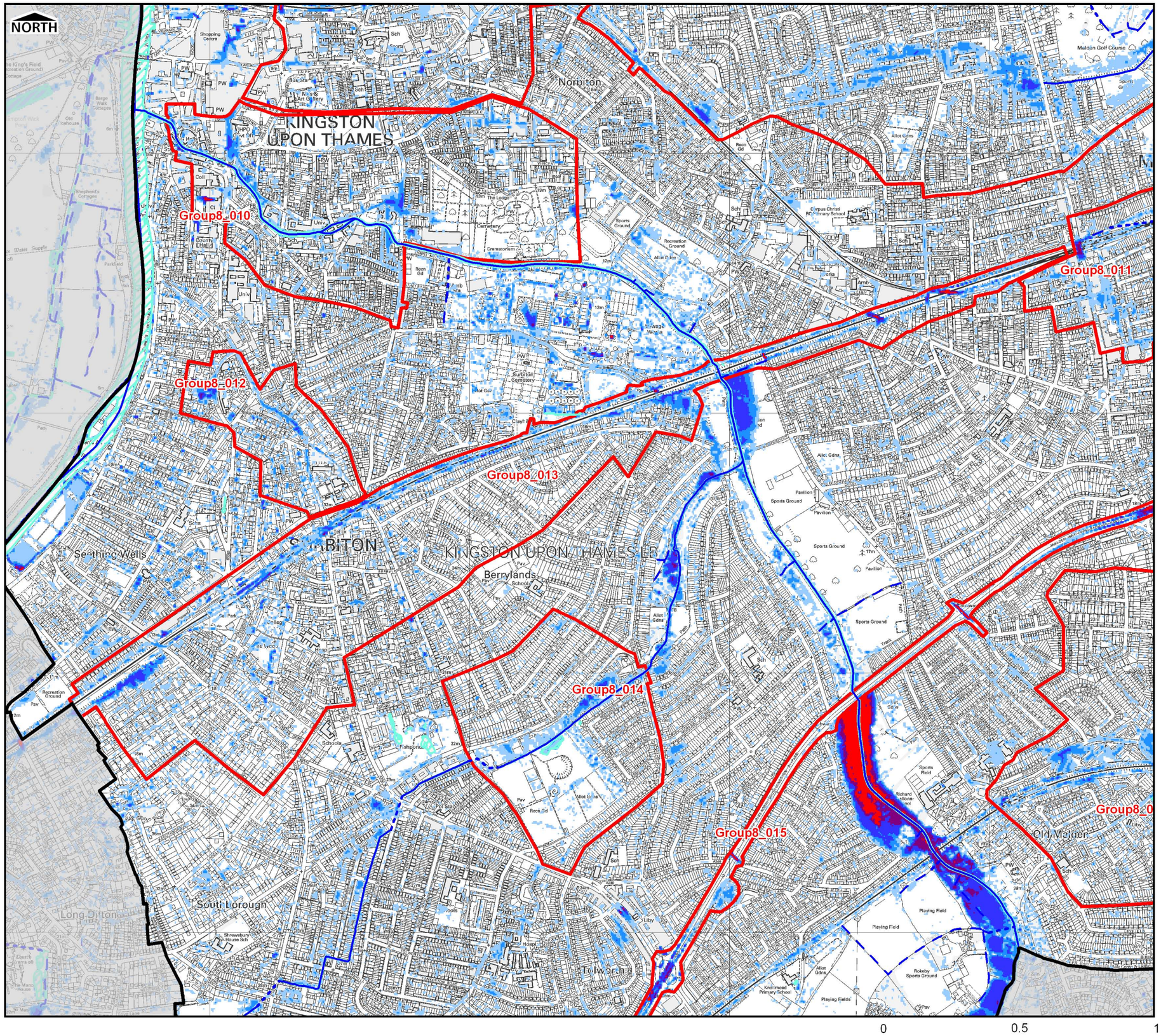
CDA 013 LONDON TO WOKING RAIL LINK

3.8.21 This CDA has been identified as the rail link is considered to be strategic infrastructure, linking London and Woking. Pluvial modelling results show surface water ponding at the toe of embankments and within railway cuttings, however this section of track is not identified by Network Rail as being located within an area prone to flooding. Road crossings of the rail line facilitated by dips in the highway are shown as Local Flood Risk Areas within the modelling results. These areas include (from east to west) Elm Road, Kingston Road, Chiltern Drive and Brighton Road. In addition, pluvial modelling shows surface water flooding of properties on Rose Walk and Lovelace Gardens.

3.8.22 In all of these locations, local topography falls towards the railway line, during intense rainfall events water is pooling at the topographical lows behind the rail embankment. Surface water drainage at Rose Walk and Chiltern Drive connects to a 225diameter Thames Water surface water sewer outfalling to the Hogsmill River at Green Lane Recreation Ground.

Summary Table – CDA 013 London to Woking Rail Link		
LLFA	Royal Borough of Kingston upon Thames	
Flood Risk Categorisation:	Surface water	
Property Count 1% AEP	• Approximately **1150 non deprived households** are identified to be at risk of flooding to a **depth > 0.03m** • Approximately **52 non deprived** households with **basements** are identified to be at risk of flooding to a **depth > 0.03m**	• 0 **non deprived households** are identified to be at risk of flooding to a depth > 0.5m. • 0 **non deprived** households with **basements** are identified to be at risk of flooding to a depth >0.5m
	There are no deprived households identified as being at risk within the CDA	
Critical Infrastructure	This CDA is delineated by the presence of the London Waterloo mainline rail network. In addition, there is an electricity sub station located to the west of Surbiton on the Upper Brighton Road	
Validation	This section of track has not been identified by Network Rail as an area prone to flooding. The Council have not provided any flood records within this location.	
Figures	Figure 3.8.6a – Surface Water Depth (1% AEP) Figure 3.8.6b – Surface Water Flood Hazard (1% AEP)	



THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED

- Borough Administrative Boundary
- Critical Drainage Area
- Permanent Water Body
- Main River
- Ordinary Watercourse
- Culverted Watercourse

Flood Depth

- <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

1. This map only shows the predicted likelihood of surface water flooding (this includes flooding from sewers, drains, small watercourses and ditches that occurs in heavy rainfall) for defined areas, and due to the coarse nature of the source data used, are not detailed enough to account for precise addresses.
2. Users of this map should refer to section 3.2 of the Surface Water Management Plan for a complete description of limitations and accuracy of the flood/hazard extents shown.
3. This map provides a strategic overview of surface water flood risk and may be subject to further analysis in the future.

Royal Borough of Kingston upon Thames

Surface Water Management Plan

Scale at A3	Date	Drawn by	Approved by
1:15,000	20/07/11	A.HARRIS	J.ROBINSON

Group8_013 (Network Rail Main Line)
Surface Water Depth (m)
1 in 100 Chance of rainfall event occuring in any given year (1% AEP)

Consultants
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Flood Risk Management
Scott Wilson
URS / Scott Wilson
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London
SW1P 1PL

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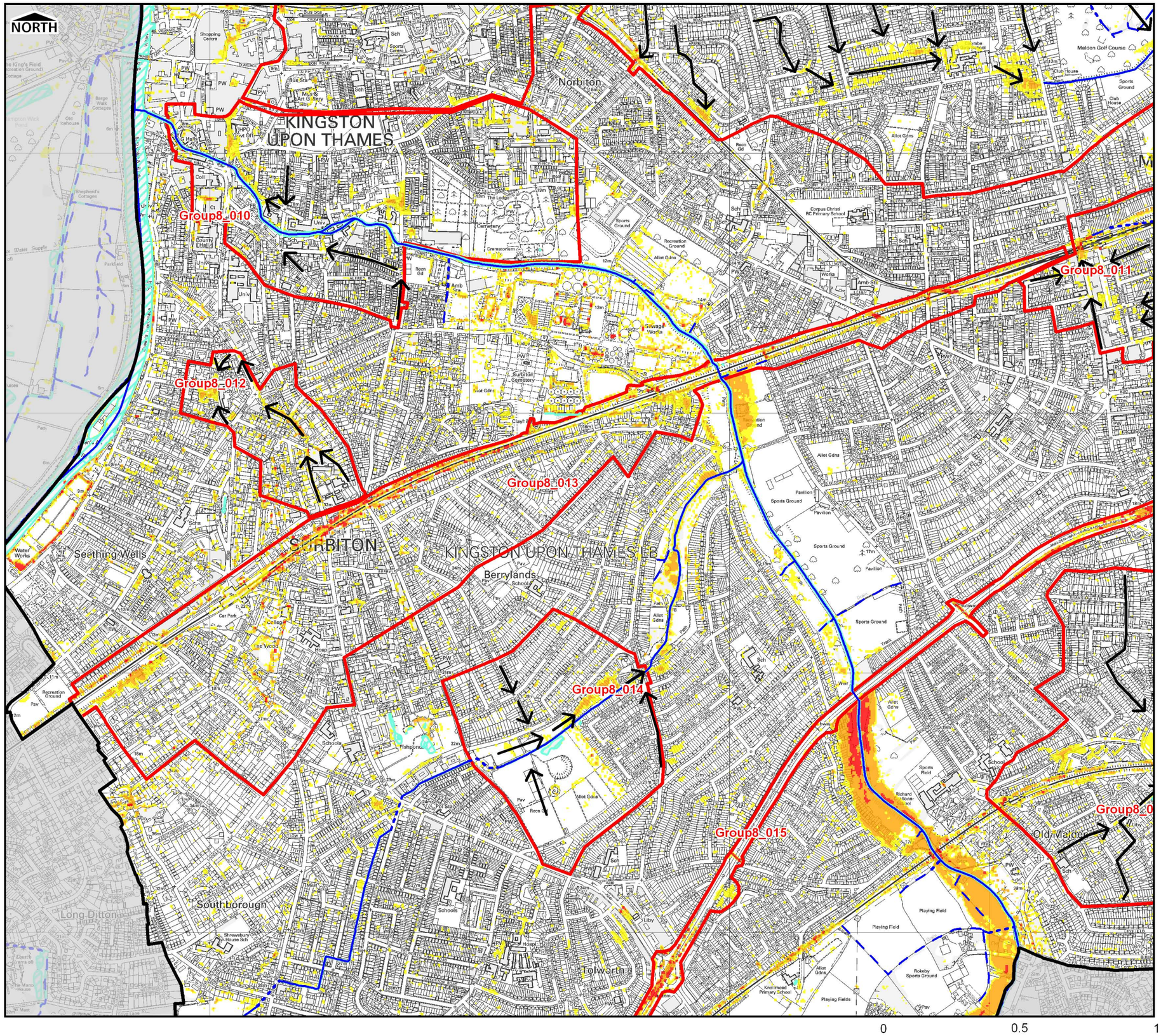
FIGURE 3.8.6a

Filepath: N:\Current Projects\D134785 D134786 DRAIN LONDON Tier 2\02 Group 8 (D134786)\05 GIS



Borough Administrative Boundary

Critical Drainage Area

Permanent Water Body

Main River

Ordinary Watercourse

Culverted Watercourse

Flood Hazard

- <0.75 Caution (Very low hazard)
- 0.75 - 1.25 Moderate (Danger for some)
- 1.25 - 2.0 Significant (Danger for most)
- <2.0 Extreme (Danger for all)

Flow Direction Arrows

Notes

1. Flood Hazard has been defined based upon the joint EA and Defra R&D Technical Report FD2320 (January 2006).
2. Degree of flood hazard can be interpreted as follows:
- Caution: Flood zone with shallow flowing water or deep standing water
- Moderate: Flood zone with deep or fast flowing water. Dangerous for children, the elderly and the infirm
- Significant: Flood zone with deep fast flowing water. Dangerous for most people.
- Extreme: Flood zone with deep fast flowing water. Dangerous for all (including emergency services)
3. This map provides a strategic overview of surface water flood risk and may be subject to further analysis in the future.

London Borough of Kingston

Royal Kingston

Surface Water Management Plan

Scale at A3	Date	Drawn by	Approved by
1:15,000	20/07/11	A.HARRIS	J.ROBINSON

Group8_013 (Network Rail Main Line)
Surface Water Flood Hazard Rating
1 in 100 Chance of rainfall event occuring in any given year (1% AEP)

Consultants
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FIGURE 3.8.6b

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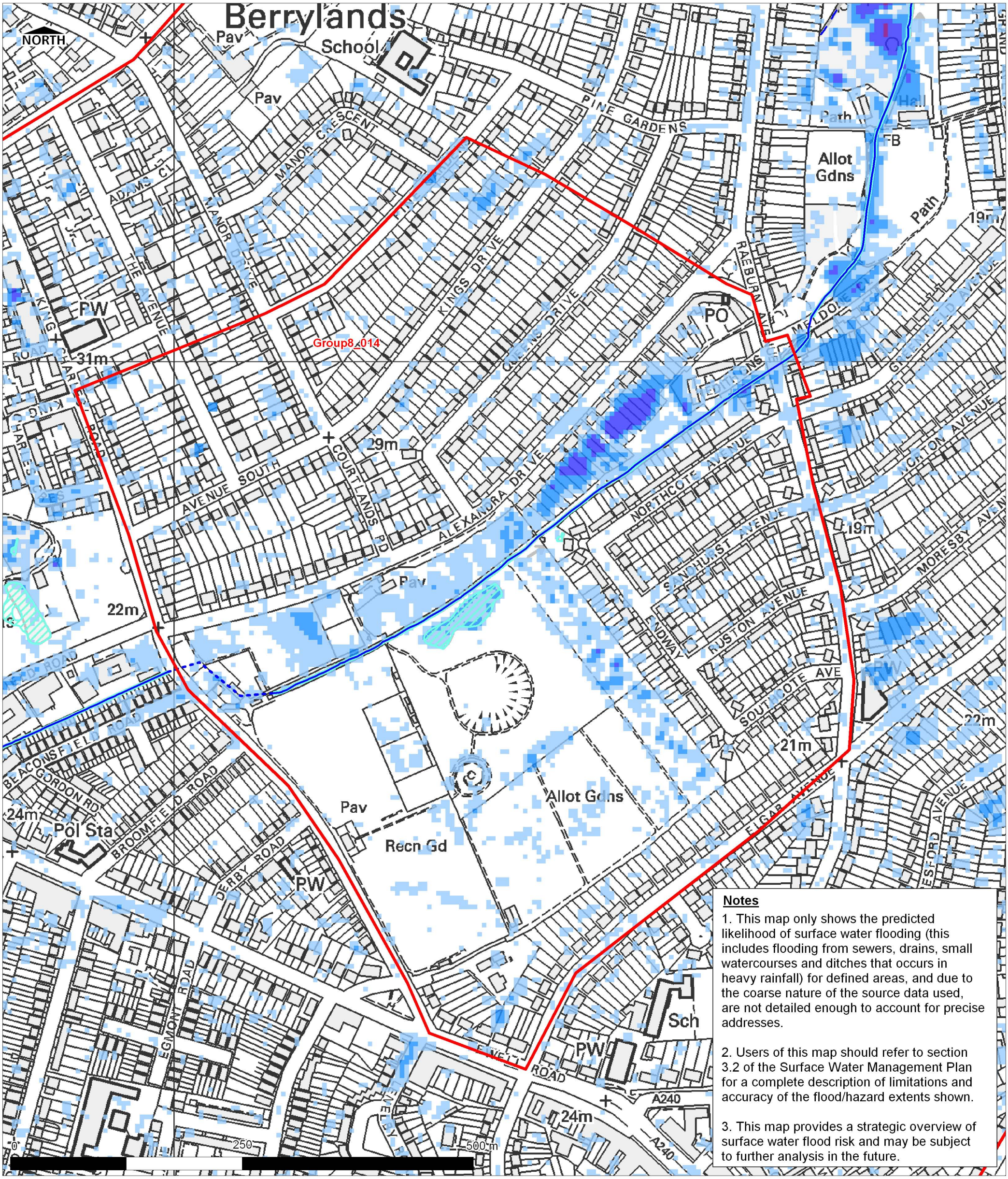
CDA 014 BERRYLANDS ALEXANDRA DRIVE

3.8.23 Located in the centre of the Borough, the Surbiton Stream dissects this CDA. Pluvial modelling has identified flow paths from the north and south flowing towards the Surbiton Stream which is in open channel at this location. The primary flood source within this CDA is the Surbiton Stream and much of the CDA is located within the Environment Agency Flood Zone 3. London Borough of Kingston upon Thames has records of property flooding on Alexandra Drive (1998/99), caused by surcharging of the local sewer network which was unable to discharge to the Surbiton Stream due to elevated water levels.

3.8.24 The CDA is identified as being located in an area with increased potential for groundwater flooding and both the Environment Agency and the Borough have records of groundwater flooding to the rear of gardens in Greenfield Avenue to the east of the CDA. This area is in close proximity to the Surbiton Stream.

3.8.25 This CDA is located within a post code which has 21-50 records of sewer flooding according to Thames Water records.

Summary Table – CDA 014 Berrylands, Alexandra Drive		
Lead Borough	Royal Borough of Kingston upon Thames	
Flood Risk Categorisation:	Surface water, sewer flooding, groundwater flooding	
Property Count 1% AEP	• Approximately **267 non deprived households** are identified to be at risk of flooding to a **depth > 0.03m** • Approximately **8 non deprived** households with **basements** are identified to be at risk of flooding to a **depth > 0.03m**	• 0 **non deprived households** are identified to be at risk of flooding to a depth > 0.5m. • 0 **non deprived** households with **basements** are identified to be at risk of flooding to a depth >0.5m
	There are no deprived households identified as being at risk within the CDA	
Critical Infrastructure	There are no pieces of critical infrastructure located within this CDA	
Validation	Primary cause of flooding at this location is surcharging of sewer system which is supported by Thames Water DG5 records.	
Figures	Figure 3.8.7a – Surface Water Depth (1% AEP) Figure 3.8.7b – Surface Water Flood Hazard (1% AEP)	



Notes

1. This map only shows the predicted likelihood of surface water flooding (this includes flooding from sewers, drains, small watercourses and ditches that occurs in heavy rainfall) for defined areas, and due to the coarse nature of the source data used, are not detailed enough to account for precise addresses.

2. Users of this map should refer to section 3.2 of the Surface Water Management Plan for a complete description of limitations and accuracy of the flood/hazard extents shown.

3. This map provides a strategic overview of surface water flood risk and may be subject to further analysis in the future.

THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED

Legend

- Borough Administrative Boundary
- Critical Drainage Area
- Permanent Water Bodies
- Main River
- Ordinary Watercourse
- Culverted Watercourse

Flood Depth

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

Royal Borough of Kingston upon Thames

Surface Water Management Plan

Scale at A3	Date	Drawn by	Approved by
1:4,000	20/07/2011	D.SKILTON	E.CRAVEN

Group8_014 (Alexandra Drive)
Surface Water Depth (m)
1 in 100 Chance of rainfall event occuring in any given year (1% AEP)

Consultants
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FIGURE 3.8.7a

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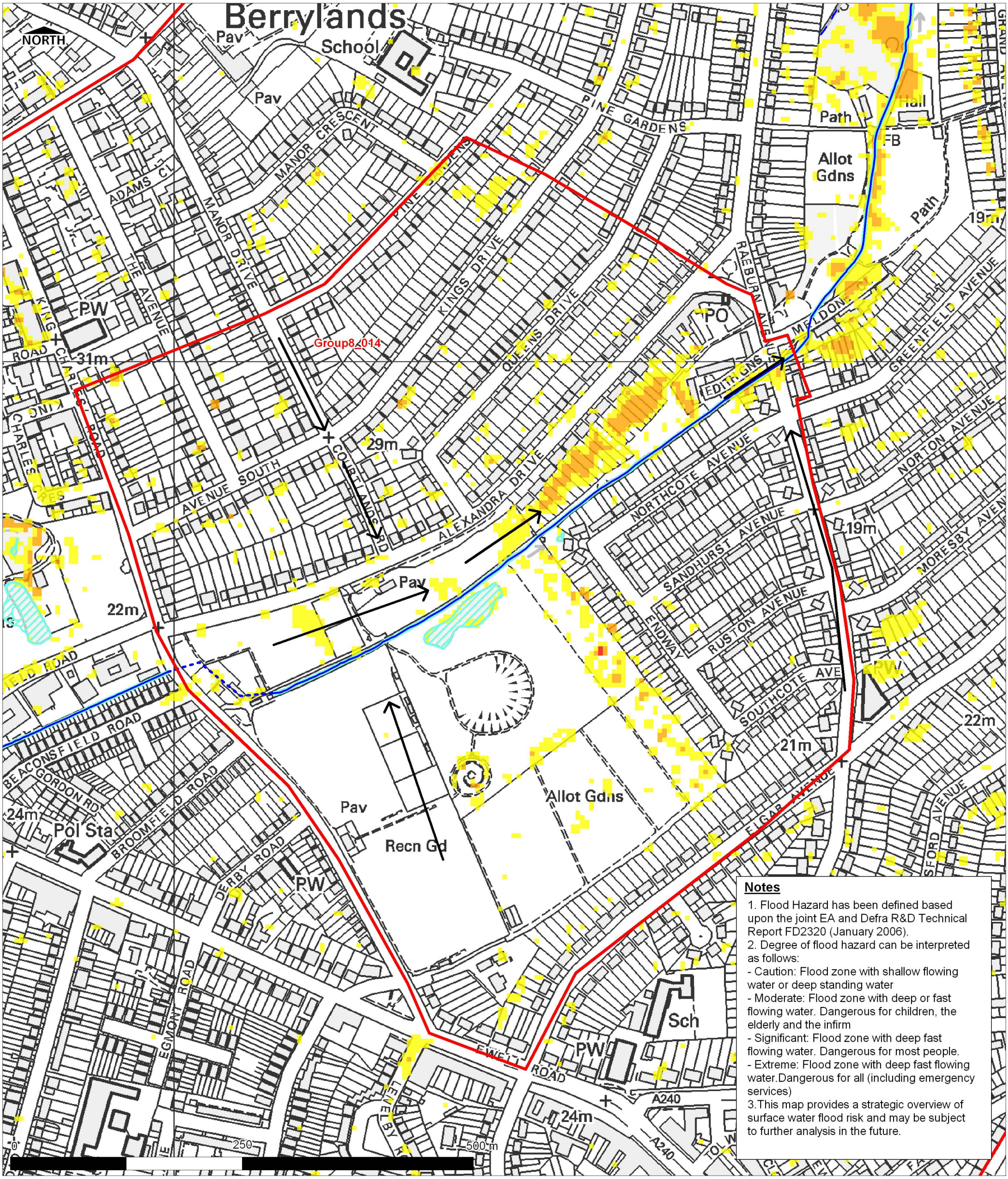

Notes

1. Flood Hazard has been defined based upon the joint EA and Defra R&D Technical Report FD2320 (January 2006).
2. Degree of flood hazard can be interpreted as follows:
- Caution: Flood zone with shallow flowing water or deep standing water
- Moderate: Flood zone with deep or fast flowing water. Dangerous for children, the elderly and the infirm
- Significant: Flood zone with deep fast flowing water. Dangerous for most people.
- Extreme: Flood zone with deep fast flowing water.Dangerous for all (including emergency services)
3.This map provides a strategic overview of surface water flood risk and may be subject to further analysis in the future.

THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED

Legend

- Borough Administrative Boundary
- Critical Drainage Area
- Permanent Water Bodies
- Main River
- Ordinary Watercourse
- Culverted Watercourse
- Flow Direction Arrows

Flood Hazard

- <0.75 Caution (Very low hazard)
- 0.75 - 1.25 Moderate (Danger for some)
- 1.25 - 2.0 Significant (Danger for most)
- <2.0 Extreme (Danger for all)

Royal Borough of Kingston upon Thames

Royal Kingston

Surface Water Management Plan

Scale at A3	Date	Drawn by	Approved by
1:4,000	20/07/2011	D.SKILTON	E.CRAVEN

Group8_014 (Alexandra Drive)
Surface Water Flood Hazard Rating
1 in 100 Chance of rainfall event occuring in any given year (1% AEP)

Consultants
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FIGURE 3.8.7b

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CDA 015 A3 STRATEGIC RED ROUTE

3.8.26 Pluvial modelling has identified flood risk areas along the A3 at underpasses, both on the A3 and at highway and pedestrian crossings of the red route. TFL have pumping stations located at Warren Drive pedestrian subway (2 pumps), South Lane pedestrian subway (2 pumps) and the New Malden/Malden Road roundabout (3 pumps on the A3 highway). Pluvial modelling results at these locations therefore show flood extents if the existing pumping systems were to fail.

3.8.27 There are no pumps identified further south than Warren Drive, while pluvial modelling identifies potential flood risk areas at Tolworth and Hook (on the A3) and at two further pedestrian subways.

Summary Table – CDA 015 A3 Strategic Red Route		
LLFA	Royal Borough of Kingston upon Thames	
Flood Risk Categorisation:	Surface water	
Property Count 1% AEP	• Approximately **56 non deprived households** are identified to be at risk of flooding to a **depth > 0.03m** • **0 non deprived** households with **basements** are identified to be at risk of flooding to a **depth > 0.03m**	• 0 **non deprived households** are identified to be at risk of flooding to a depth > 0.5m. • 0 **non deprived** households with **basements** are identified to be at risk of flooding to a depth >0.5m
	There are no deprived households identified as being at risk within the CDA	
Critical Infrastructure	This CDA is delineated by the A3 – defined as essential infrastructure as a mass evacuation route.	
Validation	There are no recorded instances of flooding along this highway as pumps are located at each low point/underpass.	
Assumptions / Comments	Flooding in underpasses shows the flood extent should existing pumps fail.	
Figures	Figure 3.8.8a – Surface Water Depth (1% AEP) Figure 3.8.8b – Surface Water Flood Hazard (1% AEP)	

NORTH

Group8_012
Group8_013
Group8_014
Group8_015
Group8_016
Group8_017

SURBITON
KINGSTON UPON THAMES LB
Berrylands
South Lorough
Tolworth
Hook
Old Malden
Surrey County Council

0 0.5 1km

- Borough Administrative Boundary
- Critical Drainage Area
- Permanent Water Body
- Main River
- Ordinary Watercourse
- Culverted Watercourse

Flood Depth

- <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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Royal Borough of Kingston upon Thames

Surface Water Management Plan

Scale at A3	Date	Drawn by	Approved by
1:15,000	20/07/11	A.HARRIS	J.ROBINSON

Group8_015 (A3)
Surface Water Flood Depth (m)
1 in 100 Chance of rainfall event occuring in any given year (1% AEP)

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FIGURE 3.8.8a

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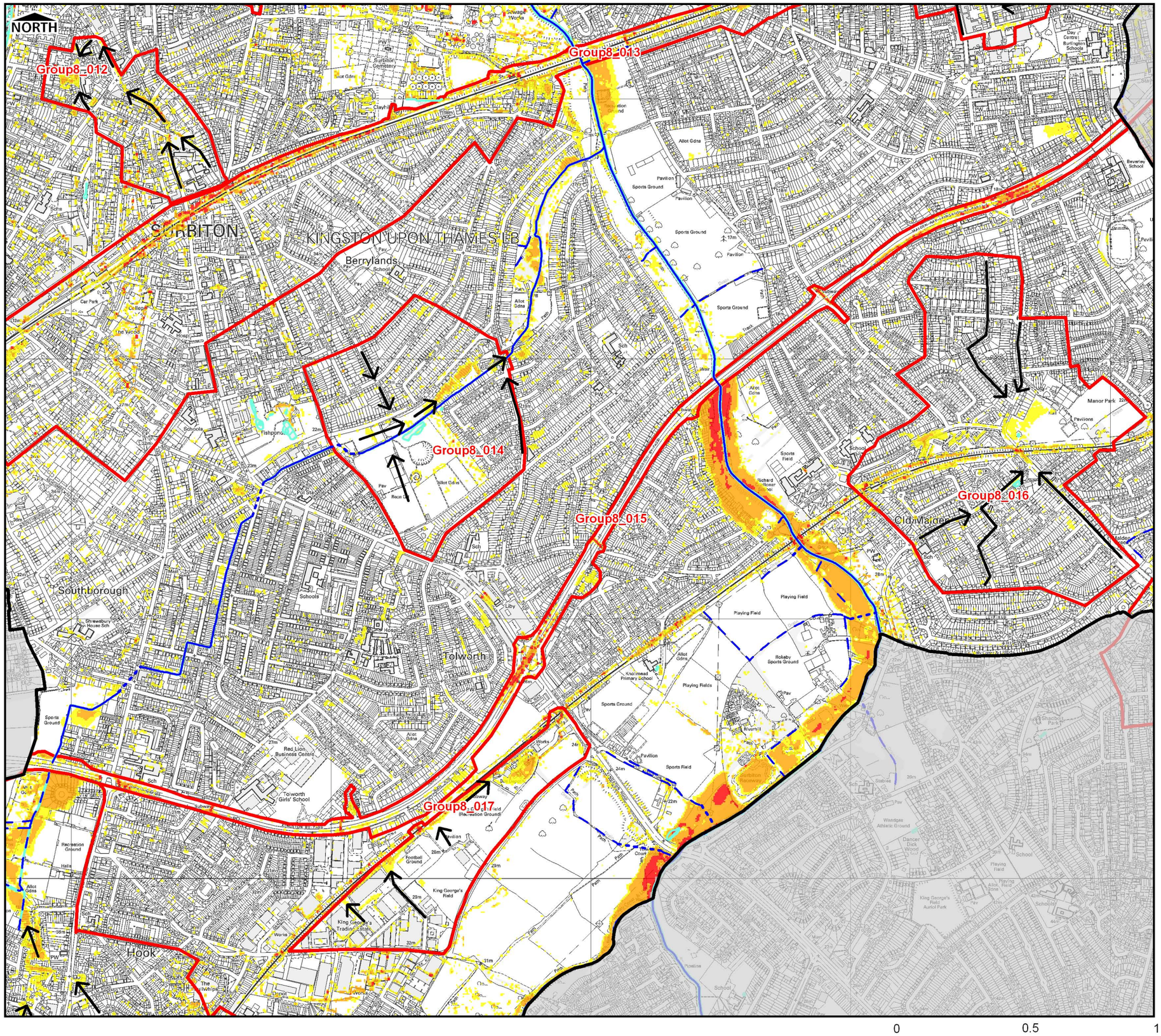

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- Borough Administrative Boundary
- Critical Drainage Area
- Permanent Water Body
- Main River
- Ordinary Watercourse
- Culverted Watercourse

Flood Hazard

- <0.75 Caution (Very low hazard)
- 0.75 - 1.25 Moderate (Danger for some)
- 1.25 - 2.0 Significant (Danger for most)
- <2.0 Extreme (Danger for all)

→ Flow Direction Arrows

Notes

1. Flood Hazard has been defined based upon the joint EA and Defra R&D Technical Report FD2320 (January 2006).
2. Degree of flood hazard can be interpreted as follows:
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3. This map provides a strategic overview of surface water flood risk and may be subject to further analysis in the future.

London Borough of Kingston

Surface Water Management Plan

Scale at A3	Date	Drawn by	Approved by
1:15,000	20/07/11	A.HARRIS	J.ROBINSON

Group8_015 (A3)
Surface Water Flood Hazard Rating
1 in 100 Chance of rainfall event occuring in any given year (1% AEP)

Consultants
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FIGURE 3.8.8b

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