

## Appendix E – Summary of Flood Risk in Melton borough

For the purposes of analysing and summarising flood risk across Melton borough, the Borough has been delineated into four 'areas', as shown in Figure 1-1, based on the main rivers and ward boundaries.

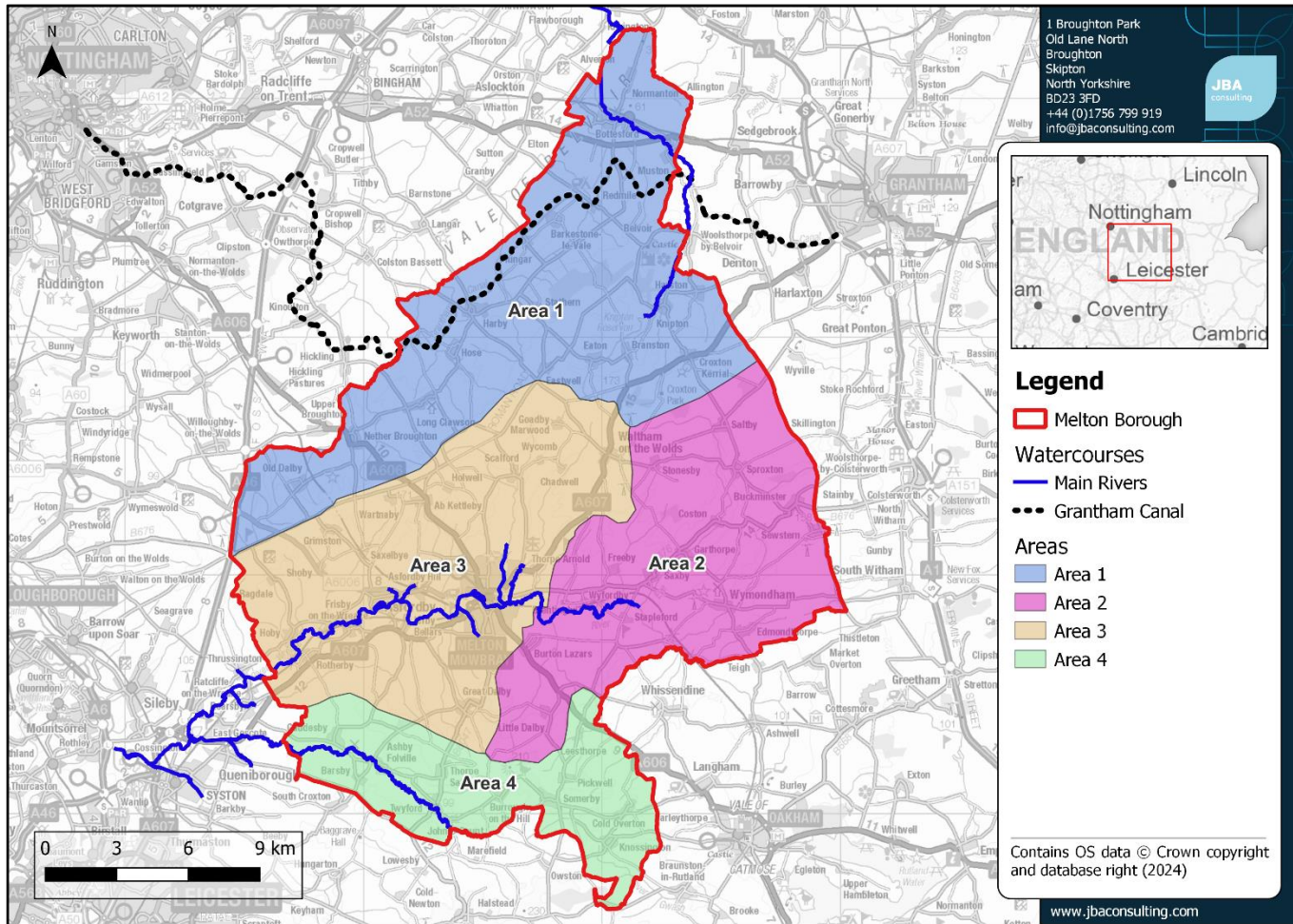


Figure 1-1: Areas used for analysing flood risk

Area 1: North Melton borough – Grantham Canal, River Devon, River Smite, The Grimmer, Winter Beck, Rundle Beck, and Scalford Brook

This area is largely rural and located in the north of Melton borough, containing villages of Bottesford and Knipton

<p>Fluvial flood risk</p>	<p>The watercourses operating within this area include the Grantham Canal, which traverses from west to east through the northern part of the area, extending from Hose towards Redmile. Tributaries contributing to the Grantham Canal within this catchment include Winter Beck and The Grimmer. Additionally, the River Devon flows through Bottesford and Muston in the north of the area, as well as Knipton, Branston, and Eaton in the eastern region. Moreover, in Nether Broughton, the River Smite and Dalby Brook flow through the area. Dalby Brook flows from Old Dalby Wood north, before exiting Melton borough and then re-entering north of Queensway Old Dalby and following the Melton borough boundary flowing north towards Area 1.</p> <p>Areas within Area 1 face fluvial flood risks, particularly in regions surrounding the River Devon and Winter Beck spanning Beckingthorpe, Bottesford, and Muston. Notably, numerous properties along The Highstreet and Belvoir Road in Bottesford, as well as those along Main Street and Church Lane in Muston, are situated in Flood Zones 2 and 3. Moving upstream along the River Devon, areas in Harston, Knipton, Branston, and Eaton also encounter fluvial flood risks, predominantly around the river, with extents designated as Flood Zones 2 and 3. A particularly vulnerable area is Belvoir Road in Knipton. Additionally, Flood Zones 2 and 3 are present between Plungar and Harby along Rundle Beck, and the west of area 1 around Dam Dyke and Wash Dyke, located west of Hose off Bolton Lane.</p>
<p>Existing Defences</p>	<p>According to the EA AIMS dataset, key flood assets within this catchment area include existing flood defences along the River Devon, Scalford Brook, and Thorpe Brook. These defences comprise natural high ground flanking the River Devon through Bottesford and Muston, along with engineered high ground south of Church Lane in Muston, situated along the right bank of the River Devon. Further, natural high ground is present on both sides of the River Devon from Knipton Reservoir to the north of the catchment.</p>
<p>Surface water flood risk</p>	<p>Surface water flow paths follow the topography of the area into fluvial watercourses. For an overview of topography across the whole study area, see Figure 4-3 in the main report. There are areas of surface water ponding in the villages, and behind rail embankments.</p> <p>The risk of flooding from surface water in this area is particularly apparent in settlements located below higher elevation areas and higher in catchments. In Hose, Redmile, and Harby surface water flow paths pose flood risk from the 3.3% AEP event upwards. In other villages within this area, such as Bottesford and Knipton, surface water flood risk appears largely confined to roads up to a 1% AEP event. In the villages of Stathern and Long Clawson, surface water flood risk is associated with smaller ordinary watercourses alongside ponding in topographic lows. Area 1 is predominantly affected by the 1% and 0.1% AEP events, particularly in areas of habitation and roads experiencing significant flow paths and areas of ponding.</p>

Area 1: North Melton borough – Grantham Canal, River Devon, River Smite, The Grimmer, Winter Beck, Rundle Beck, and Scaford Brook

This area is largely rural and located in the north of Melton borough, containing villages of Bottesford and Kipton

<p>Reservoir inundation Risks</p>	<p>The following reservoirs impact the area in the 'dry day' scenario.</p> <ul style="list-style-type: none"> <li>- Belvoir Lower Lake (The Belvoir Estate): Flood extents follow along the River Devon in the northeast of the area. Flood extents are shown to affect land between the Belvoir Estate through Muston, Easthorpe, and Bottesford towards the north of the area.</li> <li>- Belvoir Upper Lake (The Belvoir Estate): Flood extents follow along Belvoir Lower Lake into the River Devon in the northeast of the area. Flood extents are shown to affect land between the Belvoir Estate through Muston, Easthorpe, and Bottesford towards the north of the area.</li> <li>- Kipton (Canal and River Trust): Flood extents follow along the River Devon through both Belvoir Upper and Lower Lakes in the northeast of the area. Flood extents are shown to affect land between Kipton, through the Belvoir Estate, Muston, Easthorpe, and Bottesford towards the north of the area.</li> </ul> <p>The following reservoirs impact the area in the 'wet day' scenario.</p> <ul style="list-style-type: none"> <li>- Belvoir Lower Lake (The Belvoir Estate): Flood extents are greater than in the 'dry day' scenario, with flood extents extending further into settlements in the north of the area although following largely a similar path along the River Devon, with an additional area of flooding following winter Beck.</li> <li>- Belvoir Upper Lake (The Belvoir Estate): Flood extents are greater than in the 'dry day' scenario, with flood extents extending further into settlements in the north of the area although following largely a similar path along the River Devon, with an additional area of flooding following winter Beck.</li> <li>- Kipton (Canal and River Trust): Flood Extents are greater than in the 'dry day' scenario also following along the River Devon through both Belvoir Upper and Lower Lakes in the northeast of the area. Flood extents are shown to affect a larger number of settlements in the north of the area.</li> </ul>
<p>Susceptibility to groundwater risks</p>	<p>The AStGWF dataset shows areas of greater than 50% susceptibility located throughout the area, with one significant area of &gt;75% susceptibility. Encompassing areas of Bottesford and Easthorpe in the north of the area. There are areas of 50%-75% susceptibility in the east of the area close to Harby, and Hose; along Canal Lane, Harby Lane, Colston Lane and Meadow lane.</p> <p>The JBA Groundwater Emergence Map identifies ground water levels less than 0.025m below the surface along the course of the River Devon in areas around Bottesford. As a result, ground water levels may be contributing to flooding in Bottesford. Based on the RoFfSW dataset, it is likely any groundwater that emerges in the area will flow towards the north- east, mirroring route of the River Devon. Additionally, the mapping identifies groundwater levels in Long Clawson and Stathern with levels less that 0.025m below the grounds surface.</p>

Area 1: North Melton borough – Grantham Canal, River Devon, River Smite, The Grimmer, Winter Beck, Rundle Beck, and Salford Brook

This area is largely rural and located in the north of Melton borough, containing villages of Bottesford and Knipton

Historic,  
recorded flood  
events

EA recorded flood outlines highlighted the following:

- January 1950 – Fluvial flooding of an unknown cause along the River Devon with areas of Muston, Easthorpe, Bottesford and a small area north of Normanton affected.
- February 1977 – Fluvial flooding due to exceedance of river capacity of the River Devon in the north of the area.
- January 1979 – Fluvial flooding due to exceedance of river capacity along the River Devon. Affected areas from Knipton, a small area of the Belvoir estate, Muston, Easthorpe, Bottesford and a small area north of Normanton.
- July 2001 – Fluvial flooding due to exceedance of river capacity of the River Devon in the north of the area with areas of Muston, Easthorpe, and Bottesford affected.

Within this area, there are 16 recorded flood events in LCC's record.

There are 3 recorded canal breaches in this area and 21 canal overtopping events in this area. All canal flooding has been along the Grantham canal.

Area 2: East Melton borough – River Eye, Langham brook, Freeby Brook, Birton Brook

This area is largely rural and located in the east of Melton borough, containing Settlements of Wymondham, Saxby, Garthorpe, Buckminster, Sewstern, Saltby, Stonesby and Burton Lazars.

Fluvial flood risk	<p>The River Eye runs through this area from Hamwell Spring south, exiting the area in the west of the area at Brentingby. In the southeast Langham flows westwards from the east of the area, through Stapleford Park before joining the River Eye. In the south of the area, Burton Brook flows from the A606 north into the River Eye. Somerby Brook also flows from the south of the catchment northwards and joins Langham Brook just south of Stapleford Park.</p> <p>Regarding the EA Flood Zones associated with these watercourses, around the River Eye there are areas within Flood Zone 2 and 3. Settlements with areas within Flood Zones 2 and 3 include Wymondham, and Coston.</p>
Existing defences	<p>The EA AIMS dataset shows embankments, engineered high ground, natural high ground, and flood walls along the River Eye through the area.</p>
Surface water flood risk	<p>Surface water flow paths follow the topography of the land eventually flowing into the River Eye and its tributaries, with extents primarily flowing southwest in the north of the area and flowing west in the south of the area. From the 3.3% AEP event, surface water flow paths in the south of the area around the River Eye flowing west poses flood risk particularly in Melton Mowbray.</p> <p>In the more rural part of the area, surface water mapping can be attributed to existing ordinary watercourses and dry channels for the 3.3%, 1% and 0.1% AEP events. The 0.1% AEP event period follows a similar path to the 1% AEP event but with larger magnitudes and some larger flower paths in the south around Wyfordby.</p>
Reservoir Inundation Risks	<p>The following reservoirs impact the area in the 'dry day' scenario.</p> <ul style="list-style-type: none"> <li>- Brentingby Flood Storage Reservoir (Environment Agency): Flood Extents affecting land out of bank in the west of the catchment around Melton Mowbray. This 'dry day' reservoir inundation would have the most adverse effects within this area as a large number of properties would be affected.</li> <li>- Stapleford Lake (Trustees of Lady Gretton's 1992 Settlement): Flood extents largely remain within the bank however immediately downstream of Stapleford Lake there is out of bank flooding around Stapleford Park</li> </ul> <p>The following reservoirs impact the area in the 'wet day' scenario. It should be noted that the raised rail tracks impound extents near Brentingby.</p> <ul style="list-style-type: none"> <li>- Brentingby Flood Storage Reservoir(Environment Agency): Flood extents are largely similar to that in the 'dry day' scenario. Extending slightly further north in Melton Mowbray.</li> <li>- Stapleford Lake (Trustees of Lady Gretton's 1992 Settlement): Flood extents are significantly greater than the dry day scenario and would have the most adverse 'wet day' reservoir inundation affects. Flooding is entirely out of bank and follows the River Eye, flooding would span from one side of the catchment to the other, predominately in a westward direction.</li> </ul>
Susceptibility to groundwater flood risk	<p>The AStGWF dataset shows that the majority of the area is at &lt;25% susceptibility to groundwater flooding. However, there are pockets of higher susceptibility above 75% in the east of the area and between Wyfordby and Stableford around the main road. In the South of the catchment between Saxby and Burton Lazars there is an area identified as 50-75% susceptible to groundwater flooding.</p> <p>The JBA Groundwater Map identifies a similar trend, with levels across much of the area at least 5m below the ground surface. Exceptions to this are</p>



Area 2: East Melton borough – River Eye, Langham brook, Freeby Brook, Birton Brook

This area is largely rural and located in the east of Melton borough, containing Settlements of Wymondham, Saxby, Garthorpe, Buckminster, Sewstern, Saltby, Stonesby and Burton Lazars.

areas in the north of the area around Stonesby which are within 0.5m of the surface. There are small areas of high groundwater levels in the south, but they are much smaller in area. Emerging groundwater will likely follow existing watercourses and surface water flow paths, indicating areas downstream in the west of the area have the greatest potential to be affected by groundwater flooding.

Historic,  
recorded flood  
events

EA recorded flood outlines highlight the following:

- January 1977 – Flooding of the River Eye where channel capacity was exceeded.
- February 1977 – Flooding of the River Eye and Langham brook where channel capacity.
- April 1998 – Flooding of the River Eye and Langham Brook where channel capacity was exceeded slightly smaller in magnitude to the 1977 events.
- October 2000 – Flooding of the River Eye from where the bridge over the river eye between Wyfordby and Stapleford. Flooding remained in bank for the majority of the river section but exceeded channel capacity in a few locations mainly in rural areas in the south of the area.

Within this area, there are 8 recorded flood events in LCC's record.

There are no recorded canal flooding events in this area.

Area 3: West Melton borough – River Eye, River Wreake, Dalby Brook, Fairham Brook, Austen Dyke, Welby Brook, and Scalford Brook

This area is largely rural and located in the west of Melton borough, containing Settlements of Melton Mowbray, Asfordby, Frisby on the Wreake, Kirby Bellars, Rotherby, Holby, Ragdale, Sholby, Saxelbye, Grimston, Wartnaby, Ab Kettleby.

Fluvial flood  
risk

The River Eye flows Westwards through south Melton Mowbray. Rearsby Brook runs through a small section of the south of the area crossing under Gaddesby Lane flowing south out of Melton borough. Burton Brook runs from Lake Spinney east of Little Darby, flowing north into the River Wreake. The River Eye has a confluence with the Scalford Brook in Melton Mowbray flowing west before it becomes the River Wreake near Sysonby Lodge. The River Wreake then flows south before exiting catchment just past south of Hoby. Austen Dyke flows through Saxelbye South before joining the River Wreake downstream of Frisby on the Wreake. Fairham Brook flows from Woodhall Farm off Nottingham Road, Old Darby, towards the north of the area where it exits Melton borough. Welby Brook flows south from just north of Asfordby Business Park, by Welby Road, into the River Wreake just upstream of Asfordby.

Regarding the EA Flood Zones associated with these watercourses, some areas around The River Eye and River Wreake fall within Flood Zones 2 and 3. Settlements with areas within flood Zones 2 and 3 include Melton Mowbray, Asfordby, Saxelbye, Hoby. In particular, areas in the west of Melton Mowbray fall into Flood Zones 2 and 3, alongside locations in the south of Asfordby. Downstream of Asfordby, Hoby and some areas in the west of Hoby are located in Flood Zones 2 and 3. The areas at greatest risk from Scalford Brook in Melton Mowbray are around Kings Road and Algernon

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	Road. In Melton Mowbray there is an area around the River Wreake which is located within Flood Zones 2 and 3, and to the north of the area there is associated Flood Zones 2 and 3 around Burton Brook.
Existing defences	<p>The EA AIMS dataset shows:</p> <ul style="list-style-type: none"> <li>• There are three flood defence walls, and a flood embankment located on Foxville Street in Ashby Folville.</li> <li>• In Melton Mowbray along with the defences on the River Eye there is engineered high ground along the unnamed water course flowing into the River Wreake running adjacent to Edendale Road. Additionally, in the north of Melton Mowbray, flood defences consist of natural high ground, a dam embankment, and spillway within Melton County Park.</li> <li>• Along Thorpe Brook in the west of the area there is embankments, engineered high ground, natural high ground, and a flood wall where Thorpe Brook flows through Melton Mowbray.</li> <li>• Engineered high ground runs alongside Scalford Brook adjacent to Kings Road in Melton Mowbray. Another natural high ground is located near Thorpe Brook by Thorpe Arnold Cricket Club in Melton Mowbray.</li> <li>• There are reservoir embankments, and three spillways associated with the reservoir just south of Asfordby.</li> <li>• Along the River Wreake and River Eye there are embankments, engineered high ground, and four flood walls. There are two flood walls located on Welby Brook by Brook Crescent and Main Street where Welby brook passes under Melton Road, protecting properties to the west of Brook Crescent. An additional two flood walls are located along the River Wreake, adjacent to Frisby Lake.</li> </ul>
Surface water flood risk	Surface water flow paths follow the topography of the land, primarily flowing into watercourses present, and typically flowing south in the south of the area and flowing west in Melton Mowbray, for the 3.3% AEP event, surface water flow paths in the south of the area are minor, with some extents within Melton Mowbray that are not associated with watercourses. However surface water flood risk increases around Melton Mowbray and other settlements along the River Wreake and River Eye for the 1% AEP event, increasing further for the 0.1% AEP event, where there are significant flow paths and areas of ponding within the town. Surface water in the north of the area for all return periods is largely contained to existing channels and there is less associated flood risk.

Area 3: West Melton borough – River Eye, River Wreake, Dalby Brook, Fairham Brook, Austen Dyke, Welby Brook, and Scaford Brook

This area is largely rural and located in the west of Melton borough, containing Settlements of Melton Mowbray, Asfordby, Frisby on the Wreake, Kirby Bellars, Rotherby, Holby, Ragdale, Sholby, Saxelbye, Grimston, Wartnaby, Ab Kettleby.

<p>Reservoir inundation risks</p>	<p>The following reservoirs impact the area in the 'dry day' scenario.</p> <ul style="list-style-type: none"> <li>- Brentingby Flood Storage Reservoir (Environment Agency): Flood Extents affecting land around the River Eye in Melton Mowbray and River Wreake for Sysonby, Kirby Bellars, Asfordby, Frisby on the Wreake, Hoby, and Rotherby. Water flowing out of bank and follows the topography of the land and flows south.</li> <li>- Scaford Brook Reservoir (Environment Agency): Flood extents flow out of bank at Egerton park and in fields adjacent to Long Field Spencer Academy in Melton Mowbray. The flooding is then contained within the channel for the remainder of the River Wreake.</li> <li>- Frisby Lake (Environment Agency): Flood extents are from Frisby on the Wreake to the edge of the catchment following the path of the River Wreake.</li> <li>- Ragdale (Severn Trent Water): Flood extents are on the western edge of the area around the Six Hills Golf Course.</li> <li>- Stapleford Lake (Trustees of Lady Gretton's 1992 settlement): Extents are confined to the River Eye.</li> </ul> <p>The following reservoirs impact the area in the 'wet day' scenario.</p> <ul style="list-style-type: none"> <li>- Brentingby Flood Storage Reservoir (Environment Agency): Flood Extents follow a similar path as the 'dry day' scenario but with a slightly larger flood extent extending further out of bank.</li> <li>- Scaford Brook Reservoir (Environment Agency): Flood Extents follow a similar path as the 'dry day' scenario but with a significantly larger flood extent extending further out of bank and extending out of bank for the rest of the River Wreake flowing through the area. affecting land around Sysonby, Kirby Bellars, Asfordby, Frisby on the Wreake, Hoby, and Rotherby.</li> <li>- Stapleford Lake (Trustees of Lady Gretton's 1992 settlement): Flood extents breach the banks of the river channel and in Melton Mowbray flooding a small area around Priors Close.</li> <li>- Frisby Lake (Environment Agency): Data not available</li> <li>- Ragdale (Severn Trent Water): Data not available</li> </ul>
<p>Susceptibility to groundwater flood risk</p>	<p>The AStGWF dataset shows that the majority of the area is at &lt;25% susceptibility to groundwater flooding. However, around Asfordby there is an area where the ground water susceptibility &gt;75%, the only other location in the area where the groundwater susceptibility is &gt;75% is to the south of Holby where the River Wreake exits Melton borough. There are two areas which are identified as &gt;50% susceptibility to groundwater flooding around Melton Mowbray and between Friby on the River Wreake, Holby, and Great Dalby.</p> <p>The JBA Groundwater Map identifies a similar trend, with levels across much of the area at least 5m below the ground surface. Exceptions to this are in the sound around the River Eye and River Wreake where groundwater levels are predicted to be within 0.5m or less than 0.025m of the surface. Within Melton Mowbray there is a significant area surrounding the A607 where groundwater levels are less than 0.025m below the grounds surface. There are small areas of higher groundwater levels in the north around Ab Kettleby and north of Old Darby, but they are much smaller in area and are not in close proximity to settlements.</p>



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This area is largely rural and located in the west of Melton borough, containing Settlements of Melton Mowbray, Asfordby, Frisby on the Wreake, Kirby Bellars, Rotherby, Holby, Ragdale, Sholby, Saxelbye, Grimston, Wartnaby, Ab Kettleby.

<p>Historic, recorded flood events</p>	<p>EA recorded flood outlines highlight the following:</p> <ul style="list-style-type: none"> <li>• January 1977 – Flooding of the River Eye and a small section of the River Wreake where channel capacity was exceeded. Land was flooded by Melton Mowbray and Sysonby.</li> <li>• February 1977 – Flooding of the River Eye and River Wreake along Sysonby, Kirby Bellars, Asfordby, Frisby on the Wreake, downstream flooding was out of bank but did not affect settlements.</li> <li>• April 1998 – Flooding of the River Eye and River Wreake along Sysonby, Kirby Bellars, Asfordby, Frisby on the Wreake, downstream flooding was out of bank but did not affect settlements. Smaller in magnitude to the February 1977 flooding.</li> <li>• October 2000 – Flooding along the River Eye and River Wreake, flooding is contained mostly within the channel and this event was the smallest of the recorded flood outlines.</li> </ul> <p>Within this area, there are 14 recorded flood events in LCC's record.</p> <p>There are no recorded canal flooding events in this area.</p>
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Area 4: South Melton borough – Burton Brook, River Gwash, and Gaddesby Brook, Rearsby brook.

Area 4 is largely rural and located in the south of Melton borough, containing settlements of Gaddesby, Ashby Folville, Barsby, Thorpe Satchville, Twyford, Burrough on the Hill, Somerby, Pickwell, Cold Overton, and Knossington.

<p>Fluvial flood risk</p>	<p>The River Gwash runs through the south of the area flowing west just south of Knossington. The Gaddesby Brook and its tributaries flow west through Twyford and Gaddesby in the south of the area.</p> <p>This is also the case for Reasby Brook in the west of the area. Areas such as Twyford, Ashby Folville and Gaddesby in the south of the area around Gaddesby Brook are within Flood Zones 2 and 3.</p>
<p>Existing defences</p>	<p>The EA AIMS dataset shows there are engineered high ground and natural high ground located along the Gaddesby Brook.</p>
<p>Surface water flood risk</p>	<p>Surface water flow paths follow the topography of the land, primarily into the watercourses or areas of ponding. In Melton Mowbray and in the north of the area the surface water is flowing west. In the south of the area, surface water flows into the Gaddesby Brook and flows west. north of Somerby, surface water flows north towards area 2.</p> <p>For the majority of the area, surface water follows the topography to flow into existing ordinary watercourses and dry channels for the 3.3% ASEP and 1% AEP events. In the 0.1% AEP event, surface water follows a similar path to the 1% AEP but with larger magnitudes and some larger flower paths are apparent in the south around Little Dalby and areas of ponding interspersed throughout the area.</p>

Area 4: South Melton borough – Burton Brook, River Gwash, and Gaddesby Brook, Rearsby brook.

Area 4 is largely rural and located in the south of Melton borough, containing settlements of Gaddesby, Ashby Folville, Barsby, Thorpe Satchville, Twyford, Burrough on the Hill, Somerby, Pickwell, Cold Overton, and Knossington.

Reservoir Inundation Risks	The Environment Agency's Reservoir Flood Extents mapping for the 'Dry Day' and 'Wet Day' scenarios show that there are no extents within this area
Susceptibility to groundwater flood risk	<p>The AStGWF dataset shows areas with greater than 50% susceptibility spread across the area, with much of the area also at &lt;25% susceptibility. The area along Gaddesby brook directly below Gaddesby is the highest susceptibility to groundwater flooding at &gt;75% susceptibility. Areas of Gaddesby, and Ashby Folville, are all identified as areas with groundwater susceptibility &gt;50%.</p> <p>The JBA Groundwater Emergence Map identifies four main locations in the area where groundwater levels are within 0.5m of the surface, In Along Gaddesby Brook, in Somerby, and areas around Rearsby Brook. Although the areas around Rearsby Brook do not affect any settlements. Emerging groundwater will likely follow existing watercourses and surface water flow paths.</p>
Historic, recorded flood events	<p>Within this area, there are 3 recoded flood events in LCC's record.</p> <p>There are no recorded canal flooding events in this area.</p>