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1	Katie Allsopp	Patri Cuervo	Ruth Burnham	Hannah Burgess	16/07/2024	Draft for comments
2	Katie Allsopp	Patri Cuervo	Ruth Burnham	Hannah Burgess	23/08/2024	Final



London Borough of Havering Action Plan for Local Flood Risk Management Strategy and Surface Water Management Plan, 2024

This Action plan includes information on measures to implement the priorities of the London Borough of Havering to manage local flood risk.

The Action Plan includes measures from the Surface Water Management Plan (SWMP) and measures from the Local Flood Risk Management Strategy (LFRMS). Together these form the LFRMS Action Plan. The Action Plan will be monitored annually and reviewed alongside the review of the LFRMS.

The Action Plan is broken into two tabs: one for specific measures in Critical Drainage Areas (CDA) and one for boroughwide measures. Table 1 below clarifies the columns in those tabs.

The LFRMS aims and objectives are coded as per Table 2 below and reference to this code is included in column K of the boroughwide tab.

Table 3 below shows the priority ranking of the measures decided through the multicriteria analysis and the cost benefit/feasibility assessment explained in the SWMP.

This is shown in column E of the CDA measures table.

The actions in this plan are subject to available funding and resourcing and this document should be read alongside the LFRMS and SWMP documents.



Table 1: Measures information

Column	Description
Measures and description	The name of the measure and provides details of what the measure is.
General location	What CDA it is in or if it is boroughwide.
Priority ranking	The ranking of CDA specific measures which ranges from very low to very high.
Cost/funding	What funding could be available to implement the measure and the average cost of the measures.
Estimated benefit	The 'per property' and 'total' benefit from the cost benefit analysis.
Typical duration	The duration of time needed to implement the measure (short, medium or long-term and an idea of the implementation time). The implementation time will vary depending on resources, internal and external funding and priorities. Ongoing measures are those that are already being implemented.
Responsibility	The lead LBH team and primary support for implementing the measure.
Stakeholders	Who will/could be involved and support the measure implementation.
Review and implementation (KPIs)	The Key Performance Indicators (KPIs) against which the measure should be monitored.
Origin of the measure	Explains where the measure came from: new measure, guidance or other plans.

Table 2: LFRMS measures codes

LFRMS Aims	Code	Objective
Supporting communities to be more flood resilient	A1	<ul style="list-style-type: none"> • To increase awareness of flood risk in the Borough with internal and external stakeholders and members of the public. • To work with Local Resilience Forum partners to improve our preparedness, resilience, and response to flood events. • To take a risk-based and affordable approach to managing flood risk across the Borough.
Working with others to reduce flood risk	A2	<ul style="list-style-type: none"> • To work together with internal and external stakeholders to manage flooding from all sources in the Borough. • To increase understanding internally and externally of the Lead Local Flood Authority role. • To work with internal and external stakeholders to take a consistent and prioritised approach to manage drainage and flood risk assets in the Borough.
Making places flood resilient	A3	<ul style="list-style-type: none"> • To deliver a prioritised programme of works to alleviate flooding, including natural flood management measures. • To embed actions to reduce flood risk into our approach to manage the highways network. • To integrate policies and guidance to reduce flood risk through new development into our approach as a Local Planning Authority.

Table 3: Measure priority ranking

Priority Ranking	
0	Very Low
1	Low
2	
3	Medium
4	
5	High
6	
7	Very High

The CDA measures were prioritised based on the Multi Criteria Analysis as explained in Appendix D of the SWMP. The priority ranking shows the degree of urgency to implement CDA measures. However, the implementation on the ground of these measures depends on resources available (officer time, skills & knowledge, budget and funding availability, partnership working, etc). This could vary over time and depends, not only on the LLFA resources, but on the overall Council resources.

CDA Measures

ID	Measure	Description	Location	Priority Ranking	Cost/Funding			Estimated Benefit		Typical duration	Lead Organisation	Responsibility		Other Stakeholders	LFMS Aims	Review / monitoring (KPIs)	Origin of the measure												
					Estimated Capital Cost	Estimated Other Cost	Potential Funding Source	Total	Average per Property			Primary Support																	
1	Infiltration (and evaporation) for managing everyday rain - very small to small amount of rain	An engineering structure to collect rainwater from impermeable surfaces e.g. rain gardens.	CDA 005	Low	Construction of surface SuDS features in existing soft landscape £20-£50/m2 Hard landscapes £50-£100/m2 Initial consultation: £300-£1,400 Design (scale dependent): £3,000-£20,000	Feasibility study to understand best areas to implement. £10,000-£5,000 depending on if carried out in house	Local Authority e.g. Capital Funding (Parks/Highways/ LFA) Section 106 Agreements and community Infrastructure Levy Greater London Authority - New Deal programmes (Greener City 'Grow Back Greener' and 'Green and Resilient Spaces') Thames Water AMPS SWMP programme Local Wildlife and River Trusts Central Government (NFM) TRICC - PROSPECT programme, NFM funding Business Improvement Districts (BIDs)	£ 13,773,150	£ 299,416	Long (3 - 6 years)	London Borough of Havering	LFA	Land owners	A3	What number of properties are protected? Has the measure been implemented?	SWMP guidance													
			CDA 014																										
			CDA 015																										
			CDA 016																										
			CDA 017																										
			CDA 018																										
			CDA 023																										
			CDA 025																										
			CDA 026																										
			CDA 034																										
			CDA 036																										
			CDA 037																										
			CDA 038																										
			CDA 039																										
			CDA 040																										
			2	Storage for managing 'extreme rainfall' - higher volume of water				Designed to collect, delay and convey rainfall using green infrastructure techniques. This is generally above ground management e.g. swales and wet ponds.	CDA 005								Low	Construction of surface SuDS features in existing soft landscape £20-£50/m2 Hard landscapes £50-£100/m2 Initial consultation: £300-£1,400 Design (scale dependent): £3,000-£20,000	Initial consultation: £300-£1,400 Design (scale dependent): £3,000-£20,000	Local Authority e.g. Capital Funding (Parks/Highways/ LFA) Section 106 Agreements and community Infrastructure Levy Greater London Authority - New Deal programmes (Greener City 'Grow Back Greener' and 'Green and Resilient Spaces') Thames Water AMPS SWMP programme Local Wildlife and River Trusts Central Government (NFM) TRICC - PROSPECT programme, NFM funding Business Improvement Districts (BIDs)	£ 14,438,638	£ 317,689	Long (3 - 6 years)	London Borough of Havering	LFA	Land owners	A3	What number of properties are protected? Has the measure been implemented?	SWMP guidance
CDA 014																													
CDA 015																													
CDA 016																													
CDA 017																													
CDA 018																													
CDA 023																													
CDA 025																													
CDA 026																													
CDA 034																													
CDA 036																													
CDA 037																													
CDA 038																													
CDA 039																													
CDA 040																													
3	Conveyance for managing 'usual rainfall' - less amount of water.	Designed to collect, delay and convey rainfall using green infrastructure techniques. This is generally above ground management.			CDA 014	Low	Construction of surface SuDS features in existing soft landscape £20-£50/m2 Hard landscapes £50-£100/m2 Initial consultation: £300-£1,400 Design (scale dependent): £3,000-£20,000		Initial consultation: £300-£1,400 Design (scale dependent): £3,000-£20,000	Local Authority e.g. Capital Funding (Parks/Highways/ LFA) Section 106 Agreements and community Infrastructure Levy Greater London Authority - New Deal programmes (Greener City 'Grow Back Greener' and 'Green and Resilient Spaces') Thames Water AMPS SWMP programme Local Wildlife and River Trusts Central Government (NFM) TRICC - PROSPECT programme, NFM funding Business Improvement Districts (BIDs)	£ 12,075,180	£ 238,311	Long (3 - 6 years)	London Borough of Havering	LFA	Land owners	A3				What number of properties are protected? Has the measure been implemented?	SWMP guidance							
			CDA 015																										
			CDA 016																										
			CDA 017																										
			CDA 018																										
			CDA 023																										
			CDA 025																										
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			CDA 034																										
			CDA 036																										
			CDA 037																										
			CDA 038																										
			CDA 039																										
			CDA 040																										
			4	Run-off reduction strategy	A long-term plan for making whole urban areas more green and permeable. This uses green infrastructure techniques to allow increased infiltration.	CDA 014		Medium			Construction of green/blue roof £50-£150/m2 Construction of surface SuDS features in existing soft landscape £20-£50/m2 Hard landscapes £50-£100/m2 Initial consultation: £300-£1,400 Design (scale dependent): £3,000-£20,000	Initial consultation: £300-£1,400 Design (scale dependent): £3,000-£20,000						Local Authority e.g. Section 106 Agreements and community Infrastructure Levy Greater London Authority Thames Water Local Wildlife and River Trusts Central Government Business Improvement Districts (BIDs)	£ 162,211,914	£ 214,566			Long (3 - 6 years)	London Borough of Havering	LFA	Land owners	A3	What number of properties are protected? Has the measure been implemented?	SWMP guidance
						CDA 015																							
CDA 016																													
CDA 017																													
CDA 018																													
CDA 034																													
CDA 036																													
CDA 037																													
CDA 039																													
CDA 040																													
5	Specific planning policy	A new planning policy aiming to provide a considerable improvement of surface water runoff for development in strategic sites and redevelopment areas. Green infrastructure should be favoured over grey. Implement feasibility study to understand opportunities to provide storage in greenspace, parks and regeneration and developments areas (Romford strategic development area and industrial strategic area)				CDA 014	Very High	N/A	Internal costs to the Local Planning Authority and internal stakeholders	Neighbourhood Community Infrastructure Levy Local Authority e.g. Section 106 planning contributions Borough CL Local Levy			£ 12,075,180	£ 238,311	Medium (3 years)	London Borough of Havering	Planning		Residents and the public (responding to the consultation)	A3	What number of properties are protected? Has the measure been implemented?	New measure							
						CDA 017																							
						CDA 018																							
						CDA 023																							
						CDA 025																							
						CDA 034																							
			CDA 036																										
			CDA 037																										
			CDA 038																										
			CDA 039																										
			CDA 040																										
			6	Relocation of properties or infrastructure away from flood risk areas	Proposing new developments in areas with low flood risk and having availability to move existing critical infrastructure to low flood risk areas.	CDA 015	Medium				Case by case basis	Case by case basis	Neighbourhood Community Infrastructure Levy Local Authority e.g. Section 106 planning contributions Borough CL Local Levy	£ 14,640,218				£ 203,336					Medium (3 years) for new policy. Ongoing for current policy	London Borough of Havering	LFA Planning	Land owners	A3	What number of properties are protected? Has the measure been implemented?	SWMP guidance
						CDA 026																							
			7	Land management	Implementing land management actions will reduce the volume of run-off, to reduce the flood risk further downstream.	CDA 015	Medium				Case by case basis	Case by case basis	Local Levy Greater London Authority (GLA) LFA budget	£ 10,948,874				£ 223,446					Medium (1 - 3 years)	London Borough of Havering	LFA Planning	Land owners	A3	What number of properties are protected? Has the measure been implemented?	SWMP guidance
						CDA 017																							
						CDA 018																							
CDA 039																													
8	Property-level protection and resilience	Measures that prevent water entry or reduce the amount of floodwater that enters a property e.g. flood doors, flood gates, self-closing air bricks.	CDA 016	Very Low	Manual sectional barrier: £600-1800/m Manual flood gates (5x1m): £5,500	Consultation with the community if relevant	Estates Improvement Budget (EIB) Flood Defence Grant in Aid (FDGA) Local Levy	£ 9,360,465	£ 187,460	Medium (1 year)	London Borough of Havering	LFA Planning	Home owners	A3	What number of properties are protected? Has the measure been implemented?	SWMP guidance													
			CDA 040																										
9	Asset management and maintenance	Having a register of all existing assets and maintenance plan which includes frequency of maintenance.	CDA 017	Low	Case by case basis	Case by case basis	Service area revenue budgets LFA grant	£ 7,423,518	£ 161,381	Short (3 months and ongoing)	London Borough of Havering	LFA	Other RMA's and asset owners (riparian owners)	A1, A3	What number of properties are protected? Has the measure been implemented?	SWMP guidance													
			CDA 024																										
10	Watercourse management and maintenance	Maintenance to ensure optimal functionality and prevent degradation e.g. keeping growth of vegetation under control, free of debris and reducing excess silt.	CDA 017	High	Engineering channel maintenance: £241-7800/km/year Manual clearance £214-6500/km/year Mechanical maintenance £17-600/m2 Natural channel maintenance: £79-600/m2	Inspection cost: £2.6/m	Service area revenue budgets Relevant RMA's budget Riparian owners	£ 7,423,518	£ 161,381	Short (3 months and ongoing)	London Borough of Havering	LFA	Other relevant RMA's	A2	What number of properties are protected? Has the measure been implemented?	SWMP guidance													
			CDA 034																										
			CDA 037																										
11	Restoring urban watercourse	This technique aims to mimic natural processes as much as possible without increasing flood risk e.g. in channel enhancements, larger scale river restoration and SuDS.	CDA 017	Low	Case by case basis	Case by case basis	Local Levy Greater London Authority (GLA) Relevant RMA's	£ 18,993,487	£ 304,015	Long (3 - 6 years)	London Borough of Havering	LFA	Other relevant RMA's	A3	What number of properties are protected? Has the measure been implemented?	SWMP guidance													
			CDA 024																										
			CDA 037																										
12	Reducing surface water in the sewer	Infiltration and storage can be used to reduce water in sewers e.g. soakways and reducing impermeable surfaces.	CDA 017	Low	Construction of green/blue roof £50-£150/m2 Construction of surface SuDS features in existing soft landscape £20-£50/m2 Hard landscapes £50-£100/m2 Initial consultation: £300-£1,400 Design (scale dependent): £3,000-£20,000	Initial consultation: £300-£1,400 Design (scale dependent): £3,000-£20,000	Local Authority e.g. Section 106 Agreements and community Infrastructure Levy Greater London Authority Thames Water Local Wildlife and River Trusts Central Government Business Improvement Districts (BIDs)	£ 18,993,487	£ 304,015	Long (3 - 6 years)	London Borough of Havering	LFA	Thames Water Anglian Water Land owners	A3	What number of properties are protected? Has the measure been implemented?	SWMP guidance													
			CDA 018																										
13	Carry out flood modelling and scope the potential natural flood management techniques	Work with Land of the Farms to carry out flood modelling and scope potential natural flood management options in Bedford Park local nature reserve.	CDA 017	Low	N/A	Feasibility studies likely to start from £30,000	Local Levy Flood Defence Grant in Aid (FDGA) Local Levy Co-funding with other RMA's	£ 15,102,293	£ 228,823	Medium (1 - 2 years)	London Borough of Havering	LFA	Other RMA's and land owners	A3	Has potential NFM been identified?	FRMP2													
14	Carry out flood modelling in Rise Park Critical Drainage Area	Work together to carry out flood modelling to scope options for flood elevation projects and natural flood management options in the Rise Park Critical Drainage Area.	CDA 017	Low	N/A	Modelling study likely to start from £30,000	Flood Defence Grant in Aid (FDGA) Local Levy Co-funding with other RMA's	£ 15,102,293	£ 228,823	Medium (1 - 2 years)	London Borough of Havering	LFA	Other relevant RMA's	A3	Have flooding hotspots been identified?	FRMP2													
15	Carry out flood modelling of main river and adjacent educational facility in the Harold Hill Critical Drainage Area	Carry out flood modelling of main river and adjacent educational facility in the Harold Hill Critical Drainage Area.	CDA 026	Low	N/A	Modelling study likely to start from £30,000	Flood Defence Grant in Aid (FDGA) Local Levy Co-funding with other RMA's	£ 40,819,585.53	£ 223,057.87	Medium (1 - 2 years)	London Borough of Havering	LFA	Other relevant RMA's	A3	Have flooding hotspots been identified?	FRMP2													
16	Urban watercourse engineering	Hard engineering flood techniques e.g. storage, embankments, water and diversion channels.	CDA 034	Very Low	Retaining wall: £748.8-8010/m Embankments: £780-4420/m	Maintenance cost: £13-24950/km/year Retaining wall £0-1170/km/year	Flood Defence Grant in Aid (FDGA) Local Levy Co-funding with other RMA's	£ 18,952,453.93	£ 73,744.96	Medium (1 - 2 years)	London Borough of Havering	LFA	Other relevant RMA's	A3	What number of properties are protected? Has the measure been implemented?	SWMP guidance													



