# The British Museum
# East Road Building
# Flood Risk Assessment

## Prepared for
## The British Museum

December 2023

Alan Baxter

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# 1.0 Introduction

The British Museum has appointed Alan Baxter Ltd (ABA) to prepare a Flood Risk Assessment (FRA) for planning in relation to the construction of the new East Road Building (ERB) on the Bloomsbury Estate in the London borough of Camden.

# 2.0 Existing Site

The site is located in the north-east corner of the wider British Museum site in Bloomsbury, London. It is positioned between the main Museum building and the backs of the Montague Street terraced houses (known as the Perimeter Properties). The existing is a single storey building containing workshop spaces which covers the majority of the footprint of the new building, with hard landscaping covering the rest of the footprint.

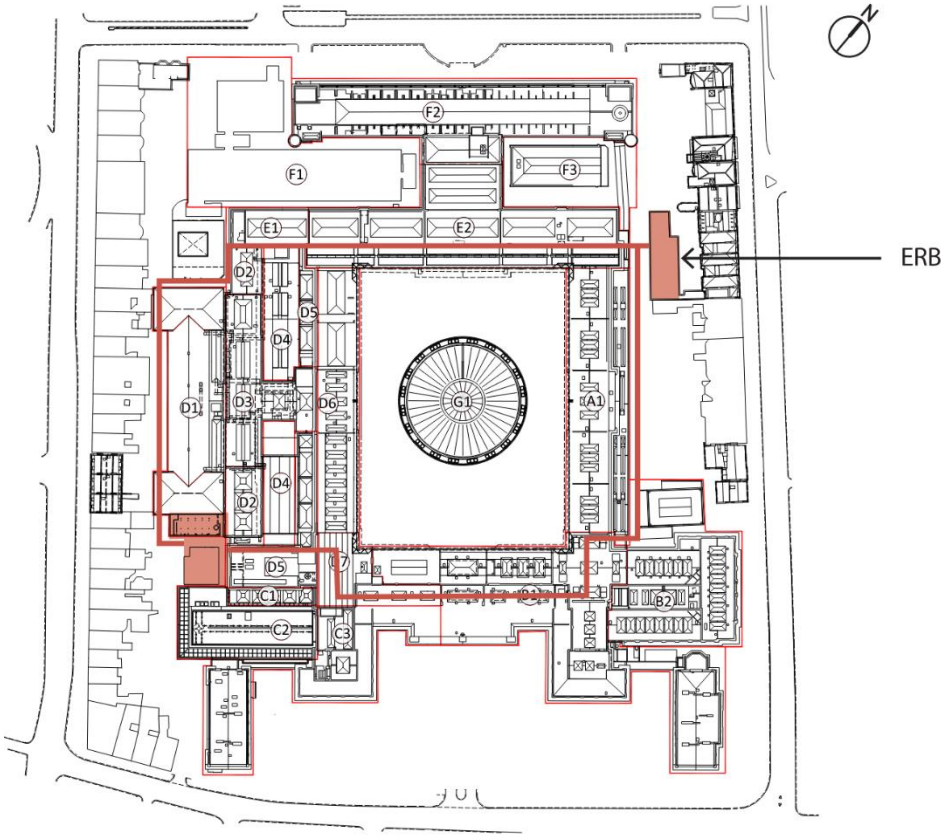


*Figure 01 – Existing Site Plan*

# 3.0 Proposed Works

The proposed scheme involves replacing the existing single storey building with a new building of a similar footprint (0.04 hectares) with three storeys. It will have a single storey basement, ground floor (shown in Figure 02) and a first floor over part of the footprint. The new building will contain plant, storage and workshop spaces.

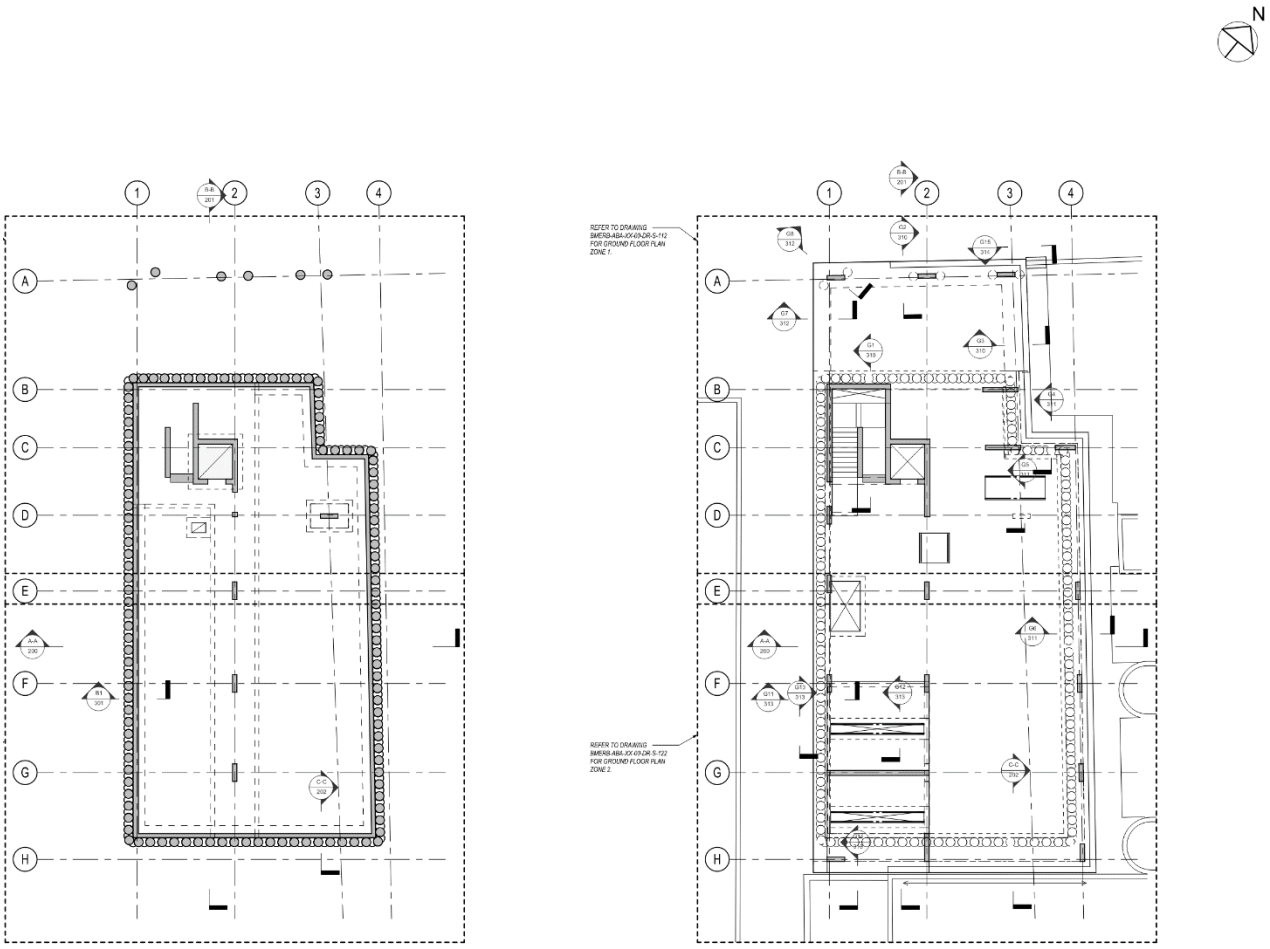


*Figure 02 – Proposed Basement and Ground Floor Plans*

# 4.0 Flood Risk Considerations

As part of this review the following potential sources of flooding have been considered.

## 4.1 Fluvial Flooding

Figure 03 shows the fluvial flood risk map from the ".Gov" website. The site is shown to be in Flood Zone 1 and is approximately 1km away from the nearest area of elevated fluvial flood risk. As such the site is not considered to be at a significant risk of fluvial flooding.

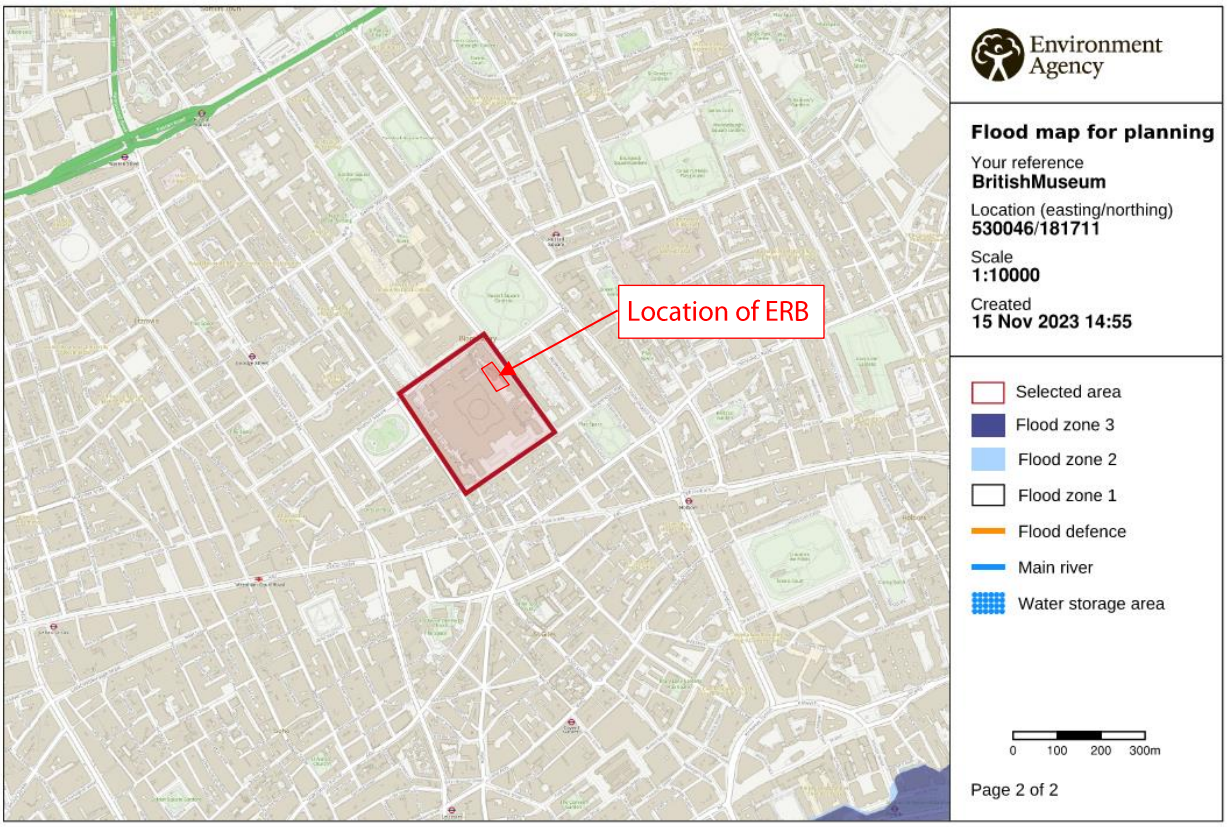



*Figure 03 - Fluvial Flood Risk Map from .Gov website.*

## 4.2 Surface Water Flooding

Figures 04 and 05 show the surface water flood map from the ".Gov" website and the London Borough of Camden Strategic Flood Risk Assessment respectively. These maps show the theoretical areas that surface water might be expected to occur during an extreme rainfall event once the below ground drainage infrastructure has been overwhelmed. They indicate an elevated risk of flooding in some parts of the British Museum site, with a 'Medium' risk of flooding in the vicinity of the ERB site, which would theoretically pond in the lowest area of the northeast part of the British Museum site. No surface water flows are shown crossing the site.


*Figure 04 - Surface Water Flood Risk Map from .Gov Website*

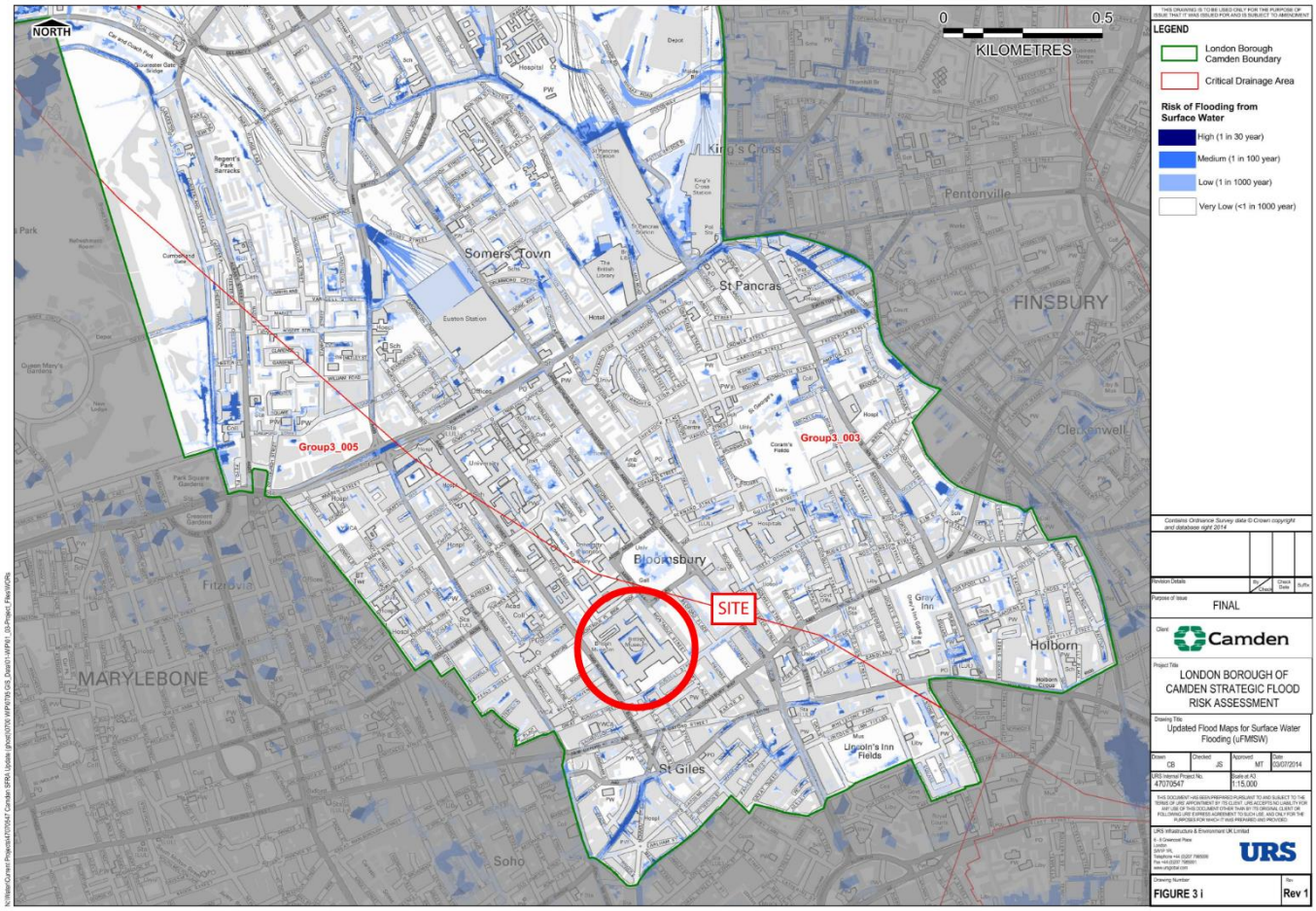


*Figure 05 - Surface Water Flood Risk Map from London Borough of Camden Strategic Flood Risk Assessment*

A more detailed review of the local topography has been carried out, using the detailed topographic surveys available for the Museum site. This shows that it is unlikely that surface water would drain towards the East Road Building site in the event of an extreme rainfall event where the local sewer network is overwhelmed. Surface water flowing south from Montague Place and north from along the East Road would most likely drain west down the ramp towards the WCEC basement (see Figure 06). This is consistent with anecdotal evidence from the Museum maintenance staff, who have noted that the WCEC basement has been subject to surface water buildup during periods of heavy rainfall.

If the below ground drainage on the site was not able to drain water away, water would initially tend to flow away from ERB down the steep ramp to the WCEC basement. A significant volume of water would need to collect here before surface flooding on the ERB would occur. A such, surface water flooding to the ERB is unlikely; however, if surface water flooding was to occur, the basement would be at increased risk of flooding. Refer to Section 5 for details of how this residual risk will be mitigated.

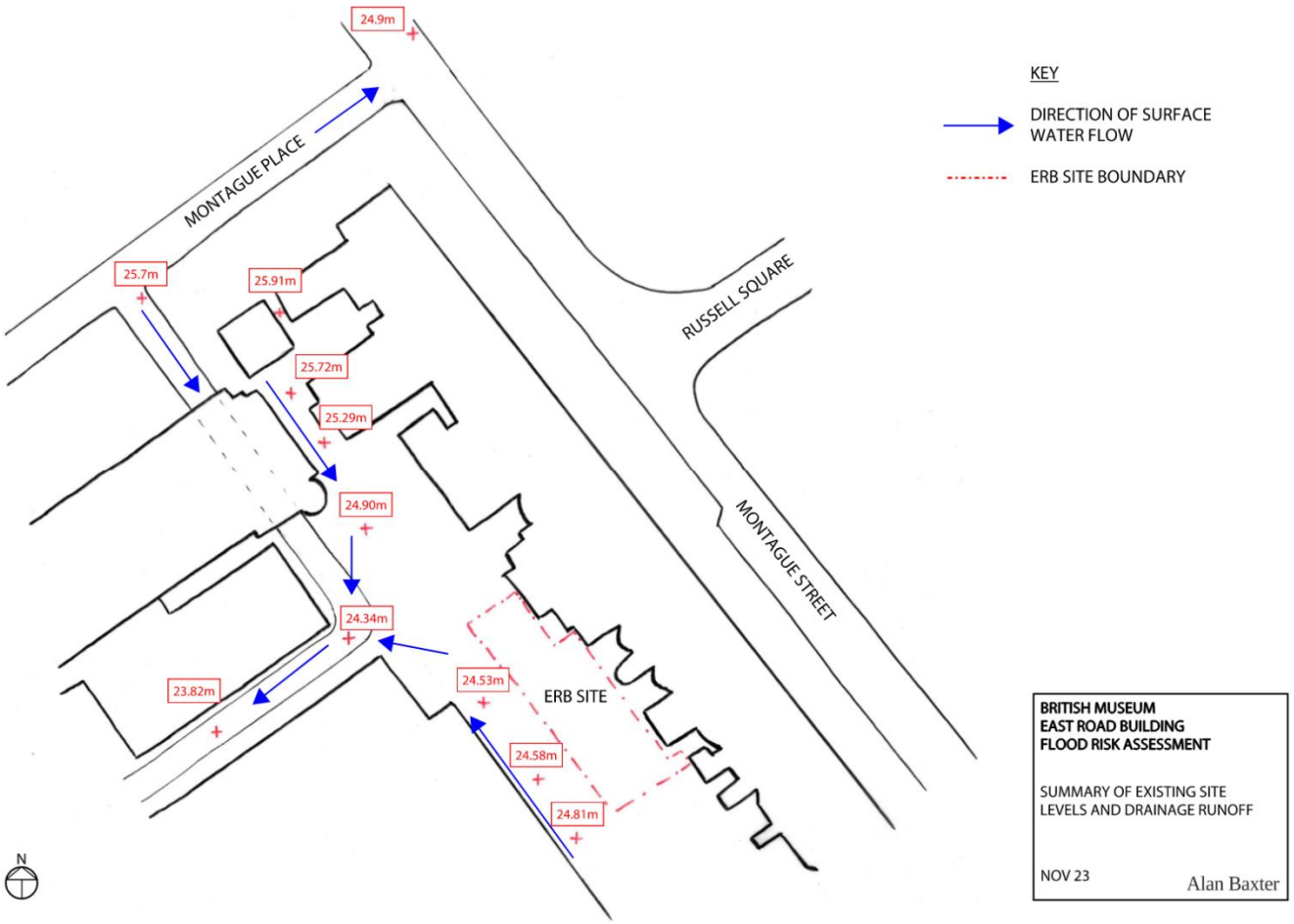


*Figure 06 - Summary of Existing Site Levels and Drainage Runoff*

## 4.3 Reservoir Flooding

Figure 07 shows the reservoir flood risk map from "the .Gov" website. This map indicates the potential extent of flooding that could occur if there was a breach or overtopping of reservoirs upstream in the catchment. No reservoir flooding is shown within the vicinity of the site.

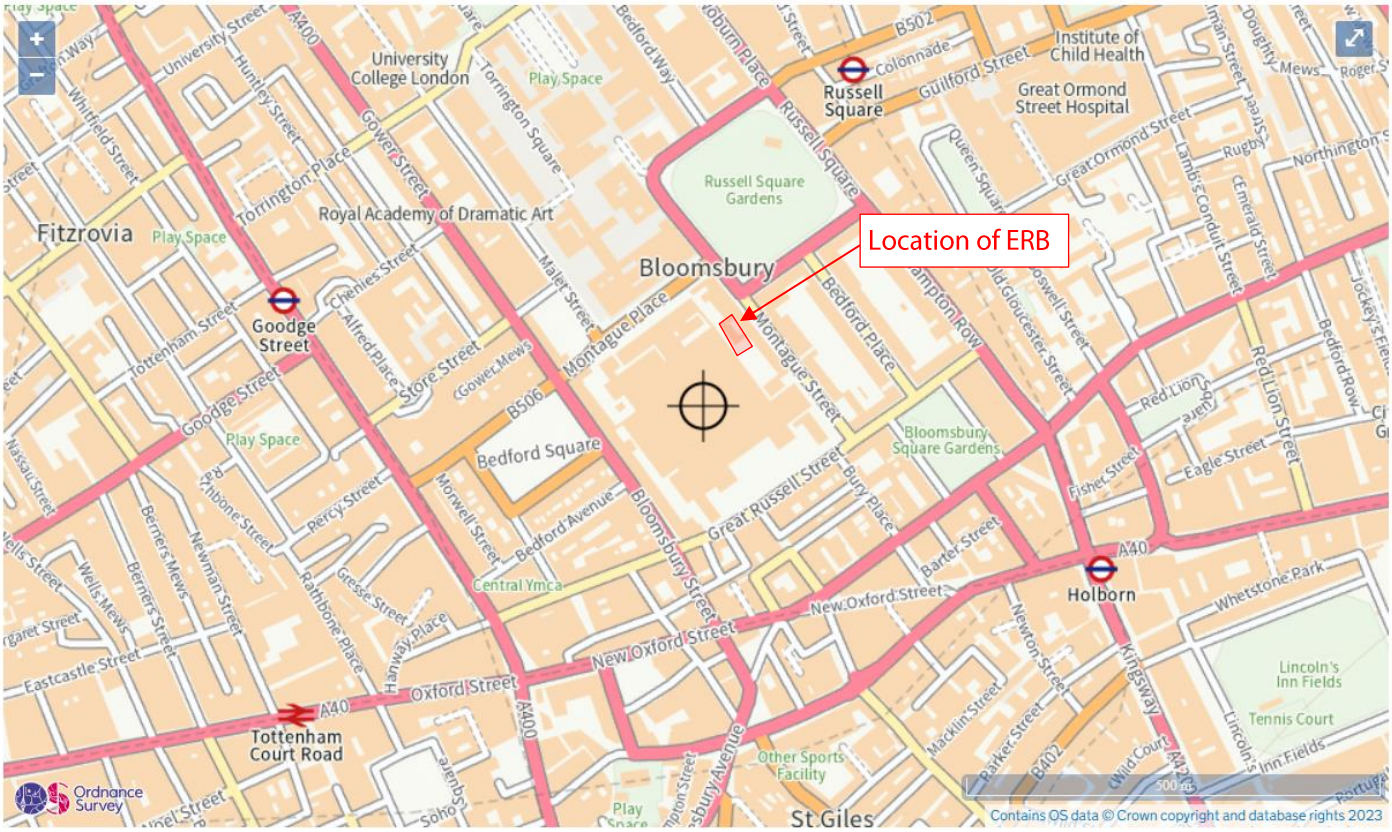


*Figure 07 - Reservoir Flood Risk Map from .Gov Website*

## 4.4 Groundwater Flooding

Figure 08 shows the London Borough of Camden's map indicating areas where there is a risk of elevated groundwater levels and recorded incidence of groundwater flooding. The ground conditions comprise a layer of previously disturbed ground over sand and gravel over clay. The basement will sit in the gravel layer. Groundwater is present near the bottom of the gravel layer.

The site is not shown to be in an area where there are permeable superficial deposits with an increased risk of ground water flooding, although there is an area of increased susceptibility in the adjacent Russell Square.

The proposed basement waterproofing strategy for the new ERB, developed by Wright and Wright Architects, will be designed to prevent groundwater penetrating the basement and the risk of groundwater flooding is therefore low.

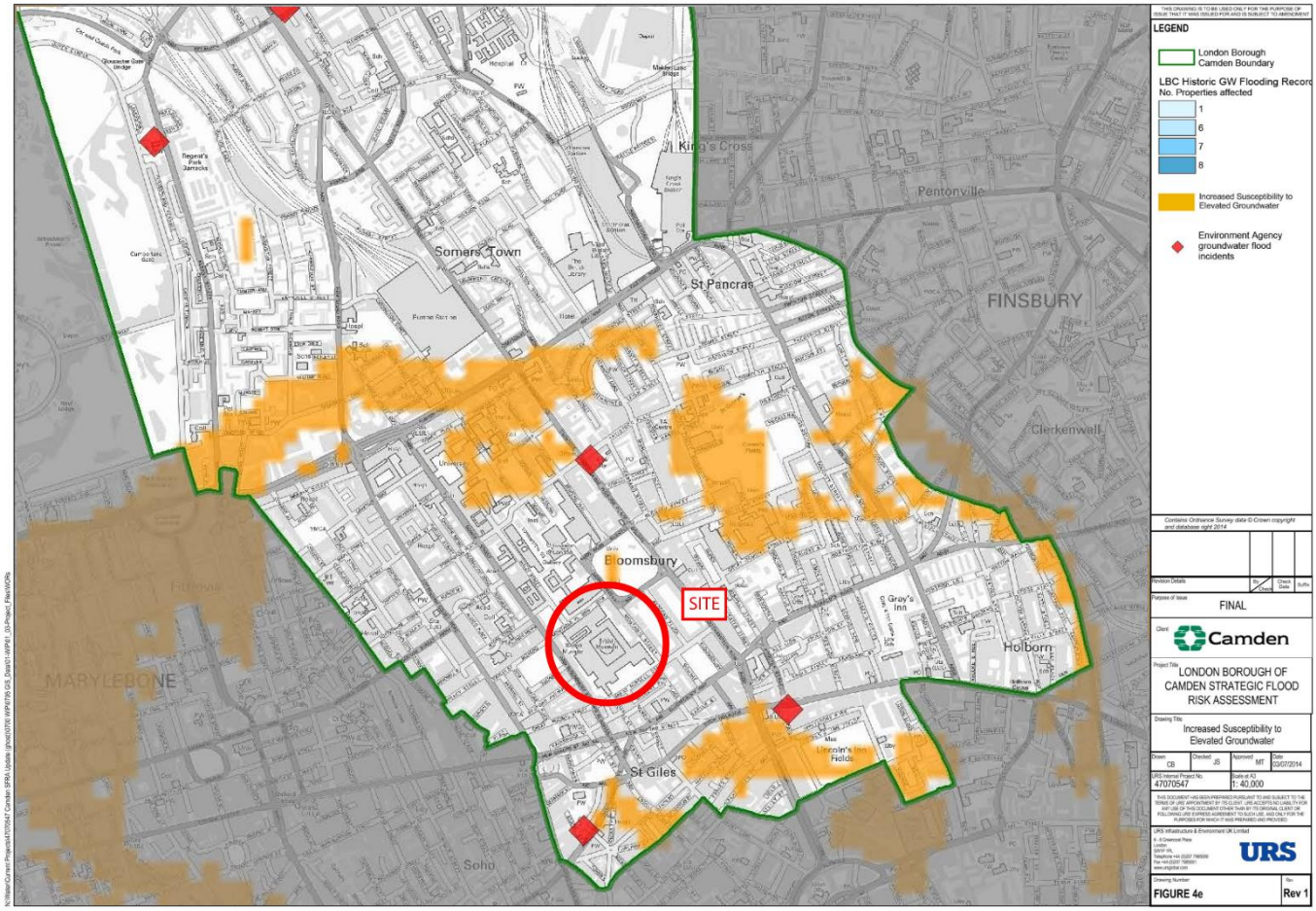


*Figure 08 - Elevated Groundwater Flood Risk Map London Borough of Camden Strategic Flood Risk Assessment*

## 4.5 Sewer Flooding

Figure 09 shows that the postcode in which the site is located has a relatively low number of records compared to the rest of the borough and no incidents are recorded in the immediate vicinity of the site. Thus, there is a low risk of sewer flooding on the site.

Only drainage connections into the sewer will have increased risk of sewer flooding, any such connections will be protected by pumps' non-return valves.

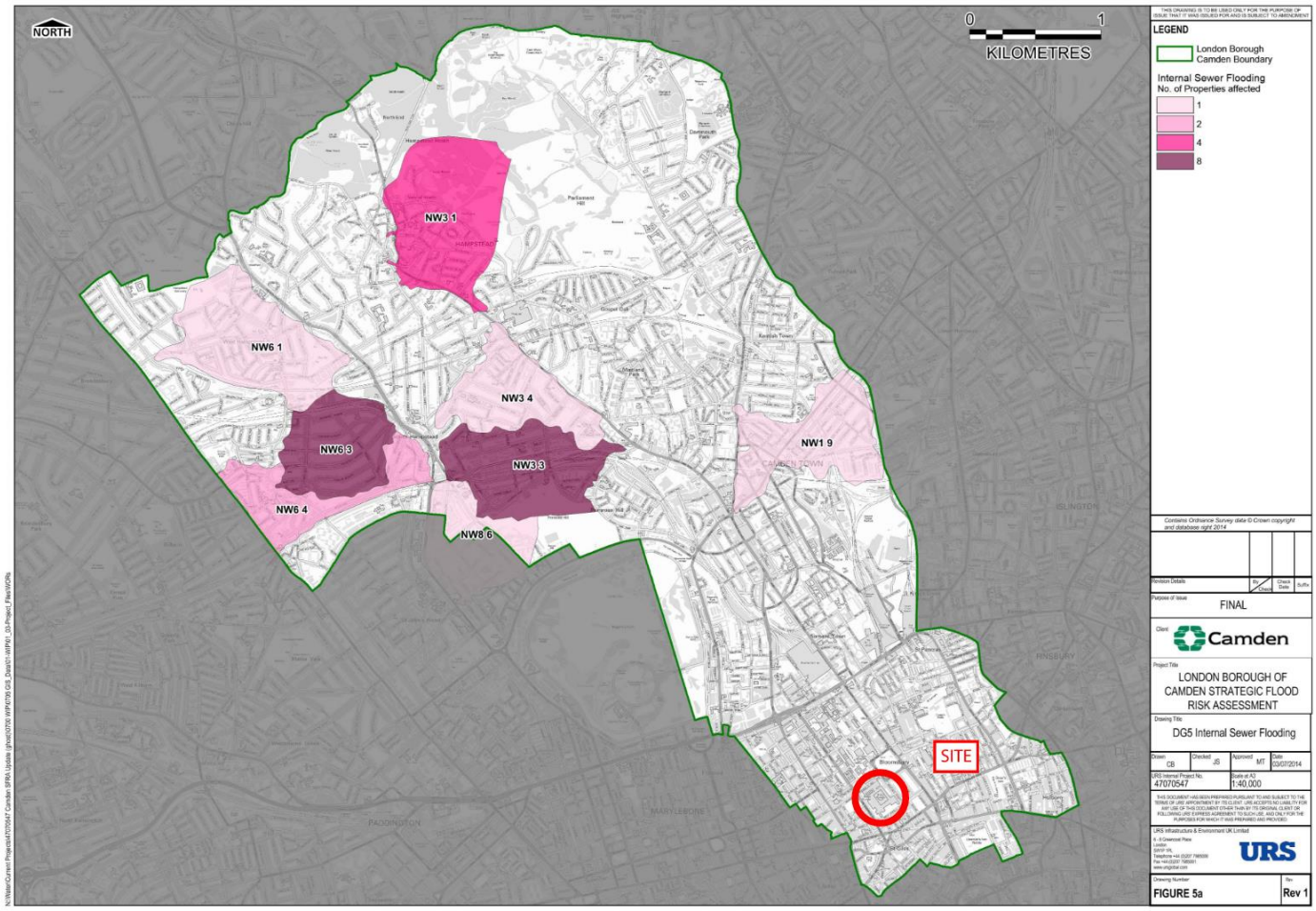


*Figure 09 - Sewer Flooding Incidents Map from London Borough of Camden Strategic Flood Risk Assessment*

# 5.0 Conclusions

## 5.1 Mitigations

General good practice will be followed, including providing raised door thresholds to prevent any very localised ponding of water entering the building. The below ground drainage network in this area of the Museum should be regularly maintained to reduce the risk of blockages and surcharging.

Additionally, SuDS measures have been developed as part of the overall drainage strategy for the site, which will reduce the likelihood of localised surface water flooding. The proposals are in the form of a brown roof and a below ground attenuation tank, which are fully described in the separate Proposed Drainage Strategy document.

Given the presence of a basement within the building, flood resilient construction should be employed, and safe escape access from the basement to ground should always be maintained.

## 5.2 Residual Risk

The potential sources of flooding for the new ERB development at the British Museum have been considered. Generally, the risk of flooding is considered low. Based on surface water flood risk maps from the .Gov website and Camden SFRA, the site is shown as a potential location where surface water may pond in an extreme rainfall event when the drainage network is overwhelmed due to surface water draining north and south along the East Road and pooling on the ERB site. A closer review of the detailed topography around the ERB site shows that, in reality, surface water is unlikely to pond adjacent to the ERB site and will instead drain west towards the WCEC basement. On this basis, the risk of surface water flooding in the new building is considered low.

Given the presence of a basement within the building, there is an elevated risk of flooding due to groundwater flooding. The proposed basement waterproofing strategy will reduce the likelihood of groundwater penetrating the basement, and the overall risk is therefore low.

Based on the information assessed from the Flood Risk Maps, there is a low risk of sewer, reservoir or fluvial flooding.

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