Site Name: Crossrail (N/A)

Site ID:	W6	**Site Address:**	Woolwich	**Area (ha):**	2.82
Current Use:	Various	**Proposed Use:**	New Cross-London rail link	**Vulnerability Classification:**	Essential Infrastructure

Tidal Source:

Flood Zone 1 (<0.1% AEP): 33%	**Flood Zone 2 (0.1% AEP):** 67%	**Flood Zone 3 (1% AEP):** 62%	**Flood Zone 3b (5%AEP):** 7%	**Area Benefiting from Defences:** 51.68%

Flood Zones and Flood Defences

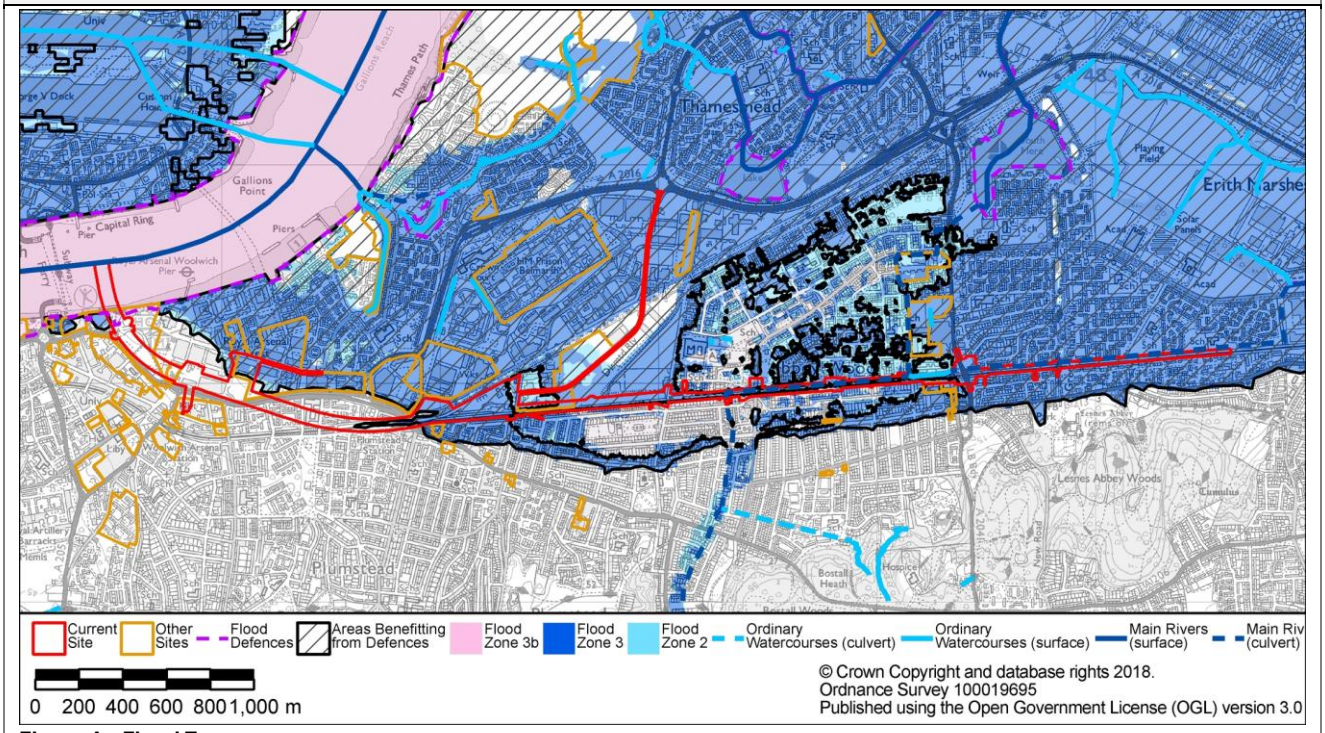

Figure A - Flood Zones

Flood Defence Source:	tidal	**Upstream of Thames Barrier?**	No
Flood Defence Type:	wall	**Standard of Protection:**	1000
Flood Warning Area	Tidal Thames from Erith High Street East to Woolwich Arsenal (62% Overlap), Tidal Thames from Woolwich Arsenal to Deptford Creek (0% Overlap)	**Emergency Rest Centre**	Newhaven (Annexe)

Residual Tidal Flood Risk

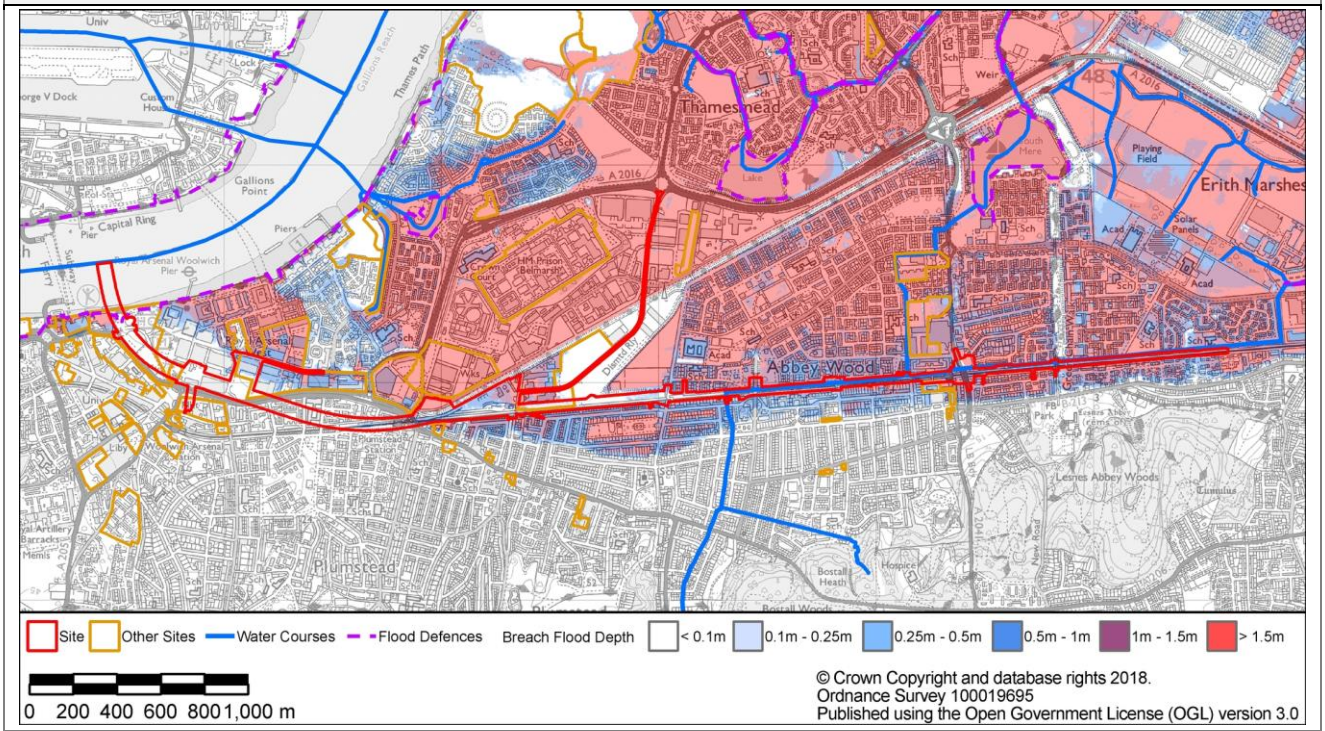

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Figure B - Maximum Flood Depth (Downriver Breach Assessment, 0.5% AEP 2115)

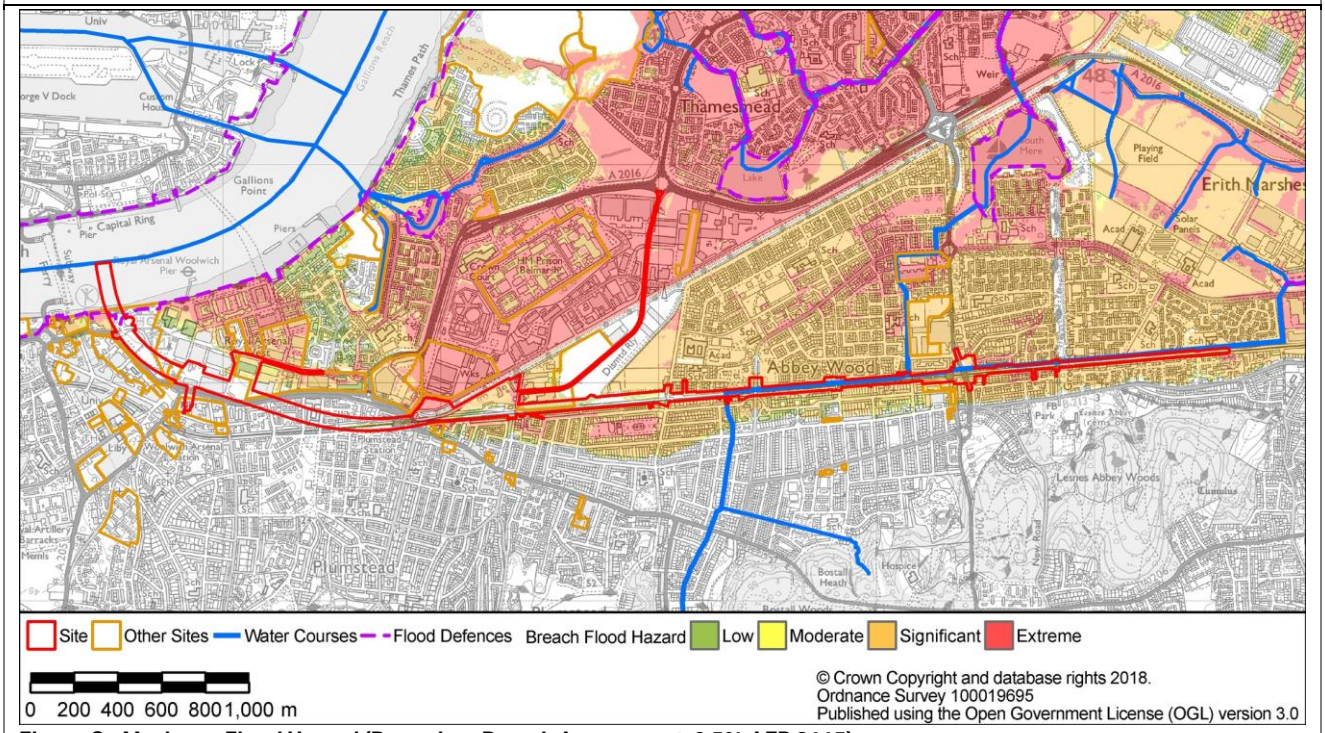

Figure C - Maximum Flood Hazard (Downriver Breach Assessment, 0.5% AEP 2115)

Fluvial Flood Hazard, Depth and Velocity

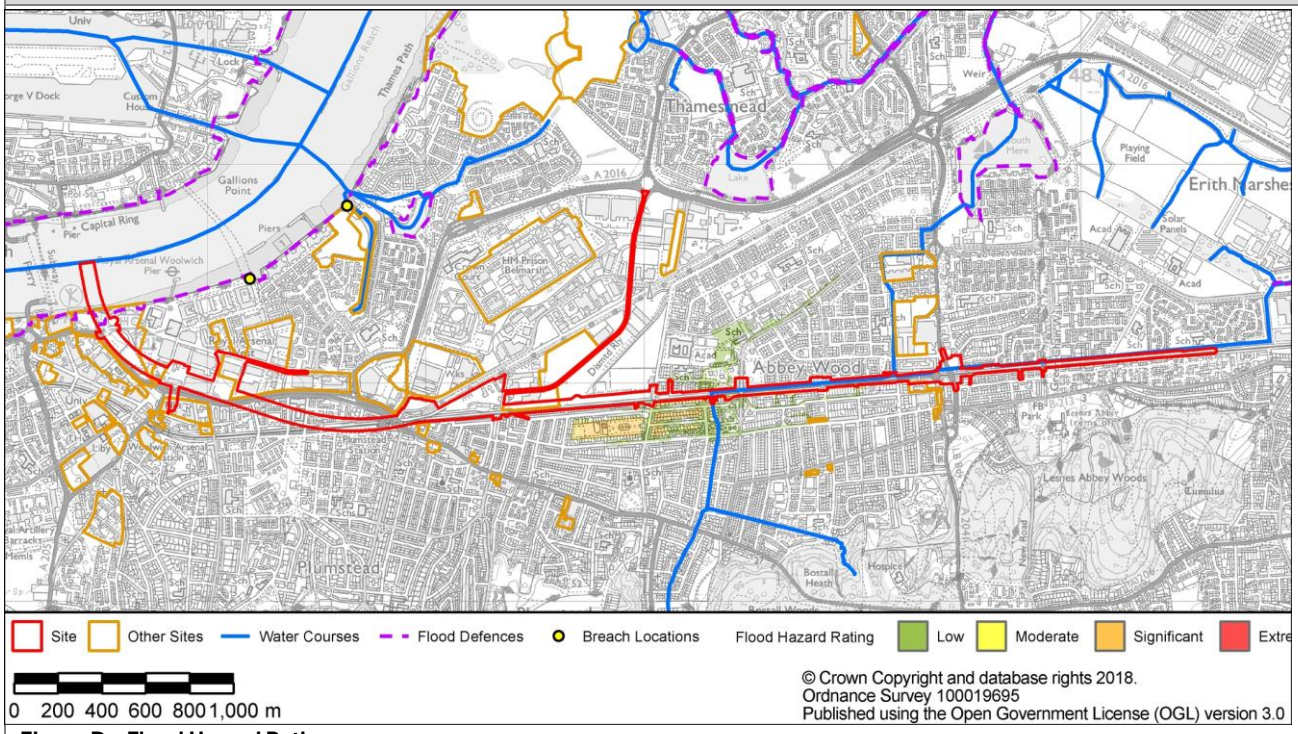

Figure D – Flood Hazard Rating

Site Name: Crossrail (N/A)

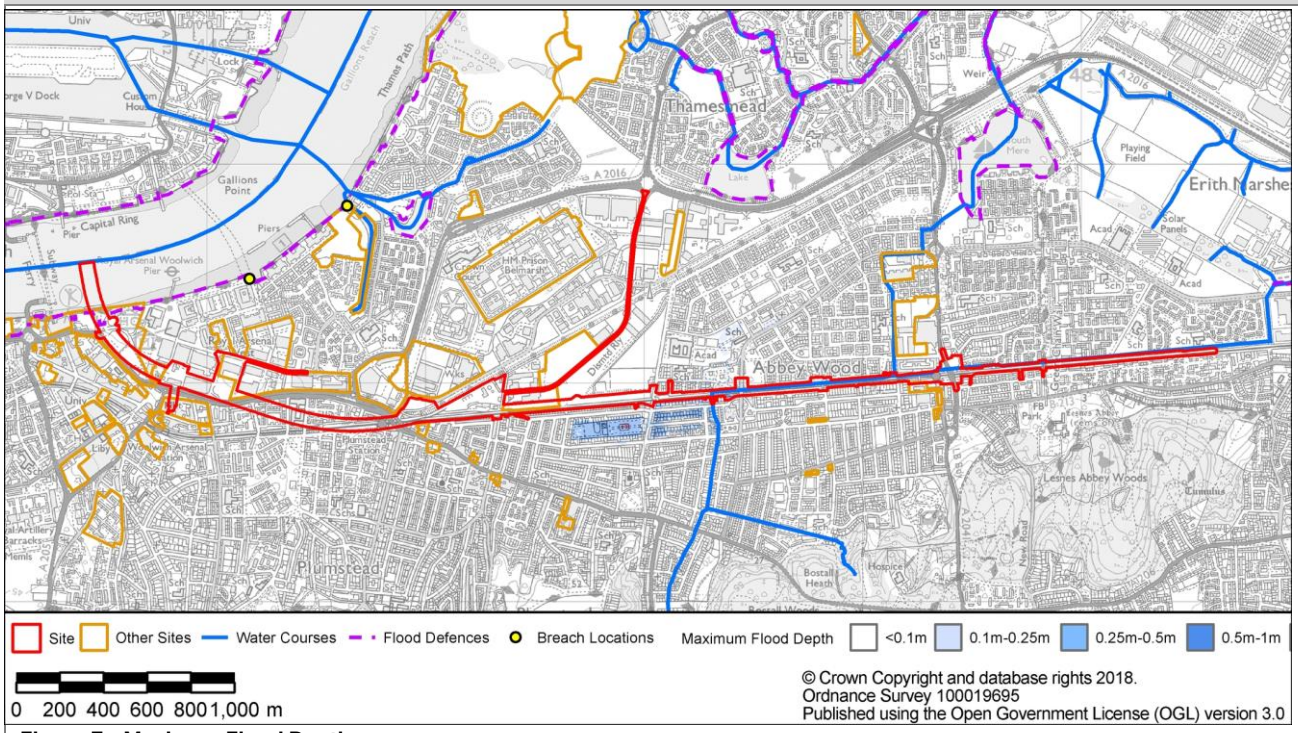

Figure E – Maximum Flood Depth

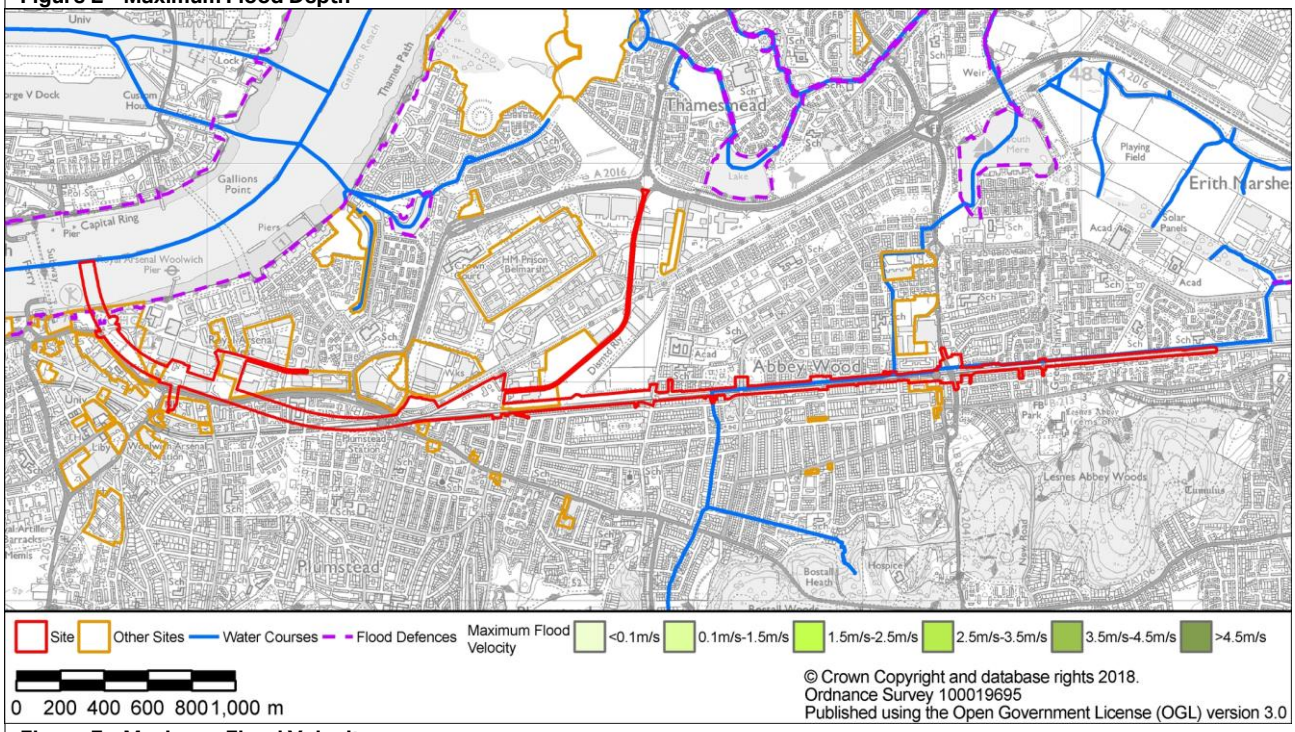

Figure F – Maximum Flood Velocity

Surface Water Source	
Risk of Flooding from Surface Water (RoFSW)	High

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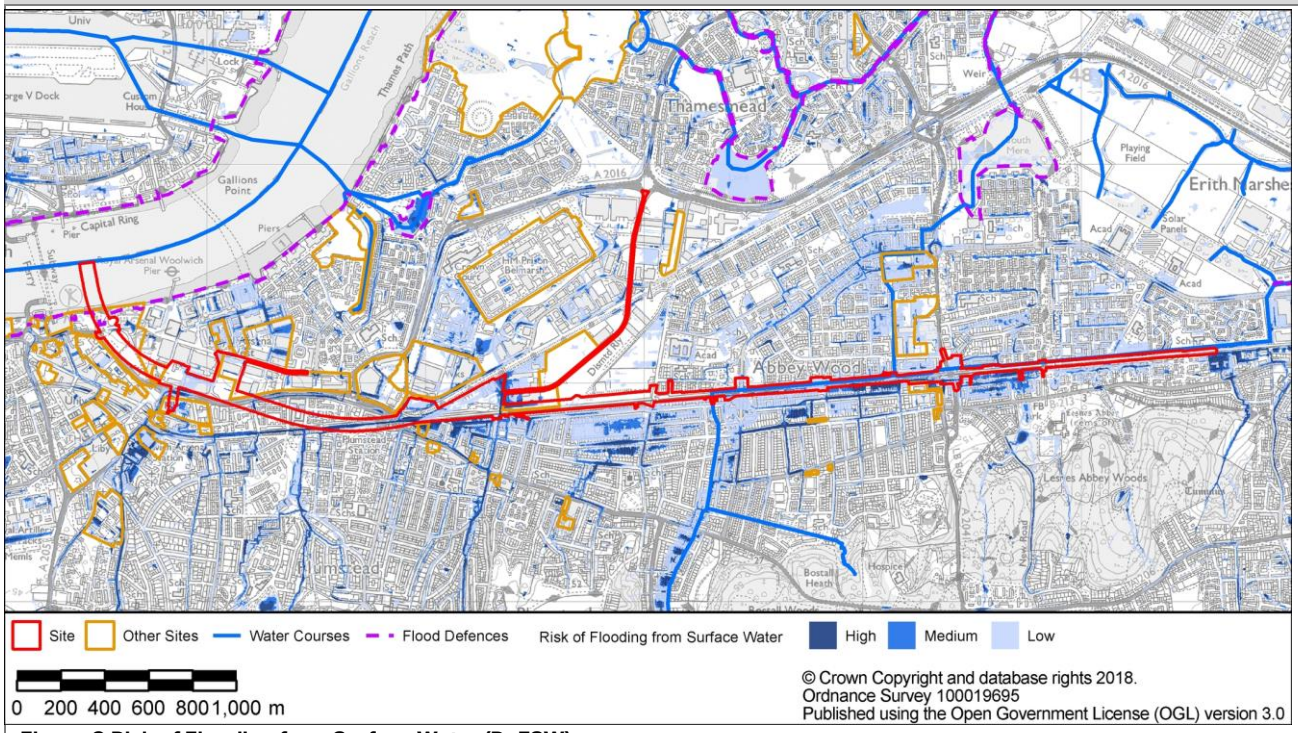

Figure G Risk of Flooding from Surface Water (RoFSW)

Critical Drainage Area	Group6_001 (80% Overlap)

Groundwater Source

Bedrock Geology	Thanet Sand Formation, Upper Chalk Formation	**Superficial Geology**	Alluvium - Clay, Silty, Peaty, Sandy, Head - Clay, Silt, Sand, Gravel
Bedrock Aquifer Designation	Secondary A (86% Overlap), Principal (14% Overlap)	**Superficial Aquifer Designation**	Secondary (undifferentiated) (94% Overlap), Unproductive (0% Overlap)
Potential Groundwater Flooding Zone	Zone C		

Other Sources

Sewer Flooding (within 4 digit postcode)	Internal Flood Incidents: 5 External Flood Incidents: 8
Artificial sources	A proportion of the site is at risk of flooding from a breach of the Butts Canal. At the time of publishing this SFRA, the Environment Agency is in the process of developing a new model for the Marsh Dykes System. Developers should contact RB of Greenwich and the Environment Agency for the most up to date flood extent data for this catchment.

Site Specific Recommendations

The site is proposed to be used as the new Cross-London rail link. Part of the site is already built. The site is predominantly located within Flood Zone 3. A proportion of the site is located in Flood Zone 1 and 2. Over half of the site benefits from the presence of defences. This proportion of the site is at residual risk of flooding. More Vulnerable uses of buildings in the development must be located on the first floor or above, with Less Vulnerable uses at ground level. Basements are not permitted within Flood Zone 3 and are discouraged within areas of Flood Zone 2. The South Mere watercourse is culverted and is located within the proposed site. The EA are a statutory consultee for planning applications where development is within 20m of a main river or culvert. Permission is required from the Environment Agency for work activity within 8m of a culvert or main river. The ROFSW map shows that parts of the site are at high risk of surface water flooding. An assessment of the local surface water flow paths should be made during the development of the site design, to encourage the location of buildings and more vulnerable aspects of the development away from those areas at risk of surface water ponding.

Finished floor levels for buildings should be set at whichever level is higher for fluvial or tidal flooding. For Tidal Flooding, Finished Floor Levels should either be: 300mm above the general ground level of the site or 600mm above the estimated sea level for a 1 in 200 year (0.5%AEP) event (including climate change). For Fluvial Flooding, Finished Floor Levels should either be: 300mm above the general ground level of the site or 600mm above the estimated River level for a 1 in 100 year (0.5%AEP) event (including climate change). A number of flood resistance and resilience measures can be implemented into new buildings to mitigate potential flooding. Guidance on resilience measures can be found in the 'Improving the Flood Performance of New Buildings, Flood Resilient Construction' published by The Department for Communities and Local Government (CLG).

Floodplain compensation storage should be provided for the area of the site within Flood Zone 3 associated with a fluvial watercourse. Further details are provided in the Developer Guidance.

Potential overland flow paths from surface water should be determined and appropriate solutions proposed to minimise the impact of the development, whilst ensuring that flows are not diverted towards other properties elsewhere. Developers should consider using design for exceedance approaches by using urban areas and infrastructure to help manage local flooding. Flow paths should be assessed to inform the strategic location of SuDS and techniques to route flows around the edge of buildings. Careful consideration should be given to the use of fences and landscaping walls so as to prevent causing obstruction to flow routes.

Unobstructed safe access routes to and from the development should be provided. These should provide access to higher ground that is not at risk from flooding. In the event of a breach in defences there is potential that dry routes to a safe location may be

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limited. Safe egress points would be most appropriately located to the south of the site. The local area is covered by the 'Tidal Thames from Erith High Street East to Woolwich Arsenal' Environment Agency Flood Warning Area. A Flood Warning and Evacuation Plan (FWEP) must be prepared for the site, detailing how flood warning will be provided as well as how the safety of occupants and access to/from the development will be ensured. Further details of what should be included can be found in the Developer Guidance. Reference to the SWMP Appendix D Figure D6 identifies that (prior to the completion of a site investigation to determine precise local conditions) infiltration of surface water into the ground is uncertain and suitable for the site. Site investigations will be required prior to the development of a Drainage Strategy for the site. Development should utilise sustainable urban drainage systems (SUDS) unless there are practical reasons for not doing so. The site is located within the Group6_001 Critical Drainage Area. The potential development must not increase flood risk to other areas within the CDA. Where an increased risk exists, developers need to provide a Drainage Strategy to demonstrate how they intend to address this, by what methods, over what timeframe and how maintenance of such works would be funded over its lifetime. This should include a consideration of SuDS in line with the London Plan 5.13 and Local Plan Policies. Surface water run-off should be managed in line with Royal Greenwich's surface water management requirements, as set out in Chapter 4 of the Developer Guidance.
Summary
The site is proposed to be used as the new Cross-:London rail link. The majority of the site is in Flood Zone 3. A proportion of the site is protected from flooding and is at residual risk. Tidal/Fluvial flood risk mitigation measures should be implemented into the site design to manage flood risk. It is recommended that effective surface water management measures are implemented, including careful site and building layout and the incorporation of SuDS, in order to reduce flooding both on the site and routing of flood water to other areas. Due to the extent of flood risk on the site, an evacuation plan should be implemented to ensure access to and from the site. On this basis, it is likely that this site could pass the Exception Test.