Site Name: Warren Lane 'teardrop' site

Site ID:	W10	Site Address:	Woolwich	Area (ha):	6.69
Current Use:	Various commercial, part vacant	**Proposed Use:**	Mixed use development including leisure A3, hotel/tourist facilities, residential. Ancillary A1 only. Royal Arsenal Gardens to be adopted as Community Open Space	**Vulnerability Classification:**	Less Vulnerable/More Vulnerable

Tidal Source:

Flood Zone 1 (<0.1% AEP): 84%	Flood Zone 2 (0.1% AEP): 16%	Flood Zone 3 (1% AEP): 13%	Flood Zone 3b (5%AEP): 12%	Area Benefiting from Defences: 8.14%

Flood Zones and Flood Defences

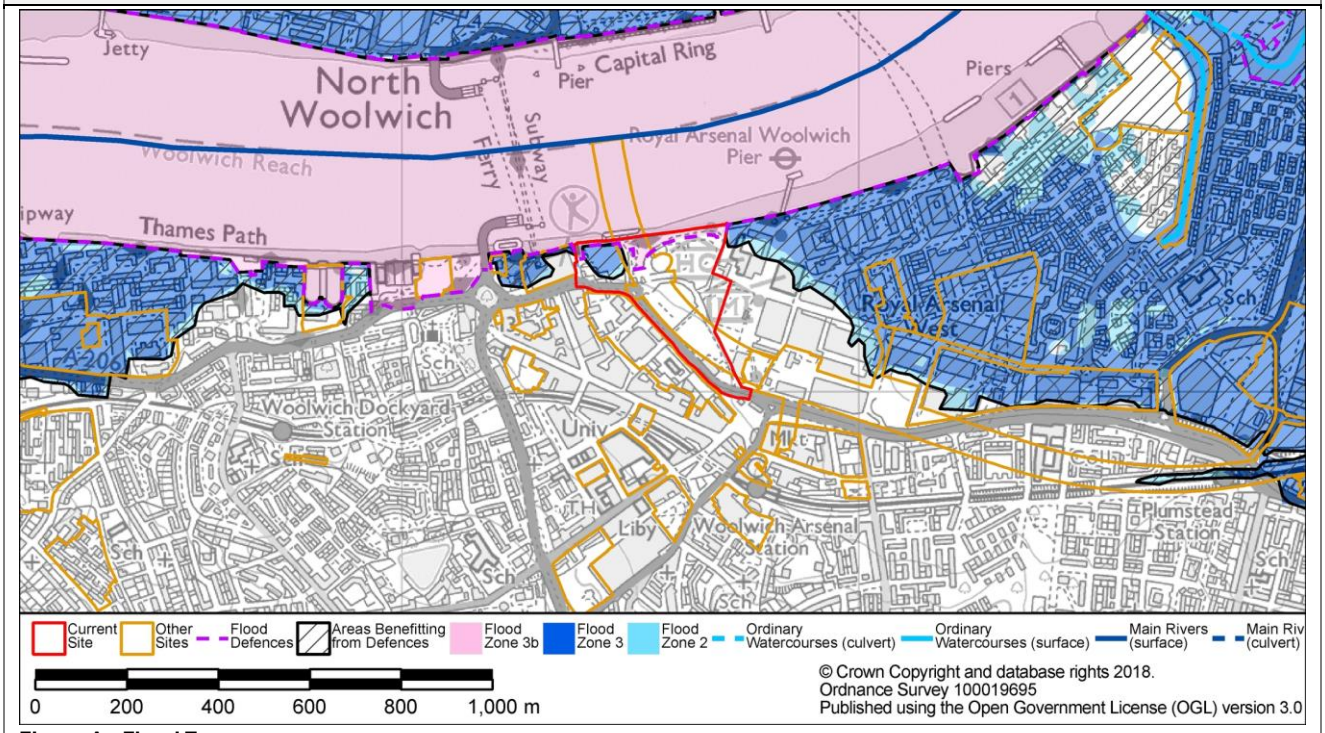

Figure A - Flood Zones

Flood Defence Source:	tidal	Upstream of Thames Barrier?	No
Flood Defence Type:	wall	**Standard of Protection:**	1000
Flood Warning Area	Tidal Thames from Woolwich Arsenal to Deptford Creek (14% Overlap), Tidal Thames from Erith High Street East to Woolwich Arsenal (0% Overlap)	**Emergency Rest Centre**	Waterfront Leisure Centre - GLL

Residual Tidal Flood Risk

Site Name: Warren Lane 'teardrop' site

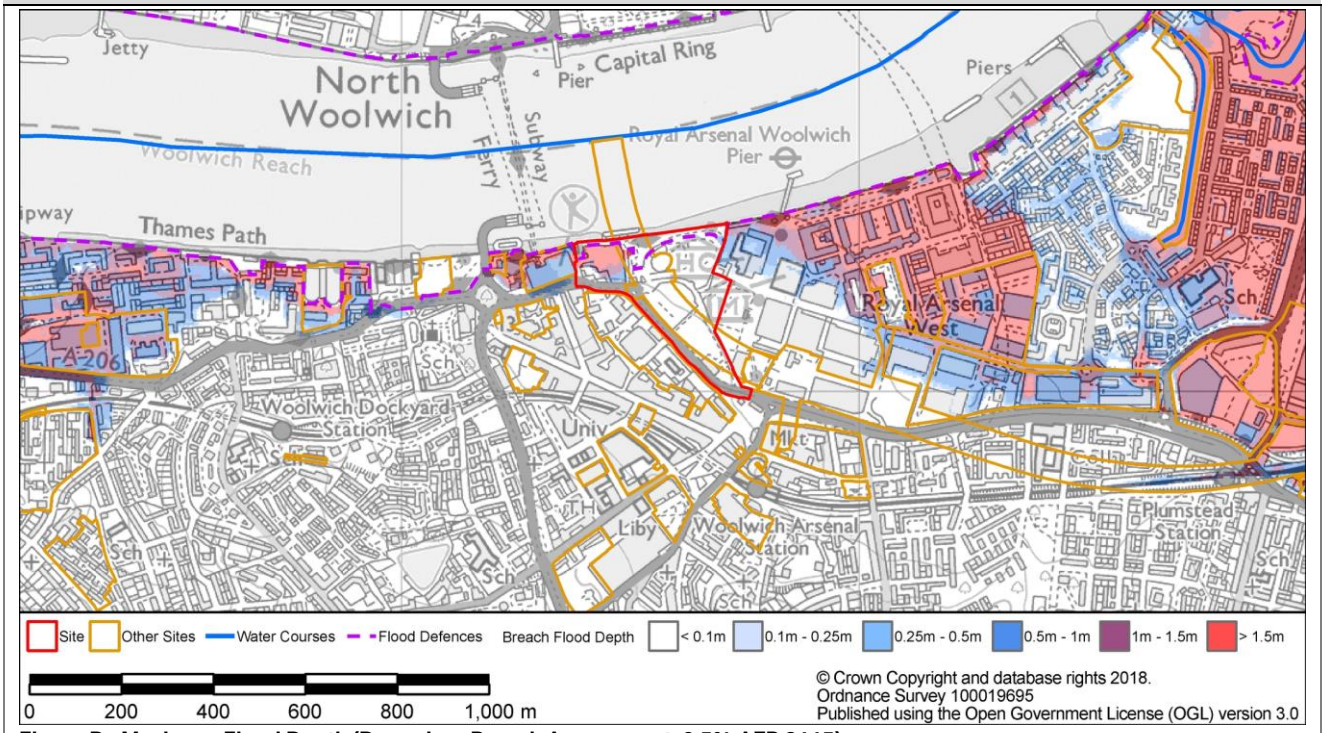

Figure B - Maximum Flood Depth (Downriver Breach Assessment, 0.5% AEP 2115)

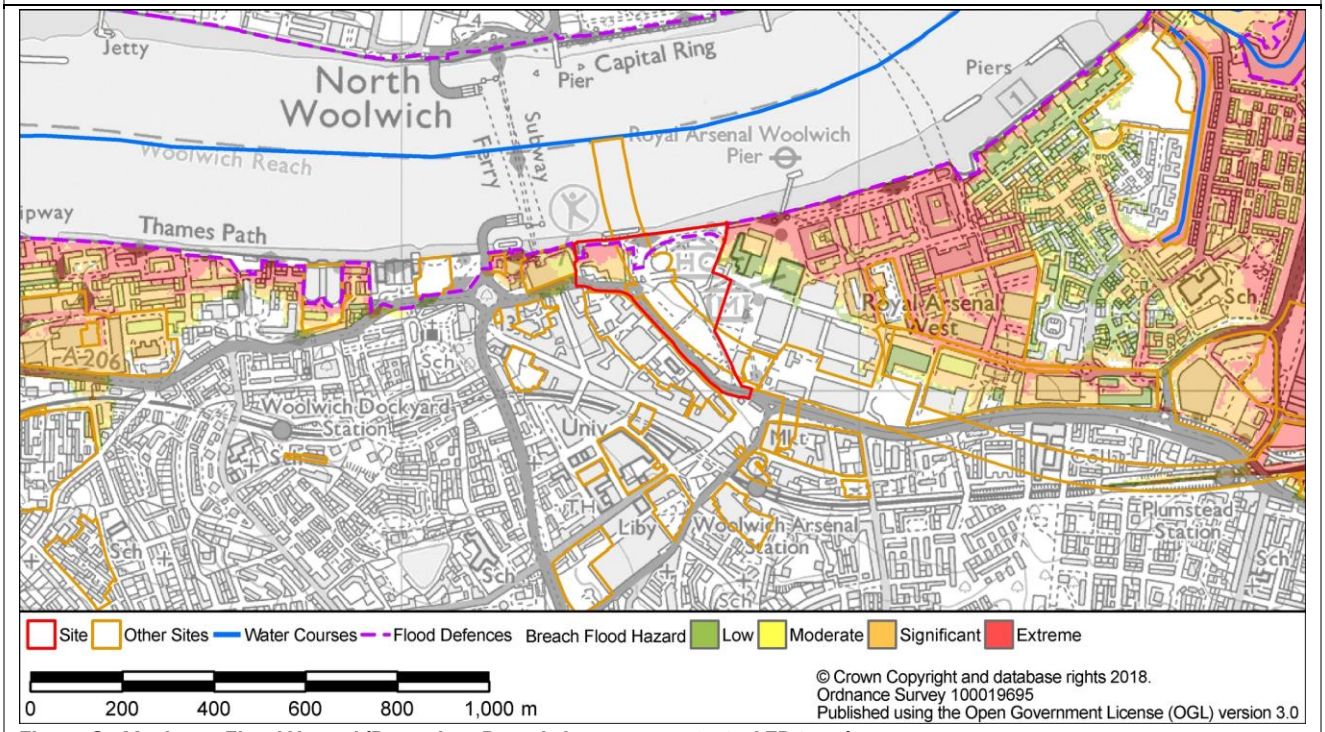

Figure C - Maximum Flood Hazard (Downriver Breach Assessment, 0.5% AEP 2115)

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

Site Name: Warren Lane 'teardrop' site

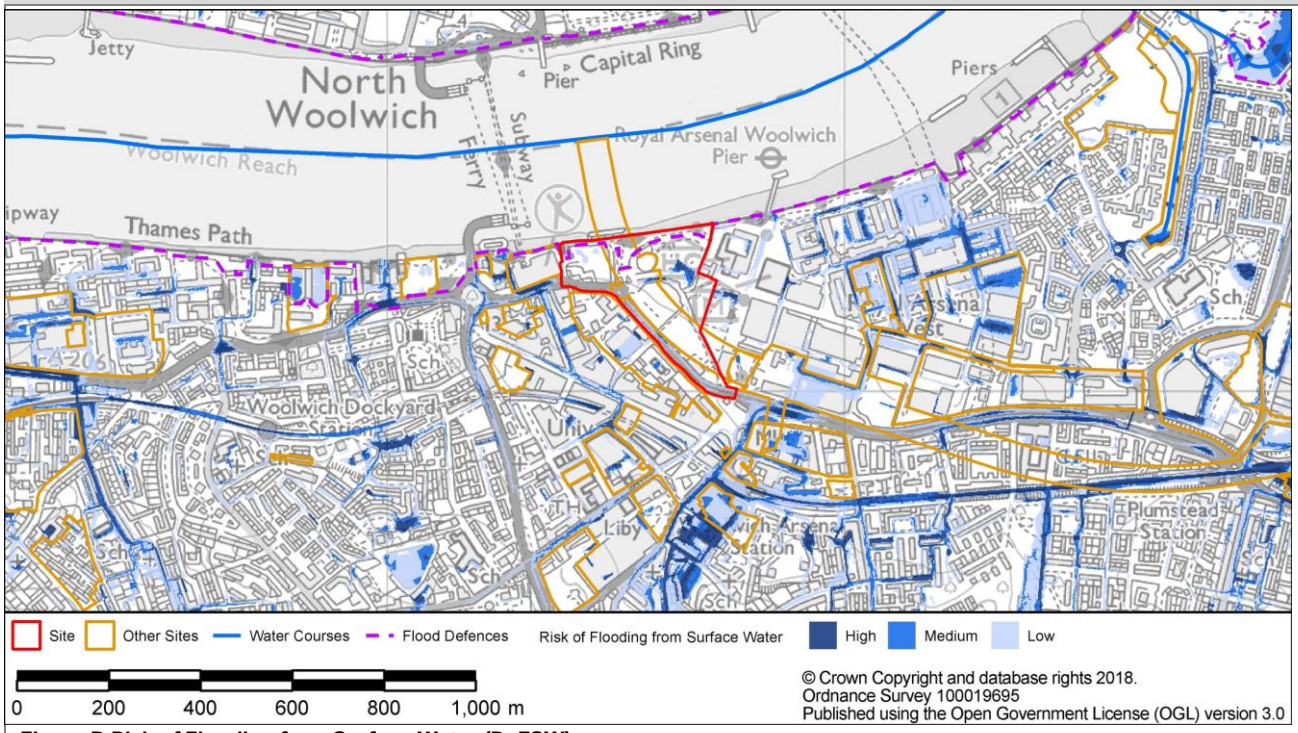

Figure D Risk of Flooding from Surface Water (RoFSW)

Critical Drainage Area	N/A

Groundwater Source

Bedrock Geology	Thanet Sand Formation	**Superficial Geology**	Alluvium - Clay, Silty, Peaty, Sandy, Head - Clay, Silt, Sand, Gravel
Bedrock Aquifer Designation	Secondary A (100% Overlap)	**Superficial Aquifer Designation**	Secondary (undifferentiated) (100% Overlap)
Potential Groundwater Flooding Zone	Zone A		

Other Sources

Sewer Flooding (within 4 digit postcode)	Internal Flood Incidents: 0 External Flood Incidents: 2
Artificial sources	

Site Specific Recommendations

The site is predominantly located in Flood Zones 1 with a proportion of the site located within Flood Zone 2 and 3 (to the north of the site). The site is protected by the presence of defences. The site is at residual risk of tidal flooding. The site is proposed to be mixed use which includes residential, commercial and community open space. More vulnerable development should be located within Flood Zone 1 where possible. If not possible, More Vulnerable uses should be located on the first floor or above, with Less Vulnerable uses at ground level. Basements are not permitted within Flood Zone 3 . Permission is required from the Environment Agency for work activity within 16m of a tidal river or tidal defence. The ROFSW map shows that site and surrounding area may be 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. This site is suitable for water compatible open space development. Reference should be made to the Integrated Water Management Strategy for the area.

For development in Flood Zone 2 or 3, finished floor levels should be set at whichever level is higher: 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). A number of flood resistance and resilience measures can be implemented into new developments 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).

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 tidal flooding. Safe egress points would be most appropriately located to the south of the site.

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 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. Where an increased risk of surface water flooding exists to surrounding sites, 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

Site Name: Warren Lane 'teardrop' site
management requirements, as set out in Chapter 4 of the Developer Guidance.
Summary
The site is largely within Flood Zone 1. A small portion is in defended Flood Zone 3, at residual risk of tidal flooding. In this area More Vulnerable uses must be located on the first floor or above, with Less Vulnerable uses at ground level. In areas of Flood Zone 3 tidal 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. On this basis, it is likely that this site could pass the Exception Test.