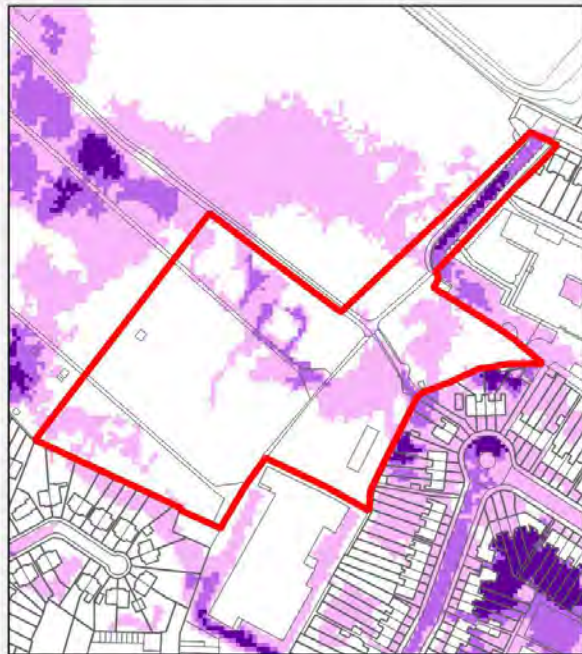
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 1000 annual chance
- 1 in 100 annual chance +50% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 222: Former Dunlop Works

Current land use: Previously developed non-residential

Site area (ha): 2.37

Location: Evington Valley Road

Proposed land use: Mixed use

Exception test required: Yes

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies to the north of the culverted Ethel Brook and part of the site is indicated to be at high risk of flooding. Further analysis of flood risk from the Ethel Brook will be required as part of a FRA in order to progress development of the site.

Exception Test Part A (sustainability): PASS (refer to Exception Testing text)

Exception Test Part B (flood risk): LIKELY PASS (dependent upon design)

Detailed modelling required at planning application stage to ascertain the appropriate extent of redevelopment/ compatible land use.

### **Development Guidance**

The key flood risk issue to address on this site in flood risk terms is the potential flood risk from the Ethel Brook. A hydraulic model of the Ethel Brook was constructed by AECOM, incorporated into the wider Willow Brook hydraulic model which was provided by the Environment Agency for this SFRA. However, the model is catchment scale and it is likely that any proposed development (esp. residential) will require testing with the hydraulic model. In particular, the performance of the upstream flood storage area on the Ethel Brook is a critical factor in the determination of downstream flood risk.

The site is historically brownfield and shown to be partly at risk. Therefore a sequential approach to site layout with appropriate flood protection measures may enable development to proceed, though there are likely to be limits on the extent of new residential land use and safe access would need to be demonstrated. Flood events are likely to be relatively short duration due to the small catchment size and the urban nature of the catchment. The EA model output data suggests that flood hazard rating is low.

The presence of existing buildings on the site means that issues of floodplain storage capacity and flow routing are unlikely to be critical factors in relation to proposed

development. Instead it the layout of proposed development, flood protection measures and the availability of safe access that will govern suitability in planning terms. Commercial redevelopment would retain the status quo in flood risk vulnerability terms. Opportunities exist to i) reduce building footprint, increasing floodplain storage capacity and reducing runoff, ii) incorporate flood resilient design measures, and 3) incorporate SuDS.



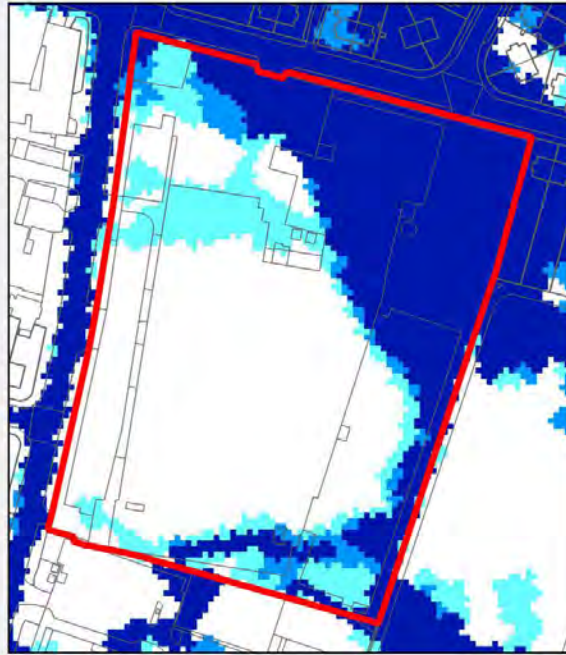
Site number: 222

Site context



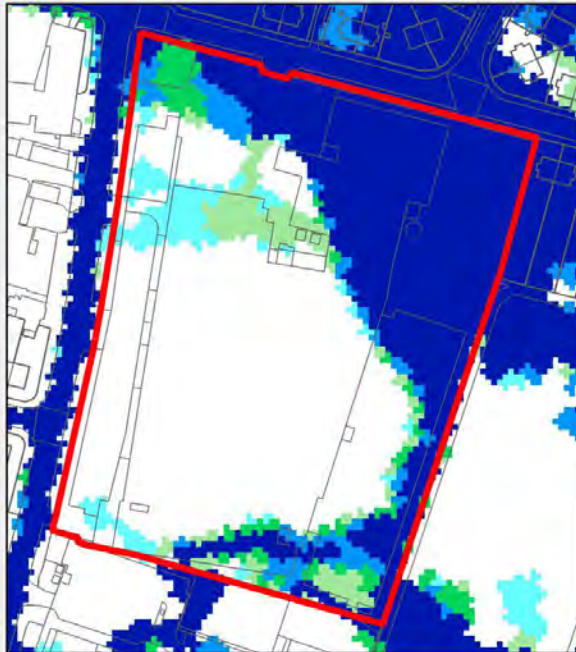
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



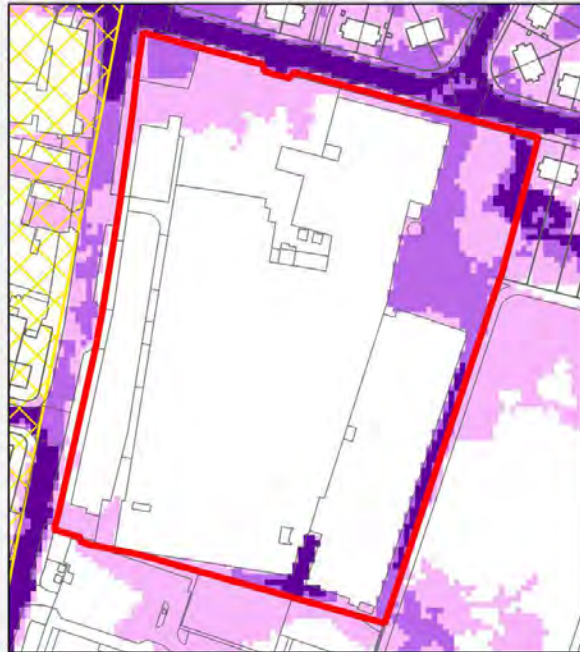
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 100 annual chance +30% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 240: 114-116 Western Road

Current land use: Previously developed non-residential

Site area (ha): 0.14

Location: Western Road, Westcotes

Proposed land use: Residential

Exception test required: Yes

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies adjacent to the Old River Soar on relatively high ground which slopes down toward the river. The vast majority of the site lies within Flood Zone 1, though land immediately adjacent to the river may be at risk of flooding in major events.

Exception Test Part A (sustainability): PASS (refer to Exception Testing text)

Exception Test Part B (flood risk): LIKELY PASS

Exception Test triggered due to slight encroachment of 1 in 20 annual chance flood extent, but likely due to flood mapping approximations. Pass likely provided that a suitable buffer is in place alongside the river

### **Development Guidance**

The site is appropriate for residential development in flood risk terms, provided that:

- Sequential approach to site layout: More vulnerable land uses should be directed to that part of the site which is at lower flood risk. A suitable buffer (generally 8m) should be left free of development alongside the Old River Soar. Subject to detailed topographic survey, this should also ensure that development avoids Flood Zones 3 and 2.
- Protection of property: Floor levels should be raised above the 1 in 100 central climate change water level with freeboard, and ideally the 1 in 1000 annual chance flood level. This should be possible due to the topography of the site.
- Sustainable Drainage: Runoff rates should be returned towards greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible habitat creation. This could be incorporated into landscaping adjacent to the river. A small depression in the LIDAR ground model results in an area of ponded surface water in the Risk of Flooding from Surface Water

maps. Adequate provision for storing runoff will need to be made.



Site number: 240

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 261: Land north of the A46

Current land use: Greenfield

Site area (ha): 21.95

Location: Near Thurcaston

Proposed land use: Residential and open space

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies in Flood Zone 1 and drains away from the city, towards the Rothley Brook. A small ordinary watercourse is noted in the north-eastern part of the site on Leicester City Council drainage team's mapping system (as shown above). The Risk of Flooding from Surface Water maps suggest a localised corridor of flood risk alongside this watercourse in a 1 in 1000 annual chance event.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

- The site is currently greenfield. If redeveloping for mixed-use, the following will need to be considered in the design and preparation of a FRA:
- Sequential approach to site layout: Development should avoid land immediately adjacent to the small watercourse which may be at risk of flooding. The extent of flooding should be further investigated through construction of a more detailed hydraulic model as part of a flood risk assessment. However, a buffer should in any event be provided alongside the watercourse, free of development, to enable access for maintenance and to preserve habitat. This would only affect a very small proportion of the site.
- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. In view of the large site area, a comprehensive treatment train may be required, incorporating local methods within individual parcels of development and regional scale features (e.g. wetlands) to store and treat runoff in larger quantities. Drainage networks outfalling into the stream

along the north-eastern perimeter should take account of the time of concentration and flood flows within the watercourse.



Site number: 261

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 262: Land east of Leicester Road

Current land use: Greenfield

Site area (ha): 48.1

Location: Birstall

Proposed land use: Residential, education and public open space

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies in Flood Zone 1. The Risk of Flooding from Surface Water maps (and LIDAR) pick up a small watercourse bisecting the site which an associate flow route running in a south-north direction towards the Rothley Brook and a second watercourse flowing along part of the eastern boundary of the site.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

The site is currently greenfield. If redeveloping for mixed-use, the following will need to be considered in the design and preparation of a FRA:

- Sequential approach to site layout: Development should avoid land immediately adjacent to the watercourses which bisects the site, which may be at risk of flooding. The extent of flooding should be further investigated through construction of a more detailed hydraulic model as part of a flood risk assessment. However, a buffer should in any event be provided alongside these watercourses, free of development, to enable access for maintenance and to preserve habitat. This would only affect a small proportion of the site.
- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. In view of the large site area, a comprehensive treatment train may be required, incorporating local methods within individual parcels of development and regional scale features (e.g. wetlands) to store and treat runoff in larger quantities. Drainage networks outfalling into the stream along the north-eastern perimeter should take account of the time of concentration

of the watercourse.

- Opportunities: There may be opportunities to restore natural stream channels, creating a corridor of green infrastructure and incorporating natural flood management techniques.



Site number: 262

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



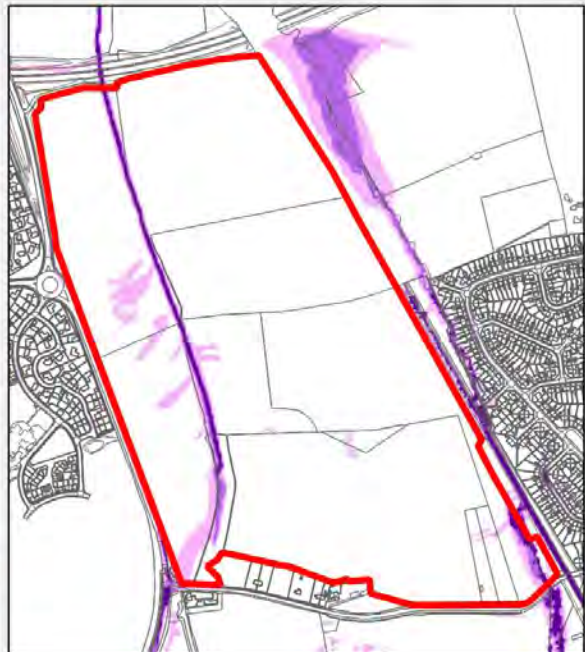
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas



## Site 297: The Exchange

Current land use: Previously developed mixed use

Site area (ha): 0.8

Location: Sturdee Road

Proposed land use: Mixed use

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1 within a critical drainage area. The Risk of Flooding from Surface Water maps suggest a limited potential for surface water ponding at high return periods.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

The site is currently occupied by a range of commercial buildings and upper storey flats. If redeveloping for mixed-use, the following will need to be considered in the design and preparation of a FRA:

- Sustainable Drainage: Runoff rates should be returned towards greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff. The drainage design should look to address any residual surface water flood risk. This might, for example, be through incorporation of SuDS features into the landscaping of the site.
- Surface Water Flood Risk: Mapping indicates the potential for shallow flooding the highways to the north and east of the site in extreme events. It may therefore be prudent to raise finished floor levels adjacent to the highway by at least 150mm above kerb level to provide protection against surface water flow/ exceedence of the highway drainage network.

Site number: 297

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

### Site 307: Mary Gee Houses

Current land use: Previously developed student housing

Site area (ha): 1.37

Location: Ratcliffe Road, Knighton

Proposed land use: Housing

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: No

#### **Flood risk summary**

The site lies within Flood Zone 1 within a critical drainage area. The Risk of Flooding from Surface Water maps suggest a limited potential for surface water ponding at high return periods.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

#### **Development Guidance**

The site is currently occupied by low rise blocks of student accommodation. If redeveloping for housing, the following will need to be considered in the design and preparation of a FRA: Sustainable Drainage: Runoff rates should be returned towards greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff. The drainage design should look to address any residual surface water flood risk. This might, for example, be through incorporation of SuDS features into the landscaping of the site.

Surface Water Flood Risk: Mapping indicates the potential for shallow flooding the adjacent highways to the south and east of the site in extreme events. It may therefore be prudent to raise finished floor levels adjacent to the highway by at least 150mm above kerb level to provide protection against surface water flow/ exceedence of the highway drainage network.



Site number: 307

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



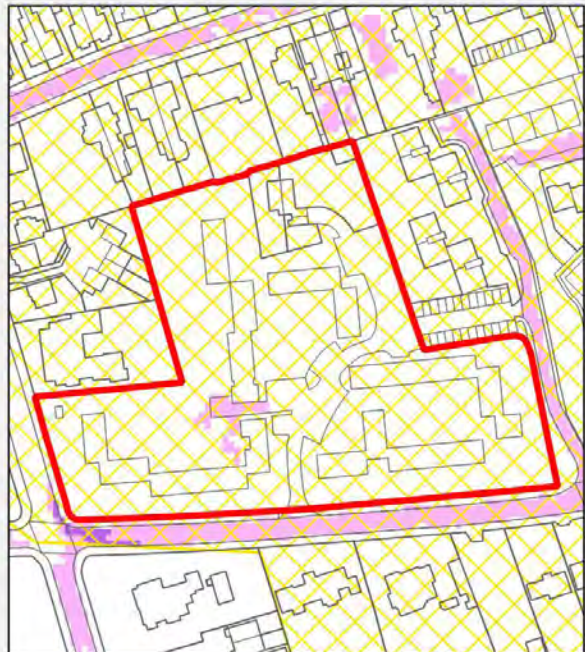
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 309: Land north of Billesdon Close

Current land use: Greenfield

Site area (ha): 12.8

Location: Beaumont Leys

Proposed land use: Housing

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies in Flood Zone 1. The Risk of Flooding from Surface Water maps (and LIDAR) pick up a small watercourse bisecting the site which an associate flow route running in a south-east to north-west direction towards the Rothley Brook. In addition, the maps identify areas of deep ponding which appear to be balancing ponds/ wetlands associated with adjacent development.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

The site is currently greenfield and is one of three adjacent proposed sites (sites 309, 718 and 2153). If redeveloping for housing, the following will need to be considered in the design and preparation of a FRA:

- Sequential approach to site layout: Development should avoid land immediately adjacent to the small watercourse identified on Ordnance Survey maps, which may be at risk of flooding. The extent of flooding should be further investigated through construction of a more detailed hydraulic model as part of a flood risk assessment. However, a buffer should in any event be provided alongside the watercourse, free of development, to enable access for maintenance and to preserve habitat. This would only affect a small proportion of the site.
- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. In view of the large site area, a comprehensive treatment train may be required, incorporating local methods within individual parcels of development and regional scale features (e.g. wetlands) to store



and treat runoff in larger quantities. Drainage networks outfalling into the stream along the north eastern perimeter should take account of the time of concentration of the watercourse.

- Existing surface water balancing features: The Risk of Flooding from Surface Water Maps show isolated areas of relatively deep ponding at a few locations around the periphery of adjacent development. These are likely to be SuDS features associated with existing development on adjacent land. These will need to be avoided/protected as will any associated flow routes, pipework and any other drainage assets.
- Opportunities: There may be opportunities to restore a natural channel form to the small watercourse which bisects the site, creating a corridor of green infrastructure and incorporating natural flood management techniques.

Site number: 309

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 1000 annual chance
- 1 in 100 annual chance +50% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 335: Manor House Playing Fields

Current land use: Greenfield

Site area (ha): 2.24

Location: Narborough Road

Proposed land use: Housing (0.4ha)

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies in Flood Zone 1. The Risk of Flooding from Surface Water maps identify an area of deep ponding along the southern perimeter of the site. This is likely to be due to raised land along the perimeter of the site.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

The site is currently greenfield. If redeveloping for mixed-use, the following will need to be considered in the design and preparation of a FRA:

- Sequential approach to site layout: Development should avoid any part of the site which may be at risk of deep surface water flooding. The extent of flooding should be further investigated as part of a flood risk assessment. It should be possible to safely manage the risk through incorporation of sustainable drainage methods since the origin of the runoff is primarily from the site itself.
- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement.



Site number: 335

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 100 annual chance +30% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 449: Allexton Gardens Open Space

Current land use: Greenfield

Site area (ha): 0.86

Location: Rowley Fields

Proposed land use: Housing

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate potential flow routing along the adjacent highways in major events, but the hazard rating is low.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

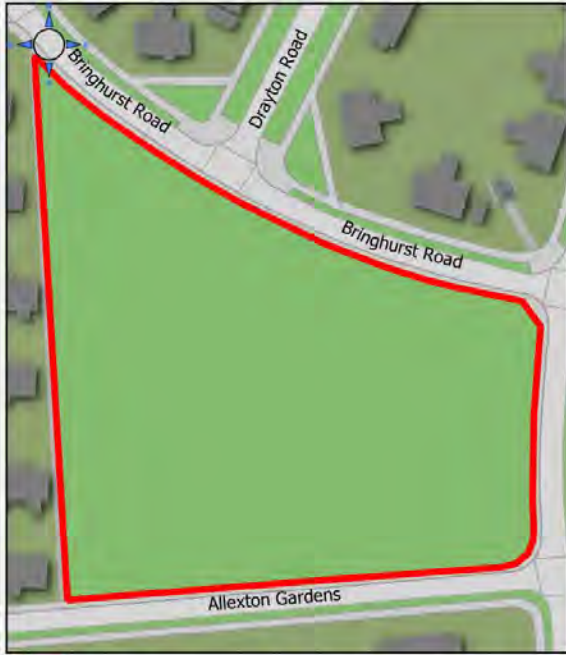
This is a greenfield site. If redeveloping for housing, the following will need to be considered in the design and preparation of a FRA:

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement.



Site number: 449

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 100 annual chance +30% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 463: Beaumont Lodge Primary School

Current land use: Green space (woodland)

Site area (ha): 0.16

Location: Beaumont Leys

Proposed land use: Housing

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

This is a greenfield site. If redeveloping for housing, the following will need to be considered in the design and preparation of a FRA:

- **Sustainable Drainage:** Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.
- **Surface Water Flood Risk:** Mapping indicates the potential for shallow flooding of Bennion Road in extreme events. It may be prudent to raise finished floor levels adjacent to the highway by at least 150mm above kerb level to provide protection against surface water flow/ exceedence of the highway drainage network.

Site number: 463

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

Surface water flood risk



## Site 464: Beaumont Park

Current land use: Greenfield- parkland

Site area (ha): 20.8

Location: Beaumont Leys

Proposed land use: Employment (7.53ha) and open space (remainder)

Exception test required: No

Critical drainage area: Yes (part)

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate the potential for minor isolated areas of ponding within the site.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

This is a greenfield site. If redeveloping for housing, the following will need to be considered in the design and preparation of a FRA:

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. The surface water drainage scheme should also address any areas of potential surface water ponding within the site. Existing water storage features should be retained (especially if they form part of an existing drainage network) and where possible enhanced and integrated effectively into the site layout.



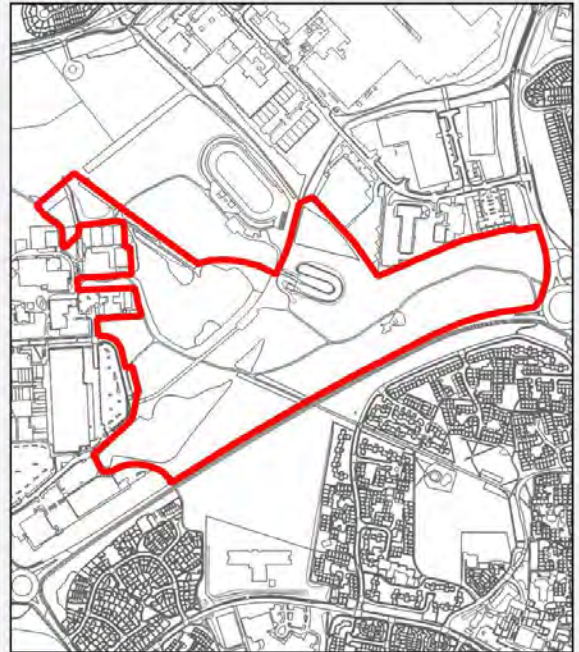
Site number: 464

Site context



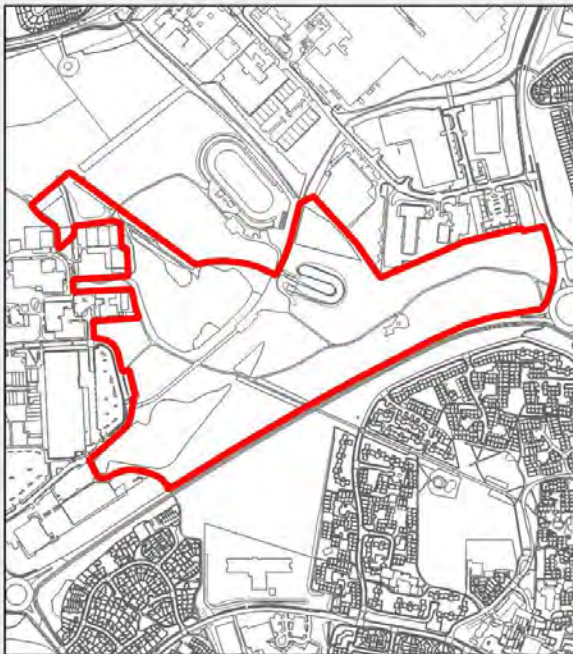
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



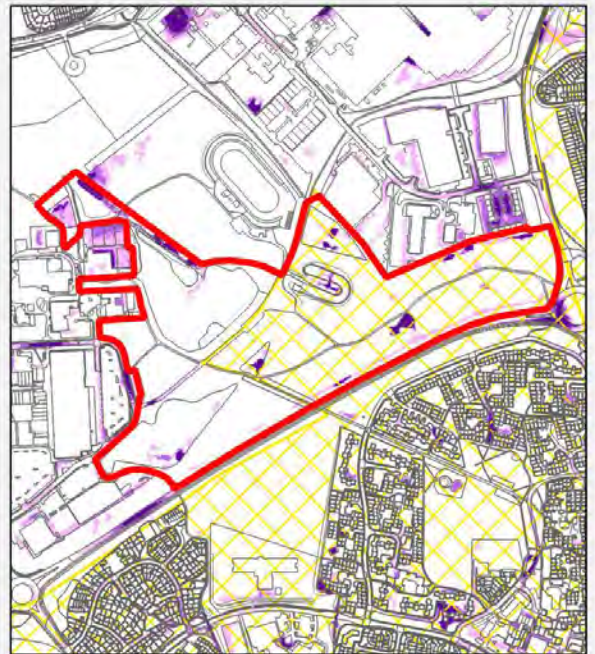
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas



## Site 473: Birstall Golf Course (adjacent to Astill Drive)

Current land use: Greenfield

Site area (ha): 2.75

Location: Abbey

Proposed land use: Housing

Exception test required: No

Critical drainage area: Yes (part)

Surface water hotspot: Yes (part)

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate a flow route leaving the site at the south western perimeter, and a proportion of the site falls within a critical drainage area and surface water flooding hotspot.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

This is a greenfield site. If redeveloping for housing, the following will need to be considered in the design and preparation of a FRA:

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. The site lies partly within the 'Redhill' surface water flooding hotspot, but it is important to note that the hotspot relates to nearby clusters of residential property at risk rather than specific risk to the site itself. The key flood risk design issue is ensuring greenfield runoff rates are maintained and, if possible, incorporating green infrastructure that will help to reduce the flood risk downstream of the site.

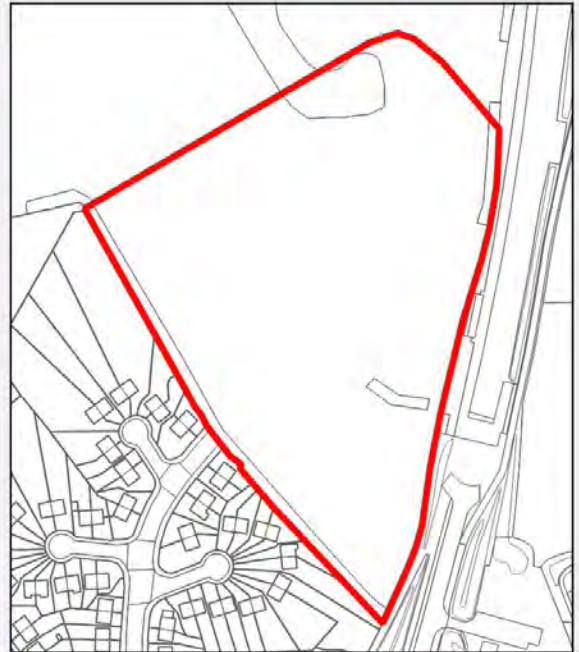
Site number: 473

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



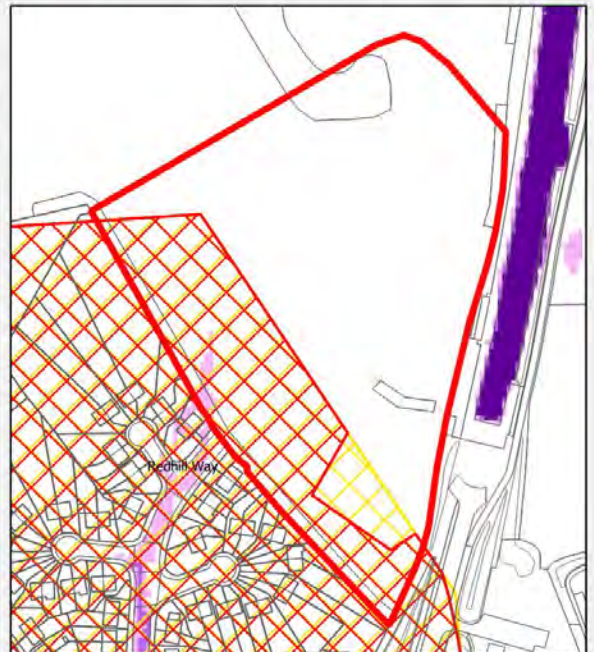
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

#### Site 474: Birstall Golf Course (south of Park Drive)

Current land use: Greenfield

Site area (ha): 2.78

Location: Abbey

Proposed land use: Housing

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

#### **Flood risk summary**

The site lies within Flood Zone 1.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

#### **Development Guidance**

This is a predominantly greenfield site. If redeveloping for housing, the following will need to be considered in the design and preparation of a FRA:

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement.



Site number: 474

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 1000 annual chance
- 1 in 1000 annual chance +30% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 481: Brent Knowle Gardens

Current land use: Greenfield

Site area (ha): 0.34

Location: Thurncourt

Proposed land use: Residential and open space

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate the potential for shallow highway flooding near to the site.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

Brent Knowle Gardens is a greenfield site located in a critical drainage area identified within the SWMP. A planning application to develop the site should be accompanied by an FRA which focuses on the following:

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement.
- Surface Water Flood Risk: Mapping indicates the potential for shallow flooding of adjacent highways, most notably at the junction of Brent Knowle Road and Wintersdale Road in the north-west corner of the site. It may therefore be prudent to raise finished floor levels adjacent to the highway by at least 150mm above kerb level to provide protection against surface water flow/ exceedence of the highway drainage network.



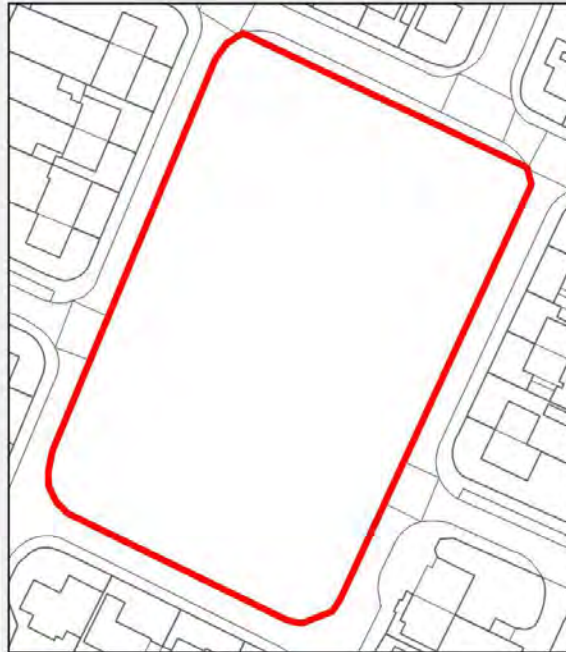
Site number: 481

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



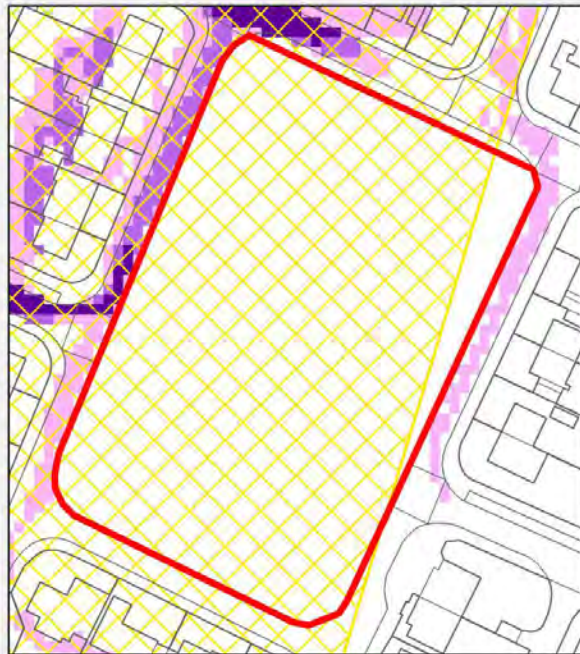
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 100 annual chance +30% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 485: Buswells Lodge Primary School Playing Fields

Current land use: Playing fields

Site area (ha): 0.25

Location: Beaumont Leys

Proposed land use: Housing

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.
- Surface Water Flood Risk: Mapping indicates the potential for flooding of the adjacent highway network in extreme events. It may therefore be prudent to raise finished floor levels adjacent to the highway by at least 150mm above kerb level to provide protection against surface water flow/ exceedence of the highway drainage network.



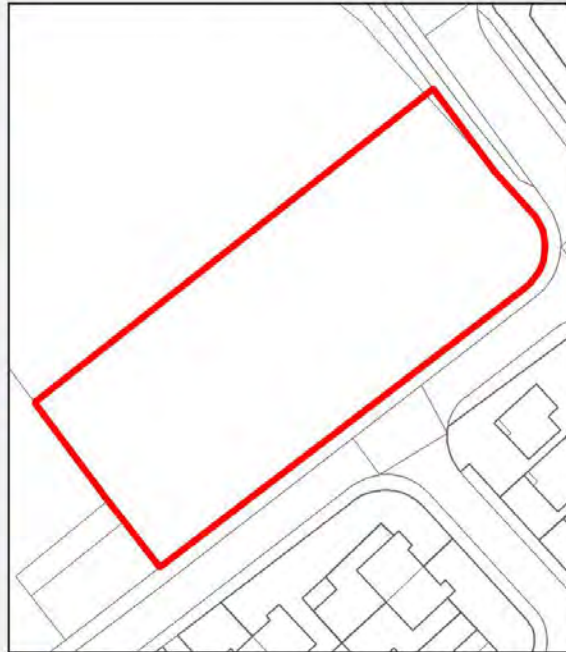
Site number: 485

Site context



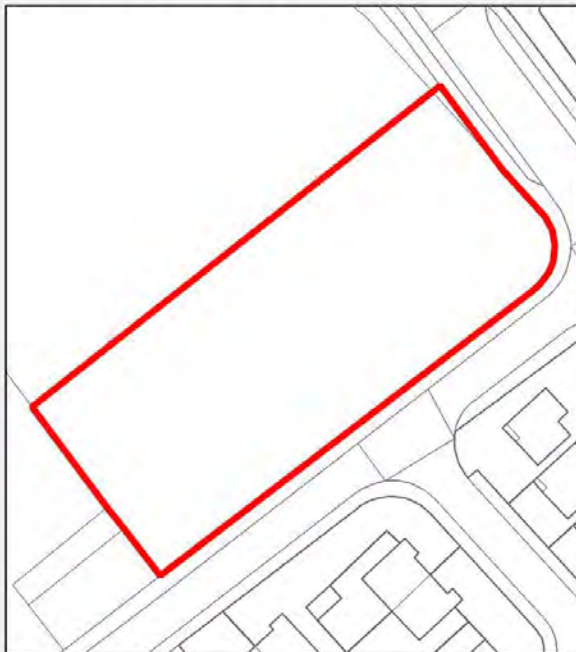
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



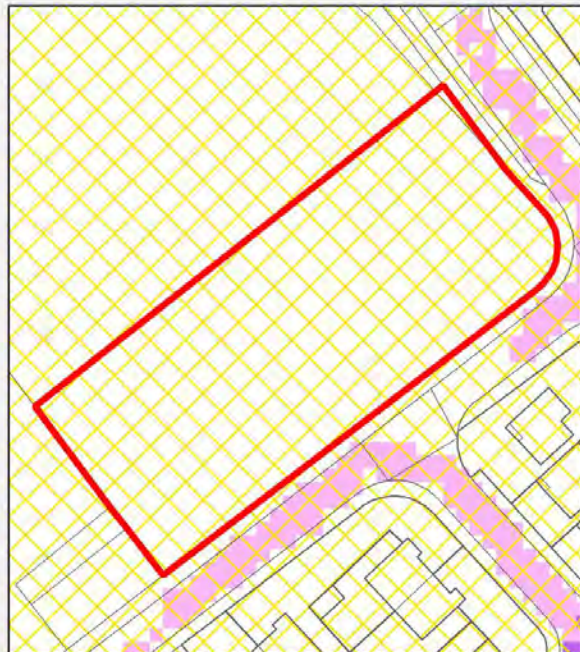
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 100 annual chance +30% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 488: Carter St/ Weymouth St/ Bardolph St East

Current land use: Previously developed commercial

Site area (ha): 1.0

Location: City Centre

Proposed land use: Housing

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: Yes (part)

### **Flood risk summary**

The southern part of the site adjacent to Martin Street site lies within Flood Zone 2. The Risk of Flooding from Surface Water maps indicate a similar pattern of flooding to the fluvial flood maps. Part of the site is identified to fall within the Belgrave Road surface water flooding hotspot, though the designation of this hotspot preceded the Risk of Flooding from Surface Water maps which are less extensive.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

Part of the site lies within Flood Zone 2. The part of the site which lies adjacent to Martin Street may be at increased risk of flooding due to climate change. However, the majority of the site lies within Flood Zone 1 and buildings already exist on the site, so redevelopment should be possible in flood risk terms. A proposed development and the accompanying flood risk assessment will need to give consideration to:

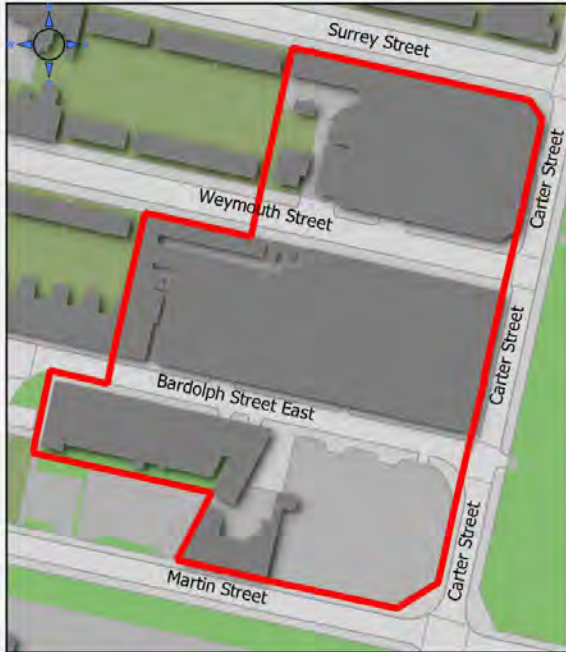
- Sequential approach to site layout: More vulnerable land uses should be directed to that part of the site which is at lower flood risk.
- Protection of property: Flood resilient design should be incorporated, with the primary method being to ensure that ground floors are raised above the 1 in 100 central climate change flood level with freeboard.
- Safe access: A means of safe access should be provided for any dwellings constructed within the site to land lying entirely outside the floodplain. Flood hazard mapping suggests that this should be possible though this should be considered as part of a FRA.
- Sustainable Drainage: The site lies within a critical drainage area and partly within a surface water flooding hotspot identified in the SWMP. As such, runoff rates should be reduced towards greenfield rates through the incorporation of sustainable



drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible habitat creation. The location of surface SuDS storage features in the lower parts of the site where flood hazard is higher would be consistent with a 'sequential approach' to site layout.

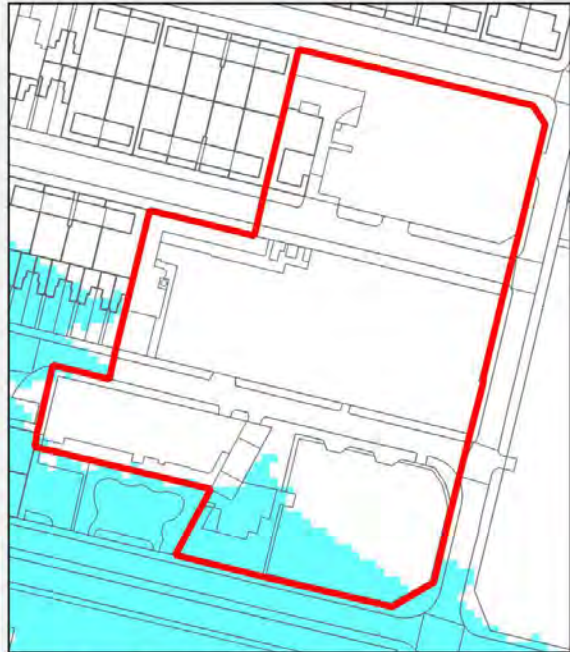
Site number: 488

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



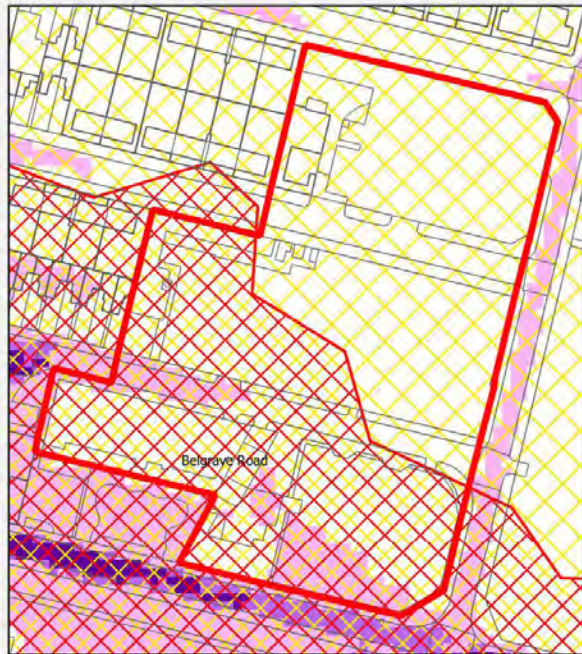
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 501: Croyland Green

Current land use: Greenfield

Site area (ha): 0.51

Location: Thurncourt

Proposed land use: 50% housing, 50% green space

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate a potential risk of flooding along Homestone Gardens (with a greater risk to the east/ south east side of the site).

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement.
- Surface Water Flood Risk: The available flood risk data suggests that the site is outside the area at risk of surface water flooding, but that the access routes to the east and south-east in particular may be a source of risk to users. As such, it would be prudent to ensure that all residential properties have an access route available leading towards the northern and/ or western boundaries of the site where the modelled flood hazard is low/ absent. Finished floor levels adjacent to the highways should be raised where practical by at least 150mm to provide protection against surface water flow/ exceedence of the highway drainage network.



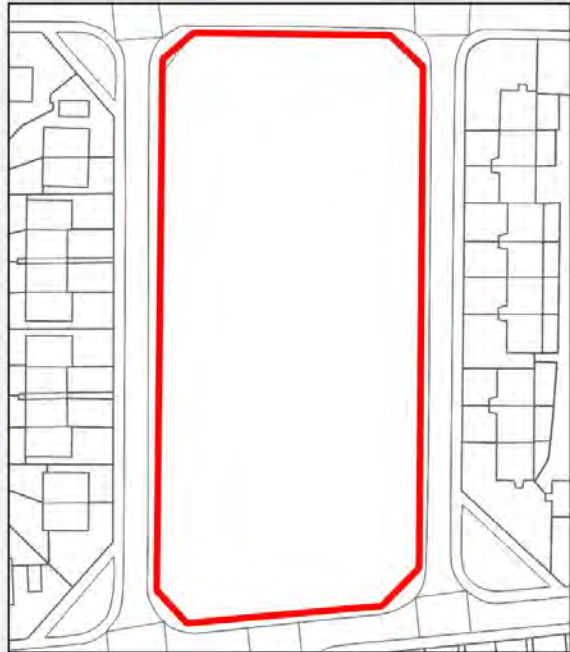
Site number: 501

Site context



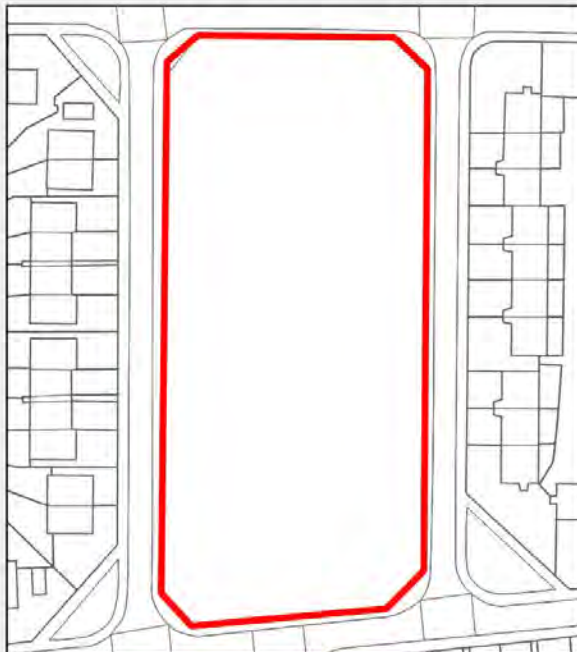
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



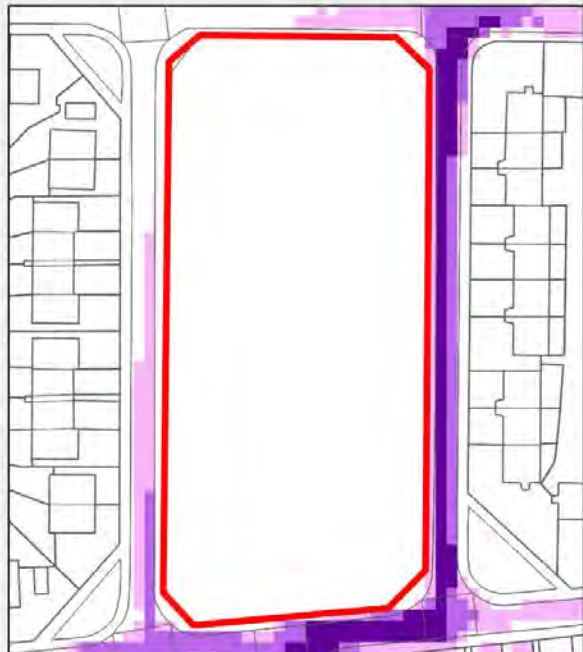
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas



## Site 505: Dorothy Rd/Linden St/Constance Rd

Current land use: Previously developed non-residential

Site area (ha): 1.07

Location: Spinney Hills

Proposed land use: Housing

Exception test required: No

Critical drainage area: Yes (part)

Surface water hotspot: Yes (part)

### **Flood risk summary**

The vast majority of the site lies within Flood Zone 1 but the southern part of the site adjacent to Constance Road lies within Zone 2. The Risk of Flooding from Surface Water maps indicate a potential risk of flooding on Constance Road adjacent to the site and the site falls partly within the Green Lane Road surface Water hotspot.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

The majority of the site lies within Flood Zone 1 and buildings already exist on the site, so redevelopment should be possible in flood risk terms. A proposed development and the accompanying flood risk assessment will need to give consideration to:

- Sequential approach to site layout: More vulnerable land uses should be directed to that part of the site which is at lower flood risk.
- Protection of property: Flood resilient design should be incorporated, with the primary method being to ensure that ground floors are raised above the 1 in 100 central climate change flood level with freeboard.
- Safe access: A means of safe access should be provided for any dwellings constructed within the site to land lying entirely outside the floodplain. Flood hazard mapping suggests that this should be possible, though it should be confirmed as part of a FRA.
- Sustainable Drainage: The site lies within a critical drainage area and partly within a surface water flooding hotspot identified in the SWMP. As such, runoff rates should be reduced towards greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible habitat creation. The location of surface SuDS storage features in the lower parts of the site

where flood hazard is higher would be consistent with a 'sequential approach' to site layout.

Site number: 505

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



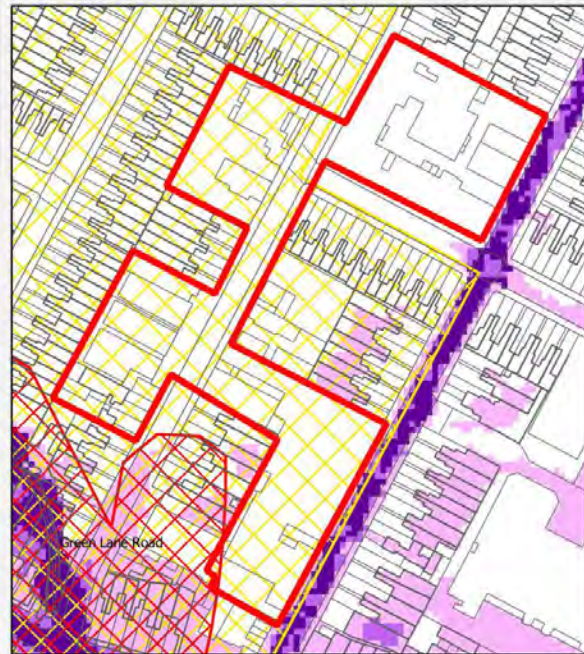
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 1000 annual chance
- 1 in 100 annual chance +50% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 516: Former bus depot

Current land use: Vacant brownfield

Site area (ha): 3.43

Location: Abbey Park Road

Proposed land use: Education

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies between the River Soar and the Grand Union Canal, which in this location is also designated as Main River because it takes the flow of the Willow Brook. The site is almost entirely within Flood Zone1, though risk is present along Abbey Park Road which forms the access into the site.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

The site is currently vacant and has (in part) been the subject of recent planning applications. Due to the presence of flood risk along the, any proposed development should be accompanied by a Flood Risk Assessment which gives particular attention to the following:

- **Safe access:** A means of safe access should be provided for any buildings constructed within the site to land lying entirely outside the floodplain. Flood hazard mapping suggests that this should be possible either by ensuring access to the southern corner of the site, which leads to land outside the floodplain via the canal bridge, or by ensuring access in a north westerly direction through this site and an adjacent allocation, towards Abbey Meadows and Abbey Park Road.
- **Sequential approach to site layout:** Based on previous FRA analysis, the extent of flooding should first be confirmed through topographic survey and appropriate mitigation included within any proposed development scheme. A precautionary approach to development is recommended because earlier Environment Agency hydraulic models have shown flood risk to be present at this site i.e. the extent of flooding is sensitive to small changes in estimated water level. Development should be steered towards those parts of the site at lower risk of flooding, with open space uses/ landscaping within those parts of the site at risk of fluvial flooding.
- **SuDS:** Runoff rates should be reduced towards greenfield rates through the



incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site. The area of surface water flooding identified on the Risk of Flooding from Surface Water maps is limited to the 1 in 1000 annual chance event with a relatively low depth and velocity, and is not part of a wider floodplain. As such it should be possible to accommodate mitigation on site.

- Protection of property: Ground floor levels should be raised above the 1 in 100 central climate change flood level with freeboard, taking the higher of the surrounding water levels (River Soar flooding at Abbey Park Road or Willow Brook/ Grand Union Canal flooding to the north east perimeter).

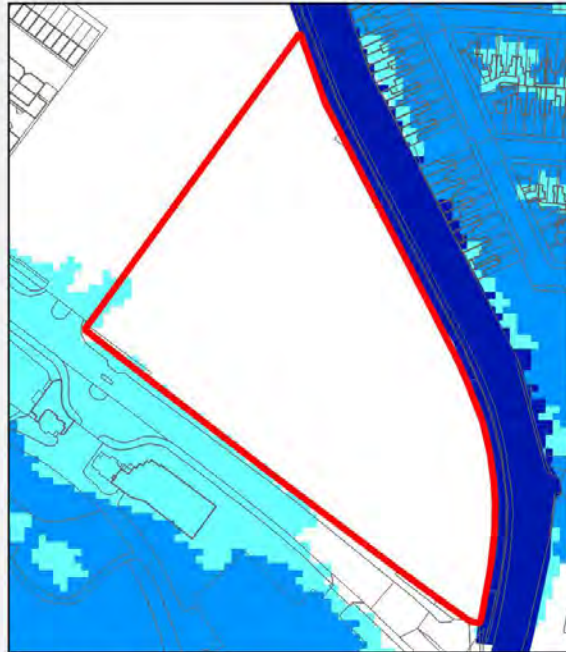
Site number: 516

Site context



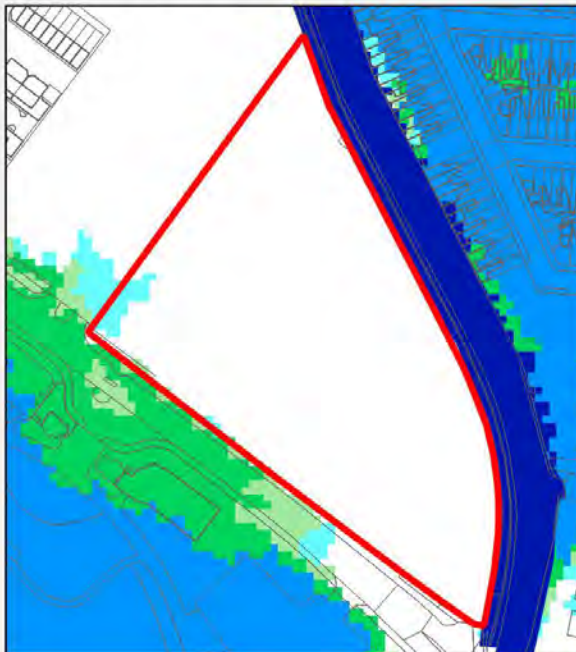
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



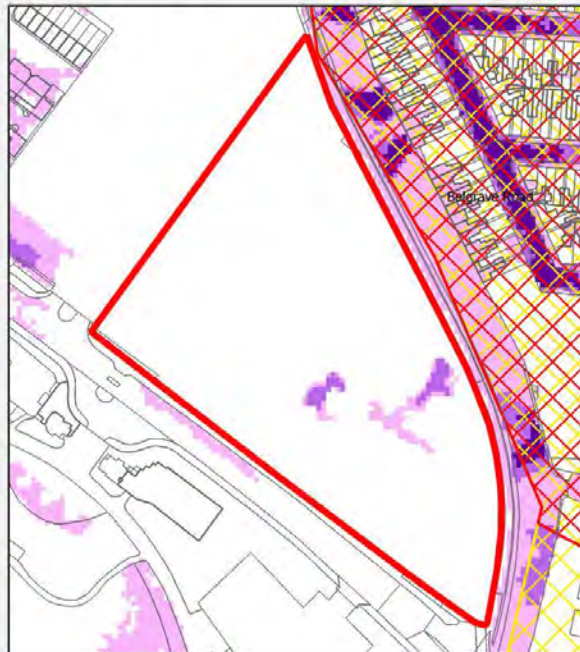
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 525: Fulford Road Open Space

Current land use: Greenfield

Site area (ha): 2.0

Location: Adj. Scudamore Road

Proposed land use: Housing

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate a minor areas of ponding in the north east corner of the site. There is a small reedbed present at this location.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

The site is currently greenfield. If redeveloping for housing, the following will need to be considered in the design and preparation of a FRA:

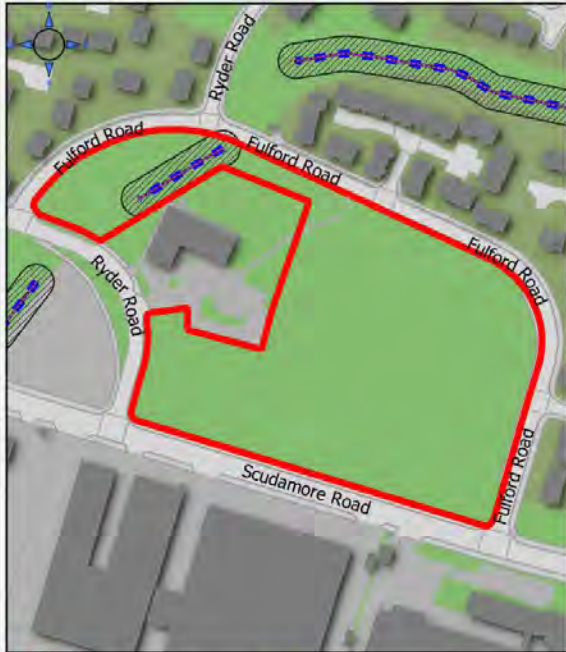
- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.
- Surface Water features: Council records indicate a watercourse (a tributary of the Braunstone Brook) present in the north west corner of the site. Development should avoid culverting of any open sections, providing an easement alongside in order to facilitate maintenance access and conserve habitat, and where opportunities exist, renaturalise the channel. The role of the small reedbed in the north eastern corner in the hydrological system should be assessed as part of any FRA undertaken for redevelopment of the site.
- Surface Water Flood Risk: Mapping indicates the potential for flooding of the adjacent highway network in extreme events. It may therefore be prudent to raise finished floor levels adjacent to the highway by at least 150mm above kerb level to provide protection against surface water flow/ exceedence of the highway drainage

network.



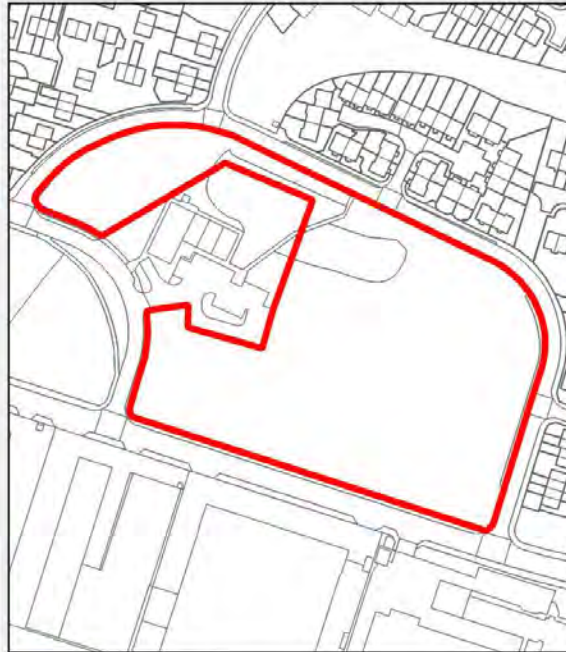
Site number: 525

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



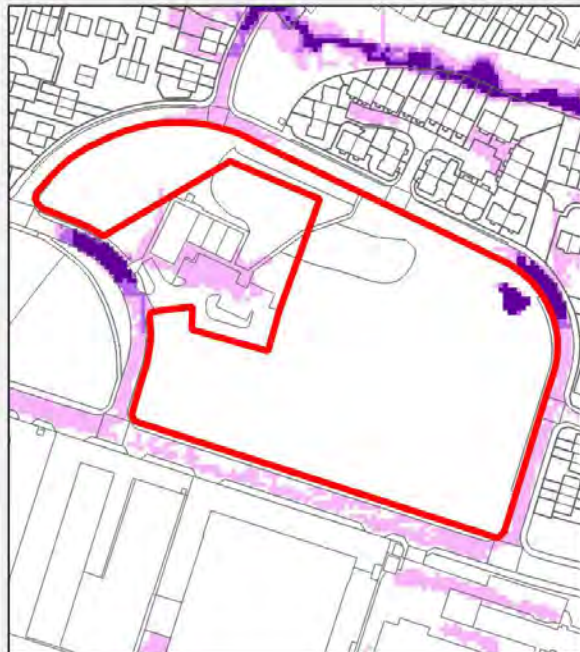
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 100 annual chance +30% flow
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 529: Glovers Walk Open Space

Current land use: Greenfield

Site area (ha): 2.36

Location: Beaumont Leys

Proposed land use: Housing (50%), Open space (50%)

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate minor areas of ponding within the site.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.
- Surface Water Flood Risk: Mapping indicates the potential for flooding of the adjacent highway network in extreme events to the east of the site. It may therefore be prudent to raise finished floor levels adjacent to the highway by at least 150mm above kerb level to provide protection against surface water flow/ exceedence of the highway drainage network.



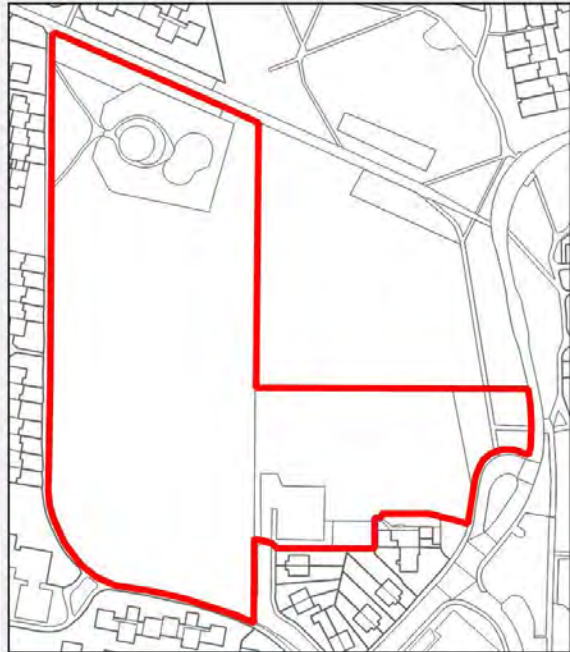
Site number: 529

Site context



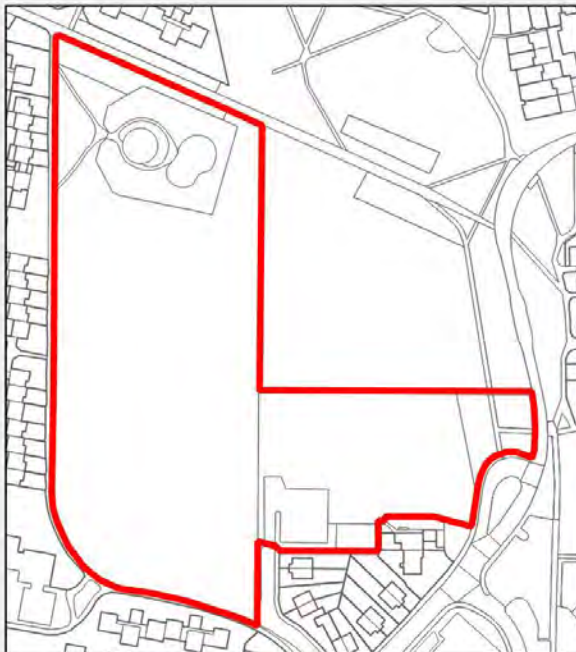
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



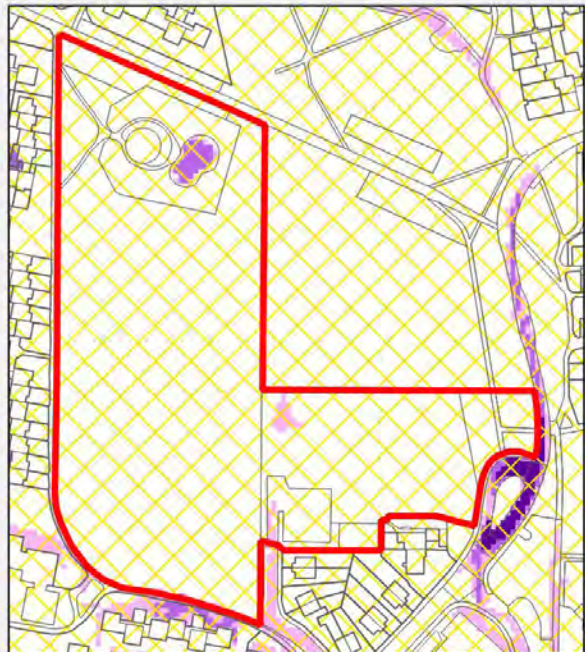
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 100 annual chance +30% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 546: Herrick Primary School Playing Fields

Current land use: Greenfield

Site area (ha): 0.25

Location: Rushey Mead

Proposed land use: Housing

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

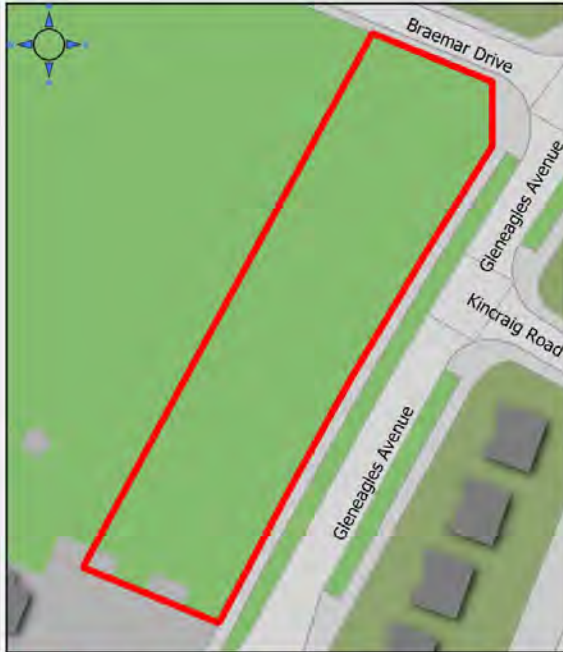
### **Development Guidance**

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.
- Surface Water Flood Risk: Mapping indicates the potential for flooding of the adjacent highway network in extreme events to the north east of the site. It may therefore be prudent to raise finished floor levels adjacent to the highway by at least 150mm above kerb level to provide protection against surface water flow/exceedence of the highway drainage network.



Site number: 546

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 549: Hockley Farm Road Open Space

Current land use: Greenfield

Site area (ha): 0.68

Location: Braunstone Park and Rowley Fields (West)

Proposed land use: Housing (33%) nature conservation (67%)

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.
- Surface Water Flood Risk: Mapping indicates the potential for flooding of the adjacent highway network in extreme events to the south west and south east of the site. It may therefore be prudent to raise finished floor levels adjacent to the highway by at least 150mm above kerb level to provide protection against surface water flow/exceedence of the highway drainage network.

Site number: 549

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 100 annual chance +30% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas



## Site 557: Ingold Avenue Open Space

Current land use: Greenfield

Site area (ha): 3.7

Location: Abbey Ward

Proposed land use: Housing (67%) green space (33%)

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate a potential flood flow route in the eastern part of the site.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.
- Surface Water Flood Risk: The eastern part of the site is crossed by a potential surface water flow route (north to south). Hazard rating is generally low but with two small areas of higher risk which coincide with existing children's play equipment. Records also indicate a surface water sewer crossing the site. The risk of surface water flooding should be investigated as part of the FRA accompanying a development proposal, and early in the process of developing the site layout. Given that 1/3 of the site is to be retained as green space, a sequential approach to development should be taken, avoiding the area potentially at risk of surface water flooding. There may also be opportunities to reduce flood risk downstream of the site by accommodating surface water storage in the landscaping of the open space. Mapping indicates the potential for flooding of the adjacent highway network in extreme events. It may therefore be prudent to raise finished floor levels adjacent to the highway by at least 150mm above kerb level to provide protection against surface water flow/ exceedence of the highway drainage network.



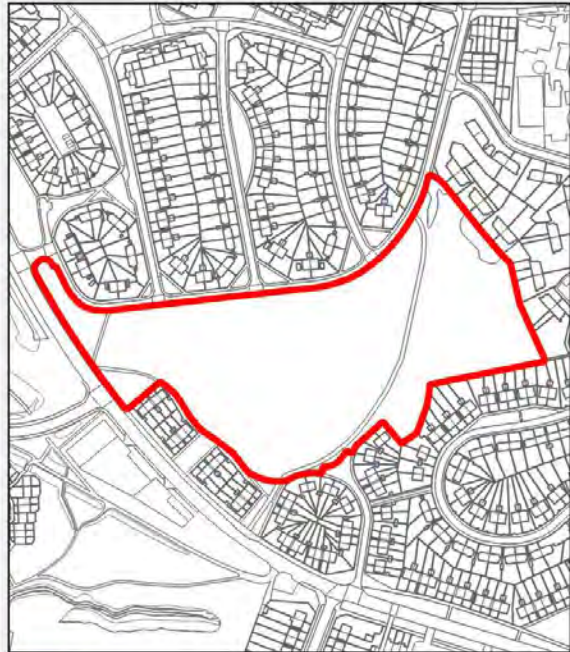
Site number: 557

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 559: Judgemeanow Community College Playing Fields

Current land use: School playing fields

Site area (ha): 0.54

Location: Evington

Proposed land use: Housing (part)

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

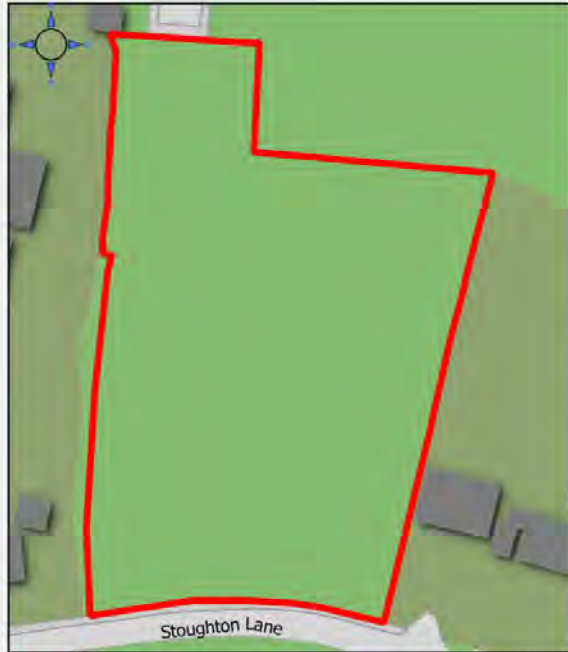
### **Development Guidance**

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.
- Surface Water Flood Risk: Mapping indicates the potential for flooding of the adjacent highway network in extreme events to the south of the site and an area of flow accumulation to the north of the site, though it is not shown to enter the site. It may therefore be prudent to raise finished floor levels adjacent to these areas by at least 150mm to provide protection against surface water flood risk.



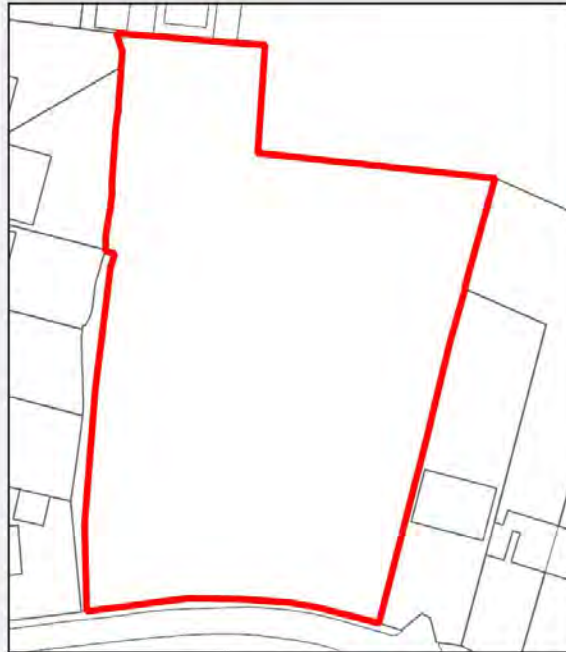
Site number: 559

Site context



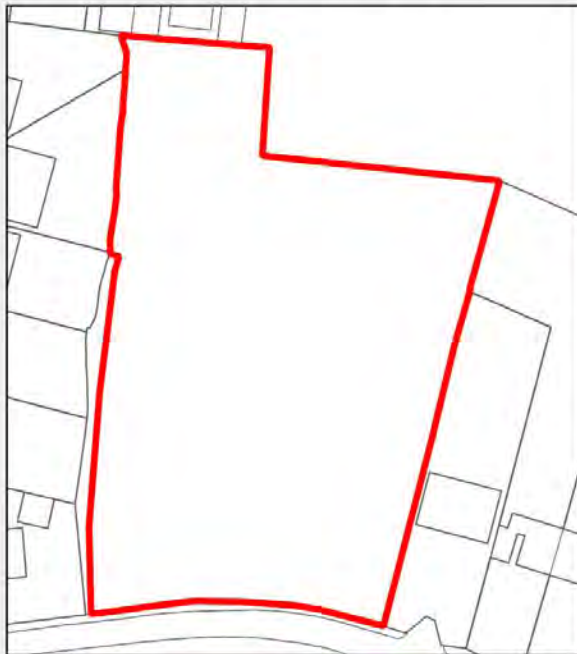
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



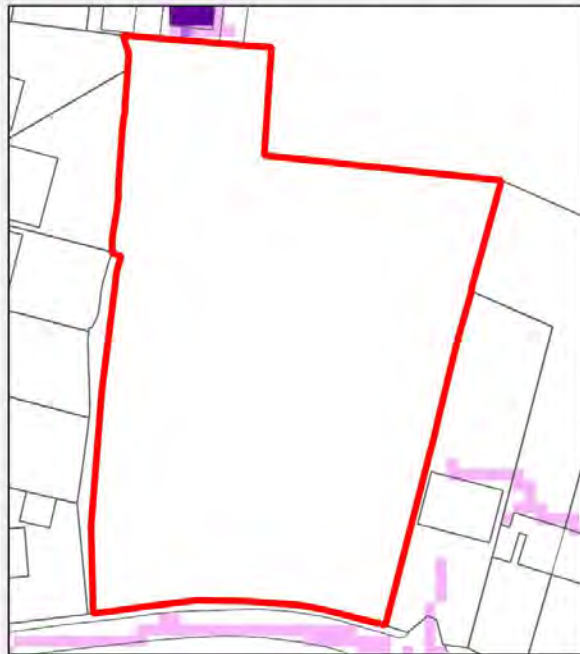
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 566: Kirminton Gardens

Current land use: Greenfield

Site area (ha): 0.68

Location: Thurncourt

Proposed land use: Housing (50%), enhanced green space (50%)

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate the potential for surface water flooding outside the site but on the access routes.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

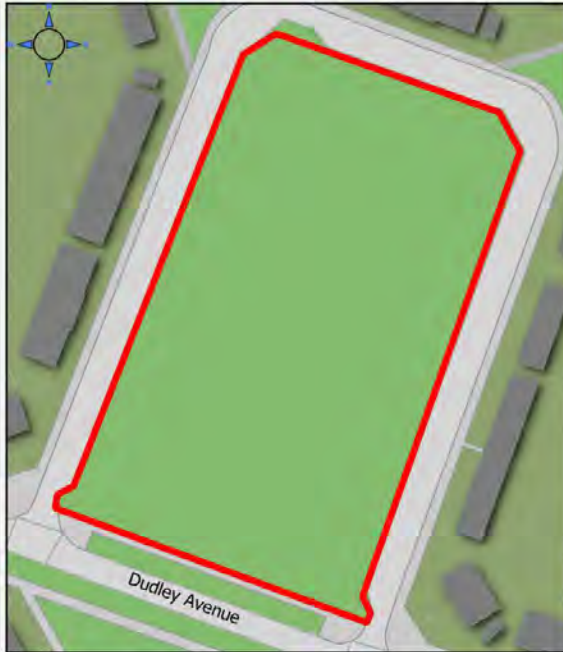
### **Development Guidance**

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement.
- Surface Water Flood Risk: The available flood risk data suggests that the site is outside the area at risk of surface water flooding, but that the access routes to the east and north east in may be a source of risk to users in a 1 in 100 annual chance event. As such, it would be prudent to ensure that all residential properties have an access route available leading towards the southern and/ or western boundaries of the site where the modelled flood hazard is low/ absent. Further analysis of surface water flood risk is recommended in relation to site access. Mapping indicates the potential for flooding of the adjacent highway network in extreme events. It may therefore be prudent to raise finished floor levels adjacent to the highway by at least 150mm above kerb level to provide protection against surface water flow/ exceedence of the highway drainage network.

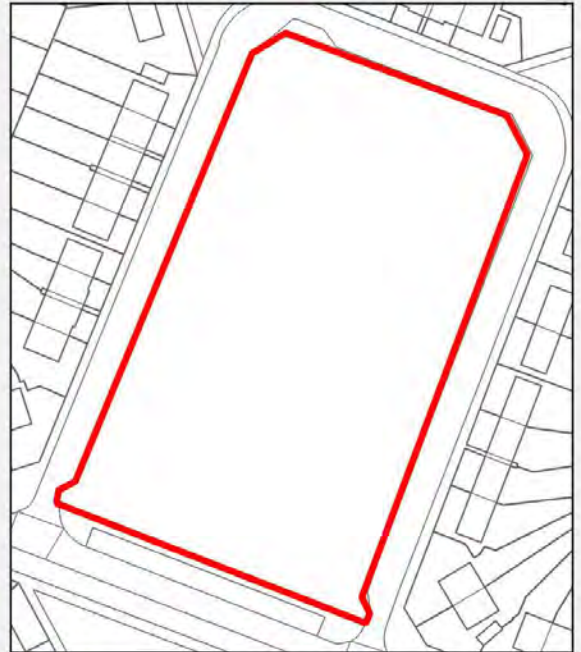


Site number: 566

Site context



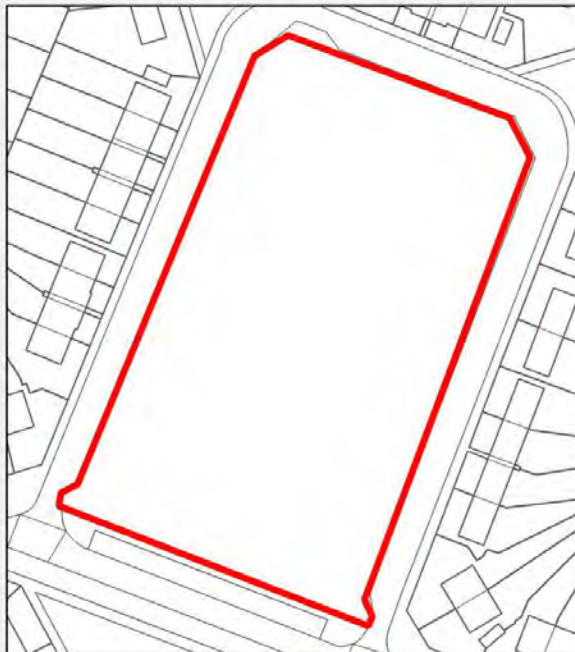
Flood Zones



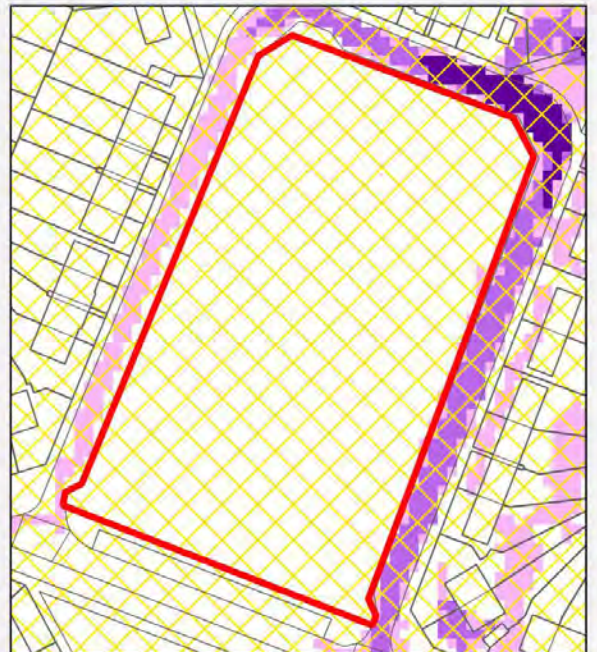
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



Surface water flood risk



- 1 in 20 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance +30% flow
- Surface water hotspots
- Critical drainage areas

## Site 569: Krefeld Way/Darenth Drive Open Space

Current land use: Greenfield

Site area (ha): 1.13

Location: Beaumont Leys

Proposed land use: Housing

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate minor areas of ponding within the site.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

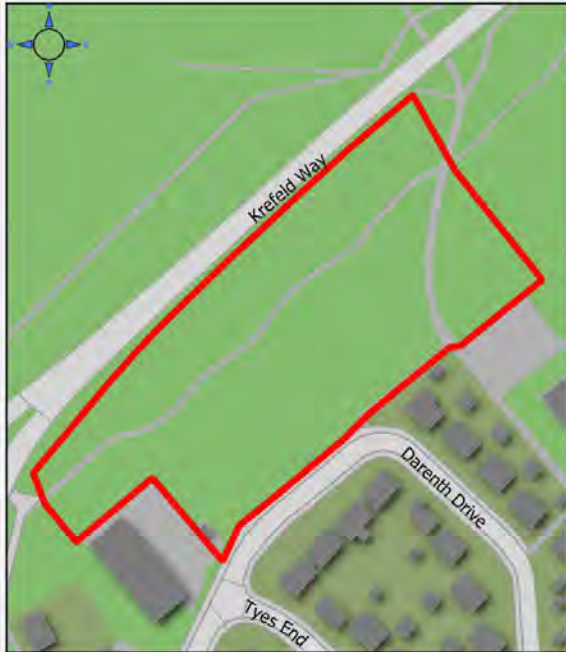
### **Development Guidance**

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.



Site number: 569

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



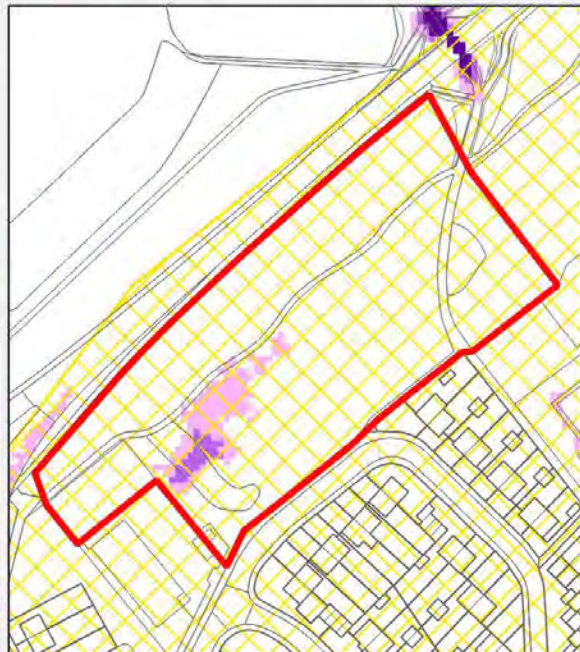
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 100 annual chance +30% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- Critical drainage areas
- Surface water hotspots

## Site 575: Land adj. Great Central Railway

Current land use: Greenfield

Site area (ha): 4.38

Location: Abbey Ward

Proposed land use: Leisure/ tourism

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate an accumulation of surface water in the south-east corner of the site.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

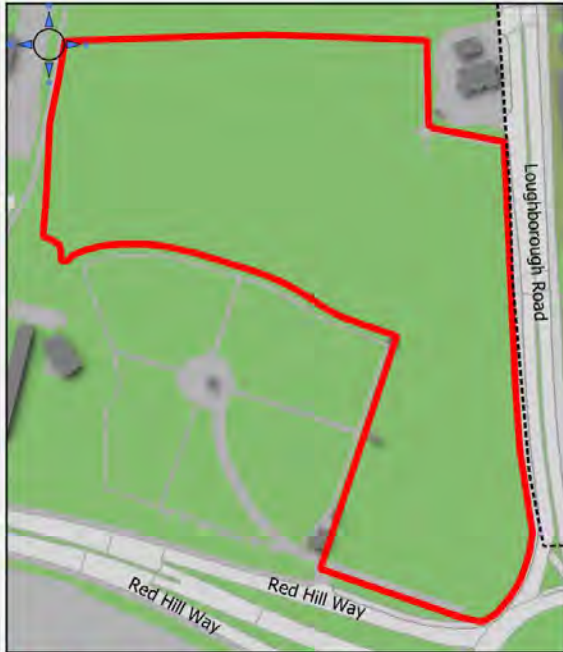
### **Development Guidance**

- **Surface Water Flood Risk:** The south-east corner of the site is identified as a potential area at risk of surface water flooding. Hazard rating varies from low ('caution') to 'danger to most' and is primarily a function of the depth of water in this location rather than velocity. Topographically this corner of the site sits in a depression, bounded to the south and east by land which has been raised to form highways (Red Hill roundabout and the A6). The local drainage in this area should be investigated as part of a FRA and if the risk of flooding is confirmed through more detailed modelling/ calculations, then development should be designed to avoid or mitigate the risk, which could be through the provision of open space/ green infrastructure in those areas at risk of surface water flooding. There may also be opportunities to reduce flood risk downstream of the site by accommodating surface water storage in this part of the site.
- **Sustainable Drainage:** Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site, notably the south-east corner of the site.



Site number: 575

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



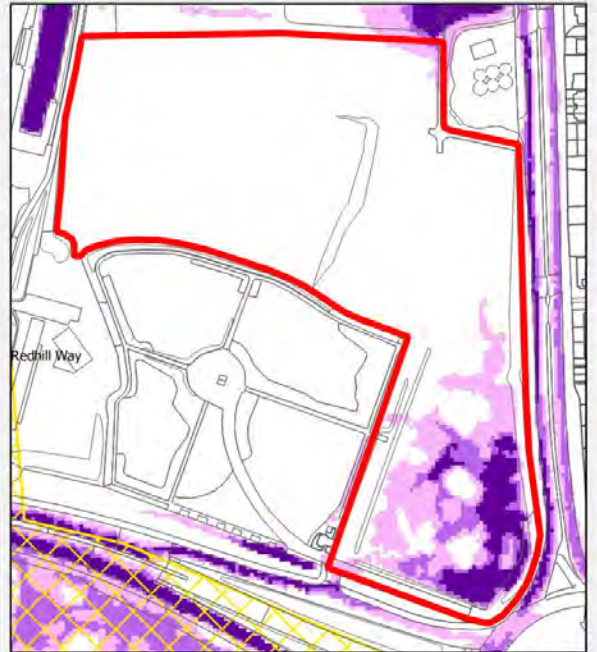
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 100 annual chance +30% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 577: Land adj. Keyham Lane/ Preston Rise

Current land use: Greenfield

Site area (ha): 0.80

Location: Humberstone/ Hamilton

Proposed land use: Housing

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate a potential for minor flooding of some adjacent highways in extreme events though the depth & hazard rating is low.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

- Sustainable Drainage: This is a greenfield site within a critical drainage area. Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement.
- Surface Water Flood Risk: Mapping indicates the potential for flooding of the adjacent highway network in extreme events to the north and east of the site. It may therefore be prudent to raise finished floor levels adjacent to the highway by at least 150mm above kerb level to provide protection against surface water flow/exceedence of the highway drainage network.



Site number: 577

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



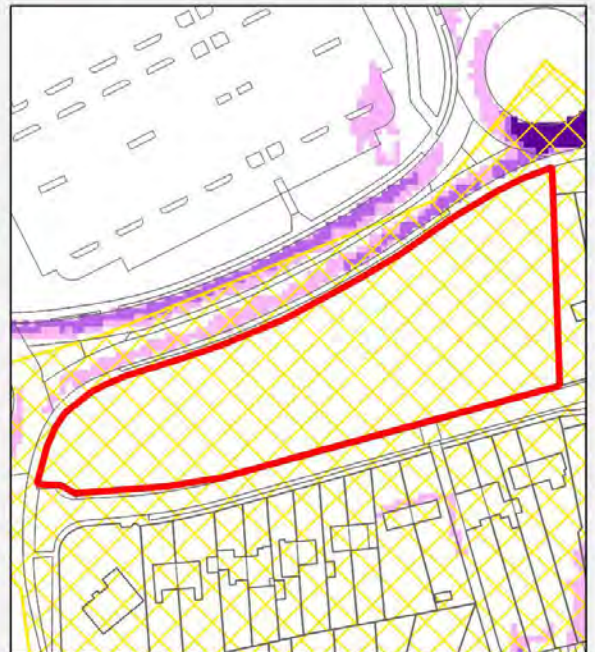
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 100 annual chance +30% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 579: Land north of Birstall Golf Course

Current land use: Greenfield

Site area (ha): 4.73

Location: Beaumont Leys

Proposed land use: Employment (B1, B2 and B8 uses) (2.45ha)

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate potential flood risk along the eastern boundary and a potential flow route bisecting the site in a west-east direction in extreme events.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

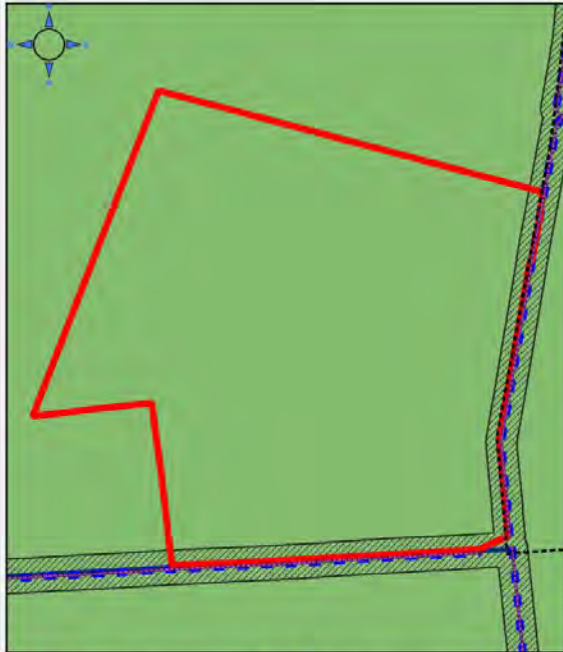
The site is currently greenfield. If redeveloping for housing, the following will need to be considered in the design and preparation of a FRA:

- Surface water flood risk & sequential approach to site layout: The extent of flooding from the ordinary watercourses running adjacent to the site and the minor flow route through the middle of the site identified on the Risk of Flooding from Surface Water maps should be investigated as part of a FRA. A sequential approach should be taken to site layout, avoiding those areas identified as being at flood risk. A buffer strip, free of development, should in any event be provided alongside all watercourses crossing or adjacent to the site, to enable access for maintenance and to preserve habitat.
- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement.
- Opportunities: There may be opportunities to restore a natural channel form to the small watercourse adjacent to the site, creating a corridor of green infrastructure and incorporating natural flood management techniques.



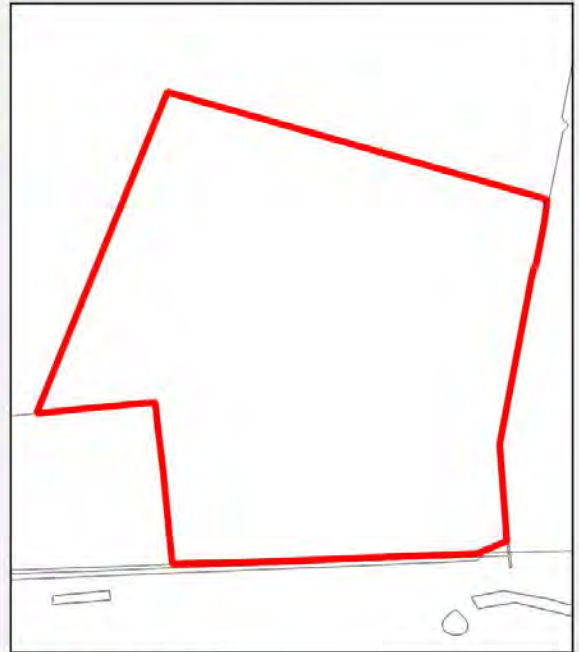
Site number: 579

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 580: Land north of Castle Hill Country Park

Current land use: Greenfield

Site area (ha): 10.6

Location: Beaumont Leys

Proposed land use: Residential

Exception test required: Yes

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies primarily within Flood Zone 1, though a very small part of the site (<2%) falls within Flood Zone 2 and 3 of the Rothley Brook. The Risk of Flooding from Surface Water maps indicate a potential risk of surface water flooding along the south west boundary of the site. This is associated with runoff from Beaumont Leys area and ultimately feeds into the Rothley Brook.

Exception Test Part A (sustainability): PASS (refer to Exception Testing text)

Exception Test Part B (flood risk): LIKELY PASS

Provided that a sequential approach is taken to the layout of development, avoiding areas of flood risk in the south-west and protecting drainage infrastructure.

### **Development Guidance**

The site is primarily greenfield. If redeveloping for mixed-use, the following will need to be considered in the design and preparation of a FRA:

- Sequential approach to site layout: Built development should avoid the area of fluvial flood risk associated with the Rothley Brook, since it occupies only a very small proportion of this site. Ordnance survey maps identify a small watercourse along the south west boundary. Built development should also avoid land adjacent to this watercourse if found to be at risk of flooding in line with the Risk of Flooding from Surface Water maps. The extent of flooding should be further investigated through construction of a more detailed hydraulic model as part of a flood risk assessment. There is also a large surface water storage feature in the south west part of the site which should be avoided along with any associated drainage infrastructure. This infrastructure may serve the suburb of Beaumont Leys and/ or the A46 and should be checked with Leicester City Council and National Highways. A buffer should in any event be provided alongside any open watercourse, free of development, to enable access for maintenance and to preserve habitat.

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. In view of the large site area, a comprehensive treatment train may be required, incorporating local methods within individual parcels of development and regional scale features (e.g. wetlands) to store and treat runoff in larger quantities. Drainage networks outfalling into the stream along the north-eastern perimeter should take account of the time of concentration of the watercourse



Site number: 580

Site context



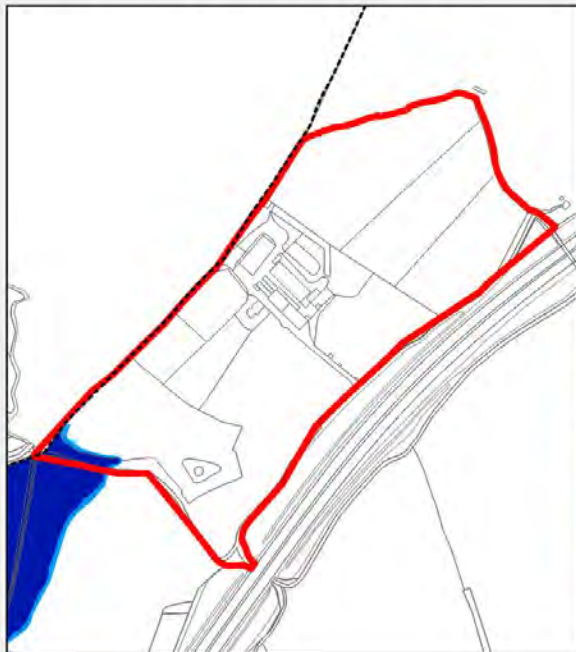
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance + 30% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 589: Land east of Beaumont Leys Lane

Current land use: Greenfield

Site area (ha): 1.18

Location: Abbey

Proposed land use: Housing

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate a minor area of ponding within the site at the 1 in 1000 annual chance event.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

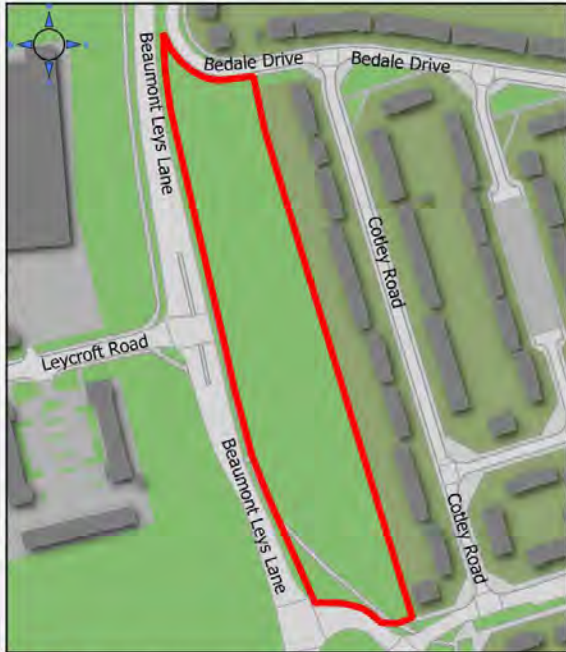
### **Development Guidance**

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.



Site number: 589

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 604: Linden School Playing Fields

Current land use: Playing fields

Site area (ha): 0.7

Location: Evington

Proposed land use: Housing

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

This is a greenfield site. If redeveloping for housing, the following will need to be considered in the design and preparation of a FRA:

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.
- Surface Water Flood Risk: Mapping indicates the potential for flooding of the adjacent highway network in extreme events to the north of the site. It may therefore be prudent to raise finished floor levels adjacent to the highway by at least 150mm above kerb level to provide protection against surface water flow/ exceedence of the highway drainage network.



Site number: 604

### Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

### Flood Zones



- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

### Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance
- 1 in 1000 annual chance

### Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 605: Longleat Close Open Space

Current land use: Greenfield

Site area (ha): 1.76

Location: North Evington

Proposed land use: Housing

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.
- Protection of property: Property threshold levels along the eastern boundary of the site should be set at least 150mm above the adjacent kerb level in order to protect against surface water flood risk, unless a FRA demonstrates a reduced risk of flooding through more detailed local analysis.



Site number: 605

Site context



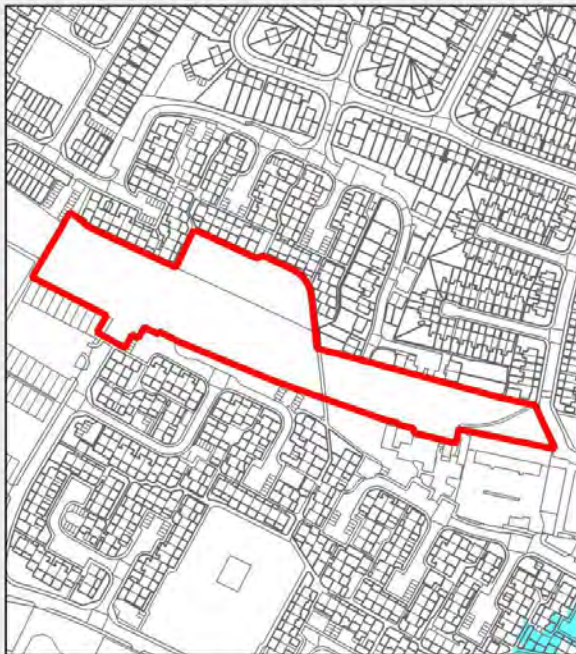
- Site Boundary
- 8m buffer (approx)
- Ordinary Watercourses
- Main Rivers

Flood Zones



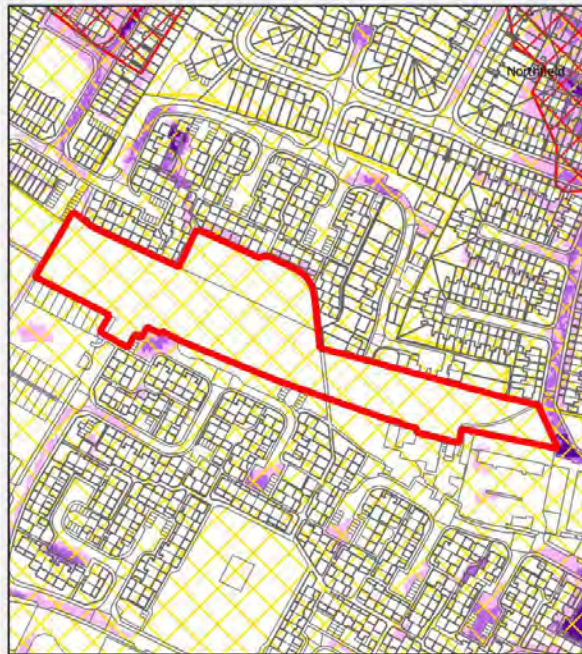
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 620: Morton Walk open space

Current land use: Greenfield

Site area (ha): 0.76

Location: North Evington

Proposed land use: Residential and open space

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.



Site number: 620

Site context



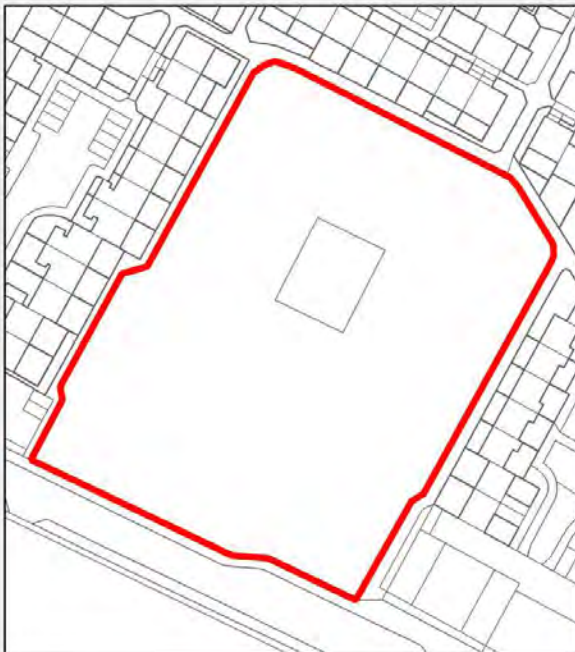
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



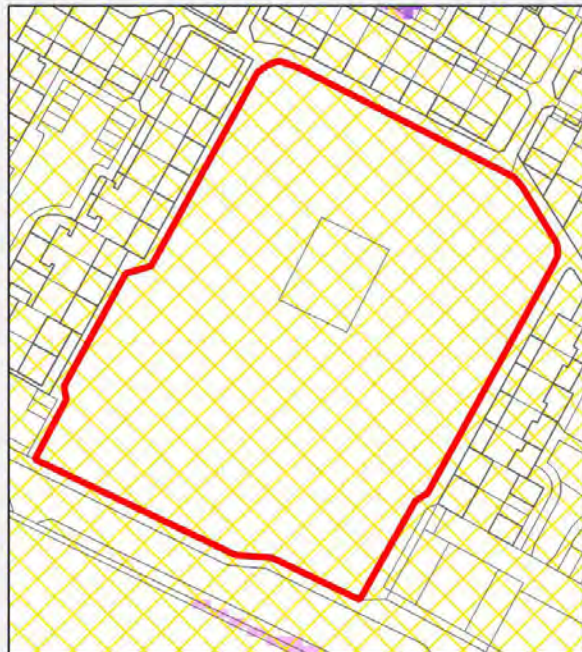
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 100 annual chance +30% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 626: Neston Gardens open space/ Mud Dumps

Current land use: Greenfield

Site area (ha): 1.63

Location: Saffron

Proposed land use: Housing

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate a potential surface water flow route along the eastern boundary of the site in a 1 in 100 annual chance event along with additional areas of risk in more extreme events.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

- Surface water flood risk & sequential approach to site layout: The Risk of Flooding from Surface Water maps indicate a potential flow route along the eastern boundary at the base of the railway embankment. Flood hazard in this area is relatively high. It is likely that historic alteration of ground levels has impeded natural drainage towards the Saffron Brook, but it should also be noted that there is a large surface water sewer to the west of the site which carries urban runoff in a northerly direction that is not explicitly accounted for within the EA surface water model. Further investigation of the risk of surface water flooding is warranted. However, the topography of the site is such that some development should be possible in flood risk terms provided that the areas of greatest surface water flood risk are avoided by taking a sequential approach to site layout. The existing pedestrian connection to Grampian Close (which is a public right of way) should be retained on the basis of the available data, because flood hazard is lower than other potential access points. Early liaison with Severn Trent Water is recommended to improve understanding of the performance of the local pipe network.
- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and

where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.

- Opportunities: There may be opportunities to reduce downstream flood risk by creating a corridor of blue-green infrastructure along the eastern boundary, if further analysis conducted in a FRA confirms the potential for surface water flows.



Site number: 626

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



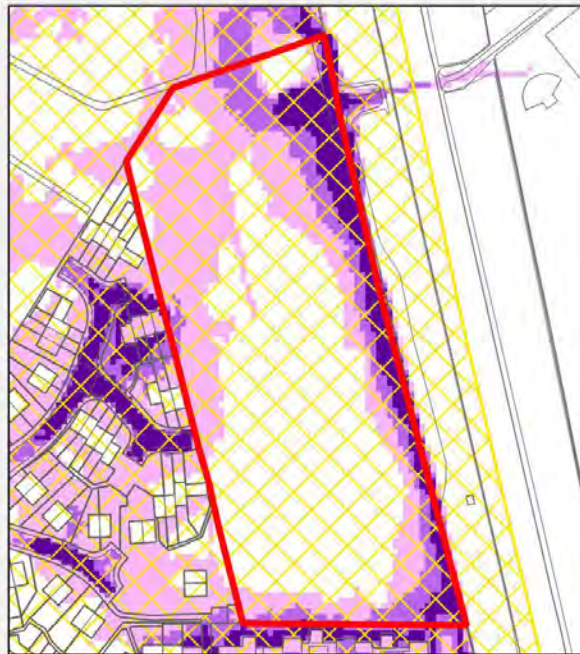
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 1000 annual chance
- 1 in 100 annual chance +50% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 627: Neston Gardens playing fields

Current land use: Greenfield

Site area (ha): 1.83

Location: Saffron

Proposed land use: Housing

Exception test required: No

Critical drainage area: Yes (part)

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate a potential surface water flow route along the eastern part of the site in a 1 in 100 annual chance event along with additional areas of risk in more extreme events.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

Neston Gardens playing fields is identified on the Risk of Flooding from Surface maps as lying along the same potential surface water flow route as the previous site (626- Neston Gardens Green Space).

- Surface water flood risk & sequential approach to site layout: The Risk of Flooding from Surface Water maps indicate a potential flow route along the eastern half of the site, flowing in a northerly direction, bounded to the east by railway embankment. Flood hazard in this area is indicated to be high, and the depth is significant in the 1 in 30 and 1 in 100 annual chance events. There is an accumulation of water in this area due to raised ground to the north (Neston Gardens). Similar to site 626, it should also be noted that there is a large surface water sewer to the west of the site which carries urban runoff in a northerly direction that is not explicitly accounted for within the EA surface water model. Further investigation of the risk of surface water flooding is therefore warranted as part of a FRA. The topography of the site is such that development should be possible in flood risk terms on at least part of the site, provided that the areas of greatest surface water flood risk are avoided by taking a sequential approach to site layout. Early liaison with Severn Trent Water is recommended to improve understanding of the local pipe network.
- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current

guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.

- Opportunities: There may be opportunities to reduce downstream flood risk by creating a corridor of blue-green infrastructure along the eastern boundary, if further analysis conducted in a FRA confirms the potential for surface water flows.



Site number: 627

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



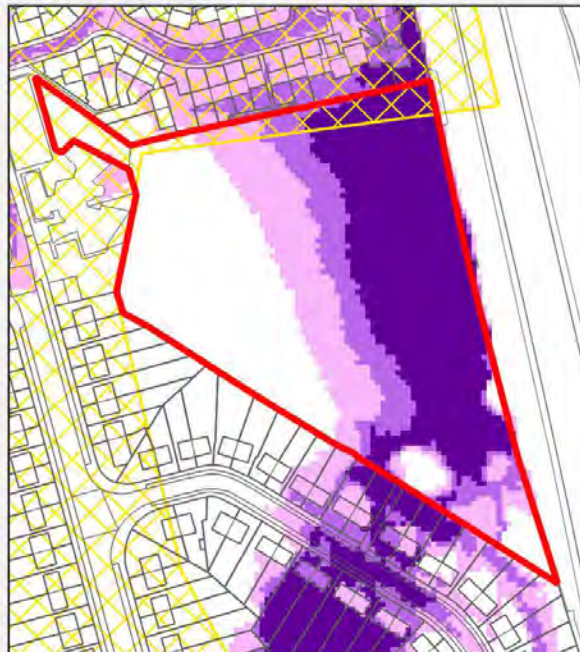
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 100 annual chance +30% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 629: Netherhall Road open space

Current land use: Greenfield

Site area (ha): 7.06

Location: Humberstone and Hamilton (North-East)

Proposed land use: Housing (50%), green space (50%)

Exception test required: Yes

Critical drainage area: Yes

Surface water hotspot: No

### **Flood risk summary**

The site is crossed by the Scraftoft Brook, a designated Main River. The available hydraulic model suggests that flood flows remain in-bank.

Exception Test Part A (sustainability): PASS (refer to Exception Testing text)

Exception Test Part B (flood risk): LIKELY PASS

Exception Testing is required by virtue of the watercourse crossing the site which therefore includes the 1 in 20 annual chance flood extent, though Environment Agency model data suggests flow remains in the channel. From a flood risk perspective the evidence suggests that there should be sufficient land available at low risk of flooding to meet the desired development ratio of 50% housing to 50% green space.

### **Development Guidance**

The site is currently greenfield. If redeveloping for housing, the following will need to be considered in the design and preparation of a FRA:

- **Watercourse buffer & opportunities:** The Scraftoft brook runs in an engineered channel through the middle of the site. As a minimum, an 8m buffer free of development (measured from top of bank) is likely to be required by the Environment Agency. However, in view of the proposal to retain 50% of the site as green space, from a water management perspective there may be a notable opportunity to re-naturalise the channel and create a corridor of blue-green infrastructure that would offer ecological and amenity value as well as potentially reducing flood risk downstream. In addition, records indicate that there is a large surface water sewer culvert entering the north east boundary of the site by Netherhall Road and outfalling into the Scraftoft Brook, following approximately the same route as the area of potential surface water flood risk (overland flow) identified on the Risk of Flooding from Surface Water maps. There may be an opportunity to reinstate a natural channel, again within the open space provision, and development will need to avoid

damaging the sewer. This should be checked with Leicester City Council and Severn Trent Water Ltd.

- Sequential approach to site layout and protection of property: In addition to fluvial risk, consideration should be given to the potential surface water flow route which runs from Netherhall Road towards the Scraftoft Brook. The risk of property flooding could be reduced by taking a sequential approach to site layout, placing less vulnerable land uses (i.e. green space) in any area of surface water flood risk identified within the FRA. Reinstatement of an open channel with adjacent blue-green corridor may help to reduce the risk. In respect of fluvial flood risk, although the flood mapping indicates that flood flows remain in-bank, it would be a sensible precaution to ensure that the floor levels of new dwellings are raised above the 1 in 100 annual chance flood level (including climate change and freeboard). Mapping indicates the potential for flooding of the adjacent highway network in extreme events. It may therefore be prudent to raise finished floor levels by at least 150mm above adjacent highway levels and to ensure safe routing of exceedence flows through the site.
- Sustainable Drainage: The site lies within a critical drainage area identified within the SWMP. Runoff rates should be limited to greenfield rates using sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible habitat creation. It may be possible to integrate the SuDS into a blue-green infrastructure corridor alongside the brook.



Site number: 629

Site context



- Site Boundary
- Ordinary Watercourses
- Main Rivers
- 8m buffer (approx)

Flood Zones



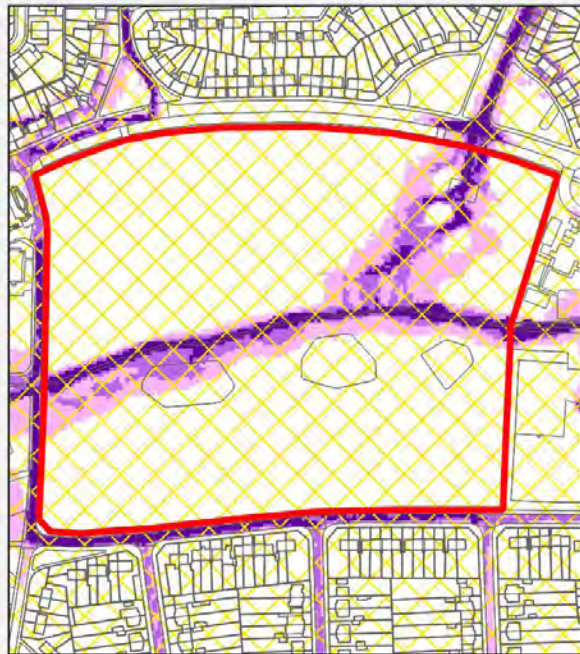
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 1000 annual chance +30% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 631: Newlyn Parade/ Crayford Way

Current land use: Greenfield

Site area (ha): 0.72

Location: Humberstone/ Hamilton

Proposed land use: Housing (50%), green space (50%)

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

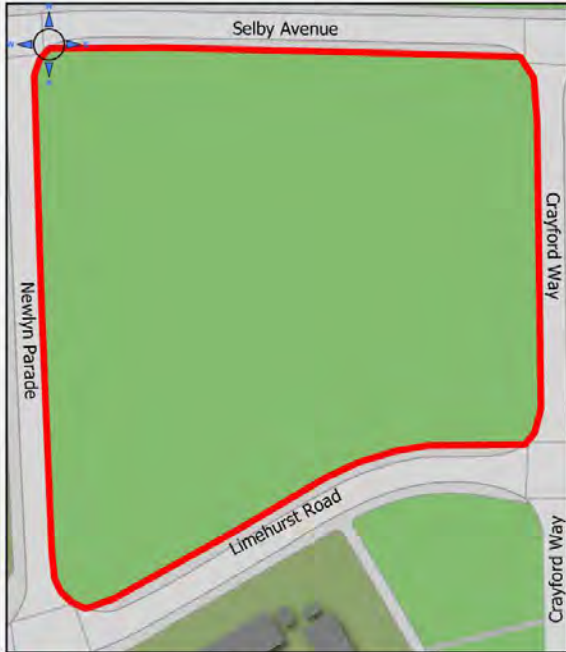
### **Development Guidance**

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.
- Surface Water Flood Risk: Mapping indicates the potential for flooding of the adjacent highway network in extreme events to the east of the site. It may therefore be prudent to raise finished floor levels adjacent to the highway by at least 150mm above kerb level to provide protection against surface water flow/ exceedence of the highway drainage network.



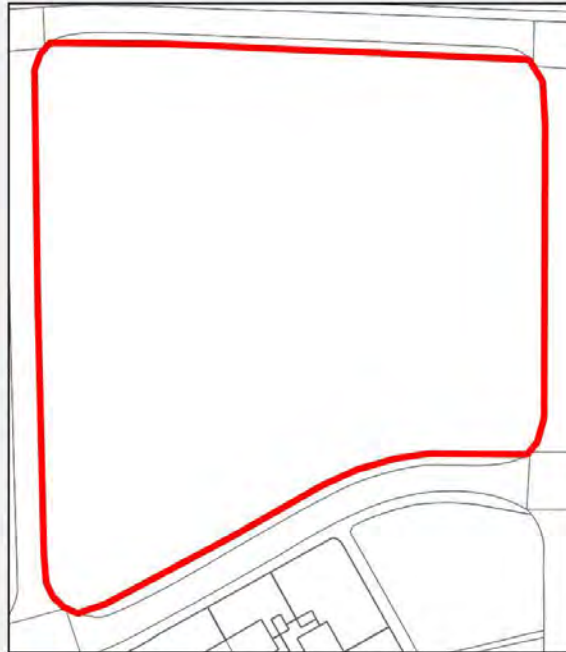
Site number: 631

Site context



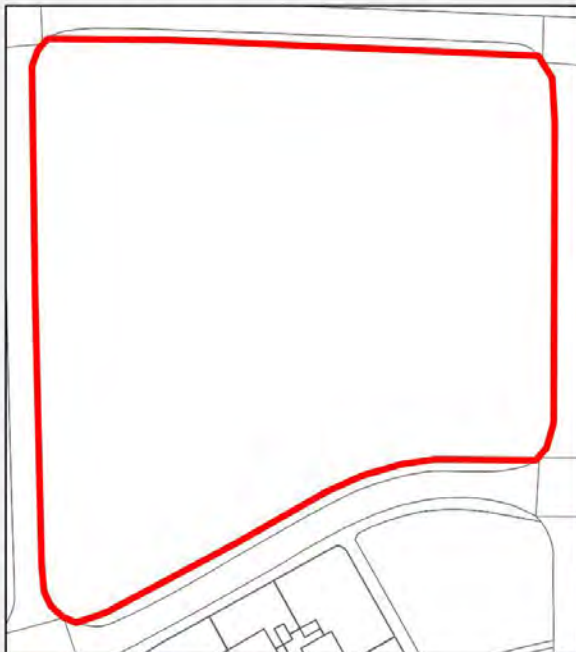
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



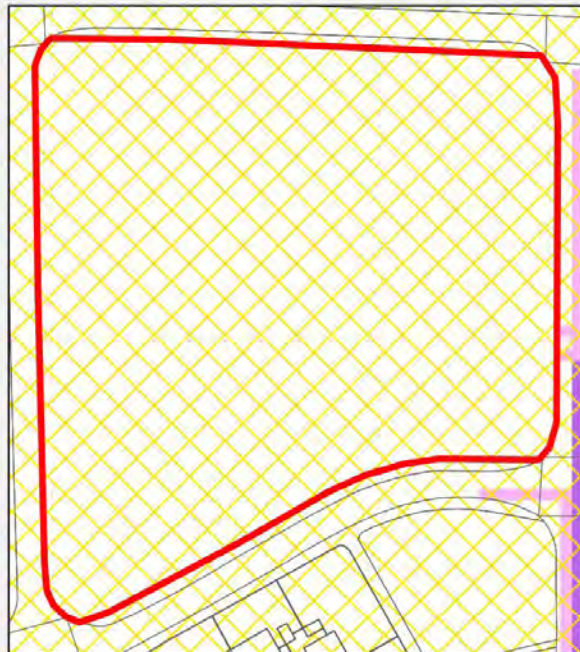
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas



## Site 646: Rancliffe Gardens

Current land use: Greenfield

Site area (ha): 1.8

Location: Braunstone/ Rowley Fields

Proposed land use: Housing

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate an area of ponding within the site.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

The site is currently greenfield. If redeveloping for housing, the following will need to be considered in the design and preparation of a FRA:

- Surface water flood risk: The Risk of Flooding from Surface Water maps indicate an area of accumulation in the northern part of the site at a topographic depression. Ordnance Survey records indicate a small pond in this location. The source and mechanism of flooding should be investigated and enquiries should be made with Severn Trent Water because records indicate a relatively large surface water sewer running along the north east boundary of the site, which is not explicitly accounted for in the Risk of Flooding from Surface Water maps. A sequential approach to site layout should be taken, placing less vulnerable land uses (e.g. green space) in areas which are identified within a FRA as being at risk of surface water flooding. There are records of flooding downstream of the site near to the Braunstone Brook, so there may also be opportunities to reduce flood risk by storing water within green spaces. Mapping indicates the potential for flooding of the adjacent highway network in extreme events to the south west of the site. It may therefore be prudent to raise finished floor levels adjacent to the highway by at least 150mm above kerb level to provide protection against surface water flow/ exceedence of the highway drainage network.
- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current

guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.

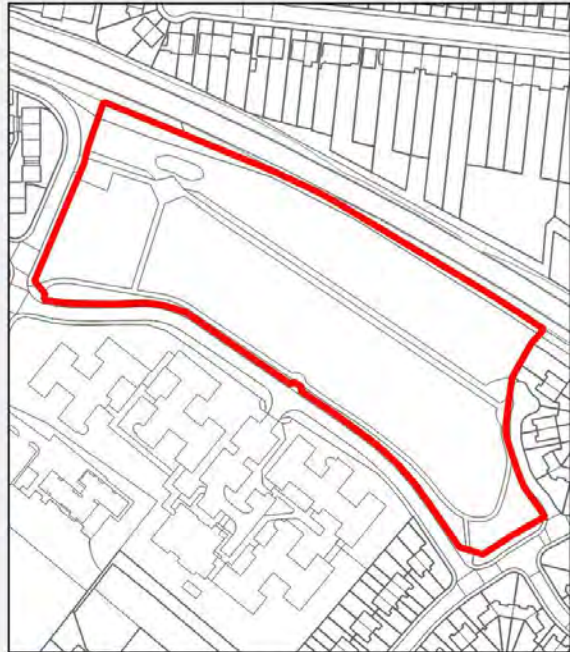
Site number: 646

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



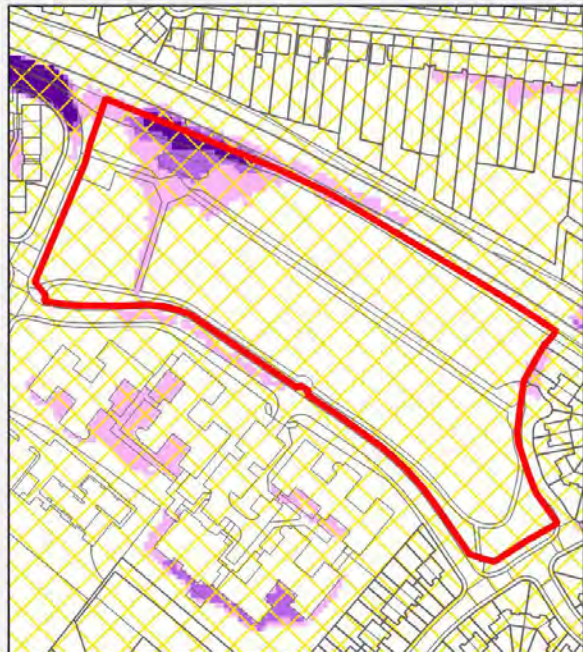
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 100 annual chance +30% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas



## Site 647: Ranworth open space

Current land use: Greenfield

Site area (ha): 1.23

Location: Abbey Ward

Proposed land use: Housing

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: Yes (part)

### **Flood risk summary**

The site lies within Flood Zone 1.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

Ranworth open space is a greenfield site located in a critical drainage area and partly within a surface water flooding hotspot identified within the SWMP. The hotspot area is defined by clusters of properties which are potentially at risk of surface water flooding in the local area, rather than a probability of the land itself flooding. A planning application to develop the site should be accompanied by an FRA which focuses on the following:

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.

Site number: 647

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



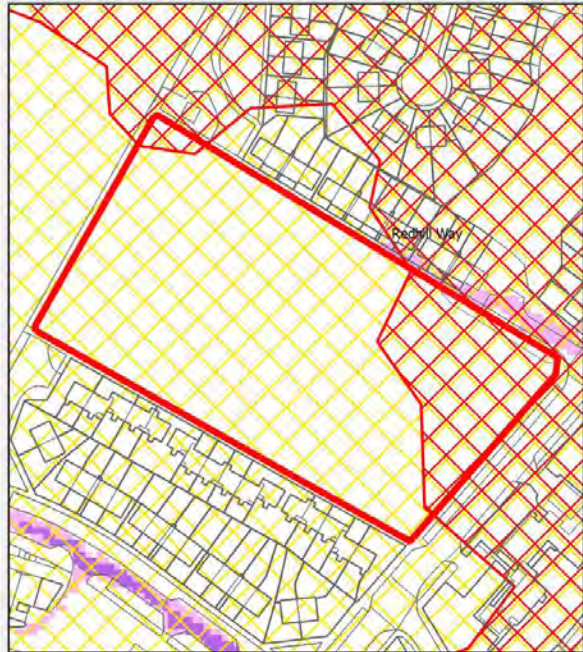
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 100 annual chance +30% flow

Surface water flood risk



- 1 in 30 annual chance
- Surface water hotspots
- 1 in 100 annual chance
- Critical drainage areas
- 1 in 1000 annual chance

## Site 648: Rayleigh Green

Current land use: Greenfield

Site area (ha): 0.64

Location: Humberstone/ Hamilton

Proposed land use: Housing

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

Rayleigh Green is a greenfield site located in a critical drainage area identified within the SWMP. A planning application to develop the site should be accompanied by an FRA which focuses on the following:

- **Sustainable Drainage:** Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement.
- **Surface Water Flood Risk:** Mapping indicates the potential for flooding of the adjacent highway network in extreme events to the east and west of the site. It may therefore be prudent to raise finished floor levels adjacent to the highway by at least 150mm above kerb level to provide protection against surface water flow/exceedence of the highway drainage network.



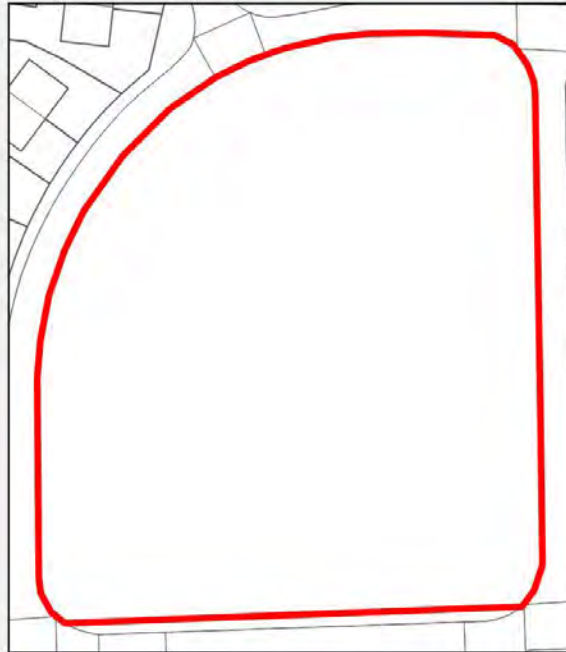
Site number: 648

Site context



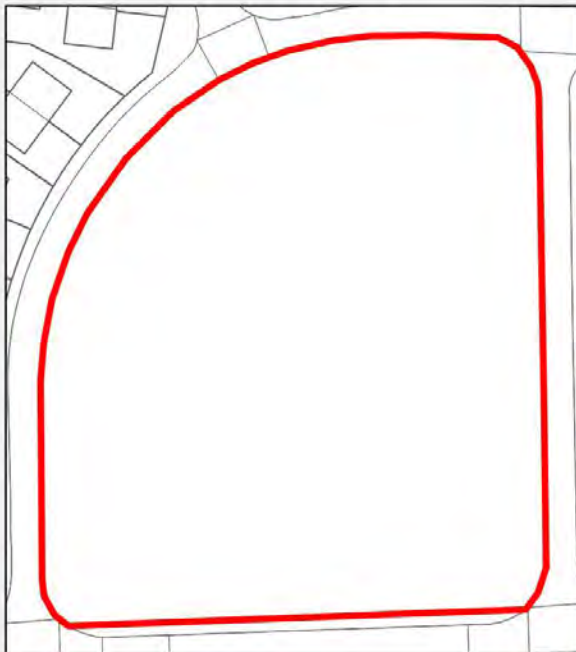
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



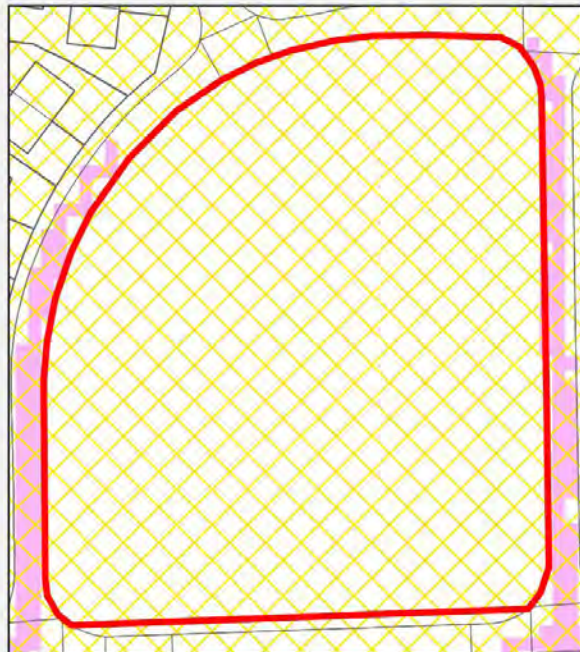
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 653: Rowlatts Hill School playing fields

Current land use: Greenfield

Site area (ha): 0.48

Location: Evington

Proposed land use: Housing

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

This is a greenfield site located in Flood Zone 1. A planning application to develop the site should be accompanied by an FRA which focuses on the following:

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.
- Surface Water Flood Risk: Mapping indicates the potential for flooding of the adjacent highway network in extreme events outside the north-west corner of the site. It may therefore be prudent to raise finished floor levels adjacent to the highway by at least 150mm above kerb level to provide protection against surface water flow/exceedence of the highway drainage network.

Site number: 653

Site context



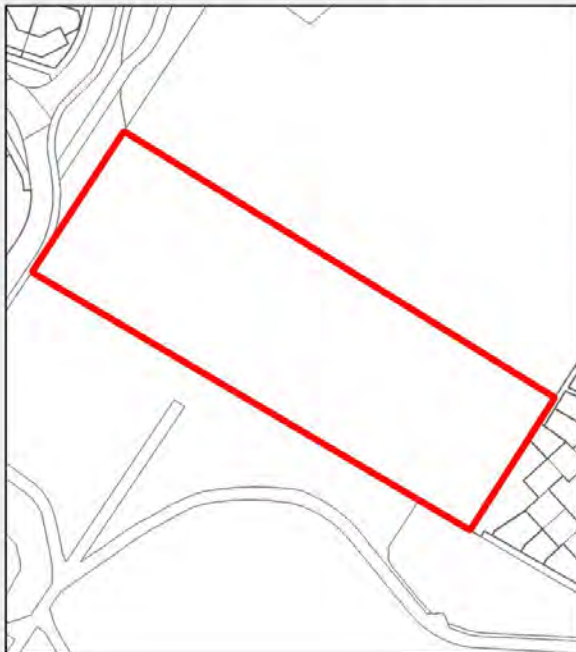
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 100 annual chance +30% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas



## Site 663: Sedgebrook Road open space

Current land use: Greenfield

Site area (ha): 1.08

Location: Evington

Proposed land use: Housing

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1, though the Bushby Brook runs along the north east perimeter.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

The site is currently greenfield. The Risk of Flooding from Surface Water maps show a potential for surface water flooding outside the site boundary on Sedgebrook Road and Downing Drive but the flood hazard is indicated to be generally low. The area of surface water flooding in the north east corner of the site is following the river valley, where the fluvial flood maps are likely to be more reliable due to the inclusion of channel geometry in the fluvial hydraulic model. If redeveloping the site for housing, the following will need to be considered in the design and preparation of a FRA:

- **Watercourse buffer:** The Bushby Brook flows along the north east boundary of the site. An 8m buffer free of development (measured from top of bank) is likely to be required by the Environment Agency.
- **Sustainable Drainage:** rates should be limited to greenfield rates using sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible habitat creation. It may be possible to integrate the SuDS into a blue-green infrastructure corridor alongside the brook.
- **Protection of property:** Property threshold levels along the western and south eastern boundaries should be set at least 150mm above the adjacent kerb level in order to protect against surface water flood risk, unless a FRA demonstrates a reduced risk of flooding through more detailed local analysis. All floor levels should be set above the

1 in 100 annual chance flood level of the Bushby Brook (including climate change and freeboard).

Site number: 663

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



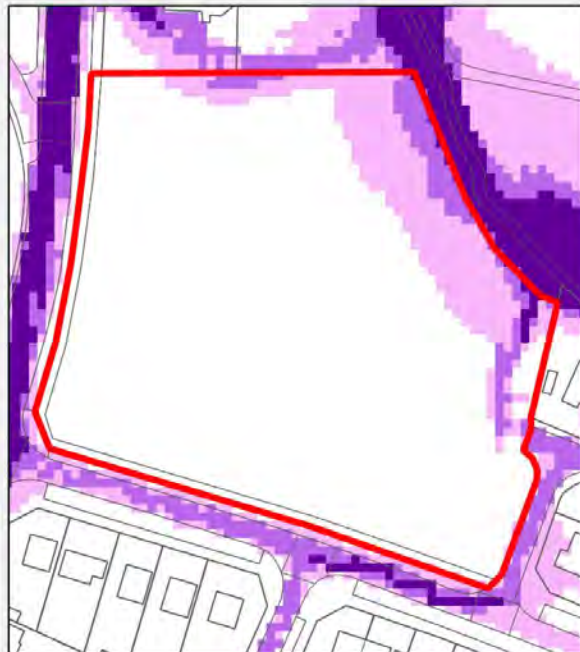
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 100 annual chance +30% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas



## Site 665: Sharmon Crescent open space

Current land use: Greenfield

Site area (ha): 0.66

Location: Western

Proposed land use: Housing

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate a potential for nearby highway flooding in extreme events but the flood hazard is indicated to be low.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

This is a greenfield site. If redeveloping the site for housing, the following will need to be considered in the design and preparation of a FRA:

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement.
- Surface Water Flood Risk: Mapping indicates the potential for flooding of the adjacent highway network in extreme events. It may therefore be prudent to raise finished floor levels adjacent to the highway by at least 150mm above kerb level to provide protection against surface water flow/ exceedence of the highway drainage network.

Site number: 665

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



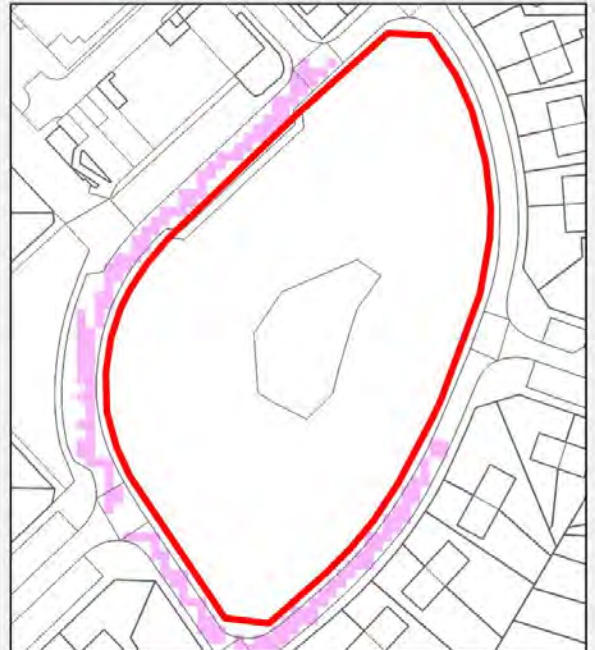
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 1000 annual chance
- 1 in 100 annual chance +30% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 669: Spendlow Gardens

Current land use: Greenfield

Site area (ha): 0.61

Location: Eyres Monsell

Proposed land use: Housing (0.3ha) green space (0.31ha)

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate a potential for highway flooding on nearby roads though the flood hazard is identified as generally low.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

This is a greenfield site within a critical drainage area identified within the SWMP.

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement.
- Surface Water Flood Risk: Mapping indicates the potential for flooding of the adjacent highway network in extreme events to the north and west of the site. It may therefore be prudent to raise finished floor levels adjacent to the highway by at least 150mm above kerb level to provide protection against surface water flow/exceedence of the highway drainage network.



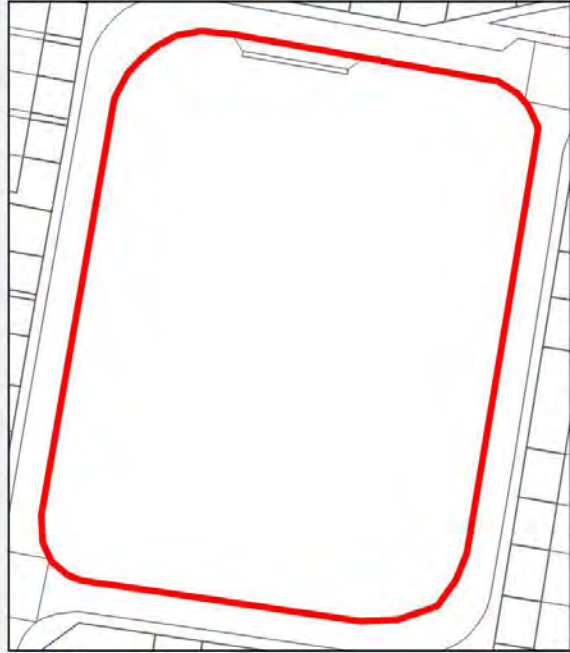
Site number: 669

Site context



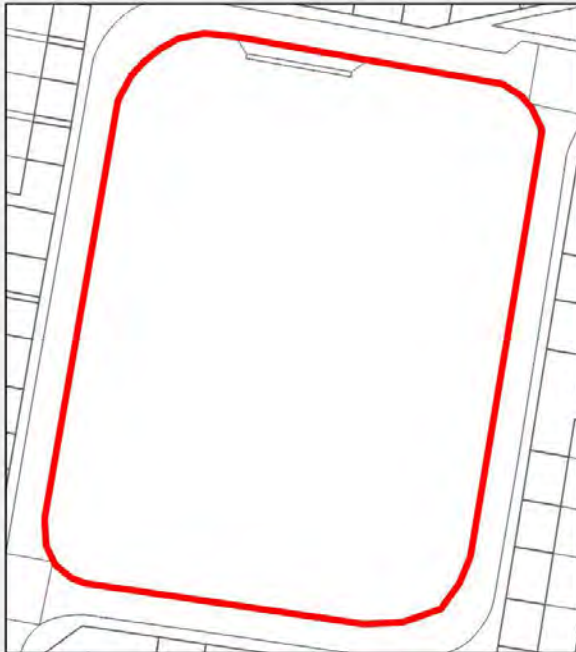
- Site Boundary
- 8m buffer (approx)
- Ordinary Watercourses
- Main Rivers

Flood Zones



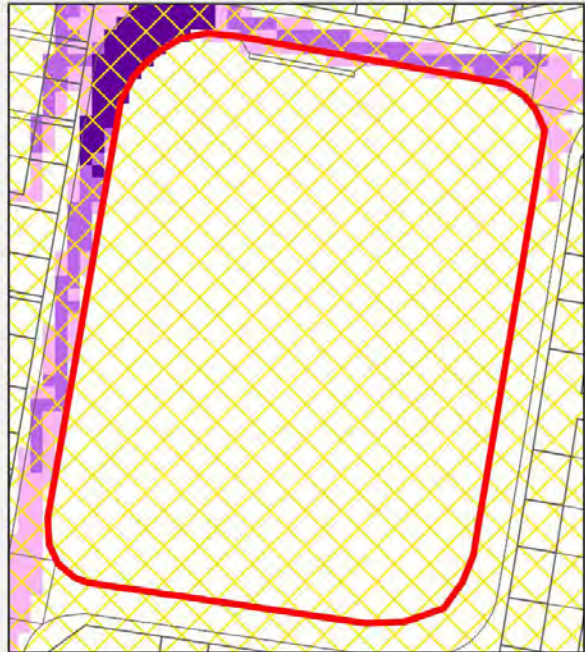
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 1000 annual chance
- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance

Surface water flood risk



- Surface water hotspots
- Critical drainage areas

## Site 673: Land to North of St Augustine Road

Current land use: Commercial

Site area (ha): 4.98

Location: Fosse

Proposed land use: Education

Exception test required: Yes

Critical drainage area: Yes

Surface water hotspot: Yes (part)

### **Flood risk summary**

The site lies partly within the floodplain of the River Soar and Braunstone Brook. Environment Agency flood models suggest that the site is protected up to the 1% AEP event, but may be at risk due to climate change.

Exception Test Part A (sustainability): PASS (refer to Exception Testing text)

Exception Test Part B (flood risk): LIKELY PASS

On the basis that a recent planning application has shown that flood risk issues can be addressed to the satisfaction of the Risk Management Authorities. This may not apply to alternative schemes if future proposals to develop the site differ substantially.

### **Development Guidance**

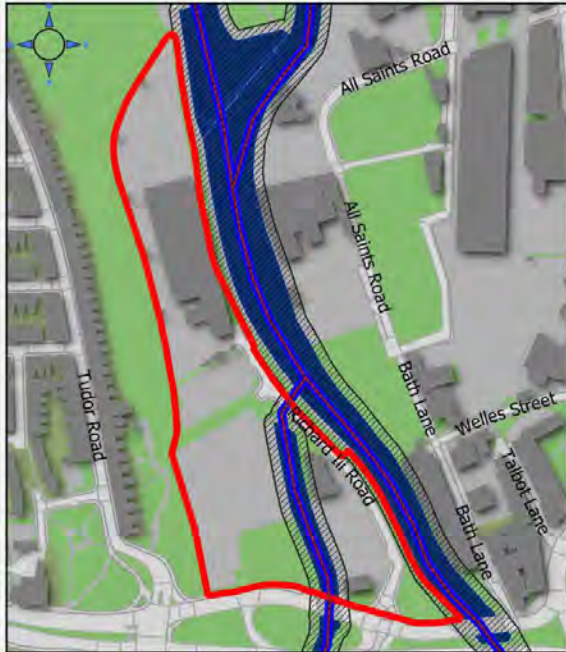
The site has recently been the subject of a planning application for a new school with an accompanying Flood Risk Assessment. The Environment Agency has indicated no objection to the proposal in flood risk terms provided that conditions are attached to planning approval. The key issues are:

- Flood storage: A scheme for the provision of compensatory flood storage is required.
- Flood plan: A flood plan is required to address flood risk in extreme events.
- Floor Levels: Floor levels must be raised to protect property against the risks of flooding.
- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.



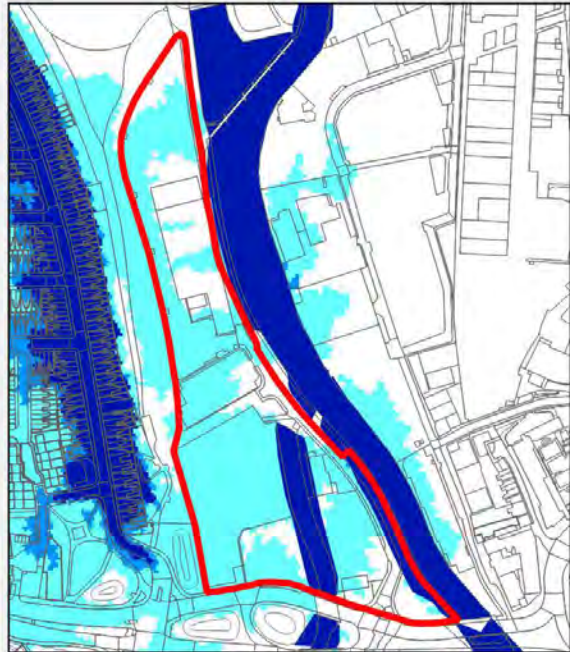
Site number: 673

Site context



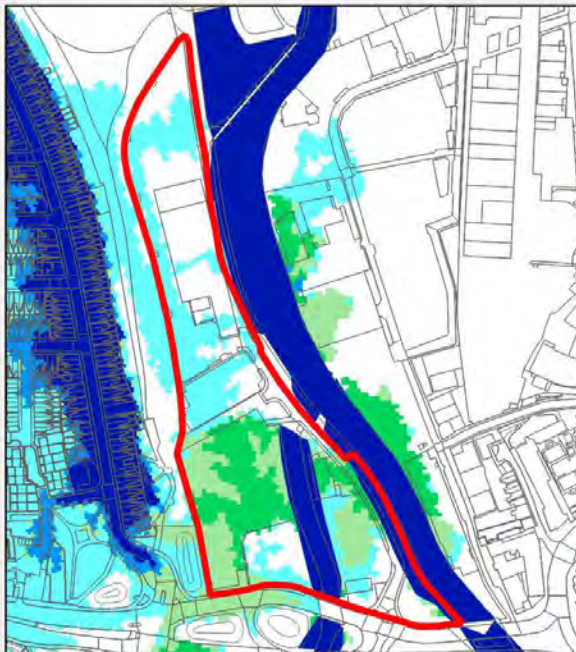
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



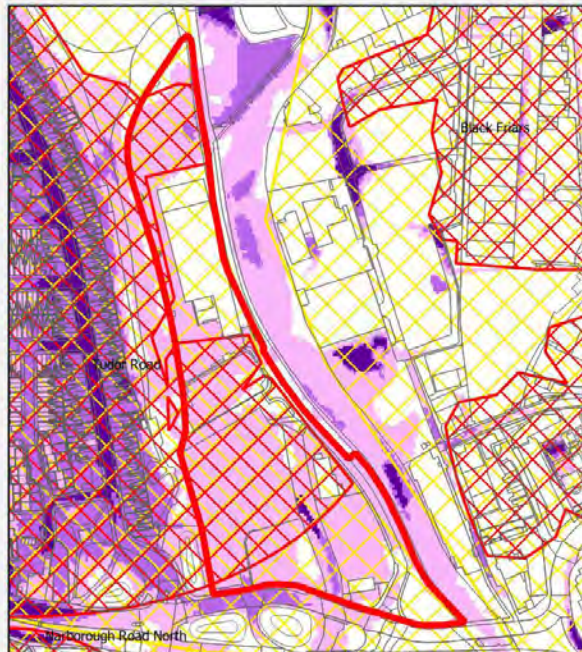
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas



## Site 675: St Helens Close open space

Current land use: Greenfield

Site area (ha): 1.07

Location: Abbey Ward

Proposed land use: Housing

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: Yes (part)

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate a minor area of surface water flood risk in extreme events, though the depth and hazard is low.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site. The site lies partly within the 'Alderman Richard Hallam' surface water flooding hotspot, though this was defined prior to the release of the Risk of Flooding from Surface Water maps.

Site number: 675

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



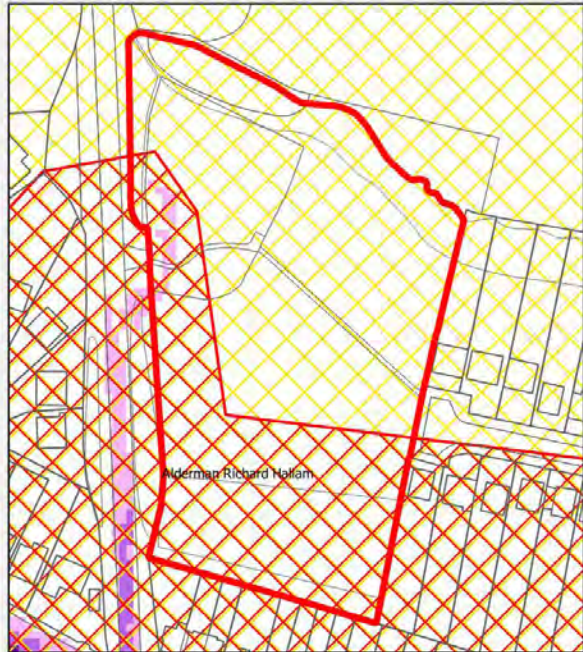
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 684: Land adjacent to Evington Leisure Centre

Current land use: Greenfield (school grounds)

Site area (ha): 0.5

Location: Evington

Proposed land use: Housing

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate a potential for shallow surface water flooding on Downing Drive in the 1 in 1000 annual chance event, though the hazard rating is low.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.
- Surface Water Flood Risk: Mapping indicates the potential for flooding of the adjacent highway network in extreme events to the south of the site. It may therefore be prudent to raise finished floor levels adjacent to the highway by at least 150mm above kerb level to provide protection against surface water flow/ exceedence of the highway drainage network. Modelling also suggests localised flow accumulation in the north east corner of the site, though this is likely due to the presence of adjacent buildings. Nevertheless, it may be prudent to raise floor levels in this part of the site by at least 150mm above surrounding ground level to provide some protection against extreme events.



Site number: 684

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



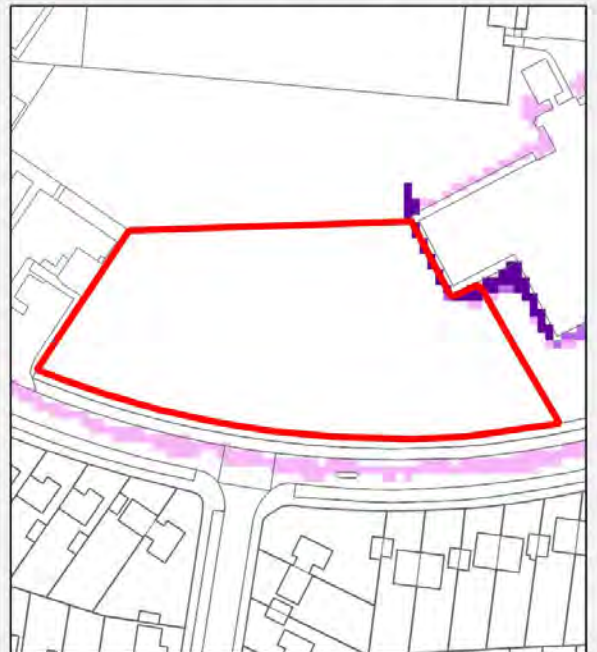
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 687: Thurcaston Road/ Hadrian Road open space

Current land use: Greenfield

Site area (ha): 2.7

Location: Abbey Ward

Proposed land use: Employment (B1, B2 & B8 uses)

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate minor areas of ponding within the site and a potential flow route in the south-west corner of the site during extreme events.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

The site is currently greenfield. If redeveloping for housing, the following will need to be considered in the design of the site and the accompanying FRA:

- Surface water flood risk: The Risk of Flooding from Surface Water maps indicate a potential flood flow route across the south-west corner of the site, which should be investigated further. Most of the runoff appears to be sourced from the adjacent industrial development, which records suggest may be served by a large sewer that carries runoff away from the site along Hoods Close and Beaumont Leys Lane. The source and mechanism of flooding should be investigated and enquiries should be made with Severn Trent Water. If a potential risk of surface water flooding is confirmed within the FRA, a sequential approach should be taken to site layout, placing less vulnerable land uses (e.g. green space) in areas which are identified as being at risk.
- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.

Site number: 687

Site context



- Site Boundary
- Ordinary Watercourses
- Main Rivers
- 8m buffer (approx)

Flood Zones



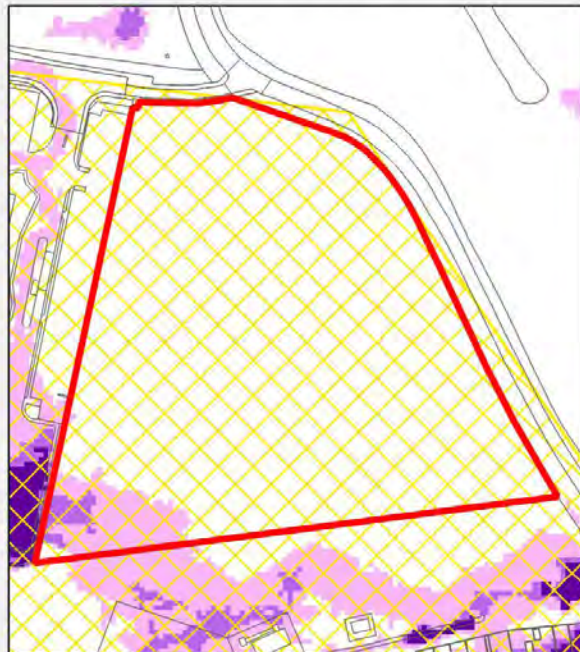
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 100 annual chance +30% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas



## Site 702: Western Golf Course

Current land use: Greenfield (golf course)

Site area (ha): 52.1

Location: Western

Proposed land use: Mixed use

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate minor areas of ponding within the site and potential flow routes towards the Kirby Muxloe Brook/ Rothley Brook.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

The site is currently greenfield. If redeveloping for housing, the following will need to be considered in the design and preparation of a FRA:

- Sequential approach to site layout: The extent of surface water flooding should be further investigated during planning of the site. The flow routes identified within the Risk of Flooding from Surface Water maps do not appear to correlate to the presence of well-defined local watercourses but do correlate with valleys in LIDAR data. There may be opportunities to align blue-green infrastructure corridors including SuDS along these potential surface water flow routes. More vulnerable development should avoid those areas identified as being at risk of surface water flooding.
- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. In view of the large site area, a comprehensive treatment train may be required, incorporating local methods within individual parcels of development and regional scale features (e.g. wetlands) to store and treat runoff in larger quantities.

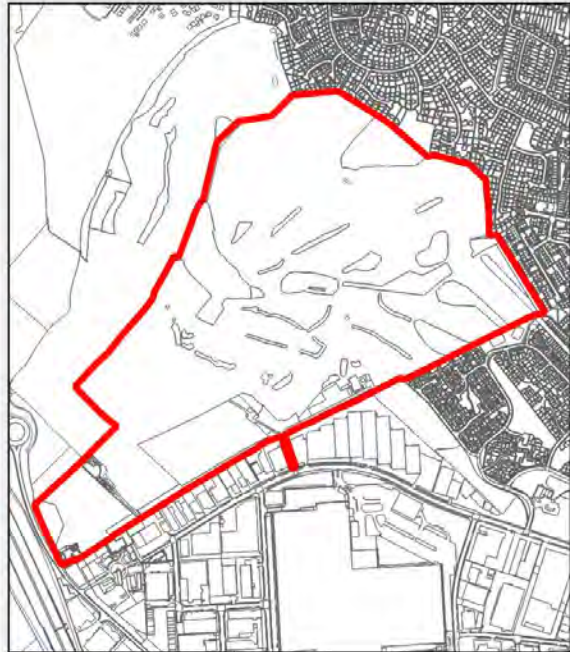
Site number: 702

Site context



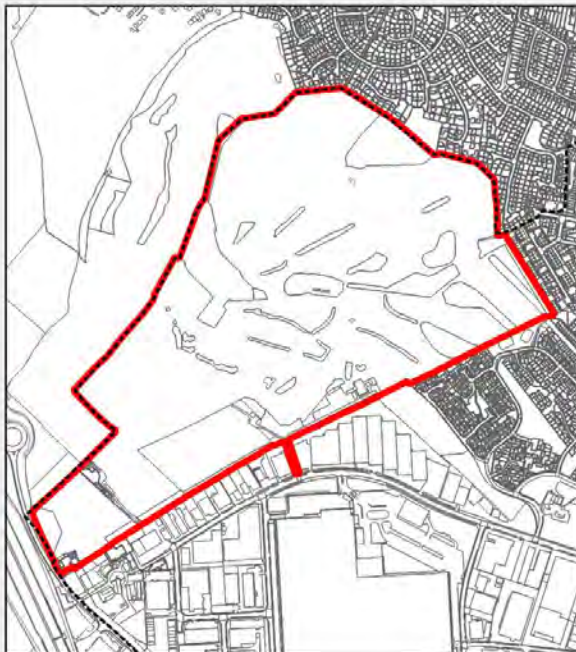
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



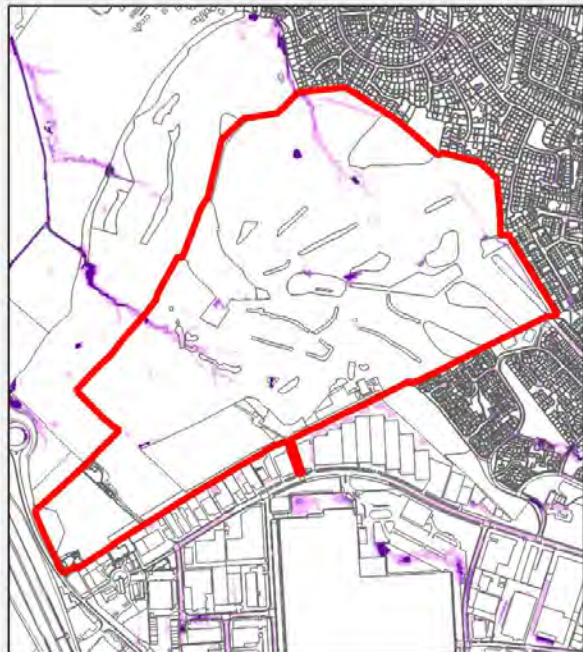
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 715: Land north of Gartree Road

Current land use: Greenfield

Site area (ha): 2.36

Location: Evington

Proposed land use: Housing (1.2ha)

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate a potential flow route across the site.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

- Surface Water Flood Risk and sequential approach to development: The site is bisected by a potential surface water flow route towards the Evington Brook which lies to the north of the site. Hazard rating in the 1 in 100 annual chance event is indicated to be low on the Risk of Flooding from Surface Water maps, but the risk of surface water flooding should be investigated as part of the FRA accompanying a development proposal. A sequential approach to development should be taken, avoiding more vulnerable land uses within any part of the site confirmed as being at risk of flooding within the FRA. Such land may be a suitable location for uses such as blue-green infrastructure (i.e. SuDS features).
- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement.



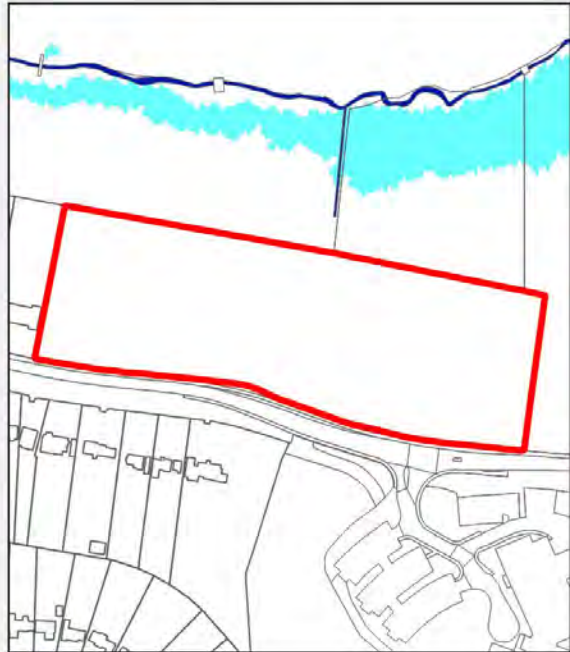
Site number: 715

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



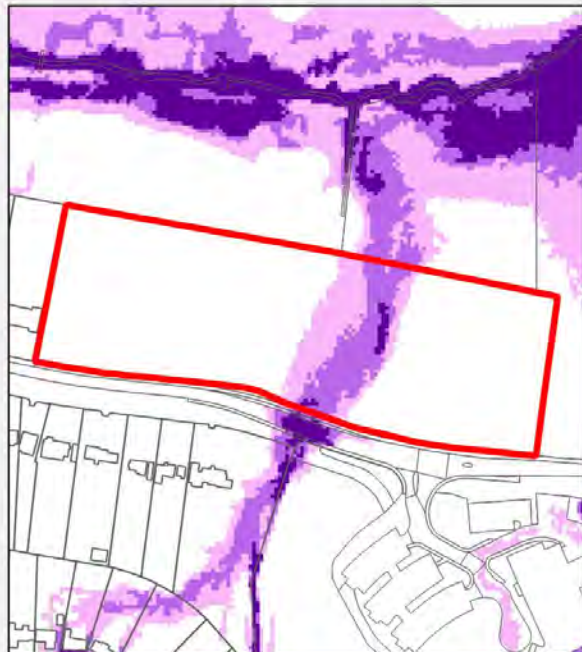
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 1000 annual chance
- 1 in 100 annual chance +50% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 718: The Paddock, Glenfield Hospital

Current land use: Greenfield

Site area (ha): 4.5

Location: Beaumont Leys

Proposed land use: Housing

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate a minor accumulation of runoff along the northern boundary of the site in extreme events.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

The site is currently greenfield. If redeveloping for housing, the following will need to be considered in the design and preparation of a FRA:

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.
- Existing open watercourses: Existing surface water features around the boundary of the site should be preserved. New development should ensure that adequate space is given to accommodate any existing surface water flood risk along the northern boundary, which should be investigated as part of a flood risk assessment.
- Surface Water Flood Risk: Mapping indicates the potential for minor flooding along the northern boundary of the site. It may therefore be prudent to raise finished floor levels by at least 150mm to provide protection against surface water flow/exceedence of the highway drainage network.



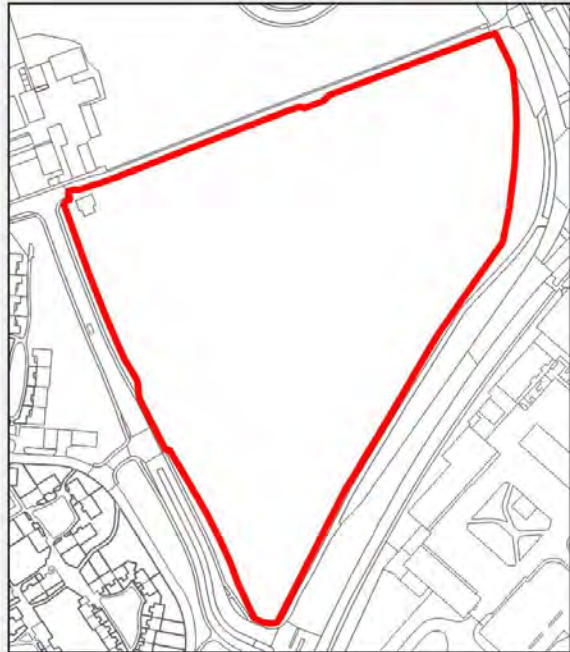
Site number: 718

Site context



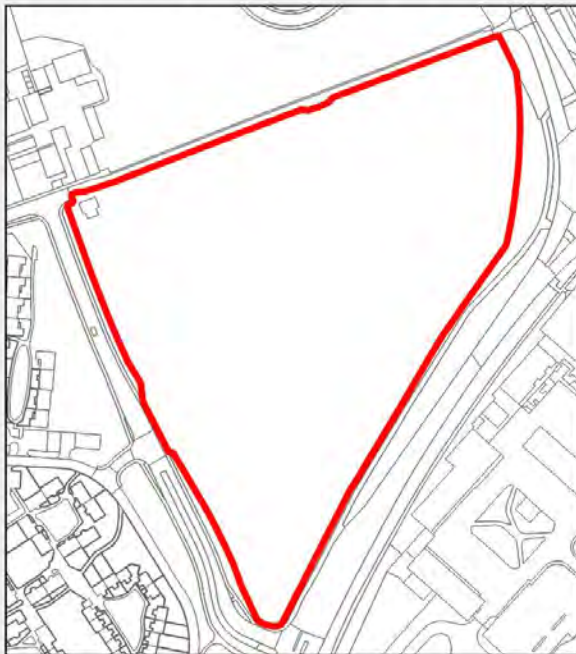
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



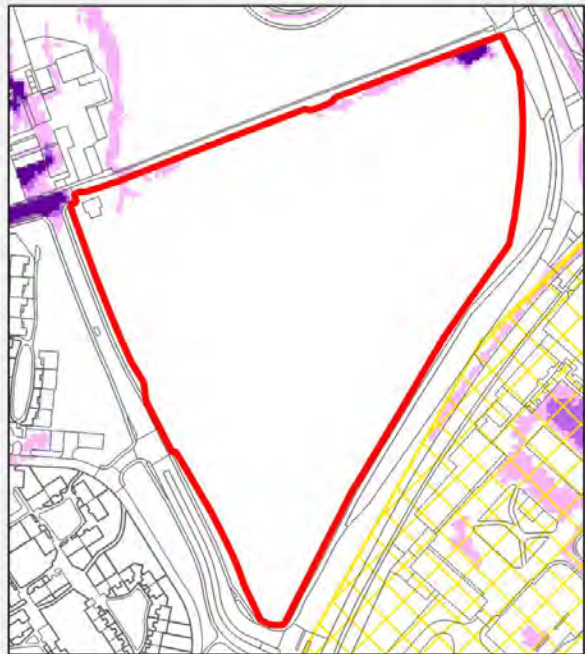
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 1000 annual chance
- 1 in 30 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas



## Site 956: Site of 11 Old Barn Walk

Current land use: Previously developed vacant site

Site area (ha): 0.05

Location: Beaumont Leys

Proposed land use: Retail/ community/ mixed use development

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate an area of flooding in a 1 in 1000 annual chance event, though the depth is shallow and the flood hazard is indicated to be generally low.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

This is a brownfield site. If redeveloping for housing, the following will need to be considered in the design and preparation of a FRA:

- **Sustainable Drainage:** The site lies within a critical drainage area. Runoff rates should be reduced towards greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.
- **Surface Water Flood Risk:** Surface water flood risk should be investigated as part of a FRA since the Risk of Flooding from Surface Water maps indicate the potential for part of the site to be affected by extreme events, though the risk is not shown to be particularly high. Appropriate mitigation should be in place for new development (e.g. property threshold set at least 150mm above adjacent road level if practical).

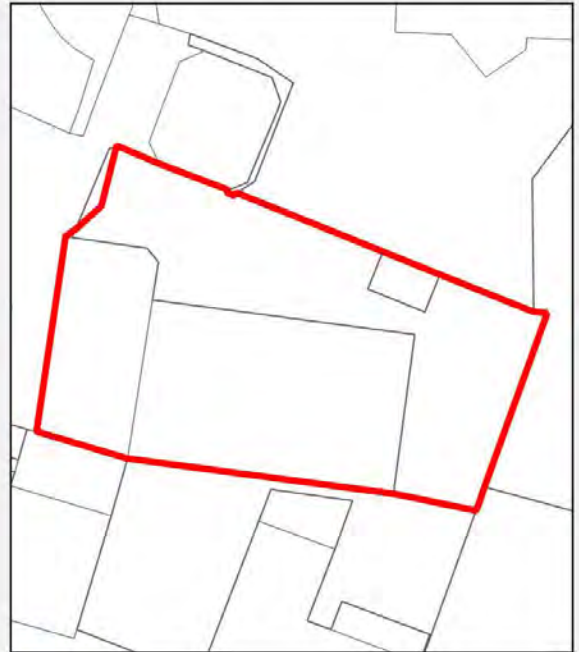
Site number: 956

Site context



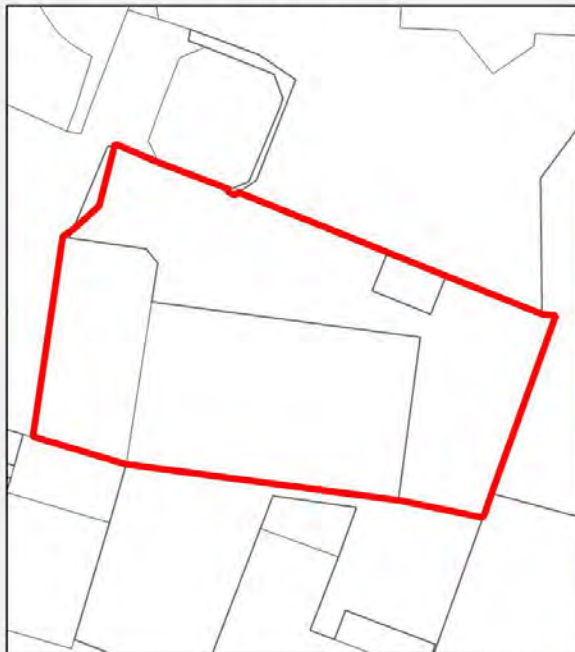
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



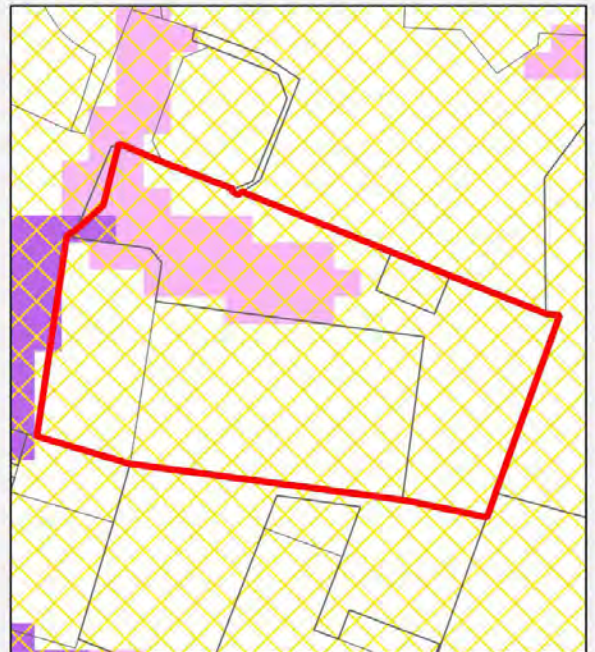
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 1000 annual chance
- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 960: Land West of Bede Island Road (Braunstone Gate)

Current land use: Previously developed vacant site

Site area (ha): 0.85

Location: Westcotes

Proposed land use: Housing (<20%) green space (>80%)

Exception test required: Yes

Critical drainage area: Yes (part)

Surface water hotspot: No

### **Flood risk summary**

The site lies encompasses the River Soar and may be at increased risk of flooding due to climate change. Risk of Flooding from Surface Water maps indicate flooding but this is an accumulation of water in the river channel which is the primary source of flood risk.

Exception Test Part A (sustainability): PASS (refer to Exception Testing text)

Exception Test Part B (flood risk): LIKELY PASS (for limited development)

It is likely that a residential development could be progressed in flood risk terms on parts of the site which are at lower risk of flooding, because the available flood risk data suggests that there is suitable access in flood conditions. However, compensatory floodplain storage would need to be provided for any encroachment into the 1 in 100 +30% flood extent, so the extent of development which can pass the Exception Test (i.e. without increasing flood risk elsewhere) will be limited. In addition, a buffer free of development is likely to be required adjacent to the river channel.

### **Development Guidance**

The site spans the River Soar and is a mixture of previously developed land to the north east of the river and public open space to the east of the river. If redeveloping for housing, the following will need to be considered in the design and preparation of a FRA:

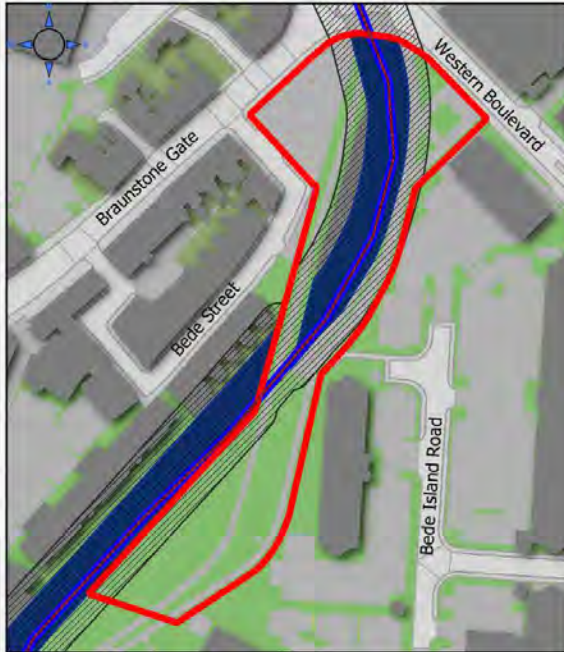
- Watercourse buffer: It is likely that the Environment Agency will require a buffer free of development to be left adjacent to the River Soar to facilitate maintenance access. This is normally a minimum of 8 metres in width measured from top of bank, though there may be scope for adjustment where existing buildings are being removed or converted that are already within 8 metres of the channel, if betterment can be demonstrated.
- Safe access: Flood risk mapping data indicates that safe access should be available to those parts of the site which lie away from the river channel. This will need to be confirmed in a FRA.



- Protection of property: Floor levels should be set above the 1 in 100 central climate change flood level with freeboard, and ideally above the 1 in 1000 annual chance flood level.

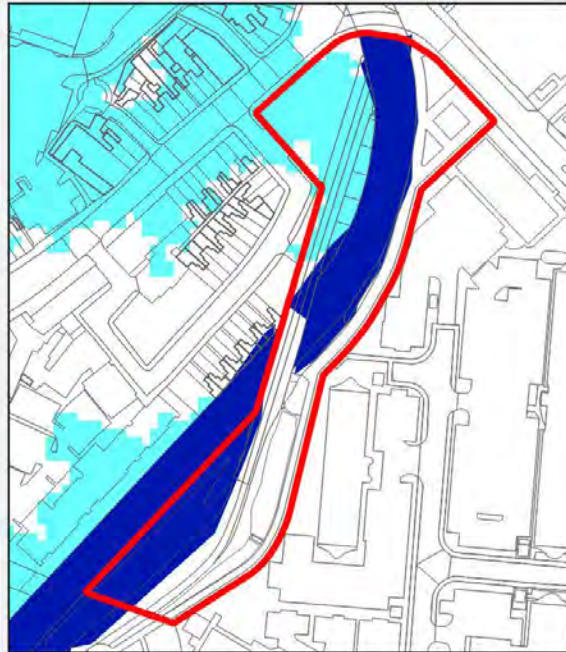
Site number: 960

Site context



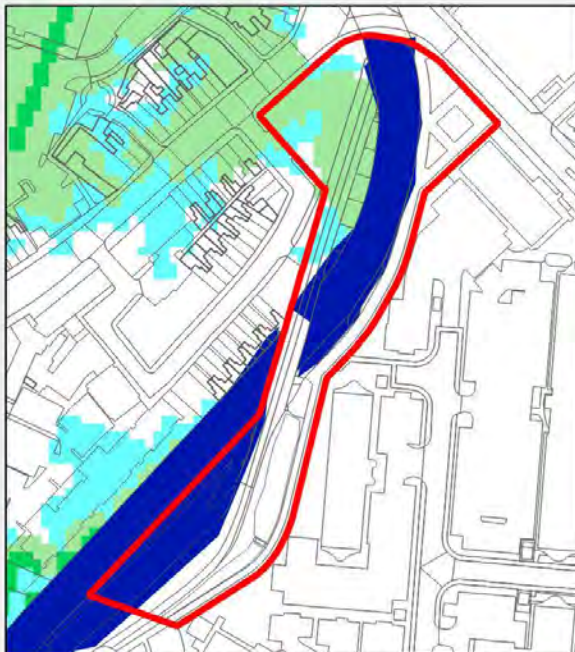
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



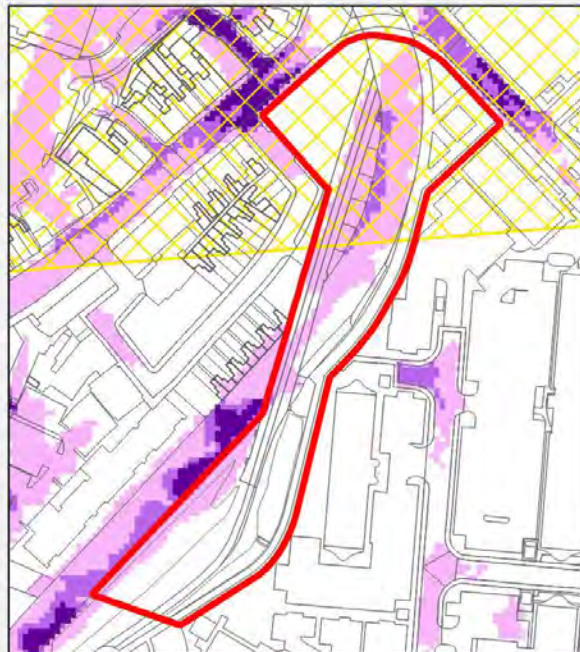
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 961: Welford Road playing fields

Current land use: Greenfield

Site area (ha): 3.8

Location: Knighton

Proposed land use: Housing (0.5ha fronting Welford Road)

Exception test required: Yes

Critical drainage area: Yes (part)

Surface water hotspot: No

### **Flood risk summary**

The site lies partly within the floodplain of the Saffron Brook. The Saffron Brook is a designated Main River which flows adjacent to the eastern boundary of the site. The Risk of Flooding from Surface Water maps also show a potential for flooding.

Exception Test Part A (sustainability): PASS (refer to Exception Testing text)

Exception Test Part B (flood risk): LIKELY PASS

Exception test triggered by site boundary extending just into flood storage area overspill.

Likely pass if development is limited to land falling in flood zones 1 and 2 with appropriate mitigation in place.

### **Development Guidance**

This is a greenfield site which lies adjacent to Knighton Park Washlands, a series of flood storage basins which reduce downstream flood risk from the Saffron Brook. The site is set higher than the washlands, but the Environment Agency flood modelling suggests a potential flow route across the site in the 1 in 1000 annual chance flood event. If redeveloping for housing, the following will need to be considered in the design and preparation of a FRA:

- Sequential approach to site layout: Consideration should be given to the potential impact of nearby flood defence failure when designing the site. Areas which could be exposed to high hazard rating should be avoided.
- Protection of property: The finished floor level/ plot level of dwellings should be raised above the 1 in 100 central climate change scenario (measured in the upstream flood storage area) with freeboard, and preferably above the 1 in 1000 annual chance flood level given the proximity of the storage area. More detailed analysis of the potential overspill flow routing from the storage area to the south of the site back into the Wash Brook should be undertaken. It may be possible to offer further protection to the site and the community to the north by raising that part of the site



which lies adjacent to the overspill route (subject to a consideration of third-party impacts). Although EA mapping suggests the site is suitable for development (provided appropriate mitigation is in place), a precautionary approach is recommended to account for uncertainty in the hydrological and hydraulic analysis.

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.

Site number: 961

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



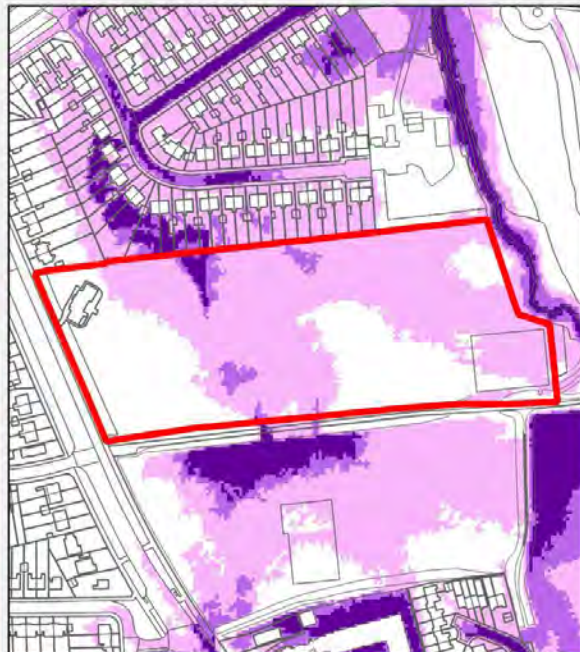
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 1000 annual chance
- 1 in 100 annual chance +50% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

Site 962: Amenity land between Coleman Rd and Goodwood Rd (east of Hazelnut Close and Ellwood Close)

Current land use: Greenfield

Site area (ha): 0.257

Location: Evington

Proposed land use: Housing

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

The site is currently greenfield. If redeveloping for housing, the following will need to be considered in the design and preparation of a FRA:

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.
- Protection of property: Property threshold levels along the south eastern boundary should be set at least 150mm above the adjacent kerb level in order to protect against surface water flood risk, unless a FRA demonstrates a reduced risk of flooding through more detailed local analysis.
- Safe access: Although the Flood Zone maps do not extend into the site, the highway network to the south-east is indicated to be at risk. Access routes which remain safe in the event of flooding should be available to the north (Coleman Road) and east (Goodwood Road heading north), but this should be confirmed as part of a site-specific FRA.



Site number: 962

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



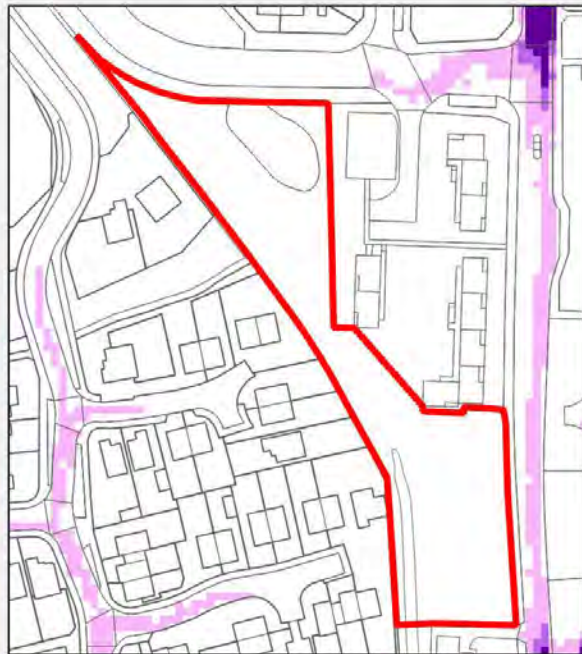
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 1000 annual chance
- 1 in 100 annual chance +50% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 963: Southfields Infant School

Current land use: Previously developed

Site area (ha): 1.2

Location: Eyres Monsell

Proposed land use: Residential

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate a potential flow route through the site.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

The site is currently brownfield. If redeveloping for housing, the following will need to be considered in the design and preparation of a FRA:

- Surface water flood risk: The Risk of Flooding from Surface Water maps indicate a potential flow route across the site. This will require further investigation as part of a FRA. Records indicate a notable surface water sewer crossing the site in a northerly direction which is not explicitly accounted for within the surface water flood risk model. Subject to the findings of the FRA it may be necessary to incorporate mitigation measures into the design and take a sequential approach to site layout, accommodating exceedence routing and/ or storage. The output from the Risk of Flooding from Surface Water maps indicates that with the exception of areas of ponding, the flood hazard is generally low and the site is not affected in its entirety, but the risk must be fully assessed and mitigated.
- Sustainable Drainage: The site lies in a critical drainage area identified in the SWMP. Runoff rates should be reduced towards greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.



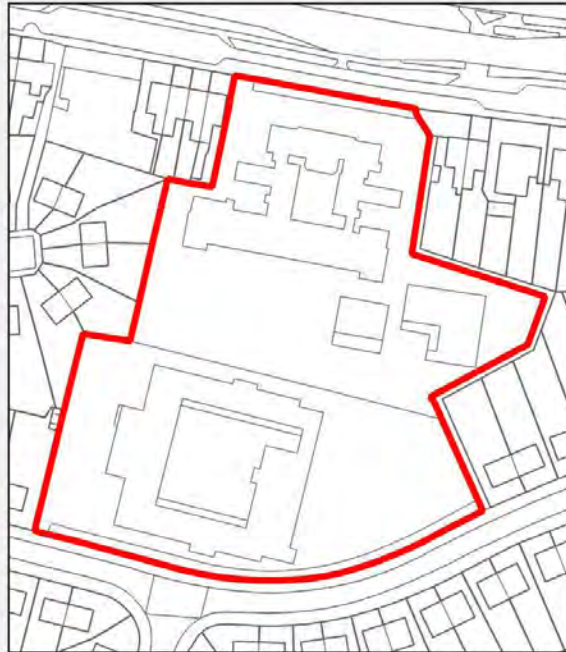
Site number: 963

Site context



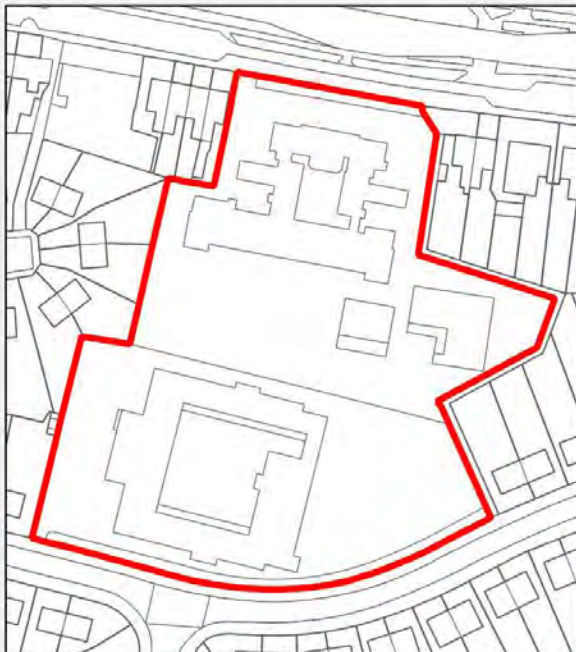
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



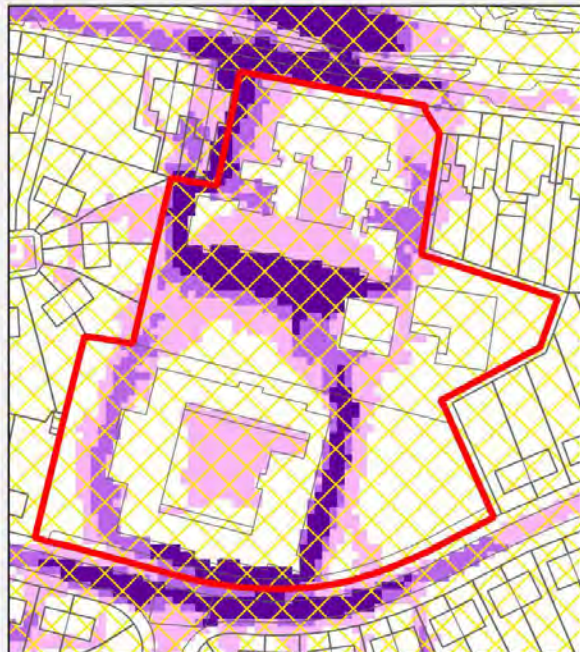
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 100 annual chance +30% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas



## Site 992: Woodstock Road

Current land use: Greenfield

Site area (ha): 0.15

Location: Abbey

Proposed land use: Housing on part adjacent to existing housing, fronting Woodstock Road.

Remainder green space

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: Yes

### **Flood risk summary**

The site lies within Flood Zone 1 and within Redhill Way Surface Water Hotspot, though the definition of the hotspot is based upon modelled flood risk to nearby properties, rather than the site itself. The Risk of Flooding from Surface Water maps indicate a potential for exceedence flows around Belgrave Boulevard to the west of the site.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

This is a greenfield site within a surface water flooding hotspot and critical drainage area identified within the SWMP. Any FRA prepared for the site should consider the following:

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.
- Surface Water Flood Risk: Mapping indicates the potential for flooding of the adjacent highway network in extreme events to the west, and to a lesser degree, the south of the site. It may therefore be prudent to raise finished floor levels adjacent to the highway by at least 150mm above kerb level to provide protection against surface water flow/ exceedence of the highway drainage network. The site falls within the Redhill Way surface water hotspot.

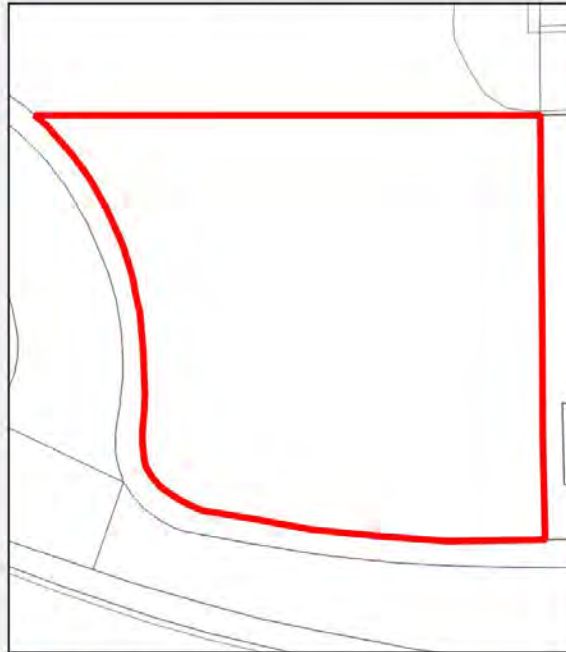
Site number: 992

Site context



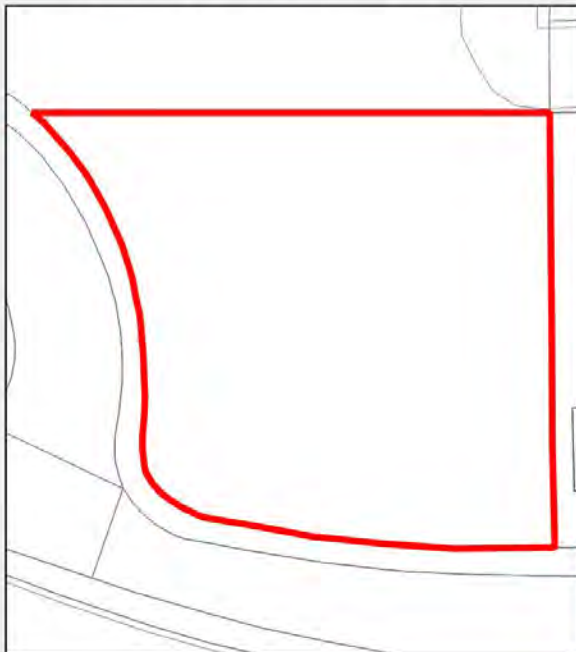
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



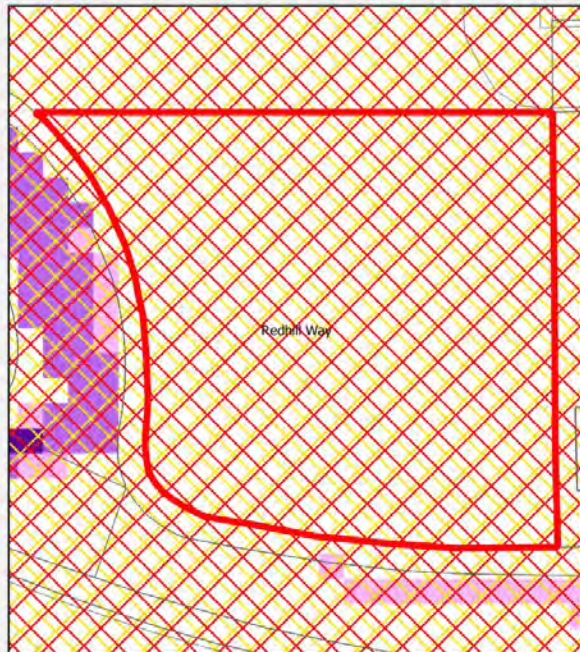
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 100 annual chance +30% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 1001: Phillips Crescent

Current land use: Greenfield

Site area (ha): 0.14

Location: Beaumont Leys

Proposed land use: Residential

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

This is a greenfield site. Any FRA prepared for the site should consider the following:

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.
- Surface Water Flood Risk: Mapping indicates the potential for flooding of land to the north-east of the site, just beyond the site boundary. As such, it may be a sensible precaution to ensure that floor levels in this part of the site are raised at least 150mm above the general existing ground level to protect against extreme surface water flooding events.



Site number: 1001

Site context



- Site Boundary
- 8m buffer (approx)
- Ordinary Watercourses
- Main Rivers

Flood Zones



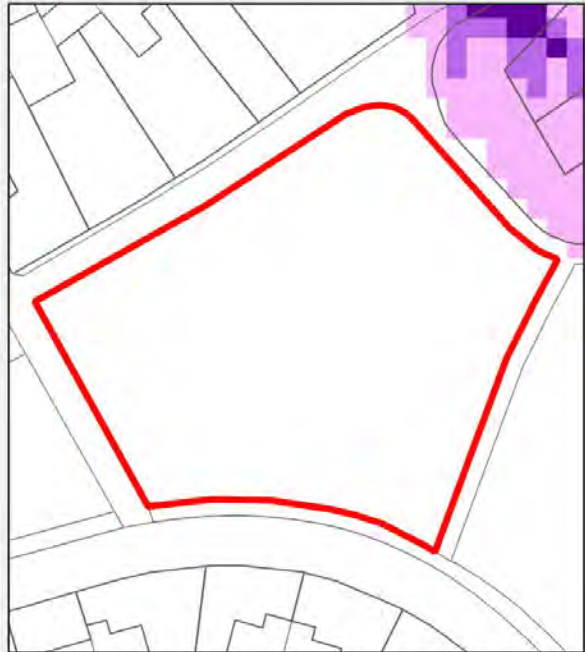
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 1000 annual chance
- 1 in 100 annual chance +50% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 1006: Kingscliffe Crescent open space

Current land use: Greenfield

Site area (ha): 0.34

Location: Evington

Proposed land use: Housing

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate potential exceedence routes along Welland Vale Road and Walsgrave Avenue but the flood hazard is indicated to be low.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

This is a greenfield site. Any FRA prepared for the site should consider the following:

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.
- Surface Water Flood Risk: Mapping indicates the potential for flooding of the adjacent highway network in extreme events. It may therefore be prudent to raise finished floor levels adjacent to the highway by at least 150mm above kerb level to provide protection against surface water flow/ exceedence of the highway drainage network.

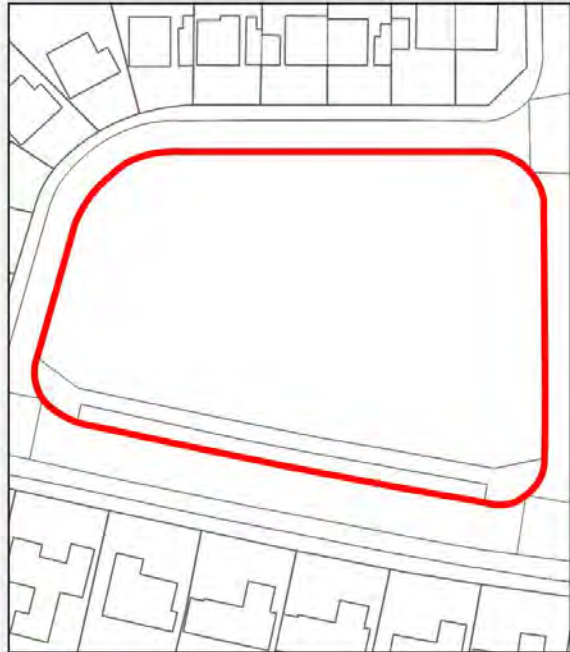
Site number: 1006

Site context



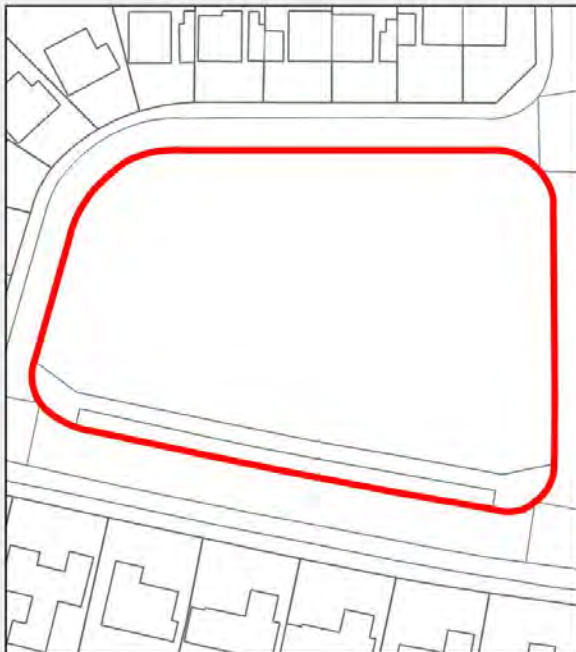
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



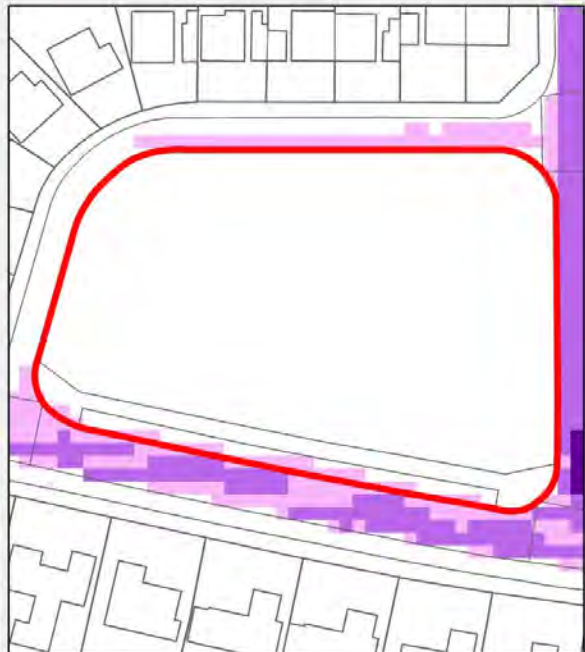
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 1000 annual chance
- 1 in 100 annual chance +50% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas



## Site 1007: Glazebrook Square

Current land use: Greenfield

Site area (ha): 0.33

Location: Western

Proposed land use: Housing

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate potential exceedence routes along Glazebrook Square to the north-west of the site in the 1 in 100 annual chance event, but the flood hazard is indicated to be low.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

This is a greenfield site in a critical drainage area identified within the SWMP. Any FRA prepared for the site should consider the following:

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.
- Surface Water Flood Risk: Mapping indicates the potential for flooding of the adjacent highway network in extreme events. It may therefore be prudent to raise finished floor levels adjacent to the highway by at least 150mm above kerb level to provide protection against surface water flow/ exceedence of the highway drainage network.

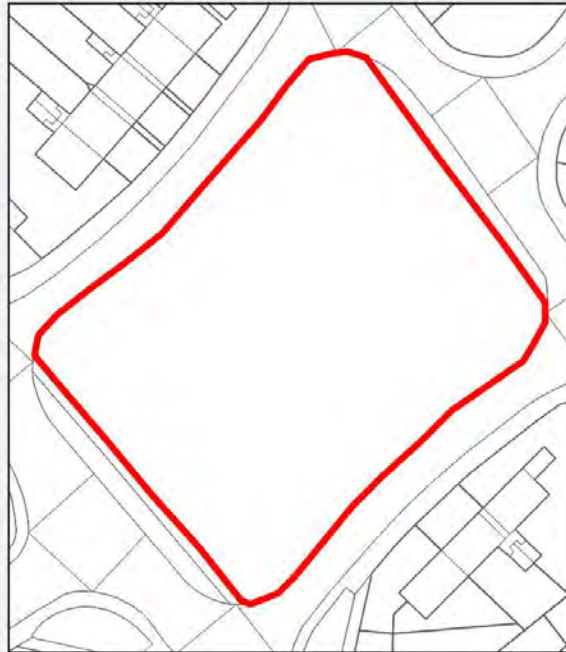
Site number: 1007

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



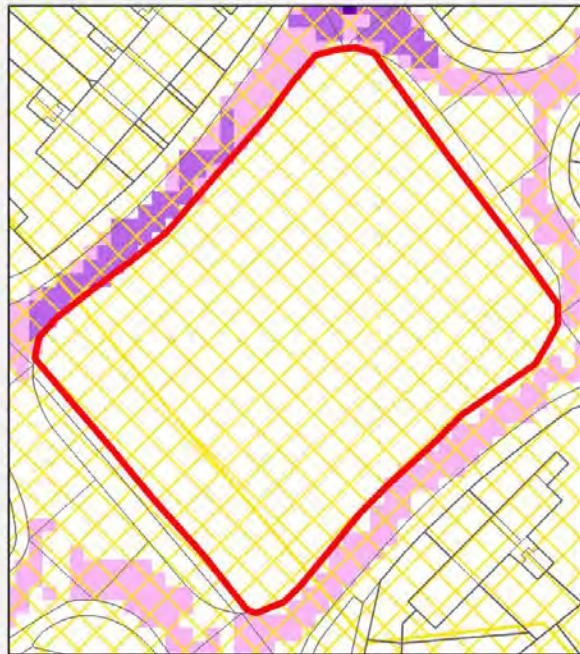
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 1000 annual chance
- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 1021: Sunbury Green

Current land use: Greenfield

Site area (ha): 0.29

Location: Thurncourt

Proposed land use: Housing

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate potential exceedance routes along Sunbury Green in the 1 in 1000 annual chance event, but the flood hazard is indicated to be low.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

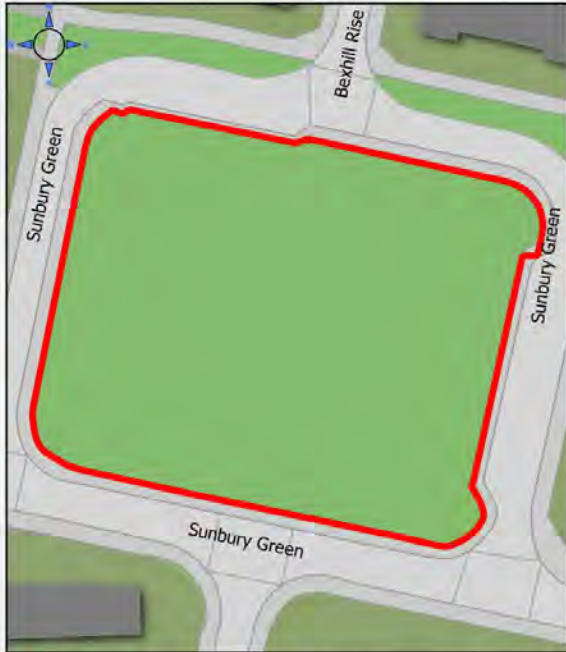
This is a greenfield site. Any FRA prepared for the site should consider the following:

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.
- Surface Water Flood Risk: Mapping indicates the potential for flooding of the adjacent highway network in extreme events. It may therefore be prudent to raise finished floor levels adjacent to the highway by at least 150mm above kerb level to provide protection against surface water flow/ exceedance of the highway drainage network.



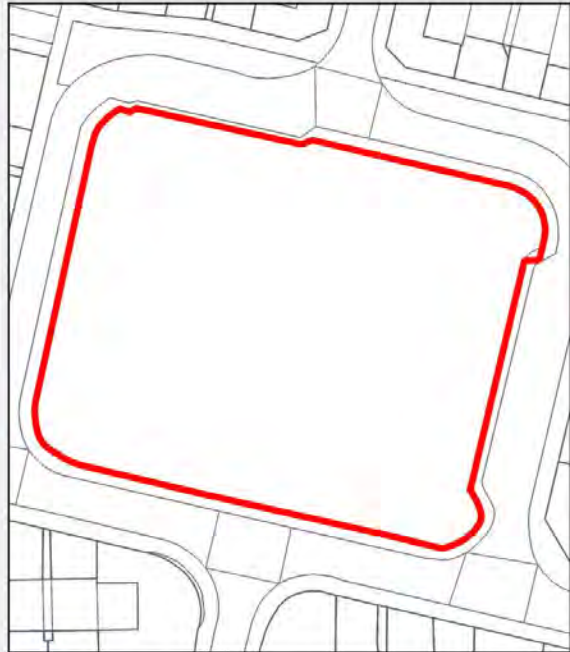
Site number: 1021

Site context



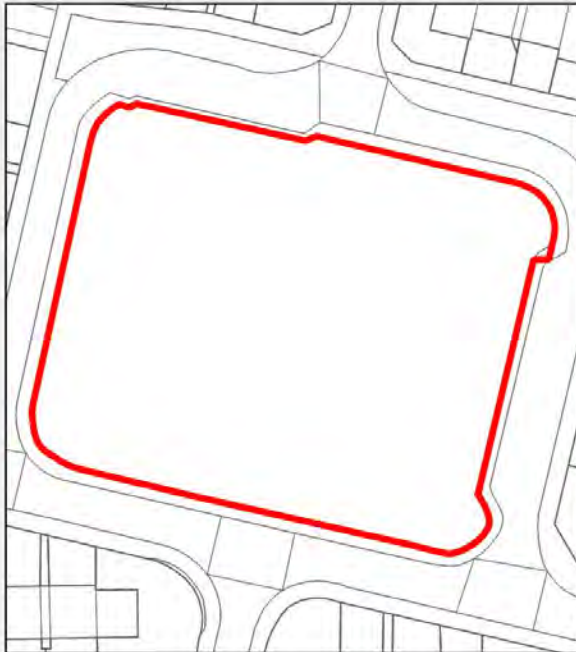
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



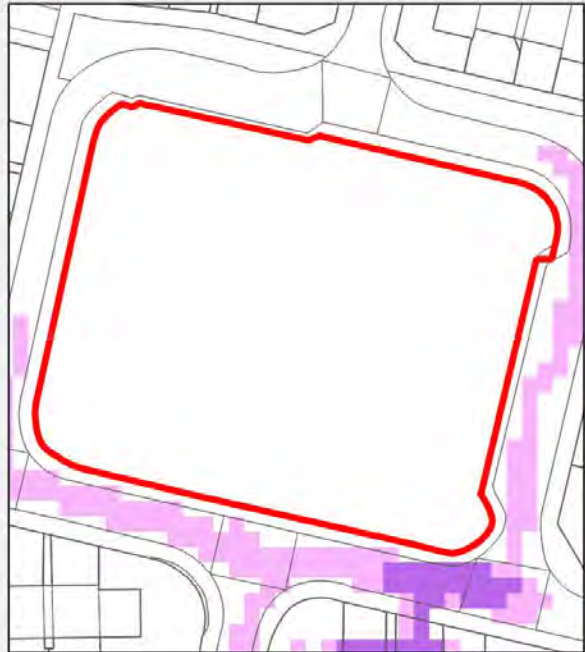
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 100 annual chance +30% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 1030: Dysart Way

Current land use: Greenfield

Site area (ha): 0.25

Location: Wycliffe

Proposed land use: Housing

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate potential exceedence routes along Dysart Way in the 1 in 100 annual chance event, but the flood hazard is indicated to be low.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

This is a greenfield site in a Critical Drainage Area identified within the SWMP. If redeveloping for housing, the following will need to be considered in the design and preparation of a FRA:

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.
- Surface Water Flood Risk: Mapping indicates the potential for flooding of the adjacent highway network (Dysart Way) in extreme events to the east of the site. It may therefore be prudent to raise finished floor levels adjacent to the highway by at least 150mm above kerb level to provide protection against surface water flow/exceedence of the highway drainage network.



Site number: 1030

Site context



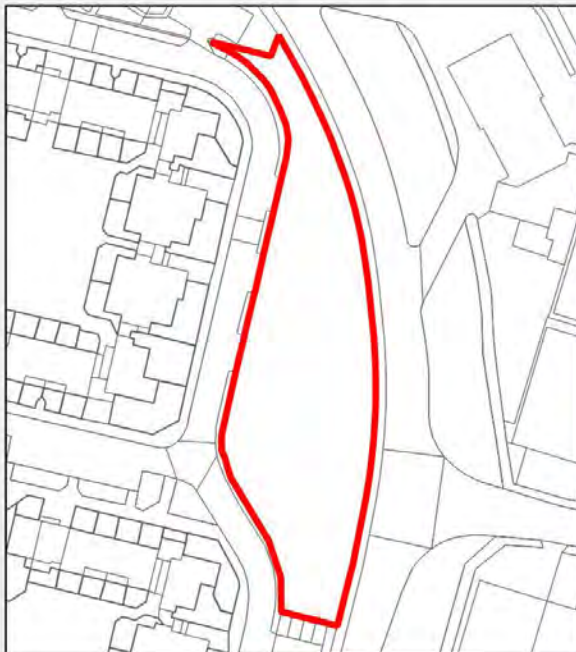
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



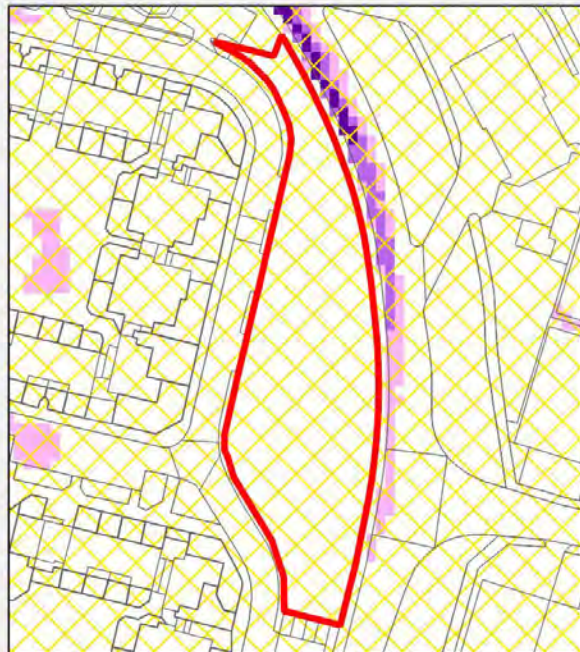
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 100 annual chance +30% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas



## Site 1034: Forest Lodge Education Centre

Current land use: Previously developed brownfield site

Site area (ha): 0.91

Location: Charnor Road, Western

Proposed land use: Housing

Exception test required: No

Critical drainage area: Yes (part)

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate the potential for limited shallow flooding in the 1 in 1000 annual chance event with a low flood hazard rating.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

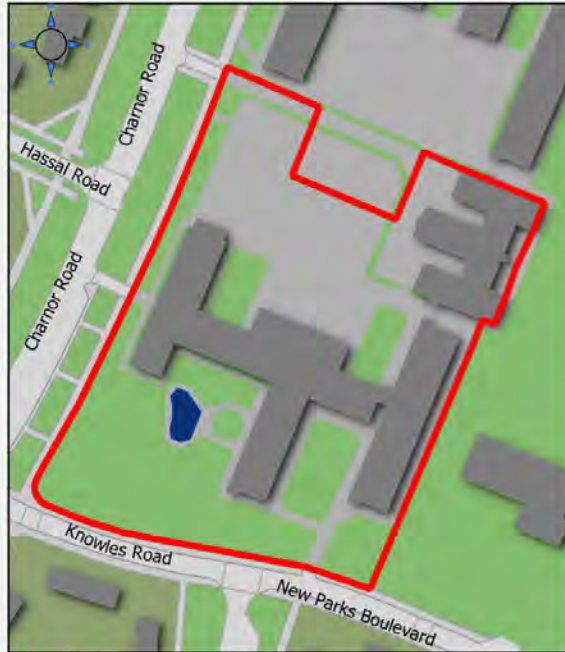
### **Development Guidance**

This is a brownfield site which lies partly within in a Critical Drainage Area identified within the SWMP. If redeveloping for housing, the following will need to be considered in the design and preparation of a FRA:

- Sustainable Drainage: Runoff rates should be reduced towards to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.
- Surface Water Flood Risk: Mapping indicates the potential for flooding of the adjacent highway network in extreme events. It may therefore be prudent to raise finished floor levels adjacent to the highway by at least 150mm above kerb level to provide protection against surface water flow/ exceedence of the highway drainage network.

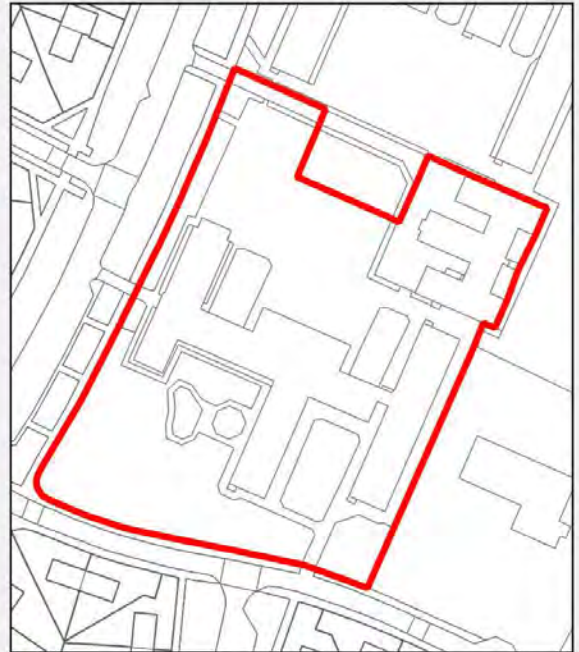
Site number: 1034

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



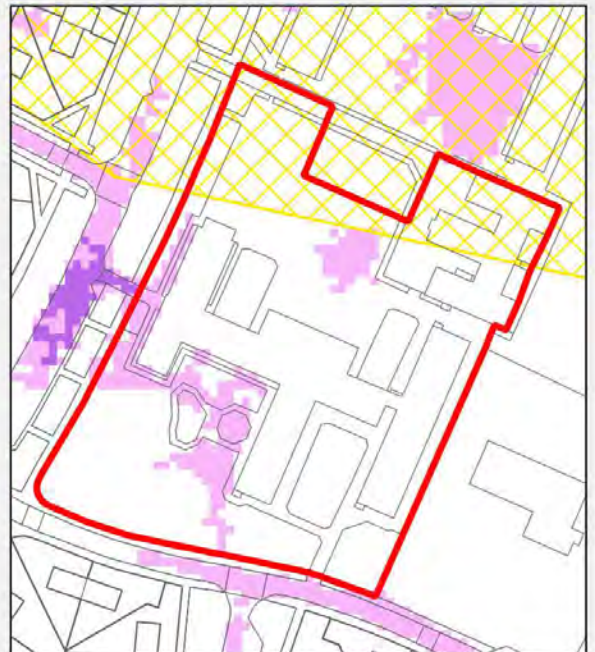
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 100 annual chance +30% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 1035: VRRE/ Gypsy Lane

Current land use: Previously developed site

Site area (ha): 0.41

Location: Troon

Proposed land use: Housing

Exception test required: No

Critical drainage area: Yes (part)

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

This is a previously developed site, a small part of which falls within a critical drainage area. If redeveloping for housing, the following will need to be considered in the design and preparation of a FRA:

- Sustainable Drainage: Runoff rates should be reduced towards greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.



Site number: 1035

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 1037: Spence Street

Current land use: Previously developed brownfield site

Site area (ha): 0.99

Location: North Evington

Proposed land use: Housing (0.77ha)

Exception test required: Yes

Critical drainage area: Yes

Surface water hotspot: Yes (part)

### **Flood risk summary**

The site lies adjacent to the Bushby Brook and is partly within Flood Zone 2. Land to the north of the brook is indicated to be at slightly lower risk of flooding.

Exception Test Part A (sustainability): PASS (refer to Exception Testing text)

Exception Test Part B (flood risk): LIKELY PASS

Exception Test is required by virtue of the 1 in 20 annual chance flood extent within the site picking up the Bushby Brook channel, though the EA model suggests flows remain in bank at the 1 in 100 annual chance event (including climate change allowance). FRA required to confirm flood risk and identify any required mitigation. Likely pass with good design and appropriate watercourse buffer.

### **Development Guidance**

This is a brownfield site that lies partly within the floodplain of the Bushby Brook. The SWMP identifies a local surface water flooding hotspot covering part of the site and a Critical Drainage Area. A flood risk assessment will be required as part of any planning application to develop the site, with a specific focus on the following:

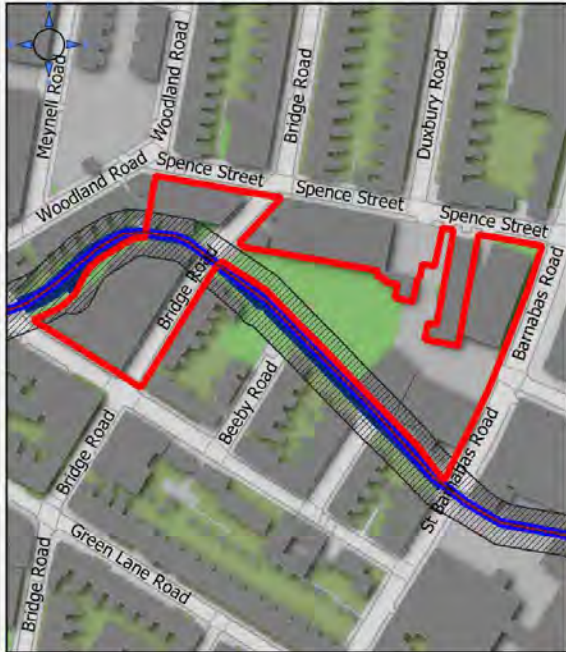
- Sequential approach to site layout: Development should be steered towards those parts of the site at lower risk of flooding.
- Protection of property: Floor levels should be raised above the 1 in 100 central climate change flood level with freeboard, and ideally above the 1 in 1000 annual chance flood level.
- Sustainable Drainage: Runoff rates should be reduced towards to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.

- Watercourse buffer: The Environment Agency are likely to require an 8m buffer to remain free of development alongside the Bushby Brook. There may be scope for adjustment where existing buildings currently lie within the zone and are being demolished if betterment can be demonstrated.



Site number: 1037

Site context



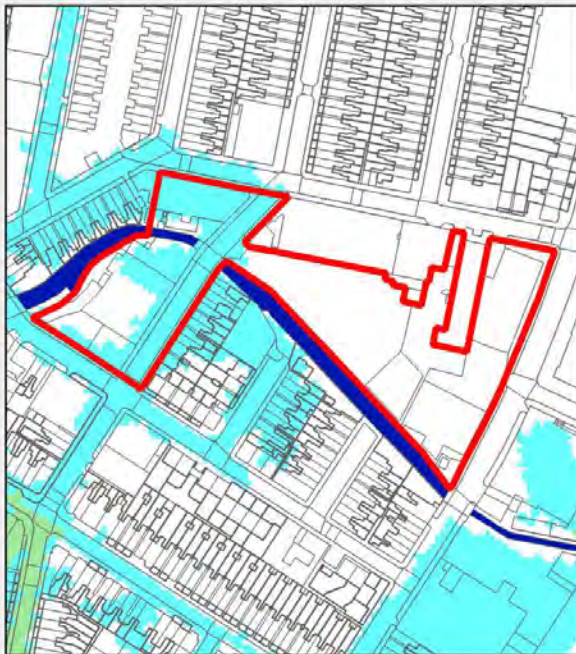
- Site Boundary
- Ordinary Watercourses
- Main Rivers
- 8m buffer (approx)

Flood Zones



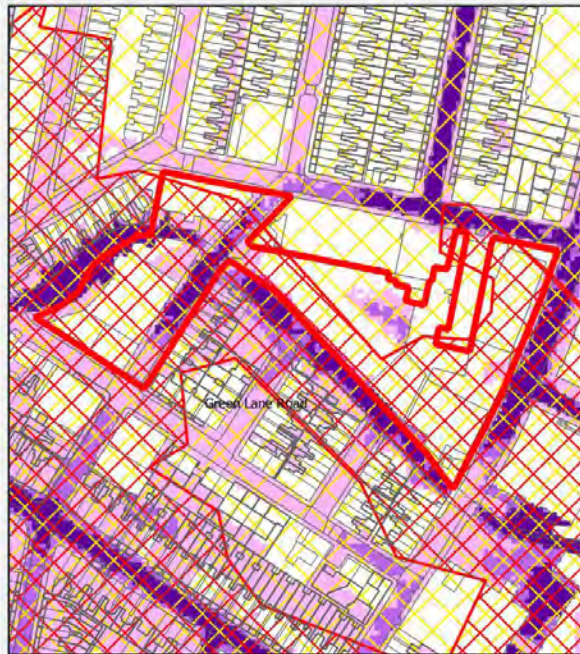
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 1039: Bisley Street/ Western Road

Current land use: Previously developed brownfield site

Site area (ha): 0.6

Location: Westcotes

Proposed land use: Housing

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate a potential for surface water ponding within the site and a more significant depth of flooding near to the site on Bisley Street.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

- Surface Water Flood Risk and sequential approach to development: The Risk of Flooding from Surface Water maps indicate a potential for ponding of surface water. Only part of the site is affected and velocities are low. As such, the risk of surface water flooding is unlikely to preclude redevelopment, but it may impact upon site layout and mitigation measures may need to be incorporated. It is likely that the ponding indicated on the site is due to an accumulation of water to the north west of the existing building within the hydraulic model, because building footprints are represented as raised ground levels and gullies and sewer pipes are not explicitly represented in the model. The risk of surface water flooding will require further investigation in a FRA. Records indicate that a large surface water sewer runs beneath Bisley Street towards the river. In view of the output from the Risk of Flooding from Surface Water maps it may be sensible to retain an access into the site via Wilberforce Road at the north west boundary, because the modelled flood hazard is indicated to be low in a 1 in 100 annual chance event.
- Sustainable Drainage: Runoff rates should be reduced towards greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface

water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.



Site number: 1039

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



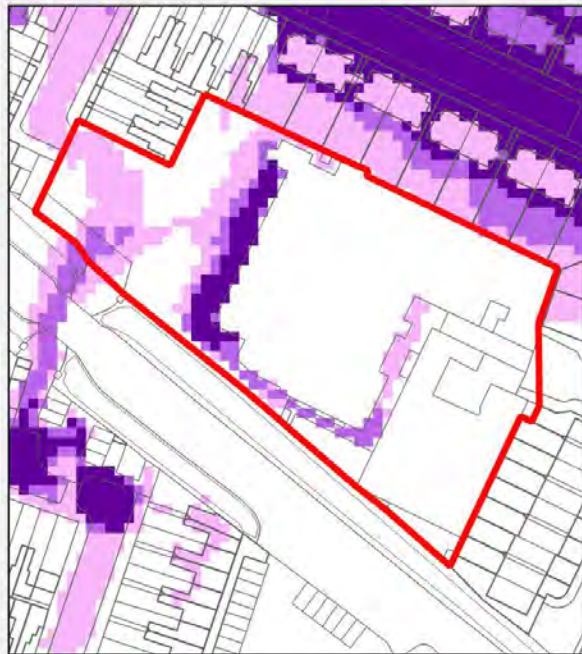
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 1000 annual chance
- 1 in 100 annual chance +50% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 1040: Mountain Road

Current land use: Greenfield

Site area (ha): 2.1

Location: Troon

Proposed land use: Employment

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies adjacent to the Melton Brook and partly within Flood Zone 2. The Risk of Flooding from Surface Water maps indicate areas of potential flooding. In a 1 in 100 annual chance event this is limited to part of the site which falls within Flood Zone 2. In a 1 in 1000 annual chance event the area is more extensive.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

This is a greenfield site that lies partly within the floodplain of the Melton Brook.

Employment uses are appropriate in flood risk terms according to the NPPF. A FRA for the site would need to take into account the following:

- Sequential approach to site layout: Built development should be steered towards those parts of the site at lower risk of flooding. Land adjacent to the Melton Brook may be more suited to the blue-green infrastructure (i.e. SuDS) required to offset runoff from new impermeable surfacing. Records indicate a large surface water sewer may cross the part of the site which lies in Flood Zone 2 and that the adjacent land to the south-west is a surface water storage area. This infrastructure will need to be avoided/ protected and liaison will be needed with Severn Trent Water Ltd as part of the FRA process. The risk of fluvial and pluvial flooding should be further investigated as part of a FRA.
- Protection of property: Floor levels should be raised above the 1 in 100 central climate change flood level of the Melton Brook with freeboard and above the level of adjacent highways to protect against the potential risk of surface water flooding..
- Watercourse buffer: The Environment Agency are likely to require an 8m buffer to remain free of development alongside the Bushby Brook. The risk of surface water flooding should be considered within an FRA and appropriate mitigation should be in

place to protect property.

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.



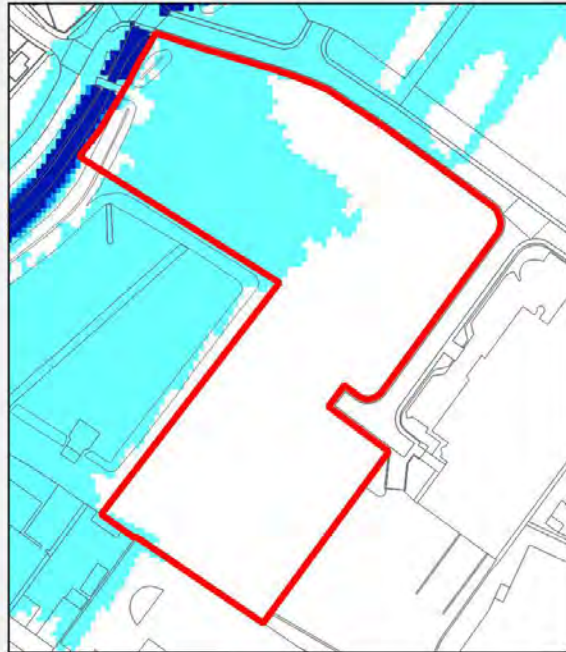
Site number: 1040

Site context



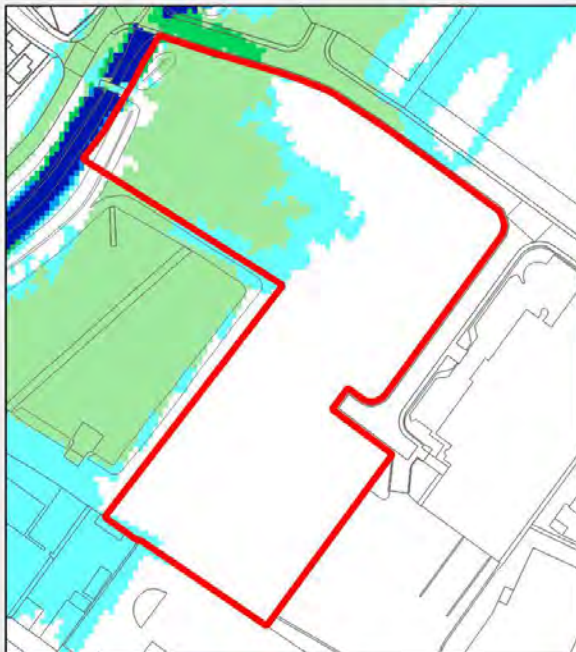
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



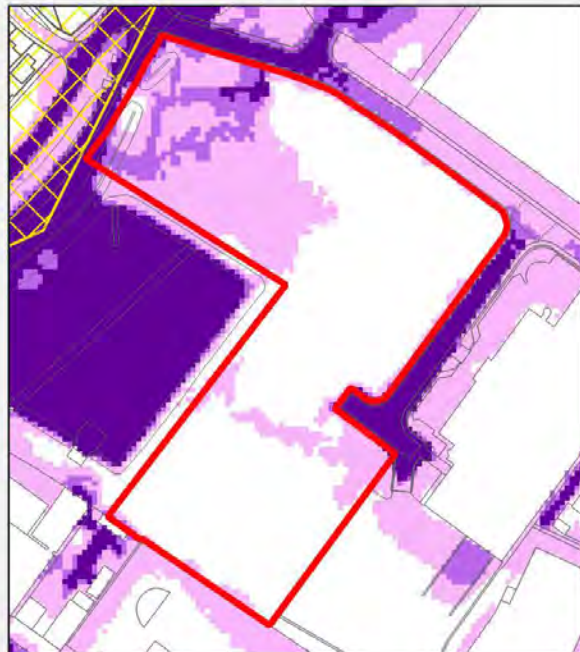
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 1000 annual chance
- 1 in 1000 annual chance +50% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 1041: Land off Hazeldene Road (adjacent to Kestrel's Field School)

Current land use: Greenfield

Site area (ha): 0.74

Location: Thurncourt

Proposed land use: Housing

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

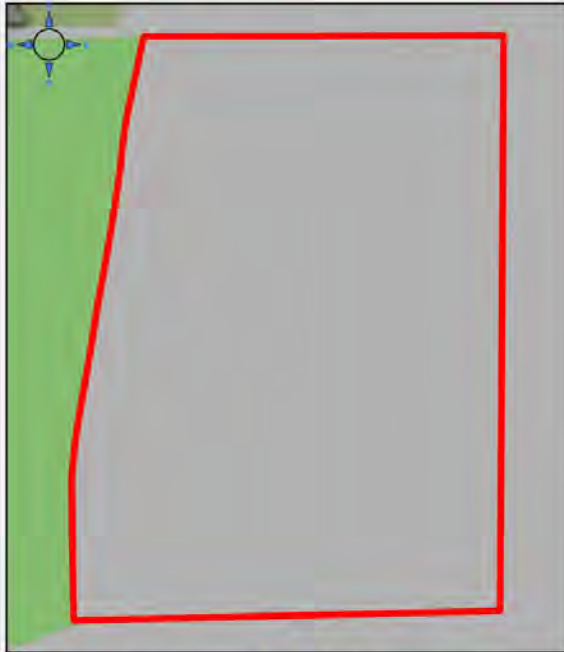
### **Development Guidance**

This is a greenfield site. If redeveloping for housing, the following will need to be considered in the design and preparation of a FRA:

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.

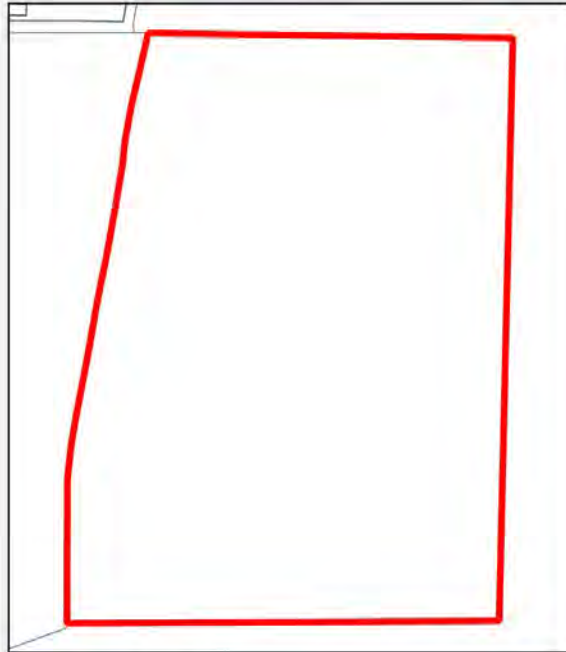
Site number: 1041

Site context



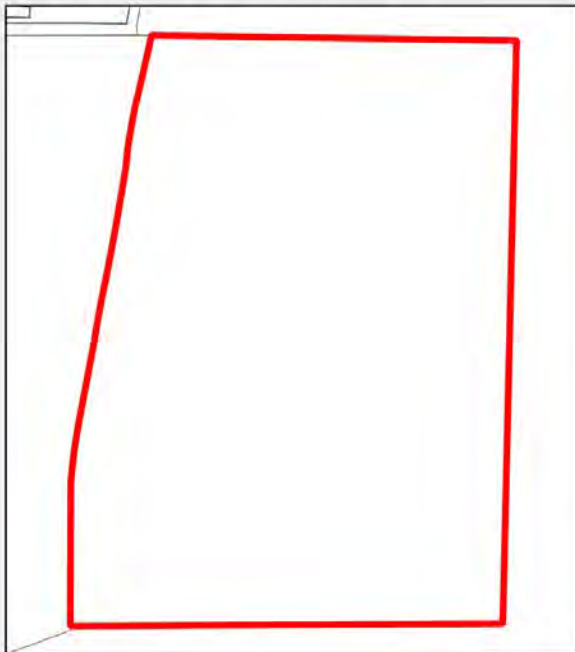
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



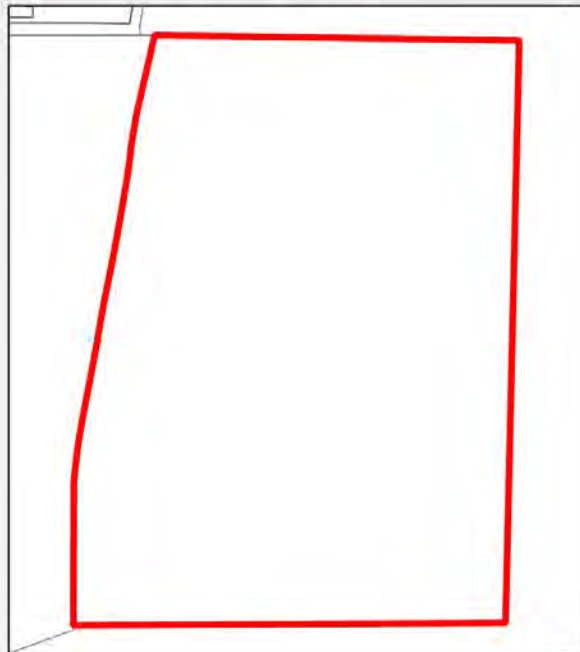
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas



## Site 1042: Land off Heacham Drive

Current land use: Former playing fields

Site area (ha): 2.4

Location: Abbey

Proposed land use: Housing

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate minor areas of ponding in the north west part of the site.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

This is a greenfield site. If redeveloping for housing, the following will need to be considered in the design and preparation of a FRA:

- Surface Water Flood Risk and sequential approach to development: The Risk of Flooding from Surface Water maps indicate a potential for ponding of surface water. Only part of the site is affected and velocities are low. As such, the risk of surface water flooding is unlikely to preclude redevelopment as a whole, but it may impact upon site layout and mitigation measures may need to be incorporated. The extent of surface water flood risk should be investigated in the FRA.
- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. There are notable areas of potential surface water ponding that should be addressed within the SuDS design for the site.

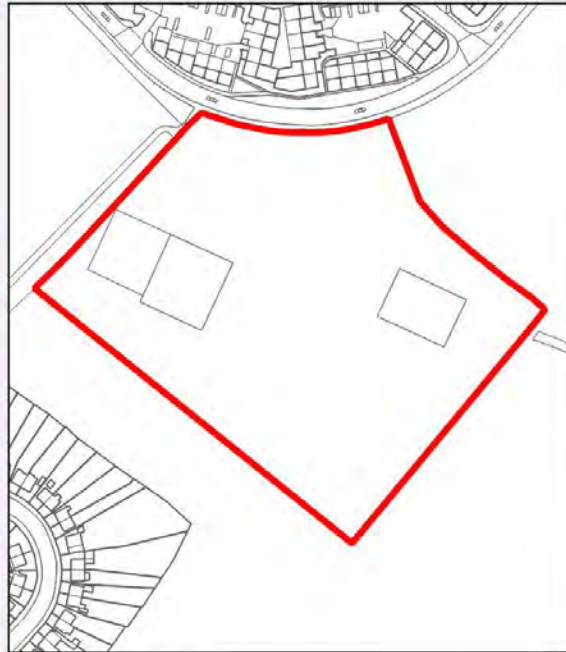
Site number: 1042

Site context



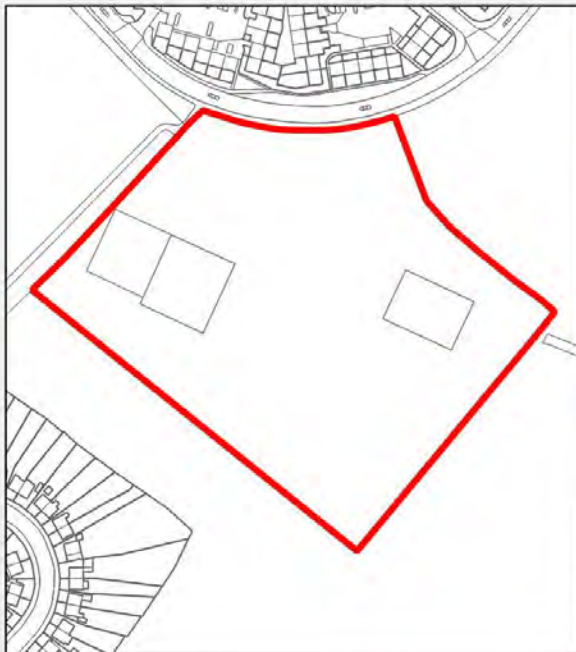
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



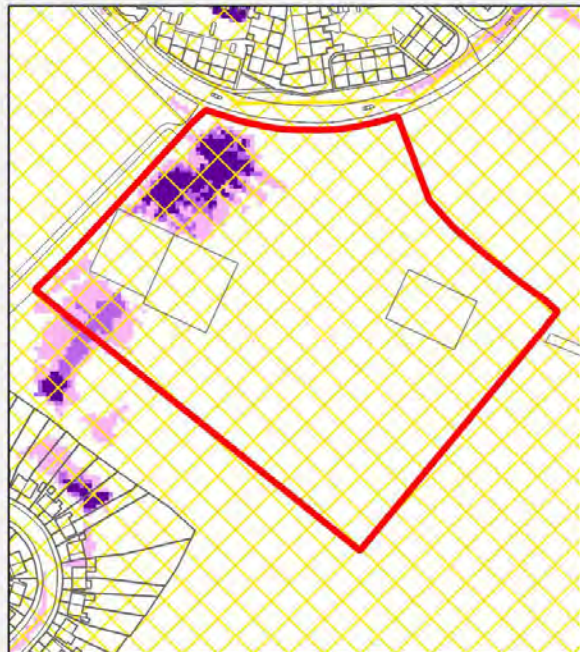
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 100 annual chance +30% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 1044: Land at Leicester General Hospital

Current land use: Hospital

Site area (ha): 28.35

Location: Evington

Proposed land use: Residential

Exception test required: No

Critical drainage area: No

Surface water hotspot: Yes (part)

### **Flood risk summary**

The site lies within Flood Zone 1. The upper reach of the Ethel Brook flows along the south east boundary of the site. The Risk of Flooding from Surface Water maps indicate areas of minor ponding within the site.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

This is a large brownfield site in the upper reaches of an urban catchment which is believed to be at risk of flooding from the Ethel Brook. The site lies partly within the '@Leicester General Hospital' surface water hotspot, though more recent surface water flood mapping shows the site to be at low risk. A Flood Risk Assessment for redevelopment of the site should consider the following:

- **Sustainable Drainage:** Runoff rates should be reduced towards greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.
- **Watercourse Buffer:** The LLFA is likely to require a buffer to be left free of development adjacent to the Ethel Brook.



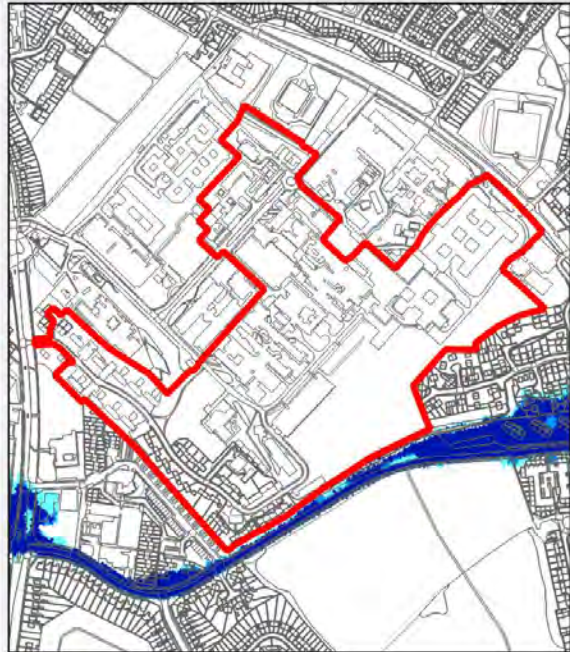
Site number: 1044

Site context



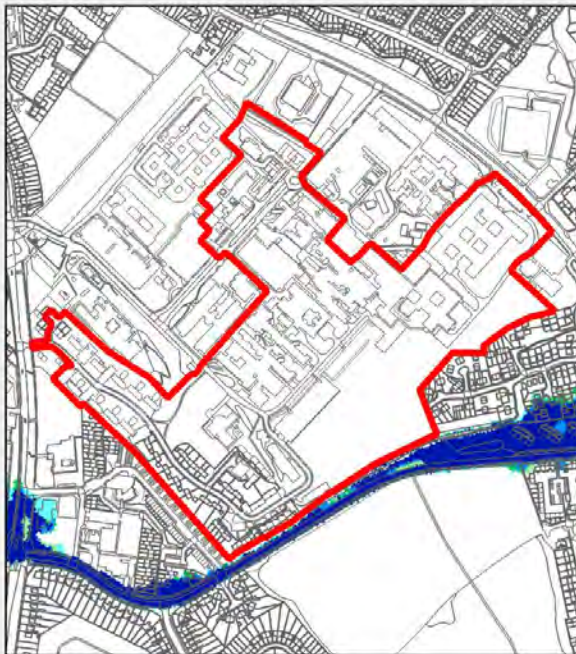
- Site Boundary
- 8m buffer (approx)
- Ordinary Watercourses
- Main Rivers

Flood Zones



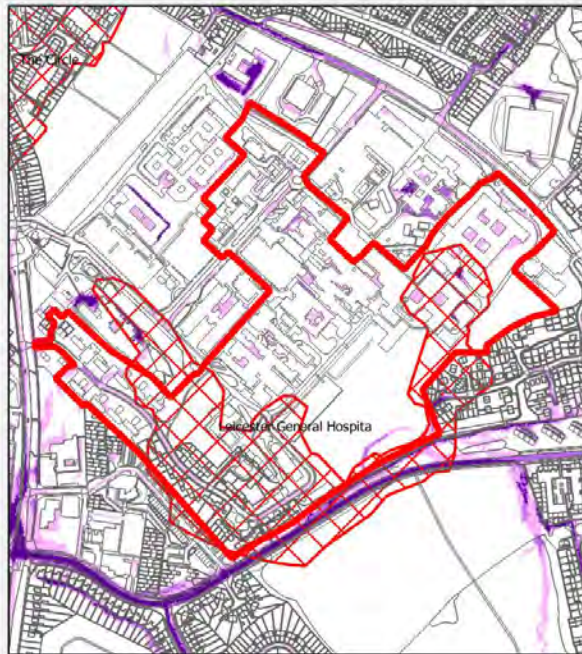
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 1047: Land at Groby Road/Fosse Road North

Current land use: Greenfield

Site area (ha): 5.0

Location: Fosse/Beaumont Leys

Proposed land use: Education

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: No

### **Flood risk summary**

The site lies predominantly within Flood Zone 1. The Gilroes Brook flows along the northern boundary of the site adjacent to the A50 and Garland Crescent. The Risk of Flooding from Surface Water maps indicate areas of minor ponding within the site.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

This is a greenfield site adjacent to the Gilroes Brook, which is a known source of flood risk to the A50 and Woodgate area to the east of the site. A Flood Risk Assessment for redevelopment of the site should consider the following:

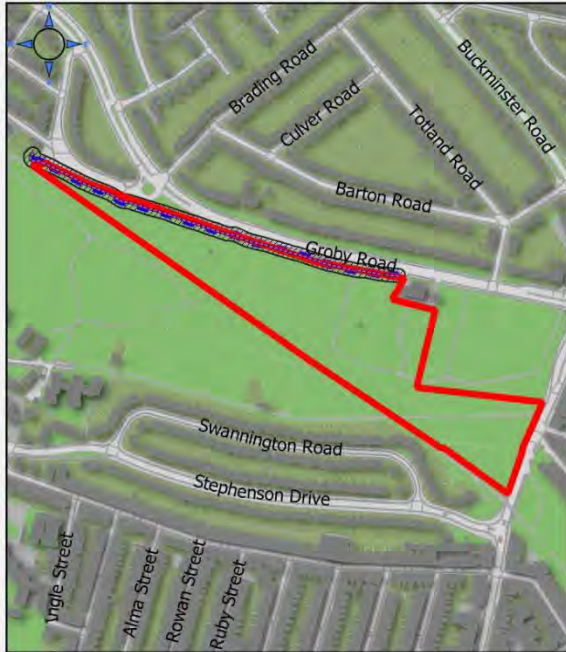
- **Sustainable Drainage:** Runoff rates should be reduced towards greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.
- **Watercourse Buffer:** The LLFA is likely to require a buffer to be left free of development adjacent to the Gilroes Brook. The Gilroes Brook flows in an incised channel and there may be opportunities for naturalisation through the provision of a blue-green infrastructure corridor.
- **Flood Risk:** The Gilroes Brook hydraulic model indicates the potential for flooding along the northern boundary of the site, which should be investigated. Mapping also indicates the potential for flooding of the adjacent highway network in extreme events along the A50 and Fosse Road North, which is backed up by historic events. Floor levels for any new buildings should be set above the 1 in 100 central climate change flood level with freeboard. It may also be prudent to ensure that finished

floor levels adjacent to the highway are raised by at least 150mm above kerb level to provide protection against surface water flow/ exceedence of the highway drainage network, and provide alternative means of access and egress in flood conditions.



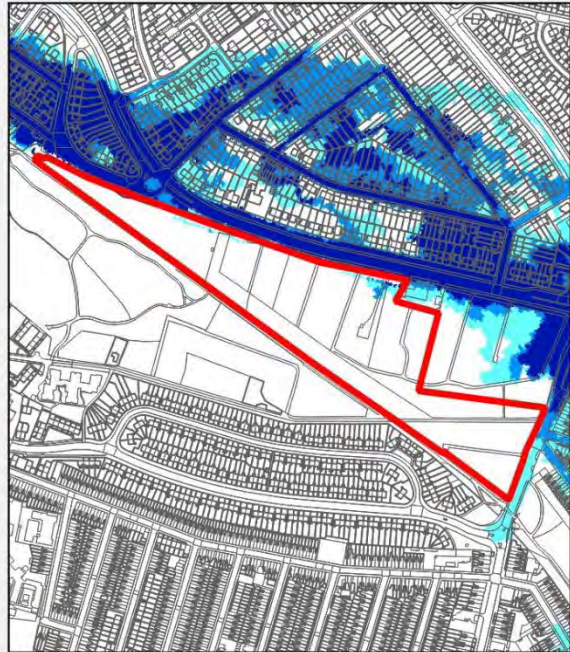
Site number: 1047

Site context



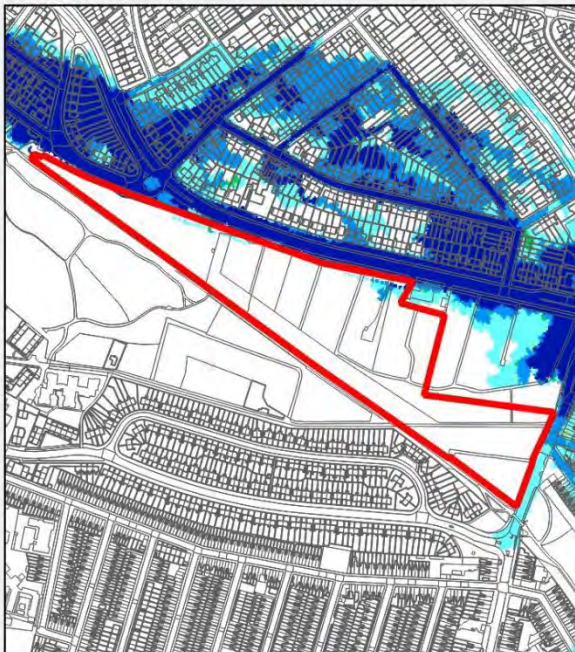
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



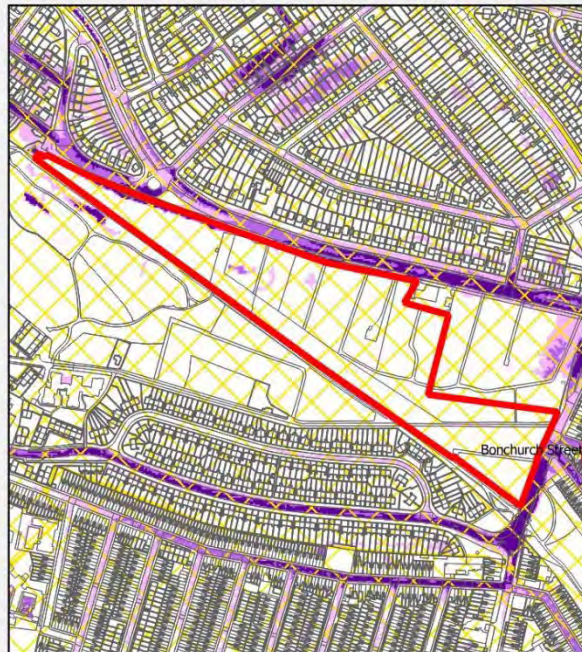
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 1049: Land at Manor Farm/Collis Crescent

Current land use: Predominantly greenfield

Site area (ha): 3.88

Location: Humberstone and Hamilton

Proposed land use: Education

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

If redeveloping for education use, the following will need to be considered in the design and preparation of a FRA:

- Sustainable Drainage: Runoff rates should be limited to existing rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. There are notable areas of potential surface water ponding that should be addressed within the SuDS design for the site. Any areas of surface water ponding should be addressed within the SuDS design.



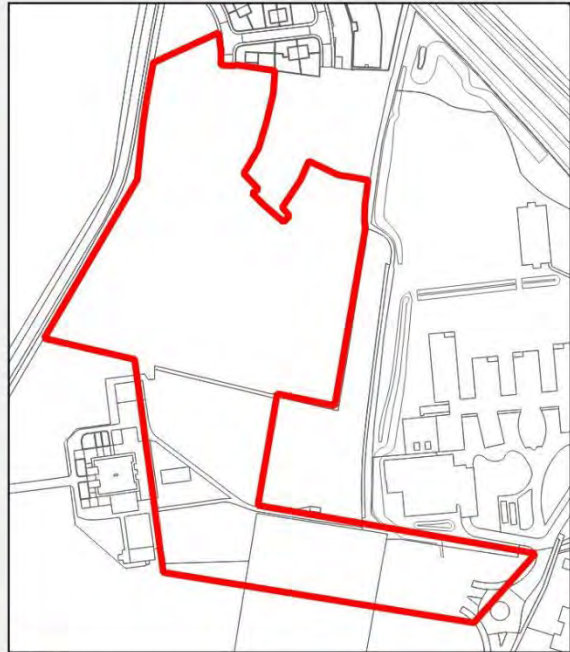
Site number: 1049

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



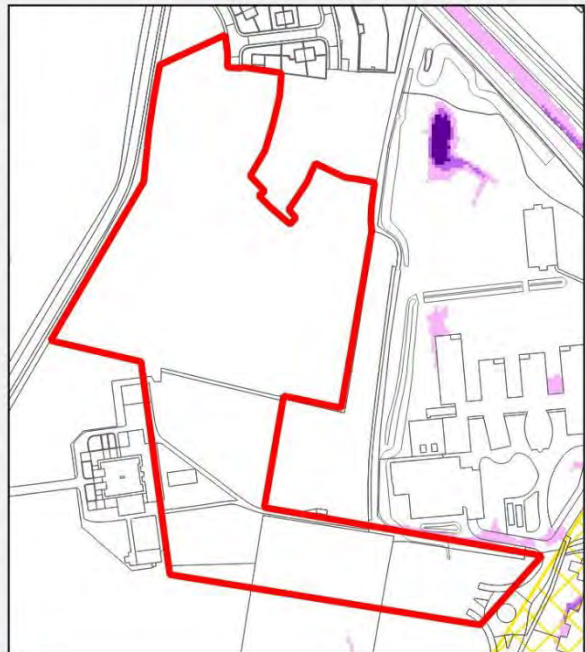
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 1000 annual chance
- 1 in 100 annual chance +50% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas



## Site 1051: Gilmorton Community Rooms

Current land use: Community rooms

Site area (ha): 0.26

Location: Aylestone (South)

Proposed land use: Residential

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate a potential flow route through the site.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

This is a previously developed site. Any FRA prepared for the site should consider the following:

- **Surface Water Flood Risk:** Surface water flood risk will need to be investigated further as part of a flood risk assessment. The Risk of Flooding from Surface Water maps indicate a potential flow route across the site, though the depth is generally low (<300mm) during the 1 in 100 annual chance event). Records indicate a large surface water sewer on Gilmorton Avenue. As such, Severn Trent Water should be contacted during the development of a FRA. Based on the available mapping, safe access should be available to Gilmorton Avenue where the hazard rating is low. Floor levels may need to be raised to protect against surface water flood risk.
- **Sustainable Drainage:** Runoff rates should be reduced towards greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. There are notable areas of potential surface water ponding that should be addressed within the SuDS design for the site. Any areas of surface water ponding should be addressed within the SuDS design.

Site number: 1051

Site context



- Site Boundary
- 8m buffer (approx)
- Ordinary Watercourses
- Main Rivers

Flood Zones



- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 1052: Railway station former Sorting Office and Station Car Park

Current land use: Commercial/ car park

Site area (ha): 2.74

Location: Campbell Street

Proposed land use: Offices

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate minor areas of overland flow and ponding towards the northern part of the site.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

This is a previously developed site. Any FRA prepared for the site should consider the following:

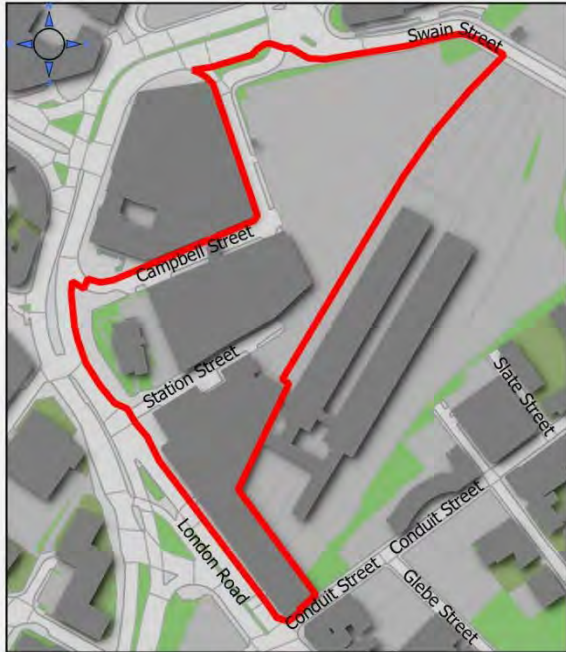
- **Surface Water Flood Risk:** The risk of surface water flooding will need to be investigated further as part of a flood risk assessment. Overall, the majority of the site is not shown to be at risk, but both the Risk of Flooding from Surface Water Maps and the SWMP indicate a similar flooding mechanism which could affect part of the site near the northern boundary. Within the area of risk identified on the maps, the flood hazard is generally low, though in the deeper area towards the northern boundary of the site the risk increases to 'danger to some'. If surface water flood risk is confirmed to be present following further investigation, then appropriate mitigation will need to be in place to ensure protection of property and a sequential approach to layout should be taken to minimise exposure to flood risks. For example, aligning green spaces with any area subject to surface water flooding would help to control the risk and providing storage on site would prevent transfer of the risk to elsewhere.
- **Sustainable Drainage:** The site lies within a critical drainage area. As such, runoff rates should be reduced towards greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological



enhancement. Any potential areas of surface water ponding should be addressed within the SuDS design for the site.

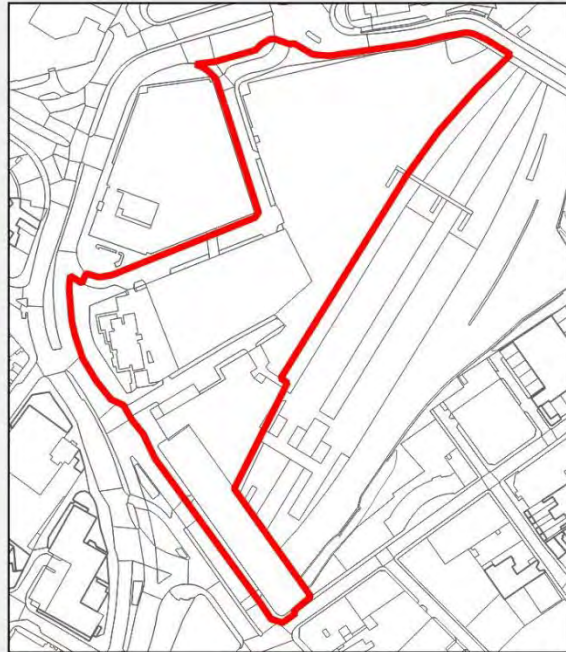
Site number: 1052

Site context



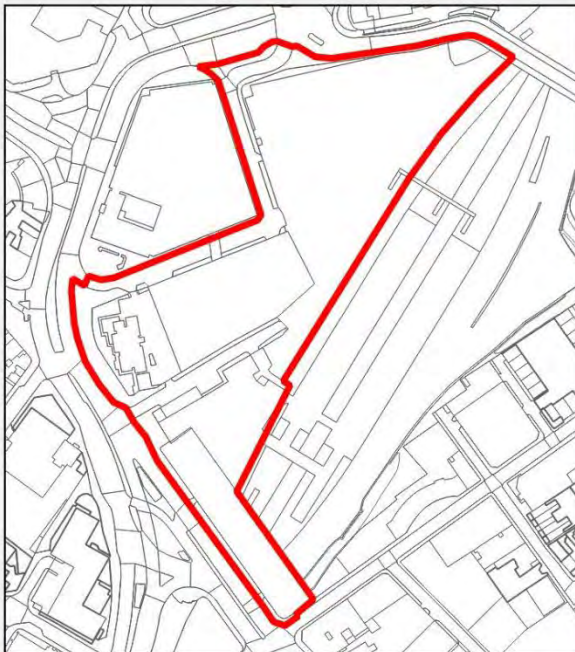
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



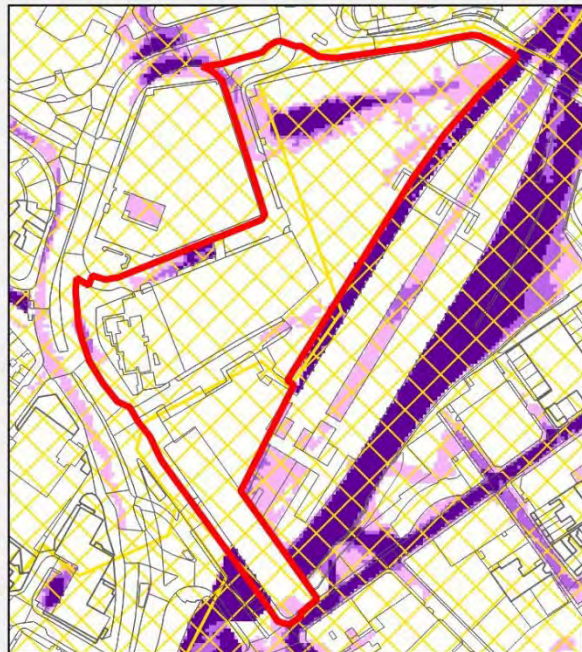
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

Site 1053: Land at Midland St, Southampton St, Nicholas St and Queen St

Current land use: Commercial

Site area (ha): 1.2

Location: Castle

Proposed land use: Offices

Exception test required: No

Critical drainage area: Yes

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate minor areas of overland flow and ponding towards the northern part of the site.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

The site is currently occupied by a large factory building. The following flood risk issues will need to be considered in the design and preparation of a FRA:

- Surface water flood risk: The risk of surface water flooding will need to be investigated as part of a flood risk assessment. On the basis of the available EA flood modelling, the depth of flooding and hazard rating in the 1 in 100 annual chance event is generally low, but with pockets of deeper water. However, the model is national scale and does not explicitly account for the hydraulic capacity of local sewers, such as the sewer which runs along Nichols Street. Opportunities, where available, should be taken during redevelopment to reduce exposure to surface water flood risk, if found to be present in a FRA. If practical, it may be prudent to raise finished floor levels adjacent to the highway by at least 150mm above kerb level to provide protection against surface water flow/ exceedence of the highway drainage network, subject to the findings of the FRA.
- Sustainable Drainage: The site lies within a critical drainage area. As such, opportunities should be taken during redevelopment to reduce runoff towards greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement.



Site number: 1053

Site context



- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



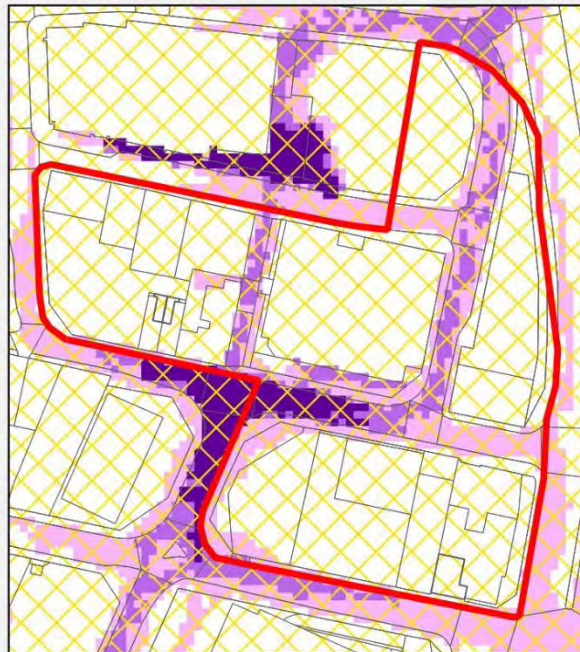
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance +50% flow
- 1 in 100 annual chance
- 1 in 1000 annual chance
- 1 in 100 annual chance +30% flow

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas

## Site 2153: Land West of Anstey Lane

Current land use: Greenfield

Site area (ha): 1.2

Location: Anstey Lane

Proposed land use: Residential

Exception test required: No

Critical drainage area: No

Surface water hotspot: No

### **Flood risk summary**

The site lies within Flood Zone 1. The Risk of Flooding from Surface Water maps indicate minor areas of ponding outside the site on an adjacent access road but only at the 1 in 1000 annual chance event.

Exception Test Part A (sustainability): n/a

Exception Test Part B (flood risk): n/a

### **Development Guidance**

If redeveloping for residential use, the following will need to be considered in the design and preparation of a FRA:

- Sustainable Drainage: Runoff rates should be limited to greenfield rates through the incorporation of sustainable drainage methods, designed in accordance with current guidance (e.g. CIRIA SuDS Manual, Leicester City Council SuDS Guidance). The drainage design should also ensure adequate treatment of surface water runoff and where possible ecological enhancement. There are notable areas of potential surface water ponding that should be addressed within the SuDS design for the site. Any areas of surface water ponding should be addressed within the SuDS design.

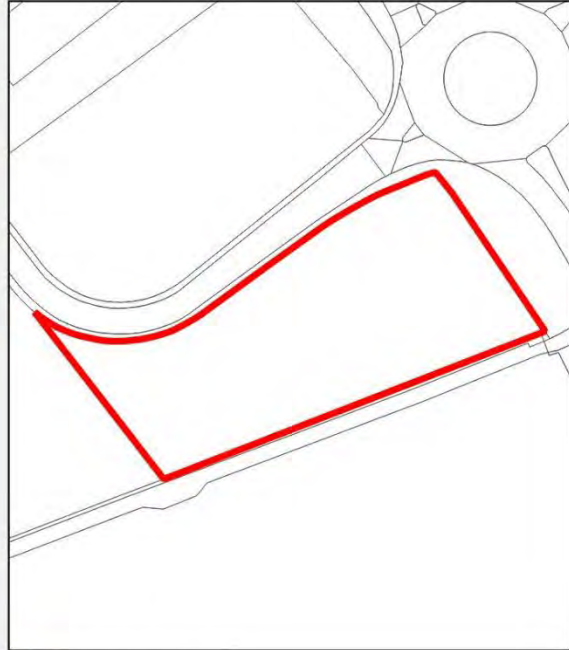
Site number: 2153

Site context



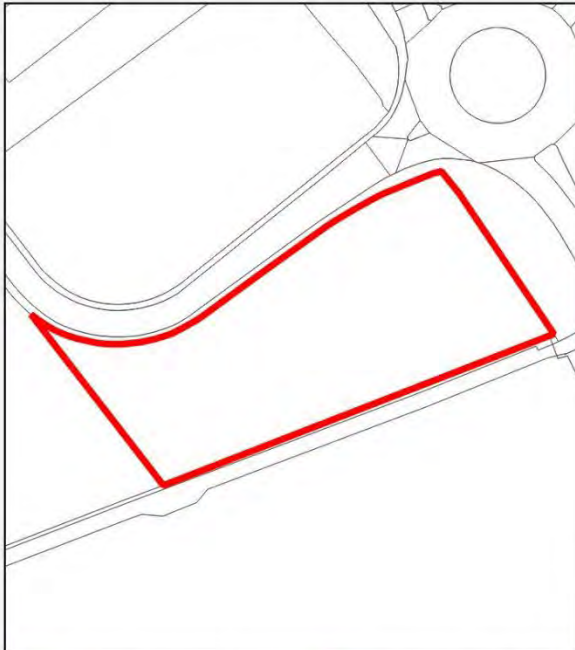
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones

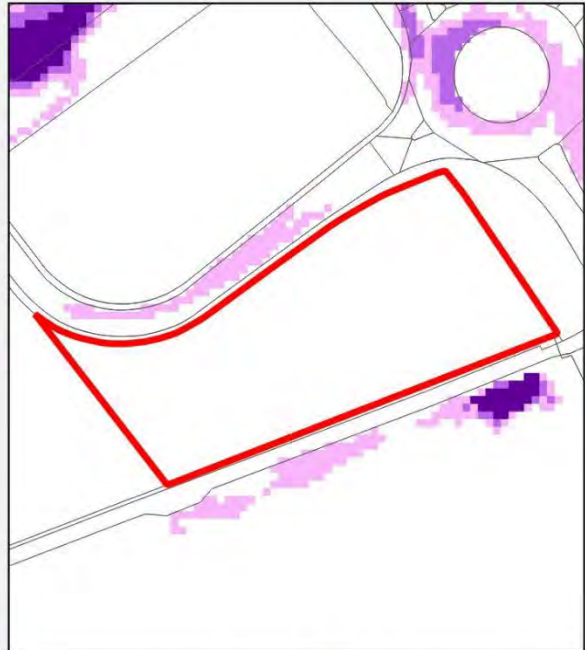


- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



Surface water flood risk



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 1000 annual chance
- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas



## Site CDA: Central Development Area

Current land use: Mixed

Site area (ha): 487

Location: City Centre

Proposed land use: Mixed

Exception test required: Yes

Critical drainage area: Yes (part)

Surface water hotspot: Yes (part)

### **Flood risk summary**

The Central Development Area (CDA) comprises land within the city centre and regeneration areas along the River Soar. Flood risk varies considerably within the CDA, though the clear majority of the area lies outside the floodplain. To the north and west along the river corridor, fluvial flooding is the predominant source of risk. Notable areas of risk include land around Repton Street and Woodgate, and Frog Island. Outside the fluvial floodplain, surface water is the main source of flood risk and much of the area is designated within the SWMP as a critical drainage area.

Exception Test Part A (sustainability): PASS (refer to Exception Testing text)

Exception Test Part B (flood risk): LIKELY PASS (though with a strategic approach to development). In relation to part (b) of the Exception Test, it is clear that flood risk is a notable constraint to development in places along the river corridor, but the vast majority of the CDA lies within Flood Zone 1 and most of the areas at risk are brownfield sites with existing commercial or residential development.

### **Development Guidance**

New development will need to ensure that:

- The capacity of the floodplain is preserved: new development should not reduce the capacity of the floodplain to store water because this can increase flood risk elsewhere. The footprint of existing buildings can be taken into account where redevelopment occurs on brownfield sites.
- There is no alteration of flood flows routes that increases flood risk to third parties: The construction of new buildings in areas of flood risk can alter the routing of flood water across the floodplain. When assessing the impact of developments on flood flow routes it may be necessary to add more detail to the fluvial hydraulic model both for the existing (baseline) and proposed development scenarios, to establish whether there is any impact on flood flow routes. Additionally, pluvial modelling may

be required where the Risk of Flooding from Surface Water maps indicate potential flow routing across a site.

- The development is safe over its lifetime: new buildings should be protected against flood risk, with the primary means of protection being to raise the floor level or the development platform, whilst also ensuring that there is no net reduction in floodplain capacity. Appropriate means of access and egress should be available to users of the development, which will be influenced by the vulnerability of the proposed land use.
- Sustainable Drainage systems (SuDS) are incorporated: new development should incorporate SuDS to prevent an increase in flood risk and a reduction in water quality. Where redevelopment of existing sites occurs, especially in critical drainage areas, runoff should be reduced.

Where a proposed development mirrors the vulnerability classification of existing development, it should be possible to redevelop a site safely within the constraint of maintaining floodplain storage capacity, because existing building footprint at the time of the application can be taken into account. Issues may arise where the proposed footprint exceeds that of existing buildings and no land is available for the provision of compensatory floodplain storage. Flood flow routing also needs to be considered. There are opportunities to reduce flood risk on previously developed sites by ensuring that new buildings are protected against flooding.

Where a proposed development results in an increase to the vulnerability classification compared to existing development (for example the replacement of commercial buildings with residential dwellings), a key additional factor will be the availability of safe access for future residents. This is highly site-specific and cannot be determined in advance of detailed development proposals, because fluvial flood hazard varies considerably within the CDA.

New development on any remaining greenfield or vacant brownfield sites in areas of flood risk within the CDA will not be able to draw upon an existing building footprint in relation to the preservation of floodplain capacity and will therefore be reliant upon the provision of compensatory floodplain storage to offset any reduction in capacity (on a level-for-level basis).

There may be opportunities to reduce flood risk to existing communities within the CDA, particularly where redevelopment aligns with measures identified by the Risk Management

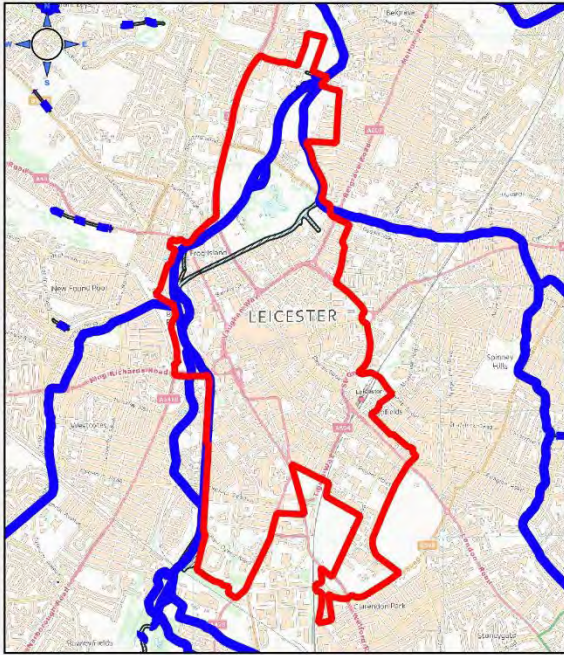
Authorities as part of a flood risk management strategy. For example, redevelopment of Repton Street river frontage may bring wider public benefits by protecting an existing community against the risk of flooding, though it would still be necessary to ensure that there is no residual increase in flood risk elsewhere and that all the requirements for ensuring the safety of the development are met. Opportunities to improve access to the river for maintenance, amenity and biodiversity enhancement should also be taken.

A strategic, plan-led approach to new development in key regeneration areas alongside the river is likely to be more successful than ad-hoc planning applications. Notable areas which may benefit from masterplanning work include Frog Island and land to the west of the River between Rally Park and the A6.



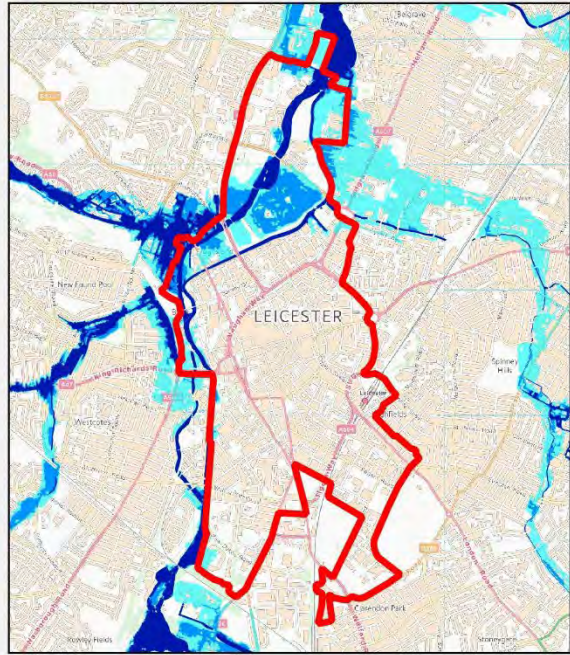
Site number: CDA

Site context



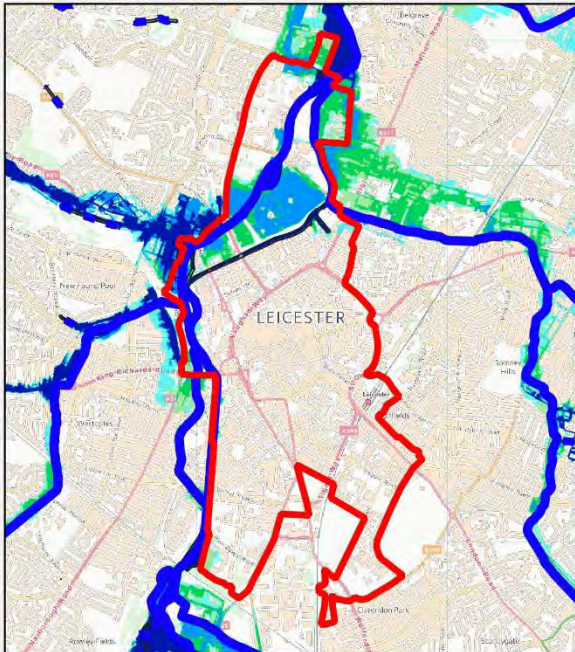
- Site Boundary
- Ordinary Watercourses
- 8m buffer (approx)
- Main Rivers

Flood Zones



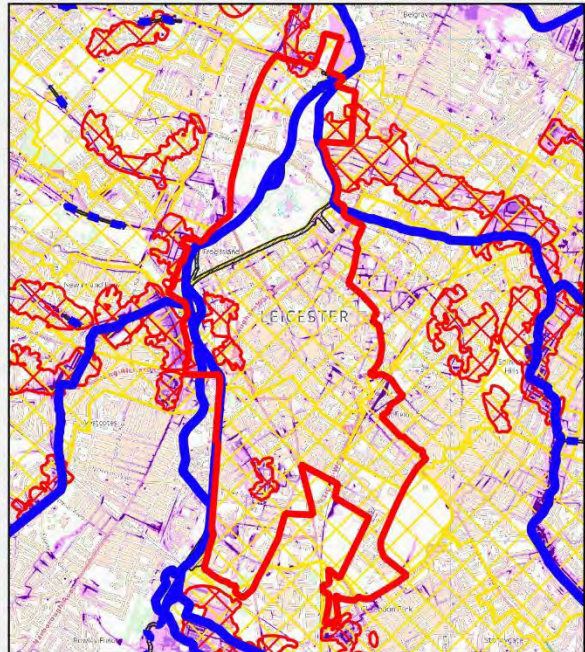
- Flood Zone 3b
- Flood Zone 3a
- Flood Zone 2

Fluvial risk (defended outlines)



- 1 in 20 annual chance
- 1 in 100 annual chance
- 1 in 100 annual chance +30% flow
- 1 in 100 annual chance +50% flow
- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance

Surface water flood risk



- 1 in 30 annual chance
- 1 in 100 annual chance
- 1 in 1000 annual chance
- Surface water hotspots
- Critical drainage areas