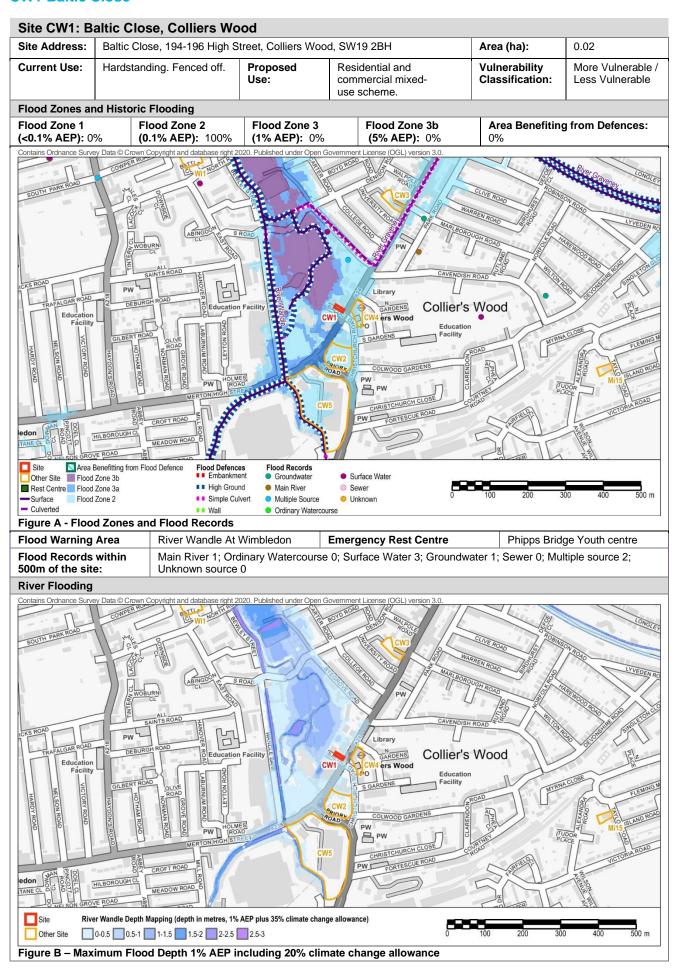
## **CW1 Baltic Close**



# Site CW1: Baltic Close, Colliers Wood

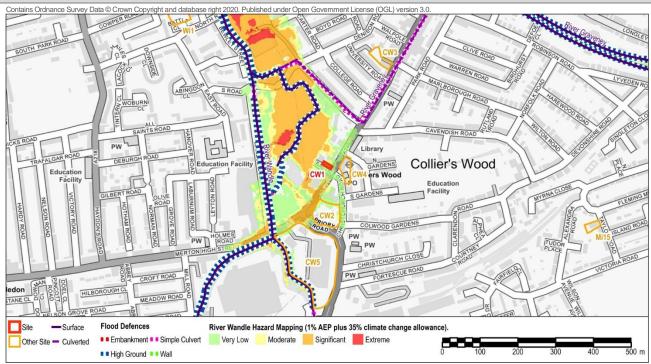


Figure C – Maximum Flood Hazard Rating 1% AEP including 20% climate change allowance

	Flooding

Other Site - Culverted

Risk of Flooding from Surface Water (RoFSW)

CONTRACT CON

Low< Medium

Figure D - Risk of Flooding from Surface Water (RoFSW)

Sewer

Main River

Critical Drainage Area	Group7_011 Collier's Wood [Merton]			
Drainage Catchment	DC23	DC23		
Groundwater Flooding				
Bedrock Geology	Thames Group - Clay, Silt, Sand And Gravel	Superficial Geology	Sand And Gravel	
Susceptibility to Groundwater Flooding (BGS)		Potential for groundwater flooding to occur at surface		
Within an area with 'increased potential for elevated groundwater', as identified in the SWMP (GLA 2011)		Yes		
Within area of perched groundwater, as identified by LB Merton in the Level 1 SFRA (AECOM, 2020)		No		

Medium Proabability

Low Probability

## Site CW1: Baltic Close, Colliers Wood

Other Sources	
Risk of flooding from reservoirs	Not shown to be at risk of flooding from reservoirs on the Long Term Flood Risk Map.

#### Summary

The site is located approximately 140m east of the River Wandle. The site is defined as Flood Zone 2, Medium probability of river flooding. There are records of flooding from a range of sources including Main River, surface water, groundwater and multiple sources within 500m of the site.

Modelling outputs for the River Wandle for the 1% AEP event including 35% increase in peak river flows as a result of climate change, indicate flood depths on the site and the surrounding area up to 0.5m. The hazard rating is 'Very Low', meaning 'caution'.

The Risk of Flooding from Surface Water mapping identifies the potential for surface water to pond in this area, along Baltic Close and the A24. There are records of surface water flooding in proximity to the site and it is located within a Critical Drainage Area (CDA 11 Collier's Wood).

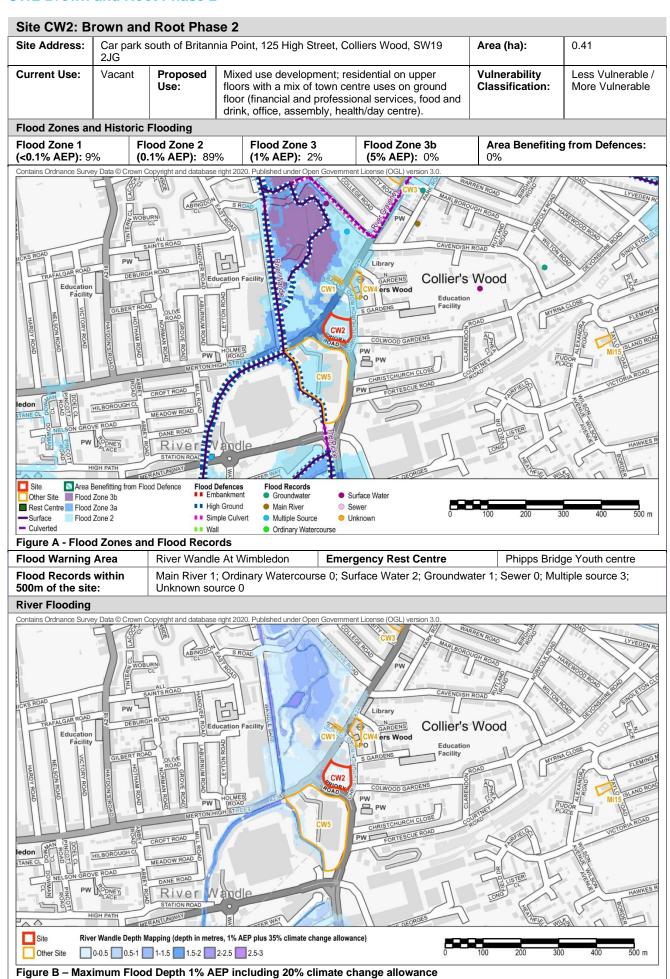
There are groundwater flooding records in this area, and broadscale mapping suggests that the local area may be susceptible to groundwater flooding at surface.

#### Site Specific Recommendations

The proposed use for the site is mixed-use including residential which is defined as More Vulnerable. More Vulnerable development is permitted within Flood Zone 2. The Exception Test is not required. However, it is noted that when considered the impact of climate change, the site is shown to be at risk of flooding from the River Wandle, and therefore a number of recommendations are made for the site:

- Finished floor levels for More and Less Vulnerable development should be set 300mm above the modelled flood level for the 1% AEP event including 35% allowance for climate change.
- The proposed development must not reduce the ability of the floodplain to store water. This should be considered in relation to the 1% AEP modelled flood event including 35% allowance for climate change. Floodplain compensation storage must be provided on a level-for-level and volume-for-volume basis. Given the entire site is located within the 1% AEP including 35% flood extent, it will not be possible to provide compensation storage within the site itself. Further guidance on the provision of compensatory flood storage is provided in section A3.3.10 of the CIRIA document C624.
- Arrangements should be made for safe access and egress away from the site in the event of flooding from the River Wandle.
  Where possible this should be dry access/egress above the 1% AEP flood level including 35% climate change allowance. The
  route along the A24 is shown to be at Low Hazard during the 1% AEP event including 35% climate change, and
  access/egress may not be dry along this route. A place of safe refuge should be designed into the proposed development,
  above the 1% AEP flood level including an allowance for climate change.
- The site is located within the Flood Warning Area for the River Wandle At Wimbledon. Occupants of the site should sign up to receive the Flood Warning Service.
- A Flood Warning and Evacuation Plan should be prepared by occupants of the site demonstrating what actions site users will
  take before, during and after a flood event to ensure their safety, and to demonstrate the development will not impact on the
  ability of the local authority and the emergency services to safeguard the current population.
- The natural surface water flow patterns on the site should be considered when preparing the surface water drainage strategy for the site to ensure that the risk to neighbouring areas is reduced. Development proposals for the site should seek to restrict surface water runoff rates to greenfield rates; demonstrate sustainable approaches to the management of surface water making use of SuDS including green roofs, rainwater harvesting and other innovative technologies; and incorporate soft landscaping, planting and impermeable surfacing.
- The risk of groundwater flooding and groundwater levels should be further assessed as part of a Site Investigation.

## **CW2 Brown and Root Phase 2**



# Site CW2: Brown and Root Phase 2

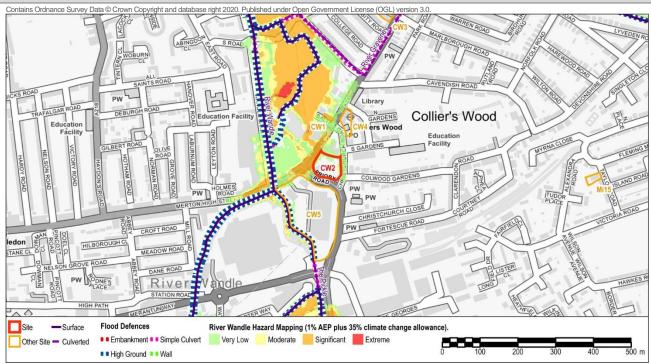


Figure C – Maximum Flood Hazard Rating 1% AEP including 20% climate change allowance

	Flooding

Risk of Flooding from Surface Water (RoFSW) Low, Medium, High

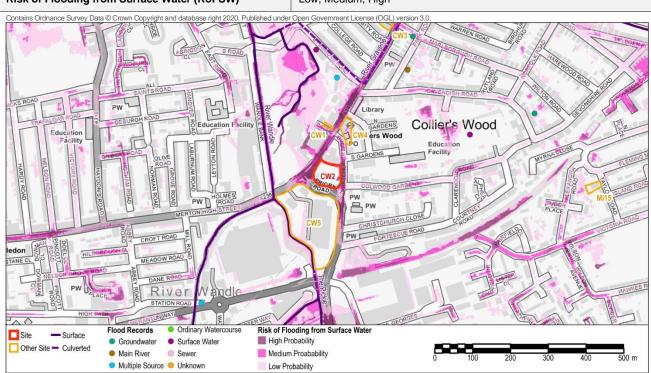


Figure D - Risk of Flooding from Surface Water (RoFSW)

Critical Drainage Area	Group7_011 Collier's Wood [Merton]			
Drainage Catchment	DC23	DC23		
Groundwater Flooding				
Bedrock Geology	Thames Group - Clay, Silt, Sand And Gravel			
Susceptibility to Groundwater Flooding (BGS)		Potential for groundwater flooding to occur at surface		
Within an area with 'increased p groundwater', as identified in th		Yes		
Within area of perched groundwater, as identified by LB Merton in the Level 1 SFRA (AECOM, 2020)		No		

#### Site CW2: Brown and Root Phase 2

Other Sources	
Risk of flooding from reservoirs	Not shown to be at risk of flooding from reservoirs on the Long Term Flood Risk Map.
_	

#### Summary

The River Wandle flows north approximately 150m west of the site. The majority of the site is defined as Flood Zone 2, Medium probability of river flooding. The western edge is defined as Flood Zone 3, High probability of river flooding. There are records of flooding from a range of sources including Main River, surface water, groundwater and multiple sources within 500m of the site.

Modelling outputs for the River Wandle for the 1% AEP event including 35% increase in peak river flows as a result of climate change, indicates flood depths up to 0.5m within the site boundary. The hazard rating is 'Low' and 'Moderate', meaning 'danger for some' (i.e. includes children, the elderly).

The Risk of Flooding from Surface Water mapping identifies the potential for surface water to pond along the roads around the site boundary. There are records of surface water flooding in proximity to the site and it is located within a Critical Drainage Area (CDA 11 Collier's Wood).

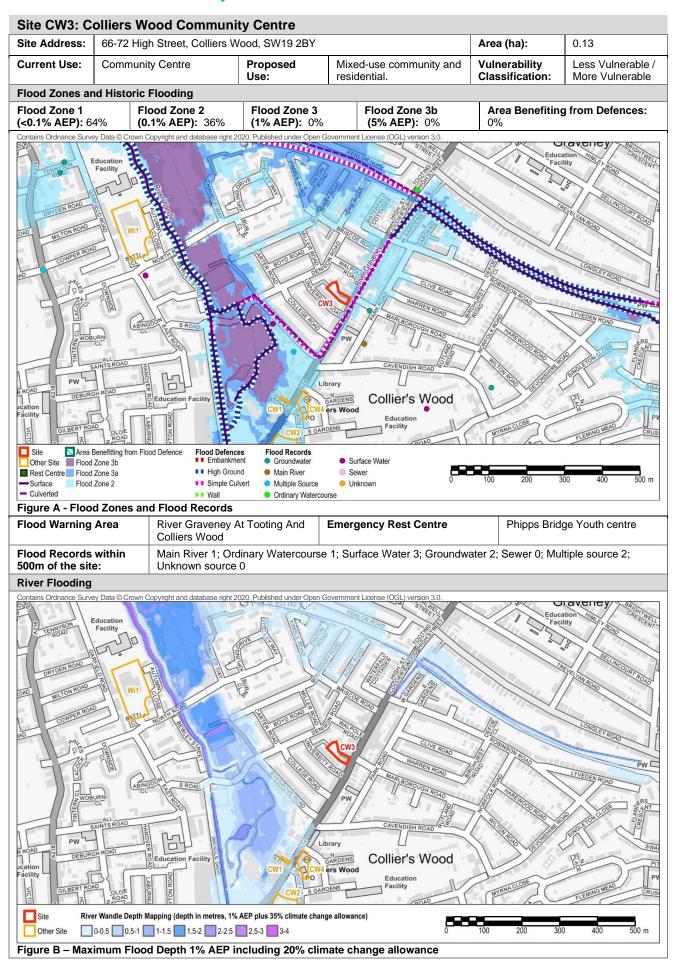
There are groundwater flooding records in this area, and broadscale mapping suggests that the local area may be susceptible to groundwater flooding at surface.

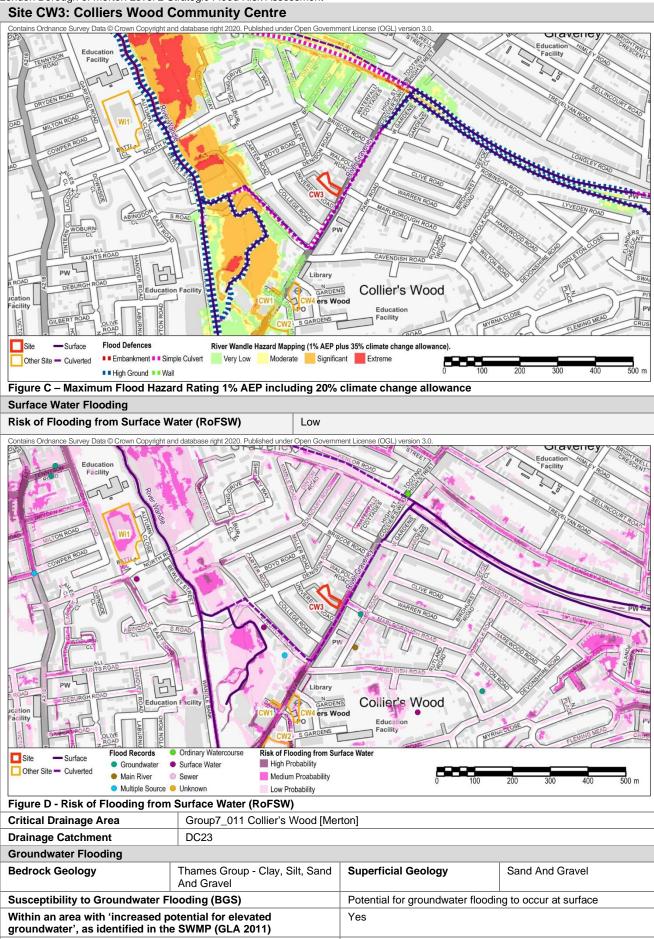
## Site Specific Recommendations

The proposed use for the site is mixed-use including residential which is defined as More Vulnerable. More Vulnerable development is only permitted in Flood Zone 3 where it can be demonstrated that the Exception Test is satisfied i.e. (1) that the proposed development will provide wider sustainability benefits to the community that outweigh flood risk, and (2) that it will be safe for its lifetime, without increasing flood risk elsewhere and where possible reduce flood risk overall. In order to satisfy the requirements of the Exception Test, the following recommendations are made:

- A sequential approach should be applied within the site, steering development towards those areas where the hazard rating is lower and at lower risk of surface water flooding.
- Finished floor levels for More and Less Vulnerable development should be set 300mm above the 1% AEP flood level including 35% allowance for climate change.
- The proposed development must not reduce the ability of the floodplain to store water. This should be considered in relation to the 1% AEP modelled flood event including 35% allowance for climate change. Floodplain compensation storage must be provided on a level-for-level and volume-for-volume basis. Given the entire site is located within the 1% AEP including 35% flood extent, it will not be possible to provide compensation storage within the site itself. Further guidance on the provision of compensatory flood storage is provided in section A3.3.10 of the CIRIA document C624.
- Arrangements should be made for safe access and egress away from the site in the event of flooding from the River Wandle. This may be achievable to the east of the site onto Christchurch Road where the hazard rating is Low. However, there may not be a dry access/egress route. A safe place of refuge should be designed into the proposed development above the 1% AEP modelling flood level including an allowance for climate change. It is noted that flooding affects the wider area, specifically the A24 to the north and the south, and therefore details of the specific egress route away from the area would need to be carefully planned and recorded in the Flood Warning and Evacuation Plan.
- The site is located within the Flood Warning Area for River Wandle At Wimbledon. Occupants of the site should sign up to receive the Flood Warning Service.
- A Flood Warning and Evacuation Plan should be prepared by occupants of the site demonstrating what actions site users will
  take before, during and after a flood event to ensure their safety, and to demonstrate the development will not impact on the
  ability of the local authority and the emergency services to safeguard the current population.
- The natural surface water flow patterns on the site should be considered when preparing the surface water drainage strategy
  for the site to ensure that the risk to neighbouring areas is reduced. Development proposals for the site should seek to restrict
  surface water runoff rates to greenfield rates; demonstrate sustainable approaches to the management of surface water
  making use of SuDS including green roofs, rainwater harvesting and other innovative technologies; and incorporate soft
  landscaping, planting and impermeable surfacing.
- The risk of groundwater flooding and groundwater levels should be further assessed as part of a Site Investigation.

## **CW3 Colliers Wood Community Centre**





No

Within area of perched groundwater, as identified by LB Merton

in the Level 1 SFRA (AECOM, 2020)

London Borough of Merton Level 2 Strategic Flood Risk Assessment

#### Site CW3: Colliers Wood Community Centre

Other Sources	Other Sources	
Risk of flooding from reservoirs	Not shown to be at risk of flooding from reservoirs on the Long Term Flood Risk Map.	

#### Summary

The River Graveney passes in a culvert south west beneath the A24 approximately 20m from the site. The majority of the site is defined as Flood Zone 1, Low probability of river flooding. The western and southern part of the site is located in Flood Zone 2, Medium Probability river flooding. This part of the River Graveney joins the River Wandle approximately 300m to the west.

Hydraulic modelling of the River Wandle does not identify the site or surrounding area to be at risk of flooding during the 1% AEP event including 35% allowance for climate change. A review of the 1% AEP event including 70% allowance for climate change, identifies flooding along the A24 adjacent to the site, but not within the site boundary. There are records of flooding from a range of sources including Main River, ordinary watercourse, surface water, groundwater and multiple sources within 500m of the site.

The Risk of Flooding from Surface Water mapping identifies the potential for surface water to pond on the eastern edge. There are records of surface water flooding in proximity to the site and it is located within a Critical Drainage Area (CDA 11 Collier's Wood).

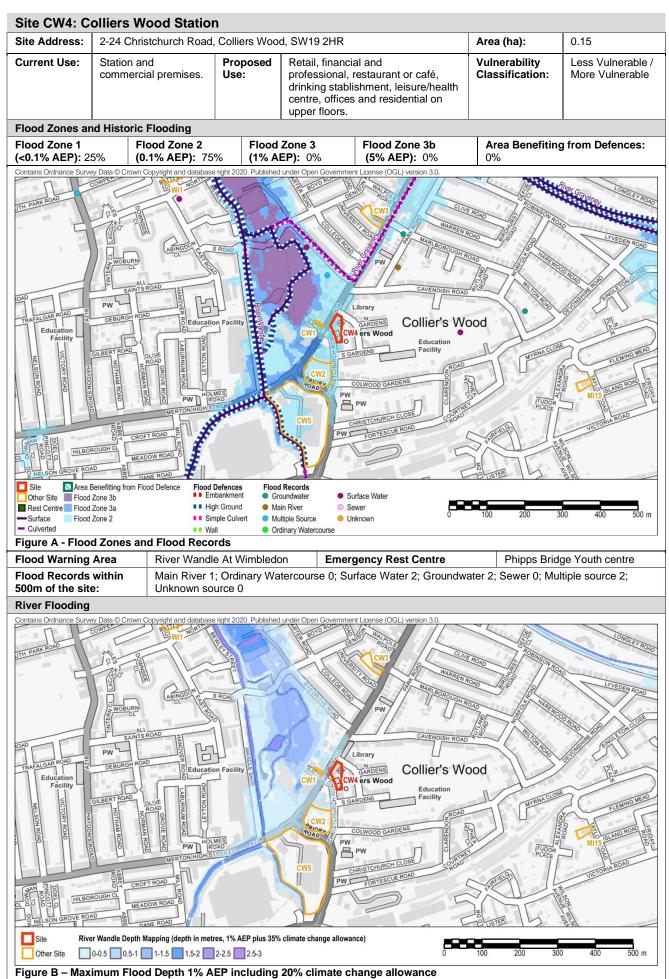
There are groundwater flooding records in this area, and broadscale mapping suggests that the local area may be susceptible to groundwater flooding at surface.

#### Site Specific Recommendations

The proposed use of the site is compatible with the flood zone. The Exception Test is not required. However, a number of recommendations are made for the site:

- In the future, as a result of climate change under the 1% AEP event including 70% climate change allowance, hydraulic modelling shows that the site could become part of a dry island, surrounded by floodwaters along the A24. Whilst the site itself may not be at risk of flooding, there would be no dry route into an area at low risk of flooding associated with the River Graveney and River Wandle. It is therefore recommended that safe refuge is designed into the development, above the 1% AEP event including 35% allowance for climate change.
- The site is located within the Flood Warning Area for River Graveney At Tooting And Colliers Wood. Occupants of the site should sign up to receive the Flood Warning Service.
- A Flood Warning and Evacuation Plan should be prepared by occupants of the site demonstrating what actions site users will
  take before, during and after a flood event to ensure their safety, and to demonstrate the development will not impact on the
  ability of the local authority and the emergency services to safeguard the current population.
- The natural surface water flow patterns on the site should be considered when preparing the surface water drainage strategy
  for the site to ensure that the risk to neighbouring areas is reduced. Development proposals for the site should seek to restrict
  surface water runoff rates to greenfield rates; demonstrate sustainable approaches to the management of surface water
  making use of SuDS including green roofs, rainwater harvesting and other innovative technologies; and incorporate soft
  landscaping, planting and impermeable surfacing.

## **CW4 Colliers Wood Station**



# Site CW4: Colliers Wood Station

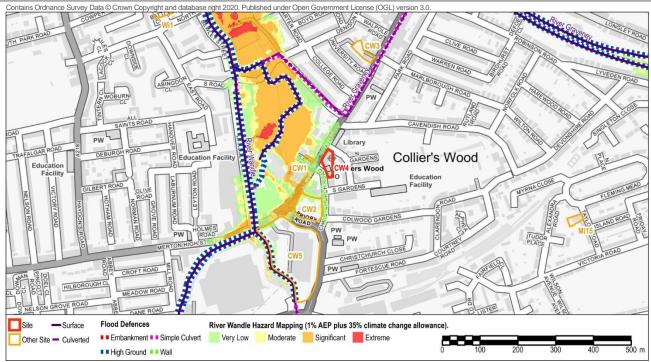


Figure C – Maximum Flood Hazard Rating 1% AEP including 20% climate change allowance

	Flooding

Risk of Flooding from Surface Water (RoFSW) Low, Medium, High

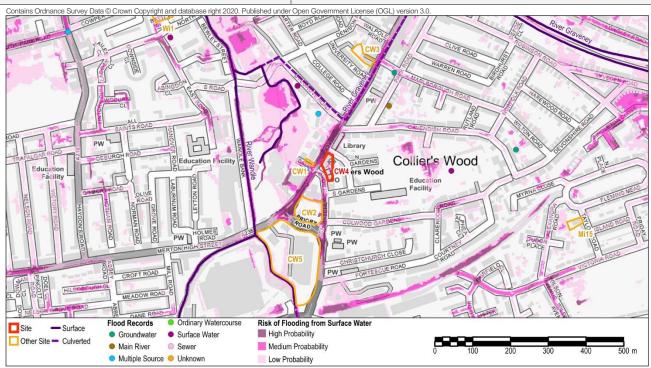


Figure D - Risk of Flooding from Surface Water (RoFSW)

Critical Drainage Area	Group7_011 Collier's Wood [Merton]			
Drainage Catchment	DC23	DC23		
Groundwater Flooding				
Bedrock Geology	Thames Group - Clay, Silt, Sand And Gravel	Superficial Geology	Sand And Gravel	
Susceptibility to Groundwater Flooding (BGS)		Potential for groundwater flooding to occur at surface		
Within an area with 'increased potential for elevated groundwater', as identified in the SWMP (GLA 2011)		Yes		
Within area of perched groundwater, as identified by LB Merton in the Level 1 SFRA (AECOM, 2020)		No		

London Borough of Merton Level 2 Strategic Flood Risk Assessment

## Site CW4: Colliers Wood Station

Other Sources	
Risk of flooding from reservoirs	Not shown to be at risk of flooding from reservoirs on the Long Term Flood Risk Map.

#### Summary

The site is located approximately 220m east of the River Wandle. The River Graveney is culverted beneath the A24 approximately 100m north of the site and flows east to join the River Wandle. The majority of the site (75%) is defined as Flood Zone 2, Medium probability of river flooding. There are records of flooding from a range of sources including Main River, surface water, groundwater and multiple sources within 500m of the site.

Modelling outputs for the River Wandle for the 1% AEP event including 35% increase in peak river flows as a result of climate change, indicate flood depths along the northern boundary of the site and the access route along the A24 of up to 0.5m. The hazard rating is 'Very Low', meaning 'caution'.

The Risk of Flooding from Surface Water mapping identifies the potential for surface water to pond along the A24 in proximity to the site. There are records of surface water flooding in proximity to the site and it is located within a Critical Drainage Area (CDA 11 Collier's Wood).

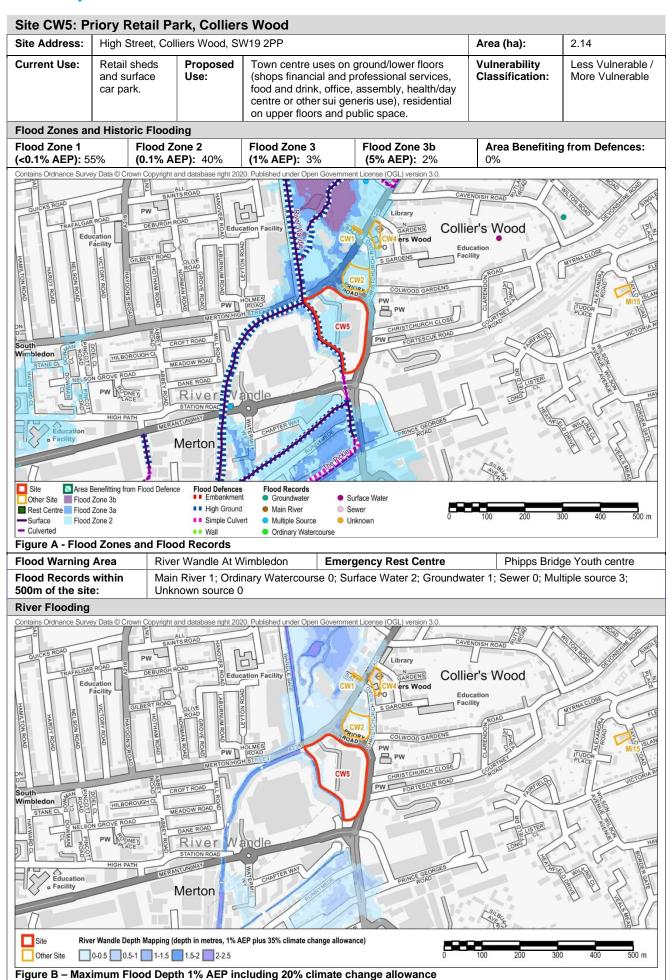
There are groundwater flooding records in this area, and broadscale mapping suggests that the local area may be susceptible to groundwater flooding at surface.

## **Site Specific Recommendations**

The proposed use for the site is mixed-use including residential which is defined as More Vulnerable. More Vulnerable development is permitted in Flood Zone 2. The Exception Test is not required. However, a number of recommendations are made for the site:

- The access/egress route along the A24 is shown to be at risk of flooding during the 1% AEP event including 35% climate change allowance with depths up to 0.5m. A place of safe refuge should be provided within the proposed development above the 1% AEP event including 35% allowance for climate change modelled flood level, and a Flood Warning and Evacuation Plan should be prepared by occupants of the site demonstrating what actions site users will take before, during and after a flood event to ensure their safety, and to demonstrate the development will not impact on the ability of the local authority and the emergency services to safeguard the current population.
- The site is located within the Flood Warning Area for River Wandle At Wimbledon. Occupants of the site should sign up to receive the Flood Warning Service.
- The natural surface water flow patterns on the site should be considered when preparing the surface water drainage strategy for the site to ensure that the risk to neighbouring areas is reduced. Development proposals for the site should seek to restrict surface water runoff rates to greenfield rates; demonstrate sustainable approaches to the management of surface water making use of SuDS including green roofs, rainwater harvesting and other innovative technologies; and incorporate soft landscaping, planting and impermeable surfacing.
- The risk of groundwater flooding and groundwater levels should be further assessed during a Site Investigation.

## **CW5 Priory Road Retail Park**



# Site CW5: Priory Retail Park, Colliers Wood Collier's Wood GARDENS ers Wood Education Facility River Vandle Merton

Site — Surface Flood Defences	River Wandle Hazard Mapping (1% AEP p	olus 35% climate change allowance).	
Other Site - Culverted - Embankment - Sirr	ple Culvert Very Low Moderate Signific	ant Extreme	
■ ■ High Ground ■ ■ Wa		0 100	200 300 400 500 m
Figure C – Maximum Flood Haza	rd Rating 1% AEP including 20%	climate change allowance	
Surface Water Flooding			
Risk of Flooding from Surface W	/ater (RoFSW) Low		
South Wimbledon STANE CL Other Site Culverted  Figure D - Risk of Flooding from	PW PROAD  ADOWROAD  Ordinary Watercourse Surface Water Sewer Unknown  Surface Water (RoFSW)	Library  CW4 ers Wood  S GARDENS  COLWOOD GARDENS  PW PW PW PW FORTESCUE ROAD  Trace Water	200 300 400 500 m
Critical Drainage Area	Group7_011 Collier's Wood [Me	ntonj	
Drainage Catchment  Groundwater Flooding	DC23, DC24		
Groundwater Flooding	Thomas Crown Olev Oll C	Compartial Or all and	Clay Cilk And Card Card
Bedrock Geology	Thames Group - Clay, Silt, Sand And Gravel	Superficial Geology	Clay, Silt And Sand, Sand And Gravel
Susceptibility to Groundwater Fl	ooding (BGS)	Potential for groundwater flooding	ng to occur at surface
Within an area with 'increased po groundwater', as identified in the		Yes	
Within area of perched groundw in the Level 1 SFRA (AECOM, 20		No	

London Borough of Merton Level 2 Strategic Flood Risk Assessment

## Site CW5: Priory Retail Park, Colliers Wood

Other Sources	
Risk of flooding from reservoirs	Not shown to be at risk of flooding from reservoirs on the Long Term Flood Risk Map.

#### Summary

The River Wandle flows along the western edge of the site. Approximately half of the site is defined as Flood Zone 1, Low probability of river flooding and the remainder is defined as Flood Zone 2, Medium probability of river flooding. Along the western edge, a small portion is defined as Flood Zone 3, High probability of flooding and Flood Zone 3b, Functional Floodplain. There are records of flooding from a range of sources including Main River, surface water, groundwater sources and multiple sources within 500m of the site.

Modelling outputs for the River Wandle for the 1% AEP event including 35% increase in peak river flows as a result of climate change, indicate that flooding affects a small area on the western edge of the site. Flood depths are shown of up to 0.5m and a corresponding hazard rating of Low.

The Risk of Flooding from Surface Water mapping identifies the potential for surface water to flow and pond towards the centre of the site as well as along the roads to the north of the site. There are records of surface water flooding in proximity to the site and it is located within a Critical Drainage Area (CDA 11 Collier's Wood).

There are groundwater flooding records in this area, and broadscale mapping suggests that the local area may be susceptible to groundwater flooding at surface.

# Site Specific Recommendations

The proposed use for the site is mixed-use including residential which is defined as More Vulnerable. More Vulnerable development is permitted in Flood Zone 2. The Exception Test is not required. However, given the proximity to the River Wandle and the risk in the future as a result of climate change, the following recommendations are made for the site:

- A sequential approach should be applied within the site, steering development towards those areas in Flood Zone 1 and at lower risk of surface water flooding.
- No development should be proposed in Flood Zone 3a and Flood Zone 3b Functional Floodplain.
- Development should be set back at least 8m from the River Wandle. Opportunities should be taken to improve the natural floodplain in this location as part of the proposed development.
- Finished floor levels for More and Less Vulnerable development should be set 300mm above the 1% AEP flood level including 35% allowance for climate change.
- Arrangements should be made for safe access and egress away from the site in the event of flooding from the River Wandle.
  This is likely to be achievable to the east of the site onto the A24 where the risk from the River Wandle is lower. It is noted that flooding affects the wider area, specifically the A24 to the north and the south, and therefore details of the specific egress route away from the area would need to be carefully planned and recorded in the Flood Warning and Evacuation Plan.
- The site is located within the Flood Warning Area for River Wandle At Wimbledon. Occupants of the site should sign up to receive the Flood Warning Service.
- A Flood Warning and Evacuation Plan should be prepared by occupants of the site demonstrating what actions site users will
  take before, during and after a flood event to ensure their safety, and to demonstrate the development will not impact on the
  ability of the local authority and the emergency services to safeguard the current population.
- The natural surface water flow patterns on the site should be considered when preparing the surface water drainage strategy for the site to ensure that the risk to neighbouring areas is reduced. Development proposals for the site should seek to restrict surface water runoff rates to greenfield rates; demonstrate sustainable approaches to the management of surface water making use of SuDS including green roofs, rainwater harvesting and other innovative technologies; and incorporate soft landscaping, planting and impermeable surfacing.
- · The risk of groundwater flooding and groundwater levels should be further assessed as part of a Site Investigation.