



# Funding Application Guidance

AMP7 Surface Water Management Programme

# 1. Introduction and aims of the programme

We're working in one of the most densely populated and built-up regions in the UK, which places a lot of pressure on drainage. Without action, population growth, urban creep and climate change would increase the likelihood of sewer flooding and pollution.

We've historically focussed on engineering solutions, but we're shifting to sustainable drainage systems (SuDS) which replicate the drainage processes provided by the natural environment.

This approach can help to:

- manage the quantity or rate of runoff of surface water (and so improve flooding resilience, as well as reducing the need for overflows)
- improve the quality of surface water run-off (and so reduce the risk of pollution)
- improve the amenity of public spaces as well as wider community benefits
- help improve biodiversity and the customers' experience of their local environment

Thames Water's Surface Water Management Programme follows these central principles:

- **Need for capacity** - we want to focus on areas where we know our existing sewer systems have lower capacity. We will utilise information generated as part of our Drainage and Waste Management Plans (DWMP) programme as well as known flooding and pollution hotspots.
- **Collaboration** - we want to partner with those who are already improving the streets and places where we live, so we can achieve mutual benefits through common means. We want to learn from collaborative opportunities in AMP7 and establish a model for future collaborative working.
- **Generate public value** - this is one of Thames Water's Strategic Ambitions. We want to go beyond regulatory compliance to demonstrate long-term stewardship of the environment and deliver social good for communities.

Thank you to everyone who applied to our first Call for Projects, which closed in August 2021. We received fantastic applications and have allocated over £1.7m to fund 20 surface water management projects.

## 2. Call for Projects

We're now inviting project partners to apply for funding of surface water management projects. The Surface Water Management Programme (SWMP) funds can cover design and construction costs of projects that disconnect or attenuate surface water flows from Thames Water sewers. Our sewers include surface water, combined and foul sewers.

**The application window will be open from Monday 14<sup>th</sup> February until Monday 25<sup>th</sup> April 2022.** We're planning to allocate up to £1.5m in this second round. Please contact us if you wish to have an early discussion about your proposed scheme – we look forward to hearing from you.

## Who can apply?

You can apply for funding from us if:

- You are a:
  - public body, including local councils
  - not-for-profit organisation, including charities and environmental non-governmental organisations
  - company or other business registered with HMRC, including sole traders, community interest companies and community benefit companies
  - school, including academy trusts, parents' associations or other organisations working on behalf of a school
- You intend to complete a project that will result in rainwater being diverted away from a Thames Water sewer, or stored for a time before being released back into a sewer at a controlled rate
- Your project will be completed and operational by March 2025
- You have a clear plan for how you will ensure suitable maintenance will be carried out

## How much can I apply for?

Funding requests should be between £5,000 and £250,000. However, please note that only the best projects will be awarded the larger grants (over £100,000).

funding requests between £150,000 and £250,000 will be subject to additional assurance to ensure they are located in the high need area and to provide confidence in the scheme delivery, cost effectiveness and overall benefit.

If you wish to make a funding request exceeding £250,000, please contact us prior to making the application.

There's no limit on the number of applications from each local authority area.

The programme is seeking projects with a cost effectiveness of below £750,000 per hectare of effective contributing area disconnected or redirected from Thames Water assets. This is equivalent to £75 per m<sup>2</sup>. We encourage the use of multiple sources of funding to maximise what can be achieved within this programme and expect most applications to request less than this maximum value.

We may consider applications with a higher cost per hectare, subject to demonstrating additional benefits and depending on specific project circumstance.

## What can be the SWMP used for?

The SWMP funds will cover costs associated with the design and construction of the projects that:

- disconnect rainwater from our sewers, discharging them directly to watercourses or ground (disconnection), or
- re-direct rainwater currently discharging into our sewers through an attenuation feature before discharging back to our assets (attenuation)

All costs must be directly associated with developing the surface water management projects or surface water management element (which may be only part of a wider project). The cost could include:

- feasibility study

- surveys
- detailed design
- construction costs
- initial maintenance costs for the first year
- management of the project development and execution, including appropriate reporting and technical assurance

The SWMP funding can cover up to 100% of eligible costs, however we encouraged you to search for other sources of funding. Applications that bring multiple funding sources together are likely to score more highly. Funding requests to cover 100% of the project costs should describe why additional funding has not been sought, to ensure value for money to our customers.

### Examples of projects eligible for funding

Sustainable drainage measures include but are not limited to water butts, planters, rain gardens, green roofs, detention basins, ponds, rainwater (combined with greywater) harvesting, and permeable paving. Examples of the types of schemes we're looking to fund include:

- Incorporating raingardens into traffic calming build-outs or cycle lanes
- Downpipe disconnection into communal features, such as detention basins and swales in housing estates
- Property level SuDS such as water butts and planters
- Incorporating SWM features such as permeable paving and swales into highways improvements or resurfacing
- Surface water management to enhance wellbeing and education in schools and other public buildings, such as swales, planters and green roofs
- Rainwater harvesting for re-use, for example by a private business or a community garden
- Wetland creation in a park

We're particularly looking for experience of a range of different types of projects and partners, to help inform our long-term strategy. Projects that include the following are more likely to be successful:

- Projects that provide added benefits to people and wildlife
- Projects that include vegetation / green infrastructure and/or water re-use
- Projects that disconnect from the foul or combined sewer, that falls in an area of low sewer capacity, or with incidents of flooding or pollution
- Projects with a low cost per m<sup>2</sup> of output area

## 3. Application Timeline and Support

The application process will follow the timeline outlined in the Table 1 below:

Table 1 – Summary of Application Process Milestones

Date	Application Process Milestone
14 February 2022	<p>Applications for the SWMP open. SWMP Applications open</p> <p>The window for submission of SWMP Applications opens. Visit our website to complete and submit the online application <a href="#">form</a>. Additional information supporting your application i.e. drawings, reports, sketches should be sent to the email address: <a href="mailto:swmp.applications@thameswater.co.uk">swmp.applications@thameswater.co.uk</a></p> <p>We will endeavour to confirm receipt of your online application within the 3 working days from your submission.</p>
February – March 2022	<p>Application support – ‘How to apply?’ webinar</p> <p>We will be running a series of online events to support you with your applications. We will present the application process, scoring criteria, evaluation methodology and provide further information about how to maximise your chances of success. Each event will be followed by a Q&amp;A session. The sessions are planned on:</p> <ul style="list-style-type: none"> <li>• Monday 14 February, 1pm</li> <li>• Wednesday 2 March, 3pm</li> </ul>
February – April 2022	<p>Application support – online events</p> <p>We plan further webinars to give you an opportunity to learn more from local authorities that are implementing a range of different types of SuDS features, and to participate in a discussion with other surface water management professionals. We plan the following sessions:</p> <ul style="list-style-type: none"> <li>• Highway SuDS – date TBC</li> <li>• Wetlands and Ponds – 9<sup>th</sup> March, 1pm</li> <li>• SuDS in Schools – 28<sup>th</sup> March, 1pm</li> <li>• Housing Estates – date TBC</li> </ul>
25 <sup>th</sup> April 2022	<p>SWMP Applications submission deadline.</p> <p>By the end of this date, you need to complete and submit an online application <a href="#">form</a> and provide additional information supporting your application i.e. drawings, reports, sketches to the email address: <a href="mailto:swmp.applications@thameswater.co.uk">swmp.applications@thameswater.co.uk</a></p> <p>We will endeavour to confirm receipt of your online application and supporting documents within 1 week of submission.</p>

Date	Application Process Milestone
May 2022	<p>Application evaluation and scoring</p> <p>During this period, the eligible applications will be evaluated by team of assessors using a multi-criteria assessment methodology. Details of the Evaluation methodology and scoring criteria are included in Section 5 of this Guidance.</p> <p>We may request more information / clarification to support any statements made within the application or supporting information. We will also inform you if your application is not eligible for funding. We will expect to receive your response to any clarifications within 10 working days from our email to you. We reserve the right to stop the evaluation and reject the application if the missing information is not provided within the specified period.</p>
Early June 2022	<p>Steering Group Meeting</p> <p>All evaluated applications will be presented to the Thames Water SWMP Steering Group for acceptance. The Steering Group is comprised of Senior Thames Water staff.</p> <p>The Thames Water SWMP Steering Group will consider how the scheme aligns with the programme strategic aims to confirm which applications to fund. The Steering Group may also request additional information from the applicant.</p>
End of June 2022	<p>Application feedback</p> <p>By the end of June 2022 we will inform you via email on the outcome of your application.</p> <p>If successful, you will be asked to complete and sign a funding agreement and further discussions will take place with the SWMP team to progress funding.</p> <p>If unsuccessful, we will provide feedback on reasons why your application has not been prioritised for funding allocation.</p>

If you have any additional questions, please contact us through the email address - [swmp.applications@thameswater.co.uk](mailto:swmp.applications@thameswater.co.uk). We will endeavour to respond to to all emails within 1 week.

We are also happy to offer an additional support and hold individual conversations to discuss specific opportunities you are developing, to provide initial feedback on your potential submissions.

## 4. Application Guidance

### Application Form

The [online application form](#) has been built up in the following sections, to enable us to understand how your project fits with our programme principles and funding requirements. For further information please refer to the detailed scoring criteria in Section 5.

1. Eligibility Check
2. General Information and Contact Details
3. Need Score - is the project in an area that suffers from flooding? Will the project help to reduce flooding or pollution risk?
4. Cost Score / Catchment - how much area will be impacted by the project? Please ensure you refer to *Section 6 - Technical Guidance on Runoff Area*.
5. Cost Score / Funding – details of your funding request to SWMP and information on other funding sources.  
Information from point 4 and 5 will allow to calculate the cost per hectare of effective area removed or attenuated from the Thames Water sewer.
6. Solution Score - how well does the proposed solution align with the programme principles, including: delivering public value, collaboration, level of protection.
7. Other – space to provide additional comments to support your application and feedback on the application process
8. Submission – tell us who you are.

You will need to provide the following supporting information with your application:

- A sketch or drawing showing the proposed SuDS feature
- A sketch, area take-off diagram and/or calculation showing how the catchment area has been determined and how the effective contribution area has been calculated. Results of hydraulic modelling may be required, depending on project complexity.
- Evidence that the provided solution disconnects/attenuates surface water from Thames Water sewer system - drawings, sketches, area take-off diagrams or any other evidence clearly demonstrating the above.
- Evidence that surface water is connected to Thames Water sewer system – site photographs, GIS records, drainage plans, or connectivity surveys or Impermeable Area Survey (IAS) or dye tests or any other evidence clearly demonstrating the above.

In addition, please provide the following if appropriate to your scheme:

- initial Maintenance Statement (if not included in the application form).
- For charity, NGO or private entity applicants, we require a confirmation of your status to confirm your eligibility to apply for funding. Evidence of the organisation type may include charity registration number, company number, public body terms of reference, HMRC registration, proof of status as a legal entity.
- Letters or statement of support from project collaborators

## Summary of application questions

The online application form must be completed once it is started, the form does not allow for partial completion, saving of responses and return to the form at the later date/time. To help you preparation of your responses, the summary of the questions as stated in the application form are shown below:

### 1 Eligibility Check

1. Confirmation that you are eligible to apply for SWMP funding.

### 2 General Information and Contact Details

2. Opportunity Name
3. Opportunity Location (address with postcode, coordinates)
4. Your organisation name
5. Your organisation type
6. Contact name and contact details of lead entity
7. Do you have any additional organisations involved in this project? This may be a community group, other funding party, or another department in your local authority
8. What is the stage of the project? Just an idea; concept design; detailed design; construction; other
9. What best describes your project? highway raingardens; SuDS at a school; open attenuation (wetland, attenuation basin) in a park or other green space; SuDS in a housing estate; part of a regeneration project; new surface water sewer; underground storage tank; property level interventions - planters/water butts; permeable paving; none of the above
10. Briefly describe the scope of the SuDS elements of the project, including design criteria used i.e. rainfall depth / return period, water storage volumes.
11. Anticipated completion of detailed design
12. Anticipated construction start date
13. Anticipated completion date
14. What are the key project risks or potential showstoppers that may impact the project delivery date?
15. Is your organisation the landowner or manager of the site(s)?
16. Is planning permission required for the opportunity?
17. Will you be maintaining the asset once constructed?
18. Maintenance Statement (What are the regular activities to be undertaken, and who will be responsible?)

### 3 Need Score

19. Outline drivers of the opportunity. What need is this opportunity addressing?
20. Which of the following evidence of need do you have? Is the impact of the scheme measurable or quantifiable? If yes, please provide details (e.g. number of properties flooded, pollution incidents, flow reduction, downstream etc.). If possible, please make use of our online tools such as the Thames Water DWMP portal, which you can use to identify sewers of low capacity. Please contact us or your local system planner if you require support.
21. What type of Thames Water sewer does the area currently drain to?
22. How is the area currently connected to the Thames Water sewer (e.g. road gullies connected into the sewer)? Has this been verified?



#### 4 Cost Score / Catchment

23. What is the total area of the catchment from which flows are being disconnected or attenuated from the TWUL's network? (Refer to guidance document for further information).
24. What method has been used to estimate the catchment area?
25. Hand calculation: Please provide the catchment runoff coefficient, and for each area a description of the catchment e.g. urban, rural, mixed (Refer to guidance document for further information).
26. Modelled solution: What is the effective catchment area from which flows are being disconnected or attenuated by implementation of this opportunity? Include assumptions used in the model. (Refer to guidance document for further information).
27. What assumptions did you make when calculating your effective catchment area?
28. Approximately how much water storage volume do you expect to provide (in m<sup>3</sup>)?
29. What rainfall depth have you used when designing your volume?

#### 5 Cost Score / Funding

30. What is the amount of funding sought from TWUL SWMP? (TWUL SWMP funding VAT inclusive, if VAT is applicable)
31. What is the estimated overall scheme budget?
32. What is the estimated construction cost of the surface water management element(s) only, excluding design and management costs?
33. If you are successful in this funding application, will Thames Water be funding at least 50% of the construction cost of the SuDS features associated with the stated catchment area?
34. What other funding sources have been sought and what amount of funding has been secured to date?
35. Are there other funding sources that are still to be explored? Would securing TWUL SWMP funding be helpful in securing funding from other sources?

#### 6 Solution Score

36. Will your project include any education (including signage) or volunteering component?
37. Does your project offer additional public value due to one of the following factors: Enhanced amenity space with features such as benches, play features, community garden, cycle lanes; Education setting e.g. school; Health setting e.g. hospital; High quality habitat creation to enhance biodiversity
38. What types of SuDS solutions are going to be constructed? Majority Blue-Green (e.g. raingarden, pond, swale, green roof, attenuation basin); Majority Grey Infrastructure (e.g. new surface water sewer, storage tank, permeable paving); Equal mix of Blue-Green and Grey Infrastructure;
39. Does the opportunity include elements of rainwater re-use? E.g. rainwater harvesting, water butts
40. What happens to the rainwater after it leaves the new SuDS feature? Does rainwater flow back into Thames Water sewer system?

#### 7 Other

41. Please provide any other additional comments that support this application.

#### 8 Submission

42. Please provide name and date.

## 5. Application evaluation process

### Confirmation of eligibility status

The Thames Water SWMP team will screen submitted application to identify if:

- the project is eligible i.e. if it disconnects or attenuates surface water flows from the Thames Water assets,
- the applicant is eligible to apply for funding,
- all required information and supporting documentation has been provided,
- the required supporting information is included.

Note we reserve the right to reject the application if the supporting documents are not provided.

### Application evaluation and scoring

The Thames Water SWMP team will evaluate application using a multi-criteria assessment methodology developed for the programme and assign scoring accordingly.

Your project will be scored against the following three programme principles:

1. Need Score - is the project in an area that suffers from flooding? Will it help to reduce flooding or pollution risk?
2. Cost Score - what is the cost per hectare of effective area removed or attenuated from the Thames Water sewer?
3. Solution Score - how well does the proposed solution align with the programme principles, including: delivering public value, collaboration, level of protection

$$\text{Overall Score} = (\text{Need Score} + \text{Cost Score}) \times \text{Solution Score}$$

Table 2 – Summary of Score Ranges

	Overall Score	Need Score	Cost Score	Solution Score
Range	0 - 72	0 - 4	0 - 5	2 - 8
Minimum for SWMP funding	18	1	1	4

Scoring ranges:

- If your overall score is <18 points, we are unlikely to be able to provide funding, except where other options have been ruled out
- You will need to score a minimum of one point on Need – this is to ensure we only work where there is a need to take water out of our sewers
- If your cost score is 3 points or above, you have a high chance of receiving funding
- A solution score of 4 or greater is required. This will be achieved with solutions that demonstrate strong adherence to the pillars of SuDS design, i.e. utilise green rather than grey infrastructure, enhance amenity and habitat, and may include an element of water reuse, as well as schemes that are delivered in partnership and that store sufficient quantity of water relative to the catchment area.

While applicants may provide an initial assessment of the scoring, the final scoring will be made by the SWMP team.

## Detailed Scoring Criteria

### 1. Need Score

Each opportunity will be assessed on 'Need for capacity' principle (Scoring range: 0 – 4 points)  
Note maximum score of 2 points for surface water sewers.

N1. Sewer type (Scoring range: 0 - 1 points):

- a. Combined or foul sewer – 1 point
- b. Surface water sewer – 0 points

N2. Capacity assessment (Scoring range: 0 - 1 points):

Use DWMP Practitioner Portal – review incidents within catchment local to the scheme (max 1km - vary radius according to size of scheme and sewer), score 1 point if:

- DWMP CAF surcharge – up to 2025
- Modelled DWMP Flooding – Internal or External

N3. Flooding assessment (Scoring range: 0 - 1 points):

Score 1 point if:

- Historical Flooding
  - o SFHD internal Hydraulic
  - o SFHD external Hydraulic
- Anecdotal flooding reports supported by stakeholder evidence
- EA flood maps – surface water flood risk
- Modelled flooding supported by modelling evidence

N4. Severity/consequence assessment (Scoring range: 0 – 1 points):

Score 1 point if:

- Flood incidents for combined/foul/surface water sewers - significant flooding incidents (actual or modelled) e.g. affecting more than 10 properties
- Pollution for combined/foul sewers:
  - o Close to CSO – up to approx. 1km
  - o Pollution incidents:  
[https://thameswater.sharepoint.com/:x:/s/TidewaySystemPlanning/Ef2RatWrl5NKrWjkqyQSELgBV3nCfp85Sn-m9Fw13TP\\_1Q?e=qO7BM7](https://thameswater.sharepoint.com/:x:/s/TidewaySystemPlanning/Ef2RatWrl5NKrWjkqyQSELgBV3nCfp85Sn-m9Fw13TP_1Q?e=qO7BM7)
- *CS01 Treatment works compliance - reducing flows to treatment works that are at / near capacity*

### 2. Cost Score

Cost effectiveness based on the effective contributing area (£/ha); (scoring range: 0 - 5 points);

- a. Over £1m - 0 points
- b. Very Low - £750k-£999.9k - 1 point
- c. Low - £500-£749.9k - 2 points
- d. Medium - £250-£499.9k - 3 points
- e. High - £50-£249.9k - 4 points
- f. Very High <£49.9k - 5 points

We are seeking schemes with a cost effectiveness of below £750,000 per hectare of effective contributing area disconnected or redirected from Thames Water assets. This is equivalent to £75

per m<sup>2</sup>. We encourage the use of multiple sources of funding to maximise what can be achieved within this programme and expect most applications to request less than this maximum value. Applications with a higher cost per hectare may be considered, subject to demonstrating additional benefits and depending on specific project circumstance.

### 3. Solution Score

The proposed project will be scored on four aspects, that reflect the scheme's alignment with SWM programme principles:

S1. Collaboration (scoring range: 0 - 1 points):

- a. Score 1 point where lead delivery partner (applicant) brings additional party into partnership. Can be contribution in kind (e.g. Friends society to help with maintenance) or different local authority department that will provide tangible support for the project (funds or help maintenance).

S2. Location / Additional public value (scoring range: 0-1 points):

- a. Score 1 point for project that brings additional public realm enhancement to the traditional 'drainage' projects, consider:
  - i. Amenity and recreation: enhancing public spaces with amenity features such as benches, cycle lanes, etc (note that for example a detention basin in a park or isolated raingardens do not fulfil these criteria without additional amenity enhancement features)
  - ii. Education setting e.g. school, with educational element
  - iii. Health setting e.g. hospital with health focus
  - iv. High quality habitat creation to enhance biodiversity

S3. SWM Solution Type (scoring range: 1 - 3 points):

- a. Majority Blue-Green Infrastructure (BGI) - high quality vegetated SuDS such as raingarden, green roof, attenuation pond with added features such as wetlands, parks enhancement – 3 points
- b. Majority Grey Infrastructure (GI) - solutions including permeable paving, underground storage, water butt, TW planter – 1 point
- c. Majority Grey Infrastructure (GI) with re-use – if grey solutions include dominant water re-use element (i.e. making rainwater available for human use to reduce clean water demand, i.e. water butts or greywater system) – 2 points
- d. Equal mix of Blue-Green Infrastructure (BGI) and Majority Grey Infrastructure (GI) – projects that don't have dominant feature; additional point can be scored, if majority of Grey Infrastructure includes re-use element – 2 points.

S4. SWM Method score based on the solution outlet configuration (scoring range: 1 - 3 points):

- a. Disconnection - removes surface water from the sewer network by conveying it elsewhere (i.e. infiltration or to watercourse). No connection to the sewer network is required (or only an overflow connection is required for extreme weather i.e. 1 in 30 year storm or above) – 3 points.
- b. Attenuation - 'calms' the sewer network by reducing peak storm flows entering the sewer network, but a connection to the sewer network is required – 2 points.
- c. Exceedance - normal flows remain in the sewer; in storm events, exceedance flows are attenuated – 1 point.

## 6. Technical Guidance

### Design Standards

It is recommended that all design should comply to CIRIA C753 – The SuDS Manual & relevant British Standards. It is recommended that the minimum design return period for sustainable drainage system is 1 in 10-year return period. Ideally, solutions will be sized to attenuate a 1 in 30 storm, plus allowance for climate change. Solutions with lower return periods will be considered, particularly where cost effectiveness is good and/or additional benefits will be achieved.

The following resources provide useful further guidance:

[GLA Sustainable Drainage Guide](#)

[SuDS in London - a design guide](#)

### Funding amount and “Meaningful Contribution”

As part of the application, we will ask for the overall construction costs associated with removal/attenuation of the stated area (hectares). This is to check if we are contributing at least 50% of the construction cost. If we are not, we will not be able to claim the full area against our performance commitment to Ofwat.

Thames Water will claim the amount of benefit from the project - ‘claimed effective contributing area’ or ‘output area’ in proportion to the financial or non-financial contribution provided by Thames Water. This will be related to the proportion of the capital cost of those elements required to disconnect, divert and/or attenuate surface water that Thames Water’s contribution will cover. For example, the overall scheme cost is £1m, the cost of SuDS is £100,000, and the funding ask from Thames Water is £60,000. Thames Water would record all of the output area of the project. If however the funding ask was £20,000, Thames Water would only record 20% of the output area

### Technical Guidance on Runoff Area

The performance of the SWMP is measured by ‘effective contributing area’ of a catchment (in hectares) which is either disconnected from the Thames Water assets or where the flow of rainwater is attenuated.

‘Effective contributing area’ is determined by the application of appropriate factors/coefficients that take into account catchment characteristics and associated losses.

Run off coefficients can be found in Table 3 and Table 4 below. These apply mostly to simple/small semi urbanised to urbanised catchments.

Table 3 – Runoff coefficient values for catchments less than 4,000m<sup>2</sup>

Surface type	Runoff coefficient	Notes
Paved area	0.70	Mix of pavements, drives, other paved surfaces
Road	0.90	Well drained roads only
Roofs	0.85	
Lawns	0.20	
Parks and gardens	0.15	

Table 4 – Runoff coefficient values for catchments greater than 4,000m<sup>2</sup>

Area type	Runoff coefficient
City centre	0.70-0.95
Suburban business	0.50-0.70
Industrial	0.50-0.90
Residential	0.30-0.70
Parks and gardens	0.05-0.30

Use of alternative coefficients would require provision of supporting information i.e. calculation, modelling to justify coefficient value. An example sketch showing how to calculate the effective contributing area of a catchment under 4,000m<sup>2</sup> is shown below in Figure 1.

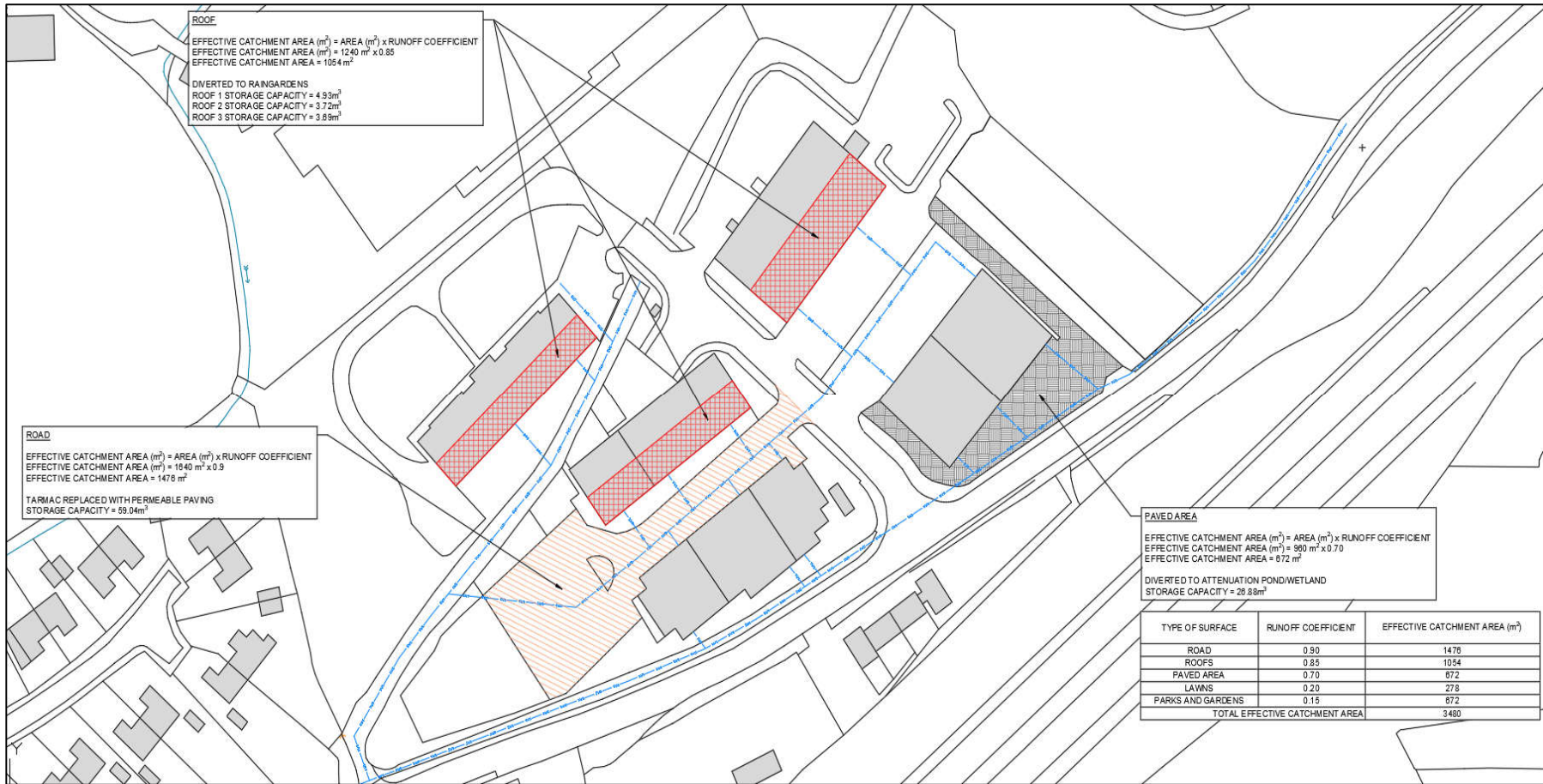


Figure 1 – Example of calculation of effective catchment area

For complex catchments, modelling or other established methodologies may be required to calculate the 'effective contributing area'.

For the large surface water attenuation projects (wetlands, attenuation basins) calculation of the effective contributing catchment area should consider:

- the catchment characteristics by application of relevant runoff co-efficient. The run-off co-efficient should be extracted from the hydraulic model used in the design. A short justification for use of the particular value of the co-efficient will be required.

Example for calculation of the equivalent area for residential area:

Catchment size - ha	Runoff coefficient	Equivalent catchment area - ha
24	0.5	12

- benefits to the Thames Water sewer in terms of the i.e. reduction in the peak flow in the sewer network downstream of the attenuation feature. Reduction in the peak flow (the absolute and percentage values) should be estimated for the critical rainfall duration and the following return period rainfall events: 1in2yr, 1in5yr, 1in10yr, 1in30yr and 1in30yr. We would be happy to accept different return period rainfall events, provided that at least five different return periods are included. The average percentage of the peak flow reduction should be used to calculate the effective catchment area.

Example of the calculations of reduction in the peak flow downstream of the proposed attenuation feature for different return period rainfall events:

	1in2yr	1in5yr	1in10yr	1in30yr	1in30yr+cc	Average
Pre-project flow – m <sup>3</sup> /s	0.49	0.61	0.7	0.71	0.74	
Post-project flow – m <sup>3</sup> /s	0.14	0.18	0.28	0.41	0.43	
Reduction in rate – m <sup>3</sup> /s	0.35	0.43	0.42	0.30	0.31	<b>0.36</b>
Reduction in flow rate - %	72%	70%	60%	42%	42%	<b>57%</b>

The overall benefit to the Thames Water sewer network as a result of the construction of the attenuation feature will be calculated as multiplication of the average predicted percentage peak flow reduction and the total equivalent area draining into the storm sewer at the connection point to the attenuation feature.



Example:

Equivalent catchment area - ha	Average reduction in the flow rate	Effective catchment area - ha
12	57%	6.84

For projects which attenuate excess of the flow only, the effective catchment area can be calculated based using comparison between the runoff volume from 1 hectare of the contributing area and total volume of overflow to attenuation feature for various rainfall events and durations. This method considers catchment characteristic and volume of the spill.

The calculation should be undertaken for the critical rainfall duration and the following return period rainfall events: 1in2yr, 1in5yr, 1in10yr, 1in30yr and 1in30yr. We would be happy to accept different return period rainfall events, provided that at least five different return periods are included.

The runoff volume form 1ha can be calculated using the following equation:

$$\text{Volume} = \text{catchment area} \times \text{run-off coefficient} \times \text{rainfall depth}$$

The runoff coefficient should reflect the catchment characteristics and can be either extracted from the model or from Table 4 of this Guidance.

Rainfall depth should be taken for the critical rainfall duration.

Table below shows example of the calculations for residential area (assumed run-off coefficient – 0.5)

	1in2yr	1in5yr	1in10yr	1in30yr	1in30yr+cc	<b>Average</b>
Volume spilled to attenuation feature - m <sup>3</sup>	1028	2040	3584	5041	7206	
Rainfall depth - mm	12.53	19.94	24.91	33.94	47.52	
1-ha run off volume - m <sup>3</sup>	63	100	125	170	238	
Effective catchment area attenuated - ha	16.41	20.42	28.78	29.71	30.33	<b>25.13</b>

