B Data sources used in this SFRA

1.1 Historical flooding

The London Borough of Newham Council (LBN) provided Section 19 reports in the area which include records of historical flood events within the area. These are presented in Table 5-1 of the Main Report. The Environment Agency's Historic Flood Map is also presented in Appendix A: Static Mapping.

Section 5.1 documents historic flooding records obtained.

1.2 Fluvial flooding

1.2.1 Flood Zones 2 and 3a

The Fluvial Model Flood Zones 2 and 3a, as shown in the Appendix A mapping, show the 1000-year (0.1% AEP) and 100-year (1% AEP) fluvial flood extents, respectively from the detailed model outputs where these were available. Figure B- 1 shows the coverage of these models.

The Environment Agency's Flood Map for Planning Flood Zones 2 and 3 are also shown in the Appendix A mapping which should be used where detailed model outputs are not available.

Over time, the online mapping is likely to be updated more often than the SFRA, so SFRA users should check there are no major changes in their area.

1.2.2 Flood Zone 3b (the functional floodplain)

The following models were updated and available for use in this Level 1 SFRA:

- River Lee 2D Modelling Study (2014).

The Shonks Mill FSA Modelling Study: Lower Roding (2018) already contains the 3.3% AEP event and therefore did not require additional re-runs for this event. The following tidal models provided by the EA did not require additional re-running:

- Thames Tidal Downriver Breach Inundation Modelling 2018
- Thames Tidal Upriver Breach Inundation Modelling 2017.

For areas not covered by detailed EA models (or where suitable outputs were not available), a precautionary approach should be adopted for Flood Zone 3b with the assumption that the extent of Flood Zone 3b would be equal to Flood Zone 3a. If development is shown to be in Flood Zone 3a, further work should be undertaken as part of a detailed site-specific Flood Risk Assessment to define the extent of Flood Zone 3b.

If the area of interest is in an area that has seen some major changes to the extent of the Flood Zones, having checked the online mapping, developers will also need to remap Flood Zone 3b as part of a detailed site-specific Flood Risk Assessment.

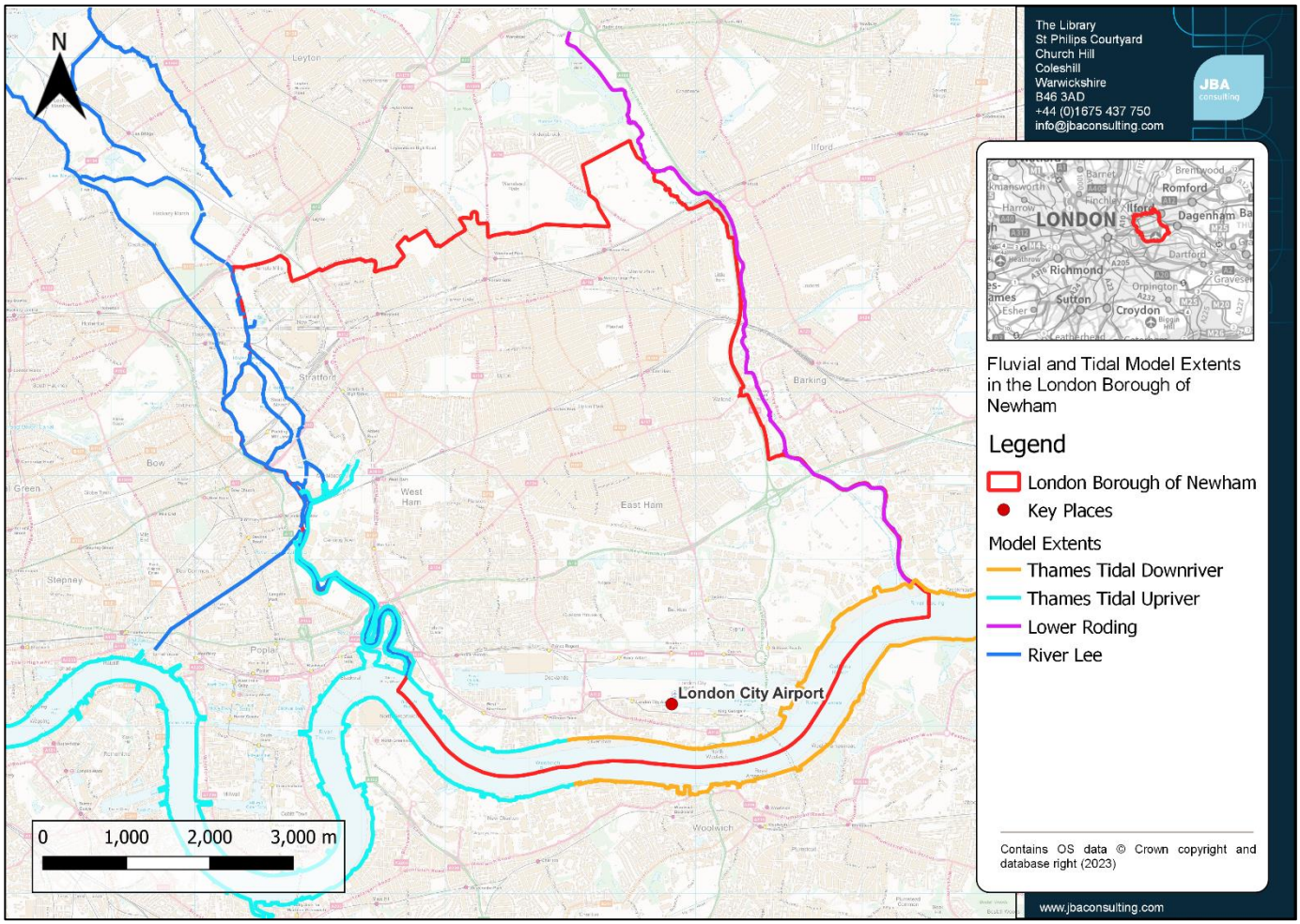

Figure B- 1: Existing hydraulic modelling coverage in the LBN

1.3 Climate change

Detailed Environment Agency hydraulic models were obtained under licence for the SFRA. Where climate change simulations undertaken for the past projects were within +/- 10% of the updated climate change allowances, these were deemed suitable to use. This was the case for the following models:

- Lower Roding 1% AEP +26% CC central allowance (latest climate change allowance - 26%)

Where previous climate change runs were not suitable, these models were re-run as part of this SFRA. This was the case for the following models:

- River Lee
  - 3.3% AEP +17%, 27% CC
  - 1% AEP +17%, 54% CC
  - 0.5% AEP +17%, 27% CC
- Lower Roding
  - 3.3% AEP +26%, 36% 64% CC
  - 1% AEP +26%, 36%, 64% CC.
  - 0.5% AEP +26%, 36%, 64% CC

For more information on fluvial model re-runs, please refer to Appendix G - Modelling Technical Notes.

Surface Water Climate Change uplifts were modelled for the Risk of Flooding from Surface Water (RoFfSW) dataset and three ICM models for the following events and scenarios:

- 3.3% AEP +20% CC
- 3.3% AEP +35% CC
- 1% AEP +25% CC
- 1% AEP +40% CC
- 0.1% AEP +25% CC
- 0.1% AEP +40% CC.

The ICM models which have been re-run using the above events and scenarios are as follows:

- Little Ilford (2015)
- Newham Central (2015)
- Silvertown (2015).

Figure B- 2 (overleaf) shows the extents covered by these ICM models.

Please refer to Chapter 4 for information on the approach to climate change in this SFRA.

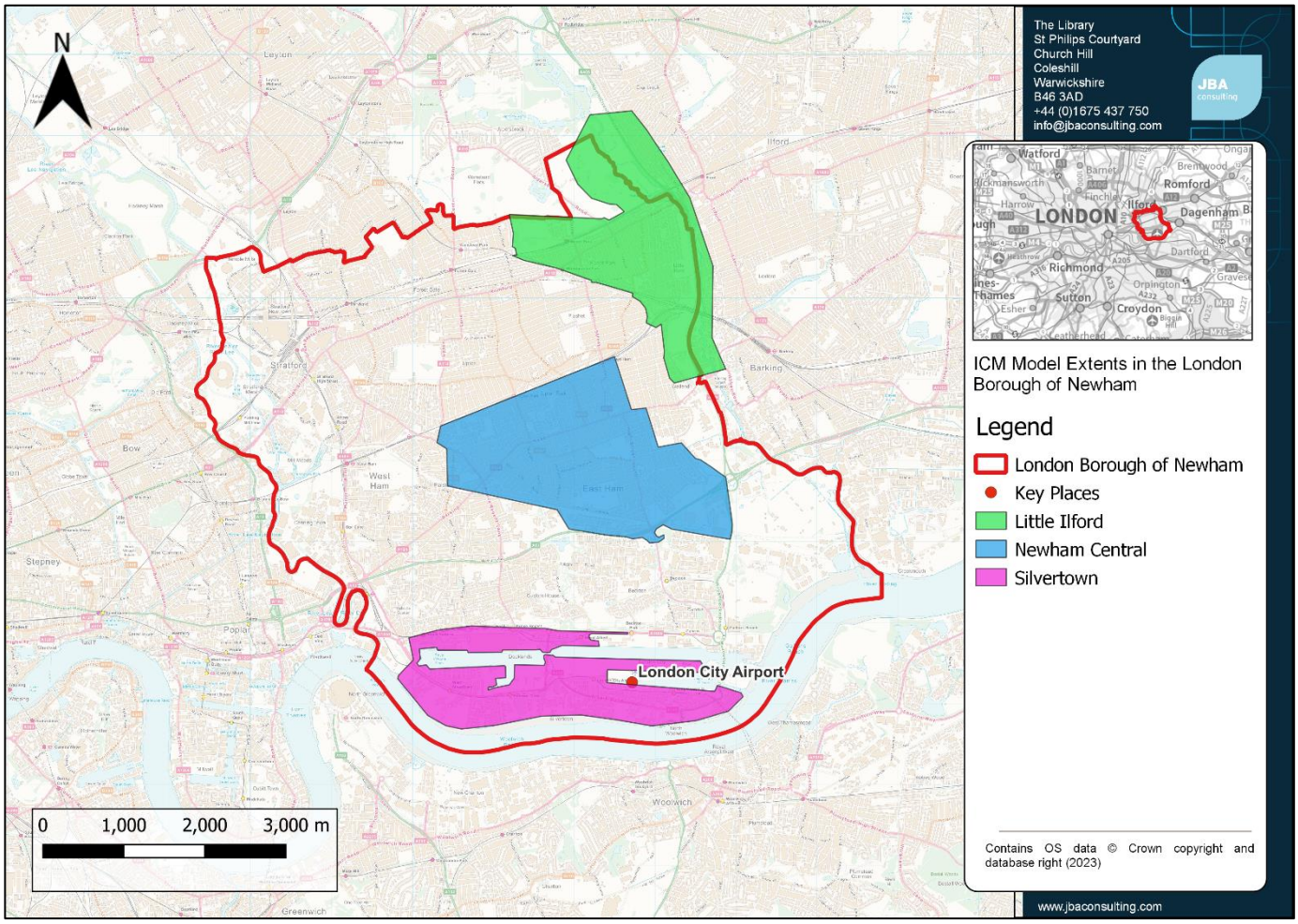

Figure B- 2: ICM model coverage in the LBN

1.4 Surface water flooding

Mapping of surface water flood risk in the study area has been taken primarily from the Risk of Flooding from Surface Water (RoFfSW) maps published online by the Environment Agency. These maps are intended to provide a consistent standard of assessment for surface water flood risk across England and Wales in order to help LLFAs, the Environment Agency and any potential developers to focus their management of surface water flood risk.

The RoFfSW is derived primarily from identifying topographical flow paths of existing watercourses or dry valleys that contain some isolated ponding locations in low lying areas. They provide a map which displays different levels of surface water flood risk depending on the annual probability of the land in question being inundated by surface water (Table B- 1).

Table B- 1: RoFfSW EA risk categories

Category	Definition
High	Flooding occurring as a result of rainfall with a greater than 1 in 30 chance in any given year (annual probability of flooding 3.3%).
Medium	Flooding occurring as a result of rainfall of between 1 in 100 (1%) and 1 in 30 (3.3%) chance in any given year.
Low	Flooding occurring as a result of rainfall of between 1 in 1,000 (0.1%) and 1 in 100 (1%) chance in any given year.

Although the RoFfSW offers improvement on previously available datasets, the results should not be used to understand flood risk for individual properties. The results should be used for high level assessments such as SFRAs for local authorities. If a site is indicated in the Environment Agency mapping to be at risk from surface water flooding, a more detailed assessment should be considered to illustrate the flood risk more accurately at a site-specific scale.

1.5 Groundwater

Mapping of groundwater flood risk has been based on the Groundwater Flood Map 5m Resolution GW5 V2.2. (GeoSmart licensed product). This has been provided by the LBN Council. The GeoSmart Groundwater Flood Risk Map highlights areas where there is sufficient evidence to suggest that flooding should occur. The map should be interpreted as an initial indicative tool to assess groundwater flood risk.

Section 5.9 of the Level 1 SFRA explains groundwater flooding.

1.6 Sewers

Thames Water provided details of 7,138 recorded incidents of sewer flooding which have occurred in the borough. These were provided using four-digit postcode areas for the period between the 1st January 1957 and 22nd December 2022.

Section 5.6 of the Main Report explains sewer flooding.

1.7 Reservoirs

The risk of inundation because of reservoir breach or failure of reservoirs within LBN has been mapped using the outlines produced as part of the National Reservoir Flood Mapping (RFM) study, and are shown online on the Long-Term Risk of Flooding website at the time of publication.

The Environment Agency provide two flooding scenarios for the reservoir flood maps: a ‘dry-day’ and a ‘wet-day’. The ‘dry-day’ scenario shows the predicted flooding which would occur if the dam or reservoir fails when rivers are at normal levels. The ‘wet-day’ scenario shows the predicted worsening of the flooding which would be expected if a river is already experiencing an extreme natural flood.

Section 5.9 of the Main Report presents the reservoirs affecting LBN.

1.8 Flood Defences

The Environment Agency supplied the location of all flood defences within LBN in their AIMS database, including information relating to the type of flood defence and their standard of protection. The Areas Benefitting from Defences shapefile was also considered. Chapter 6 of the Main Report provides information on flood defences and schemes.

1.9 Overview of supplied data

Overview of supplied data for the LBN SFRA from stakeholders is as follows:

Source of flood risk	Data used to inform the assessment	Data supplied by
Historic (all sources)	Historic Flood Map Recorded Flood Outlines Hydraulic Modelling Reports	Environment Agency
	Section 19 Reports	London Borough of Newham Council
	Historic flooding incident records	Thames Water
Fluvial (including climate change where available)	River Lee (2014) 1D-2D ISIS-TUFLOW Model Lower Roding (2018) 1D-2D ESTRY-TUFLOW Model	Environment Agency
	Flood Map for Planning Flood Zones	Environment Agency
Surface Water	Risk of Flooding from Surface Water dataset	Environment Agency
Sewer	Internal and external historic drainage records	Severn Trent Water
Groundwater	Bedrock geology/superficial deposits datasets (online dataset)	British Geological Survey
	Groundwater GeoSmart Flood Risk Map	London Borough of Newham Council
Reservoirs	National Inundation Reservoir Mapping (long term flood risk map)	Environment Agency
Flood defences	Location and description of flood defences	Environment Agency

Source of flood risk	Data used to inform the assessment	Data supplied by
Cross boundary impacts	Neighbouring authority sites and Local Plan information, to help assess cross-boundary impacts and the cumulative impact assessment	Barking and Dagenham Borough Council Greenwich Borough Council Hackney Borough Council Redbridge Borough Council Tower Hamlets Borough Council Waltham Forest Borough Council
Other datasets	Partner Data Catalogue: - AIMS asset bundle - Areas with Critical Drainage Problems - Historic flood warnings - Historic landfill - LIDAR Composite DTM 2020 1m & 2m - Nitrate Vulnerable Zones - National Receptor Dataset (for CIA) - Recorded Flood Outlines - Risk of Flooding from Rivers and Sea - Risk of Flooding from Rivers and Sea (properties in areas at risk) - Reduction in Risk of Flooding from Rivers and Sea due to Defences - Reservoir Inundation Maps - Risk of Flooding from Surface Water - Spatial Flood Defences Including AIMS - Source Protection Zones - Aquifer Designation Maps - Detailed River Network	Environment Agency

Source of flood risk	Data used to inform the assessment	Data supplied by
	- Flood Alert Areas - Flood Warning Areas - Flood Maps for Planning - Groundwater Vulnerability - Historic Flood Map	

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