

# EB 104D

## Chelmsford Surface Water Management Plan Appendix C

NORTH

**Legend**

-  Administrative Boundary
-  Model Extent
-  Main River
-  Ordinary Watercourse
-  Culverted Watercourse



**Notes**

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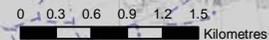
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**Chelmsford Location Plan**

**Consultant**

**CAPITA SYMONDS**  
Flood Risk Management

Capita Symonds  
Level Seven,  
52 Grosvenor Gardens,  
Belgravia,  
London  
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**FIGURE 1**

**Legend**

-  Administrative Boundary
  -  Model Extent
  -  Main River
  -  Ordinary Watercourse
  -  Culverted Watercourse
- Terrain Height (m)
-  0 - 40
  -  40 - 50
  -  50 - 60
  -  60 - 70
  -  70 - 80
  -  80 - 90
  -  90 - 100

**Notes**

1. Digital Terrain Model is based on unfiltered data and therefore includes buildings and vegetation.

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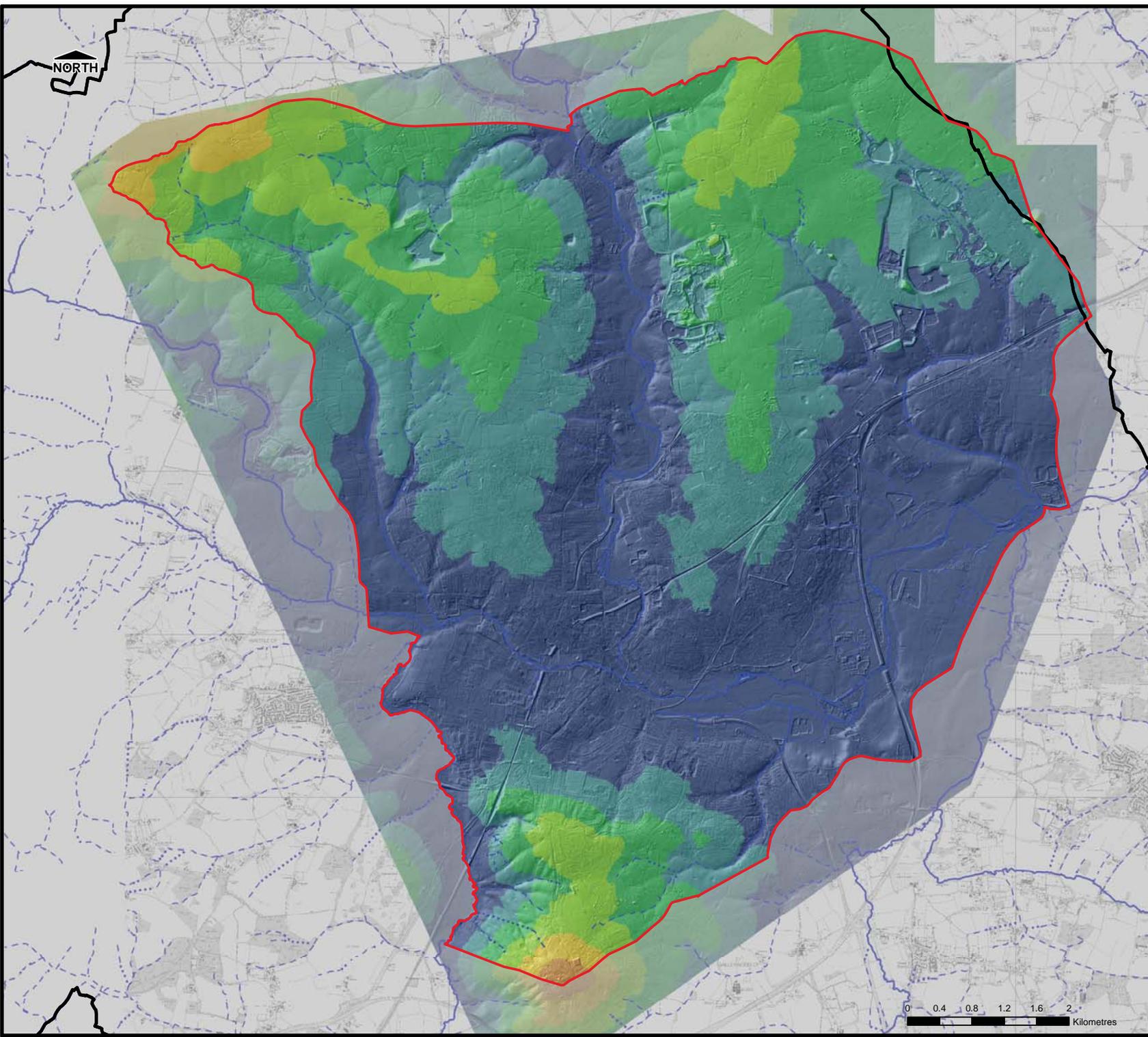
**Digital Terrain Model  
Overview**

**Consultant**  
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Level Seven,  
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**FIGURE 2**

Filepath: G:\environment\ZWE\TICS061237 - Chelmsford\SWMP\GIS\ArcMxds\Fig02\_DTM.mxd



**Legend**

-  Administrative Boundary
-  Model Extent
-  Main River
-  Ordinary Watercourse
-  Culverted Watercourse
-  Building/Structure
-  General Surface (Manmade)
-  General Surface (Natural)
-  Inland Water
-  Paths, Roads, Tracks or Rail
-  Unclassified, Land

**Notes**

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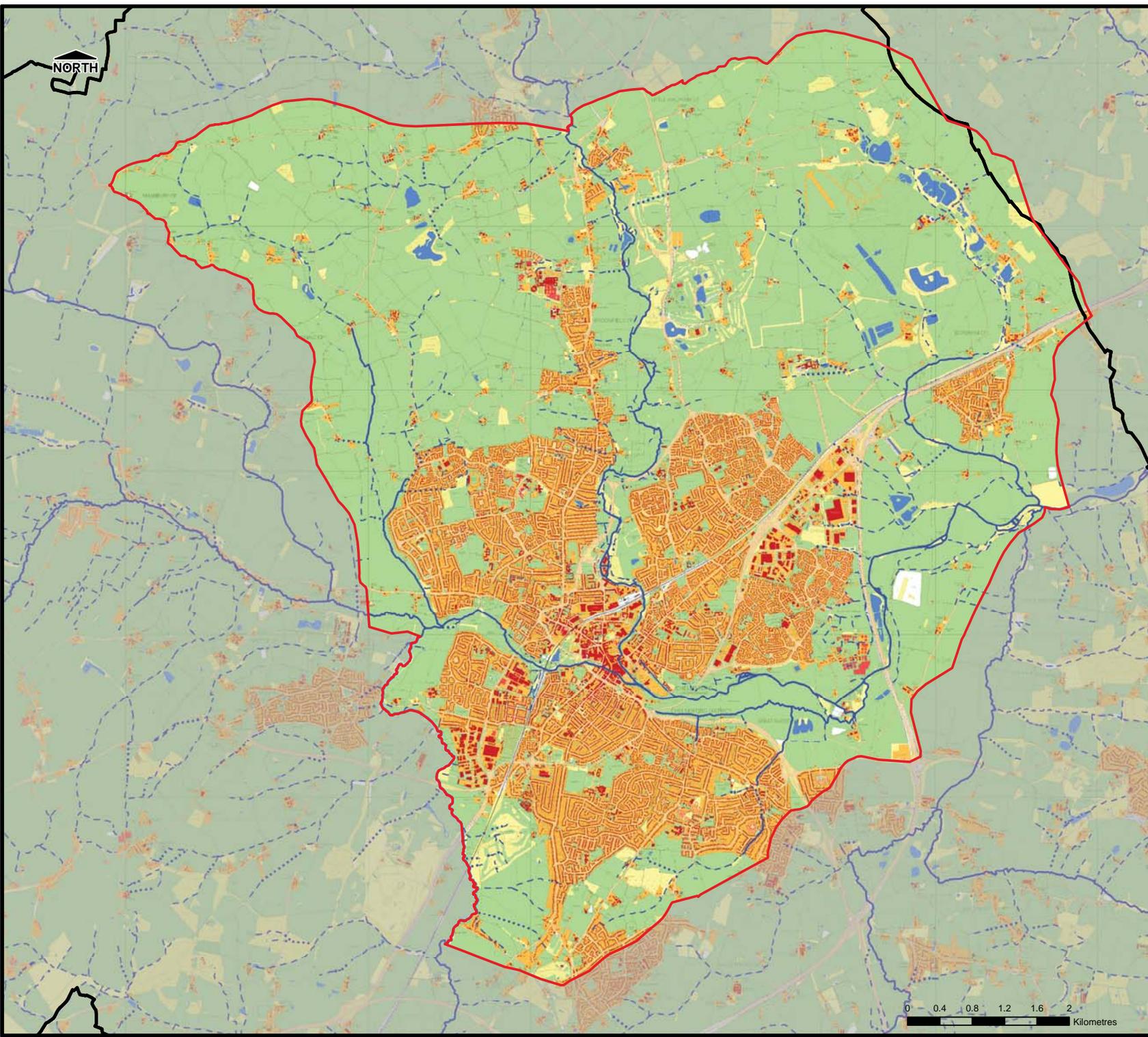
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|--------------------|-------------|-----------------|--------------------|
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**Land Use Areas Overview**

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**FIGURE 3**

Filepath: G:\environment\ZWE\TICS061237\_ChelmsfordSWMP\GIS\ArcMap9\Fig03\_Landuse.mxd



**Legend**

-  Administrative Boundary
-  Model Extent
-  Main River
-  Ordinary Watercourse
-  Culverted Watercourse
- Bedrock**
-  Bagshot Formation (BGS-SAND)
-  Claygate Member (CLGB-CLSS)
-  London Clay Formation (LC-CLSS)

- Superficial Deposits**
-  Alluvium (ALV-CSSG)
-  Brickearth (BRK-CLSS)
-  Glaciofluvial Deposits (GFDMP-SAGR)
-  Glaciolacustrine Deposits (GLLMP-CLSS)
-  Head (HEAD)
-  Kesgrave Catchment Subgroup (KGCA-SAGR)
-  Lowestoft Formation (LOFT-DMTN)
-  Peat (PEAT-PEAT)
-  River Terrace Deposits (RTD)
-  Stanmore Gravel Formation (STGR-SAGR)
-  Tufa (TUFA-CATU)

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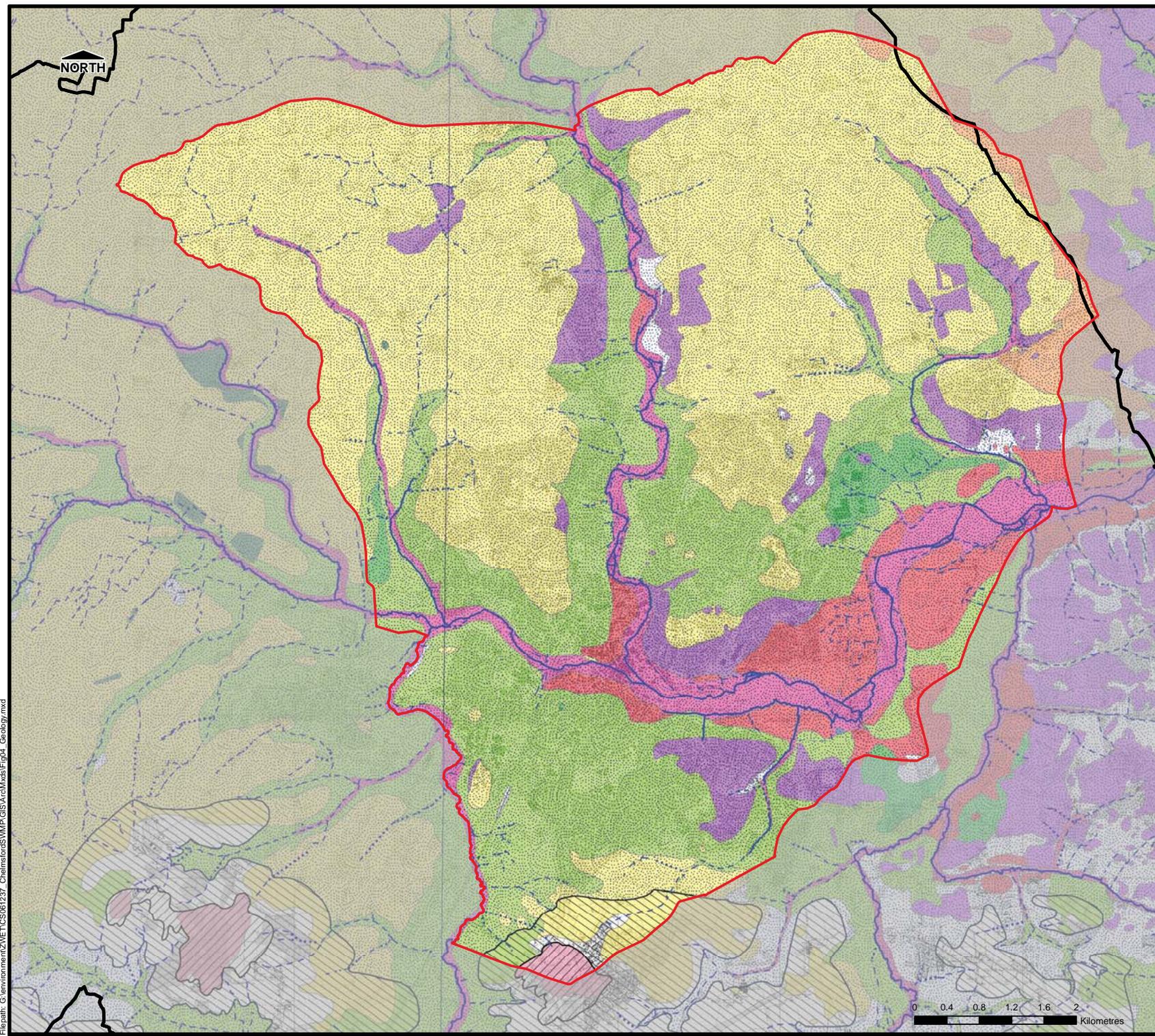
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| 1:45,000    | July 2013 | G.ATHANASIA | M.ARTHUR    |

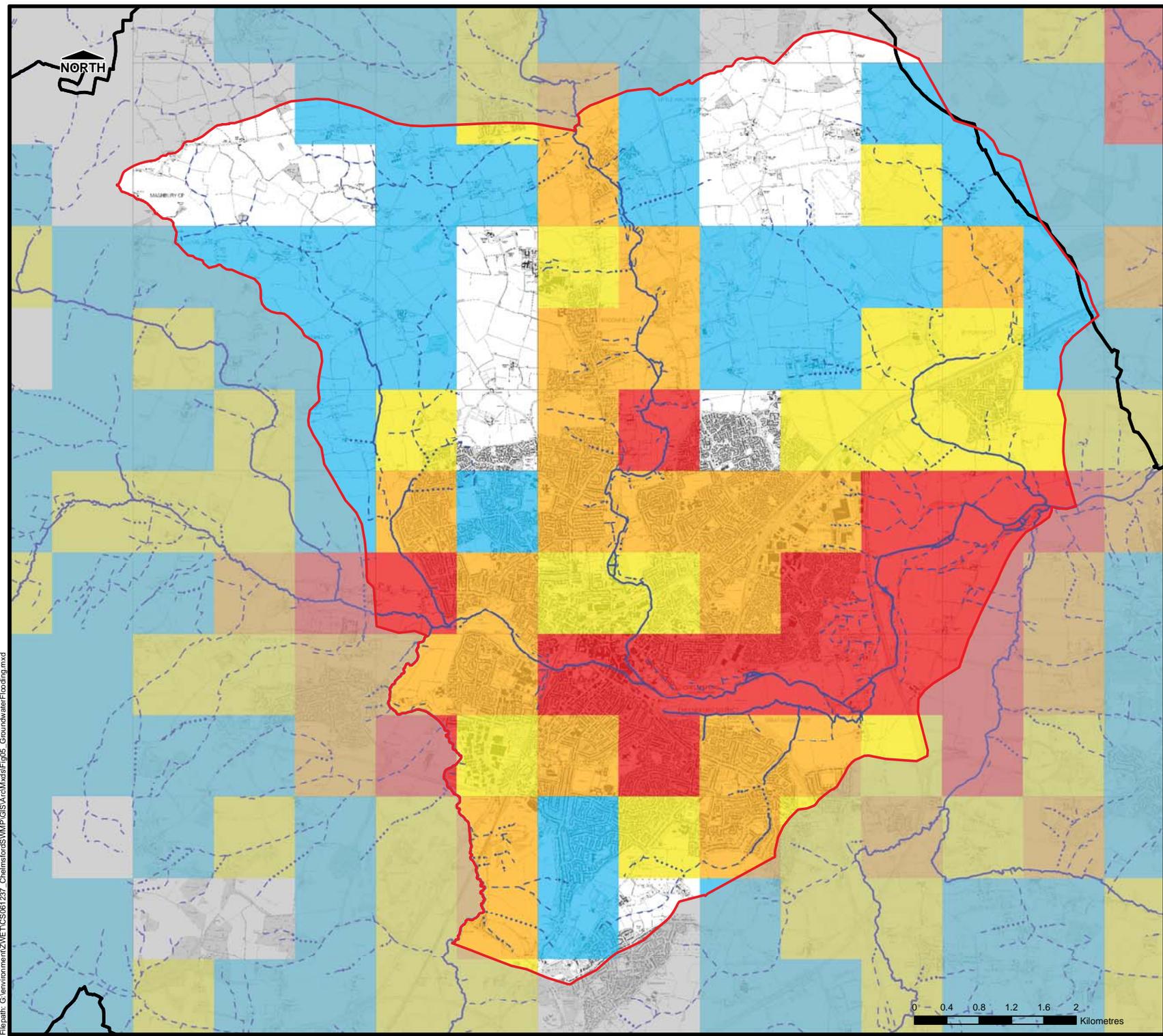
**Geological Map Overview**

**Consultant**  
**CAPITA SYMONDS**  
Flood Risk Management

Capita Symonds  
Level Seven,  
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**FIGURE 4**





THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED

- Legend**
- Administrative Boundary
  - Model Extent
  - Main River
  - Ordinary Watercourse
  - Culverted Watercourse
- Susceptibility to Groundwater Flooding**
- Very High;  $\geq 75\%$
  - High;  $\geq 50\% < 75\%$
  - Moderate;  $\geq 25\% < 50\%$
  - Low;  $< 25\%$

**Notes**

This susceptibility data is suitable for use for regional or national planning purposes where the groundwater flooding information will be used along with a range of other relevant information to inform land-use planning decisions. The susceptibility data should not be used on its own to make planning decisions at any scale, and, in particular, should not be used to inform planning decisions at the site scale. The susceptibility data cannot be used on its own to indicate risk of groundwater flooding.

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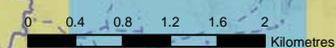
|                    |             |                 |                    |
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**Susceptibility to Groundwater Flooding Map**  
**with Reported Historic Incidents**

**Consultant**

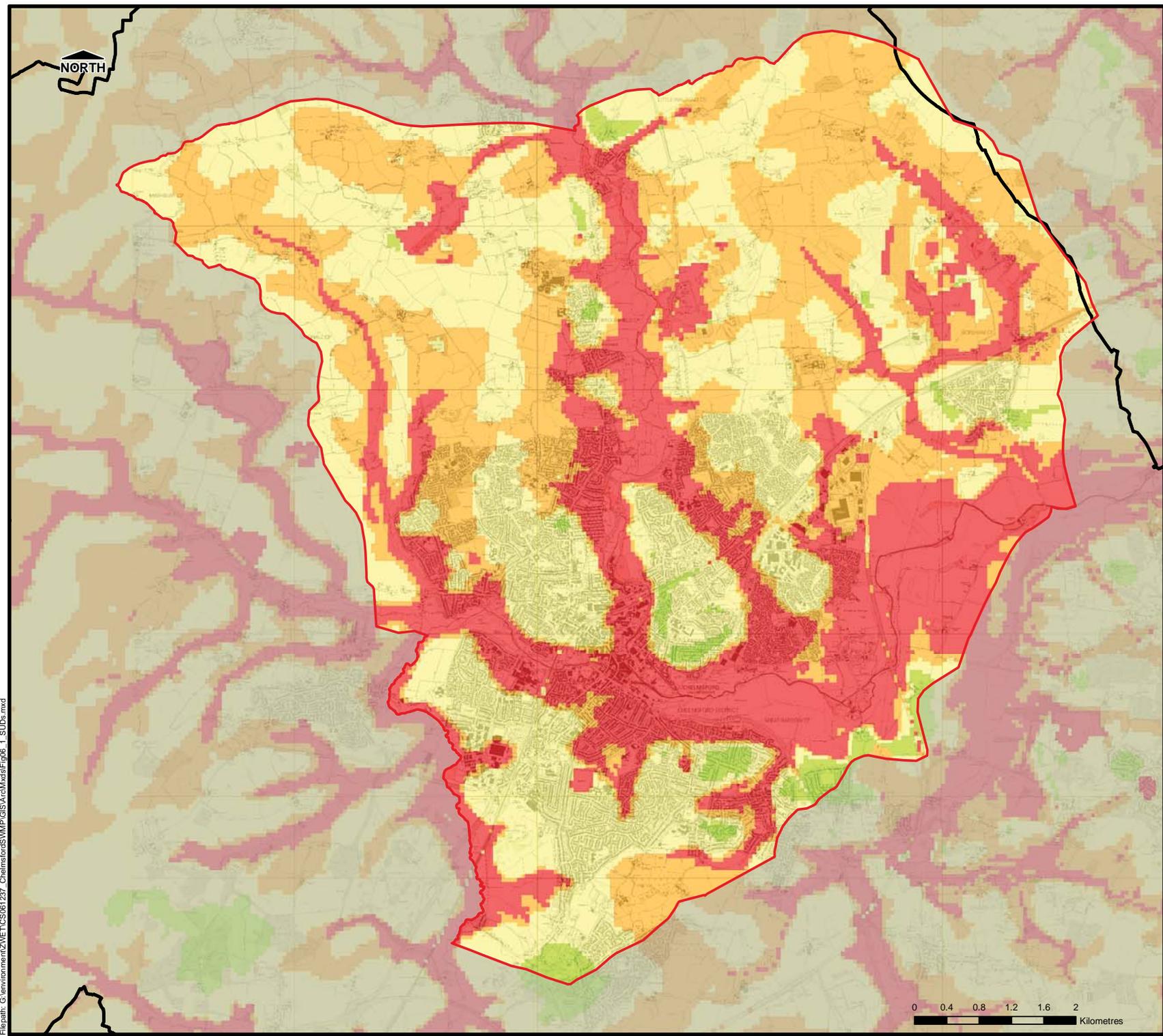
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**FIGURE 5**

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**Legend**

- Administrative Boundary
- Model Extent

**Drainage Summary**

- Highly Compatible
- Opportunities For Bespoke Infiltration SuDS
- Probably Compatible
- Very Significant Constraints

**Notes**

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**Infiltration SuDS Suitability Map**

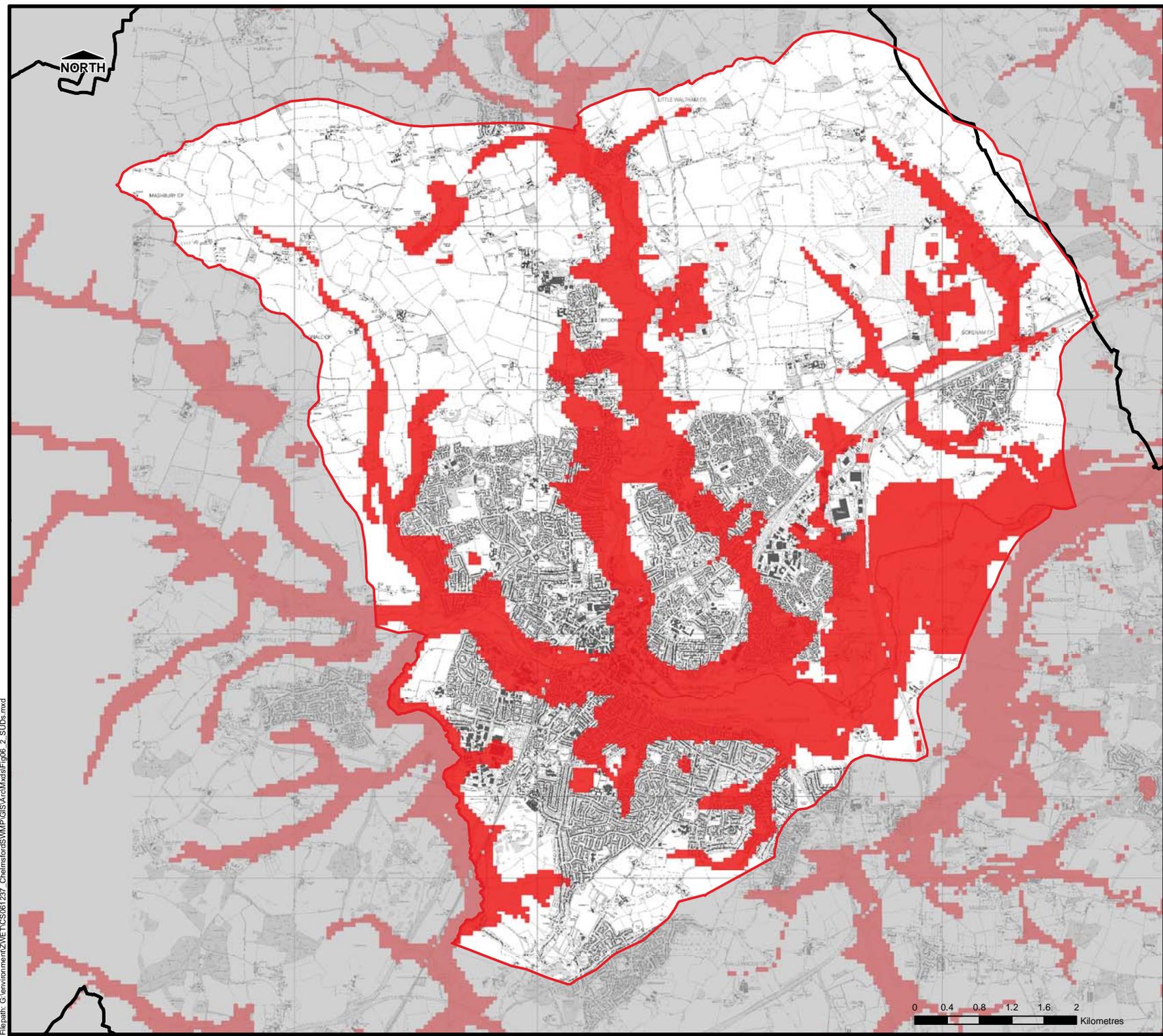
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**FIGURE 6.1**

Filepath: G:\environment\ZWE\TICS061237\_ChelmsfordSWMP\GIS\ArcMap9\Fig06\_1\_SuDS.mxd



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**Legend**

-  Administrative Boundary
-  Model Extent
- Infiltration Constraints Summary**
-  Very Significant Constraints

**Notes**

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**Infiltration SUDS  
Infiltration Constraints Summary**

**Consultant**

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**FIGURE 6.2**



Filepath: G:\environment\ZWE\TICS061237\_ChelmsfordSWMP\GIS\ArcMxds\Fig06\_2\_SUDs.mxd

**Legend**

 Administrative Boundary

 Model Extent

**Summary of Ground Stability**

 Potential For Geohazard

 Significant Potential For Geohazard

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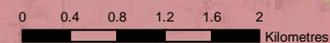
| Scale at A3 | Date      | Drawn by    | Approved by |
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**Infiltration SUDS  
Ground Stability Summary**

**Consultant**

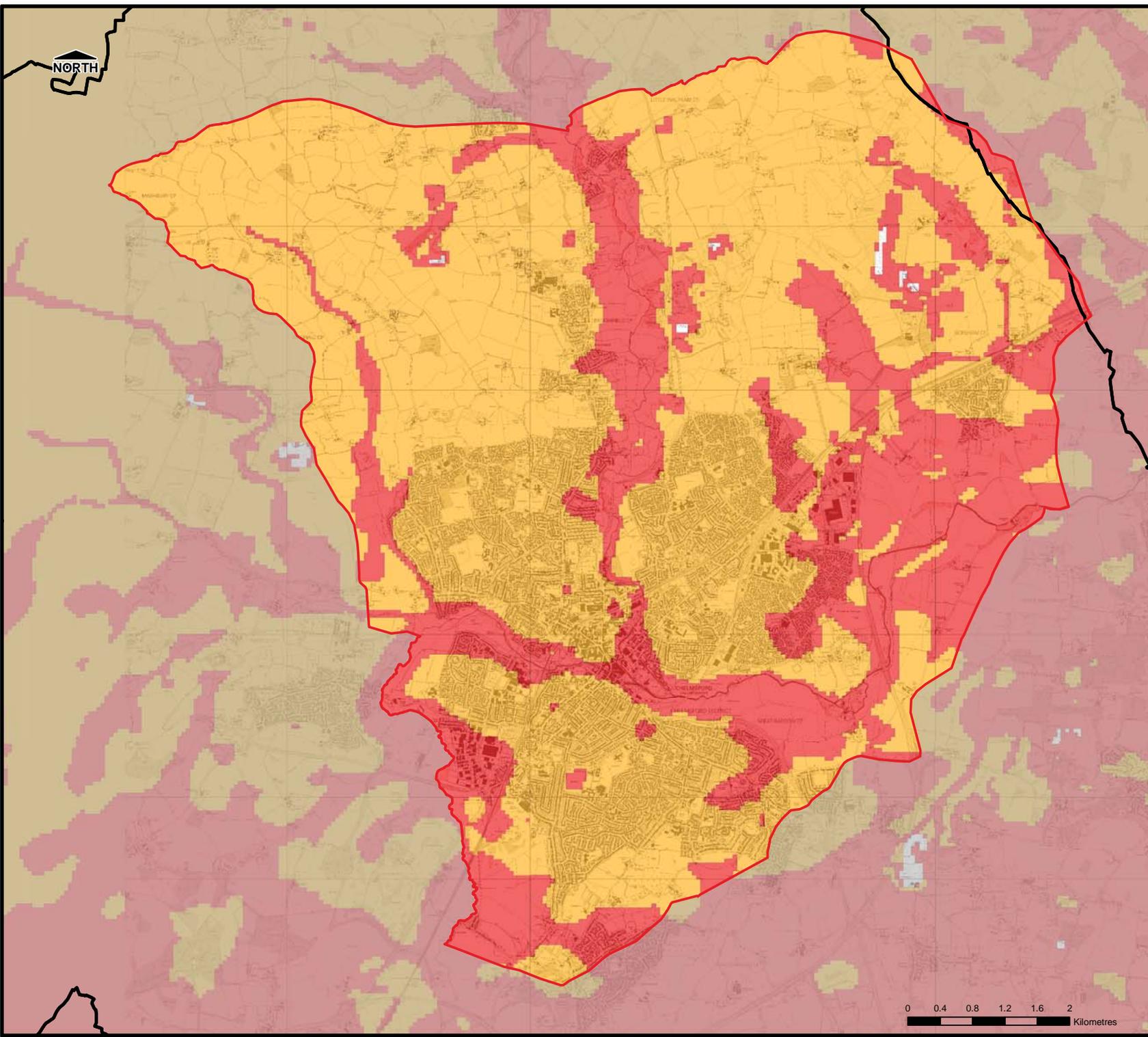
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**FIGURE 6.3**

Filepath: G:\environment\ZWE\TCS061237\_Chelmsford\SWMP\GIS\ArcMap9\Fig06\_3\_SUDs.mxd



**Legend**

 Administrative Boundary

 Model Extent

**Susceptibility to Groundwater Deterioration**

 Low Susceptibility

 Considerable Susceptibility

 Moderate Susceptibility

 Very Significant Constraints Are Indicated

**Notes**

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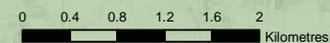
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**Infiltration SUDS  
Groundwater Protection Summary**

**Consultant**

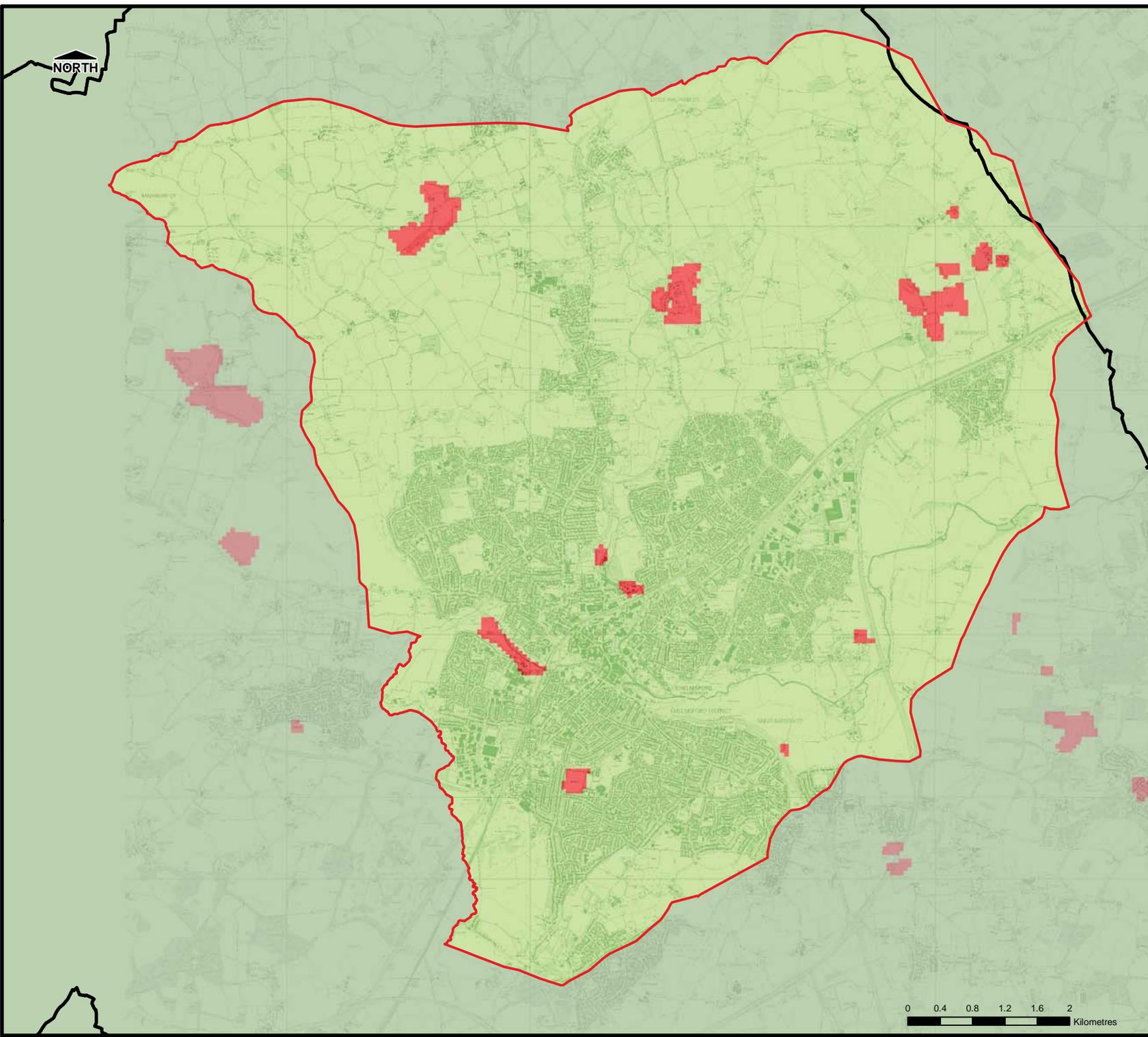
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Flood Risk Management

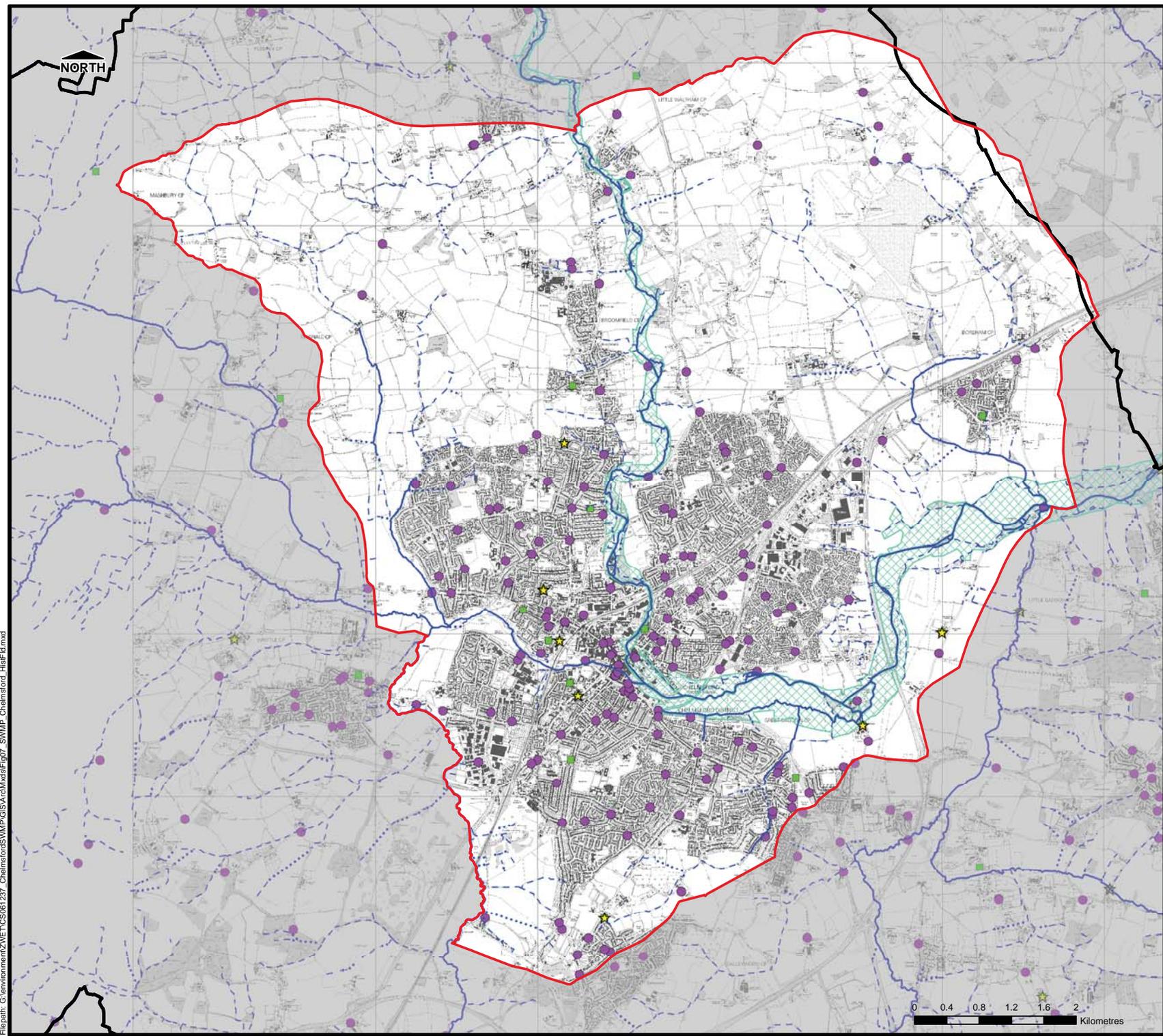
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**FIGURE 6.4**

Filepath: G:\environment\ZWE\TCS061237\_ChelmsfordSWMP\GIS\ArcMap9\Fig06\_4\_SUDs.mxd





THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED

**Legend**

- Administrative Boundary
- Main River
- Ordinary Watercourse
- Culverted Watercourse
- Environment Agency's Historic Flood Map
- Flood Incidents (PFRA)
- Fire and Rescue Service Callouts for weather related flooding
- Essex Highways flood records

**Notes**

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**Historical Flooding Overview  
DRAFT**

**Consultant**

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**FIGURE 7**

Filepath: G:\environment\ZWE\TICS061237\_ChelmsfordSWMP\GIS\ArcMap\Fig07\_SWMP\_Chelmsford\_HisFl.mxd

**Legend**

-  Administrative Boundary
-  Model Extent
-  Main River
-  Ordinary Watercourse
-  Culverted Watercourse
-  Defences
-  Environment Agency Historic Flood Map (Known Flooding From Rivers)
-  Areas Benefiting from Defences
-  Environment Agency Flood Zone 3
-  Environment Agency Flood Zone 2

**Notes**

1. Environment Agency Flood Zone 3: Land assessed, ignoring the presence of flood defences, as having a 1% or greater annual probability of fluvial flooding or a 0.5% or greater annual probability of tidal flooding.
2. Environment Agency Flood Zone 2: Land assessed, ignoring the presence of flood defences, as having between a 1% and 0.1% annual probability of fluvial flooding or between a 0.5% and 0.1% annual probability of tidal flooding in any year.
3. Environment Agency - Areas that benefit from flood defences: land that may benefit from the presence of major defences during a 1% fluvial or 0.5% tidal event. These are areas that would flood if the defence were not present, but may not flood because the defence is present. Areas benefiting from flood storage areas may be remote from the flood defence structure.
4. Environment Agency Flood Defences: The map displays the location of linear raised flood defences such as embankments & walls

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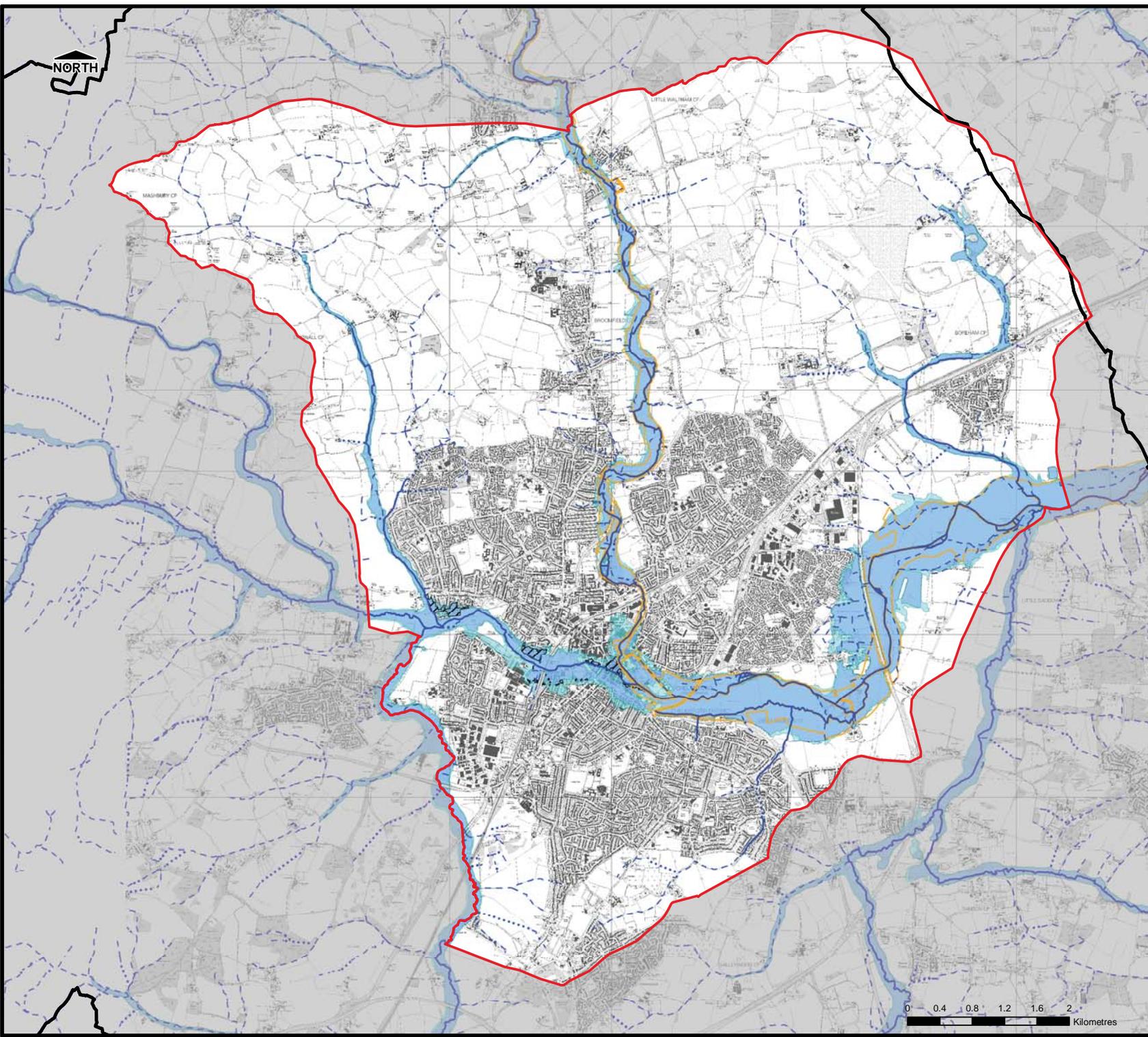
**Environment Agency  
Flood Zones  
Overview**

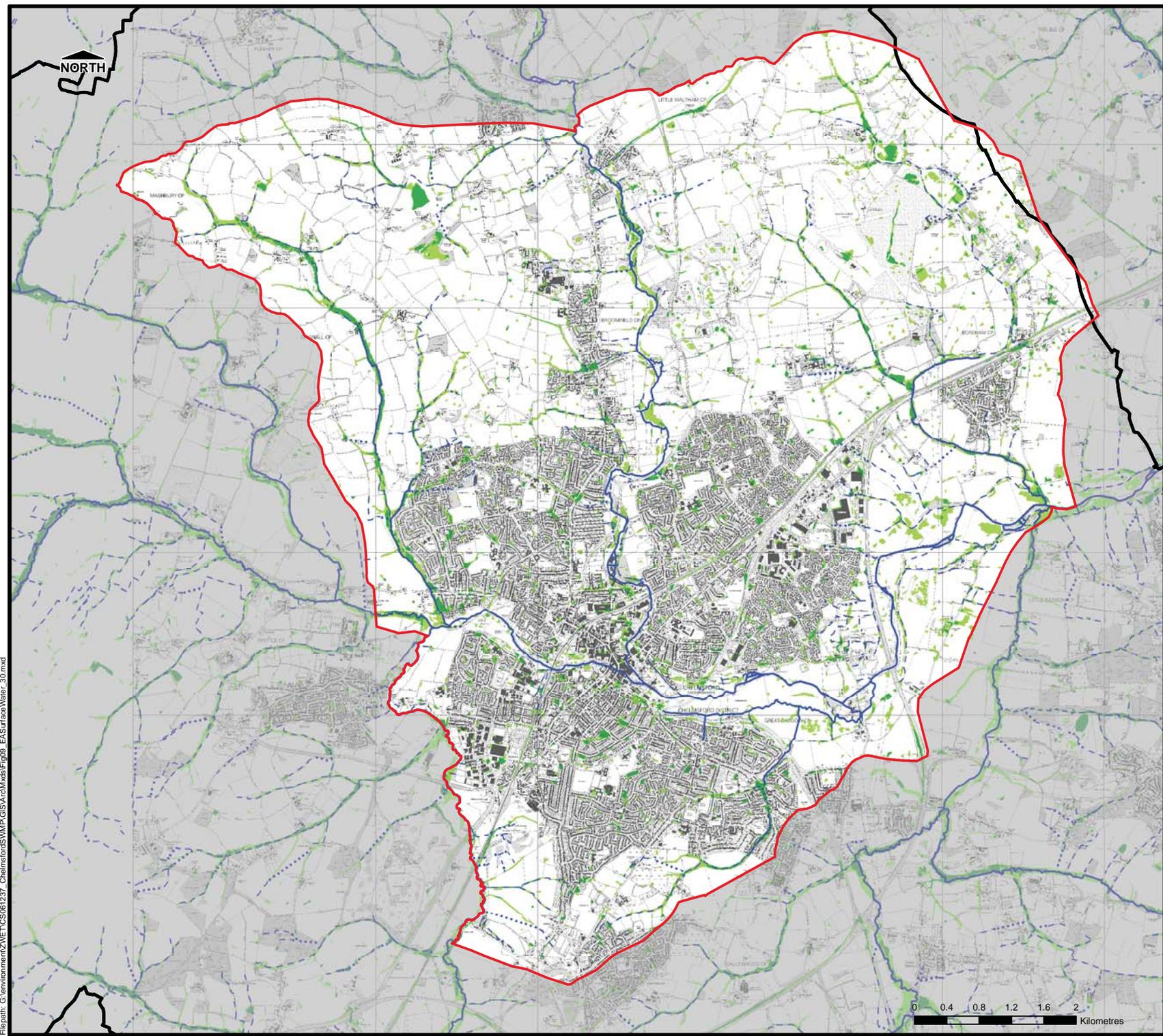
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**FIGURE 8**

Filepath: G:\environment\ZWE\TCS061237 - Chelmsford\SWMP\GIS\AreaMaps\Fig08 - EAFloodZoneMap.mxd





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**Legend**

- Administrative Boundary
- Model Extent
- Main River
- Ordinary Watercourse
- Culverted Watercourse
- Surface Water 1 in 30 year (Shallow)
- Surface Water 1 in 30 year (Deep)

**Notes**

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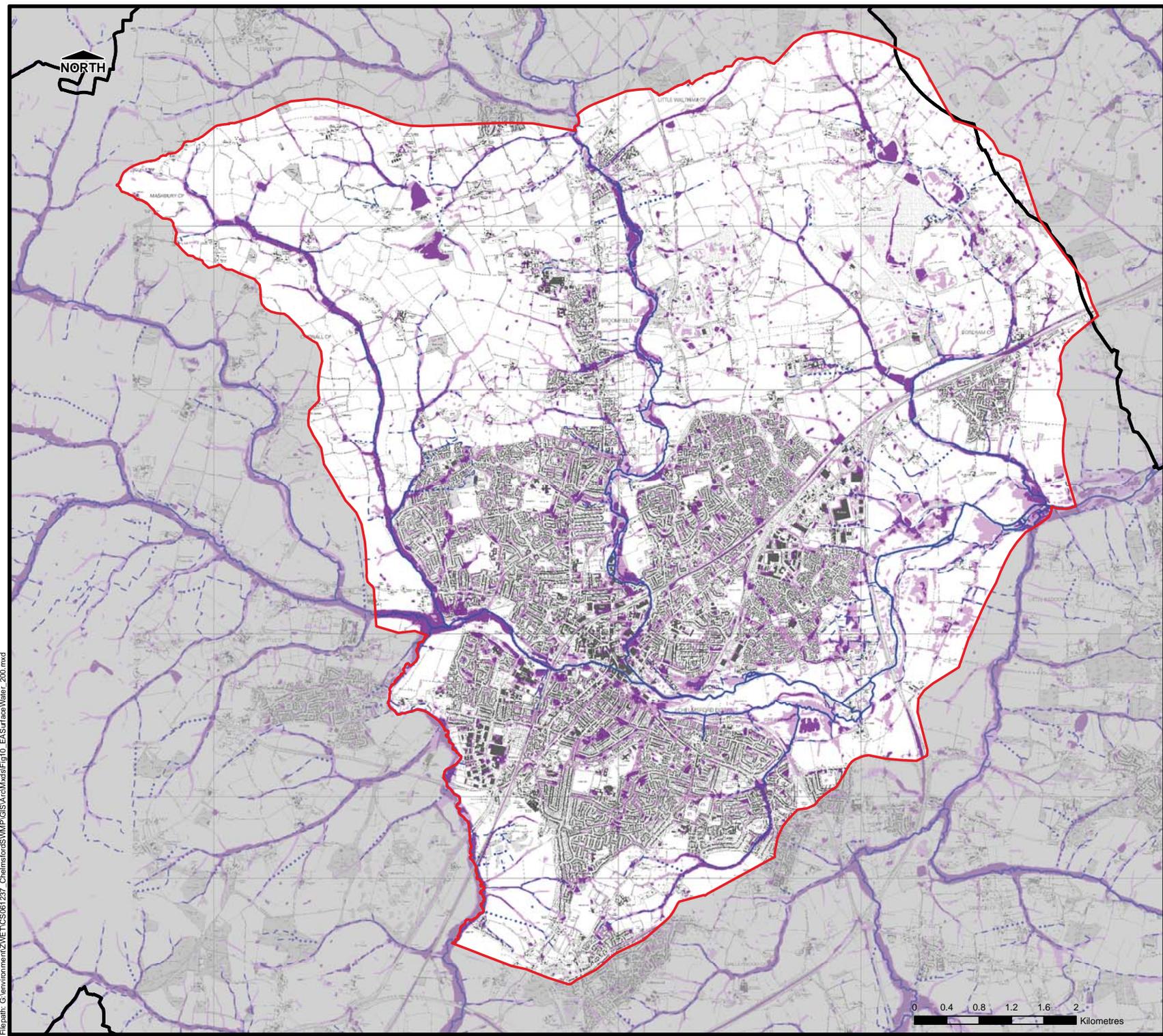
**Environment Agency  
Flood Map for Surface Water  
1 in 30 Year Probability  
Overview**

**Consultant**  
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**FIGURE 9**

Filepath: G:\environment\ZWE\TICS061237 - ChelmsfordSWMP\GIS\ArcMap\Fig09\_EASurfaceWater\_30.mxd



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**Legend**

- Administrative Boundary
- Model Extent
- Surface Water 1 in 200 year (Deep)
- Surface Water 1 in 200 year (Shallow)
- Main River
- Ordinary Watercourse
- Culverted Watercourse

**Notes**

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**Environment Agency  
Flood Map for Surface Water  
1 in 200 Year Probability  
Overview**

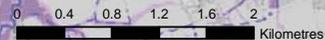
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**FIGURE 10**

Filepath: G:\environment\ZWE\TICS061237\_ChelmsfordSWMP\GIS\ArcMapS\Fig10\_EASurfaceWater\_200.mxd



**Legend**

 Administrative Boundary

 Model Extent

**Flood Depth (m)**

 < 0.1m

 0.1m to 0.25m

 0.25m to 0.5m

 0.5m to 1.0m

 1.0m to 1.5m

 > 1.5m

**Notes**

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**Surface Water Management Plan**

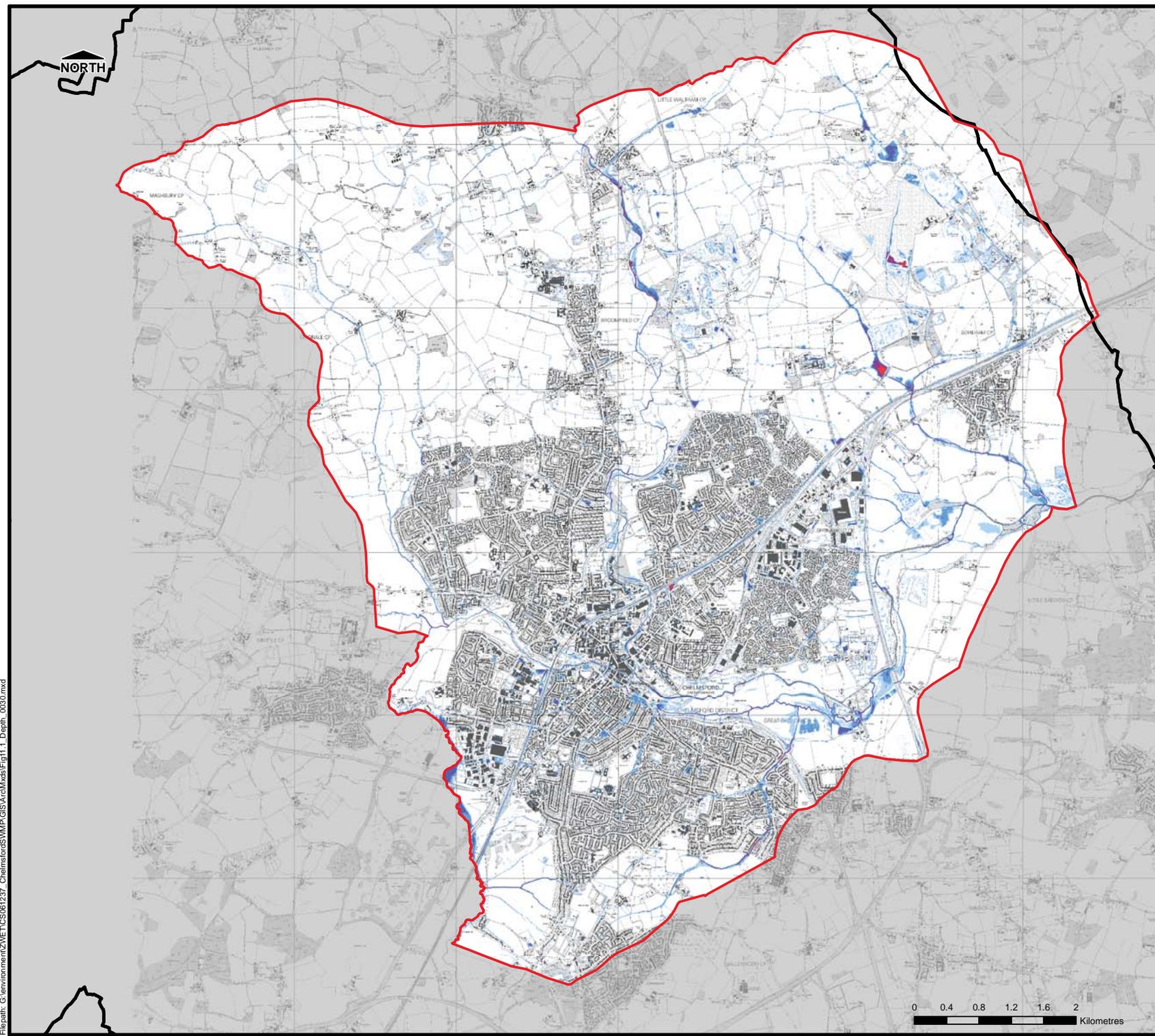
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**Surface Water  
Flood Depth  
1 in 20yr, 3hr duration**

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Level Seven,  
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London  
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**FIGURE 11.1**



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**Legend**

 Administrative Boundary

 Model Extent

**Flood Hazard**

 Caution (Very Low Hazard)

 Moderate (Danger for Some)

 Significant (Danger for Most)

 Extreme (Danger for All)

**Notes**

- 1. Digital Terrain Model is based on unfiltered data and therefore includes buildings and vegetation.

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**Surface Water  
Flood Hazard  
1 in 20yr, 3hr duration**

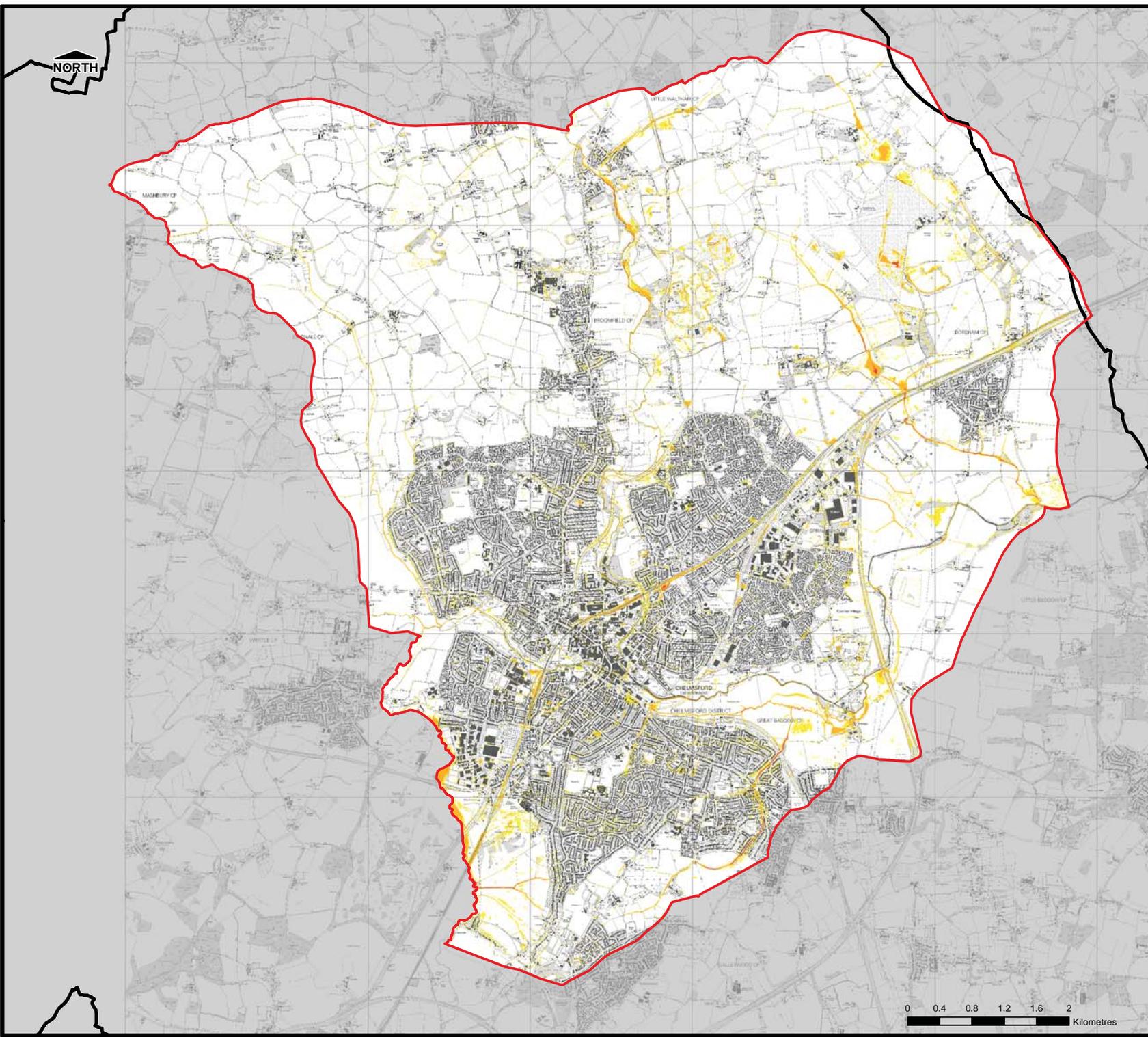
**Consultant**

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**FIGURE 11.2**

Filepath: G:\environment\ZWE\TICS\61237 - Chelmsford\SWMP\GIS\Area\Map\Fig11.2\_Hazard\_0030.mxd



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**Legend**

 Administrative Boundary

 Model Extent

**Flood Depth (m)**

 < 0.1m

 0.1m to 0.25m

 0.25m to 0.5m

 0.5m to 1.0m

 1.0m to 1.5m

 > 1.5m

**Notes**

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**Surface Water Management Plan**

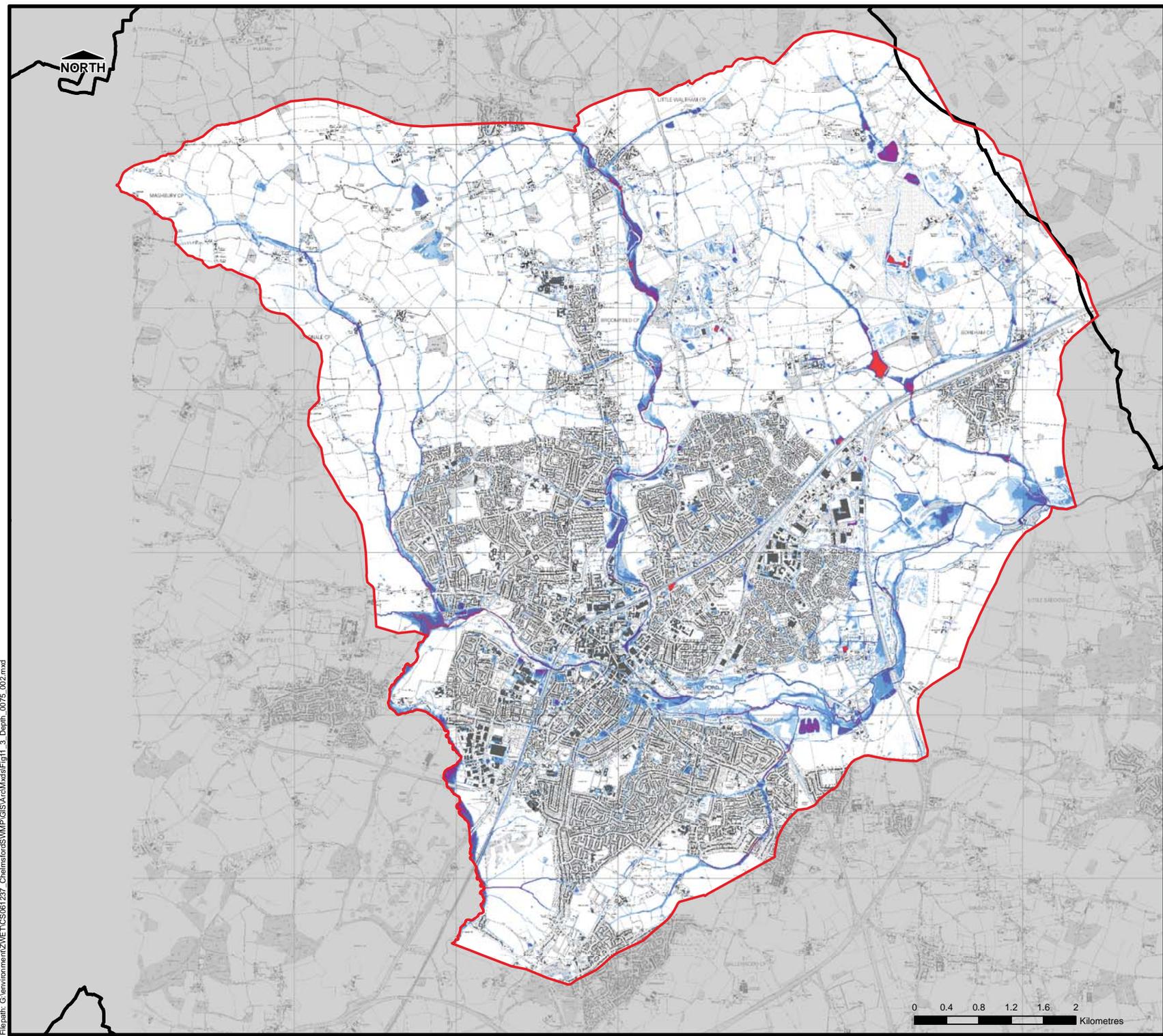
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**Surface Water  
Flood Depth  
1 in 75yr, 3hr duration**

**Consultant**  
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SW1W 0AU

**FIGURE 11.3**



Filepath: G:\environment\ZWE\TCS\61237\_Chelmsford\SWMP\GIS\AreaMaps\Fig11\_3\_Depth\_0075\_002.mxd

THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED

**Legend**

-  Administrative Boundary
-  Model Extent
- Flood Hazard**
-  Caution (Very Low Hazard)
-  Moderate (Danger for Some)
-  Significant (Danger for Most)
-  Extreme (Danger for All)

**Notes**

**Chelmsford City Council  
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**Surface Water Management Plan**

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| 1:45,000           | July 2013   | G.ATHANASIA     | M.ARTHUR           |

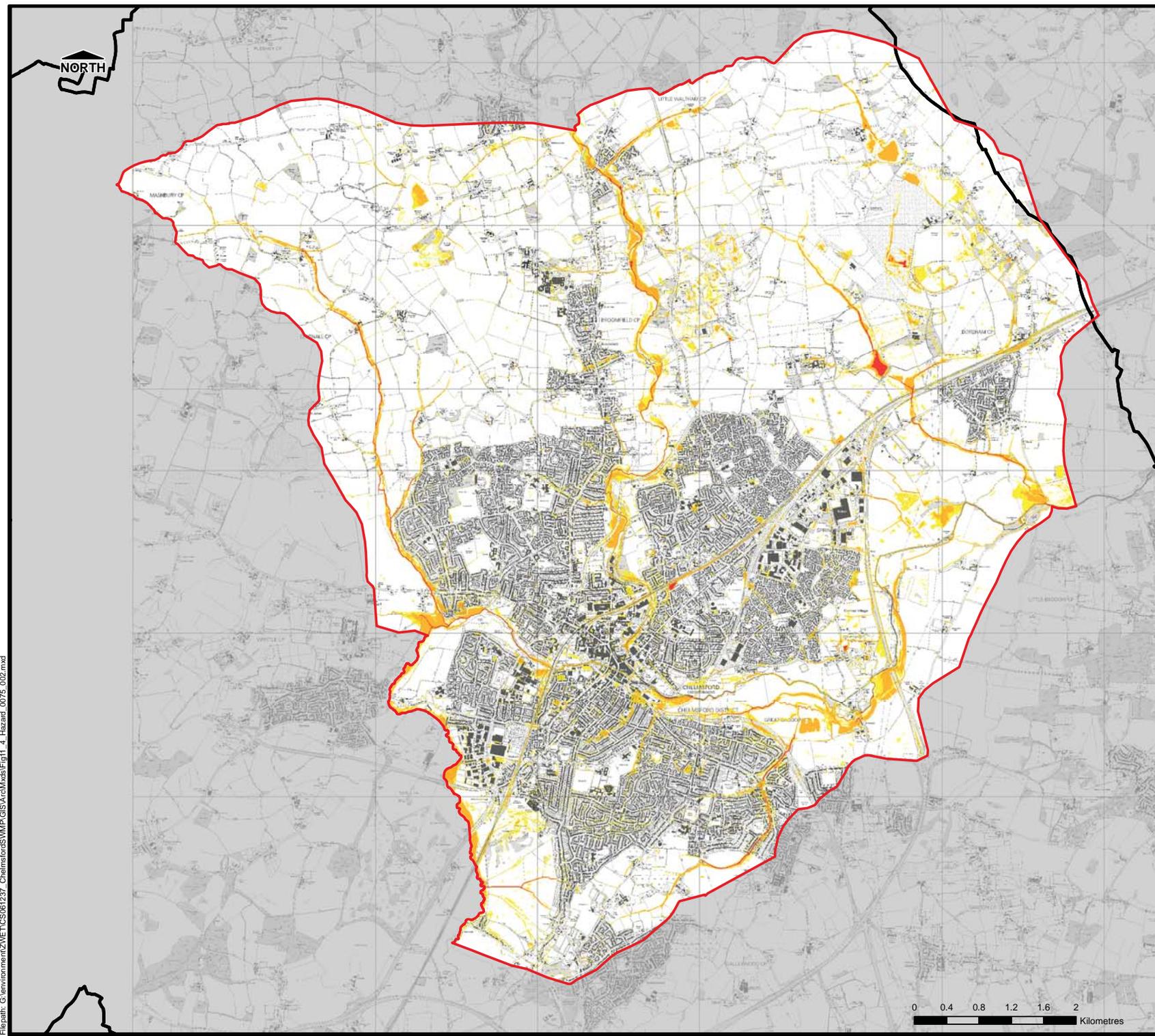
**Surface Water  
Flood Hazard  
1 in 75yr, 3hr duration**

**Consultant**

**CAPITA SYMONDS**  
Flood Risk Management

Capita Symonds  
Level Seven,  
52 Grosvenor Gardens,  
Belgravia,  
London  
SW1W 0AU

**FIGURE 11.4**



Filepath: G:\environment\ZWE\TICS\61237 - Chelmsford\SWMP\GIS\ArcMxds\Fig11\_4\_Hazard\_0075\_002.mxd

THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED

**Legend**

 Administrative Boundary

 Model Extent

**Flood Depth (m)**

 < 0.1m

 0.1m to 0.25m

 0.25m to 0.5m

 0.5m to 1.0m

 1.0m to 1.5m

 > 1.5m

**Notes**

**Chelmsford City Council  
Essex County Council**



**Surface Water Management Plan**

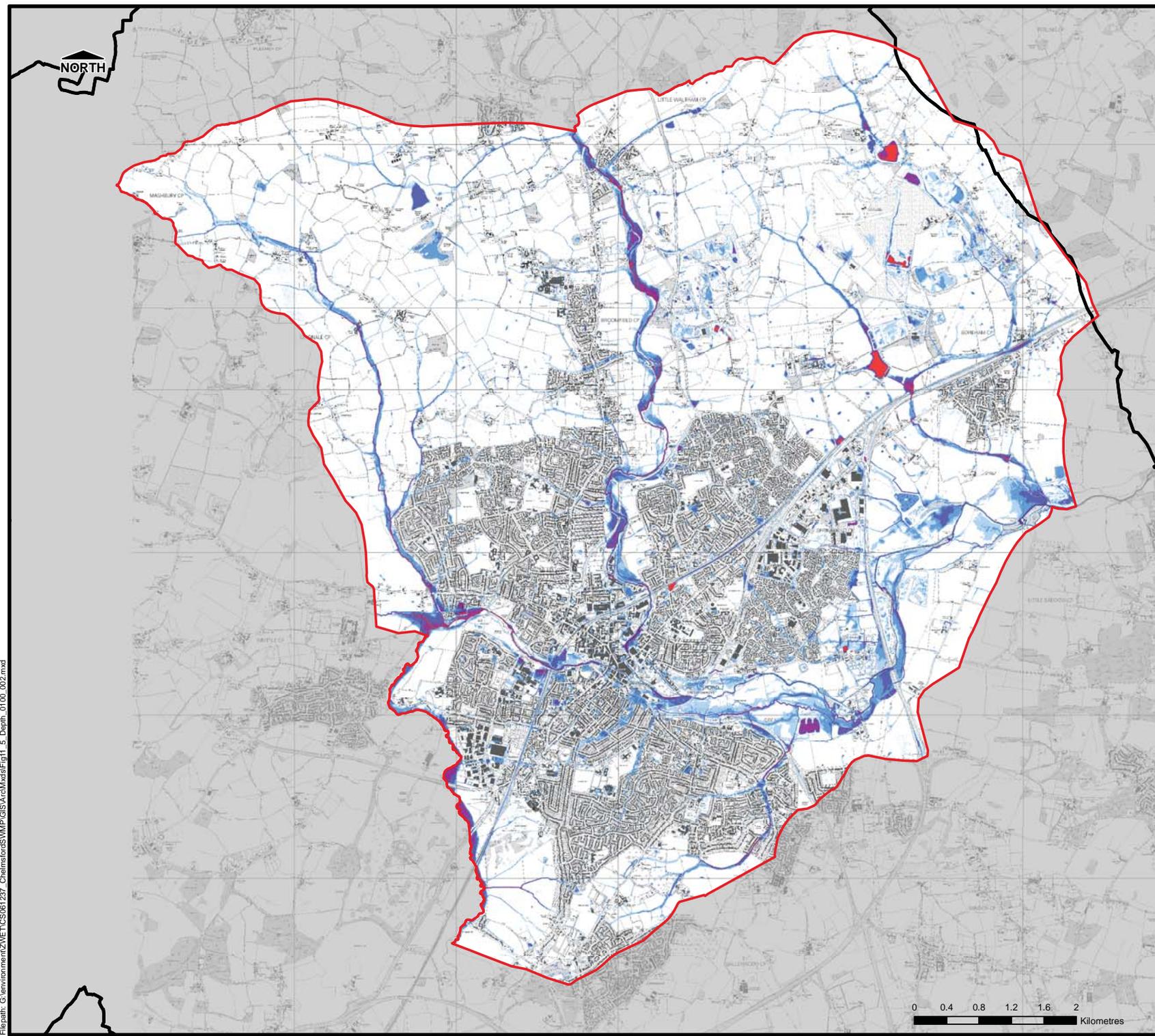
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**Surface Water  
Flood Depth  
1 in 100yr, 3hr duration**

**Consultant**  
**CAPITA SYMONDS**  
Flood Risk Management  
Capita Symonds  
Level Seven,  
52 Grosvenor Gardens,  
Belgravia,  
London  
SW1W 0AU

**FIGURE 11.5**



**NORTH**



Filepath: G:\environment\ZWE\TCS\061237\_Chelmsford\SWMP\GIS\ArcMxds\Fig11\_5\_Depth\_0100\_002.mxd

THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED

**Legend**

-  Administrative Boundary
-  Model Extent
- Flood Hazard**
-  Caution (Very Low Hazard)
-  Moderate (Danger for Some)
-  Significant (Danger for Most)
-  Extreme (Danger for All)

**Notes**

1. Digital Terrain Model is based on unfiltered data and therefore includes buildings and vegetation.

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**Surface Water  
Flood Hazard  
1 in 100yr, 3hr duration**

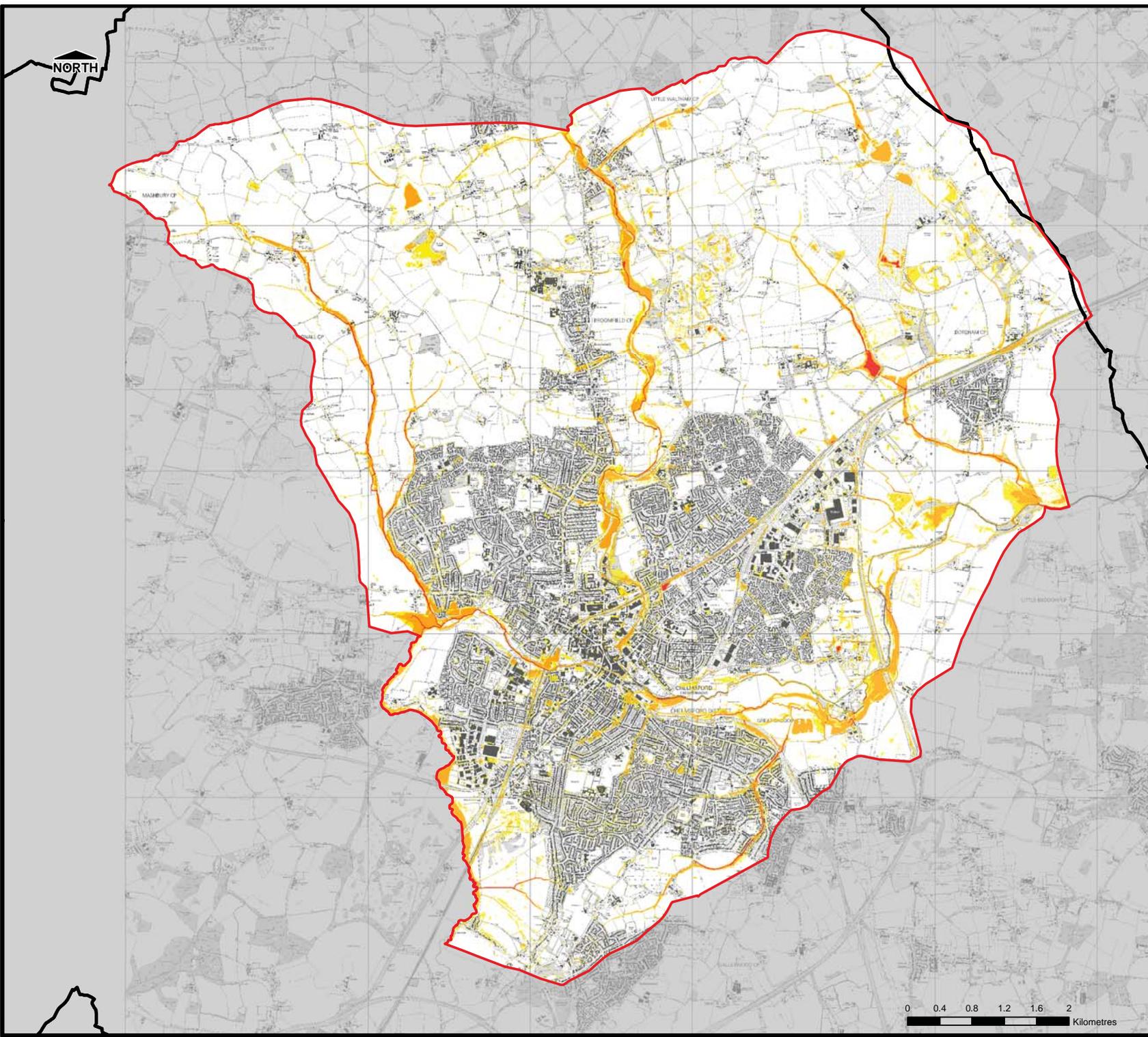
**Consultant**

**CAPITA SYMONDS**  
Flood Risk Management

Capita Symonds  
Level Seven,  
52 Grosvenor Gardens,  
Belgravia,  
London  
SW1W 0AU

**FIGURE 11.6**

Filepath: G:\environment\ZWE\TCS\61237 - Chelmsford\SWMP\GIS\Area\Map\Fig11\_6\_Hazard\_0100\_002.mxd



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**Legend**

 Administrative Boundary

 Model Extent

**Flood Depth (m)**

 < 0.1m

 0.1m to 0.25m

 0.25m to 0.5m

 0.5m to 1.0m

 1.0m to 1.5m

 > 1.5m

**Notes**

**Chelmsford City Council  
Essex County Council**



**Surface Water Management Plan**

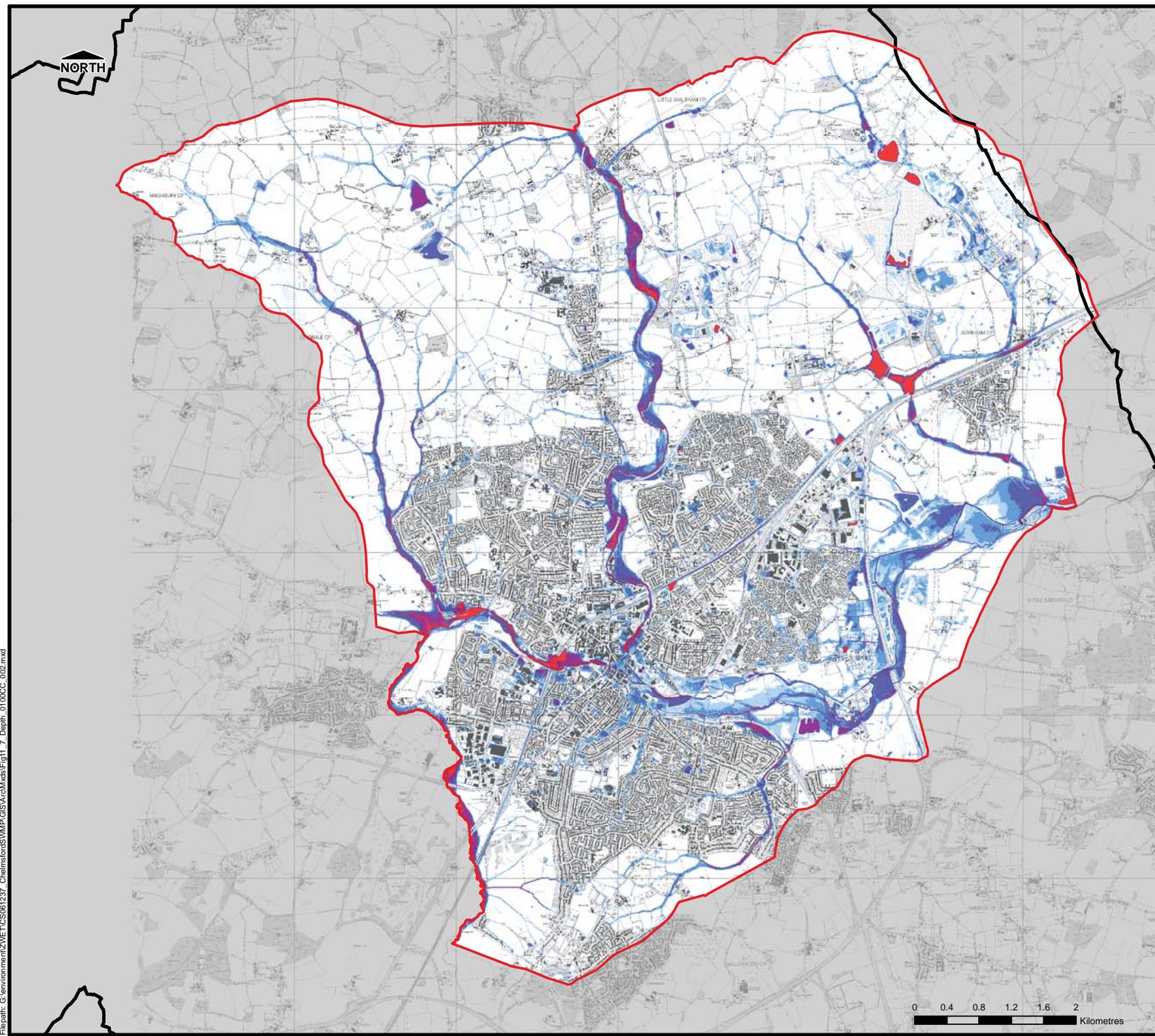
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**Surface Water  
Flood Depth  
1 in 100yr CC, 3hr duration**

**Consultant**  
**CAPITA SYMONDS**  
Flood Risk Management  
Capita Symonds  
Level Seven,  
52 Grosvenor Gardens,  
Belgravia,  
London  
SW1W 0AU

**FIGURE 11.7**



Filepath: G:\environment\ZWE\TCS\061237 - Chelmsford\SWMP\GIS\Area\Maps\Fig11\_7\_Depth\_0100CC\_002.mxd

THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED

**Legend**

 Administrative Boundary

 Model Extent

**Flood Hazard**

 Caution (Very Low Hazard)

 Moderate (Danger for Some)

 Significant (Danger for Most)

 Extreme (Danger for All)

**Notes**

- 1. Digital Terrain Model is based on unfiltered data and therefore includes buildings and vegetation.

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**Surface Water  
Flood Hazard  
1 in 100yrCC, 3hr duration**

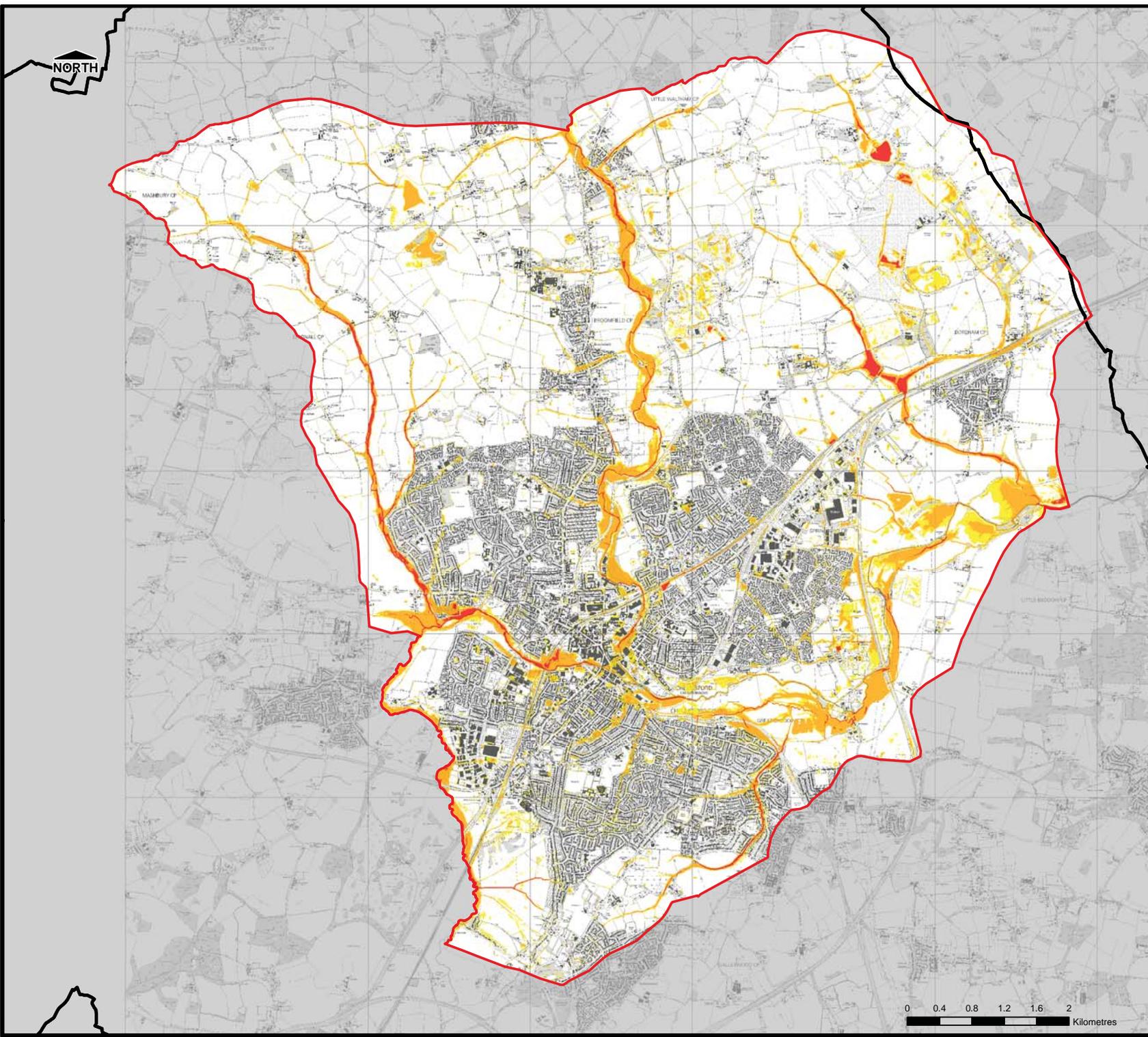
**Consultant**

**CAPITA SYMONDS**  
Flood Risk Management

Capita Symonds  
Level Seven,  
52 Grosvenor Gardens,  
Belgravia,  
London  
SW1W 0AU

**FIGURE 11.8**

Filepath: G:\environment\ZWE\TICS061237\_ChelmsfordSWMP\GIS\ArcMxds\Fig11\_8\_Hazard\_01100CC\_002.mxd



**Legend**

 Administrative Boundary

 Model Extent

**Flood Depth (m)**

 < 0.1m

 0.1m to 0.25m

 0.25m to 0.5m

 0.5m to 1.0m

 1.0m to 1.5m

 > 1.5m

**Notes**

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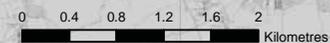
|                    |             |                 |                    |
|--------------------|-------------|-----------------|--------------------|
| <b>Scale at A3</b> | <b>Date</b> | <b>Drawn by</b> | <b>Approved by</b> |
| 1:45,000           | July 2013   | G.ATHANASIA     | M.ARTHUR           |

**Surface Water  
Flood Depth  
1 in 200yr, 3hr duration**

**Consultant**

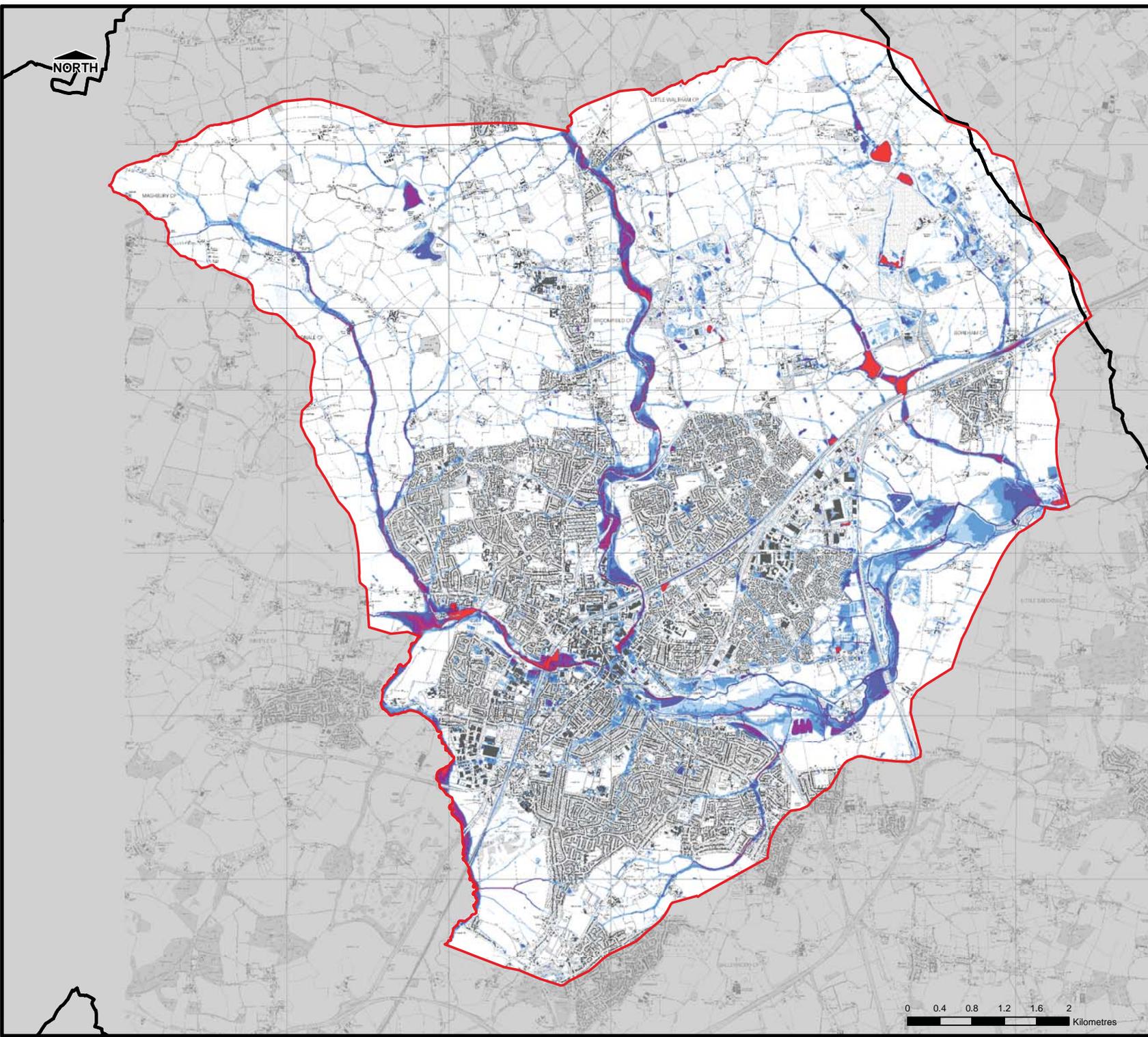
**CAPITA SYMONDS**  
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Capita Symonds  
Level Seven,  
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**FIGURE 11.9**

Filepath: G:\environment\ZWE\TCS\061237\_Chelmsford\SWMP\GIS\ArcMxds\Fig11\_9\_Depth\_0200\_002.mxd



**Legend**

-  Administrative Boundary
-  Model Extent

**Flood Hazard**

-  Caution (Very Low Hazard)
-  Moderate (Danger for Some)
-  Significant (Danger for Most)
-  Extreme (Danger for All)

**Notes**

1. Digital Terrain Model is based on unfiltered data and therefore includes buildings and vegetation.

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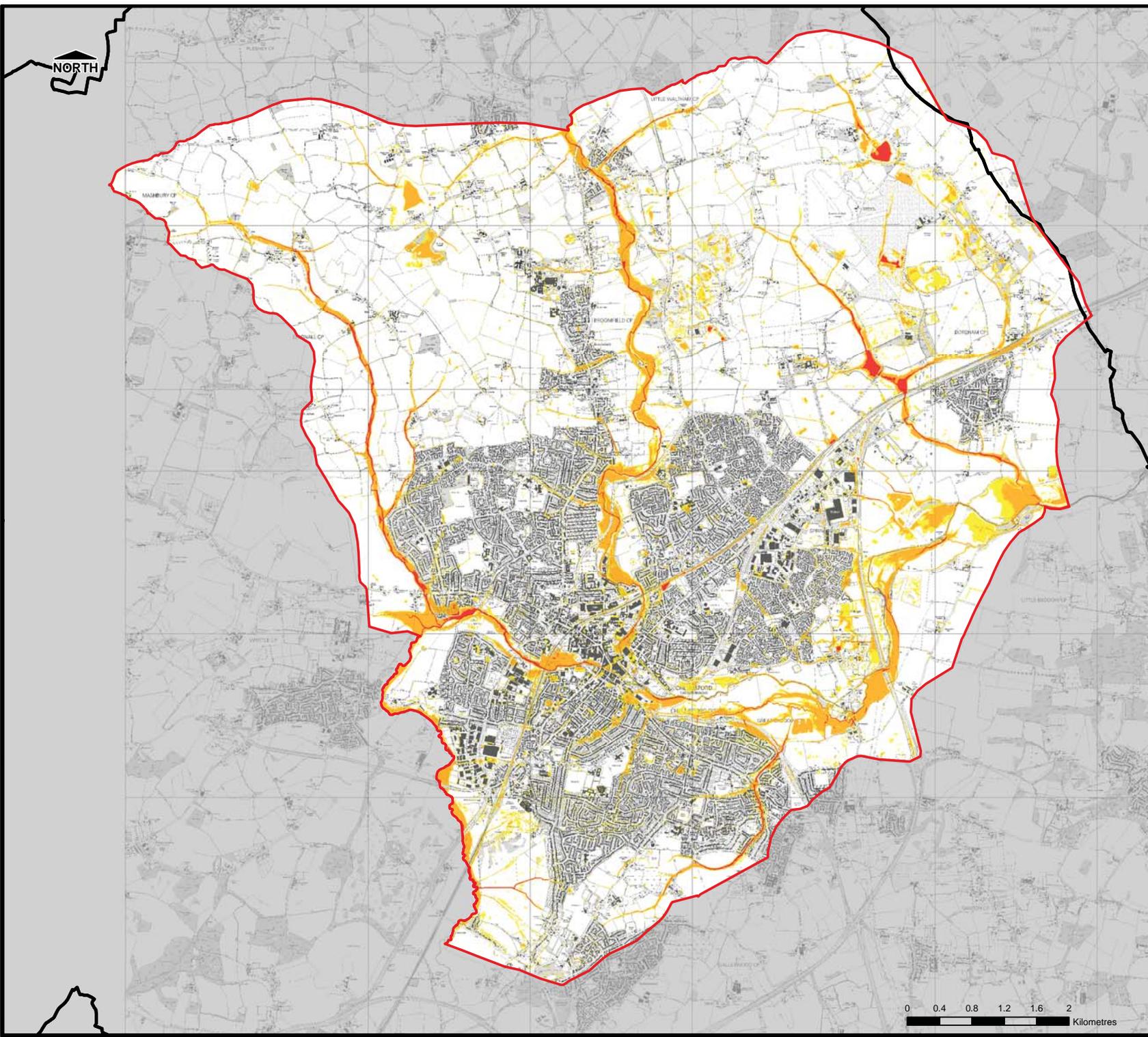
**Surface Water  
Flood Hazard  
1 in 200yr, 3hr duration**

**Consultant**  
**CAPITA SYMONDS**  
Flood Risk Management

Capita Symonds  
Level Seven,  
52 Grosvenor Gardens,  
Belgravia,  
London  
SW1W 0AU

**FIGURE 11.10**

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**Legend**

-  Administrative Boundary
-  Model Extent
-  EA FMfSW 200yr extent
-  Modelled Extents 1 in 200yr

**Notes**

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|--------------------------------|--------------------------|--------------------------------|--------------------------------|

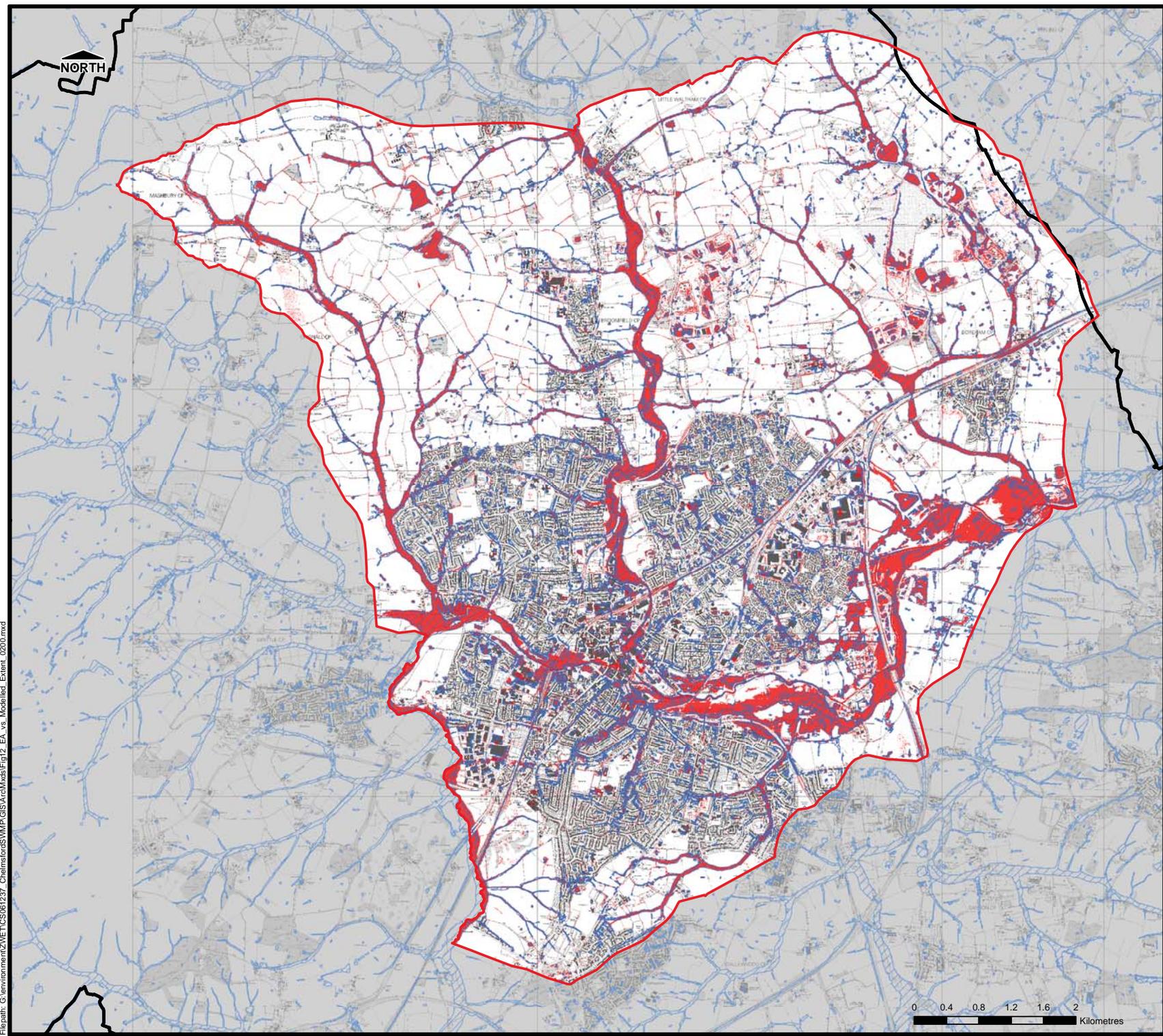
**Comparison of the EA FMfSW and the Modelled Extent for the 1 in 200yr, 3hr duration**

**Consultant**

**CAPITA SYMONDS**  
Flood Risk Management

Capita Symonds  
Level Seven,  
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**FIGURE 12**



Filepath: G:\environment\ZWE\TICS\61237\_Chelmsford\SWMP\GIS\ArcMxds\Fig12\_EA\_vs\_Modelled\_Extent\_0200.mxd

- Legend**
-  Administrative Boundary
  -  Model Extent
  -  Main River
  -  Ordinary Watercourse
  -  Culverted Watercourse
  -  Critical Drainage Areas

**Notes**

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|--------------------------------|--------------------------|--------------------------------|--------------------------------|

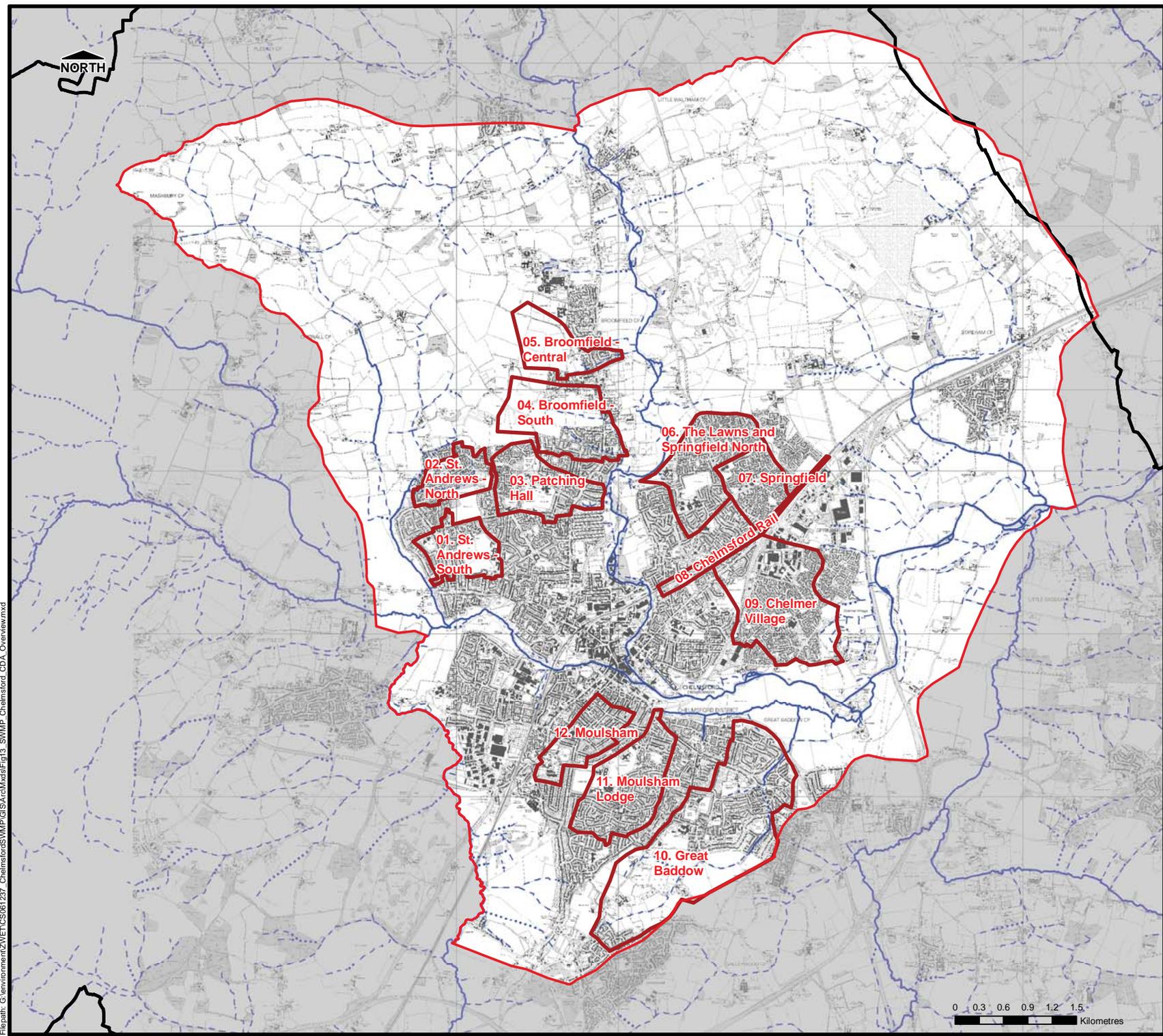
**Critical Drainage Areas Overview**

**Consultant**

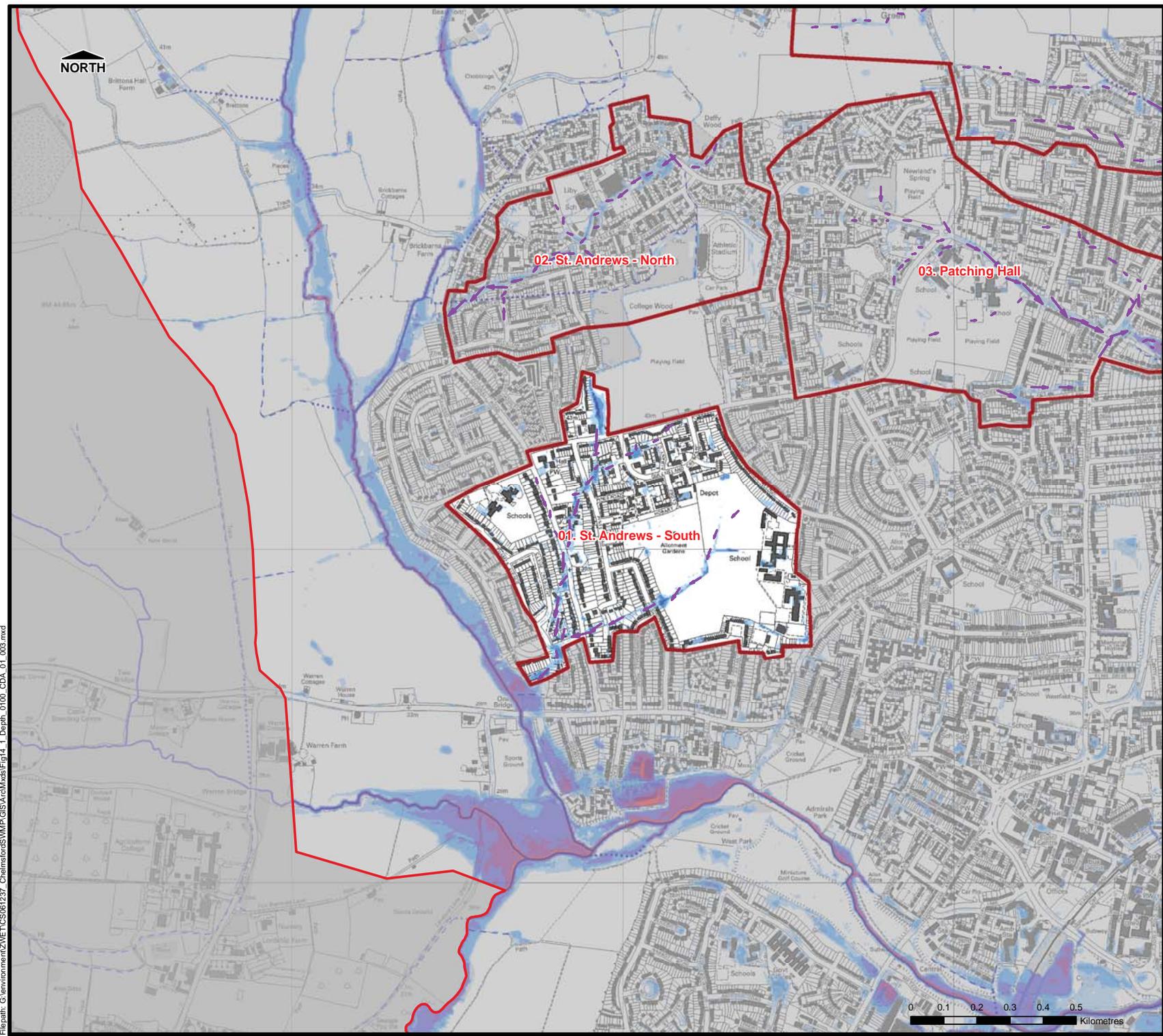
**CAPITA SYMONDS**  
Flood Risk Management

Capita Symonds  
Level Seven,  
52 Grosvenor Gardens,  
Belgravia,  
London  
SW1W 0AU

**FIGURE 13**



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**Legend**

- Administrative Boundary
- Model Extent
- Main River
- Ordinary Watercourse
- Culverted Watercourse
- Direction of flow
- Critical Drainage Areas

**Flood Depth (m)**

- < 0.1m
- 0.1m to 0.25m
- 0.25m to 0.5m
- 0.5m to 1.0m
- 1.0m to 1.5m
- > 1.5m

**Notes**

**Chelmsford City Council  
Essex County Council**



**Surface Water Management Plan**

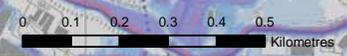
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| 1:11,000           | July 2013   | G.ATHANASIA     | M.ARTHUR           |

**Surface Water Flood Depth  
1 in 100yr, 3hr duration  
Critical Drainage Area  
01. St. Andrews - South**

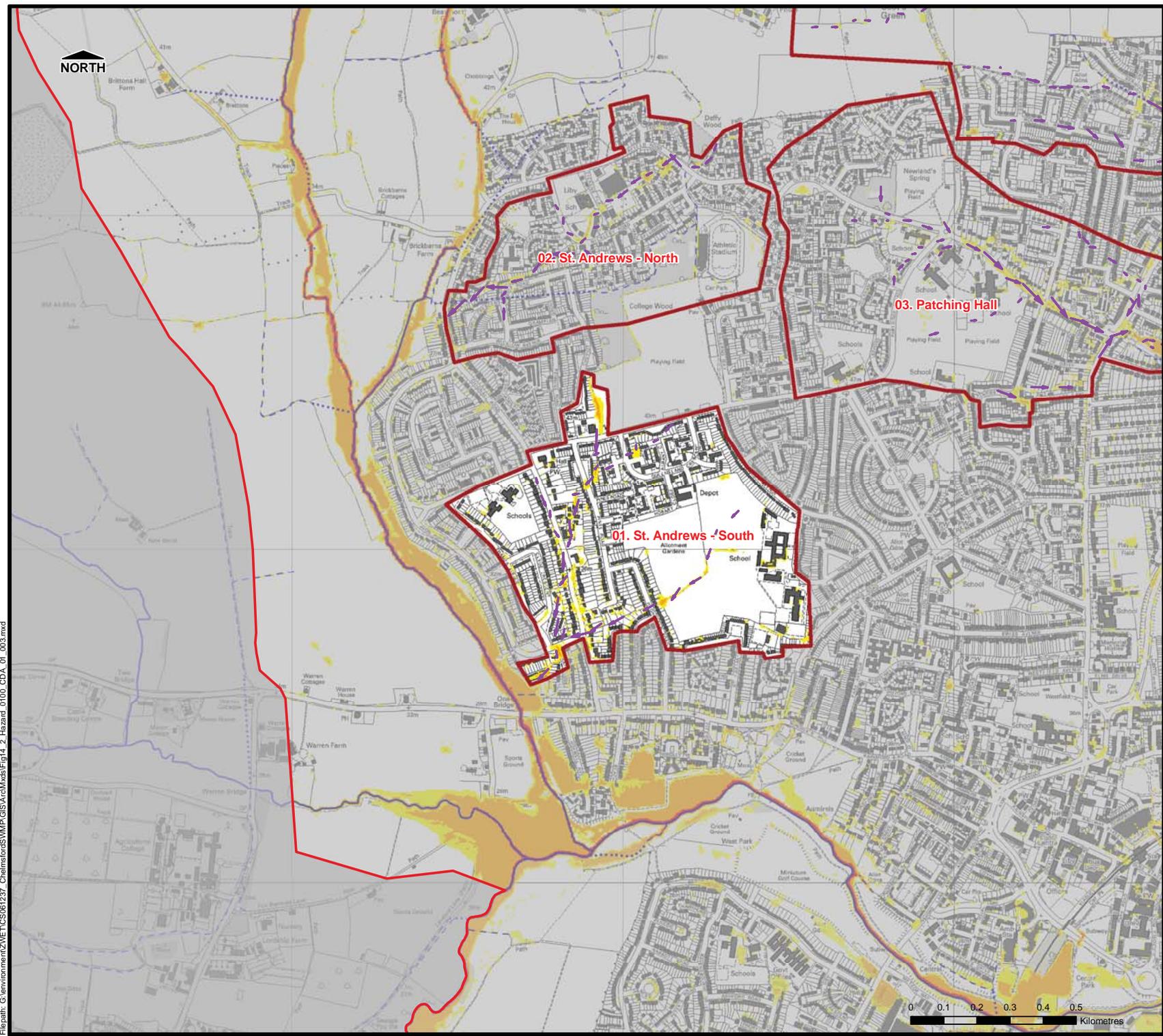
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**CAPITA SYMONDS**  
Flood Risk Management

Capita Symonds  
Level Seven,  
52 Grosvenor Gardens,  
Belgravia,  
London  
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**FIGURE 14.1**

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- Legend**
- Administrative Boundary
  - Model Extent
  - Main River
  - Ordinary Watercourse
  - Culverted Watercourse
  - Direction of flow
  - Critical Drainage Areas
- Flood Hazard**
- Caution (Very Low Hazard)
  - Moderate (Danger for Some)
  - Significant (Danger for Most)
  - Extreme (Danger for All)

**Notes**

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**Surface Water Flood Hazard  
1 in 100yr, 3hr duration  
Critical Drainage Area  
01. St. Andrews - South**

**Consultant**

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Flood Risk Management

Capita Symonds  
Level Seven,  
52 Grosvenor Gardens,  
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SW1W 0AU

**FIGURE 14.2**

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**Legend**

-  Administrative Boundary
-  Model Extent
-  Main River
-  Ordinary Watercourse
-  Culverted Watercourse
-  Direction of flow
-  Critical Drainage Areas

**Flood Depth (m)**

-  < 0.1m
-  0.1m to 0.25m
-  0.25m to 0.5m
-  0.5m to 1.0m
-  1.0m to 1.5m
-  > 1.5m

**Notes**

**Chelmsford City Council  
Essex County Council**



**Surface Water Management Plan**

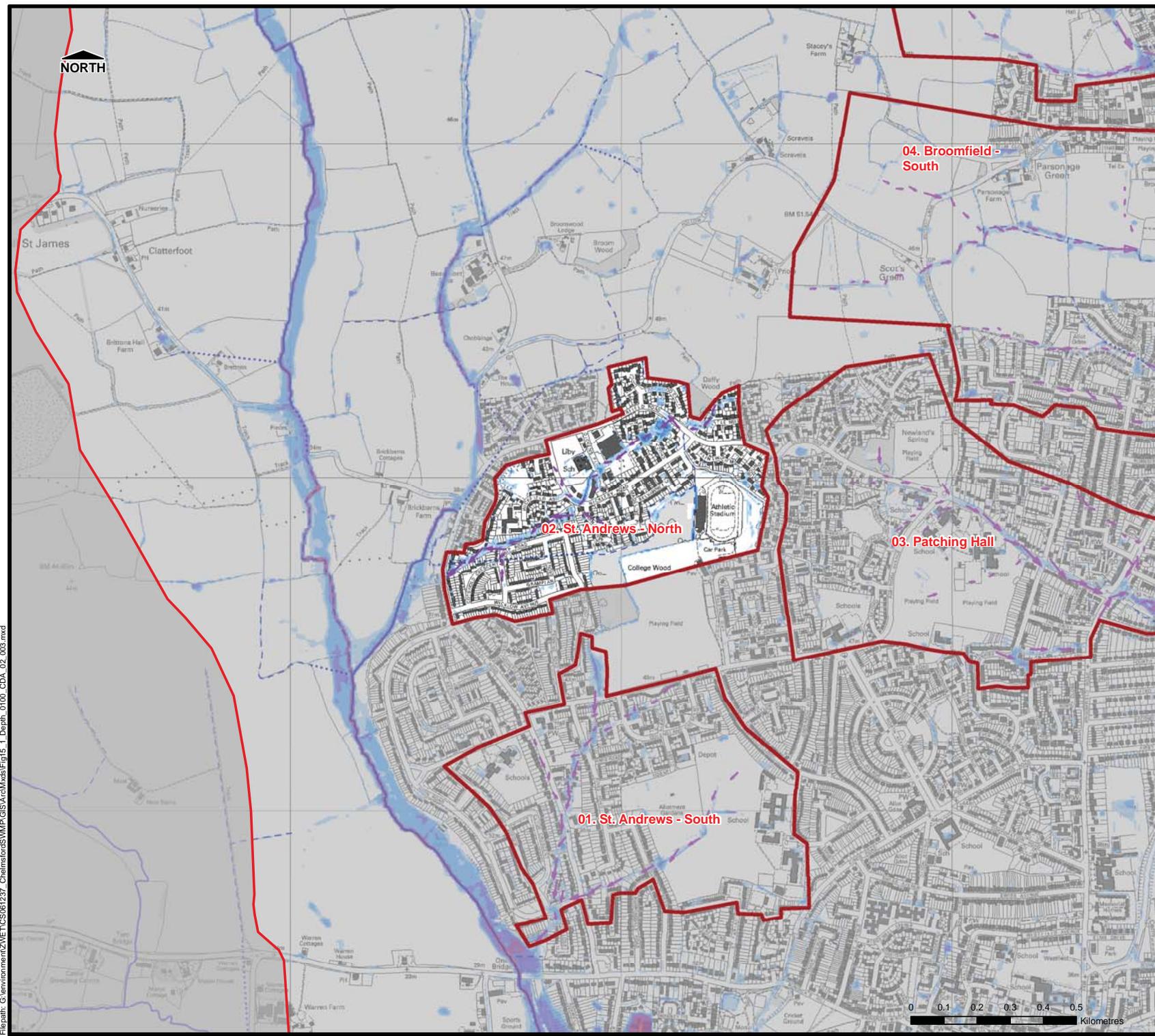
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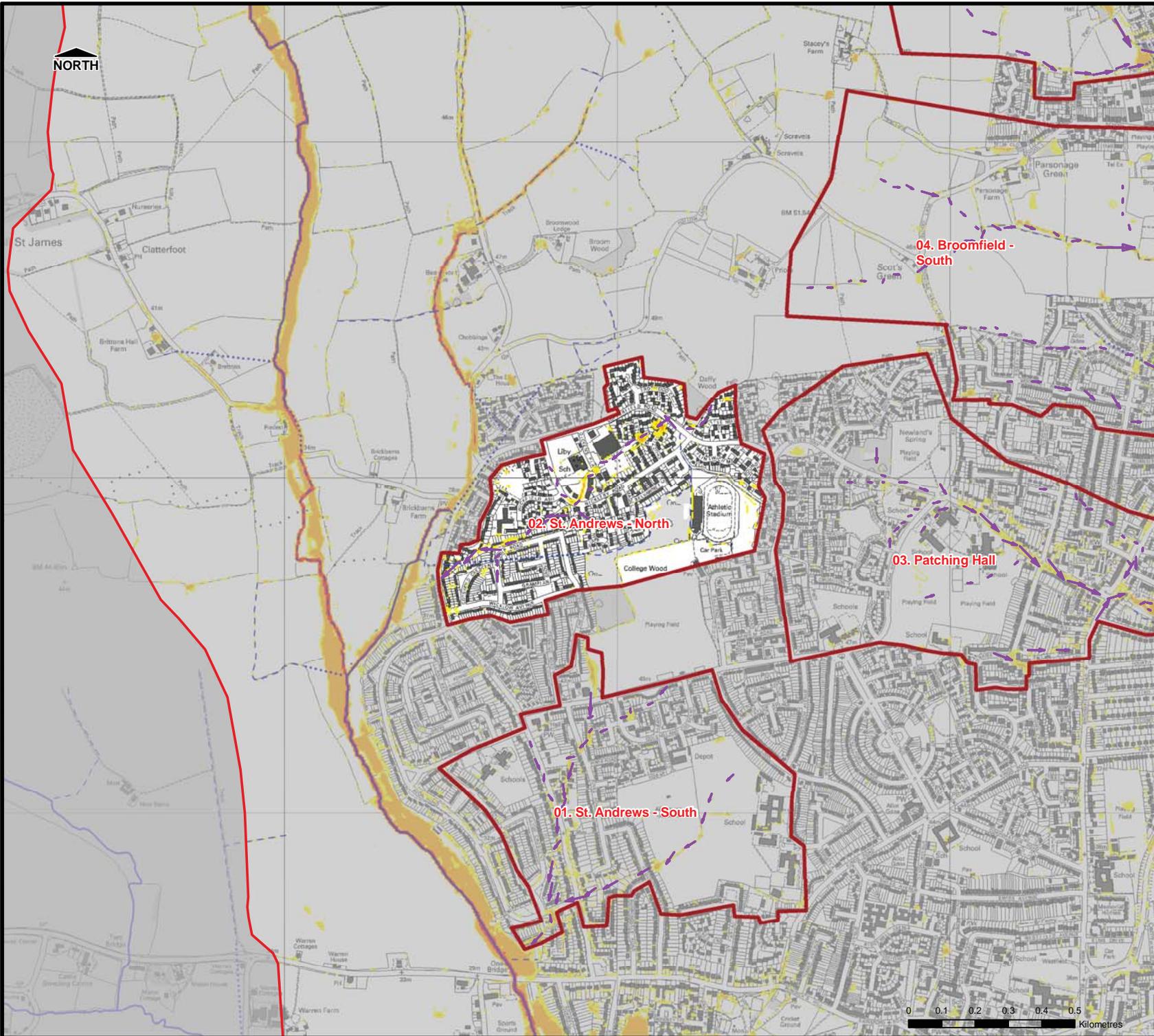
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|--------------------|-------------|-----------------|--------------------|
| <b>Scale at A3</b> | <b>Date</b> | <b>Drawn by</b> | <b>Approved by</b> |
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**Surface Water Flood Depth  
1 in 100yr, 3hr duration  
Critical Drainage Area  
02. St. Andrews - North**

|  |   |
|--|---|
| <b>Consultant</b>                              | Capita Symonds<br>Level Seven,<br>52 Grosvenor Gardens,<br>Belgravia,<br>London<br>SW1W 0AU |
| <b>CAPITA SYMONDS</b><br>Flood Risk Management |   |

**FIGURE 15.1**





**Legend**

- Administrative Boundary
- Model Extent
- Main River
- Ordinary Watercourse
- Culverted Watercourse
- Direction of flow
- Critical Drainage Areas

**Flood Hazard**

- Caution (Very Low Hazard)
- Moderate (Danger for Some)
- Significant (Danger for Most)
- Extreme (Danger for All)

**Notes**

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**Surface Water Flood Hazard  
1 in 100yr, 3hr duration  
Critical Drainage Area  
02. St. Andrews - North**

**Consultant**

**CAPITA SYMONDS**  
Flood Risk Management

Capita Symonds  
Level Seven,  
52 Grosvenor Gardens,  
Belgravia,  
London  
SW1W 0AU

**FIGURE 15.2**

**Legend**

-  Administrative Boundary
-  Model Extent
-  Main River
-  Ordinary Watercourse
-  Culverted Watercourse
-  Direction of flow
-  Critical Drainage Areas

**Flood Depth (m)**

-  < 0.1m
-  0.1m to 0.25m
-  0.25m to 0.5m
-  0.5m to 1.0m
-  1.0m to 1.5m
-  > 1.5m

**Notes**

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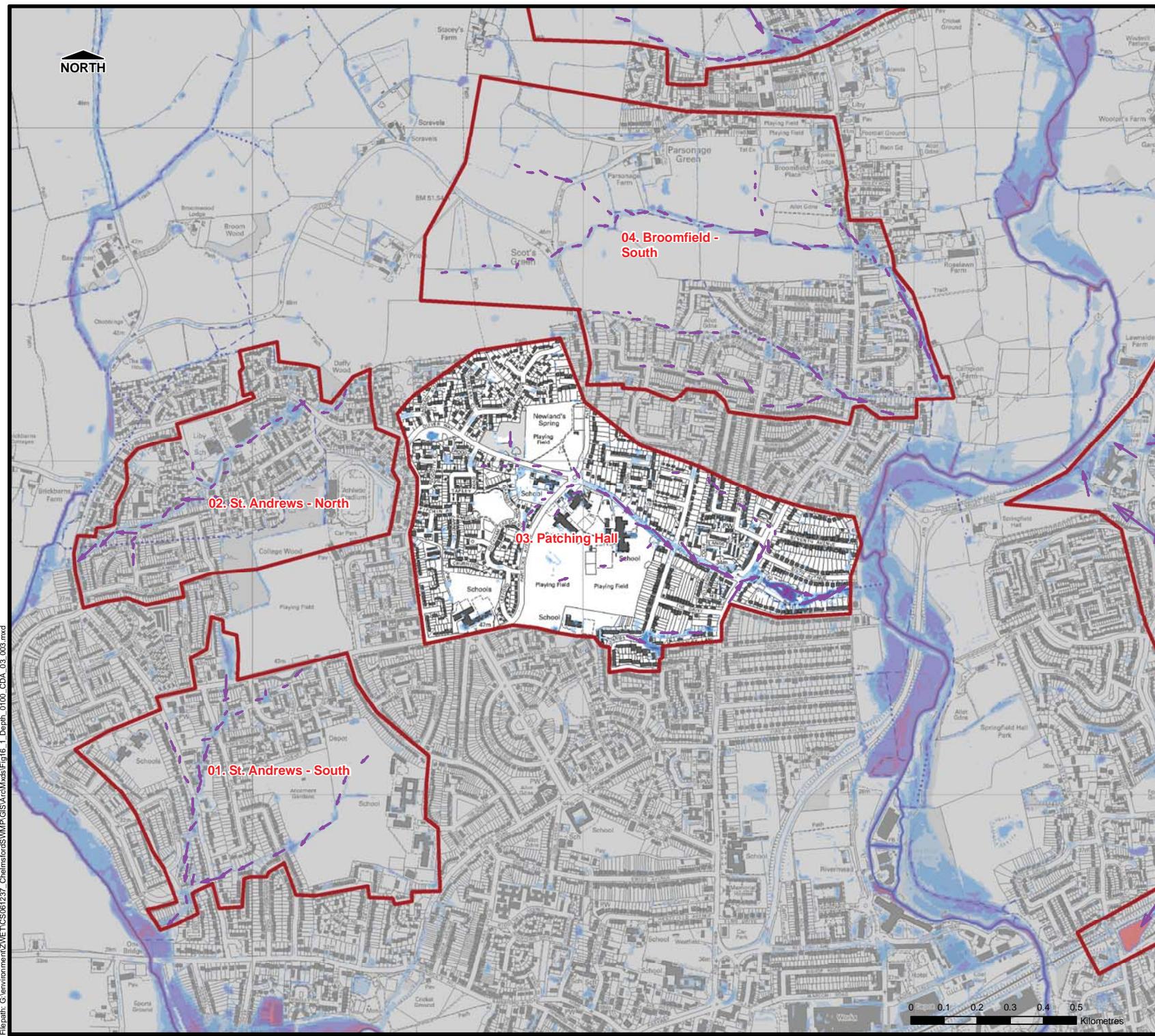
|                    |             |                 |                    |
|--------------------|-------------|-----------------|--------------------|
| <b>Scale at A3</b> | <b>Date</b> | <b>Drawn by</b> | <b>Approved by</b> |
| 1:11,000           | July 2013   | G.ATHANASIA     | M.ARTHUR           |

**Surface Water Flood Depth  
1 in 100yr, 3hr duration  
Critical Drainage Area  
03. Patching Hall**

**Consultant**  
**CAPITA SYMONDS**  
Flood Risk Management

Capita Symonds  
Level Seven,  
52 Grosvenor Gardens,  
Belgravia,  
London  
SW1W 0AU

**FIGURE 16.1**



NORTH

**Legend**

-  Administrative Boundary
  -  Model Extent
  -  Main River
  -  Ordinary Watercourse
  -  Culverted Watercourse
  -  Direction of flow
  -  Critical Drainage Areas
- Flood Hazard**
-  Caution (Very Low Hazard)
  -  Moderate (Danger for Some)
  -  Significant (Danger for Most)
  -  Extreme (Danger for All)

**Notes**

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| 1:11,000           | July 2013   | G.ATHANASIA     | M.ARTHUR           |

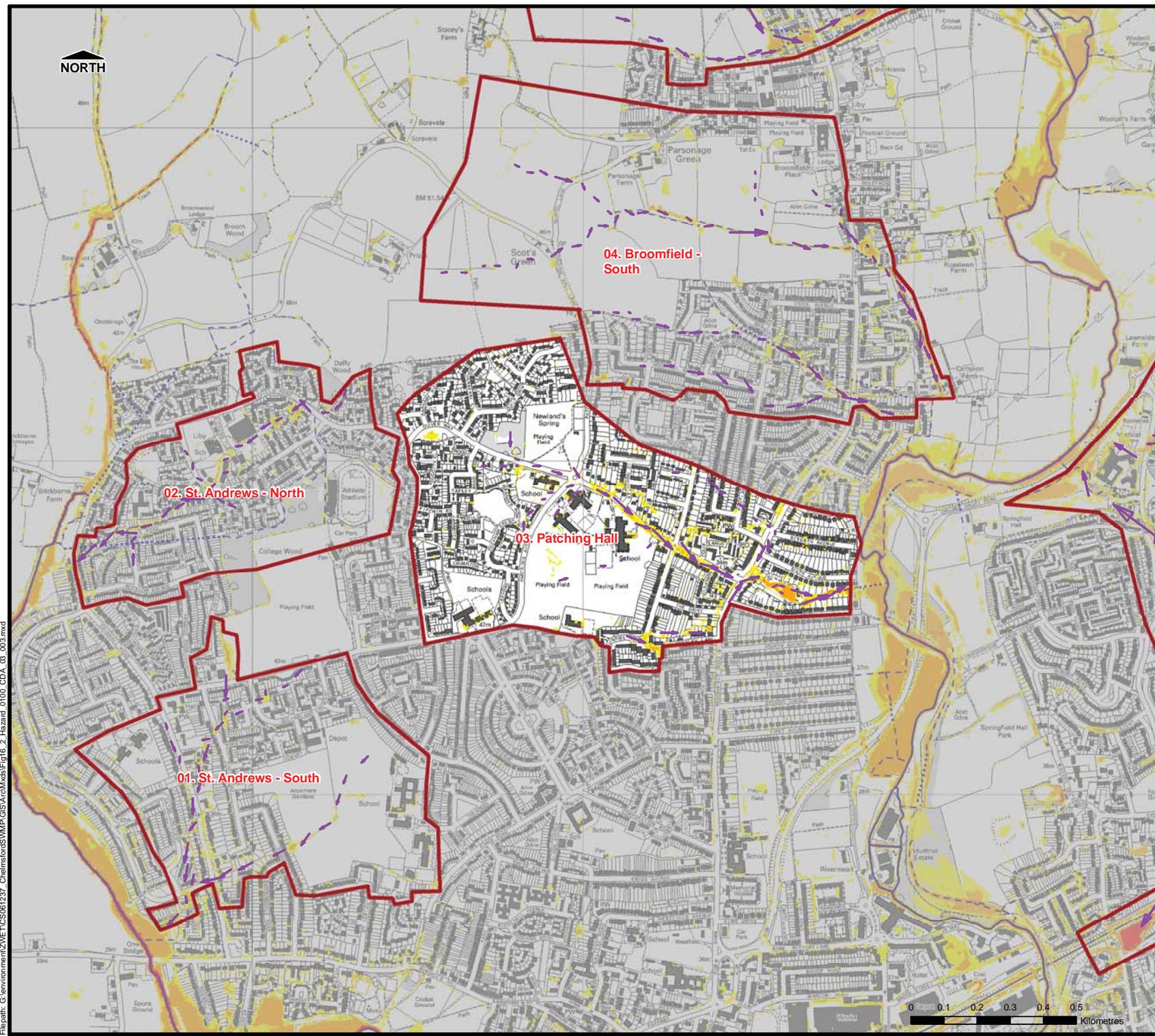
**Surface Water Flood Hazard  
1 in 100yr, 3hr duration  
Critical Drainage Area  
03. Patching Hall**

**Consultant**

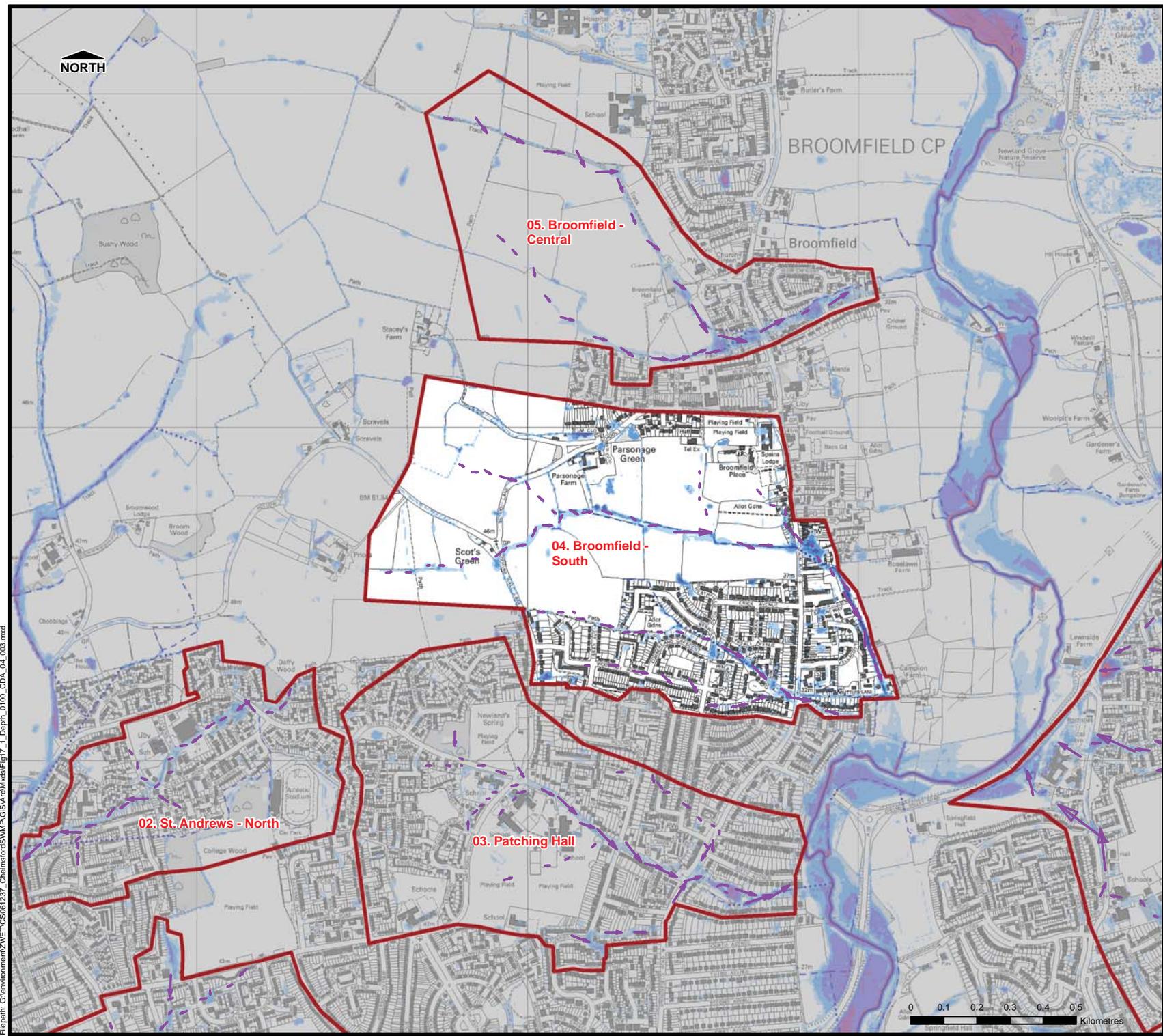
**CAPITA SYMONDS**  
Flood Risk Management

Capita Symonds  
Level Seven,  
52 Grosvenor Gardens,  
Belgravia,  
London  
SW1W 0AU

**FIGURE 16.2**



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**Legend**

-  Administrative Boundary
-  Model Extent
-  Main River
-  Ordinary Watercourse
-  Culverted Watercourse
-  Direction of flow
-  Critical Drainage Areas

**Flood Depth (m)**

-  < 0.1m
-  0.1m to 0.25m
-  0.25m to 0.5m
-  0.5m to 1.0m
-  1.0m to 1.5m
-  > 1.5m

**Notes**

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| 1:11,000           | July 2013   | G.ATHANASIA     | M.ARTHUR           |

**Surface Water Flood Depth  
1 in 100yr, 3hr duration  
Critical Drainage Area  
04. Broomfield - South**

|  |   |
|--|---|
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| <b>CAPITA SYMONDS</b><br>Flood Risk Management |   |

**FIGURE 17.1**

**Legend**

-  Administrative Boundary
-  Model Extent
-  Main River
-  Ordinary Watercourse
-  Culverted Watercourse
-  Direction of flow
-  Critical Drainage Areas

**Flood Hazard**

-  Caution (Very Low Hazard)
-  Moderate (Danger for Some)
-  Significant (Danger for Most)
-  Extreme (Danger for All)

**Notes**

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Essex County Council**



**Surface Water Management Plan**

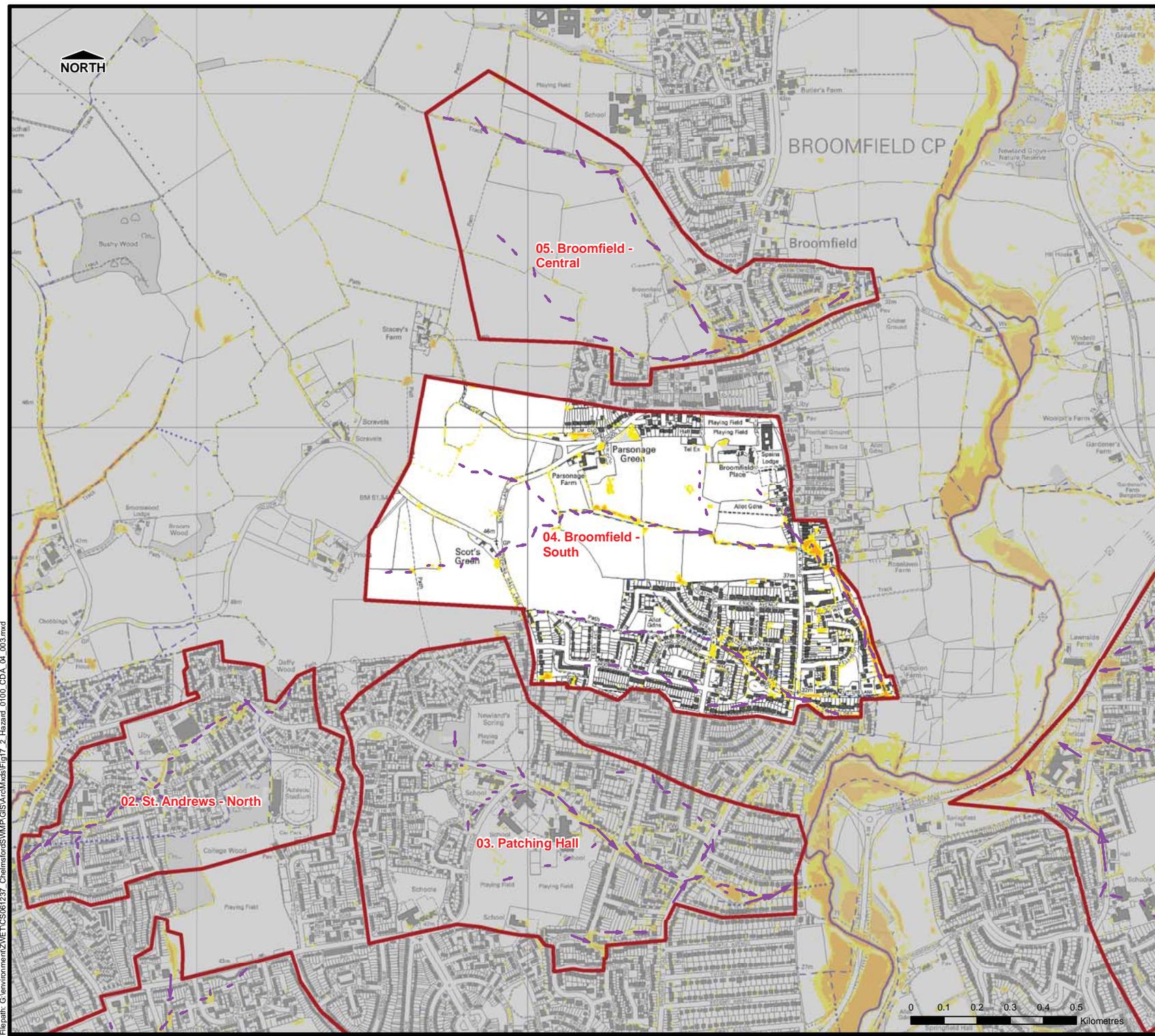
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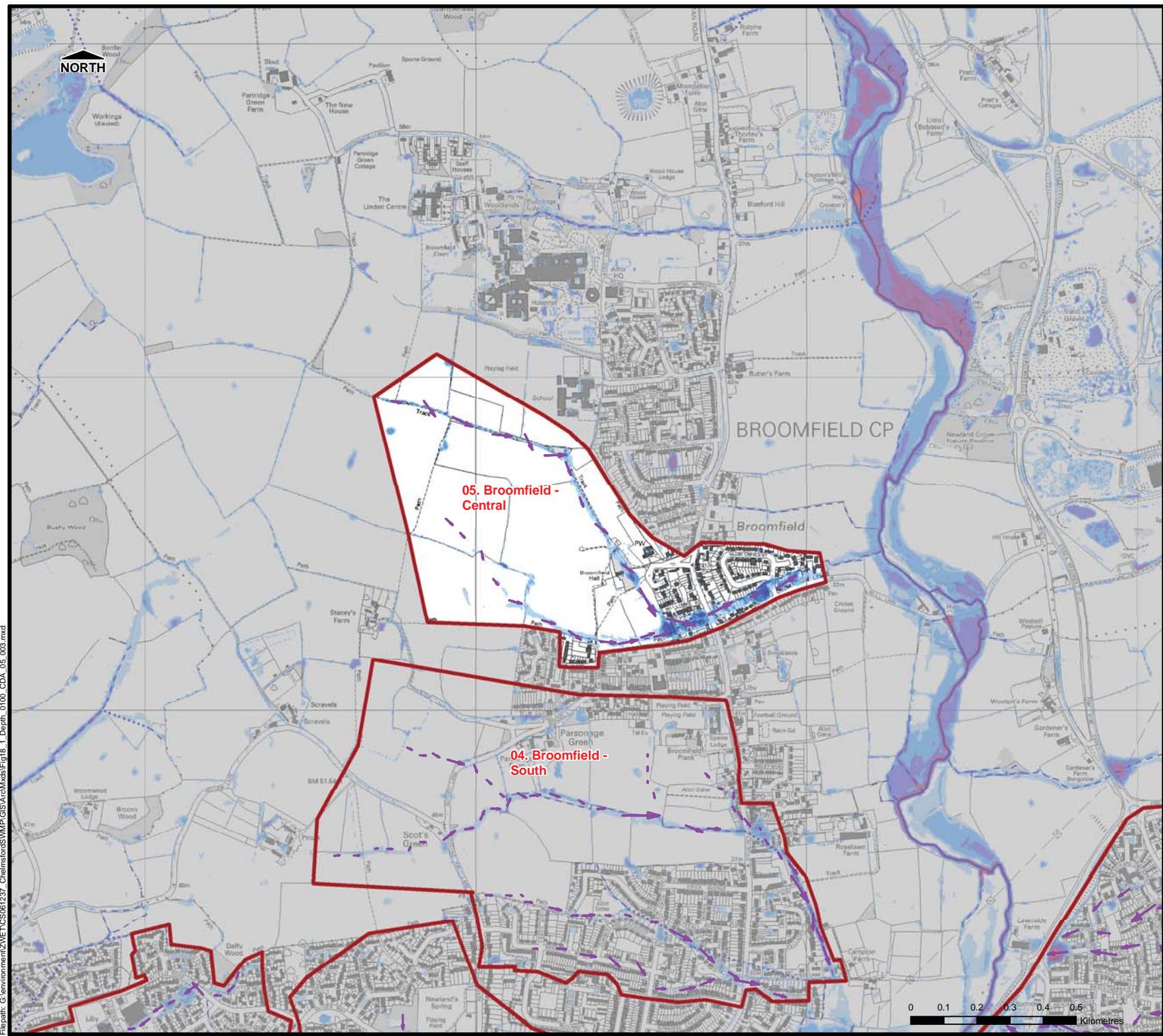
**Surface Water Flood Hazard  
1 in 100yr, 3hr duration  
Critical Drainage Area  
04. Broomfield - South**

|  |   |
|--|---|
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**FIGURE 17.2**



Filepath: G:\environment\2\WET\GIS\061237\_Chelmsford\SWMP\GIS\AreaMeds\Fig17\_2\_Hazard\_0100\_CDA\_04\_003.mxd



**Legend**

- Administrative Boundary
- Model Extent
- Main River
- Ordinary Watercourse
- Culverted Watercourse
- Direction of flow
- Critical Drainage Areas

**Flood Depth (m)**

- < 0.1m
- 0.1m to 0.25m
- 0.25m to 0.5m
- 0.5m to 1.0m
- 1.0m to 1.5m
- > 1.5m

**Notes**

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**Surface Water Flood Depth  
1 in 100yr, 3hr duration  
Critical Drainage Area  
05. Broomfield - Central**

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London  
SW1W 0AU

**FIGURE 18.1**

**Legend**

-  Administrative Boundary
-  Model Extent
-  Main River
-  Ordinary Watercourse
-  Culverted Watercourse
-  Direction of flow
-  Critical Drainage Areas

**Flood Hazard**

-  Caution (Very Low Hazard)
-  Moderate (Danger for Some)
-  Significant (Danger for Most)
-  Extreme (Danger for All)

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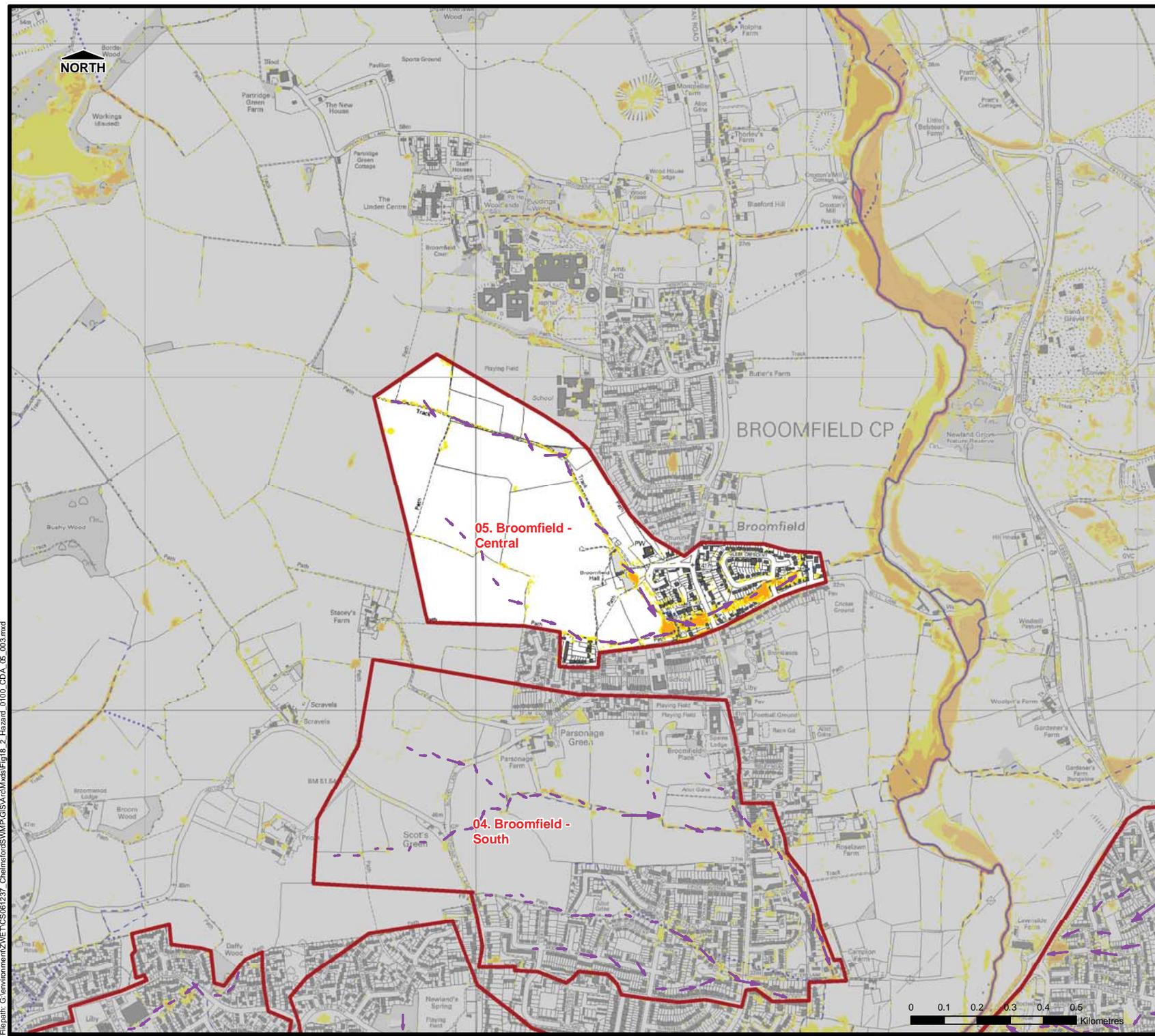
**Surface Water Flood Hazard  
1 in 100yr, 3hr duration  
Critical Drainage Area  
05. Broomfield - Central**

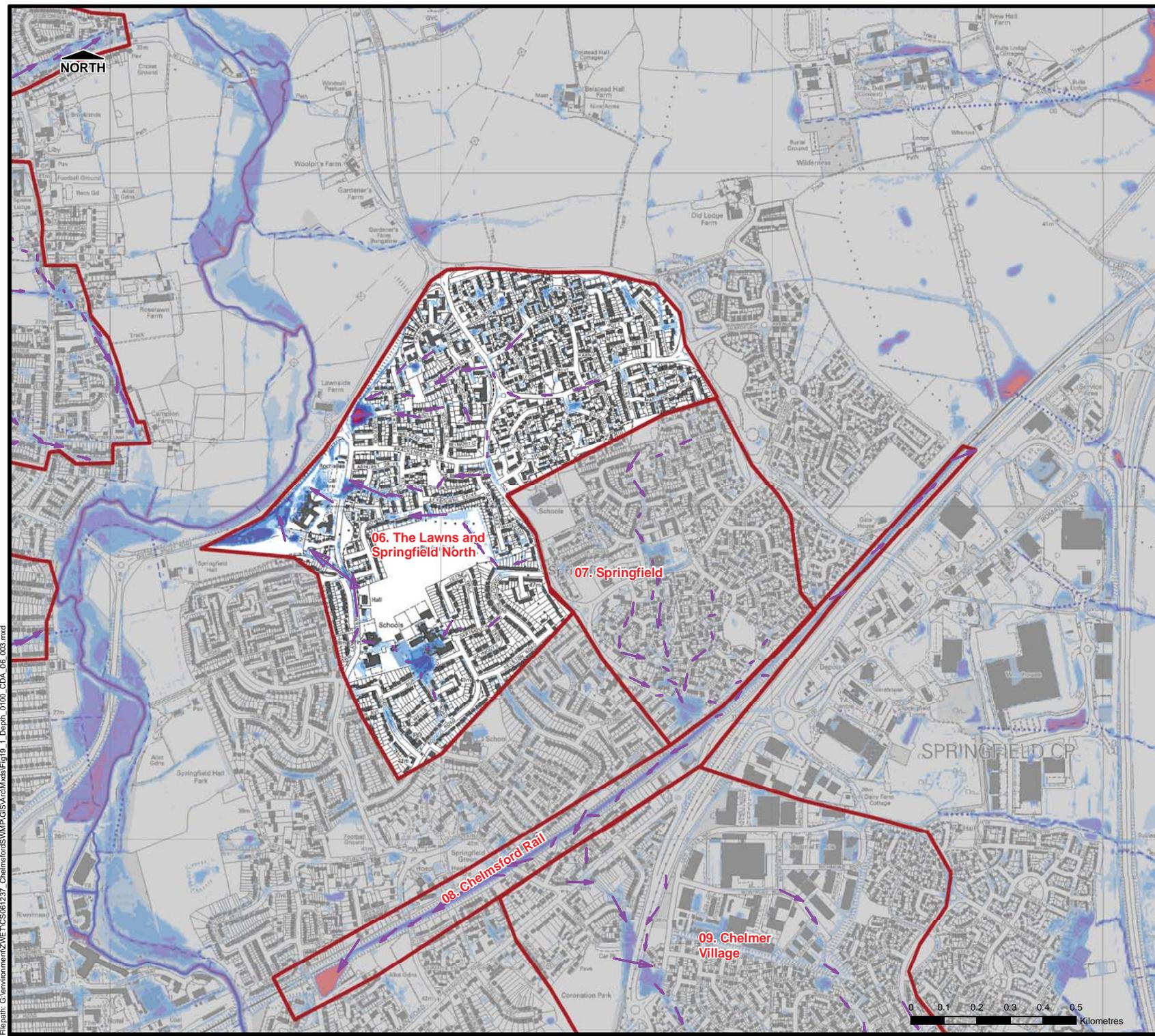
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SW1W 0AU

**FIGURE 18.2**





**Legend**

- Administrative Boundary
  - Model Extent
  - Main River
  - Ordinary Watercourse
  - Culverted Watercourse
  - Direction of flow
  - Critical Drainage Areas
- Flood Depth (m)**
- < 0.1m
  - 0.1m to 0.25m
  - 0.25m to 0.5m
  - 0.5m to 1.0m
  - 1.0m to 1.5m
  - > 1.5m

**Notes**

Notes section containing project-specific information and disclaimers.

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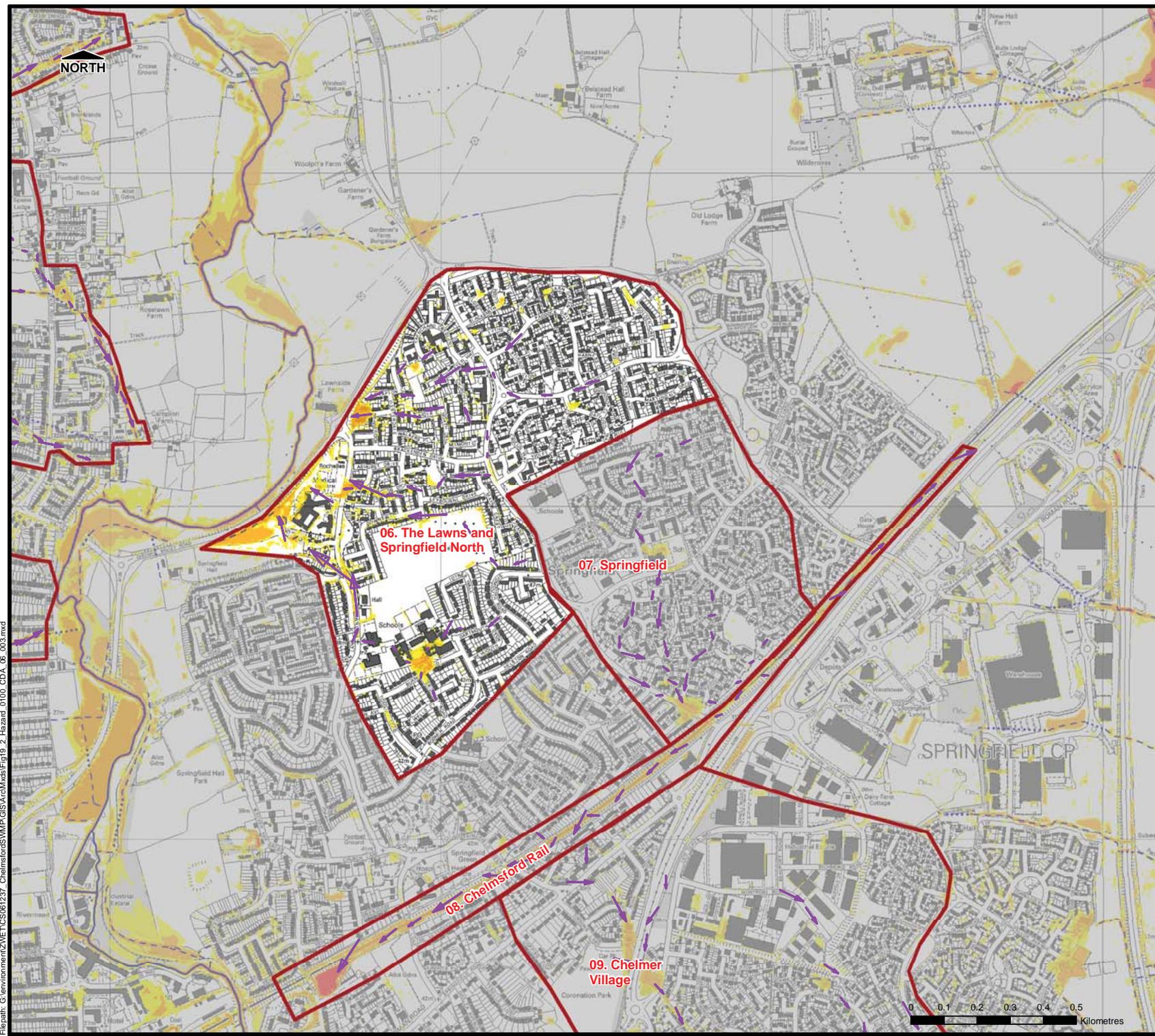
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| <b>Scale at A3</b><br>1:11,000 | <b>Date</b><br>July 2013 | <b>Drawn by</b><br>G.ATHANASIA | <b>Approved by</b><br>M.ARTHUR |
|--------------------------------|--------------------------|--------------------------------|--------------------------------|

**Surface Water Flood Depth  
1 in 100yr, 3hr duration  
Critical Drainage Area  
06. The Lawns and Springfield North**

|   |   |
|---|---|
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|---|---|

**FIGURE 19.1**

Filepath: G:\environment\ZWE\TCS\061237\_Chelmsford\SWMP\GIS\AreaMaps\Fig19\_1\_Depth\_0100\_CDA\_06\_003.mxd



**Legend**

- Administrative Boundary
- Model Extent
- Main River
- Ordinary Watercourse
- Culverted Watercourse
- Direction of flow
- Critical Drainage Areas

**Flood Hazard**

- Caution (Very Low Hazard)
- Moderate (Danger for Some)
- Significant (Danger for Most)
- Extreme (Danger for All)

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|--------------------------------|--------------------------|--------------------------------|--------------------------------|

**Surface Water Flood Hazard  
1 in 100yr, 3hr duration  
Critical Drainage Area  
06. The Lawns and Springfield North**

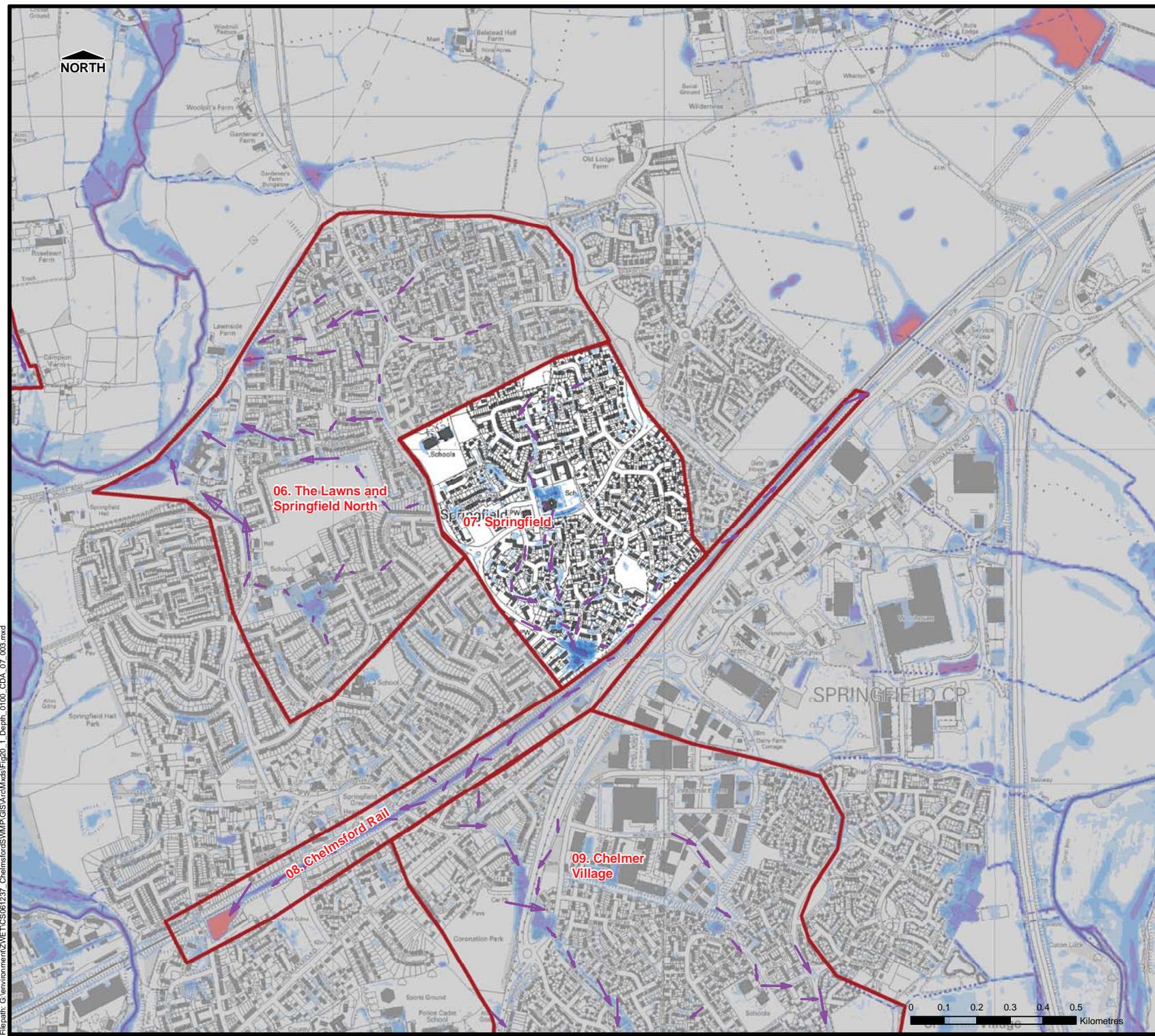
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Level Seven,  
52 Grosvenor Gardens,  
Belgravia,  
London  
SW1W 0AU

**FIGURE 19.2**

Filepath: G:\environment\ZWE\TCS061237\_Chelmsford\SWMP\GIS\ArcMap\Fig19\_2\_Hazard\_0100\_0100\_CDA\_06\_003.mxd



**Legend**

-  Administrative Boundary
-  Model Extent
-  Main River
-  Ordinary Watercourse
-  Culverted Watercourse
-  Direction of flow
-  Critical Drainage Areas

**Flood Depth (m)**

-  < 0.1m
-  0.1m to 0.25m
-  0.25m to 0.5m
-  0.5m to 1.0m
-  1.0m to 1.5m
-  > 1.5m

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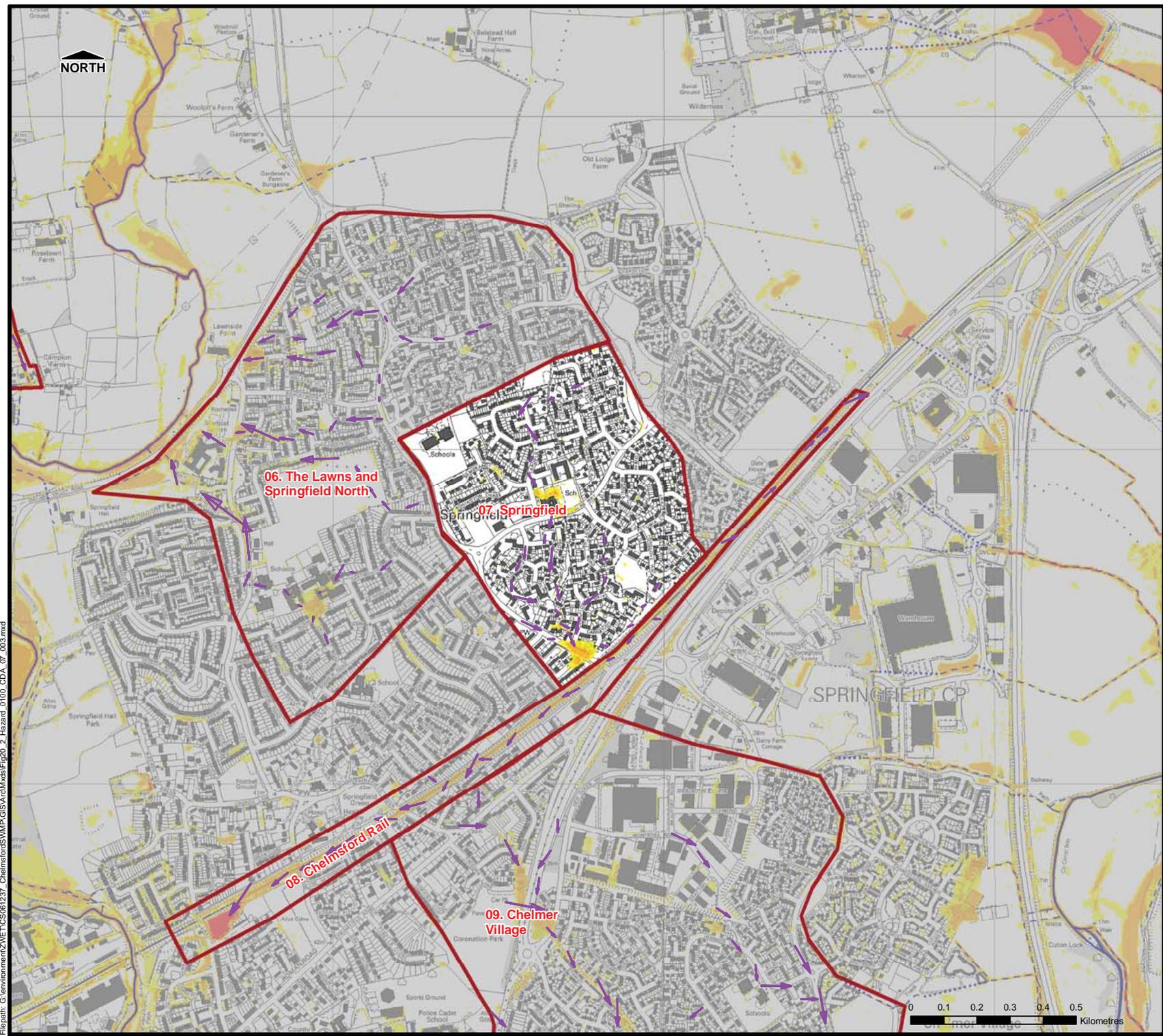
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**Surface Water Flood Depth  
1 in 100yr, 3hr duration  
Critical Drainage Area  
07. Springfield**

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**FIGURE 20.1**



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- Legend**
- Administrative Boundary
  - Model Extent
  - Main River
  - Ordinary Watercourse
  - Culverted Watercourse
  - Direction of flow
  - Critical Drainage Areas
- Flood Hazard**
- Caution (Very Low Hazard)
  - Moderate (Danger for Some)
  - Significant (Danger for Most)
  - Extreme (Danger for All)

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**Surface Water Flood Hazard  
1 in 100yr, 3hr duration  
Critical Drainage Area  
07. Springfield**

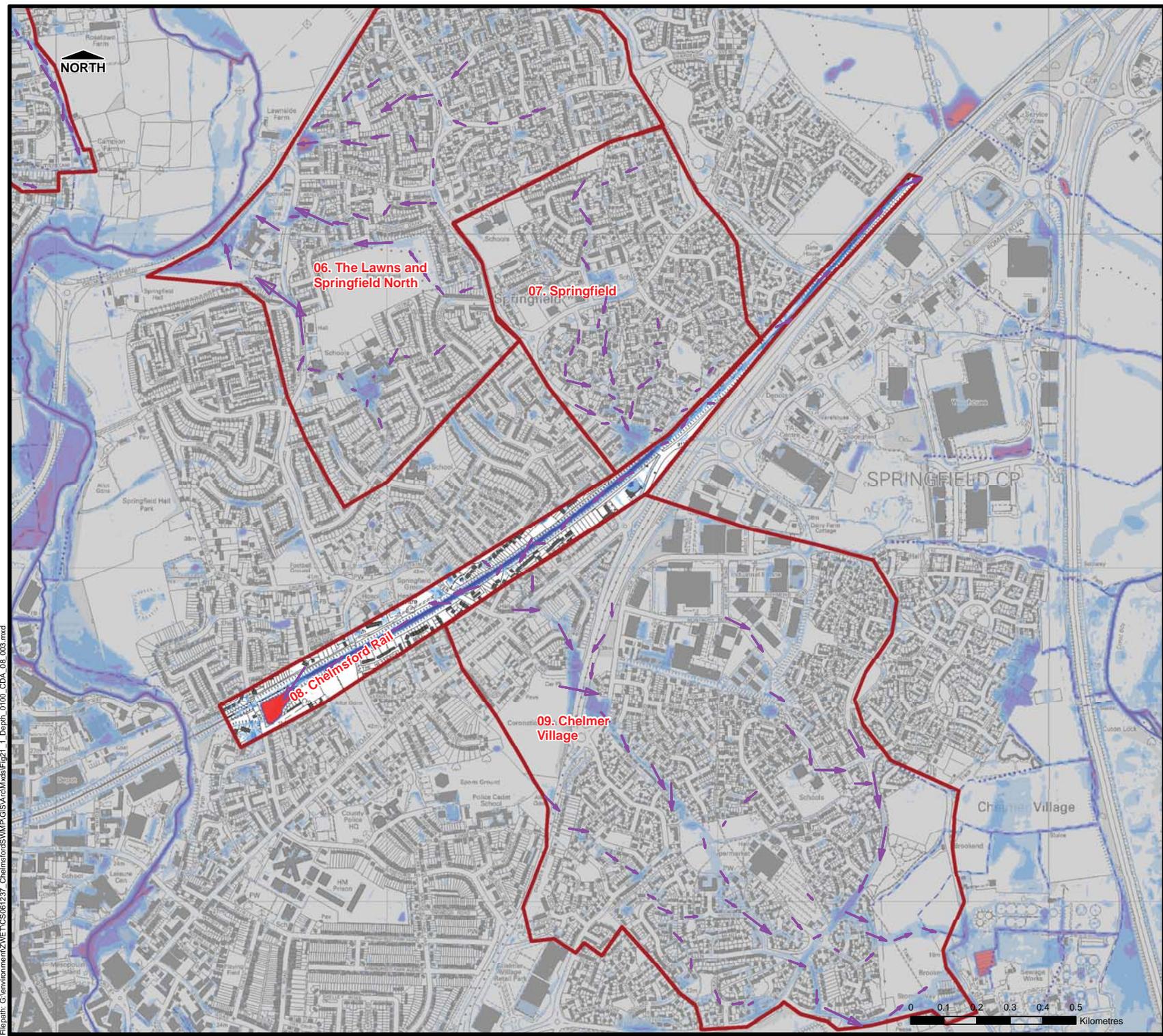
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**FIGURE 20.2**

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**Legend**

- Administrative Boundary
- Model Extent
- Main River
- Ordinary Watercourse
- Culverted Watercourse
- Direction of flow
- Critical Drainage Areas

**Flood Depth (m)**

- < 0.1m
- 0.1m to 0.25m
- 0.25m to 0.5m
- 0.5m to 1.0m
- 1.0m to 1.5m
- > 1.5m

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|--------------------------------|--------------------------|--------------------------------|--------------------------------|

**Surface Water Flood Depth 1 in 100yr, 3hr duration  
Critical Drainage Area 08. Chelmsford Rail**

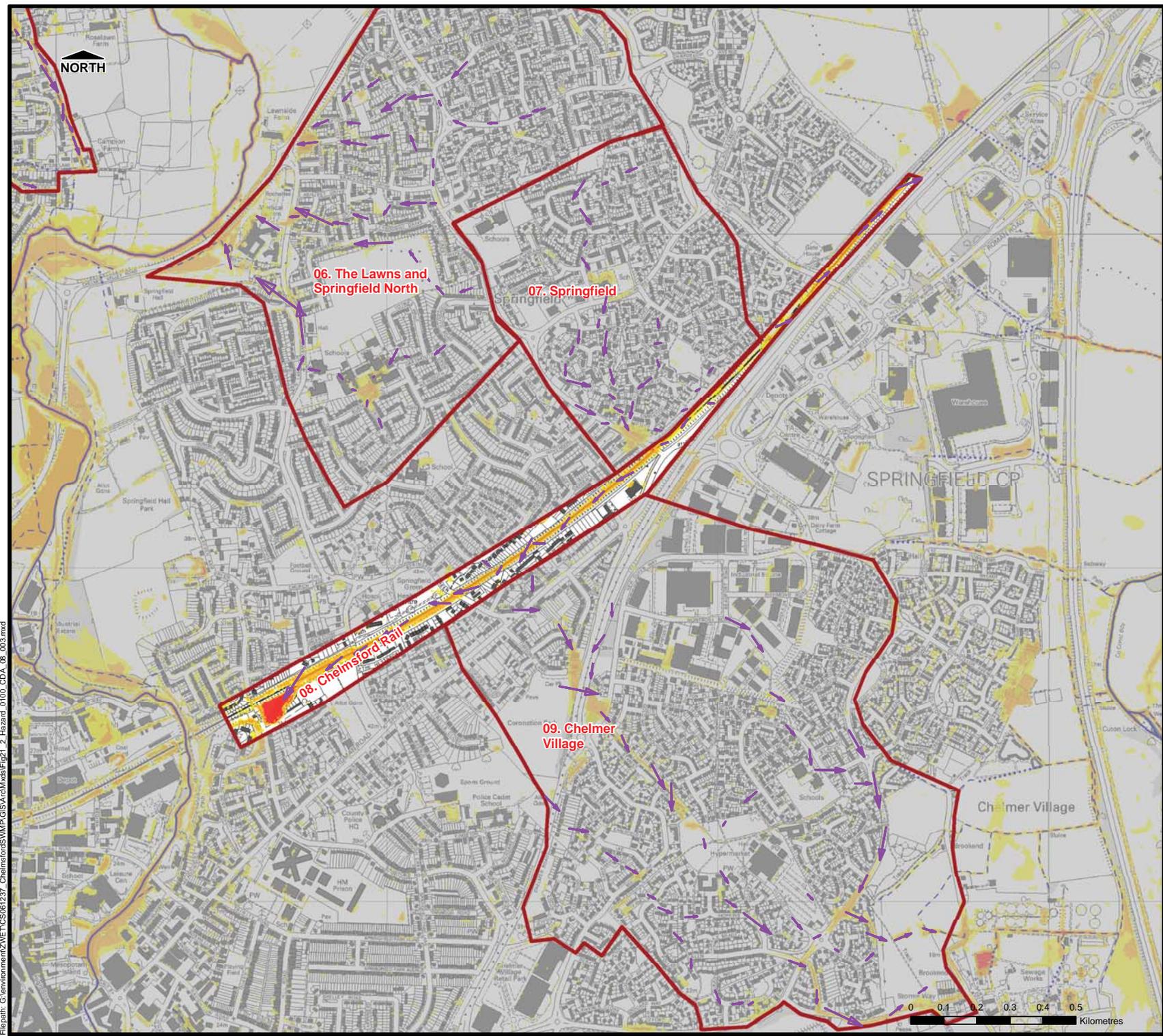
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**FIGURE 21.1**

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**Legend**

- Administrative Boundary
  - Model Extent
  - Main River
  - Ordinary Watercourse
  - Culverted Watercourse
  - Direction of flow
  - Critical Drainage Areas
- Flood Hazard**
- Caution (Very Low Hazard)
  - Moderate (Danger for Some)
  - Significant (Danger for Most)
  - Extreme (Danger for All)

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**Surface Water Flood Hazard  
1 in 100yr, 3hr duration  
Critical Drainage Area  
08. Chelmsford Rail**

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London  
SW1W 0AU

**FIGURE 21.2**

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**Legend**

-  Administrative Boundary
-  Model Extent
-  Main River
-  Ordinary Watercourse
-  Culverted Watercourse
-  Direction of flow
-  Critical Drainage Areas

**Flood Depth (m)**

-  < 0.1m
-  0.1m to 0.25m
-  0.25m to 0.5m
-  0.5m to 1.0m
-  1.0m to 1.5m
-  > 1.5m

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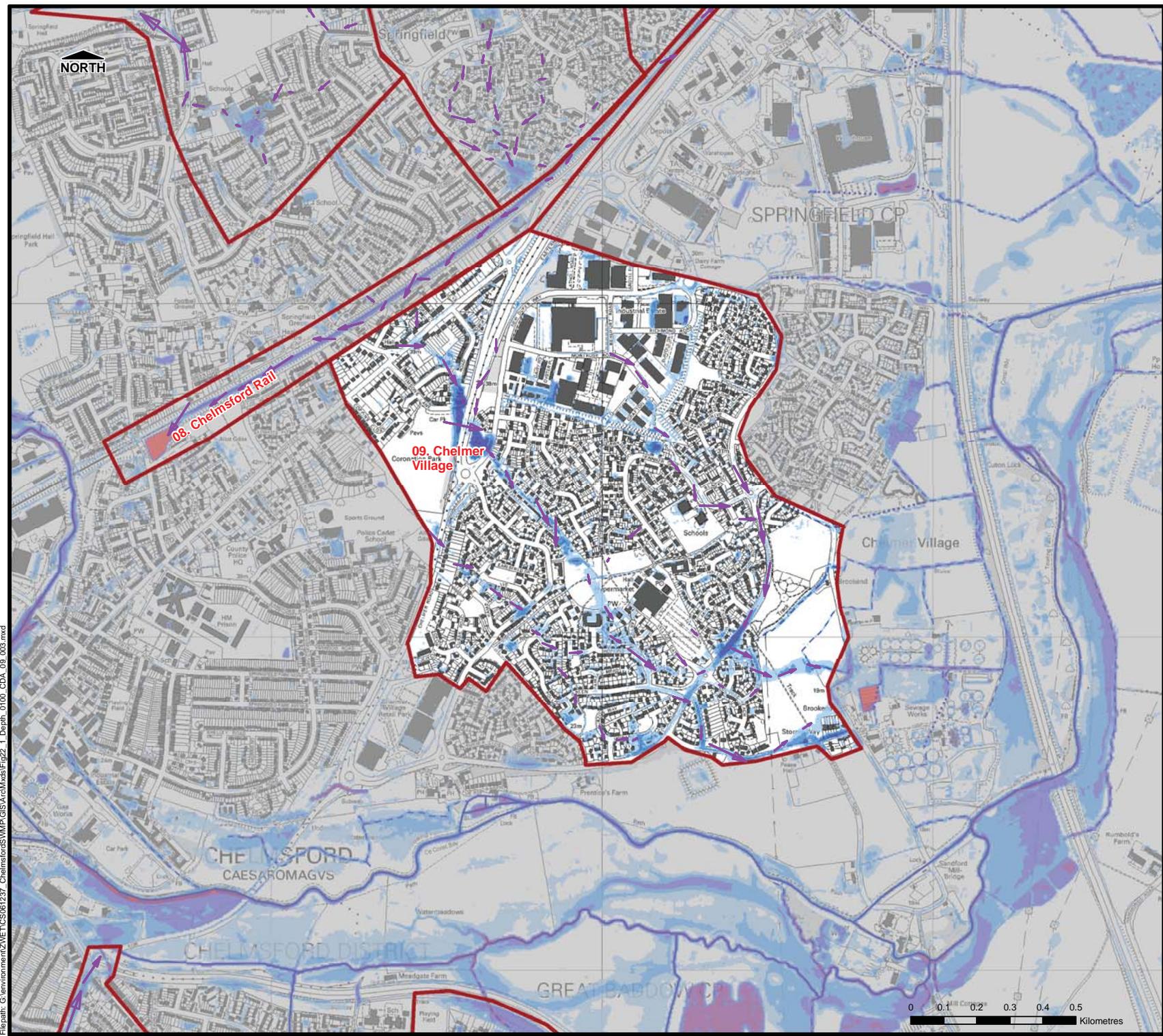
**Surface Water Flood Depth  
1 in 100yr, 3hr duration  
Critical Drainage Area  
09. Chelmer Village**

**Consultant**

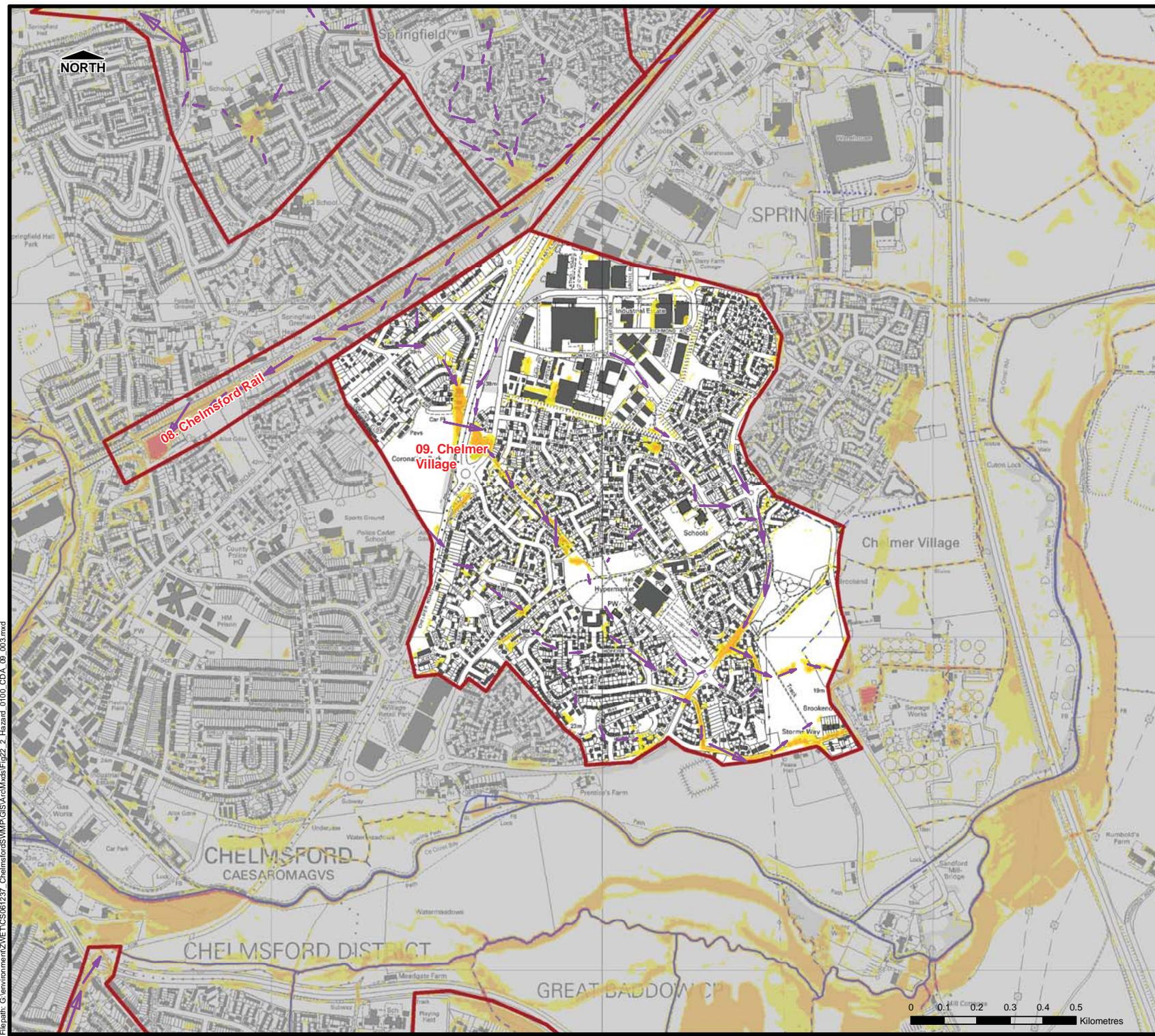
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**FIGURE 22.1**



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**Legend**

- Administrative Boundary
- Model Extent
- Main River
- Ordinary Watercourse
- Culverted Watercourse
- Direction of flow
- Critical Drainage Areas

**Flood Hazard**

- Caution (Very Low Hazard)
- Moderate (Danger for Some)
- Significant (Danger for Most)
- Extreme (Danger for All)

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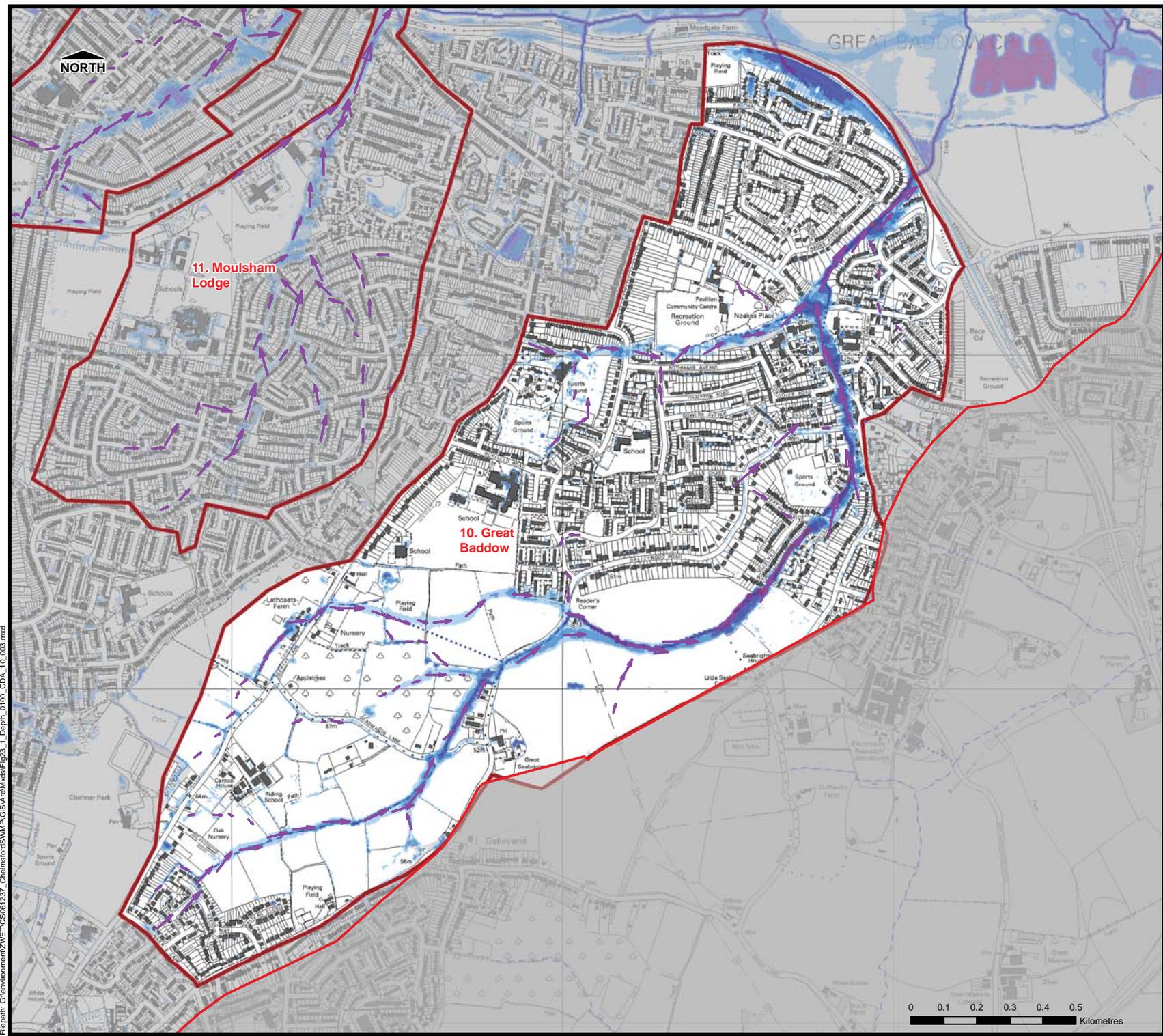
**Surface Water Flood Hazard**  
**1 in 100yr, 3hr duration**  
**Critical Drainage Area**  
**09. Chelmer Village**

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**FIGURE 22.2**



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- Legend**
- Administrative Boundary
  - Model Extent
  - Main River
  - Ordinary Watercourse
  - Culverted Watercourse
  - Direction of flow
  - Critical Drainage Areas
- Flood Depth (m)**
- <math>< 0.1\text{m}</math>
  - 0.1m to 0.25m
  - 0.25m to 0.5m
  - 0.5m to 1.0m
  - 1.0m to 1.5m
  - > 1.5m

**Notes**

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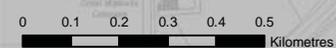
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|--------------------------------|--------------------------|--------------------------------|--------------------------------|

**Surface Water Flood Depth  
 1 in 100yr, 3hr duration  
 Critical Drainage Area  
 10. Great Baddow**

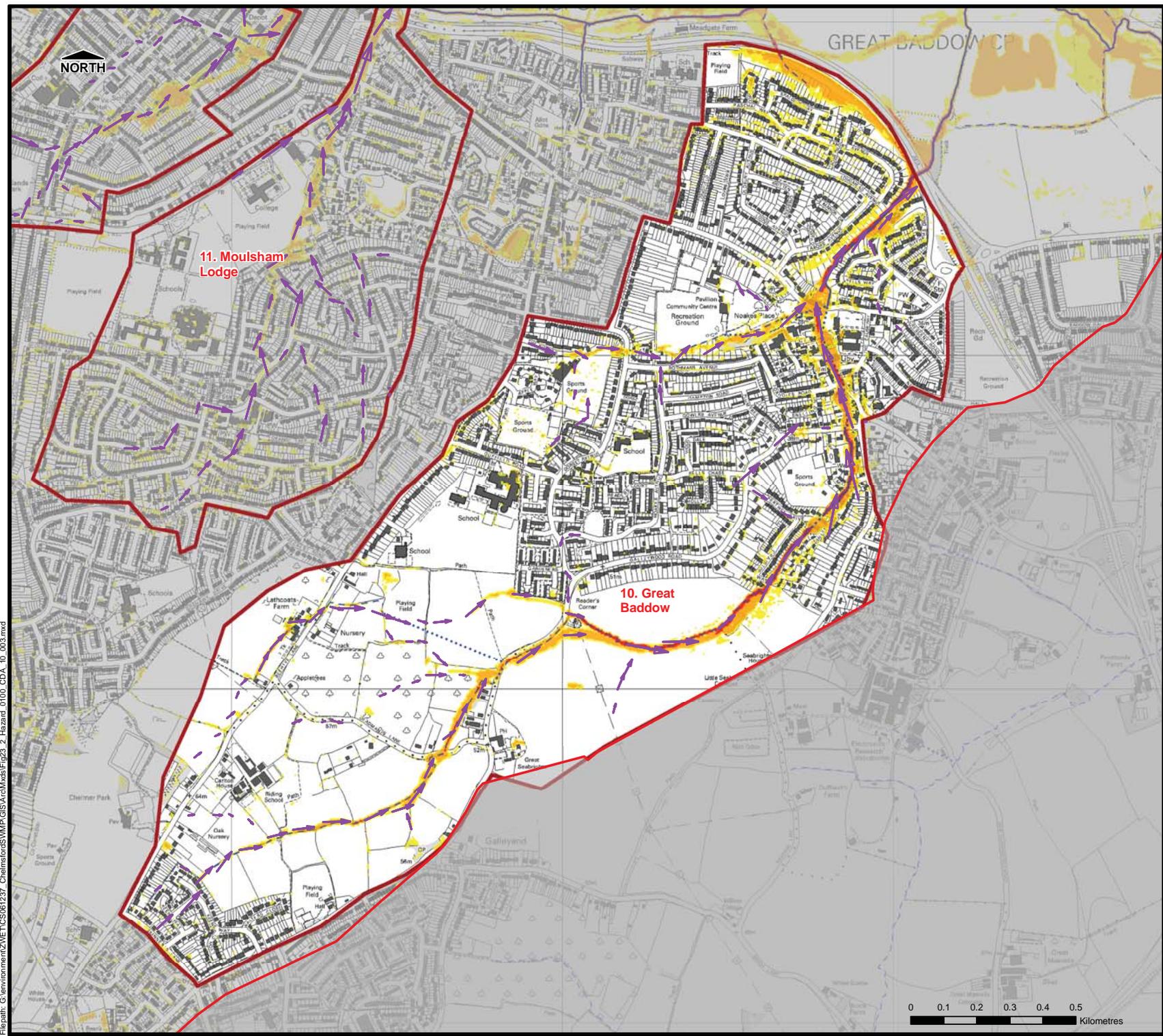
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**FIGURE 23.1**

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**Legend**

- Administrative Boundary
  - Model Extent
  - Main River
  - Ordinary Watercourse
  - Culverted Watercourse
  - Direction of flow
  - Critical Drainage Areas
- Flood Hazard**
- Caution (Very Low Hazard)
  - Moderate (Danger for Some)
  - Significant (Danger for Most)
  - Extreme (Danger for All)

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**Surface Water Flood Hazard  
1 in 100yr, 3hr duration  
Critical Drainage Area  
10. Great Baddow**

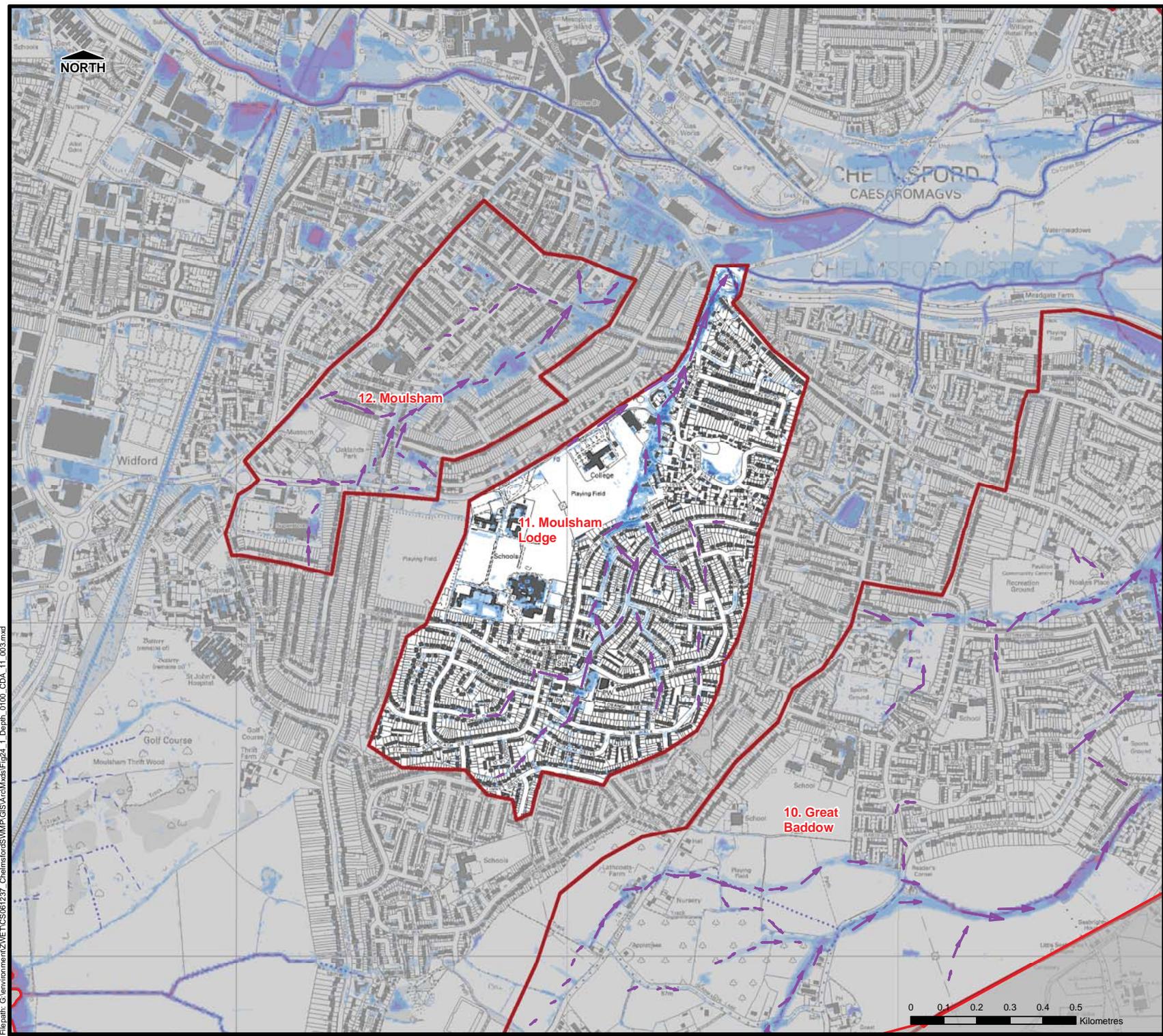
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**FIGURE 23.2**

Filepath: G:\environment\ZWE\TCS\061237 - Chelmsford\SWMP\GIS\AreaMaps\Fig23\_2\_Hazard\_0100\_0100\_CDA\_10\_003.mxd



**Legend**

-  Administrative Boundary
-  Model Extent
-  Main River
-  Ordinary Watercourse
-  Culverted Watercourse
-  Direction of flow
-  Critical Drainage Areas

**Flood Depth (m)**

-  < 0.1m
-  0.1m to 0.25m
-  0.25m to 0.5m
-  0.5m to 1.0m
-  1.0m to 1.5m
-  > 1.5m

**Notes**

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**Surface Water Flood Depth  
1 in 100yr, 3hr duration  
Critical Drainage Area  
11. Moulsham Lodge**

**Consultant**

**CAPITA SYMONDS**  
Flood Risk Management

Capita Symonds  
Level Seven,  
52 Grosvenor Gardens,  
Belgravia,  
London  
SW1W 0AU

**FIGURE 24.1**

**Legend**

-  Administrative Boundary
  -  Model Extent
  -  Main River
  -  Ordinary Watercourse
  -  Culverted Watercourse
  -  Direction of flow
  -  Critical Drainage Areas
- Flood Hazard**
-  Caution (Very Low Hazard)
  -  Moderate (Danger for Some)
  -  Significant (Danger for Most)
  -  Extreme (Danger for All)

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| 1:11,000           | July 2013   | G.ATHANASIA     | M.ARTHUR           |

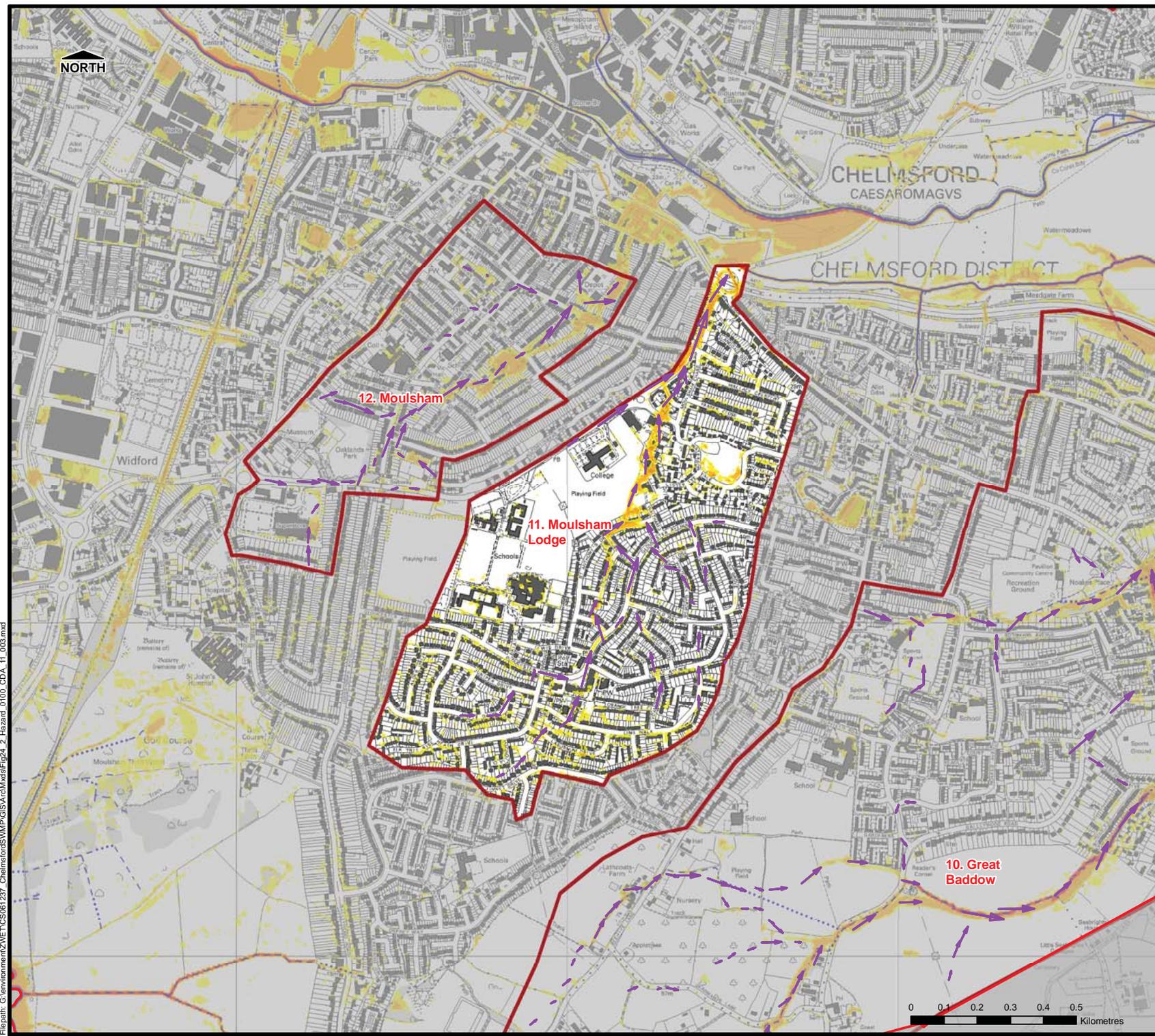
**Surface Water Flood Hazard  
1 in 100yr, 3hr duration  
Critical Drainage Area  
11. Moulsham Lodge**

**Consultant**

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Flood Risk Management

Capita Symonds  
Level Seven,  
52 Grosvenor Gardens,  
Belgravia,  
London  
SW1W 0AU

**FIGURE 24.2**



Filepath: G:\environment\ZWE\TCS061237\_Chelmsford\SWMP\GIS\AreaMaps\Fig24.2\_Hazard\_0100\_CDA\_11\_003.mxd

THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED

**Legend**

-  Administrative Boundary
-  Model Extent
-  Main River
-  Ordinary Watercourse
-  Culverted Watercourse
-  Direction of flow
-  Critical Drainage Areas

**Flood Depth (m)**

-  < 0.1m
-  0.1m to 0.25m
-  0.25m to 0.5m
-  0.5m to 1.0m
-  1.0m to 1.5m
-  > 1.5m

**Notes**

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Essex County Council**




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**Surface Water Management Plan**

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|                                |                          |                                |                                |
|--------------------------------|--------------------------|--------------------------------|--------------------------------|
| <b>Scale at A3</b><br>1:11,000 | <b>Date</b><br>July 2013 | <b>Drawn by</b><br>G.ATHANASIA | <b>Approved by</b><br>M.ARTHUR |
|--------------------------------|--------------------------|--------------------------------|--------------------------------|

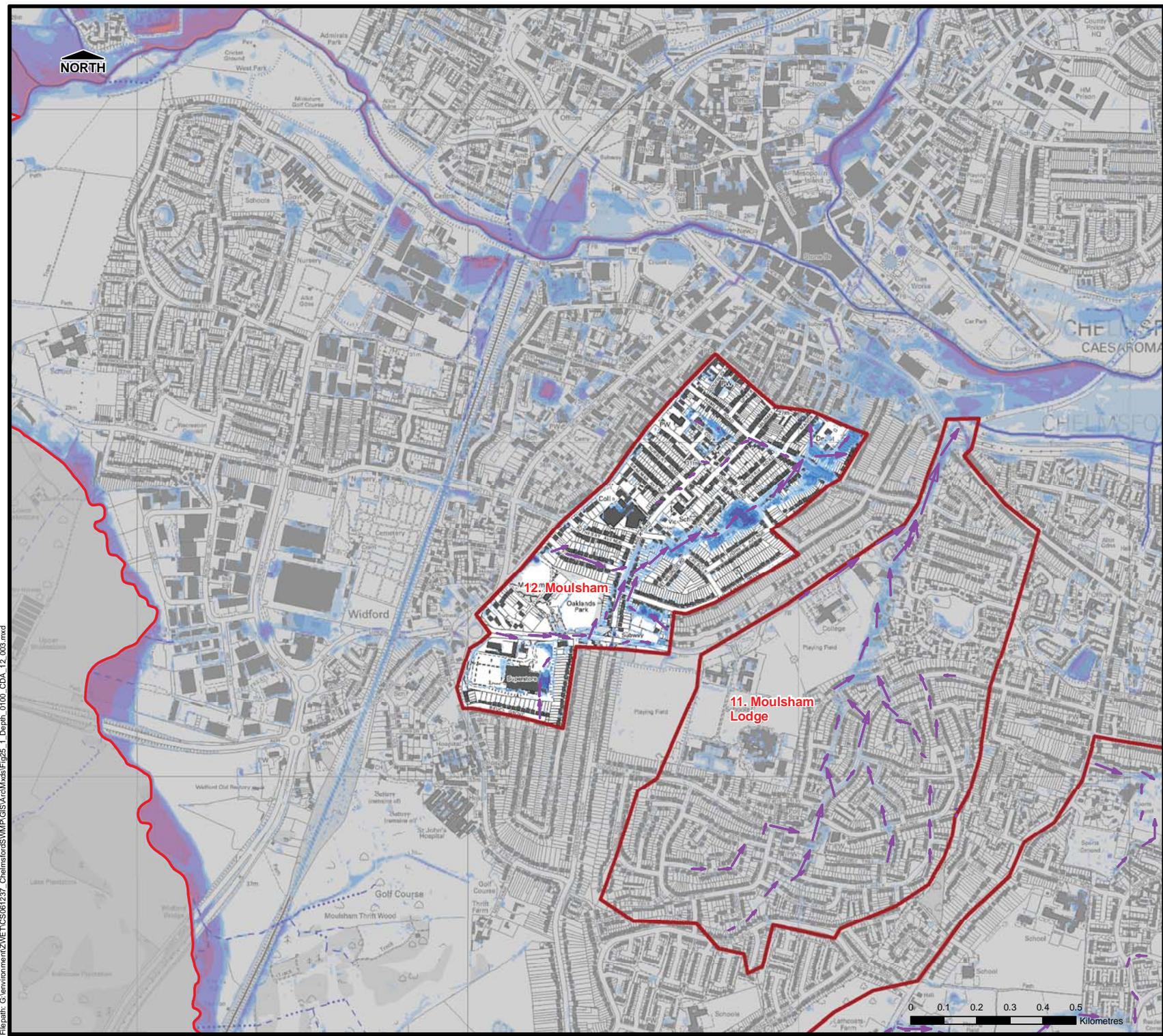
**Surface Water Flood Depth  
1 in 100yr, 3hr duration  
Critical Drainage Area  
12. Moulsham**

**Consultant**

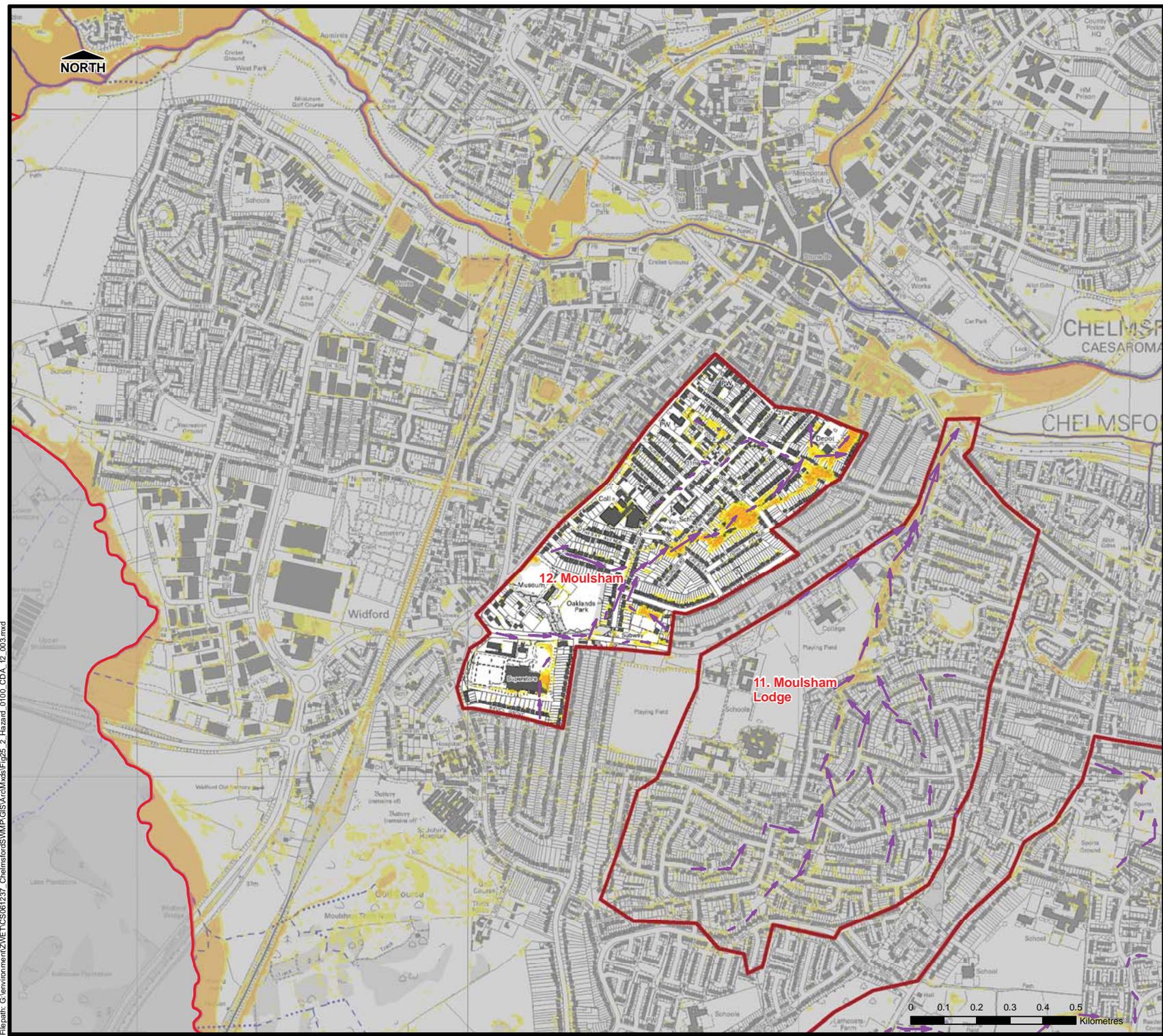
**CAPITA SYMONDS**  
Flood Risk Management

Capita Symonds  
Level Seven,  
52 Grosvenor Gardens,  
Belgravia,  
London  
SW1W 0AU

**FIGURE 25.1**



Filepath: G:\environment\ZWE\TICS061237\_ChelmsfordSWMP\GIS\AreaMaps\Fig25\_1\_Depth\_0100\_CDA\_12\_003.mxd



THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED

- Legend**
- Administrative Boundary
  - Model Extent
  - Main River
  - Ordinary Watercourse
  - Culverted Watercourse
  - Direction of flow
  - Critical Drainage Areas
- Flood Hazard**
- Caution (Very Low Hazard)
  - Moderate (Danger for Some)
  - Significant (Danger for Most)
  - Extreme (Danger for All)

**Notes**

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| <b>Scale at A3</b> | <b>Date</b> | <b>Drawn by</b> | <b>Approved by</b> |
| 1:11,000           | July 2013   | G.ATHANASIA     | M.ARTHUR           |

**Surface Water Flood Hazard  
1 in 100yr, 3hr duration  
Critical Drainage Area  
12. Moulsham**

**Consultant**

**CAPITA SYMONDS**  
Flood Risk Management

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Belgravia,  
London  
SW1W 0AU

**FIGURE 25.2**

Filepath: G:\environment\ZWE\TICS061237\_Chelmsford\SWMP\GIS\Area\Map\Fig25\_2\_Hazard\_0100\_0100\_CDA\_12\_003.mxd

**Legend**

-  Administrative Boundary
-  Model Extent
- Resistance/ Resilience**
-  < 0.1m
-  Resistance\*
-  Resilience\*
-  Water Entry Strategy\*

\* Resistance = Design water depth up to 0.3m  
 Resilience = Design water depth from 0.3m to 0.6m  
 Water Entry Strategy = Design water depth above 0.6m

**Notes**

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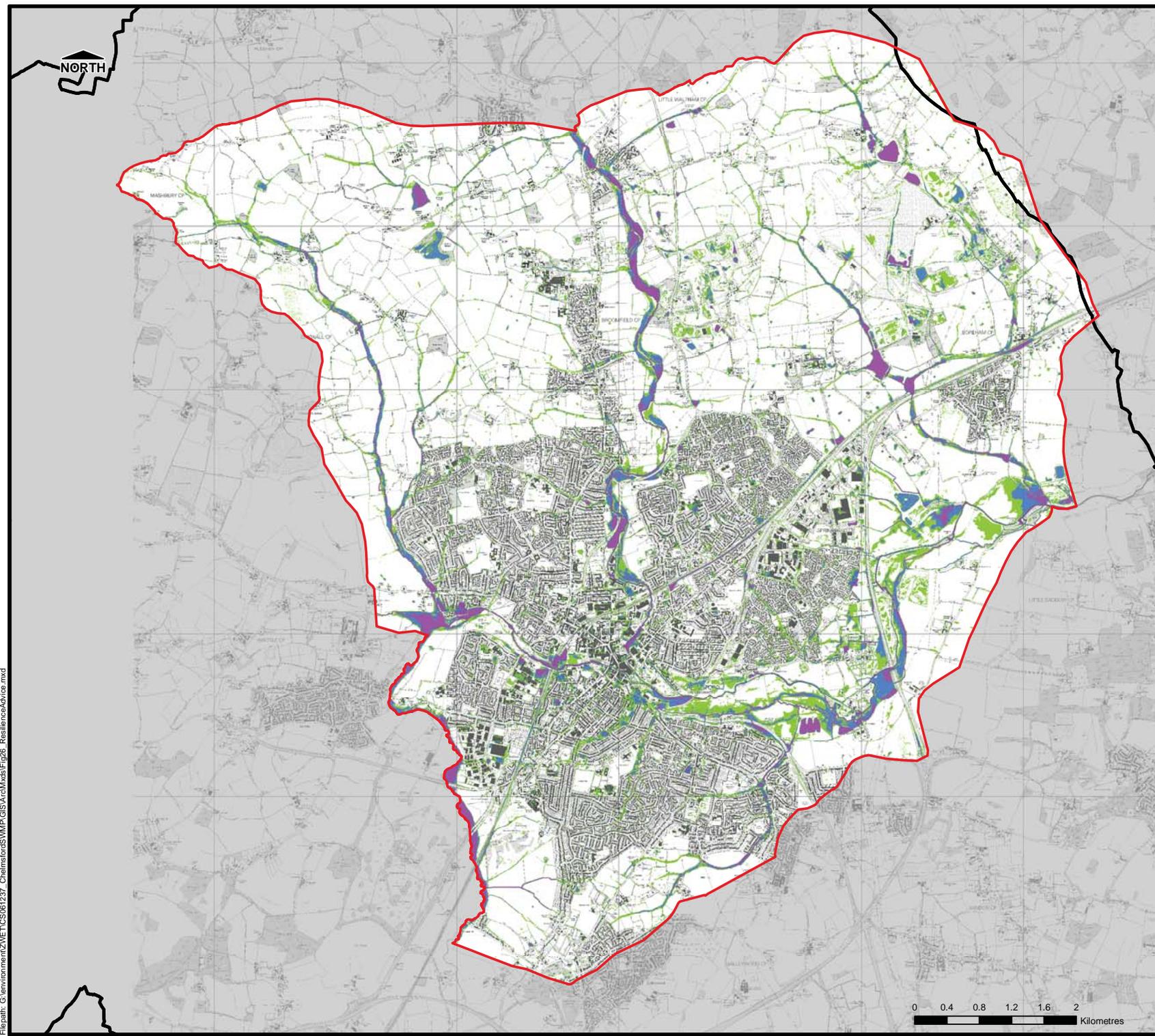
|                    |             |                 |                    |
|--------------------|-------------|-----------------|--------------------|
| <b>Scale at A3</b> | <b>Date</b> | <b>Drawn by</b> | <b>Approved by</b> |
| 1:45,000           | July 2013   | G.ATHANASIA     | M.ARTHUR           |

**Resistance/ Resilience Advice**

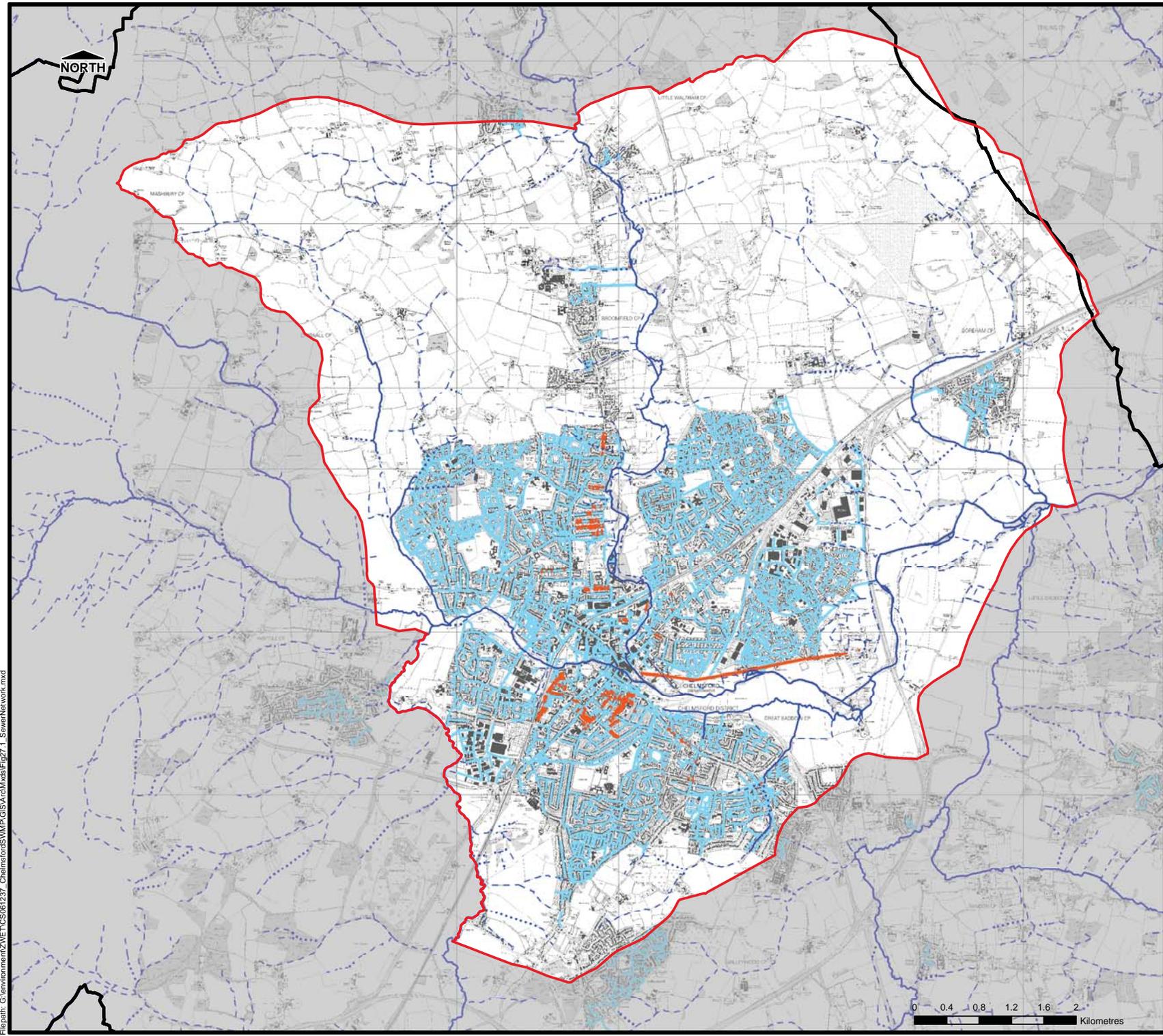
**Consultant**  
**CAPITA SYMONDS**  
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**FIGURE 26**



Filepath: G:\environment\ZWE\TICS\061237 - Chelmsford\SWMP\GIS\ArcMap\ds\Fig26 - ResistanceAdvice.mxd



THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED

**Legend**

- Administrative Boundary
- Model Extent
- Main River
- Ordinary Watercourse
- Culverted Watercourse
- Surface Water Sewer
- Combined Sewer

**Notes**

1. Anglian Water network only.

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| <b>Scale at A3</b> | <b>Date</b> | <b>Drawn by</b> | <b>Approved by</b> |
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**Sewer Network**

**Consultant**  
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Belgravia,  
London  
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**FIGURE 27.1**

Filepath: G:\environment\ZWE\TICS\061237 - Chelmsford\SWMP\GIS\ArcMxds\Fig27.1 - SewerNetwork.mxd

THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED

**Legend**

-  Administrative Boundary
  -  Model Extent
  -  Main River
  -  Ordinary Watercourse
  -  Culverted Watercourse
- Pipe Capacity Percentage Full**
-  0 - 25 %
  -  25 - 75 %
  -  75 - 100 %

**Notes**

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|--------------------------------|--------------------------|--------------------------------|--------------------------------|

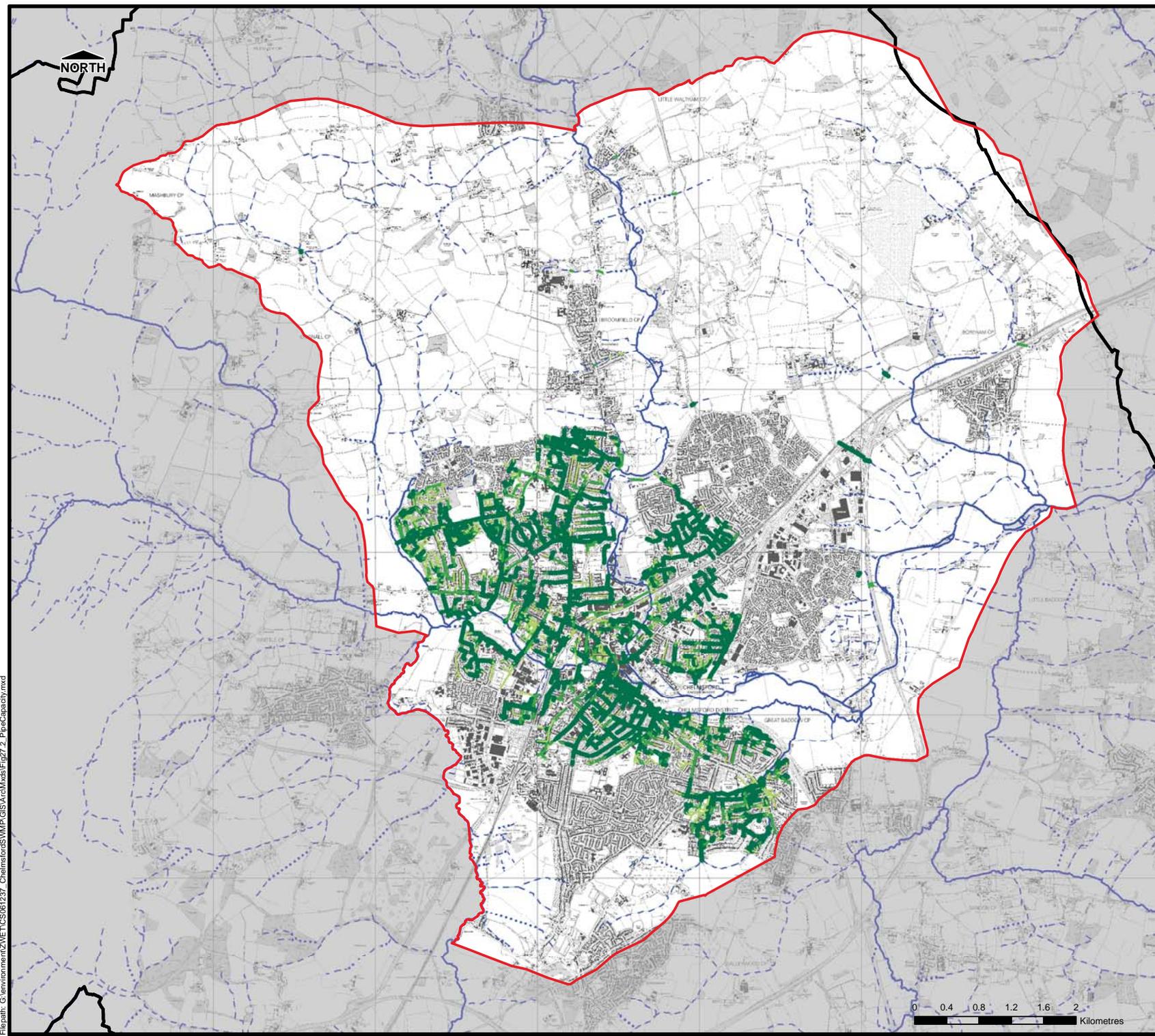
**Pipe Capacity Percentage Full  
1 in 100yr, 3hr duration**

**Consultant**

**CAPITA SYMONDS**  
Flood Risk Management

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52 Grosvenor Gardens,  
Belgravia,  
London  
SW1W 0AU

**FIGURE 27.2**



Filepath: G:\environment\ZWE\TICS\061237\_Chelmsford\SWMP\GIS\Area\Map\Fig27.2\_PipeCapacity.mxd