| Version no. | Prepared Checked |              | Reviewed     | Approved       | Issue date | Issue status       |  |  |
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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              |  |  |
|             |                  | I            |              |                |            |                    |  |  |
|             |                  | T            | Γ            |                |            |                    |  |  |





### 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.

Thw 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.  What CDA it is in or if it is boroughwide.   |  |  |  |  |  |  |
| General location                 |  |  |  |  |  |  |  |
| 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> <li>•IDo increase awareness of flood risk in the Borough with internal and external stakeholders and members of the public.</li> <li>•IDo work with Local Resilience Forum partners to improve our preparedness, resilience, and response to flood events.</li> <li>•IDo take a risk-based and affordable approach to managing flood risk across the Borough.</li> </ul>                               |  |  |  |  |
| Working with others to reduce flood risk          | A2   | <ul> <li>*IDo work together with internal and external stakeholders to manage flooding from all sources in the Borough.</li> <li>*IDo increase understanding internally and externally of the Lead Local Flood Authority role.</li> <li>*IDo work with internal and external stakeholders to take a consistent and prioritised approach to manage drainage and flood risk assets in the Borough.</li> </ul> |  |  |  |  |
| Making places flood resilient                     | A3   | <ul> <li>*ID deliver a prioritised programme of works to alleviate flooding, including natural flooding management measures.</li> <li>*ID embed actions to reduce flood risk into our approach to manage the highways network.</li> <li>*ID integrate policies and guidance to reduce flood risk through new development in our approach as a Local Planning Authority.</li> </ul>                          |  |  |  |  |

Table 3: Measure priority ranking

| ) | Priority Ranking |           |  |  |
|---|------------------|-----------|--|--|
|   | 0                | Very Low  |  |  |
|   | 1                | Low       |  |  |
|   | 2                | LOW       |  |  |
|   | 3                | Medium    |  |  |
|   | 4                | iviedium  |  |  |
|   | 5                | Lliab     |  |  |
|   | 6                | High      |  |  |
|   | 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   | 1   | Estimated E                    |                                | Typical duration                             |   | Responsibility        | Other Stakeholders  | FRMS Aims      | Review / monitoring (KPIs)  Origin of the measure  |
|----|---|--|--------------------------|-------------------|--|--|---|--------------------------------|--------------------------------|--|---|-----------------------|---|----------------|--|
|    | Infiltration (and evaporation) for managing   | An engineering structure to collect rainwater from   | CDA 005                  | Low               | Estimated Capital Cost  Construction of surface SuDS features in existing:   | Feasibility study to understand best areas                               | Potential Funding Source Local Authority e.g. Capital funding   | <b>Total</b> £ 13,773,150      | Average per Property £ 299,410 | Long (3 - 6 years)                           | Lead Organisation  London Borough of Havering | Primary Support  LLFA | Land owners   | 43             | What number of properties are protected? SWMP guidance                                   |
|    | 'everyday rain' - very small to small amount of rain  | impermeable services e.g. rain gardens.  | CDA 014                  | Medium            | Soft landscape<br>£20-£50/m2   | £10,000-15,000 depending on if carried out                               | (Parks/Highways/ LLFA) Section 106 Agreements and community Infrastructure  |                                | £ 284,728                      | _  |   |                       |   |                | Has the measure been implemented?  |
|    |   |  | CDA 015                  | Low               | Hard landscapes<br>£50-£100/m2   | in house Initial consultation: £300-£1,400                               | Greater London Authority: New Deal programmes ('Greener City' 'Grow Back  | £ 8,833,878<br>£ 10,461,851    | £ 259,820<br>£ 290,600         |  |   |                       |   |                |  |
|    |   |  | CDA 017<br>CDA 018       | High<br>Medium    |  |  | Greener' and 'Green and Resilient Spaces) Thames Water AMP8 SWMP programme  | £ 12,269,737<br>£ 19,286,990   | £ 266,733                      |  |   |                       |   |                |  |
|    |   |  | CDA 023                  | Low               |  | dependent):<br>£3,000-£20,000  | Local Wildlife and River Trusts Central Government (NFM) TRFCC: PROSPECT programme, NFM funding                       | £ 19,057,812                   | £ 340,318                      |  |   |                       |   |                |  |
|    |   |  | CDA 025<br>CDA 026       | Low Medium        |  |  | Business Improvement Districts (BIDs)   | 9 £ 38,972,931<br>£ 33,480,749 | £ 286,566<br>£ 261,568         |  |   |                       |   |                |  |
|    |   |  | CDA 034                  | Medium            |  |  |   | £ 8,637,413<br>£ 53,035,898    | £ 332,208<br>£ 289,814         |  |   |                       |   |                |  |
|    |   |  | CDA 036<br>CDA 037       | Medium            |  |  |   | £ 53,035,898<br>£ 10,784,063   | £ 289,812<br>£ 291,46          |  |   |                       |   |                |  |
|    |   |  | CDA 038<br>CDA 039       | Low               |  |  |   | £ 16,631,133<br>£ 7,346,404    | £ 272,642<br>£ 293,850         |  |   |                       |   |                |  |
|    |   |  | CDA 040                  | Medium            |  |  |   | £ 14,439,836                   | £ 277,689                      |  |   |                       |   |                |  |
| 2  | Storage for managing 'extreme rainfall' -<br>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<br>CDA 014       | Low Medium        | Construction of surface SuDS features in existing: Soft landscape £20-£50/m2 |  | Local Authority e.g. Capital funding<br>(Parks/Highways/ LLFA) Section 106<br>Agreements and community Infrastructure | £ 27,979,879<br>£ 198,306,840  | £ 93,892<br>£ 100,97           | Long (3 - 6 years)                           | London Borough of Havering                    | LLFA                  | Land owners   | <del>1</del> 3 | What number of properties are protected? SWMP guidance Has the measure been implemented? |
|    |   | management e.g. swales and wet ponds.  | CDA 015                  | Medium            | Hard landscapes<br>£50-£100/m2   | dependent):  | Levy.  Greater London Authority: New Deal   | £ 17,002,952<br>£ 20,907,966   | £ 150,469                      |  |   |                       |   |                |  |
|    |   |  | CDA 016<br>CDA 017       | Medium            |  |  | programmes ('Greener City' 'Grow Back<br>Greener' and 'Green and Resilient Spaces)                                    | £ 20,907,966<br>£ 23,147,181   | £ 104,020<br>£ 154,315         |  |   |                       |   |                |  |
|    |   |  | CDA 018<br>CDA 023       | Medium<br>Medium  |  |  | Thames Water AMP8 SWMP programme<br>Local Wildlife and River Trusts<br>Central Government (NFM)                       | £ 39,302,126<br>£ 22,435,716   | £ 88,12° £ 276,984°            |  |   |                       |   |                |  |
|    |   |  | CDA 025                  | Medium            |  |  | TRFCC: PROSPECT programme, NFM funding Business Improvement Districts (BIDs)  |                                |                                |  |   |                       |   |                |  |
|    |   |  | CDA 026<br>CDA 034       | Medium Medium     |  |  |   | £ 61,580,550<br>£ 18,952,454   | £ 153,95° £ 73,745             | -  |   |                       |   |                |  |
|    |   |  | CDA 036<br>CDA 037       | Medium<br>Medium  |  |  |   | £ 104,220,408<br>£ 22,022,262  | £ 98,507                       | -  |   |                       |   |                |  |
|    |   |  | CDA 038                  | Very low          |  |  |   | £ 32,247,455                   | £ 120,326                      | _  |   |                       |   |                |  |
|    |   |  | CDA 039<br>CDA 040       | Low<br>Medium     |  |  |   | £ 14,599,446<br>£ 28,270,036   | £ 119,668<br>£ 113,080         |  |   |                       |   |                |  |
| 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   | CDA 014<br>CDA 015       | Low               | Construction of surface SuDS features in existing: Soft landscape            | Initial consultation: £300-£1,400  | Local Authority e.g. Capital funding<br>(Parks/Highways/ LLFA) Section 106  | £ 122,015,180<br>£ 10,948,874  | £ 238,31°                      | Long (3 - 6 years)                           | London Borough of Havering                    | LLFA                  | Land owners   | 43             | What number of properties are protected? SWMP guidance Has the measure been implemented? |
|    |   | management.  | CDA 016                  | Medium            | £20-£50/m2<br>Hard landscapes<br>£50-£100/m2                                 | Design (scale dependent):<br>£3,000-£20,000                              | Agreements and community Infrastructure<br>Levy.<br>Greater London Authority: New Deal                                | £ 12,691,656                   | £ 248,856                      |  |   |                       |   |                |  |
|    |   |  | CDA 017<br>CDA 018       | High Medium       | EJO E IOU/IIIE   | , LJ,000 LEU,000   | programmes ('Greener City' 'Grow Back<br>Greener' and 'Green and Resilient Spaces)                                    | £ 15,102,293<br>£ 23,095,429   | £ 228,823<br>£ 251,037         | _  |   |                       |   |                |  |
|    |   |  | CDA 023                  | Low               |  |  | Thames Water AMP8 SWMP programme Local Wildlife and River Trusts  | £ 41,290,902<br>£ 76,054,417   | £ 71,935                       | -  |   |                       |   |                |  |
|    |   |  | CDA 025<br>CDA 026       | Low               |  |  | Central Government (NFM) TRFCC: PROSPECT programme, NFM funding Business Improvement Districts (BIDs)                 |                                | £ 101,677<br>£ 223,058         | <u>-</u>                                     |   |                       |   |                |  |
|    |   |  | CDA 034<br>CDA 036       | Low<br>Medium     |  |  |   | £ 10,321,872<br>£ 63,445,899   | £ 278,970<br>£ 242,160         |  |   |                       |   |                |  |
|    |   |  | CDA 037                  | Low               |  |  |   | £ 13,099,976                   | £ 247,169                      |  |   |                       |   |                |  |
|    |   |  | CDA 040                  | Very Low  Low     |  |  |   | £ 9,002,161<br>£ 23,529,494    | £ 250,060<br>£ 317,960         |  |   |                       |   |                |  |
| 4  | Run-off reduction strategy  | A long-term plan for making whole urban areas more gree<br>and permeable, this uses green infrastructure techniques to   | en CDA 014<br>to CDA 015 | Medium<br>High    | Construction of green/blue roof:<br>£50-£150/m                               |  | Local Authority e.g. Section 106 Agreements and community Infrastructure Levy.  | £ 162,211,914<br>£ 14,640,218  | £ 214,566<br>£ 203,336         | Long (3 - 6 years)                           | London Borough of Havering                    | LLFA                  | Land owners   | 43             | What number of properties are protected? SWMP guidance Has the measure been implemented? |
|    |   | allow increased infiltration.  | CDA 016                  | Medium            | Construction of surface SuDS features in existing: Soft landscape            | Design (scale dependent):<br>£3,000-£20,000                              | Greater London Authority Thames Water Local Wildlife and River Trusts   | £ 17,121,938                   | £ 225,289                      |  |   |                       |   |                |  |
|    |   |  | CDA 017<br>CDA 018       | High<br>Very Low  | £20-£50/m2<br>Hard landscapes  | 25,000 220,000   | Central Government<br>Business Improvement  | £ 19,993,487<br>£ 31,296,635   | £ 204,019                      | _  |   |                       |   |                |  |
|    |   |  | CDA 034<br>CDA 036       | Very Low          | £50-£100/m2  |  | Districts (BIDs)  | £ 14,399,106<br>£ 84,630,900   | £ 261,802                      |  |   |                       |   |                |  |
|    |   |  | CDA 037                  | Very Low          |  |  |   | £ 17,797,606                   |                                |  |   |                       |   |                |  |
|    |   |  | CDA 039<br>CDA 040       | Low<br>Medium     |  |  |   | f 12,123,057 f 23,529,494      | £ 228,737<br>£ 213,904         |  |   |                       |   |                |  |
| 5  | Specific planning policy  | A new planning policy aiming to provide a considerable improvement of surface water runoff for development in  | CDA 014<br>CDA 017       | Very High         | N/A  | Internal costs to the Local Planning authority and internal stakeholders | Neighbourhood Community Infrastructure<br>Levy  | £ 122,015,180<br>£ 15,102,293  | £ 238,31°                      | Medium (3 years)                             | London Borough of Havering                    | Planning              | Residents and the public (responding to the consultation) | 43             | What number of properties are protected? New measure Has the measure been implemented?   |
|    |   | strategic sites and redevelopment areas. Green infrastructure should be favoured over grey. Implement feasibility study to understand opportunities to provide | CDA 018                  | High              |  |  | Local Authority e.g. Section 106 planning contributions Borough CIL   | £ 23,095,429                   | £ 251,037                      |  |   |                       |   |                |  |
|    |   | storage in greenspace, parks and regeneration and developments areas (Romford strategic development area   | CDA 023<br>CDA 025       | High              |  |  | Local Levy  | £ 22,435,716<br>£ 46,742,308   | £ 276,984<br>£ 240,940         |  |   |                       |   |                |  |
|    |   | and industrial strategic area)   | CDA 034<br>CDA 036       | High<br>High      |  |  |   | £ 10,321,872<br>£ 63,445,899   | £ 278,970<br>£ 242,160         |  |   |                       |   |                |  |
|    |   |  | CDA 037                  | High              |  |  |   | £ 13,099,976                   | £ 247,169                      |  |   |                       |   |                |  |
|    |   |  | CDA 038                  | High              |  |  |   | £ 20,267,358<br>£ 9,002,161    | £ 232,958<br>£ 250,060         |  |   |                       |   |                |  |
|    |   |  | CDA 040                  | High              |  |  |   | £ 17,559,417                   | £ 237,289                      |  |   |                       |   |                |  |
| 6  | Relocation of properties or infrastructure away   | Proposing new developments in areas with low flood risk  | CDA 015                  | Medium            | Case by case basis   | Case by case basis   | Neighbourhood Community Infrastructure  | £ 14,640,218                   | £ 203.336                      | Medium (3 years) for new policy. Ongoing for | London Borough of Havering                    | LLFA                  | Land owners   | A3             | What number of properties are protected? SWMP guidance                                   |
|    | from flood risk areas   | and having availability to move existing critical infrastructu to low flood risk areas.  | CDA 026                  | Low               |  | ,  | Levy<br>Local Authority e.g. Section 106 planning   | £ 53,397,454                   |                                | current policy                               |   | Planning              |   |                | Has the measure been implemented?  |
|    |   |  |                          |                   |  |  | contributions Borough CIL Local Levy  |                                |                                |  |   |                       |   |                |  |
| 7  | Land management   | Implementing land management actions will reduce the   | CDA 015                  | Medium            | Case by case basis   | Case by case basis   | Local Levy  | £ 10,948,874                   | £ 223,446                      | Medium (1 - 3 years)                         | London Borough of Havering                    | LLFA                  | Land owners   | A3             | What number of properties are protected? SWMP guidance                                   |
|    |   | volume of run-off, to reduce the flood risk further downstream.  | CDA 017                  | Low               |  |  | Greater London Authority (GLA)<br>LLFA budget   | £ 15,102,293<br>£ 23,095,429   | £ 228,823                      |  |   | Planning              |   |                | Has the measure been implemented?  |
|    |   |  | CDA 039                  | Very Low          |  |  |   | £ 9,002,161                    | £ 250,060                      |  |   |                       |   |                |  |
| 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.            | Of CDA 016 CDA 040       | Very Low Very low | Manual sectional barrier: £600-1900/m Manual flood gates (5x1m):             | Consultation with the community if relevant                              | Estates Improvement Budget (EIB) Flood Defence Grant in Aid (FDGiA) Local Levy  | £ 9,560,465<br>£ 13,038,660    | £ 187,460<br>£ 176,198         | Medium (1 year)                              | London Borough of Havering                    | LLFA Planning         | Home owners   | 43             | What number of properties are protected? SWMP guidance Has the measure been implemented? |
|    |   | J  |                          |                   | £5,500   |  |   |                                |                                |  |   |                       |   |                |  |
| 9  | Asset management and maintenance  | Having a register of all existing assets and maintenance pla<br>which includes frequency of maintenance.   | an CDA 017<br>CDA 034    | Low               | Case by case basis   | Case by case basis   | Service area revenue budgets<br>LLFA grant  | £ 7,423,518 £ 5,241,782        | £ 161,38°                      | Short (3 months and ongoing)                 | London Borough of Havering                    | LLFA                  | Other RMAs and asset owners (riparian owners)             | A2, A3         | What number of properties are protected? SWMP guidance Has the measure been implemented? |
| 10 | Watercourse management and maintenance  | Maintenance to ensure optimal functionality and prevent  | CDA 017                  | High              | Engineering channel maintenance:  Manual clearance                           |  | Service area revenue budgets<br>Relevant RMAs budget  | £ 7,423,518                    | £ 161,38                       | Short (3 months and ongoing)                 | London Borough of Havering                    | LLFA                  | Other relevant RMAs                                       | A2             | What number of properties are protected? SWMP guidance Has the measure been implemented? |
|    |   | degradation e.g. keeping growth of vegetation under control, free of debris and reducing excess silt.  | CDA 034<br>CDA 037       | Very Low Low      | £241-7800/km/year  Mechanical maintenance                                    |  | Riparian owners   | £ 5,241,782<br>£ 6,603,602     | £ 201,607<br>£ 178,476         | _  |   |                       |   |                | . as the measure been implemented:   |
|    |   |  |                          |                   | £214-6500/km/year  |  |   |                                |                                |  |   |                       |   |                |  |
| 11 | Restoring urban watercourse   | This technique aims to mimic natural processes as much as  | s CDA 017                | Low               | Natural charance  Manual charance £70-600/m2                                 |  | Local Levy  | £ 19,993,487                   | £ 204,015                      | Long (3 - 6 years)                           | London Borough of Havering                    | LLFA                  | Other relevant RMAs                                       | 13             | What number of properties are protected? SWMP guidance                                   |
|    |   | possible without increasing flood risk e.g. in channel enhancements, larger scale river restoration and SuDS.  | CDA 034<br>CDA 037       | Very Low          |  |  | Greater London Authority (GLA)<br>Relevant RMAs   | £ 14,399,106<br>£ 17,797,606   | £ 261,802                      |  |   |                       |   |                | Has the measure been implemented?  |
|    |   |  | CDN 037                  | 2011              |  |  |   | 11,131,000                     | 2 223,250                      |  |   |                       |   |                |  |
| 12 | Reducing surface water in the sewer   | Infiltration and storage can be used to reduce water in sewers e.g. soakaways and reducing impermeable surfaces.   | CDA 017<br>5. CDA 018    | Low               | Construction of green/blue roof:   | Initial consultation: £300-£1,400  | Local Authority e.g. Section 106 Agreements and community Infrastructure Levy.  | £ 19,993,487<br>£ 31,296,635   | £ 204,015                      | Long (3 - 6 years)                           | London Borough of Havering                    | LLFA                  | Thames Water  | 43             | What number of properties are protected? SWMP guidance Has the measure been implemented? |
|    |   |  |                          |                   | £50-£150/m  Construction of surface  | Design (scale dependent):<br>£3,000-£20,000                              | Greater London Authority Thames Water Local Wildlife and River Trusts   | - 1,23,033                     |                                |  |   |                       | Anglian Water  Land owners                                |                |  |
|    |   |  |                          |                   | SuDS features in existing:   | 25,000 210,000   | Central Government Business Improvement Districts (BIDs)  |                                |                                |  |   |                       | Land officers   |                |  |
| 13 | Carry out flood modelling and scope the potenti natural flood management techniques                                 | ial Work with Land of the Fanns to carry out flood modelling and scope potential natural flood management options in   | CDA 017                  | Low               | N/A  | Feasibility studies likely to start from £30,000                         | Flood Defence Grant in Aid (FDGiA)<br>Local Levy  | £ 15,102,293                   | £ 228,823                      | Medium (1 - 2 years)                         | London Borough of Havering                    | LLFA                  | Other RMAs and land owners                                | 73             | Has potential NFM been identified? FRMP2   |
|    |   | Bedfords Park local nature reserve.  |                          |                   |  |  | Co-funding with other RMAs  |                                |                                |  |   |                       |   |                |  |
| 14 | Carry out flood modelling in Rise Park Critical<br>Drainage Area  | for flood alleviation projects and natural flood managemer   |                          | Low               | N/A  | Modelling study likely to start from £30,000                             | Local Levy  | £ 15,102,293                   | £ 228,823                      | Medium (1 - 2 years)                         | London Borough of Havering                    | LLFA                  | Other relevant RMAs                                       | A3             | Have flooding hotspots been identified? FRMP2  |
| -  |   | options in the Rise Park Critical Drainage Area.   |                          | 1                 | N/A  | Madelle 1971   | Co-funding with other RMAs  |                                |                                | Maralia w 14 - 2                             | London B. C. C.                               | LIFA                  | Other selection 2014                                      | 22             |  |
| 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               | IN/A   | Modelling study likely to start from £30,000                             | Flood Defence Grant in Aid (FDGiA) Local Levy Co-funding with other RMAs  | £ 40,819,589.53                | ± 223,057.87                   | Medium (1 - 2 years)                         | London Borough of Havering                    | LLFA                  | Other relevant RMAs                                       | 43             | 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:<br>£748.8-4810/m<br>Embankments:                             | Maintenance cost: Embankment £13-22490/km/year                           | Flood Defence Grant in Aid (FDGiA)<br>Local Levy<br>Co-funding with other RMAs  | £ 18,952,453.93                | £ 73,744.96                    | Medium (1 - 2 years)                         | London Borough of Havering                    | LLFA                  | Other relevant RMAs                                       | 73             | What number of properties are protected? SWMP guidance Has the measure been implemented? |
|    |   |  |                          |                   | £780-4420/m  | £13-22490/km/year Retaining wall £0-1170/km/year                         | CO randing with other RIVIAS  |                                |                                |  |   |                       |   |                |  |
|    | 1   | 1  | <u>l</u>                 |                   |  | 1  | 1   |                                |                                |  |   | У.                    |   |                |  |





# Boroughwide Measures

| ID                                     | Measure   | Description  | Location                    | Cost Estimated Capital Cost  | Potential Funding Source   | Typical duration                           | Resp<br>Lead Organisation                              | Primary Support    | Other Stakeholders   | LFRMS Aims/ Objectives | Review / monitoring (KPIs)   | Origin of the measure  |
|--|---|--|-----------------------------|--|--|--|--|--------------------|--|------------------------|--|--|
| Flood Risk Knowledge and Awareness  17 | Improve understanding of flood risk in the boroug and raising public awareness  | Increasing understanding and knowledge of flood ris in the borough.  | k Boroughwide               | N/A  | LLFA funding<br>Council budget   | Long (3-6 years)                           | London Borough of Havering                             | LLFA               | Different Council departments Residents and businesses   | A1                     | LBH Corporate Plan 2024-2027: Enabling a resident-<br>focused and resilient Council  | Previous SMWP  |
| 18                                     | Improve information on surface water flood events   | s. Increasing understanding and knowledge of flood ris in the borough and updated proforma to collect  | k Boroughwide               | N/A  | LLFA funding   | Medium (1 year)                            | London Borough of Havering                             | LLFA               |  | A1                     | LBH Corporate Plan 2024-2027: Enabling a resident-<br>focused and resilient Council  | Previous SMWP  |
| 19                                     | Commission Section 19 reports promptly after floo   | information.  Oding Investigating flood risk reports be commissioned for   | Boroughwide                 | N/A  | LLFA funding   | Short (6 months)                           | London Borough of Havering                             | LLFA               |  | A1, A2                 | LBH Corporate Plan 2024-2027: Enabling a resident-   | From Section 19 recommendation                                 |
| 20                                     | event.  Produce a holistic Thames Estuary 2100 Riverside  | completion as soon as possible following the flood event.  Write a riverside strategy for the Borough  | Boroughwide                 | Potentially £40k   | LLFA grant/budget.   | Long (5 years)                             | London Borough of Havering                             | LLFA               | TRFCC Joint Thames Strategies  | A3                     | focused and resilient Council  LBH Corporate Plan 2024-2027: Enabling a resident-  | FRMP2  |
|  | Strategy in the London Borough of Havering.   |  |                             |  | The TRFCC has allocated budget for a Joint Thames<br>Strategies Refresh Project so it could be implemented<br>through this project.                  | d  |  |                    | Refresh Project partners   |                        | focused and resilient Council  |  |
| 21                                     | Link measures from the SMWP directly to the Floor<br>Risk Management Strategy for the Borough such the<br>a programme of work is visible  |  | Boroughwide                 | N/A  | LLFA funding   | Short (6 months)                           | London Borough of Havering                             | LLFA               | Different Council Departments and other RMAs (EA, Water Companies, neighbouring boroughs)  | A3                     | LBH Corporate Plan 2024-2027: Enabling a resident-<br>focused and resilient Council  | Previous SMWP  |
| 22                                     |   | nent. As part of the Local Plan, a Strategic Flood Risk<br>Assessment should be produced.  | Boroughwide                 | £40,000-£50,000  | Local Plan evidence base budget  | Medium (1 - 2 years)                       | London Borough of Havering                             | Planning Authority |  | A2, A3                 | LBH Corporate Plan 2024-2027: Enabling a resident-<br>focused and resilient Council  | FRMP2  |
| 23                                     | Maintain a register of critical flood risk sites across borough, plus make it available to internal and external stakeholders.  | the Part of the LLFA duties.   | Boroughwide                 | N/A  | LLFA funding   | Ongoing                                    | London Borough of Havering                             | LLFA               | Other RMAs and other stakeholders who own flood risk assets  | A2                     | LBH Corporate Plan 2024-2027: Enabling a resident-<br>focused and resilient Council  | New LFRMS Measures   |
| 24                                     | Ensure more sustainable planning decisions by providing developers with copies/links of Local Floor Risk Management Strategy and joint Action Plan.   |  | Boroughwide                 | N/A  | Planning application process<br>LLFA funding   | Short (6 months)                           | London Borough of Havering                             | LLFA               | Developers   | A3                     | LBH Corporate Plan 2024-2027: Enabling a resident-<br>focused and resilient Council  |  |
| 26                                     | Identify a list of priorities that can be managed wit the budget available for flood risk.  Review corporate and core strategies to identify who mutual goals and aims can be met through   | approach.  here Ensure that the Council adopts the most cost-effective approach and enhances partnership working within  | ve Boroughwide              | Already done through this project  N/A   | LLFA funding  Council budget   | Short (6 months)  Medium (3 years)         | London Borough of Havering  London Borough of Havering | LLFA               | Other Council Departments  Other Council Departments   | A3 A3                  | LBH Corporate Plan 2024-2027: Enabling a resident-<br>focused and resilient Council  LBH Corporate Plan 2024-2027: Enabling a resident-<br>focused and resilient Council |  |
| Emergency Planning<br>27               | discharging LLFA responsibilities and actions.  Develop emergency response plans across the   | the Council departments.  Ensure upskilling of officers and the implementation   | of Boroughwide              | N/A  | Contingency planning funding   | Short (6 months)                           | London Borough of Havering                             | Emergency planning | Other Council Departments  | A3                     | LBH Corporate Plan 2024-2027: Enabling a resident-   | Previous SMWP  |
| 28                                     | borough.  Ensure business continuity planning.  | strong policies.  Ensure upskilling of officers and the implementation strong policies e.g. Operational response in terms of   | _                           | N/A  | Council budget   | Short (6 months)                           | London Borough of Havering                             | Planning           | Local residents  | A3                     | focused and resilient Council  LBH Corporate Plan 2024-2027: Enabling a resident- focused and resilient Council  | Previous SMWP  |
| 29                                     | Raising flood insurance awareness for residents and businesses.   | flooding and developing plans for flood hotspots   | Boroughwide                 | N/A  | Council budget   | Short (6 months)                           | London Borough of Havering                             | LLFA               | Local residents  | A1                     | LBH Corporate Plan 2024-2027: Enabling a resident-<br>focused and resilient Council  | Previous SMWP  |
| 30                                     | Encourage community flood action groups and resilient community plans.  | any Council duties and activities.  Encourage working collaboratively internally and   | Boroughwide                 | N/A  | Council budget   | Short (6 months)                           | London Borough of Havering                             | Planning           | Local residents  | A1                     | LBH Corporate Plan 2024-2027: Enabling a resident-<br>focused and resilient Council  | Previous SMWP  |
| 31                                     | Empower volunteers to undertake Flood Warden duties in the London Borough of Havering.  | Work with the Emergency Planning team to understand and implement Flood Warden duties  | Boroughwide                 | N/A  | Council budget   | Short (6 months)                           | London Borough of Havering                             | LLFA               | Local residents  | A1                     | LBH Corporate Plan 2024-2027: Enabling a resident-<br>focused and resilient Council  |  |
| 32                                     | Improve preparedness by arranging for term servic contractor to maintain a stock of plant and material for emergency flooding responses.  |  | Boroughwide                 | IN/A   | Council budget   | Short (6 months)                           | London Borough of Havering                             | LLFA               | Local residents  | A4                     | LBH Corporate Plan 2024-2027: Enabling a resident-<br>focused and resilient Council  | INEM FLUINO INIGARNIE  |
| Land Use Planning  33                  |   | risk Implement more stringent policies where required to ensure more sustainable planning decisions.   | Boroughwide                 | N/A  | Local Plan budget  | Medium (3 years)                           | London Borough of Havering                             | Planning           | Planning stakeholders (GLA, statutory consultees, neighbouring planning authorities), residents and  | A3                     | LBH Corporate Plan 2024-2027: A great place to live, work and enjoy  | SWMP guidance/ New Measure                                     |
| 34                                     |   | al Implement more stringent policies where required to   | Boroughwide                 | N/A  | Local Plan budget  | Short (1 year)                             | London Borough of Havering                             | LLFA               | businesses responding to public consultation  Planning Department  | A3                     | LBH Corporate Plan 2024-2027: A great place to live,   | Previous SMWP  |
|  | Flood Risk Management is suitably linked to new development - in line with SuDS approval status, increased knowledge of flood risk and future Local   | ensure more sustainable planning decisions.  |                             |  |  |  |  |                    |  |                        | work and enjoy   |  |
| 35                                     | Flood Risk Management Strategy.  Engage developers at pre-approval stage in the London Borough of Havering.   | Ensure that flood risk and drainage are addressed as soon in the planning process as possible.   | Boroughwide                 | N/A  | Planning application process and pre-application advice fees   | Short (1 year)                             | London Borough of Havering                             | LLFA               | Planning Department  | A3                     | LBH Corporate Plan 2024-2027: A great place to live, work and enjoy  | FRMP2  |
| Partnership Working 36                 | Encourage working in partnership with other RMAs Water Companies, residents and businesses.   | s, With Regional Flood and Coastal Committee, districts borough, IDB in relation to ordinary watercourses an   |                             | N/A  | LLFA grant   | Short and ongoing                          | London Borough of Havering                             | LLFA               | Other RMAs and other stakeholders interested in flood risk and drainage  | A2                     | LBH Corporate Plan 2024-2027: Enabling a resident-<br>focused and resilient Council  | From LLFA duties review  |
| 37                                     | Undertake stakeholder mapping as a part of  | with planning to streamline processes.   | Boroughwide                 | N/A  | Council budget   | Short (3 months)                           | London Borough of Havering                             | LLFA               | LBH communications and engagement team   | A2                     | LBH Corporate Plan 2024-2027: Enabling a resident-   | Previous SMWP  |
| 38                                     | Communication Plan development.  Ensure key messages in the Community engageme (CE) plan that encourage attitude and behaviour  | ent  | Boroughwide                 | N/A  | Council budget   | Long ( 3 - 6 years and ongoing)            | London Borough of Havering                             | LLFA               | LBH communications and engagement team   | A2                     | focused and resilient Council  LBH Corporate Plan 2024-2027: Enabling a resident- focused and resilient Council  | Previous SMWP  |
| 39                                     | change with the public are delivered.  Develop a collaborative resourcing approach acros  Drain London group 5, (neighbouring LLFAs) enabl the relationships developed in the group to be the springboard to efficient resource management on |  | Boroughwide                 | N/A  | LLFA grant   | Short (1 year)                             | London Borough of Havering                             | LLFA               | Neighbouring authorities   | A2                     | LBH Corporate Plan 2024-2027: Enabling a resident-<br>focused and resilient Council  | Previous SMWP  |
| 40                                     | local flood risk issues.  Have quarterly flood risk meetings to encourage collaboration with internal and external parties.   |  | Boroughwide                 | N/A  | LLFA grant   | Short (3 months)                           | London Borough of Havering                             | LLFA               | Other RMAs and interested stakeholders   | A2                     | LBH Corporate Plan 2024-2027: Enabling a resident-<br>focused and resilient Council  | New LFRMS Measure  |
| 41                                     | Produce a concise table documenting LLFA duties their implementation  Agree with other stakeholders the precise   | and  Ensure dialogue and effective partnership working to  | Boroughwide Boroughwide     | Already done through this project  | LLFA grant  LLFA grant and other maintenance funding   | Ongoing Short (3 months)                   | London Borough of Havering  London Borough of Havering | LLFA               | Relevant stakeholders  Other RMAs, asset owners and riparian owners  | A2                     | LBH Corporate Plan 2024-2027: Enabling a resident-<br>focused and resilient Council<br>LBH Corporate Plan 2024-2027: Enabling a resident-                                |  |
| Measures on the Ground                 | maintenance responsibility for every drainage assewithin the borough.   |  |                             |  |  |  |  |                    | O the first of a same of the first of the fi |                        | focused and resilient Council  |  |
| 43                                     | Take forward on the ground measures in the joint Action Plan towards option appraisal and design.   |  | Boroughwide                 | N/A depending on the measures  | LLFA grant, Local Levy, TRFCC funding, other RMAs funding  | Medium (1 - 3 years)                       | London Borough of Havering                             | LLFA               | Other RMAs, TRFCC  | A3                     | LBH Corporate Plan 2024-2027: Enabling a resident-focused and resilient Council  |  |
| 45                                     | Installation of additional rain gauges.  Investigate scope to supply airbrick covers to the   | Additional rain gauges could be installed to allow for better understanding of local rainfall conditions.  Investigate scope to supply airbrick covers to the          | Boroughwide Boroughwide     | £2,000 per rain gauge plus ongoing maintenance cos<br>N/A internal study   | sts LLFA grant, other RMAs funding  LLFA grant   | Medium (1 - 3 years)  Short (6 months)     | London Borough of Havering  London Borough of Havering | LLFA               | Other RMAs  Home owners  | A3 A3                  | focused and resilient Council  LBH Corporate Plan 2024-2027: Enabling a resident-  | From Section 19 recommendation  From Section 19 recommendation |
| 46                                     | properties at risk  Investigate opportunities for SuDS retrofitting at  | properties at risk (particularly those with thresholds a a level lower than road level).  Increase drainage to limit flood risk to council                             | Boroughwide                 | Feasibility study £25,000+   | Service area capital budgets   | Short (1 year)                             | London Borough of Havering                             | LLFA               | Housing department, Corporate services, Building   | A3                     | focused and resilient Council  LBH Corporate Plan 2024-2027: Enabling a resident-  | FRMP2  |
|  | council buildings and on highways.  | buildings and highways.  |                             |  | Council budget Greater London Authority (GLA) Transport for London National Highways   |  |  |                    | occupiers, other RMAS (Transport for London -TfL,<br>National Highways) and other stakeholders who may<br>be able to fund them.  |                        | focused and resilient Council  |  |
| 47                                     | Review of need for the implementation of new watercourse assets  Develop a prioritised 5-year programme of Natura   | Understand what supporting infrastructure is needed for reduce flood risk from watercourses.  Understand the locations where NFM could be                              | Boroughwide Boroughwide     | Feasibility study £25,000+ Feasibility study £25,000+  | LLFA grant TRFCC Grant in Aid or Levy Funding LLFA grant   | Medium (1 - 2 years)  Medium (1 - 2 years) | London Borough of Havering  London Borough of Havering | LLFA               | EA, other neighbouring boroughs  EA, other neighbouring boroughs   | A1, A3 A3              | LBH Corporate Plan 2024-2027: Enabling a resident-<br>focused and resilient Council<br>LBH Corporate Plan 2024-2027: Enabling a resident-                                |  |
| 49                                     | Flood Management (NFM) projects across the borough.   | implementing and where it could have the highest impact.  by Ensure that any highways schemes consider flood risl  |                             | N/A internal study   | TRFCC Grant in Aid or Levy Funding  Council budget LLFA grant  | Short (3 months)                           | London Borough of Havering                             | LLFA               | TfL and National Highways  | A3                     | focused and resilient Council  LBH Corporate Plan 2024-2027: Enabling a resident-  |  |
| Asset Management                       | adding drainage considerations to a checklist for scheme designs.   | from the outset.   |                             | , and the second |  |  |  |                    |  |                        | focused and resilient Council  |  |
| 50                                     | Increased asset monitoring and clearance.  Develop systematic maintenance regime of   | Increased monitoring and clearance of screens near regular flooding locations.   | to Boroughwide  Boroughwide | N/A  | Council maintenance budgets Service area revenue budgets  Council maintenance budget Service   | Short (6 months)  Short (6 months)         | London Borough of Havering  London Borough of Havering | LLFA               | Highways Department  EA, other neighbouring boroughs   | A2, A3 A1, A2, A3      | LBH Corporate Plan 2024-2027: Enabling a resident-<br>focused and resilient Council  LBH Corporate Plan 2024-2027: Enabling a resident-                                  |  |
|  | watercourse and its assets within the area.   |  | <del></del>                 |  | area revenue budgets<br>Council budget   |  |  |                    |  | ,,,                    | focused and resilient Council  | 2 255.5 15 recommendation                                      |
| 52                                     | Maintain the asset register and continue developin setting out the assets owned, maintained and managed by the LLFA and others.   | ng it, Develop a register of all existing assets and maintenance plan which includes frequency of maintenance and which assets have a significant effe                 | Boroughwide                 | N/A ongoing project  | LLFA grant Service area revenue budgets LLFA grant   | Short and ongoing                          | London Borough of Havering                             | LLFA               | Other flood risk and drainage asset owners (TfL, EA, Water Companies, National Highways, Network rail, etc)  | A1 A2                  | LBH Corporate Plan 2024-2027: Enabling a resident-<br>focused and resilient Council  | Previous SWMP  |
| 53                                     | Develop an assets management system in line with requirements under the FWMA and regulations.   | on flood risk.   | Boroughwide                 | N/A ongoing project  | Service area revenue budgets LLFA grant  | Ongoing                                    | London Borough of Havering                             | LLFA               | Other flood risk and drainage asset owners (TfL, EA, Water Companies, National Highways, Network rail,   | A1, A2                 | LBH Corporate Plan 2024-2027: Enabling a resident-<br>focused and resilient Council  | Previous SMWP  |
| 54                                     | Work with the Infrastructure Delivery Group to  | Linked to the previous two measures to achieve a robust understanding of flood risk and drainage asse  | Boroughwide                 | N/A internal partnership working   | Council budget LLFA grant  | Short (6 months - 1 year)                  | London Borough of Havering                             | LLFA               | etc)  Other flood risk and drainage asset owners (TfL, EA, Water Companies, National Highways, Network rail,   | A2                     | LBH Corporate Plan 2024-2027: Enabling a resident-<br>focused and resilient Council  | FRMP2  |
| 55                                     | asset condition data in the Borough   | Defra will consult on how Schedule 3 of the FWMA 2010 and the work of SABs will be implemented.  |                             | N/A  | LLFA grant   | Medium (1 - 2 years)                       | London Borough of Havering                             | LLFA               | etc) Other neighbouring boroughs, Defra  | A2                     |  | From LLFA duties review  |
| 56                                     | Carry out an assessment of potential desilting and  | Review and respond to the Defra consultation and pu  | ut Boroughwide              | N/A internal study   | Council budget LLFA grant  | Short (6 months - 1 year)                  | London Borough of Havering                             | LLFA               | Other asset owners   | A3                     | LBH Corporate Plan 2024-2027: Enabling a resident-   | FRMP2  |
| 57                                     | ditch clearing works.  Invest in main rivers and watercourses by seeking  | Linked to previous NFM measure ('Develop a   | Boroughwide                 | Variable from £25,000 to £100,000 depending on the   | LLFA grant TRFCC Grant in Aid and  | ,  | London Borough of Havering                             | LLFA               | Other RMAs and interested stakeholders   | A3                     | focused and resilient Council  LBH Corporate Plan 2024-2027: Enabling a resident-  |  |
|  | biodiversity and natural flood management opportunities and employ a risk-based maintenant approach in the Borough.   | prioritised 5-year programme of Natural Flood  Management (NFM) projects across the borough').  Once the programme is in place, NFM projects can be implemented.       | pe                          | project  | Levy funding   |  |  |                    |  |                        | focused and resilient Council  |  |
| 58                                     | Manage and reduce flood risk by having a risk-bas maintenance regime that prioritises critical flooding   |  | Boroughwide                 | Current annual budget is £80K.   | Council maintenance budgets Service area revenue budgets   | Medium and ongoing                         | London Borough of Havering                             | LLFA               | Other flood risk and drainage asset owners (TfL, EA, Water Companies, National Highways, Network rail,   | A2                     | LBH Corporate Plan 2024-2027: Enabling a resident-<br>focused and resilient Council  | New LFRMS Measures   |
|  | locations.  | maintenance regime of watercourse and its assets within the area' and 'Carry out an assessment of potential desilting and ditch clearing works')                       |                             |  | Maintenance budgets will need to be substantially increased to accommodate rising contractor costs, deficiency of previous funding & higher risks of |  |  |                    | (etc).   |                        |  |  |
| Skills Required                        |   |  |                             |  | flooding due to climate change & urbanisation.   |  |  |                    |  |                        |  |  |
| 59                                     | Devise a professional development plan to upskill officers involved with flood risk management.   | skills are needed to produce a professional  |                             | N/A (internal officer time and potentially training budget   | LLFA grant Council training budget   |  | London Borough of Havering                             | LLFA               | Different Council departments involved in LLFA duties discharge (Highways, Planning, Climate Change).  |                        | LBH Corporate Plan 2024-2027: Enabling a resident-<br>focused and resilient Council  |  |
| 60                                     |   | eliver Upskill staff when needed and work with other RMAs line and relevant stakeholders. Attendance to relevant training offered by others including the Thames Floor |                             | N/A (internal officer time and potentially training budget   | LLFA grant Council training budget   | Medium (1 year and ongoing)                | London Borough of Havering                             | LLFA               | Different Council departments involved in LLFA duties discharge (Highways, Planning, Climate Change). External training providers.   | A2                     | LBH Corporate Plan 2024-2027: Enabling a resident-<br>focused and resilient Council  | Previous SMWP  |
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