Appendix F - Cumulative Impact Assessment

1 Background

1.1 Introduction

The cumulative impact of development should be considered at both the Local Plan making stage and the planning application and development design stages. Paragraph 160 of the National Planning Policy Framework (NPPF, 2021) states:

'Strategic policies should be informed by a strategic flood risk assessment and should manage flood risk from all sources. They should consider cumulative impacts in, or affecting, local areas susceptible to flooding, and take account of advice from the Environment Agency and other relevant flood risk management authorities, such as lead local flood authorities and internal drainage boards.'

Appropriate mitigation measures should be undertaken to prevent exacerbation of flood risk, and where possible the development should be used to reduce existing flood risk issues, both onsite and downstream of the development.

To understand the impact of future development on flood risk in the London Borough of Newham, catchments were identified where development may have the greatest potential effect on flood risk, and where further assessment would be required within a Level 2 Strategic Flood Risk Assessment (SFRA) or site-specific Flood Risk Assessment (FRA). Catchments were defined based on sewer catchments provided by Thames Water - the sewage undertaker for the London Borough of Newham. To identify the catchments at greatest risk, various factors were considered, including the potential change in developed area within each catchment and communities sensitive to increased risk of surface water and fluvial flooding, alongside evidence of historic flooding incidents. Where catchments have been identified as sensitive to the cumulative impact of development, the assessment sets out planning policy recommendations to help manage the risk.

1.2 Strategic flood risk solutions

1.2.1 Local solutions

London Borough of Newham Council (LBN) is reviewing and updating its planning polices through a process known as the Local Plan Update (LPU). This will set an updated planning policy framework for the future management of flood risk and drainage in the area. This includes flood risk management, alongside wider environmental and water quality enhancements. Strategic solutions that the LPU may

directly or indirectly help to shape include upstream flood storage, integrated major infrastructure/ Flood Risk Management schemes, new defences, and watercourse improvements as part of regeneration and enhancing green infrastructure, with opportunities for natural flood management and retrofitting Sustainable Drainage Systems (SuDS).

Existing specific actions for the authority area are set out in the LBN Local Flood Risk Management Strategy, which can be downloaded from the Council website here, and the Thames River Basin District Flood Risk Management Plan, which is available on the Government website here.

Section 2 of the main report sets out the strategic plans that exist for the authority area. The list below summarises the key outcomes these are seeking to achieve. This vision needs to be delivered by new development alongside retrofitting and enhancing SuDs infrastructure and flood defence schemes in the existing developed area.

The strategic policy vision from the Catchment Flood Management Plans (CFMPs) and the River Basin Management Plans (RBMPs) focuses on community engagement and seeking opportunities to fund and deliver flood alleviation schemes in areas deemed high-risk; re-naturalising watercourses, developing emergency response plans to deal with extreme floods, and floodplain management.

Strategic policies relevant to Newham Borough, encourage development to:

- Maintain and enhance understanding of flood risk within LBN,
- Develop emergency response planning to deal with extreme floods, including raising public awareness and promote community level action, and working with key partners to identify critical infrastructure at risk,
- Maintain existing flood defences (and management infrastructure) when redevelopment takes place, replace and improve them so that they are more effective against the impacts of climate change,
- Reduce flood risk by recreating river corridors in urban areas,
- Ensure new developments minimise and also mitigate the rise of flooding, and that residual risk is addressed,
- Identify areas where particular and cumulative flood risk issues exist, and develop actions and policies to reduce this risks,
- Development plans should contribute to the delivery of the measures set out in the Thames Estuary 2100 Plan,
- Respond effectively in the event of a flooding emergency,
- Adopt and maintain a partnership approach to flood risk management,
- Use sustainable flood storage and mitigation schemes to store water and manage surface water runoff in locations that provide overall flood risk reduction as well as environmental benefits.

It is noted in the guidance and policy documents that regeneration of brownfield land has the potential for significant benefits in terms of wastewater management by the use of SuDS, which will also provide water quality benefits, and reduce flood risk. This is going to have a significant impact on such an urbanised area and catchments.
National solutions

In some locations nationally, the Environment Agency (EA) have committed to assist Local Planning Authorities (LPAs) in identifying areas which may be most affected by increased flood risk due to development and/or climate change. However, this work is stated to likely fall short of extensive hydraulic modelling and detailed mapping of theoretical flood extents. The headline message is therefore:

Flood risk is increasing, perhaps substantially, so Planners, Emergency Planners, Asset Managers and others will need to mitigate this through a mix of collaborative working, planning policies, use of 'worst case' scenarios, development of contingency plans and some detailed analysis.

1.3 Assessment of Cross-Boundary Issues

LBN is bordered by the following Local Authority areas, shown in Figure 1-1:

- Barking and Dagenham Borough
- Hackney Borough
- Redbridge Borough
- Waltham Forest Borough
- Greenwich Borough
- Tower Hamlets Borough

The topographic characteristics of Newham Borough are dictated by the Thames Basin, and the plains of the River Roding and River Lee, where the borough is generally low-lying. Section 1.5 of the main report provides further details on the study area.

Future development, both within and outside of Newham Borough, as well as climate change, have the potential to affect flood risk to existing development and the surrounding areas, depending on the effectiveness of SuDS and drainage implementation.

Development control should ensure that the impact on receiving watercourses from development in the Borough has been sufficiently considered during the planning stage. The National Planning Policy Framework (NPPF) sets out how developments should demonstrate they will not increase flood risk elsewhere. Therefore, providing developments near watercourses in neighbouring authorities comply with the latest planning policy, guidance and legislation relating to flood risk and sustainable drainage, they should result in no increase in flood risk within the Borough. The neighbouring authorities were contacted for information on their site allocations, to

determine where development in neighbouring authorities has the potential to have an impact on flood risk within LBN.

The following Local Plans have been adopted by neighbouring local authorities and include policies relevant to flood risk and drainage, with hyperlinks to the documents provided:

- Barking and Dagenham Local Plan (currently under Examination, due to cover up to 2037)
- Hackney Local Plan 2020 - 2033
- Redbridge Local Plan 2015 - 2030
- Waltham Forest Local Plan (currently being prepared)
- Greenwich Local Plan 2014 - 2028
- Tower Hamlets Local Plan 2020 - 2031

For the CIA, Newham Borough was assessed at the sewer catchment level (supplied by Thames Water), with these sewer catchments shown in Figure 1-2. Sewer catchments are used (rather than fluvial catchments) catchments due to the urban nature of the Borough. There are only two Water Framework Directive (WFD) catchments within the Borough, and fluvial catchments will not represent catchment issues on a smaller, more localised scale, which is required for an urbanised London Borough.

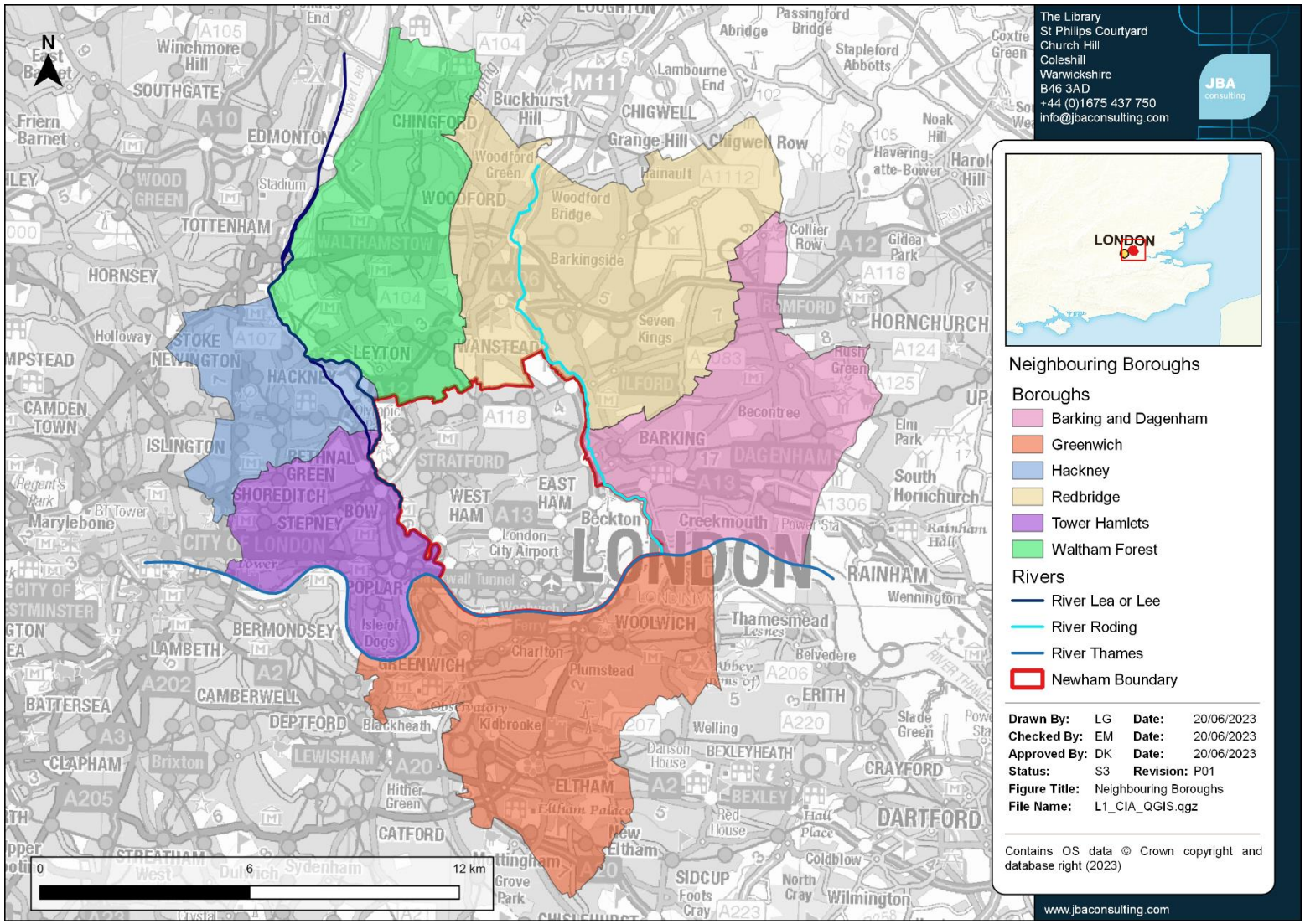

Figure 1-1: Neighbouring authorities to Newham

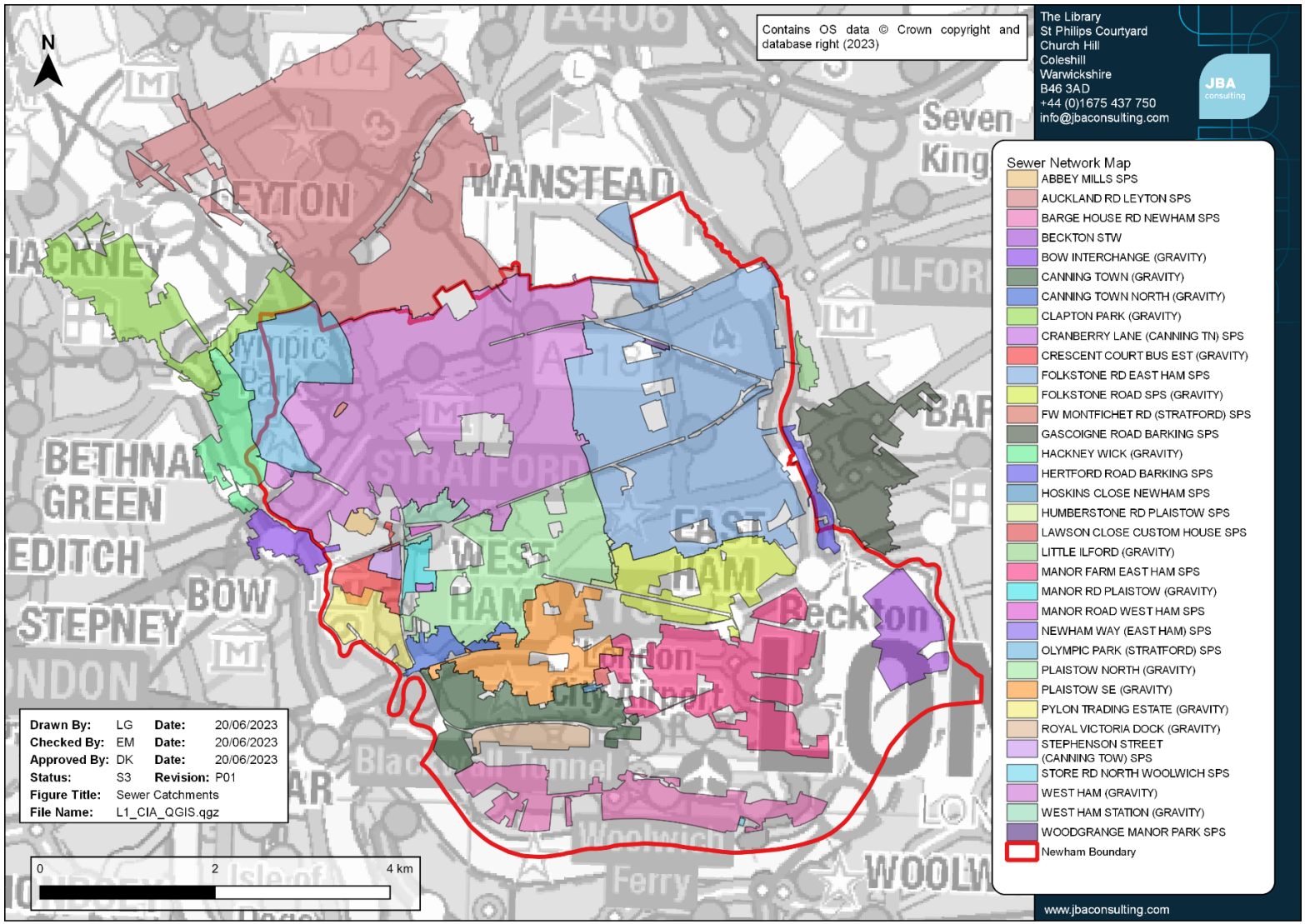

Figure 1-2: Catchments within Newham

1.4 Cumulative Impact Assessment Methodology

This broadscale assessment determines where the potential cumulative impact of developments have the potential to have the greatest effect on flood risk across the study area. Catchments at the highest risk are taken forward to a catchment-level analysis. Potential change in developed areas within each catchment from neighbouring authorities was also considered. Records of historic flooding were available for LBN but not for the neighbouring authorities. It should be noted that not all flooding is reported, for several reasons, so the number of recorded historic flooding incidences is indicative. Analysis of this data facilitated the identification of catchments at the greatest risk of cumulative impacts as a result of development.

There are four stages to the Level 1 Cumulative Impact Assessment (CIA):

1. Assess sensitivity to surface water flood risk.
    - This will be assessed by calculating the change in the number of properties at risk from the 1% AEP to the 0.1% AEP events for surface water flooding, given as a percentage of the total properties in the catchment.
2. Assess sensitivity to fluvial flood risk
    - This will be assessed by counting the change in the number of properties at risk from the 1% AEP to the 0.1% AEP events for fluvial flooding respectively for the upper River Roding and River Lee only. Tidal flooding was not included in the assessment as this is risk of tidal breach modelling, which will be unaffected by development. Fluvial flooding is most sensitive in the north of the Borough and along the western and eastern boundaries (which the Roding and Lee flow by). Because the sewer catchments do not cover some of the areas affected by fluvial flooding, this has been discounted from the overall ranking, however the catchments that are sensitive to change will be discussed separately.
3. Identify historic flooding incidents.
    - Identify the total number of historic flooding incidents within Newham in each catchment,
    - Identify the total number of historic sewer flooding incidents within Newham in each catchment.
4. Assess the catchments with the highest degree of proposed new development.
    - This will be assessed by calculating the percentage area of each catchment covered by proposed development.
5. Identify the catchments at greatest risk.
    - Rank catchments in each category.
    - Discussion of catchments which are at high risk in all categories/individual categories.

- Policy recommendations for developments in higher risk catchments.
- Identify catchments needing further consideration within a Level 2 SFRA (if required).

The next stage after this process would be to assess the impacts of individual sites/preferred development areas in LBN. However, this is beyond the scope of a Level 1 SFRA and would be assessed within a Level 2 SFRA (if required) and site-specific FRA.

Table 1-1 summarises the datasets used within the London Borough of Newham CIA.

Future development sites within the study area were provided by LBN and neighbouring authorities. Catchments within the study area were ranked on three metrics: sensitivity to increased risk of surface water flooding, prevalence of recorded historic flood incidents (limited by the data available), and area of new development proposed within the catchment.

The final results of this assessment gave a rating of low, medium, or high risk for each metric, for each catchment within the study area, the boundaries of which were derived from the Thames Water sewer catchments. The rating of each catchment in each of these assessments was combined to give an overall ranking.

Table 1-1: Summary of datasets used within the Broadscale CIA.

Dataset	Coverage	Sources of Data	Use of Data
Catchment boundaries	London Borough of Newham and neighbouring authorities	Thames Water foul network	Assessment of susceptibility to cumulative impacts of development by catchment
National Receptor Dataset (202)	London Borough of Newham and neighbouring authorities (does not extend across all cross-boundary catchments)	EA	Properties for the assessment of flood risk
Risk of Flooding from Surface Water	London Borough of Newham and neighbouring authorities	EA	Assessing the number of properties at risk of surface water flooding within each catchment

Dataset	Coverage	Sources of Data	Use of Data
Fluvial Flooding	London Borough of Newham and neighbouring authorities	EA	Assessing the number of properties at risk of fluvial flooding within each catchment
Future development areas (recently built out sites/sites under construction/sites with planning permission/previously allocated sites/currently allocated sites)	London Borough of Newham and neighbouring authorities	LBN Greenwich Council Redbridge Council Hackney Council Tower Hamlets Council Waltham Forest Council Barking and Dagenham Council	Assessing the impact of proposed future development on risk of flooding
Historic flooding incidents	London Borough of Newham	LBN Thames Water	Assessing incidences of historic flooding within the study area

1.4.1 Sensitivity to increases in surface water flooding

This is the measure of the increase in the number of properties at risk of surface water flooding from a 1% AEP event to a 0.1% AEP event. It is an indicator of where local topography makes an area more sensitive to increases in flood risk that may be due to any number of reasons, including climate change, new development etc. It is not an absolute figure or prediction of the impact that new development will have on flood risk, but rather an indicator of the sensitivity of receptors to cumulative effects.

The National Receptor Database (NRD) dataset 2021 was used to identify all properties within the study area.

This data was analysed for the 0.1% AEP event and the 1% AEP event for surface water flood extents respectively to determine the number of properties in each catchment, in each surface water flood extent. The difference between the two values was then taken as a percentage of the total number of properties within the catchment to allow comparison between catchments of different sizes.

1.4.2 Sensitivity to increases in fluvial flooding

This is the measure of the increase in the number of properties at risk of fluvial flooding from the 1% AEP event to the 0.1% AEP event from the River Roding and River Lee. It is an indicator of where local topography makes an area more sensitive to increases in flood risk that may be due to any number of reasons, including climate change, new development etc. It is not an absolute figure or prediction of the impact that new development will have on flood risk.

The National Receptor Database (NRD) dataset 2021 was used to identify all properties within the catchments. The NRD was intersected with the 1% and 0.1% AEP fluvial flood extents separately to determine the number of properties in each catchment, in each fluvial flood extent.

The catchments are highly urbanised, and the study area is at the downstream end of the catchments. For these reasons, development is very unlikely to impact fluvial flood risk. However, cross-boundary issues will need to be considered further upstream of the study area.

1.4.3 Growth in the area

Development within LBN has the potential to affect flood risk in neighbouring authorities, especially if there are existing flood risk issues. The River Lee and Roding flows south to reach the Thames.

Areas for future proposed development were received from LBN and neighbouring authorities and were assessed as part of this CIA. The area of new development within each catchment was expressed as a percentage of the total catchment area to determine the potential for increases in flood risk as a result of new development. At this stage the whole area of each development was considered, with no land use assumptions for the development areas.

1.4.4 Historic and sewer flood risk

Recorded flooding event data for fluvial, surface water and sewer flooding within LBN were made available for this assessment. No historic flooding data was made available for the neighbouring authorities as this data is not held by LBN. Therefore, historic events in catchments that cross local authorities' boundaries are unknown.

Details of historic flood events can be found in Section 5.1 of the main report. The historic data provided by LBN was represented as point data, where each point represents a location where it is known there has been at least one flood event (however, the nature and scale of these flood events varies significantly).

A count of each historical flood incident was conducted for each catchment to determine the historic flood risk within the catchments.

The sewer flooding data provided from Thames Water was provided as a shapefile showing the number of flooding per postcode within LBN. This was intersected with the Thames Water sewer catchments, and the count of flooding was area weighted according to how much area of the postcode was within a sewer catchment.

1.5 Ranking the results

The results for each assessment were ranked into high, medium, and low risk as shown in Table 1-2. Ranking delineations were given at natural breaks in the results.

The ranking results were combined from all four assessments to give an overall high, medium, and low ranking for all catchments within the Borough. Each catchment was assigned a score for each assessment based on its ranking (high = 3, medium = 2, low = 1), and these were then averaged to produce a final score and ranking. Any catchment producing an overall score higher than 2 was considered high risk.

There is currently no national guidance available for assessing the cumulative impacts of development. These rankings provide a relative assessment of the catchments within LBN and are not comparable across other boroughs/districts. The thresholds used have been based on natural breaks in the data and professional judgement.

Table 1-2: Ranking assessment criteria

Flood risk ranking	Percentage of properties at increased risk of surface water flooding	Count of properties at increased risk of fluvial flooding	Total number of historic flooding incidents	Total number of sewer flooding incidents	Percentage area of catchment covered by new development
Low risk	<3	<100	<10	<10	<3
Medium risk	3 to 5	100 - 400	10 to 40	10 to 100	3 to 10
High risk	>5	>400	>40	>100	>10

1.5.1 Assumptions

The assumptions made when conducting the CIA are shown in Table 1-3.

Policy recommendations with regards to managing the cumulative impact of development have been made in Section 2 below. This will help to ensure there is no incremental increase in flood risk both within and downstream of the LBN.

Table 1-3: Assumptions of the CIA.

Assessment aspect	Assumption made	Details of limitation in method	Justification of method used
Surface water flood risk	Total number of properties	Assumption that all properties have been included in the 2021 NRD dataset. It may not include all new build properties. It also does not include all properties across some of the larger cross-boundary catchments.	This was the most up to date and accurate data available. The cross-boundary catchments most affected by the missing NRD data lie mostly outside LBN so the impact will be minimal.
Fluvial flood risk	Total number of properties	Used the 0.1% AEP event from the Roding and Lee models as an indicative estimate of the impacts of climate change across the Borough.	Although detailed climate change modelling was available for some watercourses, the 0.1% AEP event covers the entire area of the catchments both within and outside the Borough and therefore provided a consistent approach for this high level assessment.
Historic Flooding incidents	Total number of historic events and severity of flooding	Only flooding incidents recorded that could be georeferenced with XY coordinates to produce GIS files were used. There is limited detail on some of the sources of flooding within this dataset. This dataset includes flood history from 2014 to March 2023. Each point represents a location where it is known there has been at least one flood incident. The severity of the historic flooding event relating to the point has not been considered, just the total number of points within	GIS data sourced provided the most accurate results possible for the location of historic flooding incidents in LBN.

Assessment aspect	Assumption made	Details of limitation in method	Justification of method used
		each catchment where there has been a flood incident.	
Sewer Flooding Incidents	Total number of events per postcode	Data given in number of events per postcode area within LBN (with the last two letters redacted from the postcode). This number was area weighted to correlate this Thames water sewer catchments, in order to get a count of incidents per sewer catchment. The data received is dated from 1985 to March 2023. The data does not include any details of flooding, just that it affected property.	This was the most reliable way of counting the incidents per catchment as the information was not given in point format due to sensitivities with the data.
Development	Area of development	Have assumed all promoted sites provided by LBN and the neighbouring authorities are taken forward to development. For LBN, sites included all promoted sites provided by the Council as of 2023. Have not considered whether sites are greenfield or brownfield sites (with brownfield regeneration having the potential to reduce flood risk) or the proposed allocation type and land use of the site. The sewer catchments provided by Thames Water do not cover the whole of the Newham Borough area, so	This is a reasonable worst-case scenario as we do not have further information to inform which sites are most likely to go forward to development. Information on greenfield and brownfield sites was not readily available so this will be considered further in the Level 2 assessment.

Assessment aspect	Assumption made	Details of limitation in method	Justification of method used
		assessment is only provided covering the sewer catchment area.	

1.6 Cumulative Impact Assessment

1.6.1 Sensitivity to surface water flooding

The number of properties located within the 0.1% AEP surface water extent not presently within the 1% AEP extent was calculated, as a percentage of the total properties across the whole catchment. These properties are considered sensitive to increased flood risk as a result of climate change.

Catchments with greater than 5% properties at increased risk were considered high risk and are listed in Table 1-4.

Table 1-4 : Catchments considered highly sensitive to increased surface water flood risk in the future.

Catchment	Percentage of properties sensitive to increased surface water flood risk	Rank
Manor Road West Ham SPS	31.2	1

This catchment includes the area of Beckton and Cyprus in the south of the Borough.

1.6.2 Sensitivity to fluvial flooding

The number of properties located within the 0.1% AEP fluvial extents not presently within the 1% AEP extent was calculated, as a count within the catchments. These properties are considered sensitive to increased flood risk as a result of climate change. Catchments with a difference in the count between the two extents of greater than <400 properties at increased risk were considered high risk and are listed in Table 1-4.

Catchment	Count of properties sensitive to increased fluvial flood risk	Rank
Folkstone Road East Ham SPS	3970	1
Folkstone Road SPS (Gravity)	2557	2
Auckland Road Leyton	1927	3

Catchment	Count of properties sensitive to increased fluvial flood risk	Rank
SPS		
Gascoigne Road Barking SPS	1204	4
Hackney Wick (Gravity)	1019	5
Clapton Park (Gravity)	858	6

The Rivers Roding and Lee are within the Roding, Beam and Ingrebourne and London WFD surface water management catchments respectively. These results indicate that the catchments are very sensitive to increased flood risk as a result of climate change. These are within the lower reaches of the catchments, where the watercourses then cross over into the Thames management catchment. The risk is mostly confined to the northern reaches of the rivers within the Borough around areas such as Stratford, Canning Town and Little Ilford.

1.6.3 Prevalence of historic flooding incidents

Historic flood incidents data for fluvial or surface water flooding were available from LBN and sewer flooding incidents from Thames Water. While this will not provide a detailed scope of historic flooding incidents across the region from neighbouring authorities, using the data available the number of flood incidents in each catchment were identified to provide a broadscale understanding of flood risk.

Catchments with more than 40 recorded historic flooding incidents were considered high risk (Table 1-5).

Catchments with more than 100 recorded sewer flooding incidents were considered high risk Table 1-6).

For a more detailed assessment of historic flood risk, acquiring historic flooding incidents records from all neighbouring authorities is recommended.

Two catchments were discounted from this assessment due to being located outside of the Borough, and historic incidents were only provided for the area within the Borough. These catchments are Gascoigne Road, Barking SPS and Little Ilford.

Table 1-5: Catchments with the highest number of recorded historic flood incidents.

Catchment	Number of recorded incidents	Rank
West Ham	101	1
Folkstone Road East Ham SPS	85	2
Plaistow North	40	3

Table 1-6: Catchments with the highest number of recorded sewer flood incidents.

Catchment	Number of recorded incidents	Rank
West Ham (Gravity)	2222	1
Folkstone Road East Ham SPS	1988	2
Plaistow North	603	3
Manor Farm East SPS	169	4
Plaistow SE	166	5

1.6.4 These catchments include the urban areas of East Ham, Little Ilford, Manor Park, West Ham and Plaistow.Area of proposed development

LBN and neighbouring authorities provided shapefiles of promoted development sites and the total area of new development in each catchment was measured, as a percentage of catchment area. Due to the scale of proposed developments in comparison to the catchment areas, catchments with more than 10% of their area earmarked for development were considered high risk.

Table 1-7: Catchments with the highest percentage cover of proposed development.

Catchment	Area of proposed development (ha)	Area of proposed development as percentage of catchment area	Rank
FW Montfitchet Road (Stratford) SPS	1.2	100	1
Stephenson Street (Canning Town) SPS	9.9	99	2
Barge House Road Newham SPS	147.8	22	3
Crescent Court Bus Est	30.1	38	4
Canning Town	133.3	37	5
Pylon Trading Estate	47.4	21	6
West Ham	688	17	7

These catchments include the urban areas of Docklands and Silvertown, Canning Town, Stratford and West Ham.

1.7 Overall rankings

For each assessment, catchments were given a score of 3 (high), 2 (medium), or 1 (low) risk. These scores were then averaged across the assessment to give a combined score. Table 1-8 provides a summary of the rankings for each catchment for the individual assessments and the combined scores. Fluvial flooding was discounted from the overall ranking and recommendations for this will be made separately. The final average for two catchments (Gascoigne Road Barking and Little Ilford) are based on Development and Surface water flooding sensitivity only due to no data coverage for historic flooding incidences within these catchments.

Table 1-8: Catchment rankings and combined scores.

Catchment name	Develop-ment	Historic flooding	Sewer flooding	Surface water flooding	Average score
Abbey Mills SPS	1	1	1	1	1.00
Auckland Road Leyton SPS	2	1	2	1	1.50
Barge House Road SPS	3	1	2	1	1.75
Beckton STW	1	1	1	1	1.00
Bow Interchange	1	1	1	1	1.00
Canning Town	3	2	2	1	2.00
Canning Town North	2	1	2	1	1.50
Clapton Park	2	1	1	1	1.25
Cranberry Lane (Canning Town) SPS	1	1	1	1	1.00
Crescent Court Bus Est	3	1	2	1	1.75
Folkstone Road East Ham SPS	1	3	3	1	2.00
Folkstone Road SPS	1	1	3	1	1.50
FW Montfitchet Road (Stratford) SPS	3	1	1	1	1.50
Gascoigne Road Barking SPS	2	0	0	1	1.50
Hackney Wick	1	1	1	1	1.00

Catchment name	Develop-ment	Historic flooding	Sewer flooding	Surface water flooding	Average score
Hertford Road Barking SPS	1	1	1	1	1.00
Hoskins Close Newham SPS	1	1	1	1	1.00
Humberstone Road Plaistow SPS	1	1	2	1	1.25
Lawstone Close Custom House SPS	1	1	2	1	1.25
Little Ilford	1	0	0	1	1.00
Manor Farm East Ham SPS	2	1	3	1	1.75
Manor Road Plaistow	1	1	2	1	1.25
Manor Road West Ham SPS	1	1	1	3	1.50
Newham Way (East Ham) SPS	1	1	1	1	1.00
Olympic Park (Stratford) SPS	2	1	2	1	1.50
Plaistow North	1	3	3	1	2.00
Plaistow SE	2	2	3	1	2.00
Pylon Trading Estate	3	1	2	1	1.75
Royal Victoria Dock	1	1	2	1	1.25
Stephenson Street (Canning Town) SPS	3	1	1	1	1.50
Store Road North Woolwich SPS	1	1	1	1	1.00
West Ham	3	3	3	1	2.50
West Ham Station	1	1	2	1	1.25
Woodgrange Manor Park SPS	1	1	2	1	1.25

A Red-Amber-Green (RAG) rating was then applied to the catchments, with red being high risk, amber being medium risk and green being low risk. The RAG ratings are shown in Figure 1-3. The catchments with an average score of greater or equal to 2 were deemed high risk and are shown in Table 1-9.

Table 1-9: High risk catchments as shown in Figure 1-3.

Catchment name	Average score
Canning Town	2.00
Folkstone Road East Ham SPS	2.00
Plaistow North	2.00
Plaistow SE	2.00
West Ham	2.50

The high risk catchments named in Table 1-9 above ranked high for at least two parameters. The most at risk urban areas are Canning Town, Plaistow, West Ham and East Ham (including part of Little Ilford).

The catchments classified as medium (above or equal to 1.5) and low risk (less than 1.5) are shown in Table 1-10 and Table 1-11 respectively.

Table 1-10: Medium risk catchments.

Catchment name	Average score
Auckland Road Leyton SPS	1.50
Barge House Road SPS	1.75
Canning Town North	1.50
Crescent Court Bus Est	1.75
Folkstone Road SPS	1.50
FW Montfitchet Road (Stratford) SPS	1.50
Gascoigne Road Barking SPS	1.50
Manor Farm East Ham SPS	1.75
Manor Road West Ham SPS	1.50
Olympic Park (Stratford) SPS	1.50
Pylon Trading	1.50
Stephenson Street (Canning Town) SPS	1.50

Table 1-11: Low risk catchments.

Catchment name	Average score
Abbey Mills SPS	1.00
Beckton STW	1.00
Bow Interchange	1.00
Clapton Park	1.25
Cranberry Lane (Canning Town) SPS	1.00
Hackney Wick	1.00

Catchment name	Average score
Hertford Road Barking SPS	1.00
Hoskins Close Newham SPS	1.00
Humberstone Road Plaistow SPS	1.25
Lawstone Close Custom House SPS	1.25
Little Ilford	1.00
Manor Road Plaistow	1.25
Newham Way (East Ham) SPS	1.00
Royal Victoria Dock	1.25
Store Road North Woolwich SPS	1.00
West Ham Station	1.25
Woodgrange Manor Park SPS	1.25

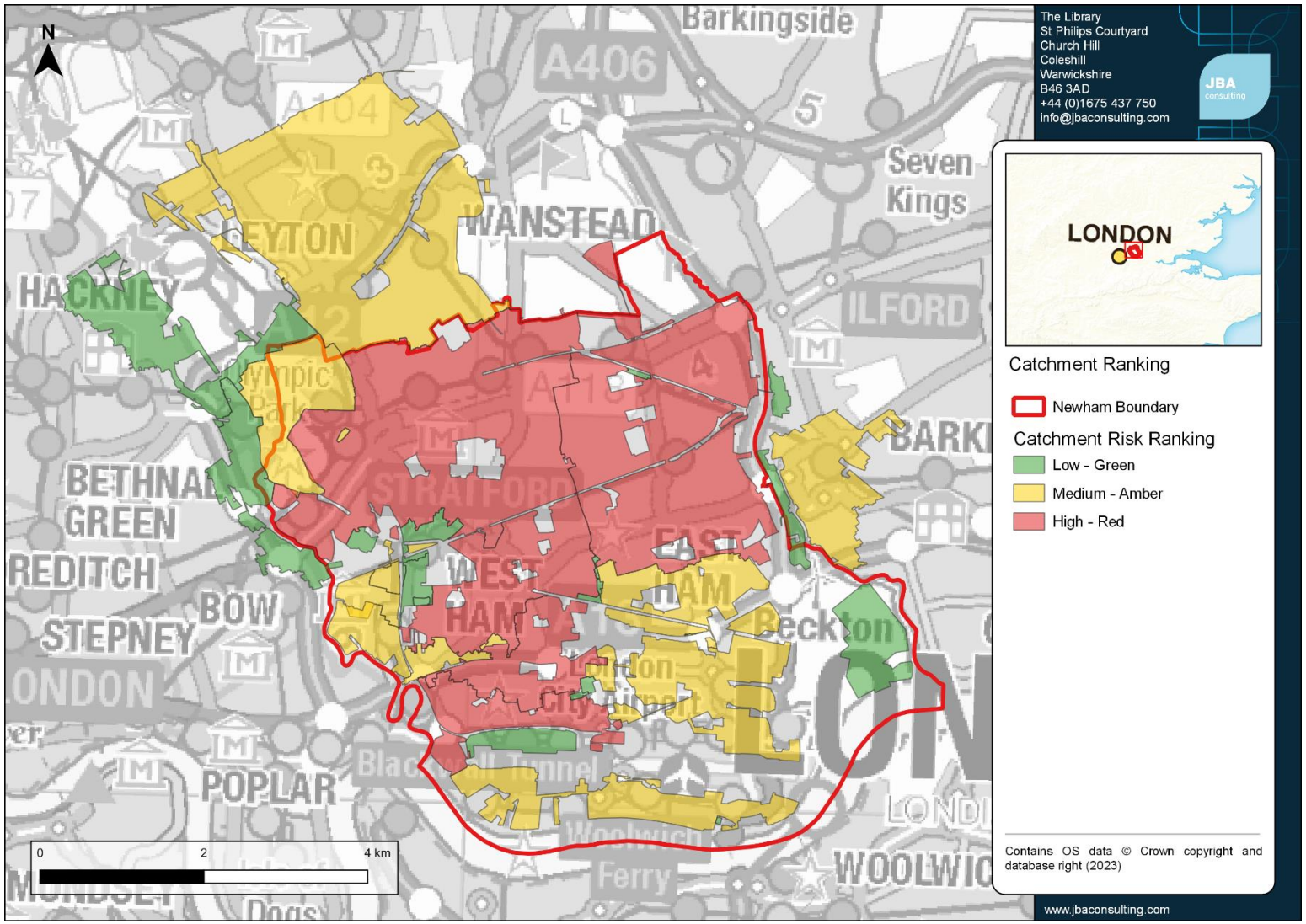

Figure 1-3: Results of the ranking assessment showing high (red), medium (amber) and low (green) risk catchments across LBN.

2 Level 1 SFRA Policy recommendations

2.1 Broadscale recommendations

All developments are required to comply with the NPPF and demonstrate they will not increase flood risk elsewhere. Therefore, providing developments comply with the latest guidance and legislation relating to flood risk and sustainable drainage, and appropriate consideration is given to surface water flow paths and storage proposals should normally not increase flood risk downstream.

The high-level CIA for London Borough of Newham has highlighted areas where there is the potential for development to have a cumulative impact on flood risk. Catchments have been identified as high, medium, or low risk, relative to the other catchments within the borough.

Flood risk can be affected by several different factors, which have been assessed as part of the CIA. As a result, incremental action and betterment in flood risk terms across all of the Borough should be supported where possible.

In some cases, new development within brownfield sites will provide betterment due to strict SuDS measures that are required. This is reiterated within the London Plan 2021 which states boroughs should make as much use as possible of suitable brownfield sites to accommodate their housing targets.

The following policy recommendations therefore apply to all catchments within the study area:

- LBN should work closely with neighbouring local authorities to develop complementary Local Planning Policies for catchments that drain into and out of the area to other local authorities in order to minimise any cross boundary issues of cumulative impacts of development, particularly in the upper areas of the Roding and Lee.
- LBN should to maintain and enhance the understanding of flood risk within LBN.
- Developers need to maintain and improve existing flood defences when redevelopment takes place, in line with National policies and the Thames Estuary 2100 plan requirements.
- Develop emergency response plans and also promote and raise public awareness of extreme floods at community level.
- Developers should ensure there is no additional runoff from development sites, such as by using SuDS, so that flood risk is not exacerbated downstream. Preference will be given to systems that contribute to the conservation and enhancement of biodiversity and green infrastructure where practicable. Developers should refer to the relevant Lead Local Flood Authority (LLFA)

guidance for the requirements for SuDS in LBN. Further guidance on SuDS can be found in Section 9 of the main report.

- LBN as LLFA will review Surface Water Drainage Strategies in accordance with their local requirements for major and non-major developments. These should consider all sources of flooding to ensure that future development is resilient to flood risk and does not increase flood risk elsewhere. In particular, they should;
    - The strategy should follow the drainage hierarchy of the London Plan and maximise the use of SuDS with management and maintenance schemes,
    - All development within the CDA should achieve greenfield run-off rates and provide betterment where possible in order to try and reduce run-off from impermeable surfaces, and reduce the pressure on the sewer network,
    - Developers should refer to the relevant LLFA guidance for the requirements for SuDS in the LBN.
- Where appropriate, culverting should not be supported, and day-lighting existing culverts should be promoted through new developments.
- Developers should consult with Thames Water at the earliest opportunity to assess the impact of development on the sewer.
- LBN work closely with neighbouring authorities and Thames Water to identify where additional development in cross boundary catchments may cause issues for sewer capacity.
- All development proposals should undertake a site-specific FRA. Site-specific FRAs should;
    - Meet the requirements set out by Newham's Surface Water Management Plan, GLA's sustainable Design and Construction SPG, and building regulations Part H: drainage and water disposal.
    - Include details of flood levels, access and egress plans in Flood Zones 2 and 3
    - In TE2100 areas, applicants need to demonstrate that development incorporates or does not inhibit sufficient land and access to be available for the renewal and maintenance of flood defences for the lifetime of the development.
- LBN should consider requiring developers to contribute to community flood defences outside of their red line boundary to provide wider benefits and help offset the cumulative impact of development.

Section 8 of the main report details the local requirements for mitigation measures. Catchment-specific recommendations are made for high-risk catchments below.

2.2 Recommendations for high risk catchments

High risk catchments are detailed in Table 1-9. From analysing the results produced above, high-level recommendations for flood storage and betterment have been proposed for sites in each of the high risk catchments. These recommendations

should be considered by developers as part of a site-specific assessment, but more detailed modelling must be undertaken by the developer to ascertain the true storage needs and potential at each site at the planning application stage. The FRA should consider the potential cumulative effects of all proposed development and how this affects sensitive receptors.

The following recommendations are made for high risk catchments:

- Developers should include a surface water drainage strategy and FRA to support the development. This should provide information to the EA, the LLFA and the LPA regarding the proposed approach to surface water management.
- Any FRA should be carried out in line with the National Planning Policy Framework; Flood Risk and Coastal Change Planning Practice Guidance; London Borough of Newham Council's Local Plan Policies and Sustainable Drainage Design and Evaluation Guide for developers.
- As part of the London Plan policy SI12 on Flood Risk Management, flood risk should be recognised as an important consideration as part of all development proposals, and it sets out the strategic approach in London to manage flood risk. This includes the expectation that flood risk from all sources is managed in a cost-effective way.
- As part of the London Plan policy SI13 and LBN SuDs guidance, all development proposals are required to include a Surface Water Drainage Strategy along with their FRA. This aims to achieve greenfield run-off rates and ensure surface water run-off is managed as close to source as possible. It should also promote an integrated approach to water management. Drainage should be designed and implemented in ways that promote multiple benefits.
- Developers should include a detailed access and evacuation plan demonstrating that there is sufficient time and means to leave the area, and that this will be effectively communicated.
- For developments in high risk catchments, the LLFA and LPA should consult with Thames Water and other catchment partnerships in the GLA. This will help to understand ongoing and upcoming projects where drainage improvements, NFM, flood storage and attenuation, identify key infrastructure, and environmental betterment may be possible upstream alongside developments and aid in reducing flood risk.
- LPAs should work closely with the EA and the LLFA to identify any areas of land that should be safeguarded for any future flood alleviation schemes, particularly in the northern more rural part of the borough. Investigations should seek to determine where developments have the potential to contribute towards works to reduce flood risk and enable regeneration in catchments as well as contributing to the wider provision of blue-green infrastructure.
- The risk of sewer flooding within these catchments is high. Therefore, developers should consult with Thames Water to ensure that the development aims to help

achieve the targets of the Drainage and Wastewater Management Plan. The whole of LBN is located within the Beckton sewer catchment. Newham was identified as a high risk catchment as part of Thames Water's Drainage and Wastewater Management Plan. The strategic plan for this risk zone identifies a series of solutions and targets which include, for example, network improvements, and property level protection measures to prevent buildings from flooding. It is recommended that developers seek advice from Thames Water during early development stages so that they ensure that development aims to help achieve these targets.

- Any re-development within areas of flood risk must provide other wider sustainability benefits, provide flood risk betterment and be made resilient to flooding.
- When redeveloping existing buildings, the installation of some permanent or temporary flood proofing and resilience measures could protect against both surface water and sewer flooding. Non-return valves prevent water entering the property from drains and sewers. Non-return valves can be installed within gravity sewers or drains within a property's private sewer upstream of the public sewerage system. These need to be carefully installed and must be regularly maintained.

2.3 Development within medium risk catchments

Catchments that have scored an overall ranking of medium, but where development is proposed should also consider the following recommendations:

- Developers should include a surface water drainage strategy and FRA to support the development. This should provide information to the EA, the LLFA and the LPA regarding the proposed approach to surface water management.
- As part of the London Plan policy SI12 on Flood Risk Management, flood risk should be recognised as an important consideration as part of all development proposals, and it sets out the strategic approach in London to manage flood risk. This includes the expectation that flood risk from all sources is managed in a cost-effective way.
- As part of the London Plan policy SI13 and LBN SuDs guidance, all development proposals are required to include a Surface Water Drainage Strategy along with their FRA. This aims to achieve greenfield run-off rates and ensure surface water run-off is managed as close to source as possible. It should also promote an integrated approach to water management. Drainage should be designed and implemented in ways that promote multiple benefits.
- LPAs should work closely with the EA and the LLFA to identify any areas of land that should be safeguarded for any future flood alleviation schemes and NFM features.

- There is the potential for development in these catchments to contribute towards works to reduce flood risk and enable regeneration as well as contributing to the wider provision of green infrastructure.

Medium risk catchments can be found in Table 1-10.