# Basement Assessment User Guide

## 1. Basement Assessment Process:

This guidance applies to all development proposals that feature basements, cellars, or other subsurface structures (collectively termed as 'basements' within this document). This includes new structures and extensions to existing structures. This document is designed to guide users through the requirements of the Basement Assessment process for a range of environmental impacts. This guide should be used in conjunction with the London Borough of Richmond upon Thames' Strategic Flood Risk Assessment (SFRA) and associated Further Groundwater Investigations document.

Planning applications which feature basements will need to provide supporting information regarding the potential level of impact the proposed development will have. The applicant will need to show that the proposal will not adversely impact the site, neighbouring properties, and the wider natural environment. This includes impacts to groundwater and water transferred via throughflow.

Applications may require a Screening Assessment (as a minimum) depending on the location of the proposed development. See Section 3 for further information.

## 2. Stages of a Basement Assessment:

The Basement Assessment process needs to enable the London Borough of Richmond upon Thames to assess the potential impacts of a proposed subsurface development. Depending on the predicted level of impact, applicants will need to produce and submit information in line with the following stages of the Basement Assessment process. All documentation must be provided within the proposed development's planning application submission.

1. **Screening Assessment** – A Screening Assessment is used to identify any potential matters that may have an adverse impact and determine if a Basement Impact Assessment is required. If the answer to any of the screening questions (see Section 4) is "yes", or is currently unknown, matters relating to that question will need to be addressed as part of a Basement Impact Assessment. Accompanying information to justify responses included within the Screening Assessment should be provided and signed off by the chartered professional who carried out the assessments for the supporting evidence (see Section 6).

Ahead of preparing a Basement Impact Assessment, a scoping step should be carried out to determine the extent of the potential impacts identified as part of the Screening Assessment. Scoping should be used to set the boundaries of the Basement Impact Assessment and establish what the assessment will address. Additional information may be collected to help with this process. To further gain a better understanding of the site and the immediate area, desktop, and field surveys (where required) should be carried out. The type and degree of such site investigations carried out is dependent on what was identified as part of the Screening Assessment. These will support the Basement Impact Assessment.

2. **Basement Impact Assessment** – The Basement Impact Assessment should evaluate the potential direct and indirect impacts of the proposed development. It is required that a Basement Impact Assessment is carried out and signed off by a chartered professional, depending on the type of expertise required (see Section 5 and Section 6).

Whether it is a Screening Assessment or a Basement Impact Assessment, the London Borough of Richmond upon Thames will rely on the professional integrity of the person signing off the assessment to ensure that the construction of the basement can be undertaken safely. To support with their decision making, the London Borough of Richmond upon Thames may choose to consult, at the applicant's expense, an independent chartered structural engineer with expertise in historic structures for specific cases where particularly vulnerable historic buildings or structures may be affected. Further consultation may also be sought from an independent chartered professional or specialist regarding any of the three categories covered by the Screening Assessment. This would normally be carried out as part of the consideration of the planning application.

## 3. Screening Assessment Guidance

The following steps explain how users can identify whether a proposed development requires the submission of a Screening Assessment during the planning process.

### Step 1:

Determine through the London Borough of Richmond upon Thames' SFRA map if the proposed property falls within one of the two following borough designations:

- an area with >= 25% susceptibility to groundwater flooding
- one of the four throughflow catchment areas

If the proposed development falls within one (or both) of these two designations, and contains a basement, then the applicant needs to complete a Screening Assessment.

### Step 2:

The type of information required within a Screening Assessment is determined by the answers to the set of questions set out in Section 4 of this User Guide.

For all questions where the response is "yes", or where the answer is currently unknown, these matters should be taken forward and investigated as part of the Basement Impact Assessment. Questions where the response is "no" should have accompanying information / supporting evidence to justify the response, structured within a Screening Assessment document that addresses each of the questions. For further guidance on the requirements of a Basement Impact Assessment, see Section 5.

### Step 3:

In instances where the accompanying information / supporting evidence provided as part of the Screening Assessment was undertaken by a chartered professional, the information should be signed off by the specialist who carried out the works (see Section 6). A completed version of the form should be provided as part of the Screening Assessment to confirm that the supporting information provided aligns with the answers provided in response to the Screening Assessment questions.

# 4. Screening Assessment Questions

The purpose of the Screening Assessment is to identify if there are any potential issues which would require a more detailed investigation into the suitability of a proposed development due to groundwater influenced flood risk factors. If so, a Basement Impact Assessment should be carried out. To identify if this is required, the following categories of information should be covered as part of the Screening Assessment:

- Subterranean characteristics
- Land stability (including site slope)
- Flood risk and drainage (including throughflow, groundwater and surface water)

Analysis undertaken by the applicant should be based on the proposed development site's characteristics and focus on the impact on the site, neighbouring properties, and the wider natural environment. The following questions, split into the above three information categories, should also be addressed within the Screening Assessment:

## Subterranean Characteristics

- Does the recorded water table extend above the base of the proposed subsurface structure?
- Is the proposed subsurface development structure within 100m of a watercourse or spring line?
- Are infiltration methods proposed as part of the site's drainage strategy?
- Does the proposed excavation during the construction phase extend below the local water table level or spring line (if applicable)?
- Is the most shallow geological strata at the site London Clay?
- Is the site underlain by an aquifer and/or permeable geology?

## Land Stability

- Does the site, or neighbouring area, topography include slopes that are greater than 7˚?
- Will changes to the site's topography result in slopes that are greater than 7˚?
- Will the proposed subsurface structure extend significantly deeper underground compared to the foundations of the neighbouring properties?
- Will the implementation of the proposed subsurface structure require any trees to be felled or uprooted?
- Has the ground at the site been previously worked?
- Is the site within the vicinity of any tunnels or railway lines?

## Flood Risk and Drainage

- Will the proposed subsurface development result in a change in impermeable area coverage on the site?
- Will the proposed subsurface development impact the flow profile of throughflow, surface water or groundwater to downstream areas?
- Will the proposed subsurface development increase throughflow or groundwater flood risk to neighbouring properties?

As part of answering the Screening Assessment questions, applicants are required to provide information to justify their answers. Examples of information that is expected as part of the Screening Assessment include, but is not limited to:

- Description of the proposed basement, cellar, or other subsurface structure development.
- Construction methods proposed.

- Characteristics of the site, including geological information (bedrock, superficial deposits, and aquifer confirmation) and topographical information.
- Site borehole information with water levels. Historical borehole data from sources such as the British Geological Survey may be acceptable to help justify answers provided within the 'Subterranean Characteristics' section of the Screening Assessment. If historical borehole data is used, the borehole location must be within 100m of the site and have been conducted within the last 20 years to best capture the current local conditions. However, singular borehole measurements may not provide information on what subterranean conditions might look like at a different time in the year. Groundwater flow and throughflow may be subjected to seasonal influences. Therefore, it will be necessary to monitor subterranean water levels over a period of time in areas that may be more susceptible to groundwater and throughflow. For further information on monitoring subterranean water level conditions as part of an impact assessment, see Section 5.
- Characteristics of potential impacts (including the impact on soils, water quality and hydrology).
- Details of mitigation measures (where appropriate).

## 5. Basement Impact Assessment

For all Screening Assessment questions where the response is "yes", or where the answer is currently unknown, these matters should be taken forward and investigated as part of the Basement Impact Assessment. Depending on what categories of information which need to be covered, the Basement Impact Assessments must be carried out by a chartered professional who can carry out the required assessment(s). Examples of specialists that have the required skills and qualifications to carry out assessments necessary for a Basement Impact Assessment include:

- Civil engineer
- Geotechnical specialist
- Geologist
- Hydrologist
- Hydrogeologist

Guidance provided under 'Structural Impact Assessments' as part of the Good Practice Guide on Basement Developments (2015) should be followed to produce a Basement Impact Assessment. It must include a detailed geotechnical site investigation, site plans outlining the subsurface structure, and engineering information detailing the potential impacts of the proposed development. Depending on the matters flagged up as part of the Screening Assessment, other content that may be included or referenced as part of the Basement Impact Assessment include a:

- Flood Risk Assessment
- Demolition and Construction Management Plan
- Site Waste Management Plan
- BREEAM Assessment
- Environmental Impact Assessment / Environmental Statement

The Basement Impact Assessment should be signed off by the specialist who carried out the investigatory works (see Section 6). The submission should also demonstrate that the level of risk posed to neighbouring properties and the wider environment is low. It must also include, but is not limited to, the following details:

- Detailed borehole information on-site or from nearby to the development site. At least two data recordings should take place within at least a 12 month period to demonstrate any potential seasonal variations. As subterranean water conditions are subject to various seasonal and yearly influences, it is important to monitor any potential changes over a period of time. The subterranean measurements should identify the geological conditions on or close to the development site, the infiltration potential, and the height of any local groundwater.
- Mitigation if the identified potential impacts of the proposed subsurface development are not acceptable. If, for example, the assessment identifies that the proposed development may result in water ingress to the new development and/or to neighbouring properties, then mitigation measures should be proposed to reduce and/or alleviate the risk of flooding. Flood risk must not be worsened as a result of the proposed development. Examples of flood risk mitigation include, but are not limited to, the following:
    - Underground corridors with a high permeability
    - Controlled subsurface structure drainage systems (including pumps)

# 6. Site and Assessment Verification Form

This Site and Assessment Verification form should be completed and submitted as part of the planning application. The 'Chartered Professional Verification' table should be completed by the specialist that undertook the required assessment(s) (Screening Assessment and / or Basement Impact Assessment). If chartered professionals from different expertise areas carried out parts of the assessment(s), please ensure that separate Site and Assessment Verification forms are completed and submitted.

## Site Details

| Site Details | Applicant Information |
|---|---|
| **Site name** | |
| **Planning application reference (if applicable)** | |
| **Address & postcode** | |
| **Brief description of the proposed works** | |
| **Geology type** | |
| **Presence of aquifer?** | |
| **Total site area (Ha)** | |
| **Is the site currently known to be at risk of flooding from any sources?** | |

## Chartered Professional Verification

| Professional Details | Applicant Information |
|---|---|
| **Name** | |
| **Profession / area of expertise** | |
| **Chartered institution and membership level** | |
| **Brief description of assessment involvement** | |
| **Brief summary of the assessment results** | |
| **Declaration of assessment results** | |
| **Signature** | |