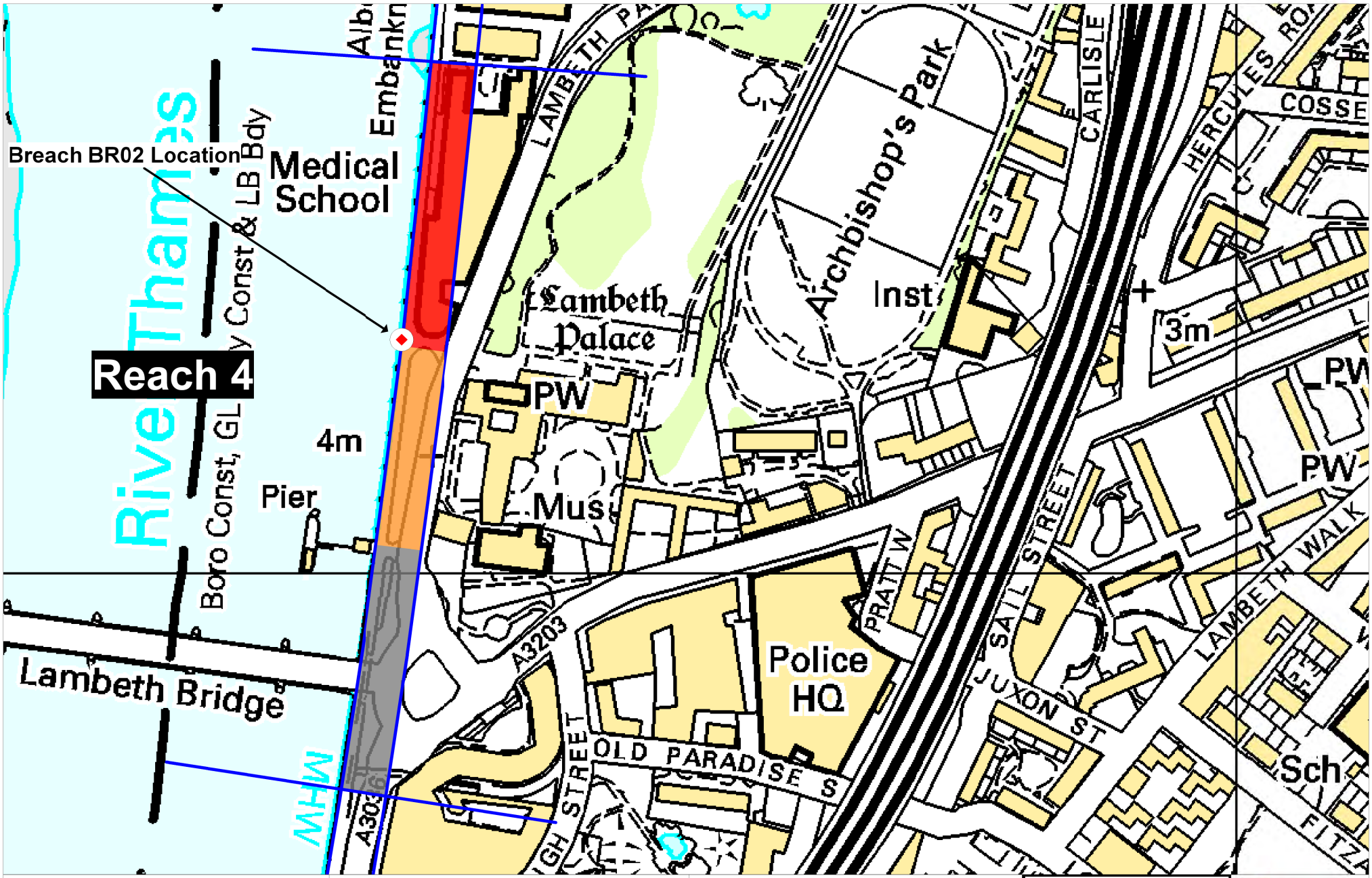


Project:
Lambeth SFRA

Title:
River Reach 4
Riverside Category

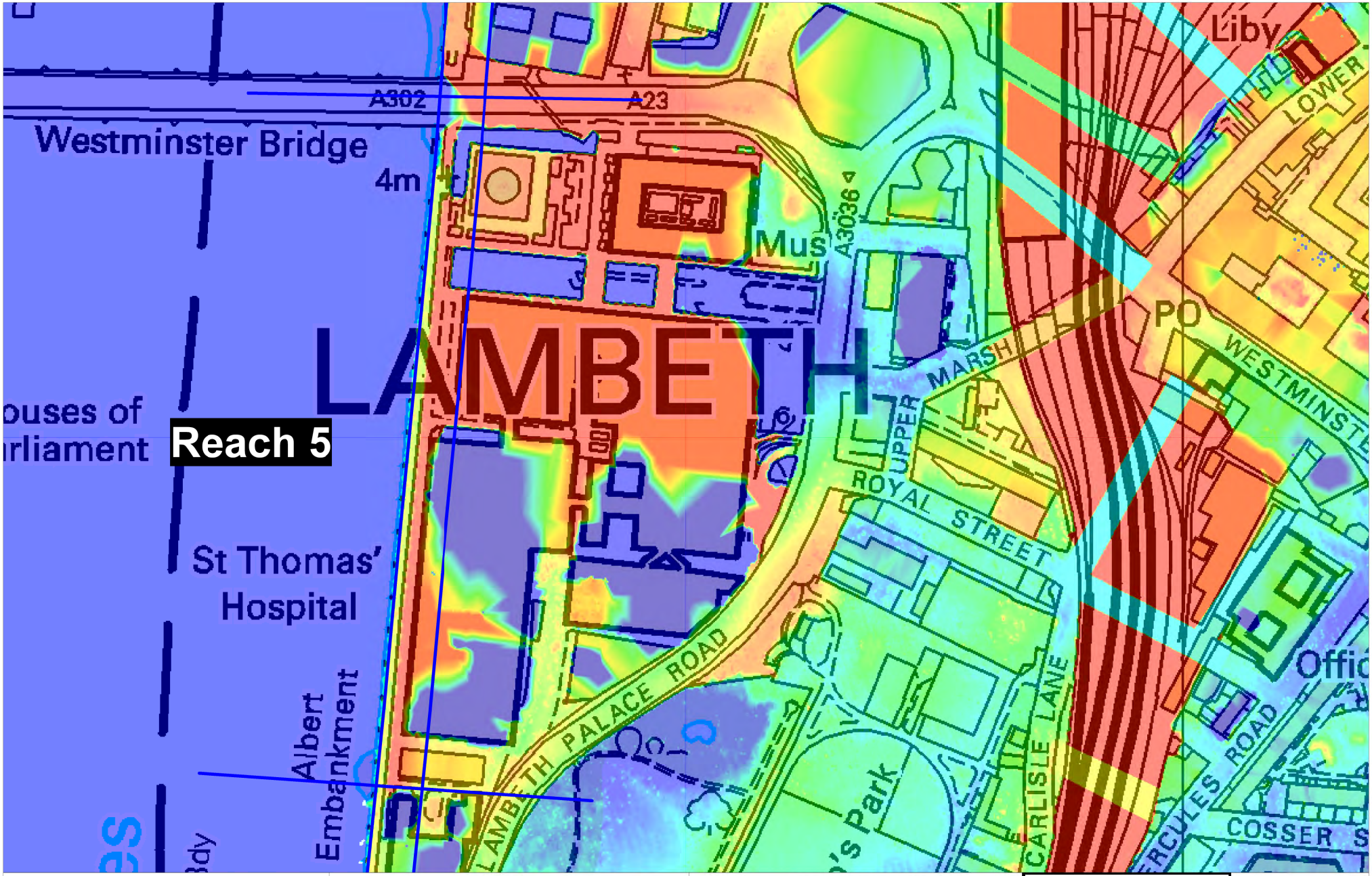
Category 4
Category 3
Category 2
Category 1 (High Ground)

FIGURE H11

Scale: 1:2000 @ A3

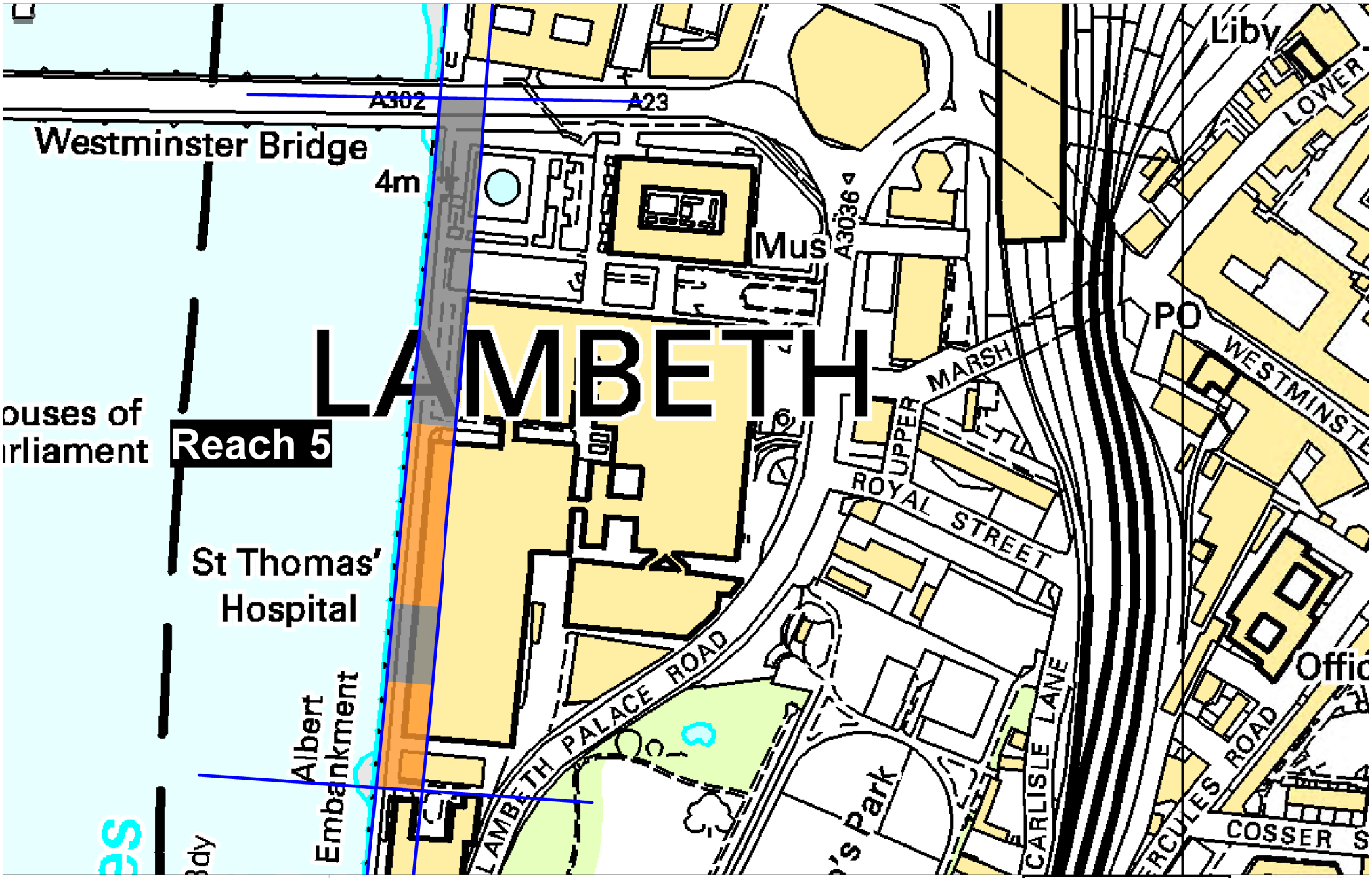
Drw NM Date 13/08/08 Rev 2

Scott Wilson
www.scottwilson.com



Project:	Title:	Elevation [m AOD]:	FIGURE H12
Lambeth SFRA	**River Reach 5** **Digital Terrain Model**	3.00 3.50 4.00 4.50 5.00 5.50	Scale: 1:2000 @ A3 Drw NM Date 13/08/08 Rev 2

Scott Wilson
www.scottwilson.com



Project:
Lambeth SFRA

Title:
River Reach 5
Riverside Category

Category 4
Category 3
Category 2
Category 1 (High Ground)

FIGURE H13

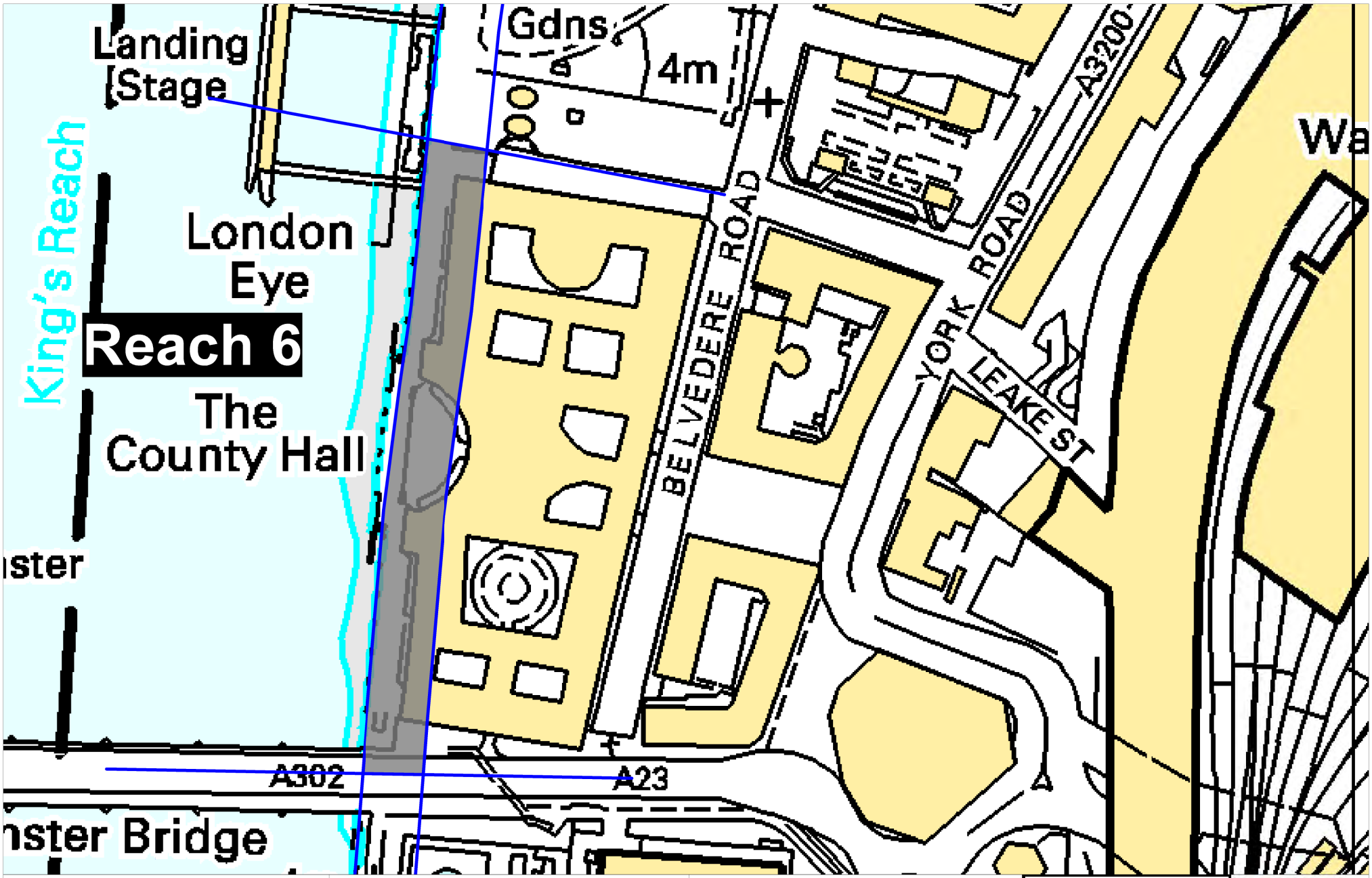
Scale: 1:2000 @ A3

Drw NM | Date 13/08/08 | Rev 2

Scott Wilson
www.scottwilson.com

Project:	Title:	Elevation [m AOD]:	FIGURE H14
Lambeth SFRA	**River Reach 6** **Digital Terrain Model**	3.00 3.50 4.00 4.50 5.00 5.50	Scale: 1:1500 @ A3 Drw NM Date 13/08/08 Rev 2

Scott Wilson
www.scottwilson.com



Project:
Lambeth SFRA

Title:
River Reach 6
Riverside Category

Category 4
Category 3
Category 2
Category 1 (High Ground)

FIGURE H15

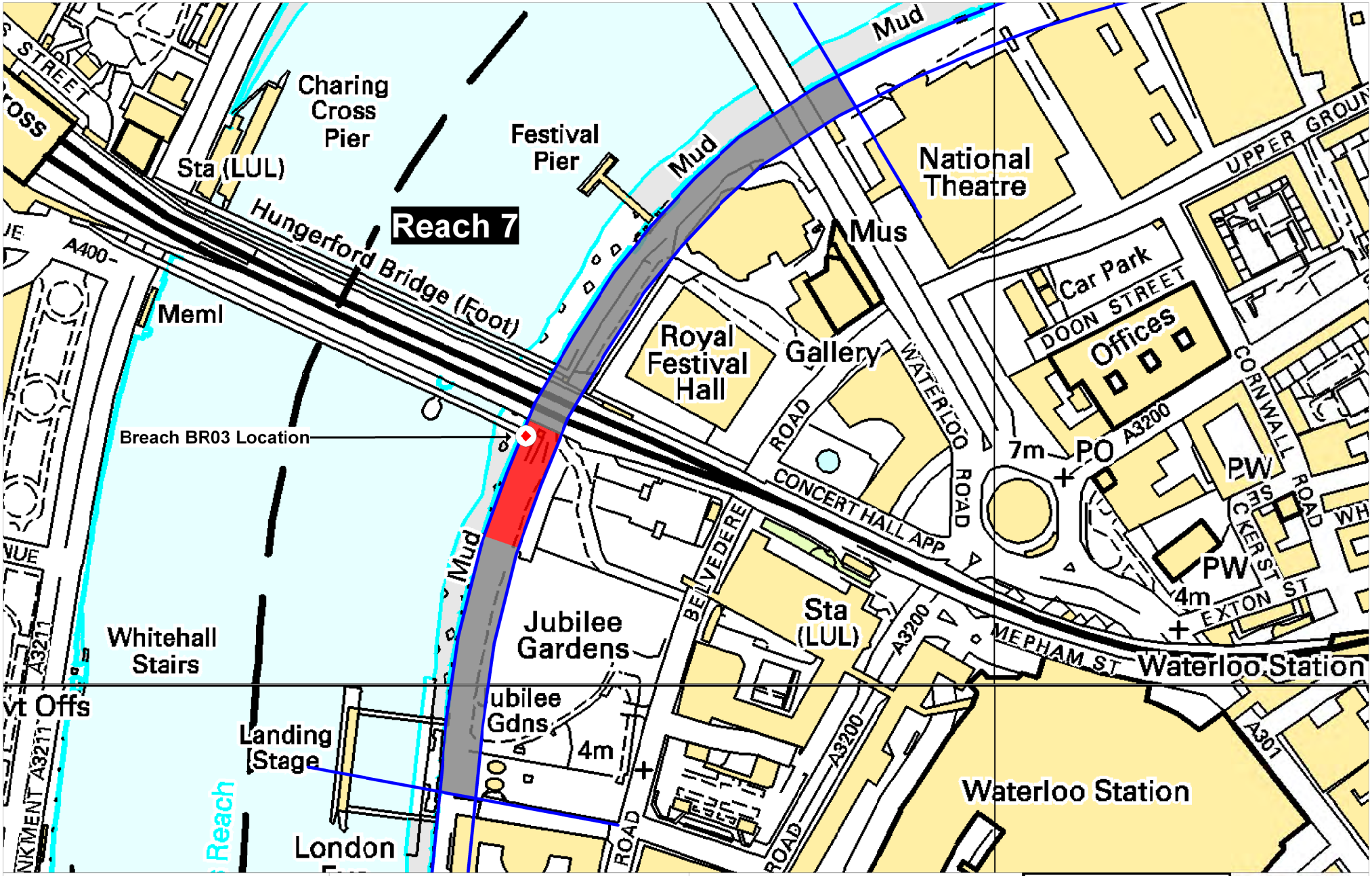
Scale: 1:1500 @ A3

Drw NM | Date 13/08/08 | Rev 2

Scott Wilson
www.scottwilson.com

Project:	Title:	Elevation [m AOD]:	FIGURE H16
Lambeth SFRA	**River Reach 7 Digital Terrain Model**	3.00 3.50 4.00 4.50 5.00 5.50	Scale: 1:2500 @ A3
			Drw NM Date 13/08/08 Rev 2

Scott Wilson
www.scottwilson.com



Project:	Title:		
Lambeth SFRA	**River Reach 7 Riverside Category**	Category 4 / Category 3 / Category 2 / Category 1 (High Ground)	**FIGURE H17**

Scale: 1:2500 @ A3

Drw NM | Date 13/08/08 | Rev 2

Scott Wilson
www.scottwilson.com

Project:
Lambeth SFRA

Title:
River Reach 8
Digital Terrain Model

Elevation [m AOD]:

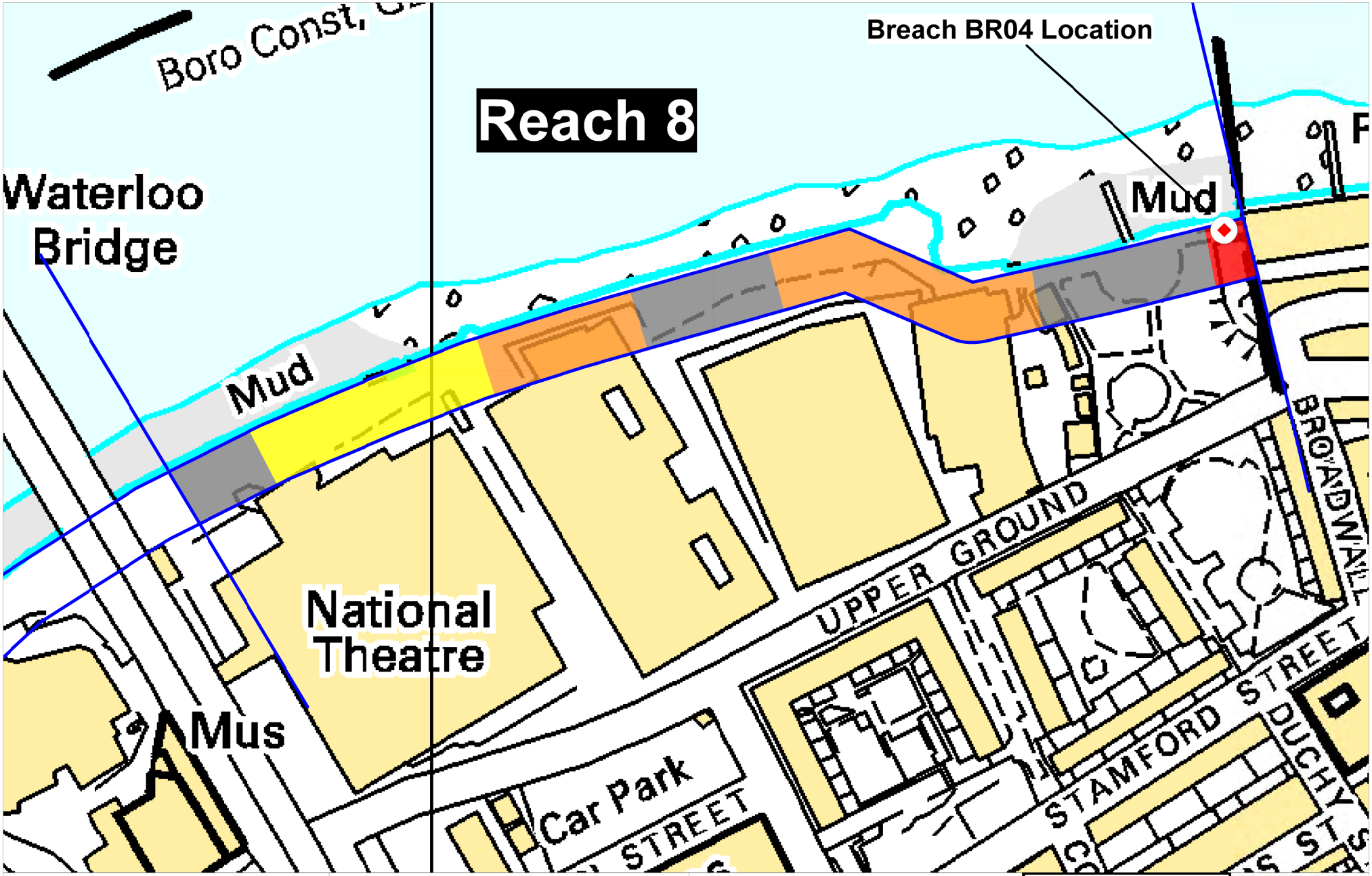
3.00 3.50 4.00 4.50 5.00 5.50

FIGURE H18

Scale: 1:1500 @ A3

Drw NM | Date 13/08/08 | Rev 2

Scott Wilson
www.scottwilson.com



Project:
Lambeth SFRA

Title:
River Reach 8
Riverside Category

Category 4
Category 3
Category 2
Category 1 (High Ground)

FIGURE H19

Scale: 1:1500 @ A3

Drw NM | Date 13/08/08 | Rev 2

Scott Wilson
www.scottwilson.com

APPENDIX D – METHODS OF MANAGING RESIDUAL FLOOD RISK

The following sub-sections outline various methods available for the management of residual flood risk. The methods outlined will not be appropriate for all development types or all geographical areas. Therefore, they should be considered on a site-by-site basis. In addition, it is important that the use of such techniques do not exacerbate flooding elsewhere.

Recreation, Amenity and Ecology

The inclusion of parks and open spaces or river restoration schemes have ecological, biodiversity and sustainability benefits as well as providing flood risk mitigation through the creation of increased flood storage areas and conveyance of rainwater.

Due to the nature of the study area, the opportunity of river restoration is limited to the Effra sewer. However, open spaces and the inclusion of ditches or small pools could be investigated as part of new developments. These all can have the added benefit of improving the ecological and amenity value of an area by providing attractive areas available for recreation as well as providing storm water attenuation The Environment Agency has carried out studies in Sutcliffe Park in Lewisham and Chinbrook Meadows that have shown proven health benefits from providing open spaces to the local community.

Secondary Defences

Secondary defences are those that exist on the dry side of primary defences. Typically, their main function is to reduce the risk of residual flooding following a failure or overtopping of the primary defences.

Secondary defences can relocate floodwaters away from certain areas or reduce the rate of flood inundation following a residual event. Examples of secondary defences include embankments or raised areas behind flood defence walls, raised infrastructure e.g. railways or roads and, on a strategic level, canals, river and drainage networks. The latter are a form of secondary defence as they are able to convey or re-direct water away from flood prone areas even if this is not their primary function. The consequences of increasing water levels at other properties would need to be taken into account whether such a solution were implemented in the active or defended flood plains.

Land Raising

Land raising can have mixed results when used as a secondary flood alleviation measure. It can be an effective method of reducing flood inundation on certain areas or developments by raising the finished levels above the predicted flood level. However, it can also result in the reduction in flood storage volumes which may increase local floodwater levels and exacerbated flooding elsewhere.

The tidal Thames and the River Graveney are both defended and the Environment Agency do not normally be required level for level compensatory flood storage for small scale developments within defended floodplains, assuming that defences will be maintained for the lifetime of the development.

However, the impact of residual risk on other properties should be considered, and where the potential increase of flood levels or potential disruption of flow routes as a result of development is significant, compensatory flood storage should be provided.

Due to the heavily urbanised nature of the study area, land raising and compensatory storage is unlikely to be required.

N.B. Building up land ‘adjacent’ to existing or primary flood defences must respect the byelaw margin: a strip of land kept free of obstructions, to enable maintenance and emergency repair of the primary flood defence.

Finished Floor Levels

Where developing in flood risk areas is unavoidable, the most common method of mitigating flood risk to people is to ensure habitable floor levels are raised above the maximum flood water level.

For the limited development that may take place along the River Graveney: The Environment Agency suggest that under **fluvial/undefended** flood risk conditions, a 300mm freeboard on the 1 in 100 year, plus 20% climate change flood level is used when setting finished floor levels (600mm freeboard is required for less precisely computed levels). Where this can not be achieved for practicality reasons flood proofing measures should be utilised up to the 1 in 100 year, plus 20% climate change flood level.

For development that is proposed in the north of the Study Area in Flood Zone 3a: The Environment Agency suggests that under **tidal/defended flood risk** conditions finished floor levels are as follows:

For *'residential uses'* if no breach analysis has been undertaken by the applicant, then finished floor levels should be set at or above the 1 in 1000 year flood level preferably, if this is not possible then at or above the 1 in 200 year flood level. If breach analysis has been undertaken by the applicant then the 1 in 1000/200 year flood levels from this model would apply in the same way. Most of the London Borough or Lambeth is covered by the breach scenarios included in the Level 1 SFRA and most planning applications for residential development would be able to use the results of this to set their finished floor levels.

For *'Less vulnerable'* uses, finished floor levels do not need to be raised. However, it is strongly recommended that internal access is provided to upper floors to provide safe refuge in a flood event. (It is appreciated that this may not always be possible due to the heavily urbanised nature of the study area with many commercial properties being located underneath privately owned residential accommodation).

Schools – even though these are classed as 'more vulnerable', finished floor levels do not need to be raised as it is not always viable, however, internal access to higher floors MUST be provided to give safe refuge during times of flood.

For both 'less vulnerable' developments and schools where internal access to higher floors is provided, the associated plans showing this should be included within any site specific FRA.

It is also necessary to ensure that proposed roads levels are such that emergency access and evacuation routes are maintained where possible at the 1 in 1000 year flood level. This can significantly reduce the risk of the proposed development becoming inundated by flooding. As with the land raising option, it is imperative that any assessment takes into consideration the volume of floodwater potentially displaced and potential disruption to flow routes posed by such raising.

Flood Resilience

Flood resilient buildings are designed to reduce the consequences of flooding and facilitate recovery from the effects of flooding sooner than conventional buildings.

The Association of British Insurers in cooperation with the National Flood Forum has produced published guidance on how homeowners can improve the food resilience of their properties (ABI, 2004). Such measures should be encouraged for use on existing development subject to flooding, and not purely to justify new development.

The guidance identifies the key flood resistant measures as being:

- Replace timber floors with concrete and cover with tiles,
- Replace chipboard/MDF kitchen and bathroom units with plastic equivalents,
- Replace gypsum plaster with more water-resistant material, such as lime plaster or cement render,

- Move service meters, boilers, and electrical points well above likely flood levels, and,
- Put one-way valves into drainage pipes to prevent sewage backing up into the house.

In considering appropriate resilience measures, it will be necessary to plan for specific circumstances and have a clear understanding of the mechanisms that lead to flooding and the nature of flood risk by undertaking a FRA.

Guidance on resilient construction is being prepares and will be placed on the Communities and Local Government and Planning Portal websites[24]

Advice on flood mitigation for homes and businesses is also given in the ODPM's 2003 report, 'Preparing for Floods' (ODPM) and CLG's 2007 report 'Improving The Flood Performance of New Buildings'.

[24] See www.communities.gov.uk or planningprotal.gov.uk