Appendix C Sites requiring Exception Test

Site 35: Purley Baptist Church, 2-12 Banstead Road

Site 54: 375-401 Brighton Road

Site 101: Toby Carvery, Brantwood Road

Site 324: Purley Oaks Depot, 505-600 Brighton Road

Site 347: Tesco, 2 Purley Road

Site 405: Capella Court & Royal Oak Centre, 725 Brighton Road

Site 411: Palmerston House, 814 Brighton Road

Site 683: Purley Back Lanes, 16-28 Pampisford Road

Site 946: Stubbs Mead Depot, Factory Lane

Site Name: Purley Baptist Church, 2-12 Banstead Road

Site ID:	35	**Area (ha):**	0.43
Proposed Use:	New church, community facility and residential.	**Vulnerability Classification:**	More Vulnerable

Flood Zones and Historic Flooding

Flood Zone 1 (<0.1% AEP): 96%	**Flood Zone 2 (0.1% AEP):** 3%	**Flood Zone 3 (1% AEP):** 1%	**Flood Zone 3b (5% AEP):** 0%	**Area Benefiting from Defences:** 0%

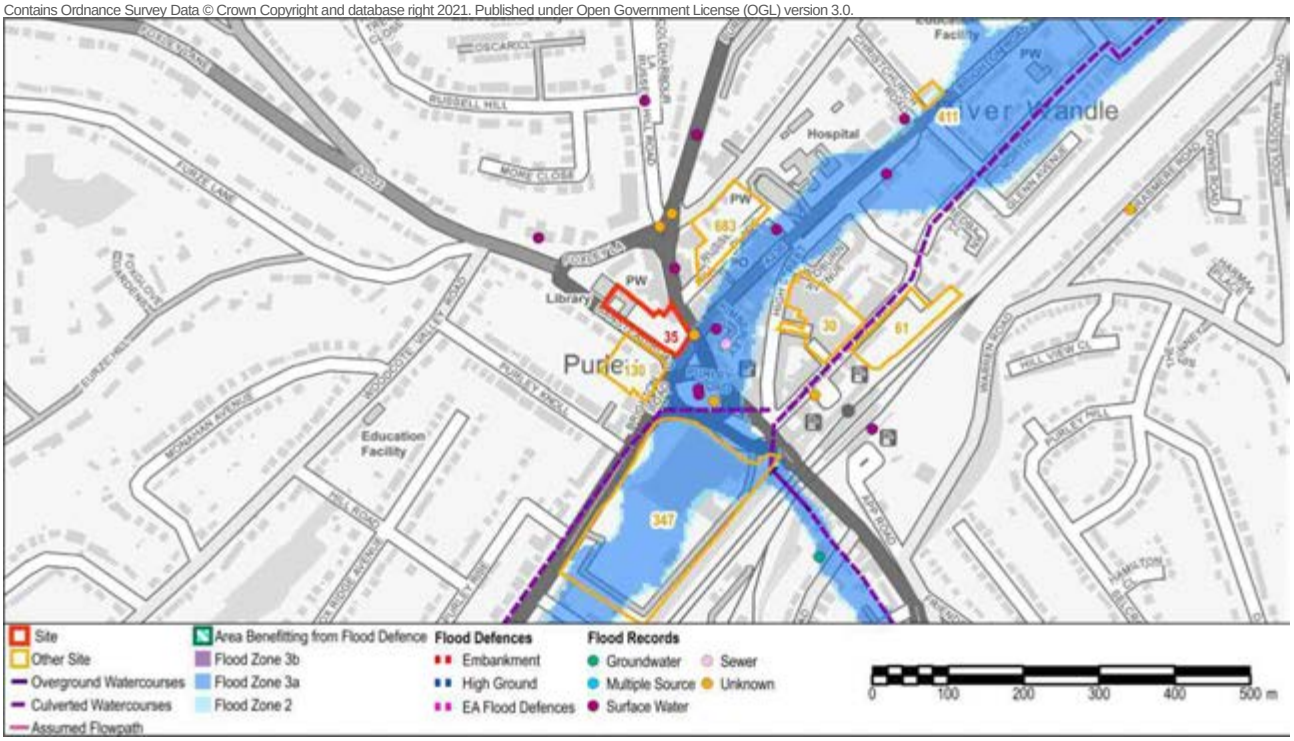


Figure 1 - Flood Zones and Flood Records

Flood Warning Area	None
Flood Records within 500m of the site:	Surface Water 11; Groundwater 1; Sewer 2; Multiple source 0; Unknown source 6

River Flooding

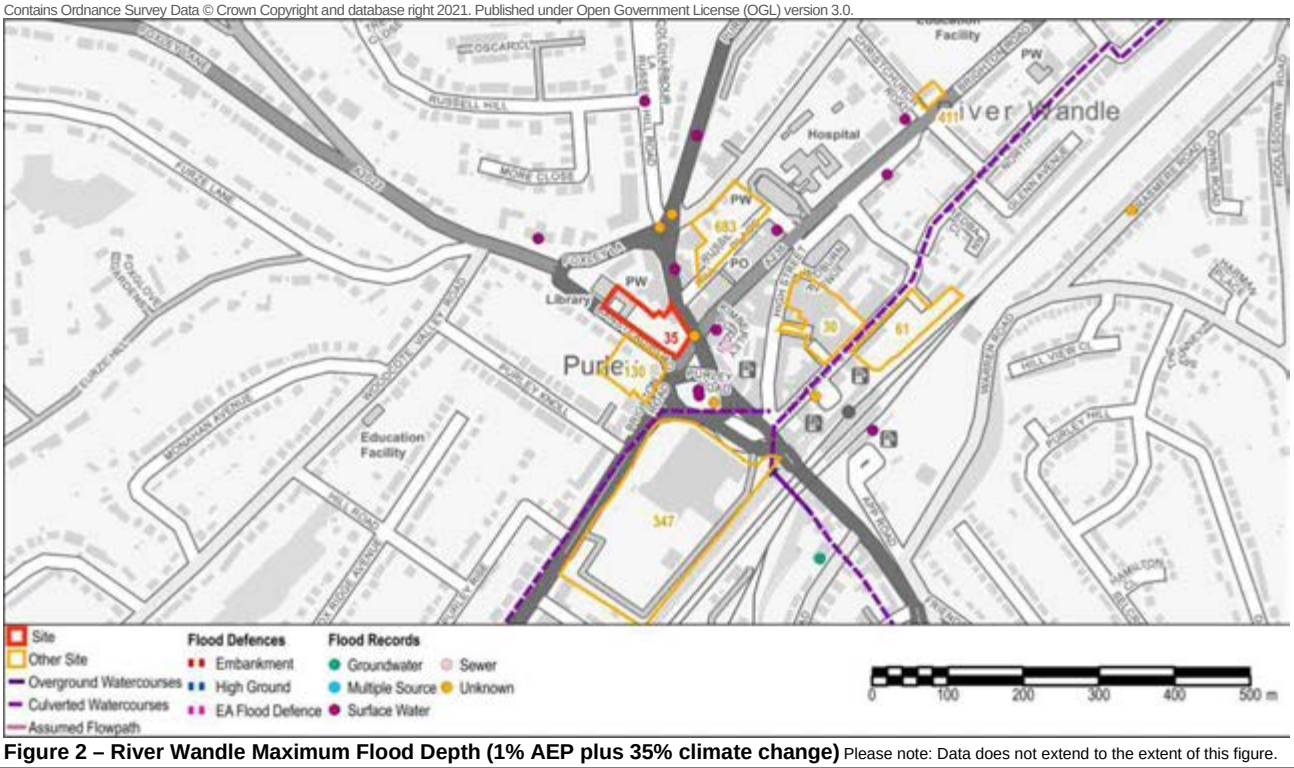


Figure 2 – River Wandle Maximum Flood Depth (1% AEP plus 35% climate change) Please note: Data does not extend to the extent of this figure.

Site Name: Purley Baptist Church, 2-12 Banstead Road

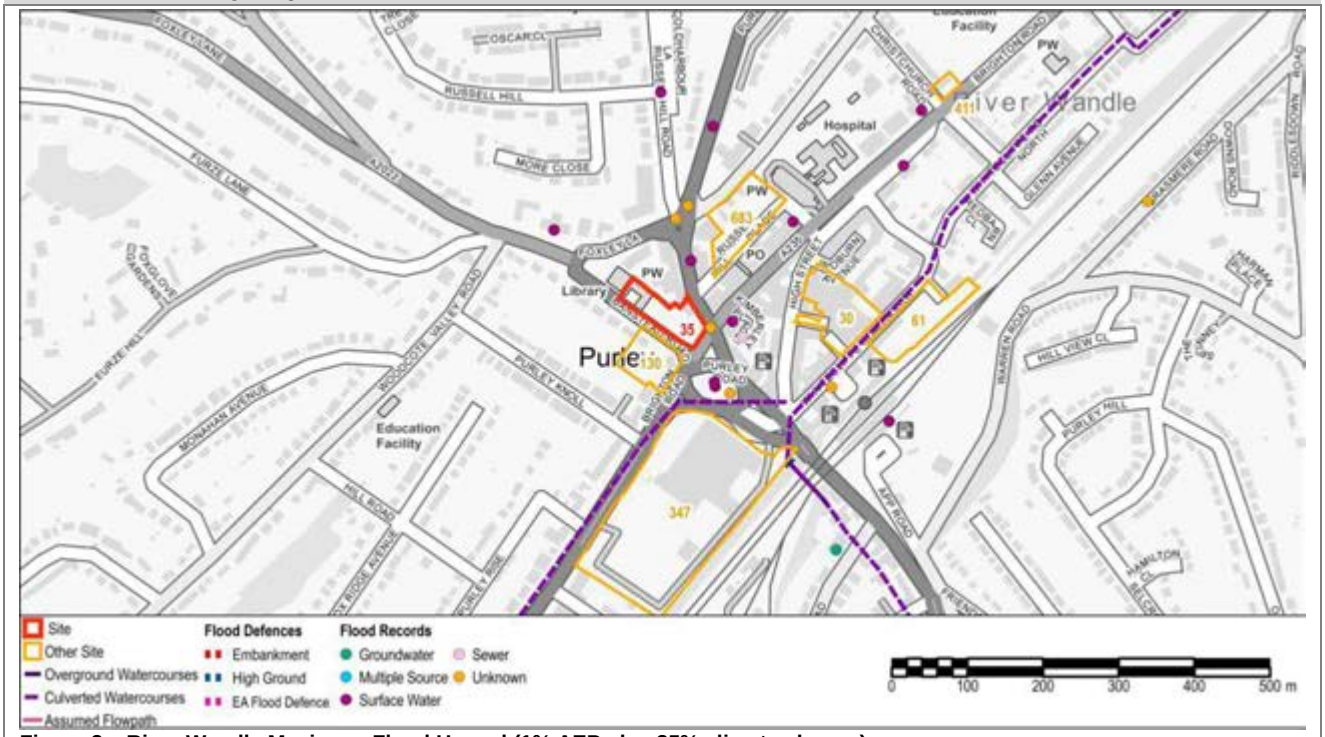


Figure 3 – River Wandle Maximum Flood Hazard (1% AEP plus 35% climate change) Please note: Data does not extend to the extent of this figure.

Surface Water Flooding	
Critical Drainage Area	Group8_040 - Purley Cross [Croydon]
Drainage Catchment	DC39, DC47

Site Name: Purley Baptist Church, 2-12 Banstead Road

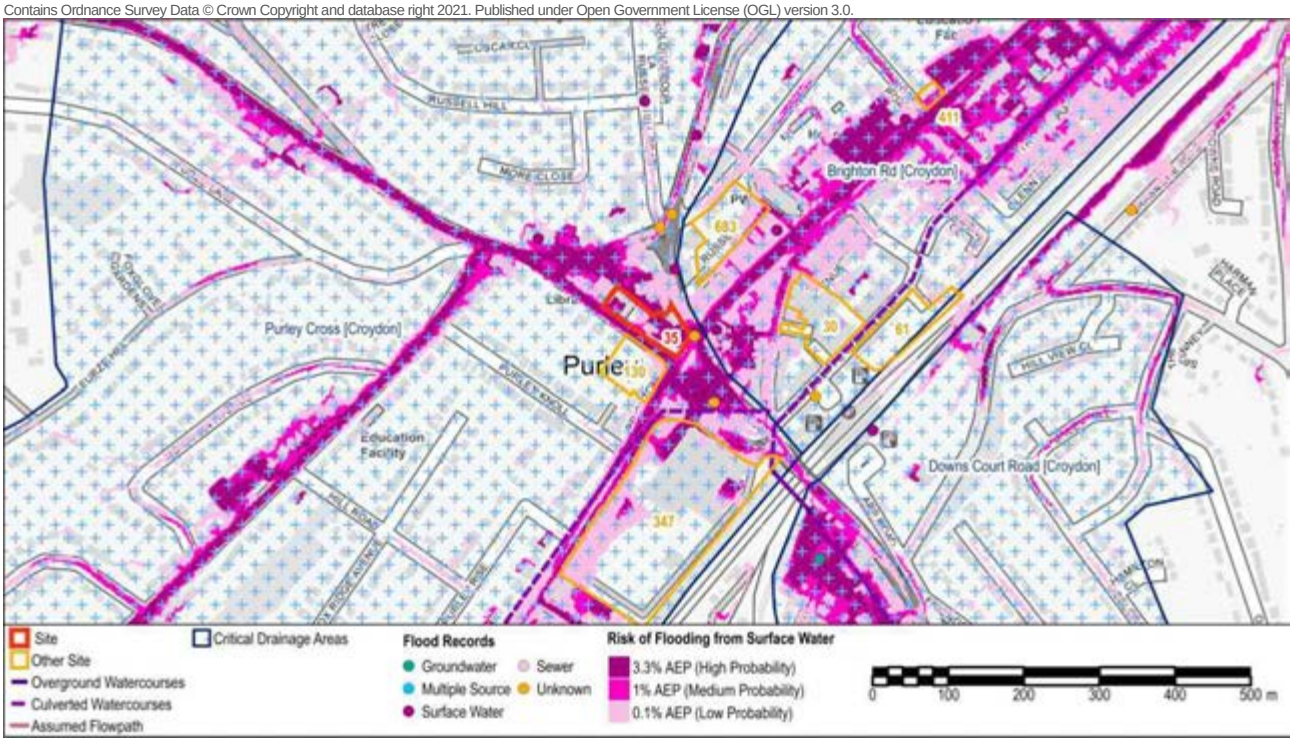


Figure 4 - Risk of Flooding from Surface Water (RoFSW) Flood Extents

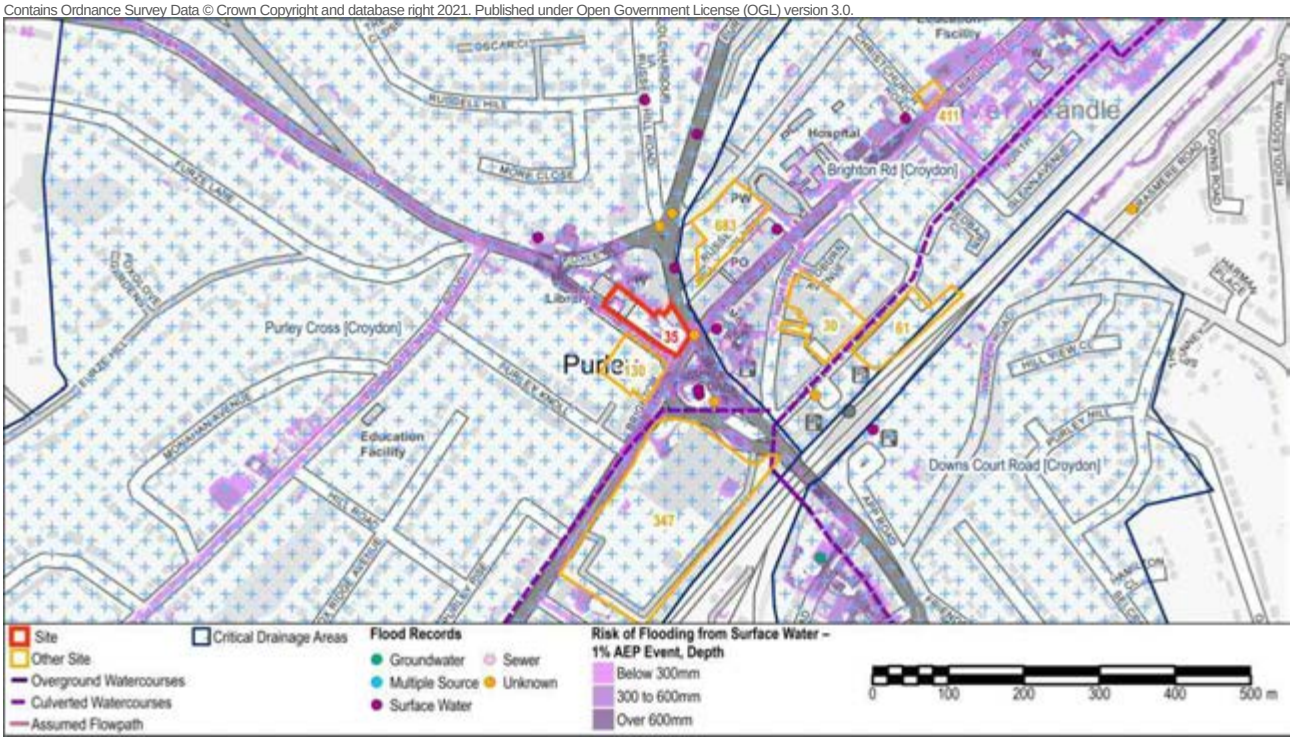


Figure 5 - Risk of Flooding from Surface Water (RoFSW) 1% AEP Flood Depth

Site Name: Purley Baptist Church, 2-12 Banstead Road

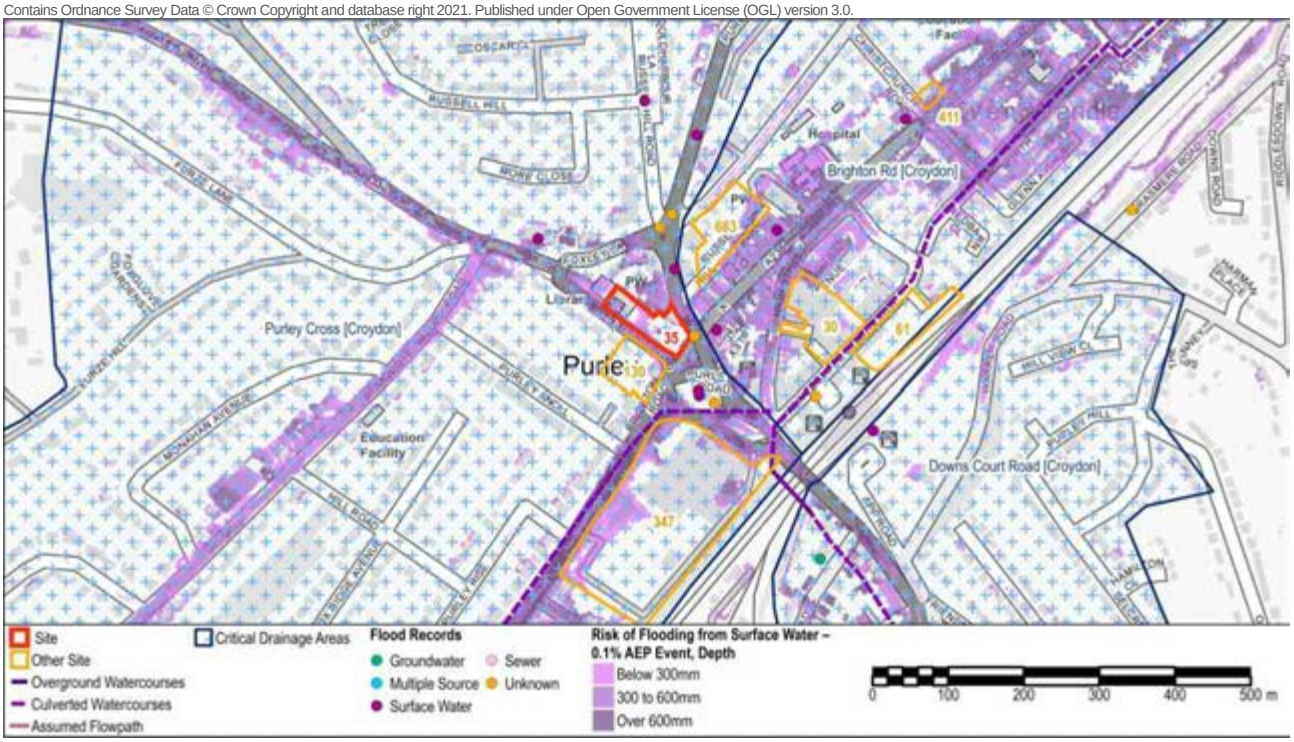


Figure 6 - Risk of Flooding from Surface Water (RoFSW) 0.1% AEP Flood Depth

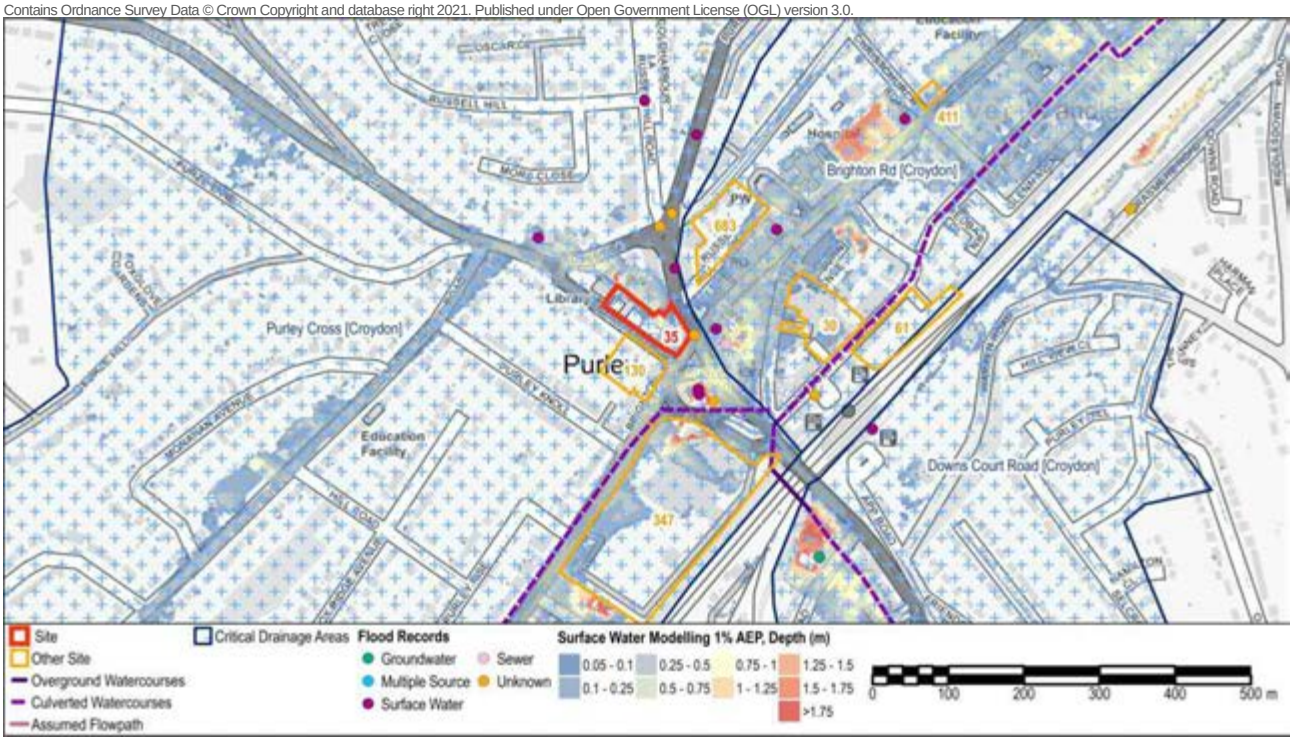


Figure 7 - Surface Water Modelling 1% AEP Flood Depth

Site Name: Purley Baptist Church, 2-12 Banstead Road

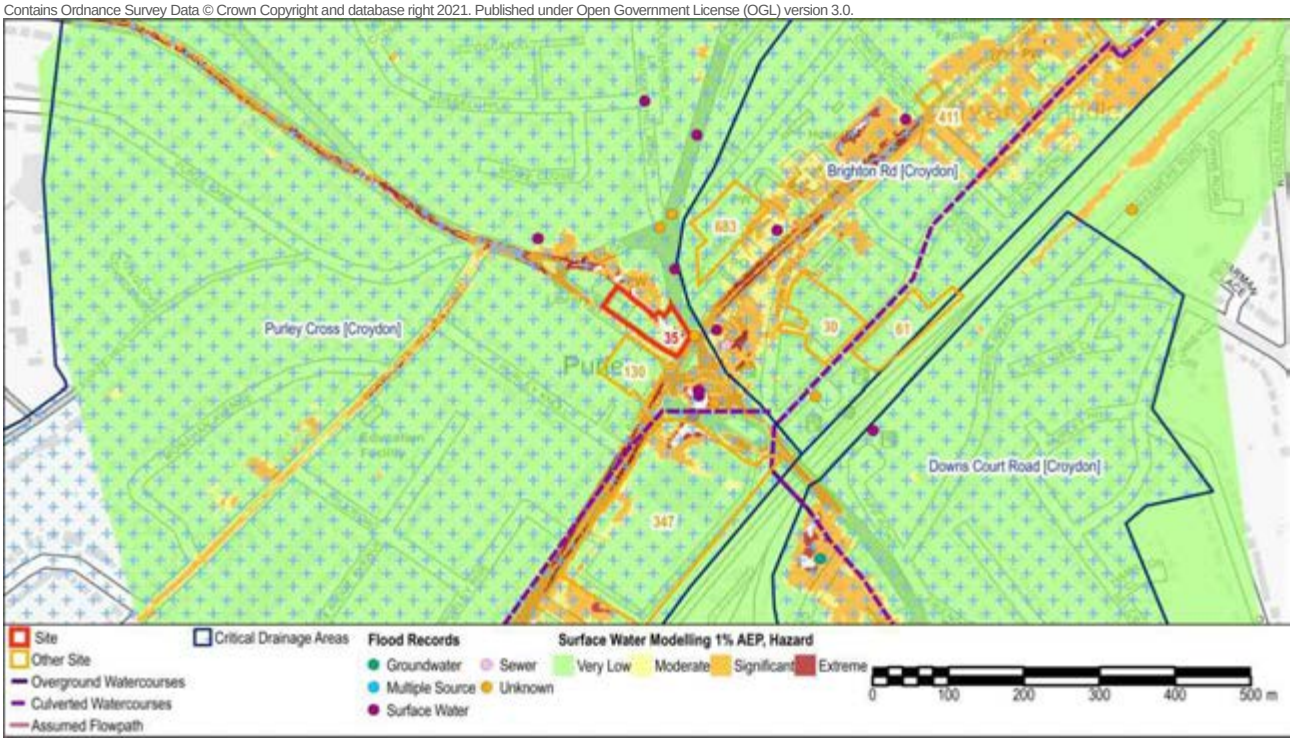


Figure 8 - Surface Water Modelling 1% AEP Flood Hazard

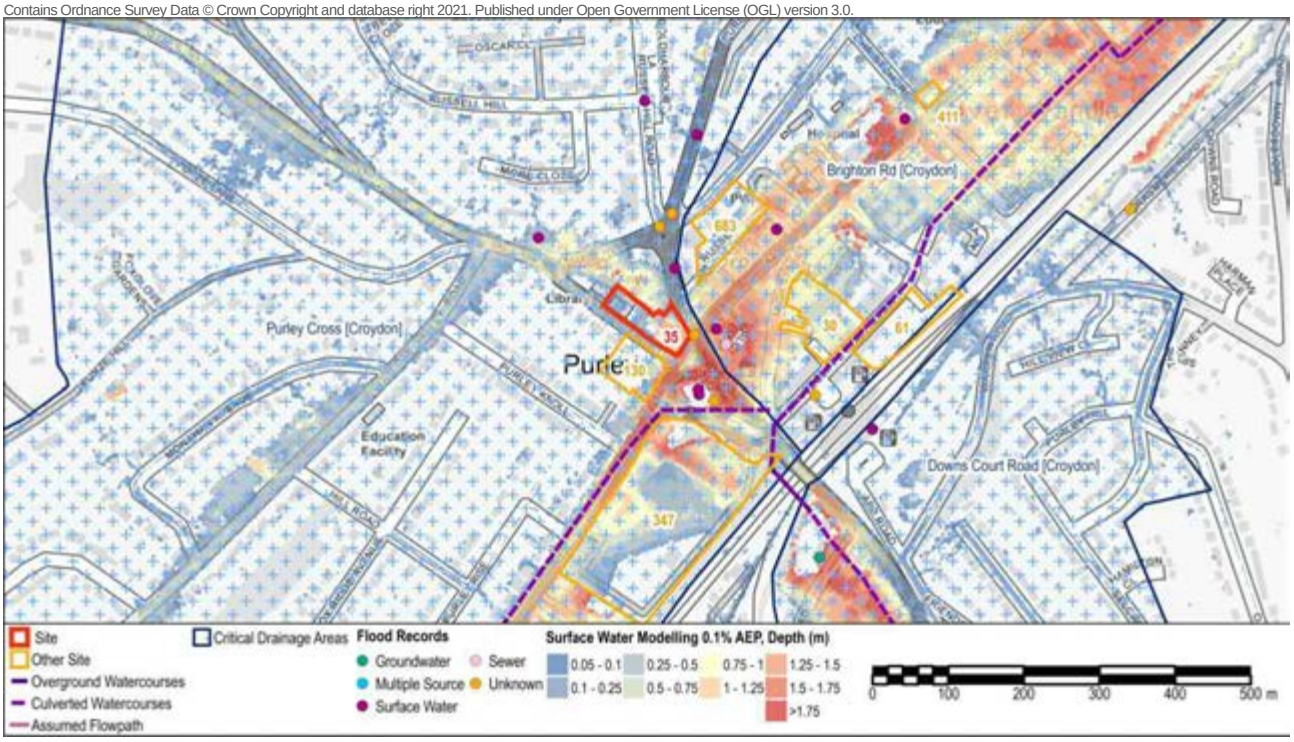


Figure 9 - Surface Water Modelling 0.1% AEP Flood Depth

Site Name: Purley Baptist Church, 2-12 Banstead Road

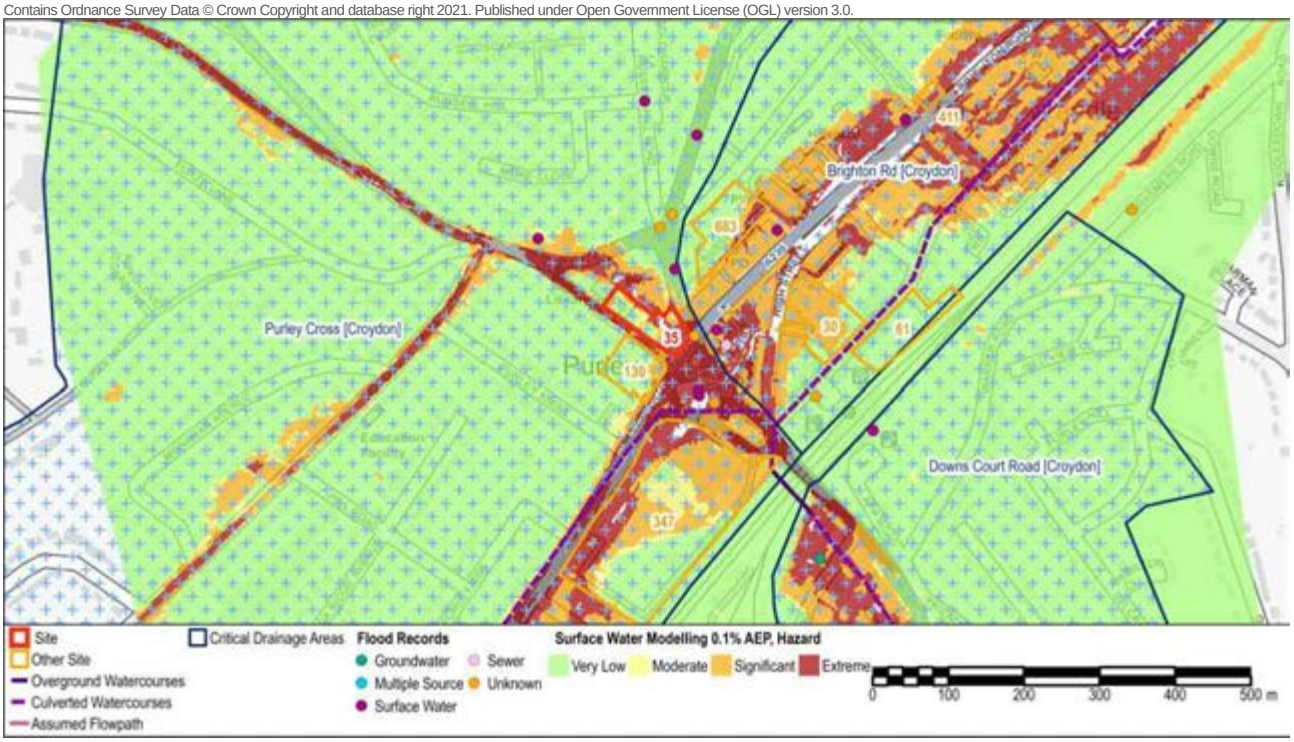


Figure 10 - Surface Water Modelling 0.1% AEP Flood Hazard

Groundwater Flooding			
Bedrock Geology	White Chalk Subgroup	**Superficial Geology**	-
Increased Potential for Elevated Groundwater		Yes	
Susceptibility to Groundwater Flooding (BGS)		Potential for groundwater flooding to occur at surface	

Other Sources	
Risk of flooding from reservoirs	The Long Term Flood Risk Map shows that the site is not at risk of flooding, in the event of a breach or failure of a reservoir.

Summary

The majority (96%) of the site is defined as Flood Zone 1, Low probability of river flooding. The south eastern fringe of the site boundary is defined within Flood Zone 2 , Medium probability of river flooding and Flood Zone 3a, High Probability of river flooding.

A 1050mm diameter culvert runs in a northern direction along Brighton Road, conveying runoff generated in the surroundings and flows from the intermittent watercourses of the Merstham Bourne and Caterham Bourne
There are 11 records of surface water flooding within 500m of the site, as well as records of groundwater flooding, sewer flooding and records from unspecified source. The site lies within the Purley Cross Critical Drainage Area (CDA).

This culverted part of the Wandle catchment was not included within the River Wandle modelling and therefore there are no modelling outputs for the 1% AEP fluvial flood event including 35% increase in peak river flows as a result of climate change (Figures 2 and 3).

Surface water modelling undertaken by Arcadis (July 2020) is included in Figures 7-10 and covers the site and surrounding area. For the 1% AEP event, there is risk of surface water flooding reaching depths of 0.5m – 1m in the east of the site as well as along significant stretches of the surrounding roads including Banstead Road, Foxley Lane, Russell Hill Road and Brighton Road, with a corresponding hazard rating of Significant and Extreme. During the 0.1% AEP event, flood depths increase from 0.5m to 1.5m.

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 1 and Flood Zone 2. Where More Vulnerable development is proposed in areas of Flood Zone 3, the Exception Test will be required. Furthermore, even where the Exception Test is not required (in line with Table 3 of the PPG), in the light of the risk of surface water flooding in this area, steps should be taken to ensure that development is safe for its lifetime considering the impact of climate change, will not increase flood risk elsewhere, and where possible will reduce flood risk overall. To this end, 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 before consideration of areas at greater risk. Development should be avoided in Flood Zone 3a.
- Planning for the site should consider how it can ‘make space for water’ and consider the need to temporarily store surface water runoff during heavy rainfall events. Opportunities should be sought for providing strategic SuDS systems across multiple plots within this area.
- Development proposals 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.
- Development of the site should consider the footprint of the existing buildings are ensure no loss of floodplain storage. Development of the site should consider the surface water flow paths in the area and ensure there is no increase in flood risk

Site Name: Purley Baptist Church, 2-12 Banstead Road

to neighbouring areas. Opportunities should be taken to reduce the risk of surface water flooding to the surrounding areas through the layout of the development.

- Finished floor levels for More Vulnerable development should be set above the modelled flood level for the 1% AEP event, including a 300mm freeboard. Flood depths for the modelled 1% AEP event are shown in Figure 7.
- Finished floor levels do not need to be raised for Less Vulnerable development, however flood resilience measures should be adopted within these developments to reduce potential damage during flooding and enable rapid re-occupancy.
- Surface water modelling shows that the main access routes throughout this area are at risk of flooding with a Significant or Extreme hazard rating during the 1% and 0.1% AEP events. Development proposals for the site should consider how safe access/egress can be provided during these events. In addition, given the potential for surface water to have rapid onset, a place of safe refuge should be provided within new developments above the modelled flood level for the 0.1% AEP event (Figure 9).
- A flood warning and evacuation plan should be prepared, in accordance with the Council's wider emergency planning response.
- This area is covered by the Environment Agency Flood Alert Area for Groundwater flooding in South East London (Areas at risk from Groundwater flooding including Caterham Bourne, Coulsdon Bourne, Beddington, Carshalton, Coulsdon, Kenley, Purley, South Croydon, Whyteleafe, Bromley, Bexley and Lewisham). This service has a wide geographic coverage and does not give time-specific warnings.
- The risk of groundwater flooding and groundwater levels should be further assessed as part of a Site Investigation for specific development proposals within the site.

Site Name: 375-401 Brighton Road

Site ID:	54	**Area (ha):**	0.62
Proposed Use:	Mixed use residential and supermarket.	**Vulnerability Classification:**	More Vulnerable

Flood Zones and Historic Flooding

Flood Zone 1 (<0.1% AEP): 4%	**Flood Zone 2 (0.1% AEP):** 3%	**Flood Zone 3 (1% AEP):** 93%	**Flood Zone 3b (5% AEP):** 0%	**Area Benefiting from Defences:** 0%

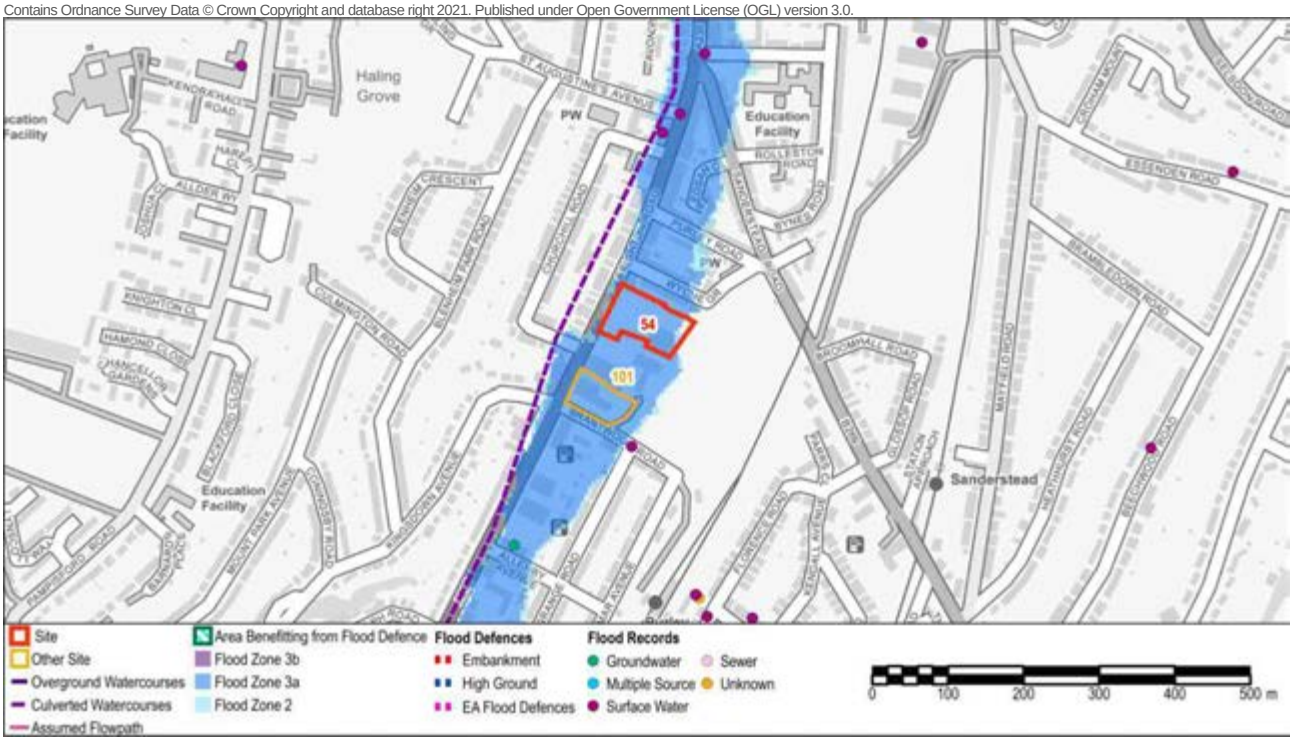


Figure 1 - Flood Zones and Flood Records

Flood Warning Area	None
Flood Records within 500m of the site:	Surface Water 9; Groundwater 1; Sewer 0; Multiple source 0; Unknown source 1

River Flooding

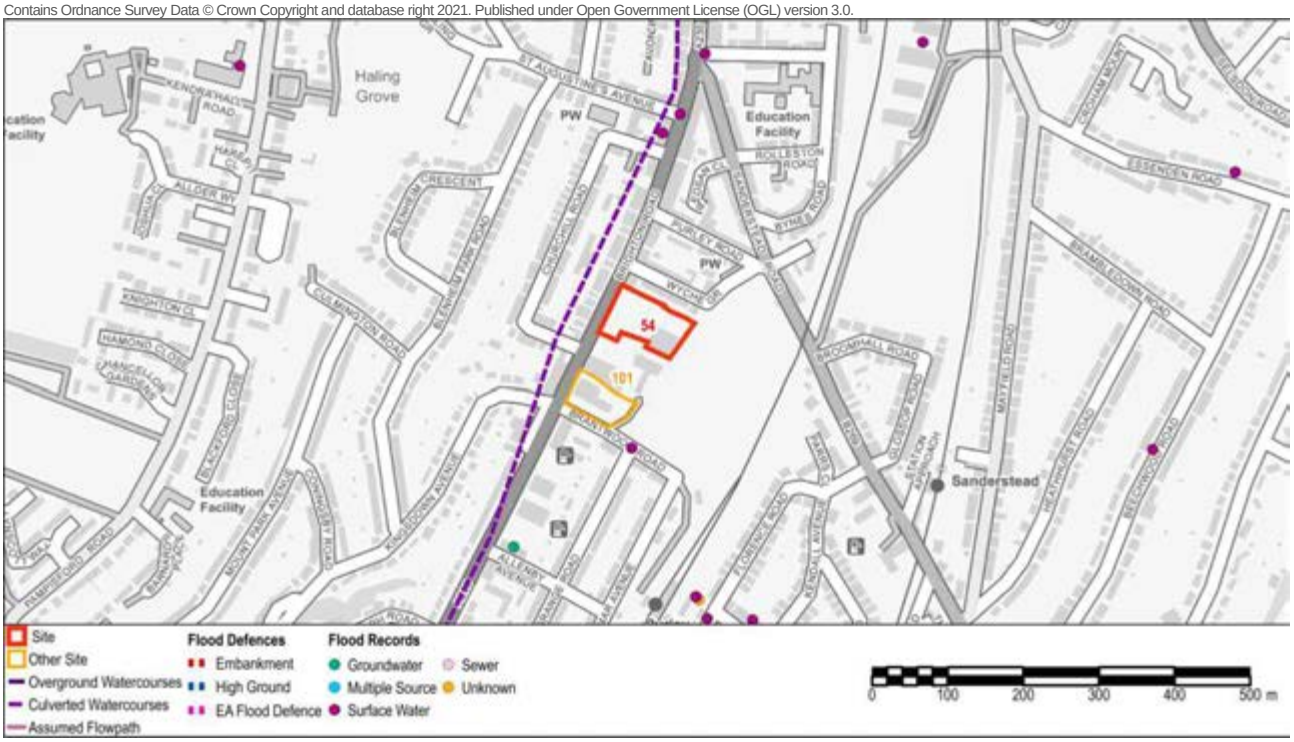


Figure 2 – River Wandle Maximum Flood Depth (1% AEP plus 35% climate change) Please note: Data does not extend to the extent of this figure.

Site Name: 375-401 Brighton Road

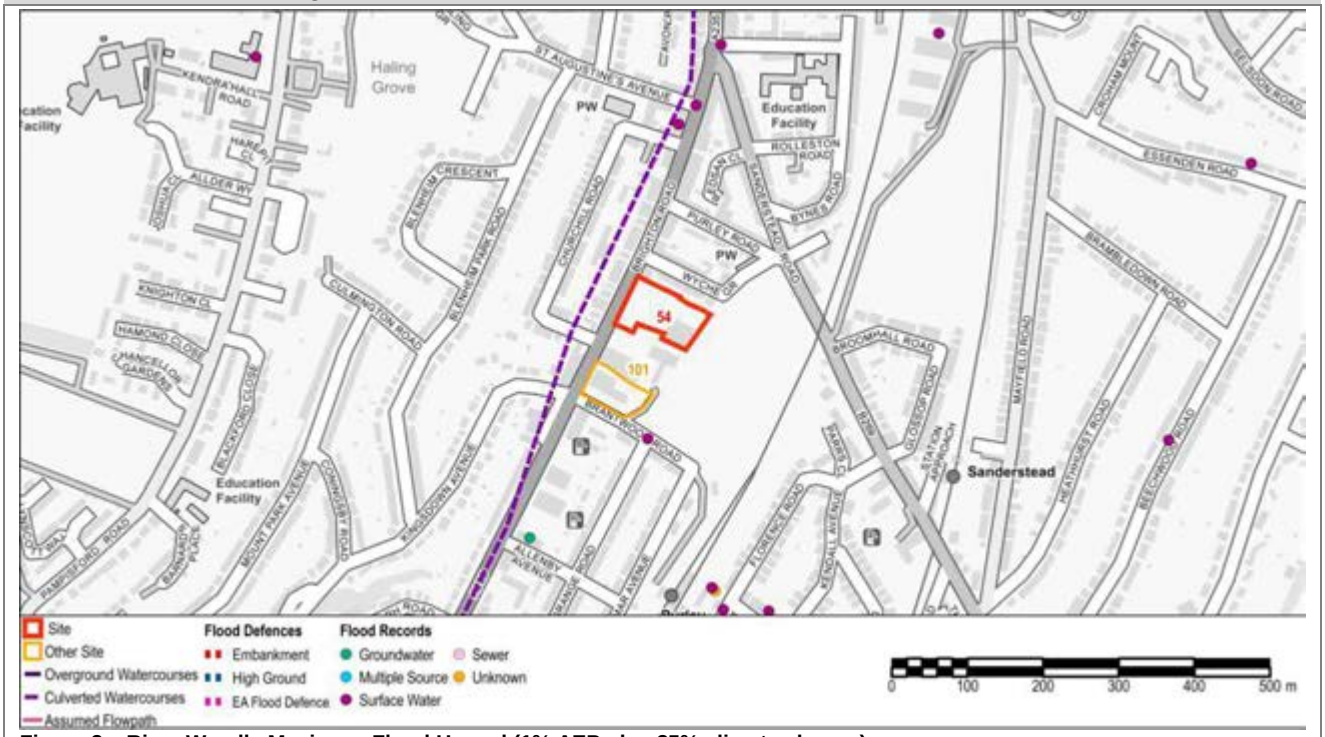


Figure 3 – River Wandle Maximum Flood Hazard (1% AEP plus 35% climate change) Please note: Data does not extend to the extent of this figure.

Surface Water Flooding	
Critical Drainage Area	Group8_041 - Brighton Rd [Croydon]
Drainage Catchment	DC39

Site Name: 375-401 Brighton Road

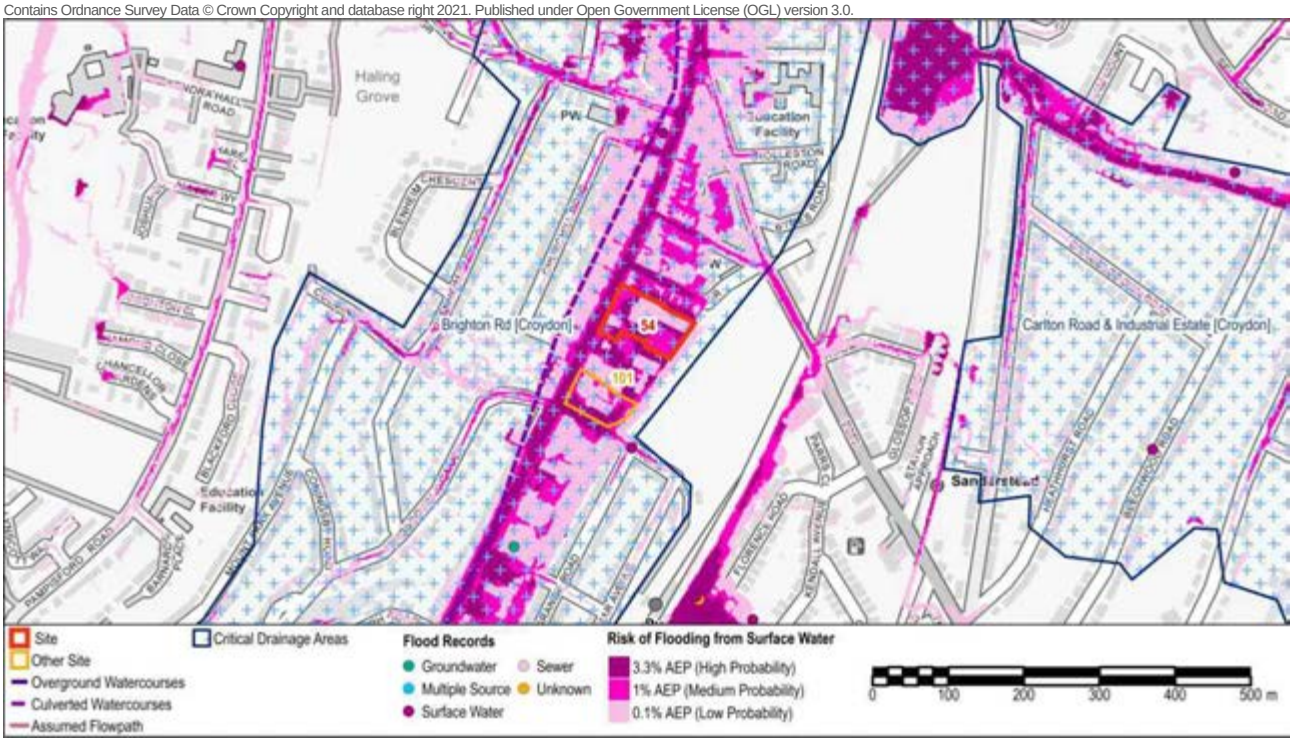


Figure 4 - Risk of Flooding from Surface Water (RoFSW) Flood Extents

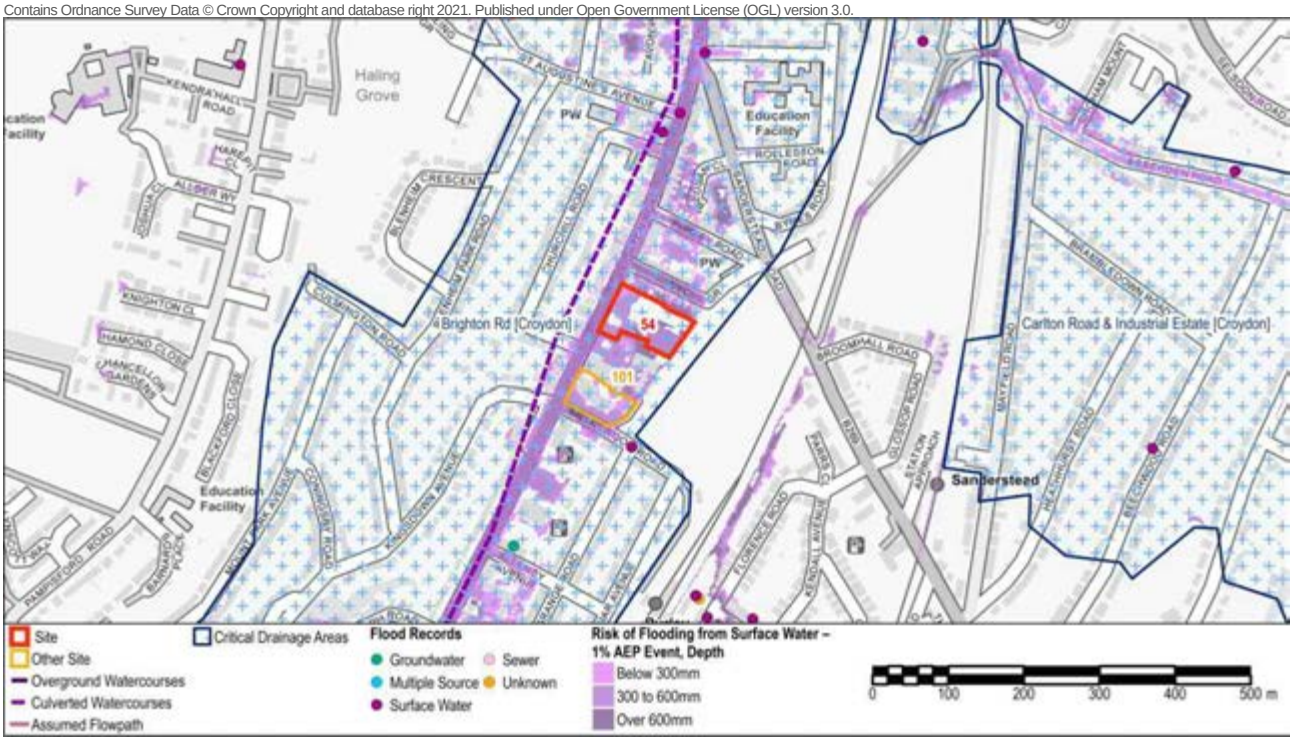


Figure 5 - Risk of Flooding from Surface Water (RoFSW) 1% AEP Flood Depth

Site Name: 375-401 Brighton Road

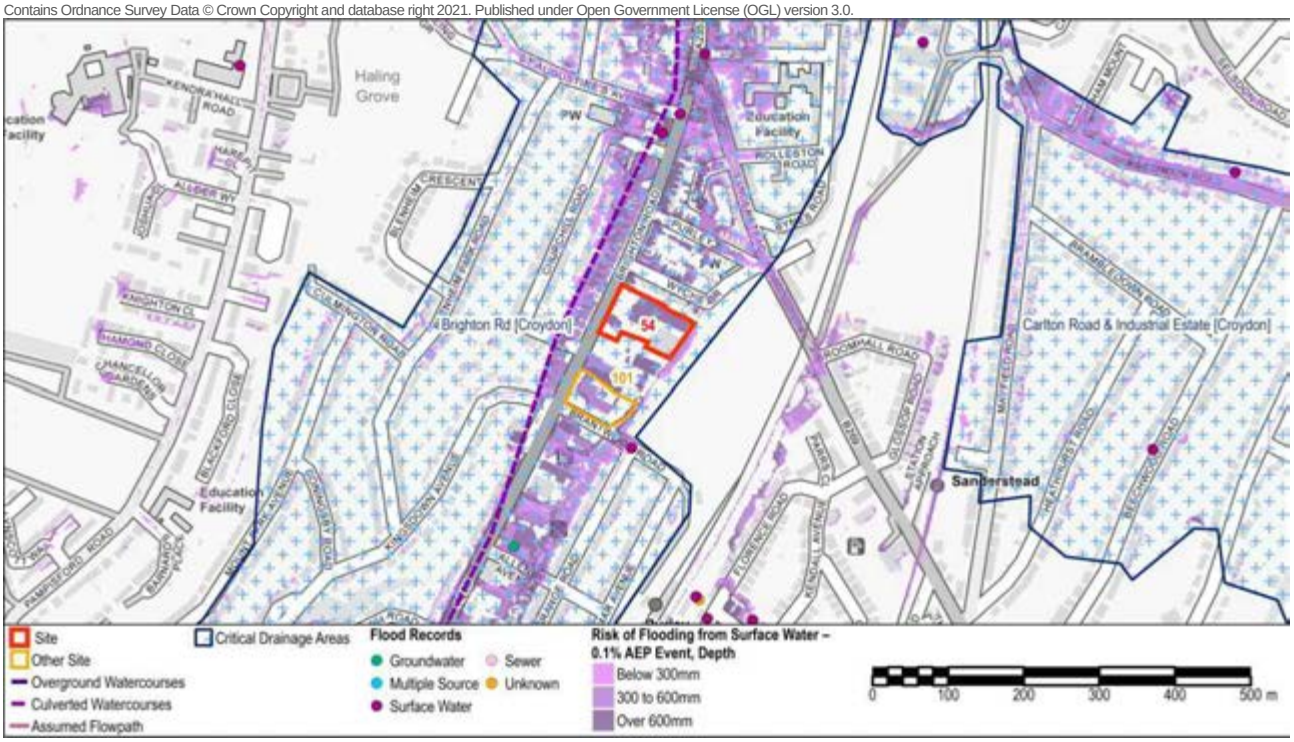


Figure 6 - Risk of Flooding from Surface Water (RoFSW) 0.1% AEP Flood Depth

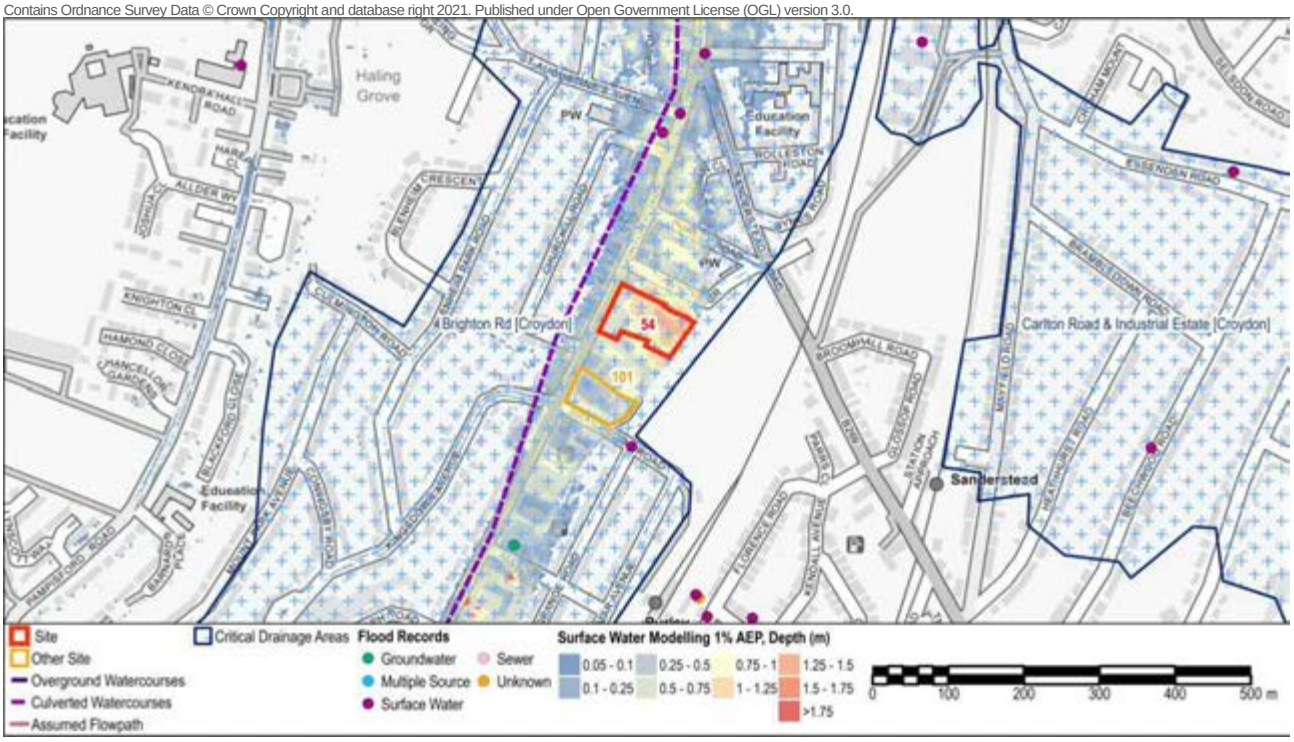


Figure 7 - Surface Water Modelling 1% AEP Flood Depth

Site Name: 375-401 Brighton Road

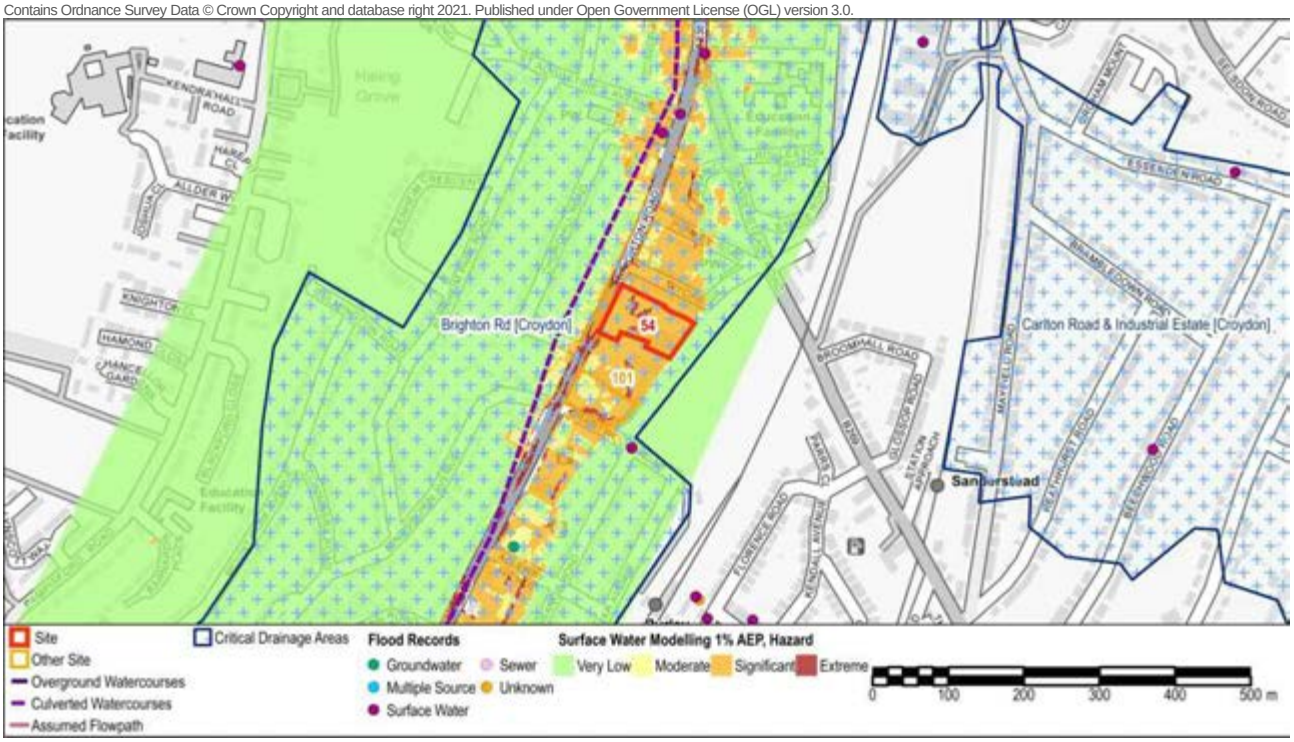


Figure 8 - Surface Water Modelling 1% AEP Flood Hazard

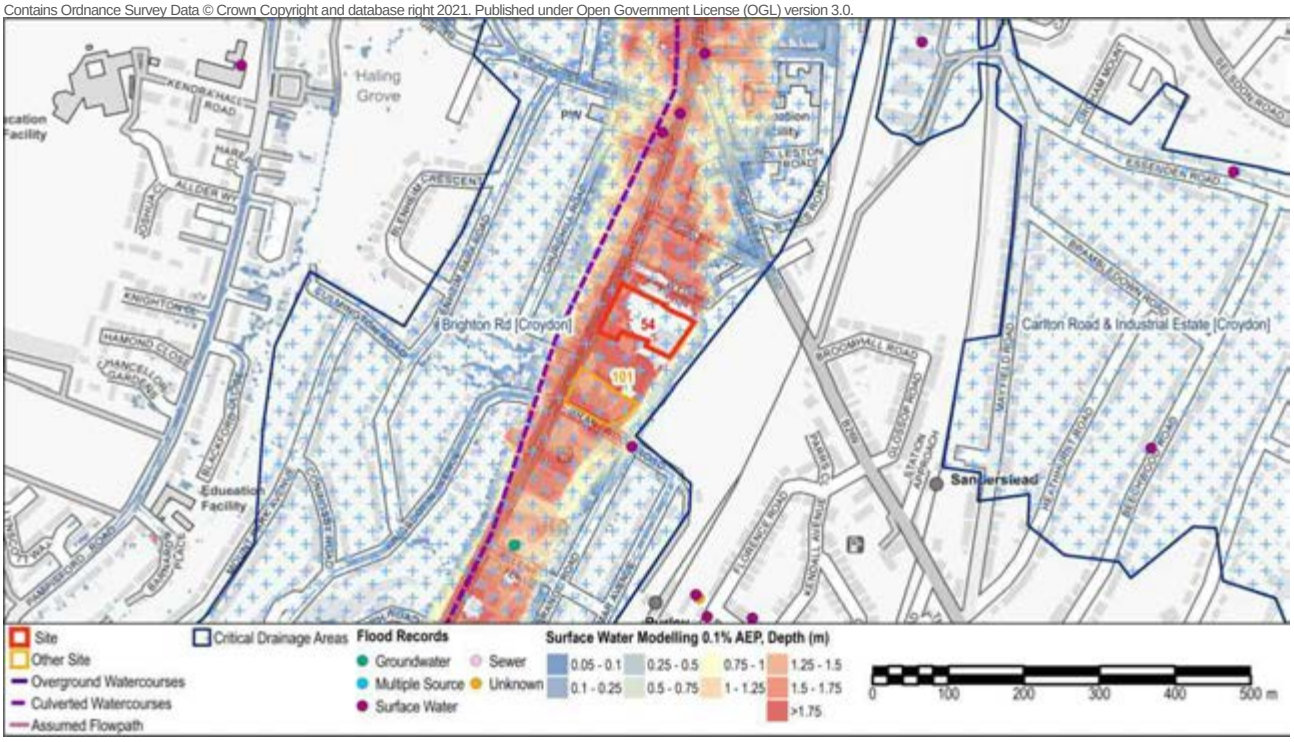


Figure 9 - Surface Water Modelling 0.1% AEP Flood Depth

Site Name: 375-401 Brighton Road

Figure 10 - Surface Water Modelling 0.1% AEP Flood Hazard

Groundwater Flooding			
Bedrock Geology	White Chalk Subgroup	**Superficial Geology**	Sand And Gravel
Increased Potential for Elevated Groundwater		Yes	
Susceptibility to Groundwater Flooding (BGS)		Potential for groundwater flooding to occur at surface	

Other Sources	
Risk of flooding from reservoirs	The Long Term Flood Risk Map shows that the site is not at risk of flooding, in the event of a breach or failure of a reservoir.

Summary

The majority of the site (92%) is defined as Flood Zone 3, High probability of river flooding, and the remainder of the site in defined as Flood Zone 1 (4%), Low probability flood of river flooding and the Flood Zone 2 (6%), Medium Probability Flooding.

A 1050mm diameter culvert runs in a northern direction along Brighton Road, conveying runoff generated in the surroundings and flows from the intermittent watercourses of the Merstham Bourne and Caterham Bourne.

There are records of flooding along Brighton Road recorded in the SFRA, SWMP and PFRA. There are records of flooding from a range of sources including surface water, groundwater, multiple sources and unknown sources within 500m of the site. The site lies within the Brighton Road Critical Drainage Area (CDA).

This culverted part of the Wandle catchment was not included within the River Wandle modelling and therefore there are no modelling outputs for the 1% AEP fluvial flood event including 35% increase in peak river flows as a result of climate change (Figures 2 and 3).

Surface water modelling undertaken by Arcadis (July 2020) is included in Figures 7-10 and covers the site and surrounding area. For the 1% AEP event, there is risk of surface water flooding reaching depths of 1.5m on the site as well as 0.75m along Brighton Road, with a corresponding hazard rating of Significant and Extreme. During the 0.1% AEP event, flood depths increase to >1.5m, with a hazard rating of Extreme.

Site Specific Recommendations

The proposed use for the site includes residential uses which are 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:

- Planning for the site should consider how it can 'make space for water' and consider the need to temporarily store surface water runoff during heavy rainfall events. Opportunities should be sought for providing strategic SuDS systems across multiple plots within this area.
- Development proposals 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.
- Development of the site should consider the footprint of the existing buildings are ensure no loss of floodplain storage. Development of the site should consider the surface water flow paths in the area and ensure there is no increase in flood risk to neighbouring areas. Opportunities should be taken to reduce the risk of surface water flooding to the surrounding areas through the layout of the development.

Site Name: 375-401 Brighton Road

- Finished floor levels for More Vulnerable development should be set above the modelled flood level for the 1% AEP event, including a 300mm freeboard. Flood depths for the modelled 1% AEP event are shown in Figure 7.
- Finished floor levels do not need to be raised for Less Vulnerable development, however flood resilience measures should be adopted within these developments to reduce potential damage during flooding and enable rapid re-occupancy.
- Surface water modelling shows that the main access routes throughout this area are at risk of flooding with a Significant or Extreme hazard rating during the 1% and 0.1% AEP events. Development proposals for the site should consider how safe access/egress can be provided during these events. In addition, given the potential for surface water to have rapid onset, a place of safe refuge should be provided within new developments above the modelled flood level for the 0.1% AEP event (Figure 9).
- A flood warning and evacuation plan should be prepared, in accordance with the Council's wider emergency planning response.
- This area is covered by the Environment Agency Flood Alert Area for Groundwater flooding in South East London (Areas at risk from Groundwater flooding including Caterham Bourne, Coulsdon Bourne, Beddington, Carshalton, Coulsdon, Kenley, Purley, South Croydon, Whyteleafe, Bromley, Bexley and Lewisham). This service has a wide geographic coverage and does not give time-specific warnings.
- The risk of groundwater flooding and groundwater levels should be further assessed as part of a Site Investigation for specific development proposals within the site.

Site Name: Toby Carvery, Brantwood Road

Site ID:	101	**Area (ha):**	0.36
Proposed Use:	Residential development.	**Vulnerability Classification:**	More Vulnerable

Flood Zones and Historic Flooding

Flood Zone 1 (<0.1% AEP): 0%	**Flood Zone 2 (0.1% AEP):** 0%	**Flood Zone 3 (1% AEP):** 100%	**Flood Zone 3b (5% AEP):** 0%	**Area Benefiting from Defences:** 0%

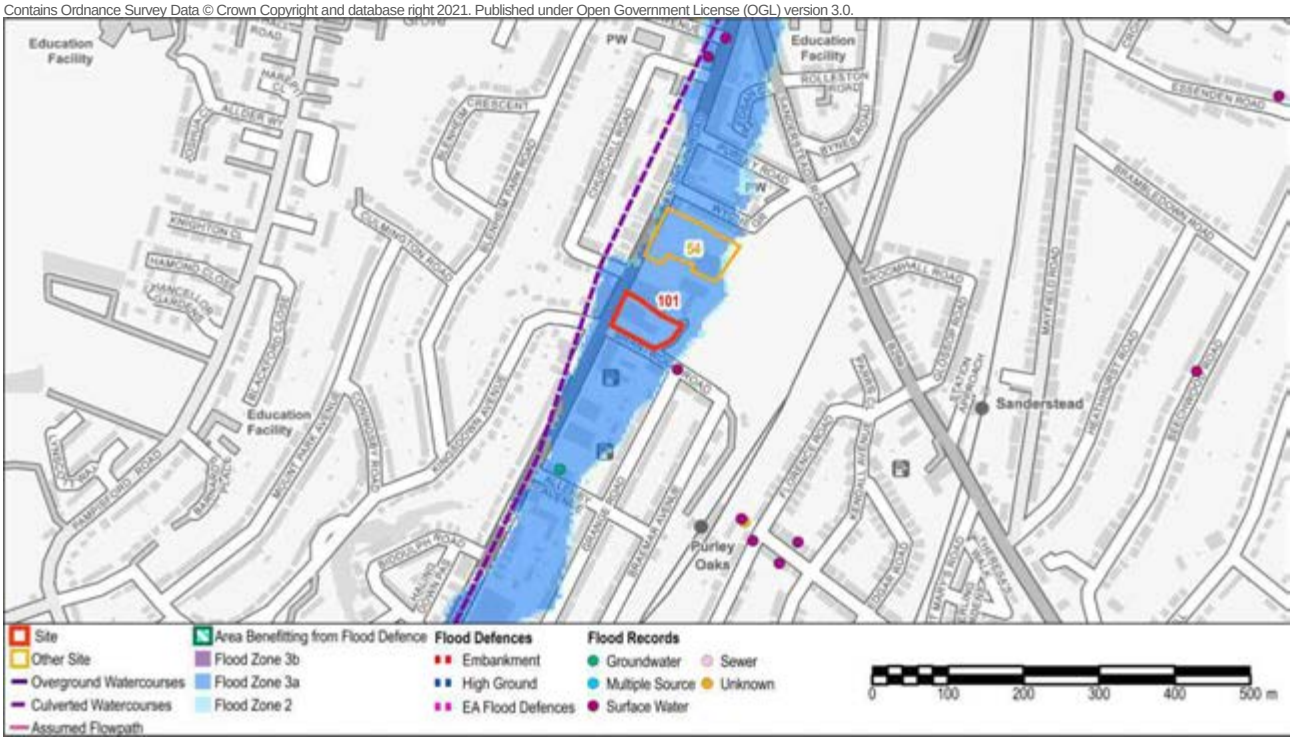
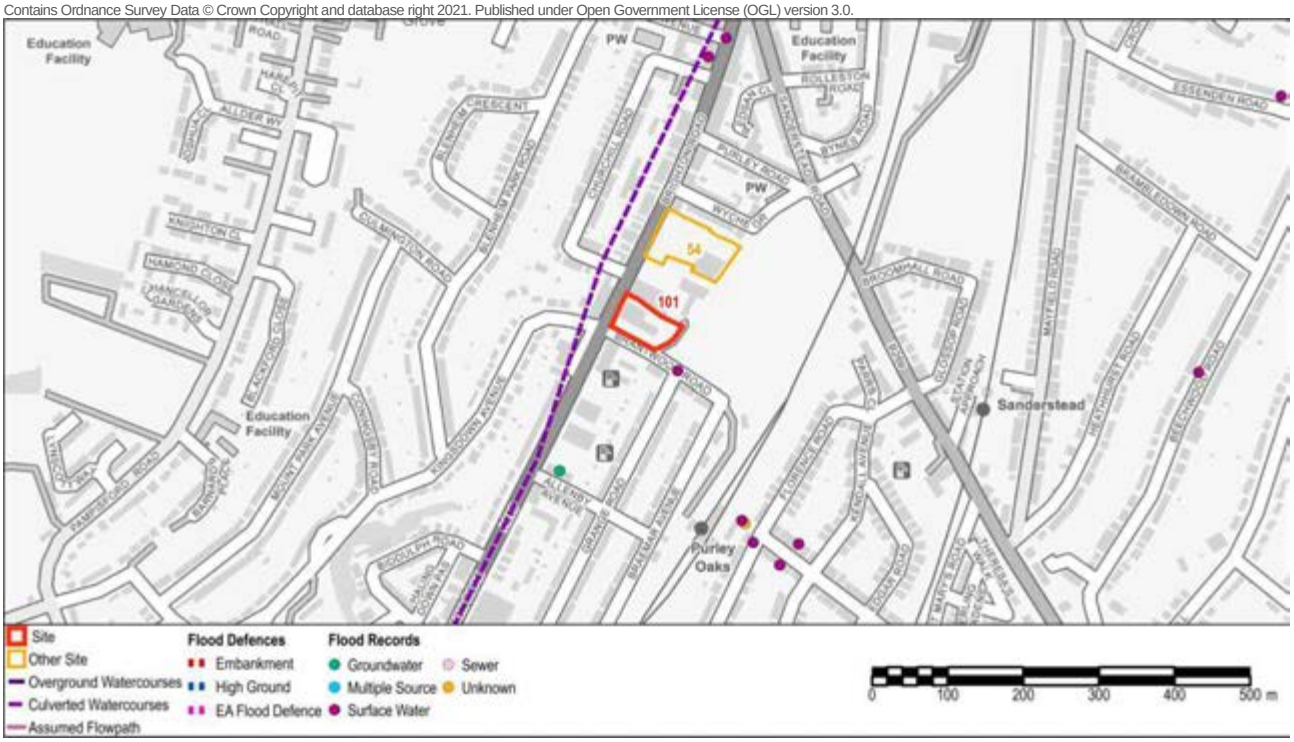


Figure 1 - Flood Zones and Flood Records

Flood Warning Area	None
Flood Records within 500m of the site:	Surface Water 8; Groundwater 1; Sewer 0; Multiple source 0; Unknown source 1

River Flooding



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Site Name: Toby Carvery, Brantwood Road

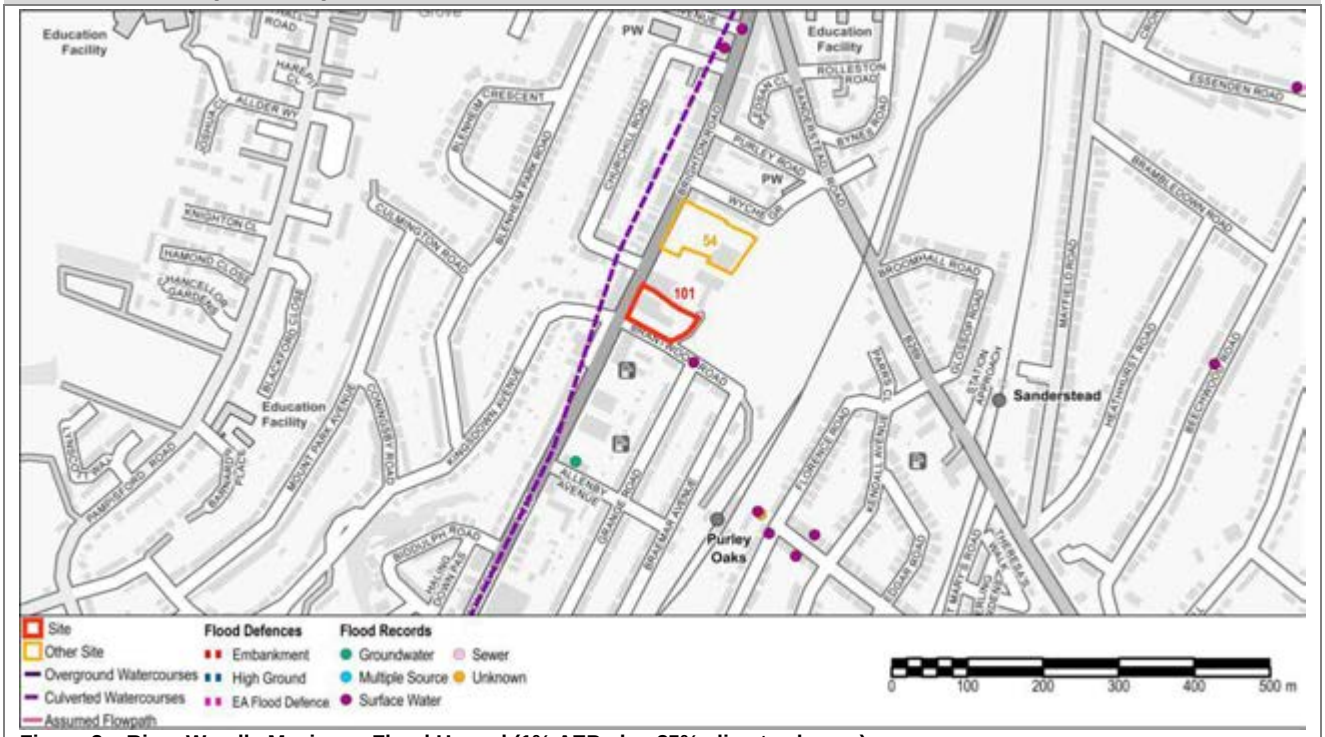

Figure 3 – River Wandle Maximum Flood Hazard (1% AEP plus 35% climate change) Please note: Data does not extend to the extent of this figure.

Surface Water Flooding	
Critical Drainage Area	Group8_041 - Brighton Rd [Croydon]
Drainage Catchment	DC39

Site Name: Toby Carvery, Brantwood Road

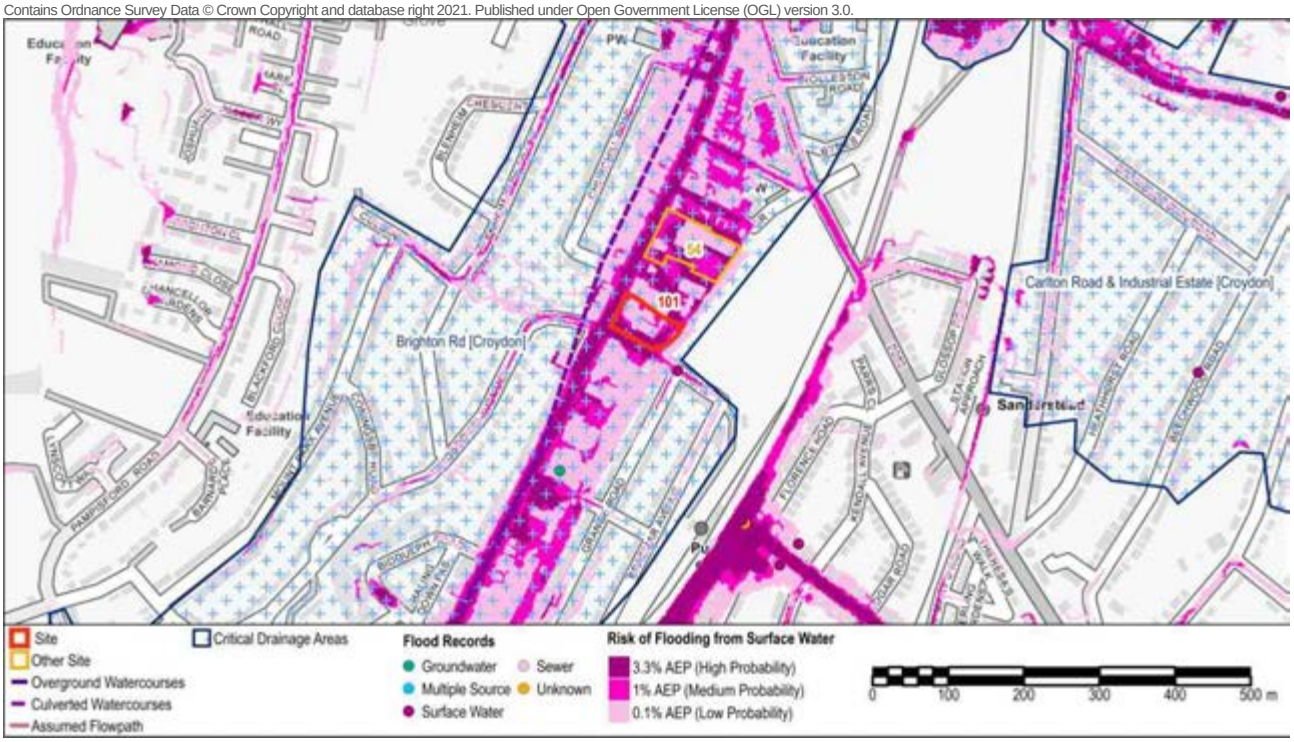

Figure 4 - Risk of Flooding from Surface Water (RoFSW) Flood Extents

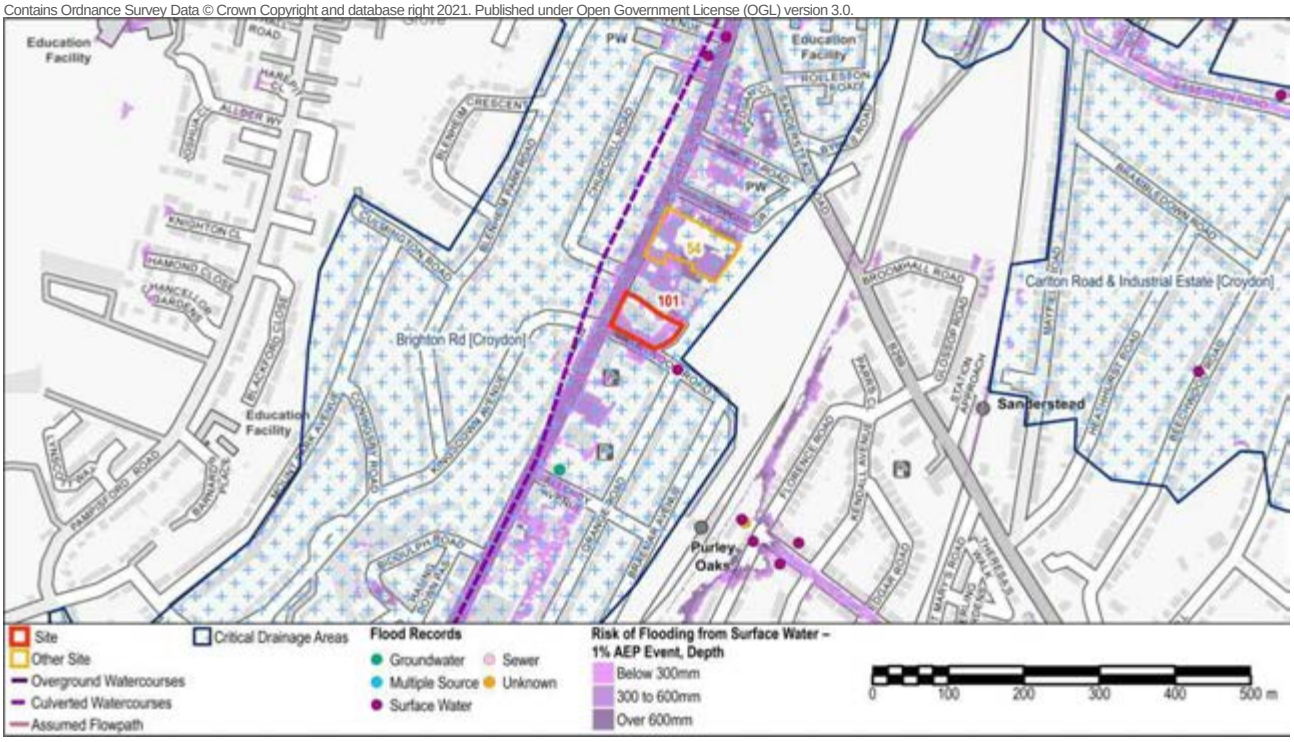

Figure 5 - Risk of Flooding from Surface Water (RoFSW) 1% AEP Flood Depth

Site Name: Toby Carvery, Brantwood Road

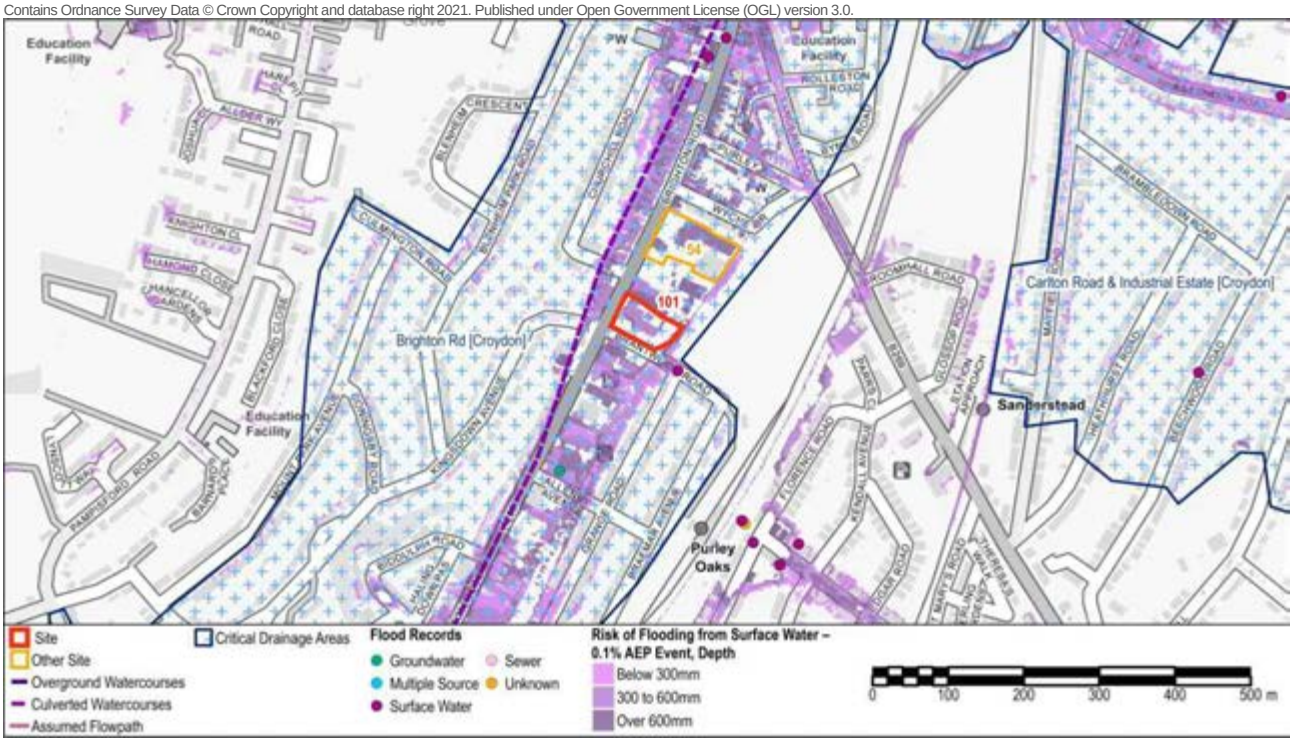

Figure 6 - Risk of Flooding from Surface Water (RoFSW) 0.1% AEP Flood Depth

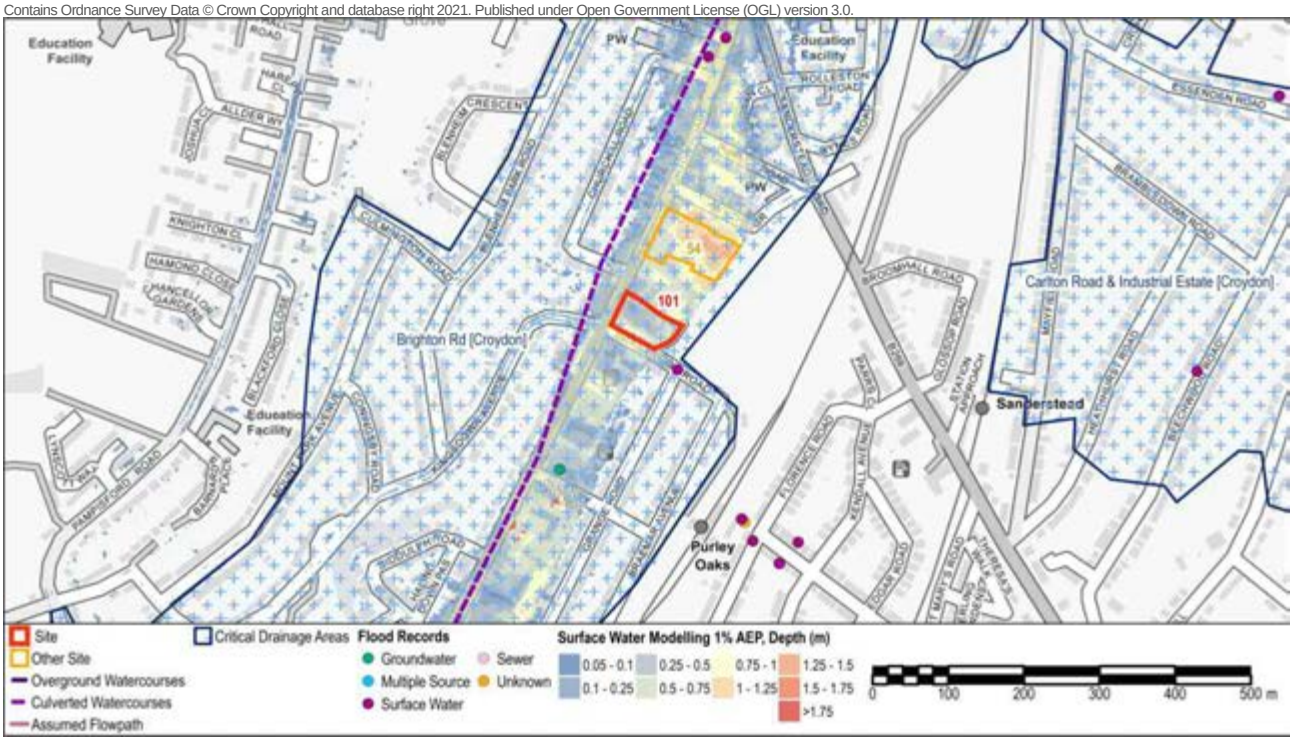

Figure 7 - Surface Water Modelling 1% AEP Flood Depth

Site Name: Toby Carvery, Brantwood Road

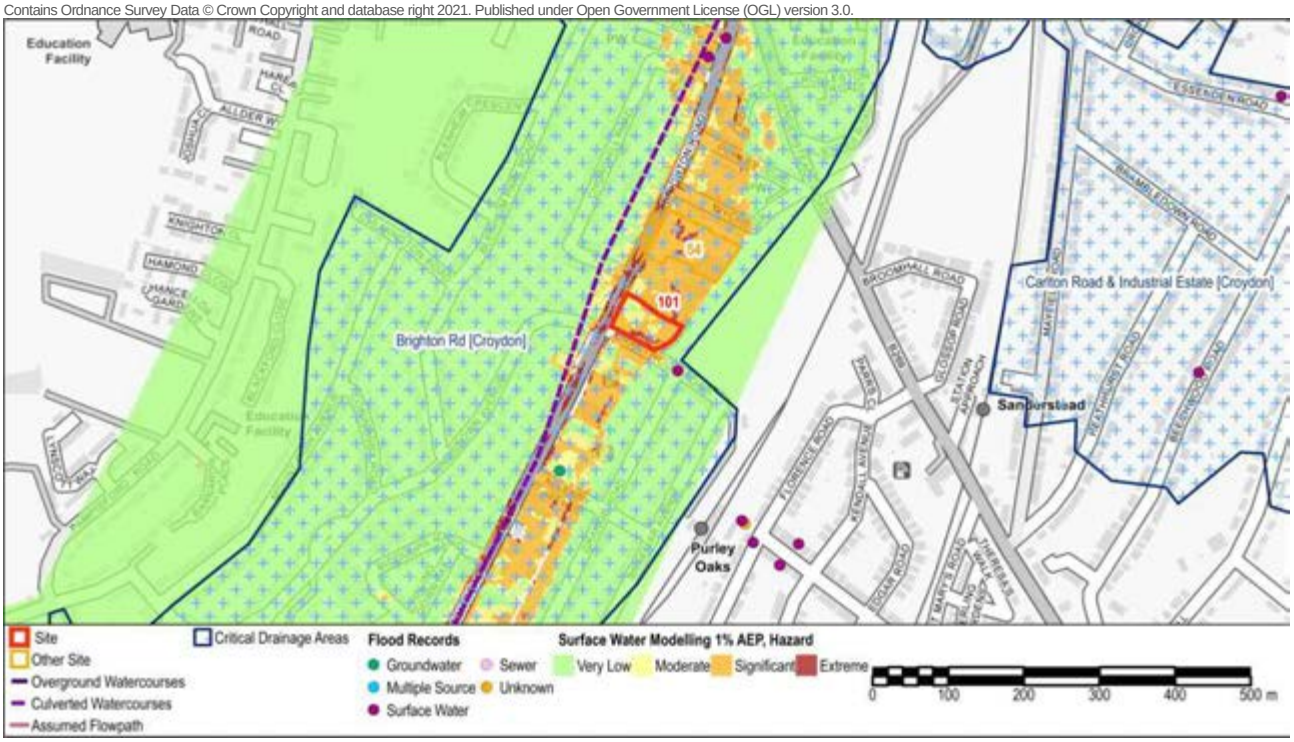

Figure 8 - Surface Water Modelling 1% AEP Flood Hazard

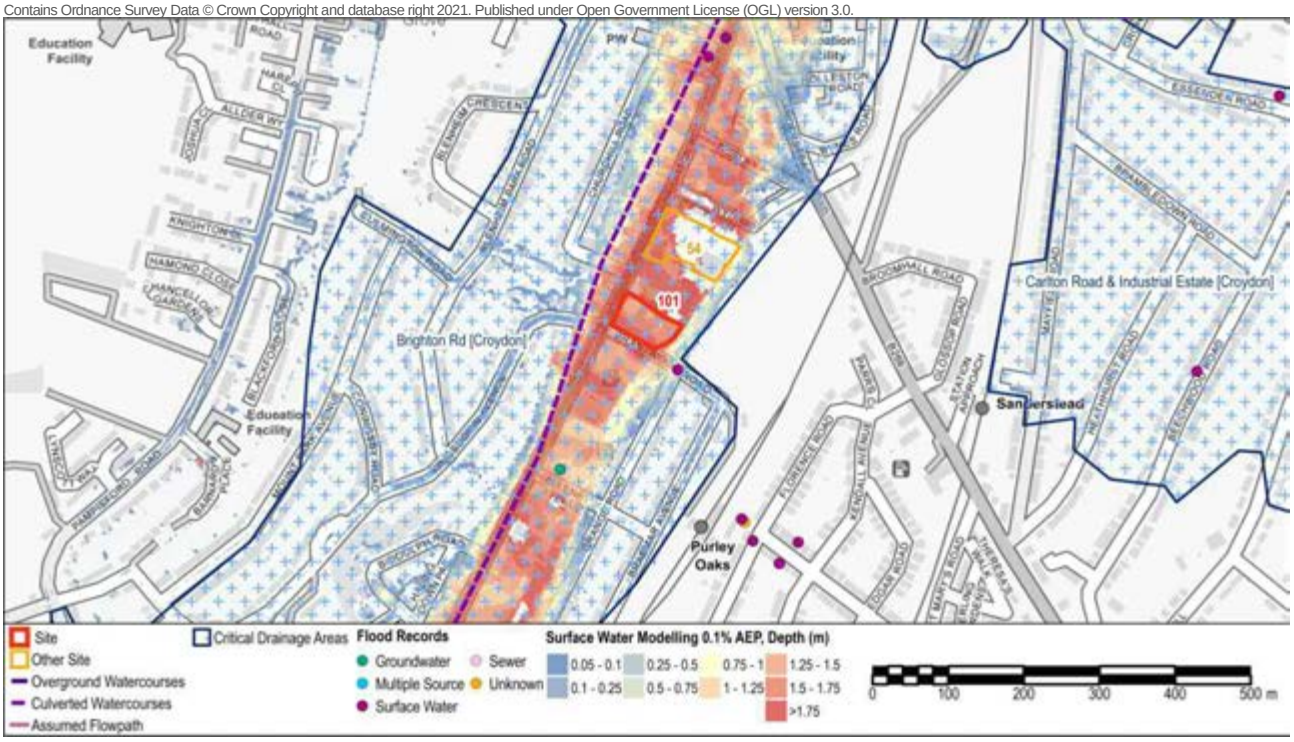

Figure 9 - Surface Water Modelling 0.1% AEP Flood Depth

Site Name: Toby Carvery, Brantwood Road

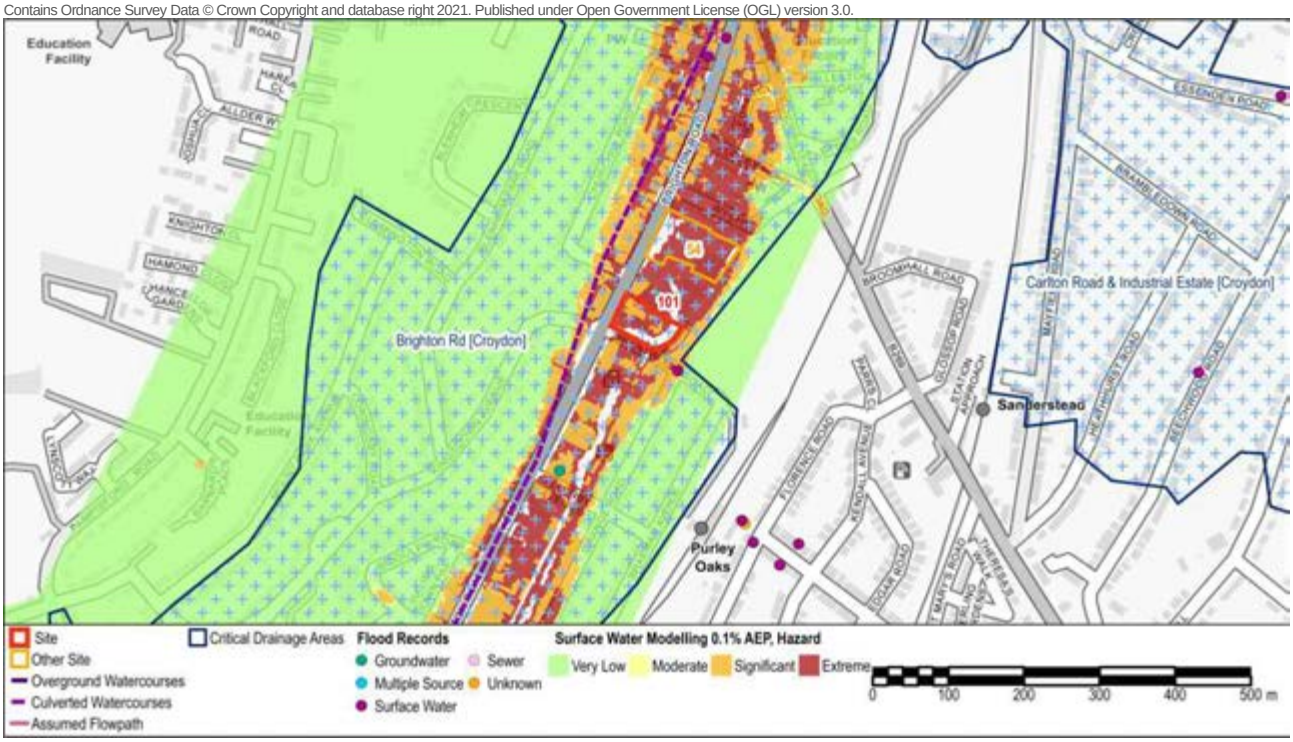

Figure 10 - Surface Water Modelling 0.1% AEP Flood Hazard

Groundwater Flooding			
Bedrock Geology	White Chalk Subgroup	**Superficial Geology**	Sand And Gravel
Increased Potential for Elevated Groundwater		Yes	
Susceptibility to Groundwater Flooding (BGS)		Potential for groundwater flooding to occur at surface	

Other Sources	
Risk of flooding from reservoirs	The Long Term Flood Risk Map shows that the site is not at risk of flooding, in the event of a breach or failure of a reservoir.

Summary

The site is located entirely within Flood Zone 3, High probability of river flooding.

A 1050mm diameter culvert runs in a northern direction along Brighton Road, conveying runoff generated in the surroundings and flows from the intermittent watercourses of the Merstham Bourne and Caterham Bourne.

There are records of flooding along Brighton Road recorded in the SFRA, SWMP and PFRA. There are records of flooding from a range of sources including surface water, groundwater, multiple sources and unknown sources within 500m of the site. The site lies within the Brighton Road Critical Drainage Area (CDA).

This culverted part of the Wandle catchment was not included within the River Wandle modelling and therefore there are no modelling outputs for the 1% AEP fluvial flood event including 35% increase in peak river flows as a result of climate change (Figures 2 and 3).

Surface water modelling undertaken by Arcadis (July 2020) is included in Figures 7-10 and covers the site and surrounding area. For the 1% AEP event, there is risk of surface water flooding reaching depths of up to 1m on the site as well as along surrounding roads including Brantwood Road and Brighton Road, with a corresponding hazard rating of Significant on the site and Extreme along the roads. During the 0.1% AEP event, flood depths increase to >1.5m, with a hazard rating of Significant and Extreme.

Site Specific Recommendations

The proposed use for the site is 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:

- Planning for the site should consider how it can 'make space for water' and consider the need to temporarily store surface water runoff during heavy rainfall events. Opportunities should be sought for providing strategic SuDS systems across multiple plots within this area.
- Development proposals 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.
- Development of the site should consider the footprint of the existing buildings are ensure no loss of floodplain storage. Development of the site should consider the surface water flow paths in the area and ensure there is no increase in flood risk to neighbouring areas. Opportunities should be taken to reduce the risk of surface water flooding to the surrounding areas through the layout of the development.

Site Name: Toby Carvery, Brantwood Road

- Finished floor levels for More Vulnerable development should be set above the modelled flood level for the 1% AEP event, including a 300mm freeboard. Flood depths for the modelled 1% AEP event are shown in Figure 7.
- Finished floor levels do not need to be raised for Less Vulnerable development, however flood resilience measures should be adopted within these developments to reduce potential damage during flooding and enable rapid re-occupancy.
- Surface water modelling shows that the main access routes throughout this area are at risk of flooding with a Significant or Extreme hazard rating during the 1% and 0.1% AEP events. Development proposals for the site should consider how safe access/egress can be provided during these events. In addition, given the potential for surface water to have rapid onset, a place of safe refuge should be provided within new developments above the modelled flood level for the 0.1% AEP event (Figure 9).
- A flood warning and evacuation plan should be prepared, in accordance with the Council's wider emergency planning response.
- This area is covered by the Environment Agency Flood Alert Area for Groundwater flooding in South East London (Areas at risk from Groundwater flooding including Caterham Bourne, Coulsdon Bourne, Beddington, Carshalton, Coulsdon, Kenley, Purley, South Croydon, Whyteleafe, Bromley, Bexley and Lewisham). This service has a wide geographic coverage and does not give time-specific warnings.
- The risk of groundwater flooding and groundwater levels should be further assessed as part of a Site Investigation for specific development proposals within the site.

Site Name: Purley Oaks Depot, 505-600 Brighton Road

Site ID:	324	**Area (ha):**	1.09
Proposed Use:	20 Gypsy and Traveller Pitches.	**Vulnerability Classification:**	Highly Vulnerable

Flood Zones and Historic Flooding

Flood Zone 1 (<0.1% AEP): 93%	**Flood Zone 2 (0.1% AEP):** 5%	**Flood Zone 3 (1% AEP):** 2%	**Flood Zone 3b (5% AEP):** 0%	**Area Benefiting from Defences:** 0%

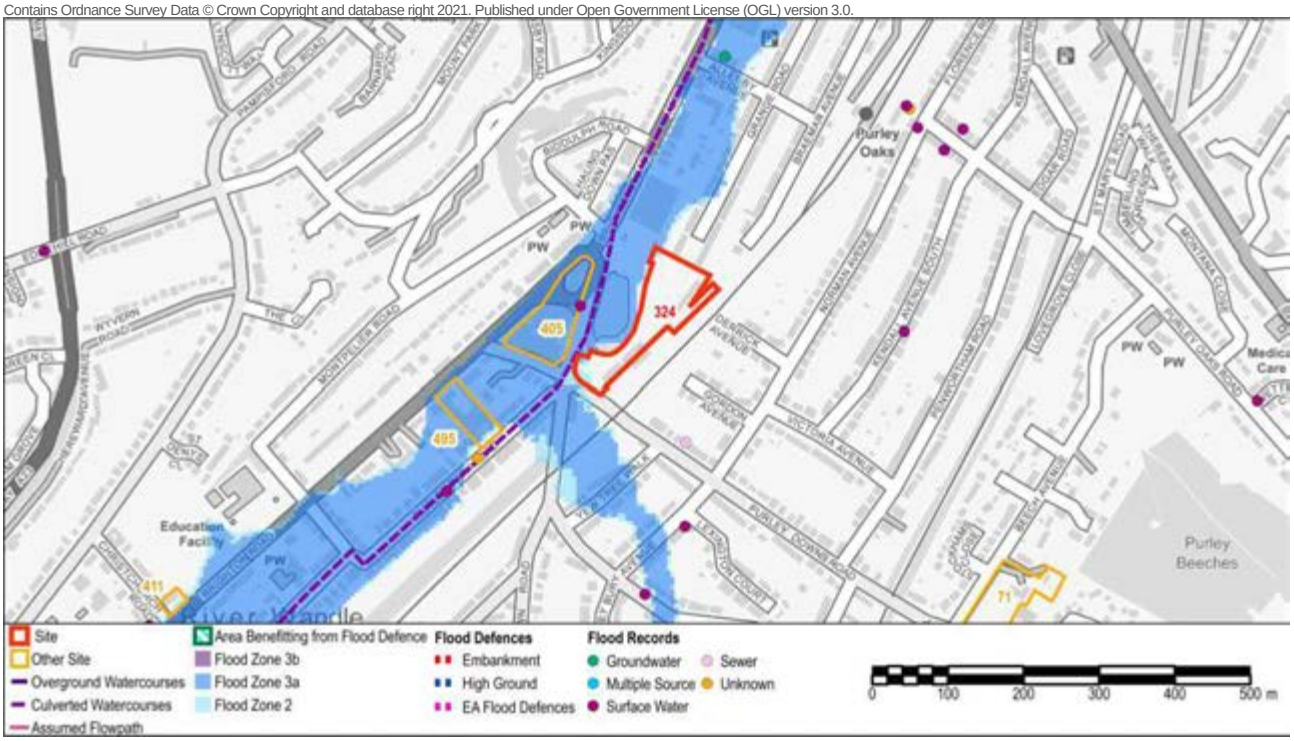

Figure 1 - Flood Zones and Flood Records

Flood Warning Area	None
Flood Records within 500m of the site:	Surface Water 10; Groundwater 1; Sewer 1; Multiple source 0; Unknown source 2

River Flooding

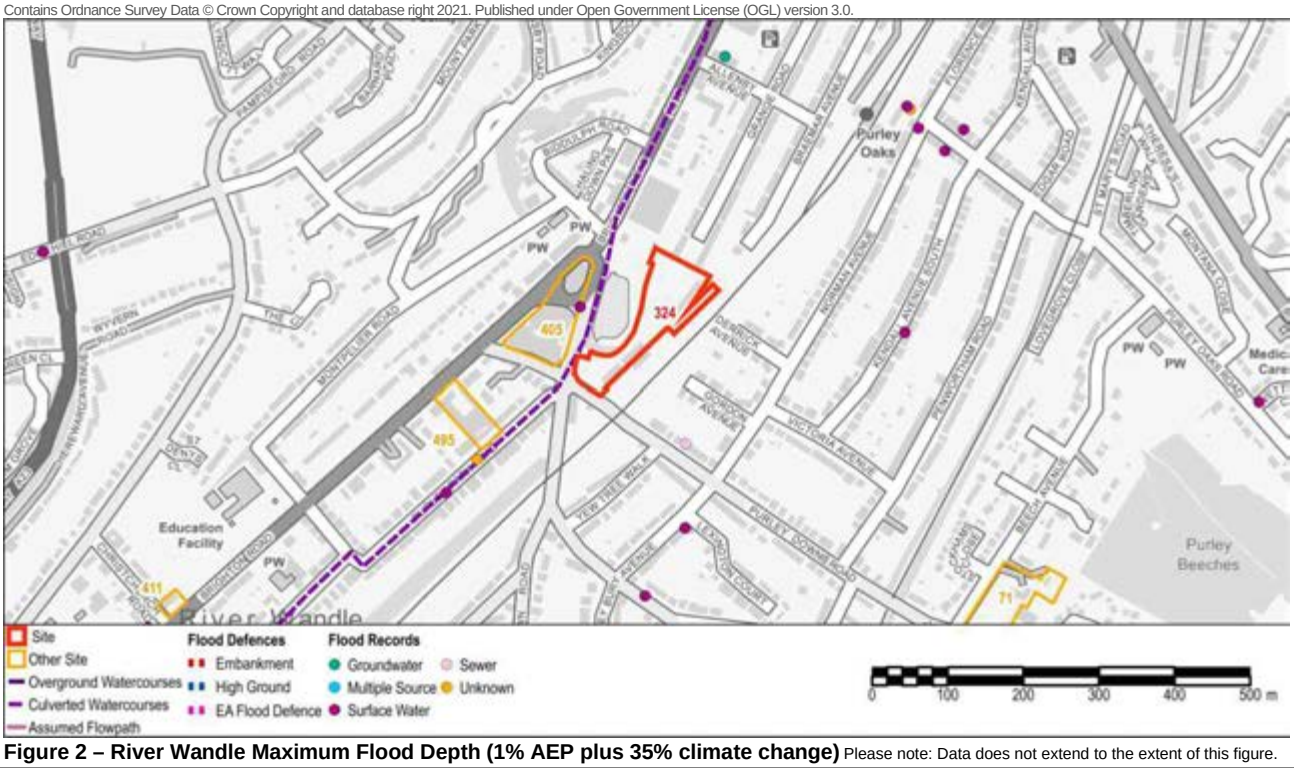

Figure 2 – River Wandle Maximum Flood Depth (1% AEP plus 35% climate change) Please note: Data does not extend to the extent of this figure.

Site Name: Purley Oaks Depot, 505-600 Brighton Road

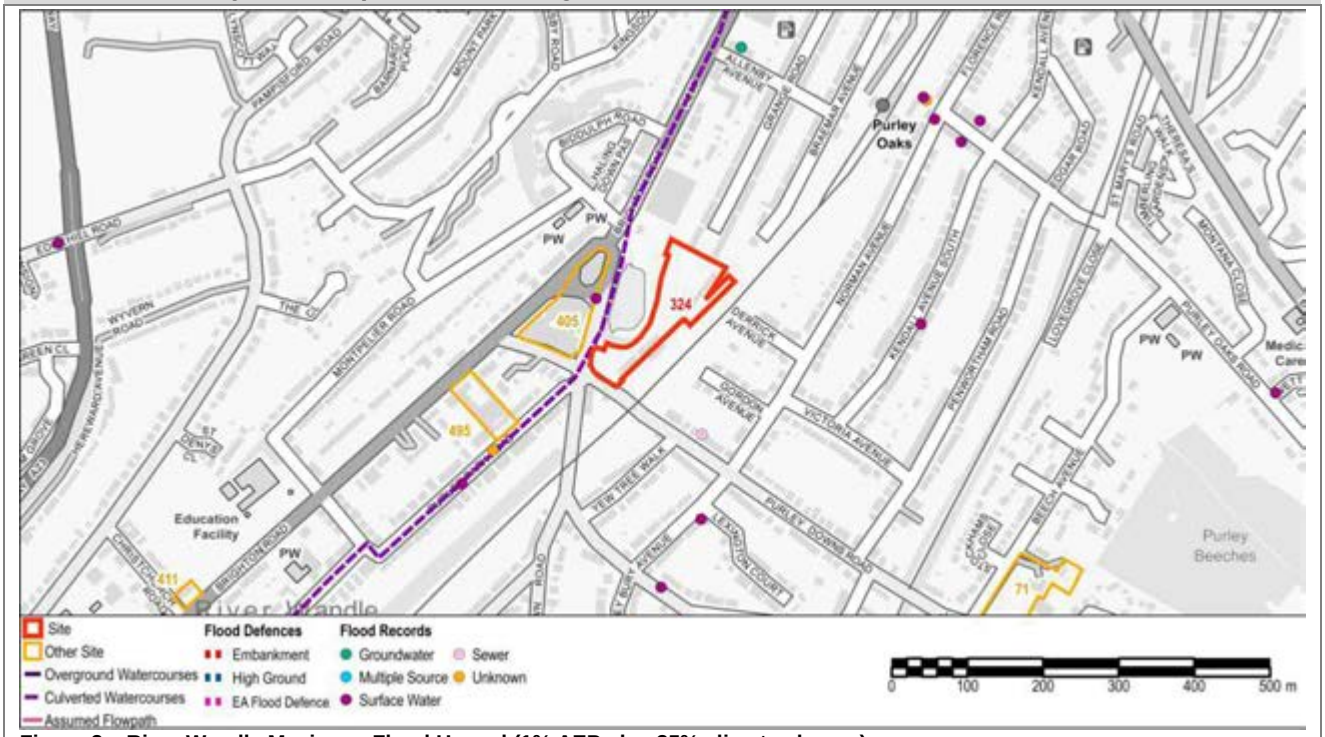

Figure 3 – River Wandle Maximum Flood Hazard (1% AEP plus 35% climate change) Please note: Data does not extend to the extent of this figure.

Surface Water Flooding	
Critical Drainage Area	Group8_041 - Brighton Rd [Croydon]
Drainage Catchment	DC39

Site Name: Purley Oaks Depot, 505-600 Brighton Road

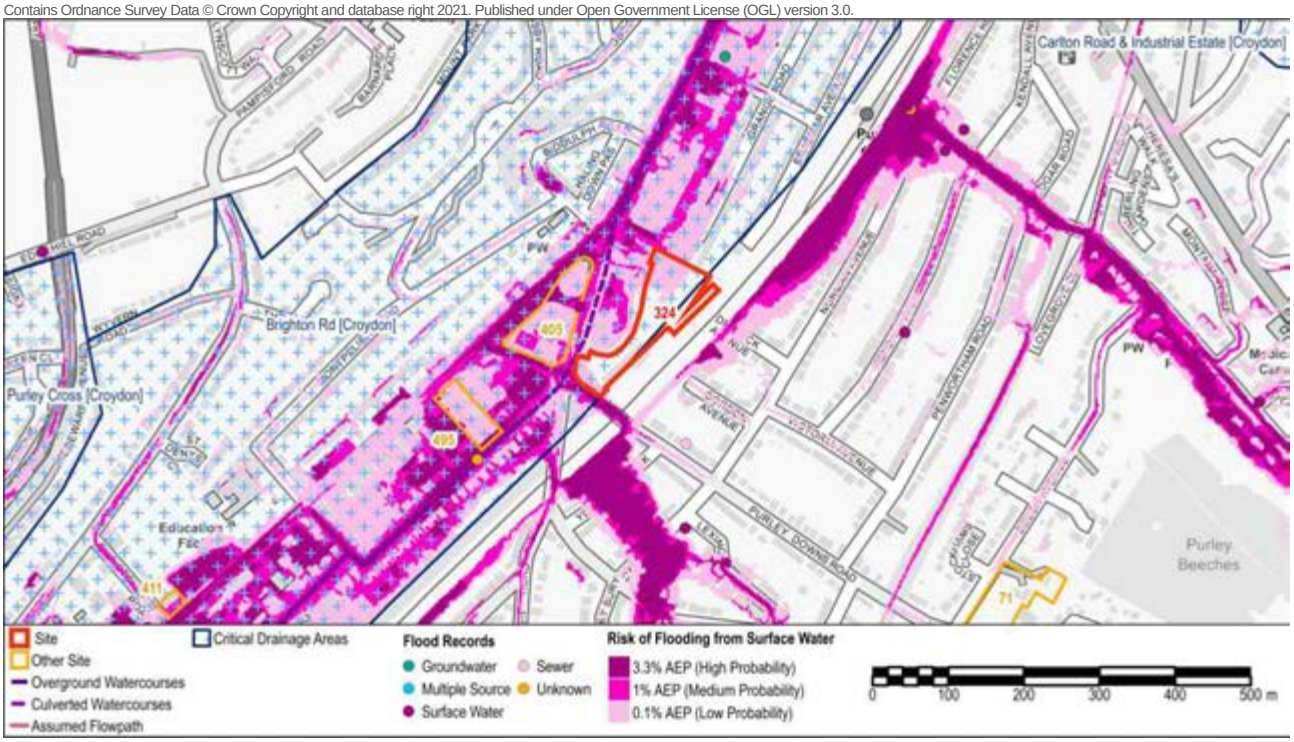

Figure 4 - Risk of Flooding from Surface Water (RoFSW) Flood Extents

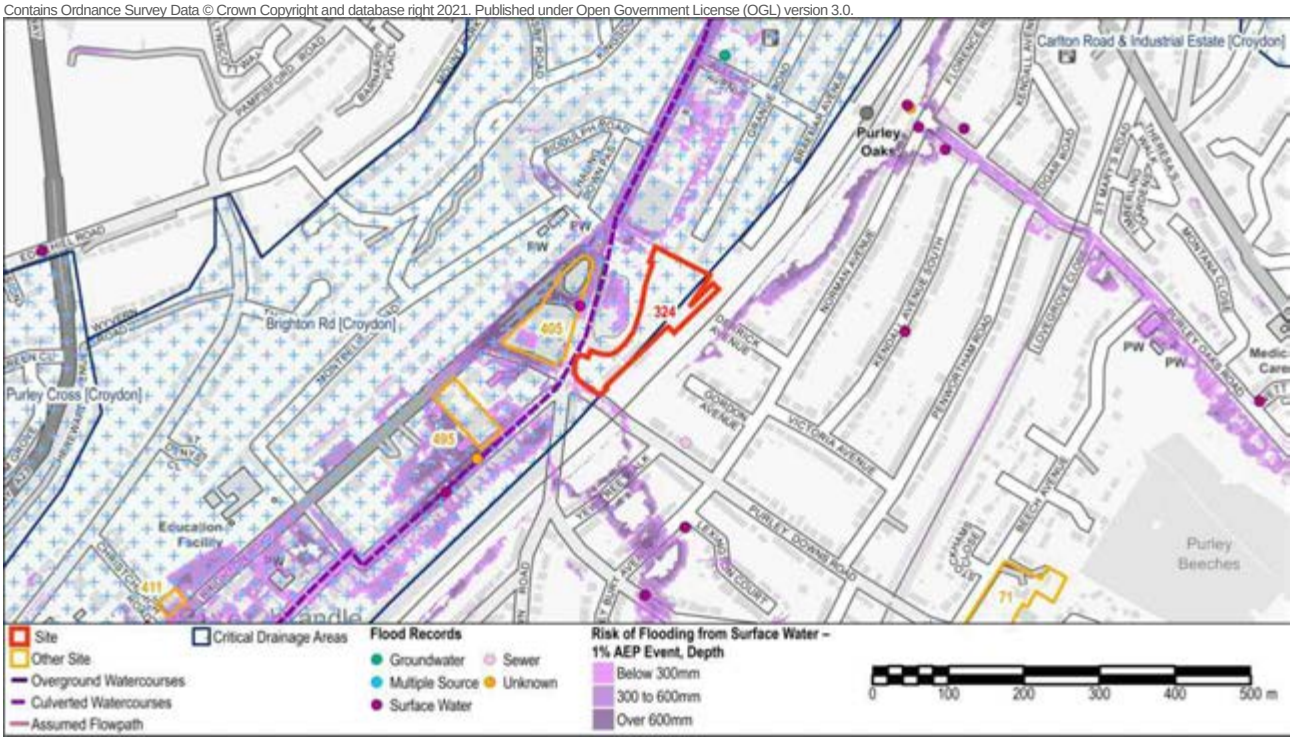

Figure 5 - Risk of Flooding from Surface Water (RoFSW) 1% AEP Flood Depth

Site Name: Purley Oaks Depot, 505-600 Brighton Road

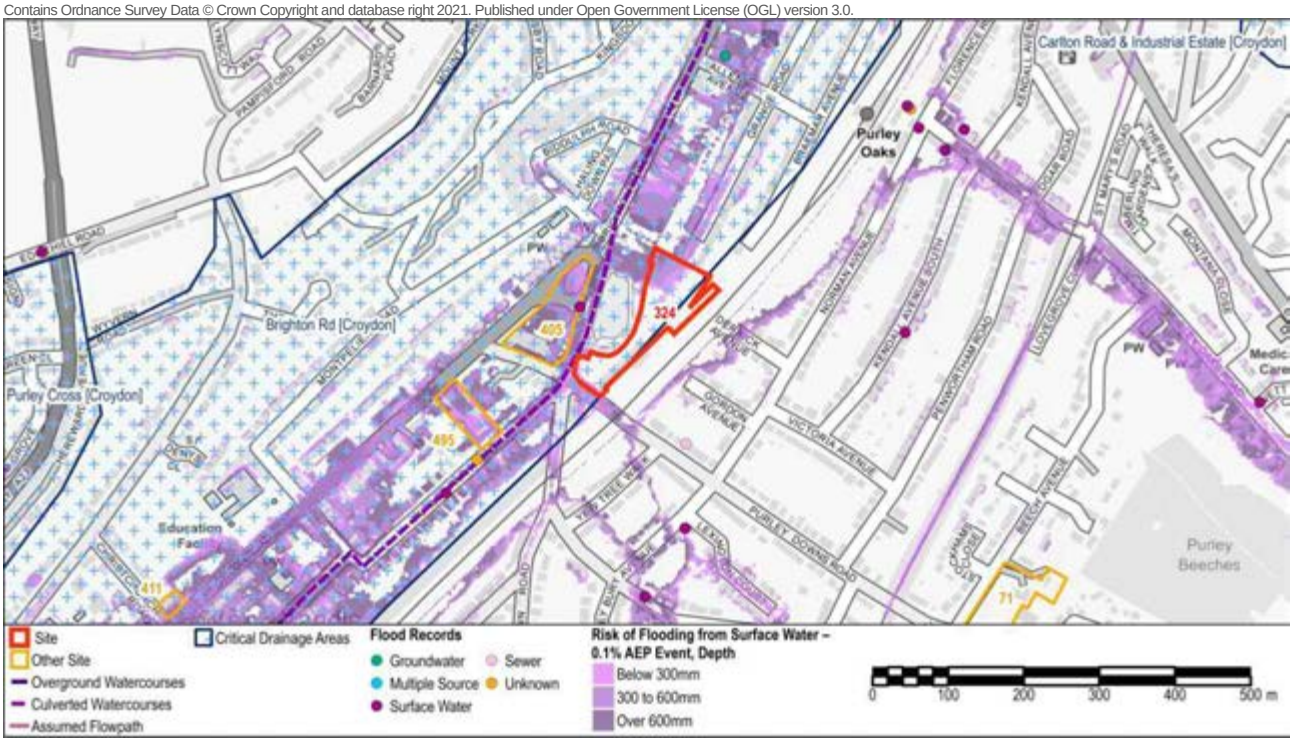

Figure 6 - Risk of Flooding from Surface Water (RoFSW) 0.1% AEP Flood Depth

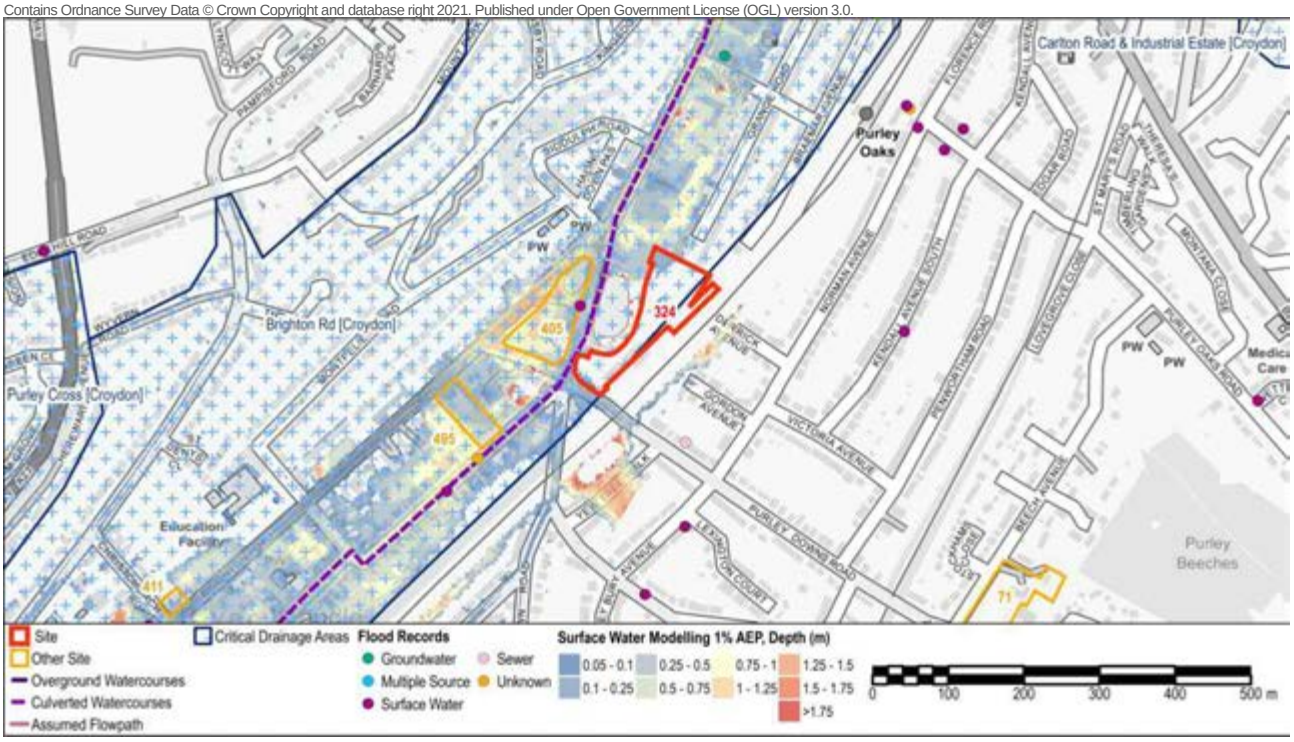

Figure 7 - Surface Water Modelling 1% AEP Flood Depth

Site Name: Purley Oaks Depot, 505-600 Brighton Road

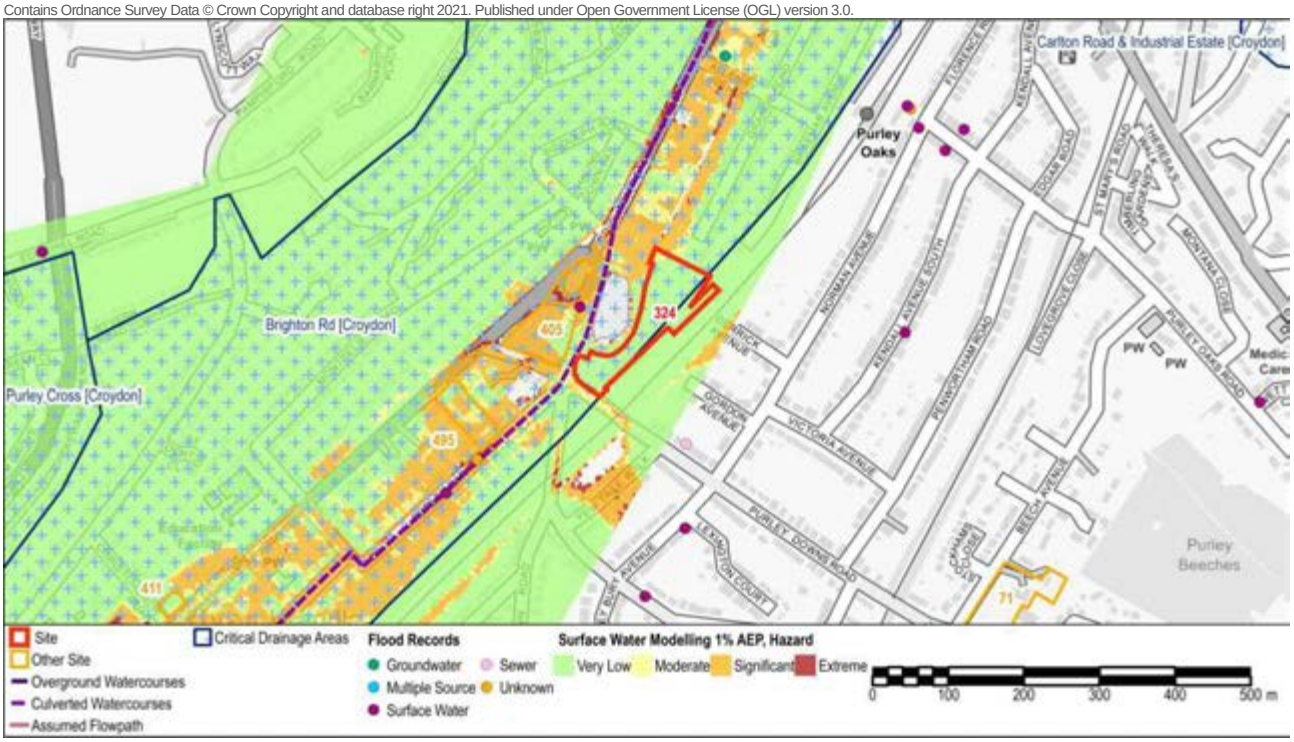

Figure 8 - Surface Water Modelling 1% AEP Flood Hazard

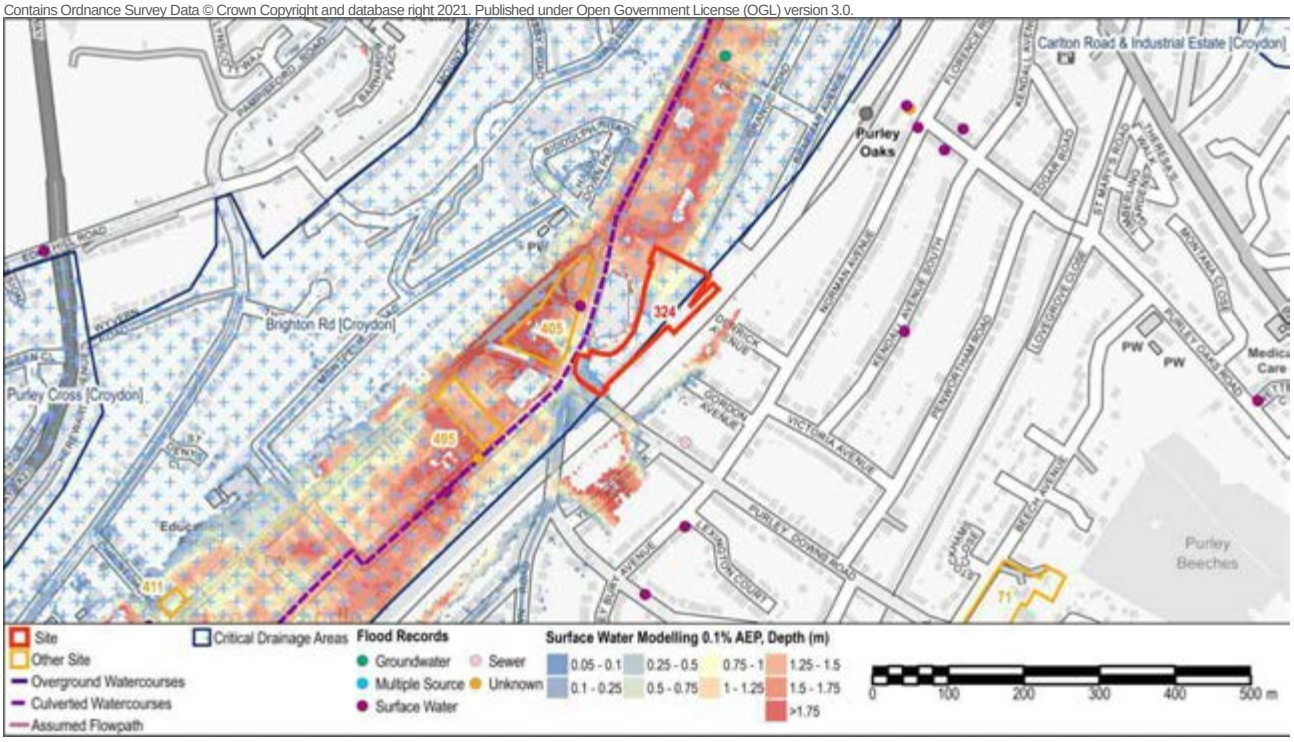

Figure 9 - Surface Water Modelling 0.1% AEP Flood Depth

Site Name: Purley Oaks Depot, 505-600 Brighton Road

Figure 10 - Surface Water Modelling 0.1% AEP Flood Hazard

Groundwater Flooding			
Bedrock Geology	White Chalk Subgroup	**Superficial Geology**	-
Increased Potential for Elevated Groundwater		Yes	
Susceptibility to Groundwater Flooding (BGS)		Potential for groundwater flooding to occur at surface	

Other Sources	
Risk of flooding from reservoirs	The Long Term Flood Risk Map shows that the site is not at risk of flooding, in the event of a breach or failure of a reservoir.

Summary

The majority (93%) of the site is defined as Flood Zone 1, Low probability of river flooding. The south eastern fringe of the site boundary is defined within Flood Zone 2, Medium probability of river flooding, and Flood Zone 3a, High Probability of river flooding.

A 1050mm diameter culvert runs in a northern direction along Brighton Road, conveying runoff generated in the surroundings and flows from the intermittent watercourses of the Merstham Bourne and Caterham Bourne. A balancing pond is also located next to the site.

There are records of flooding along Brighton Road recorded in the SFRA, SWMP and PFRA. There are records of flooding from a range of sources including surface water, groundwater, multiple sources and unknown sources within 500m of the site. The site lies within the Brighton Road Critical Drainage Area (CDA).

This culverted part of the Wandle catchment was not included within the River Wandle modelling and therefore there are no modelling outputs for the 1% AEP fluvial flood event including 35% increase in peak river flows as a result of climate change (Figures 2 and 3).

The Risk of Flooding from Surface Water mapping identifies the potential for surface water to flow and pond west to east through the northern part of the site as well as south to west along the fringe of the southern part of the site. There are records of surface water flooding in proximity to the site and it is located within a Critical Drainage Area (Group8_041, Brighton Rd [Croydon]).

Surface water modelling undertaken by Arcadis (July 2020) is included in Figures 7-10 and covers the site and surrounding area. For the 1% AEP event, just the northern edge of the site is shown to be at risk, with depths between 0.1-0.25m, corresponding to a Low hazard rating. However, the area surrounding the site including access routes along Riddlesdown Road, Brighton Road and Purley Downs Road are shown to be at risk of flooding. During the 0.1% AEP event the risk to the site increases with depths of 0.5-1.5m in the northern half of the site, and a corresponding hazard rating of Extreme in this part of the site.

Site Specific Recommendations

The proposed use for the site is Gypsy and Traveller pitches which are defined as Highly Vulnerable. Highly Vulnerable development is permitted in Flood Zone 1. Highly Vulnerable development is only permitted in Flood Zone 2 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. Highly Vulnerable development is not permitted in Flood Zone 3.

Given the future risk of flooding to the site and surrounding area from surface water, associated with the culverted watercourse beneath Brighton Road, 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 before consideration of areas at greater risk. Development is not permitted in Flood Zone 3a.

Site Name: Purley Oaks Depot, 505-600 Brighton Road

- Planning for the site should consider how it can 'make space for water' and consider the need to temporarily store surface water runoff during heavy rainfall events. Opportunities should be sought for providing strategic SuDS systems across multiple plots within this area.
- Development proposals 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.
- Finished floor levels for More Vulnerable development should be set above the modelled flood level for the 1% AEP event, including a 300mm freeboard. Flood depths for the modelled 1% AEP event are shown in Figure 7. Given the proposals for gypsy and traveller accommodation on the site, consideration needs to be made to what extent raised FFLs can be achieved and relied upon.
- Finished floor levels do not need to be raised for Less Vulnerable development, however flood resilience measures should be adopted within these developments to reduce potential damage during flooding and enable rapid re-occupancy.
- Surface water modelling shows that the main access routes throughout this area are at risk of flooding with a Significant or Extreme hazard rating during the 1% and 0.1% AEP events. Development proposals for the site should consider how safe access/egress can be provided during these events. In addition, given the potential for surface water to have rapid onset, a place of safe refuge should be provided within new developments above the modelled flood level for the 0.1% AEP event (Figure 9). Given the proposals for gypsy and traveller accommodation on the site, consideration needs to be made to what extent safe refuge can be achieved and relied upon.
- A flood warning and evacuation plan should be prepared, in accordance with the Council's wider emergency planning response.
- This area is covered by the Environment Agency Flood Alert Area for Groundwater flooding in South East London (Areas at risk from Groundwater flooding including Caterham Bourne, Coulsdon Bourne, Beddington, Carshalton, Coulsdon, Kenley, Purley, South Croydon, Whyteleafe, Bromley, Bexley and Lewisham). This service has a wide geographic coverage and does not give time-specific warnings.
- The risk of groundwater flooding and groundwater levels should be further assessed as part of a Site Investigation for specific development proposals within the site.

Site Name: Tesco, 2 Purley Road

Site ID:	347	**Area (ha):**	3.81
Proposed Use:	Residential, healthcare facility (if required by the NHS) and retail development.	**Vulnerability Classification:**	More Vulnerable

Flood Zones and Historic Flooding

Flood Zone 1 (<0.1% AEP): 23%	**Flood Zone 2 (0.1% AEP):** 6%	**Flood Zone 3 (1% AEP):** 71%	**Flood Zone 3b (5% AEP):** 0%	**Area Benefiting from Defences:** 0%

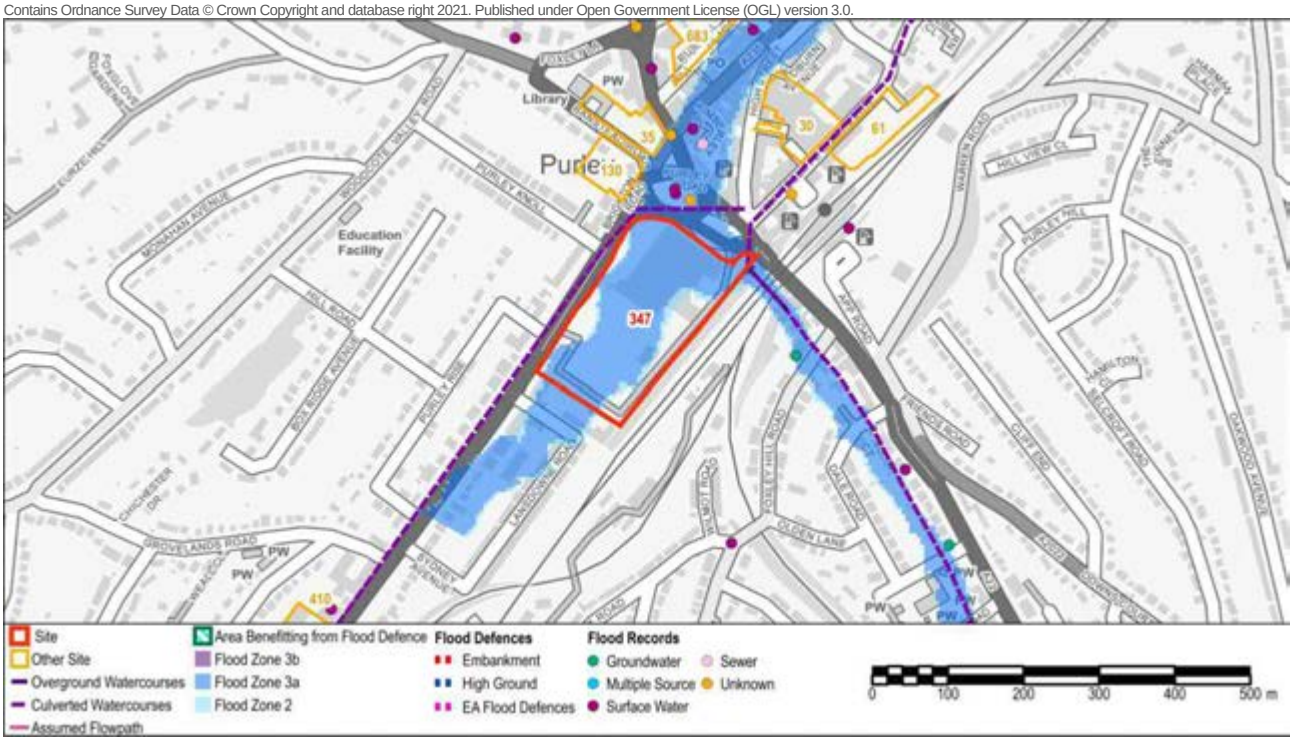

Figure 1 - Flood Zones and Flood Records

Flood Warning Area	None
Flood Records within 500m of the site:	Surface Water 14; Groundwater 2; Sewer 3; Multiple source 0; Unknown source 7

River Flooding

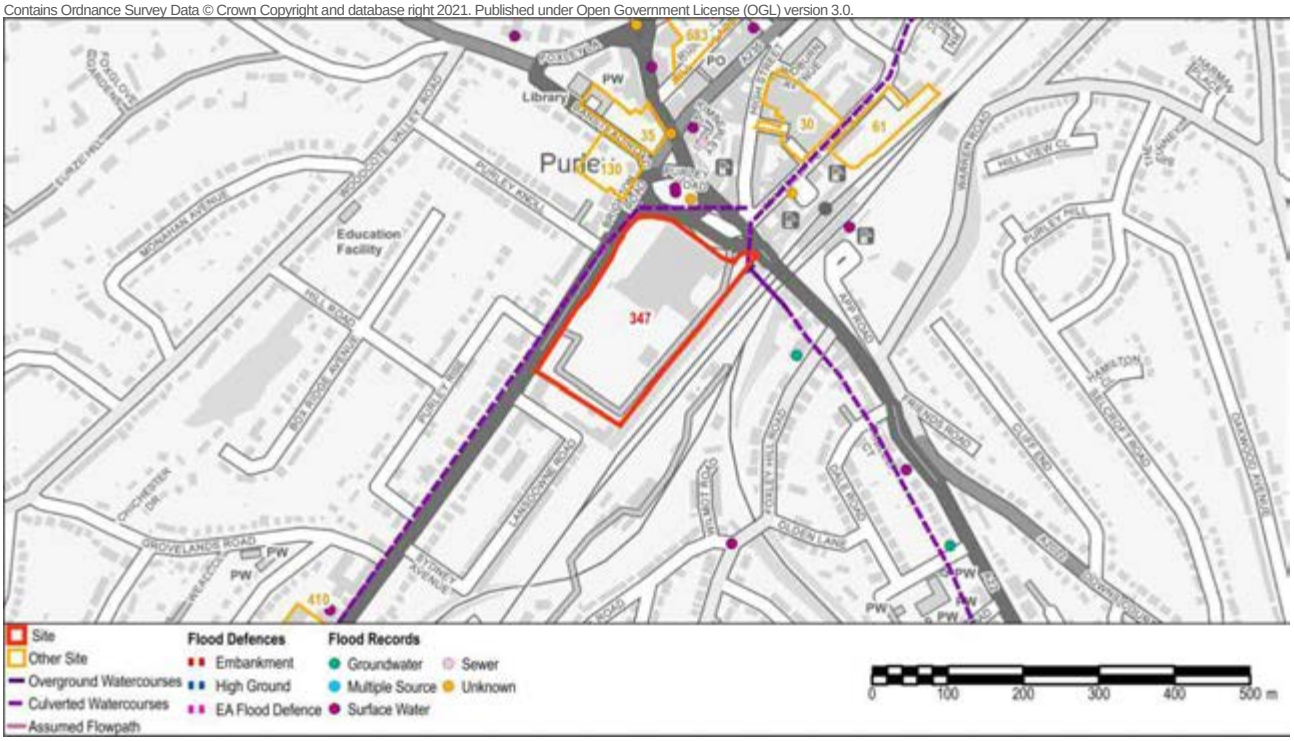

Figure 2 – River Wandle Maximum Flood Depth (1% AEP plus 35% climate change) Please note: Data does not extend to the extent of this figure.

Refer to the London Borough of Croydon Level 1 and Level 2 SFRA Reports for full details and limitations of the datasets used in this site assessment.

Site Name: Tesco, 2 Purley Road

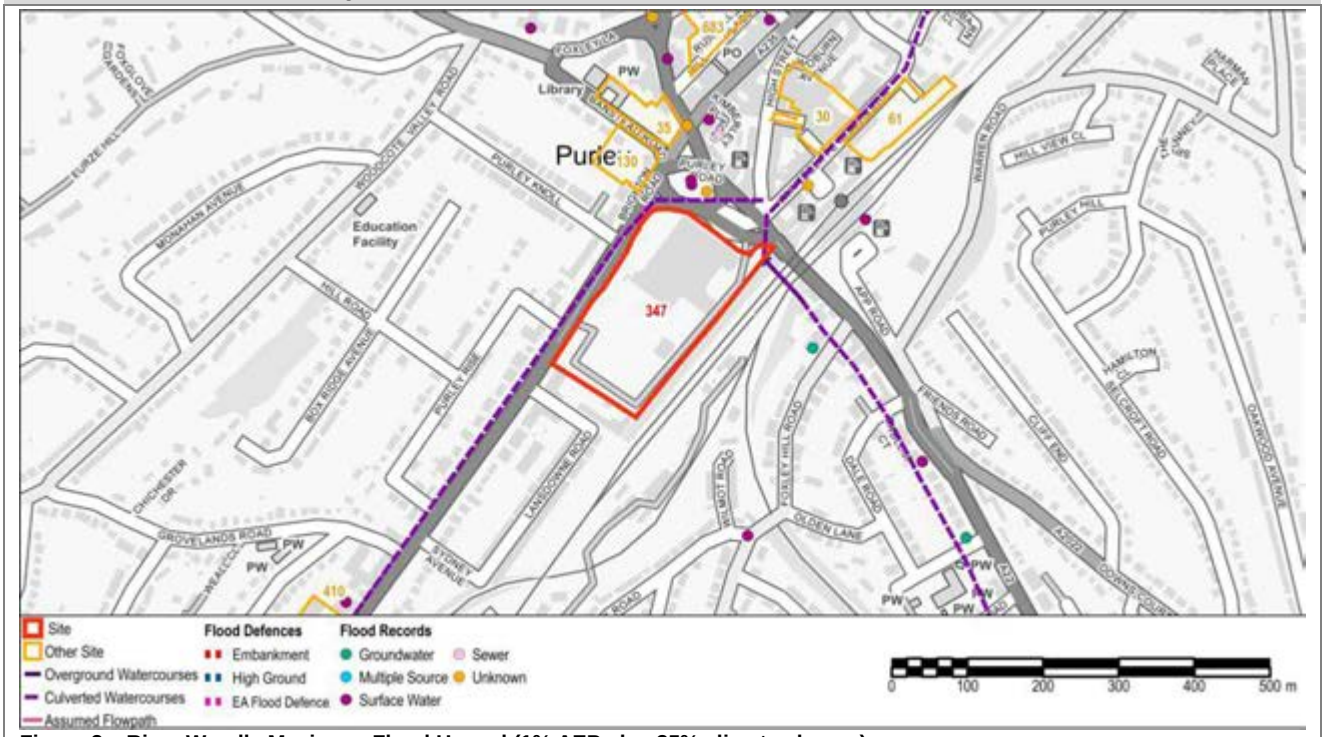

Figure 3 – River Wandle Maximum Flood Hazard (1% AEP plus 35% climate change) Please note: Data does not extend to the extent of this figure.

Surface Water Flooding	
Critical Drainage Area	Group8_040 - Purley Cross [Croydon]
Drainage Catchment	DC39

Site Name: Tesco, 2 Purley Road

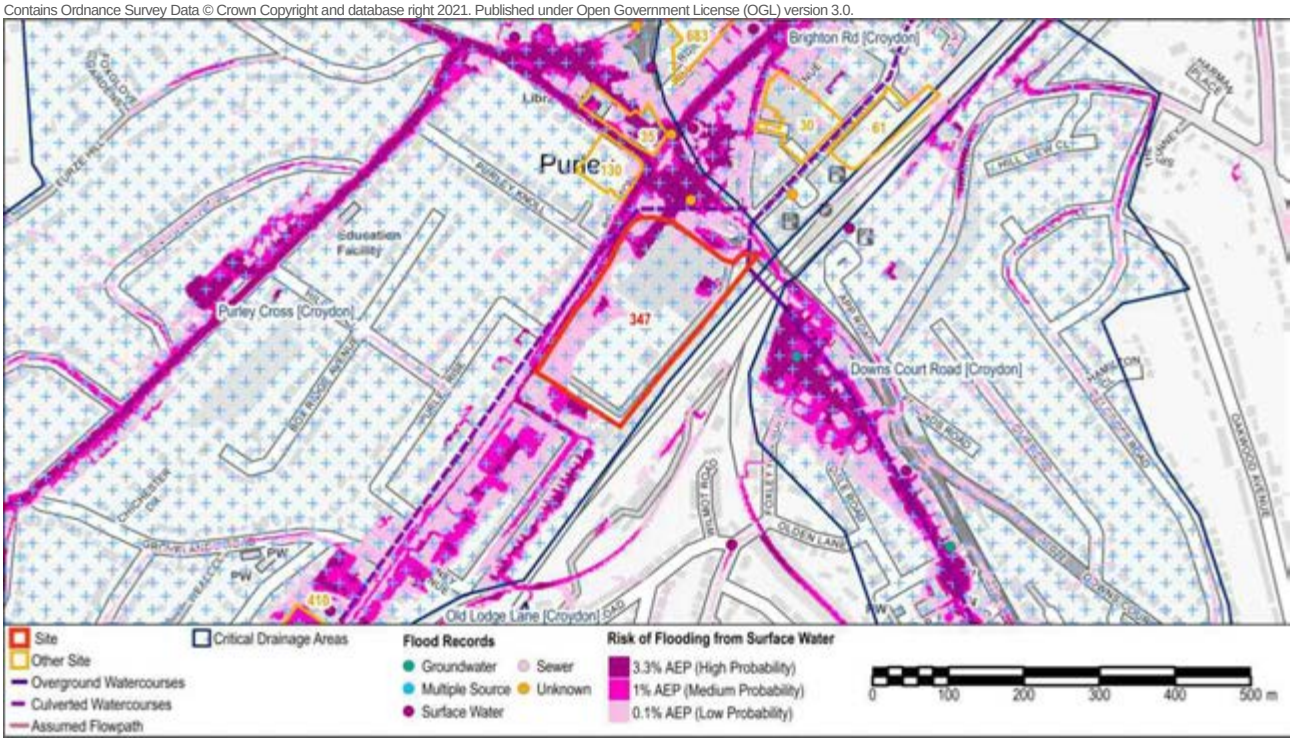

Figure 4 - Risk of Flooding from Surface Water (RoFSW) Flood Extents

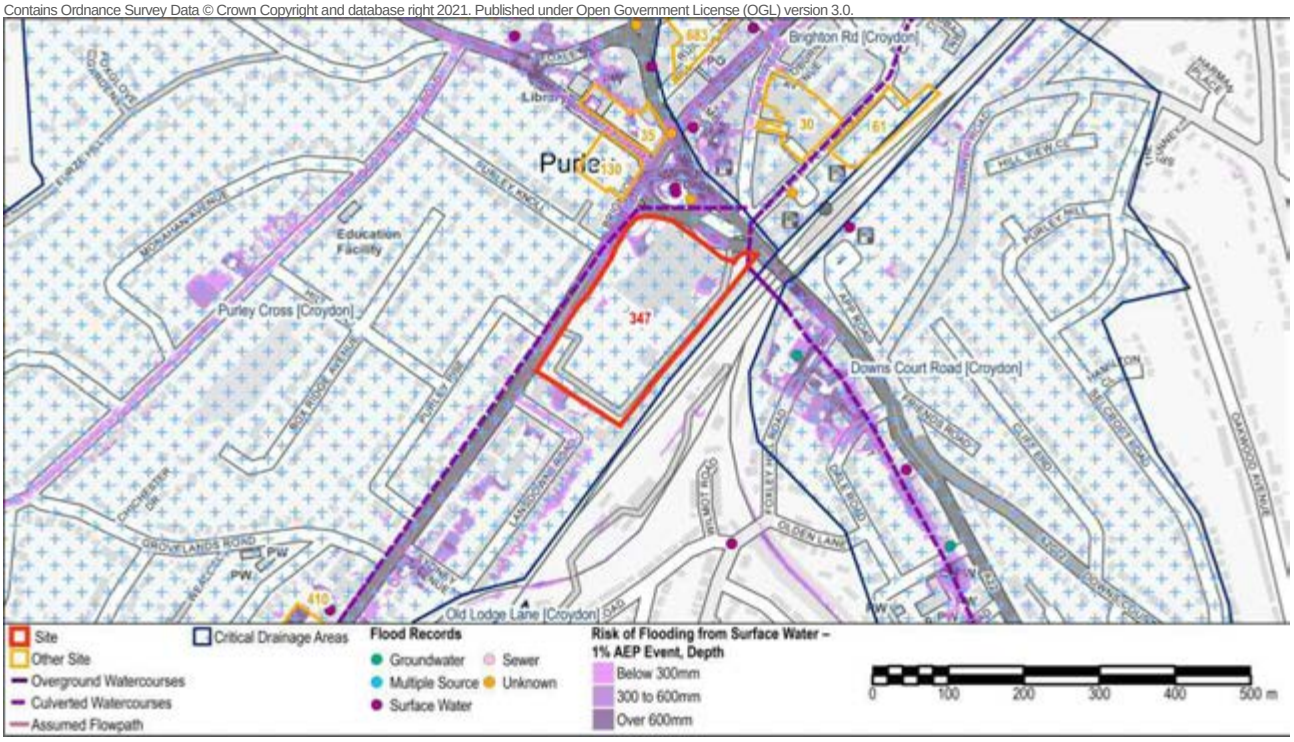

Figure 5 - Risk of Flooding from Surface Water (RoFSW) 1% AEP Flood Depth

Site Name: Tesco, 2 Purley Road

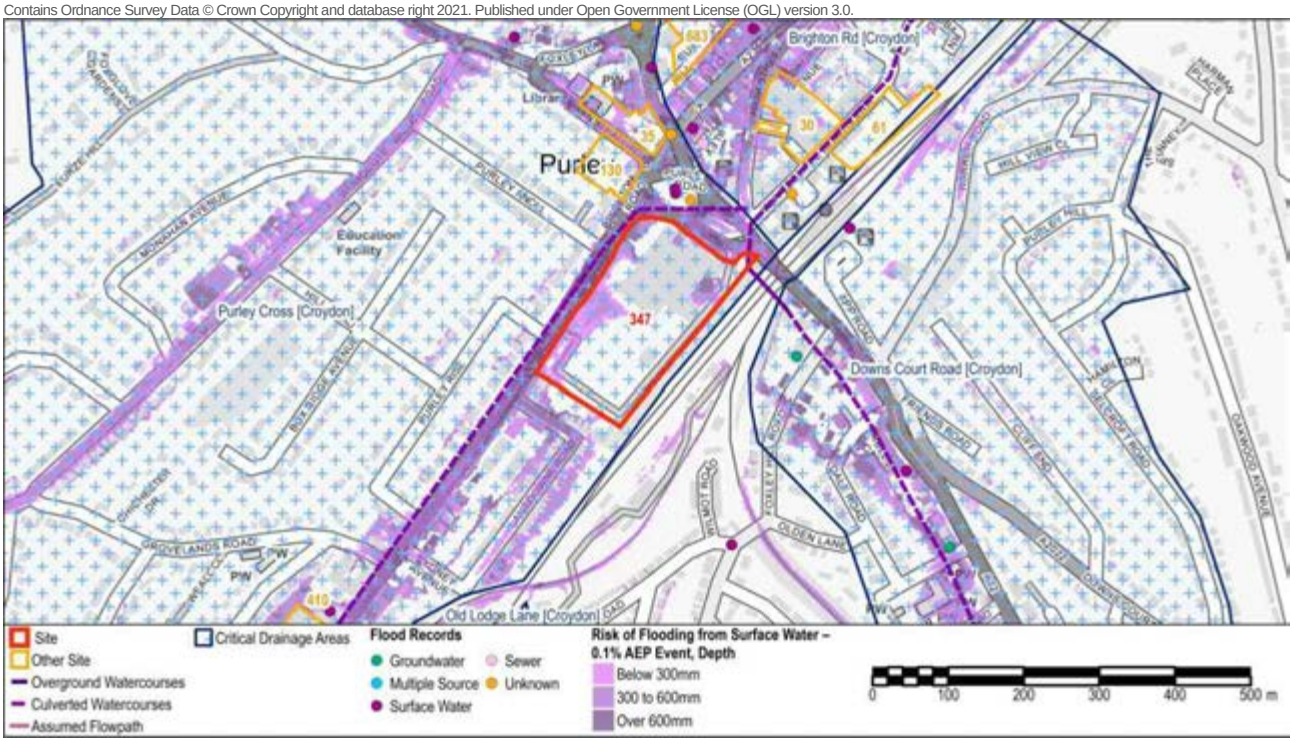

Figure 6 - Risk of Flooding from Surface Water (RoFSW) 0.1% AEP Flood Depth

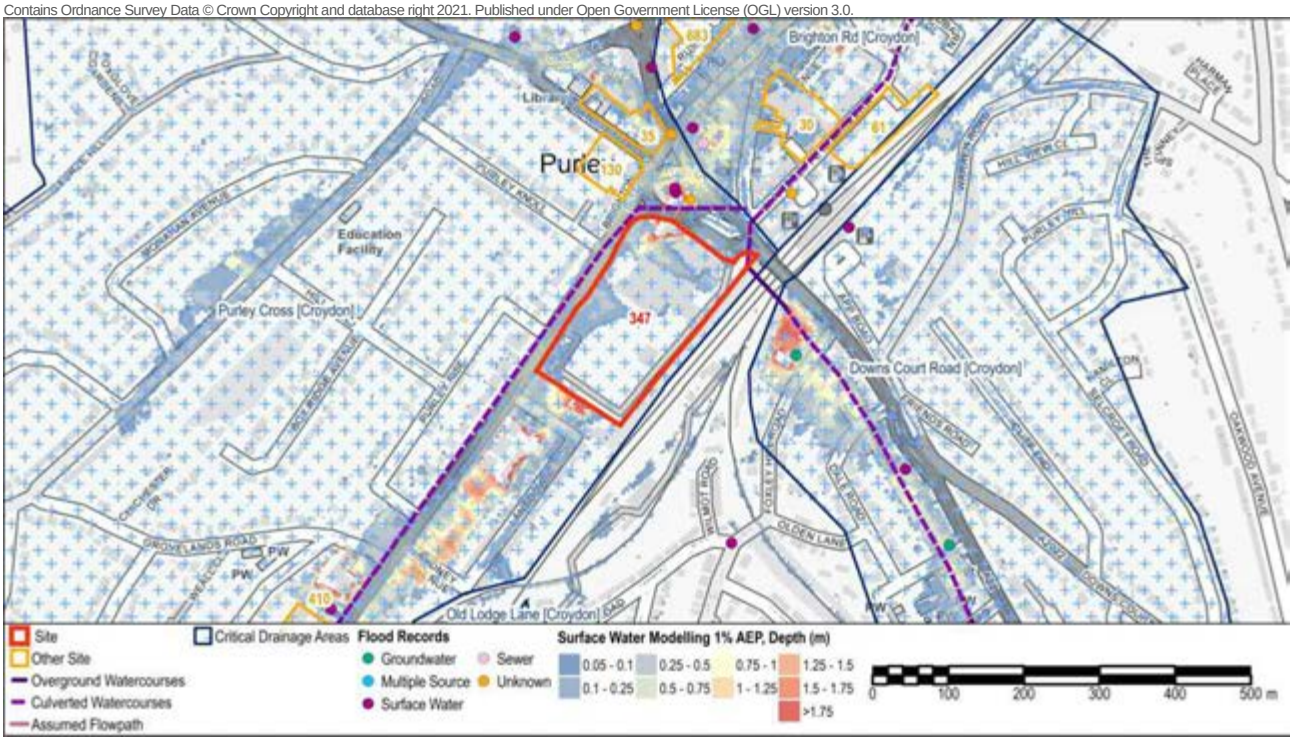

Figure 7 - Surface Water Modelling 1% AEP Flood Depth

Site Name: Tesco, 2 Purley Road

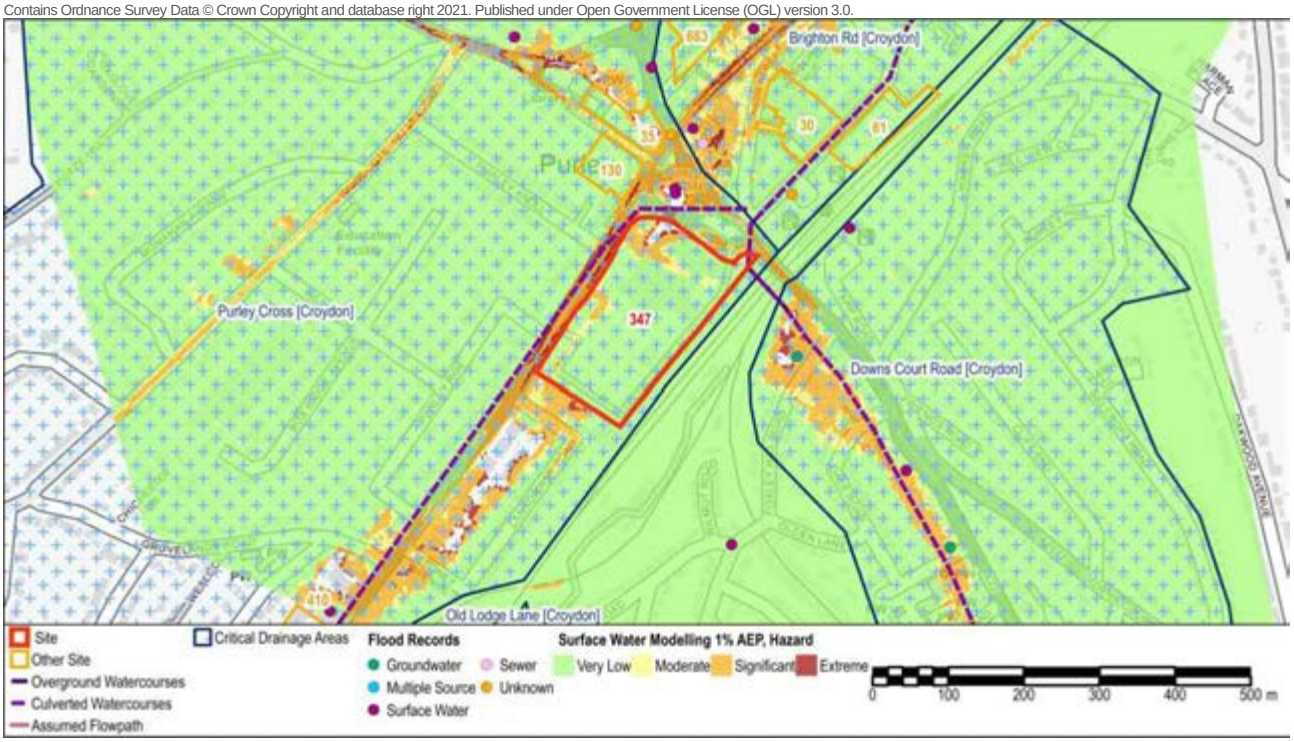

Figure 8 - Surface Water Modelling 1% AEP Flood Hazard

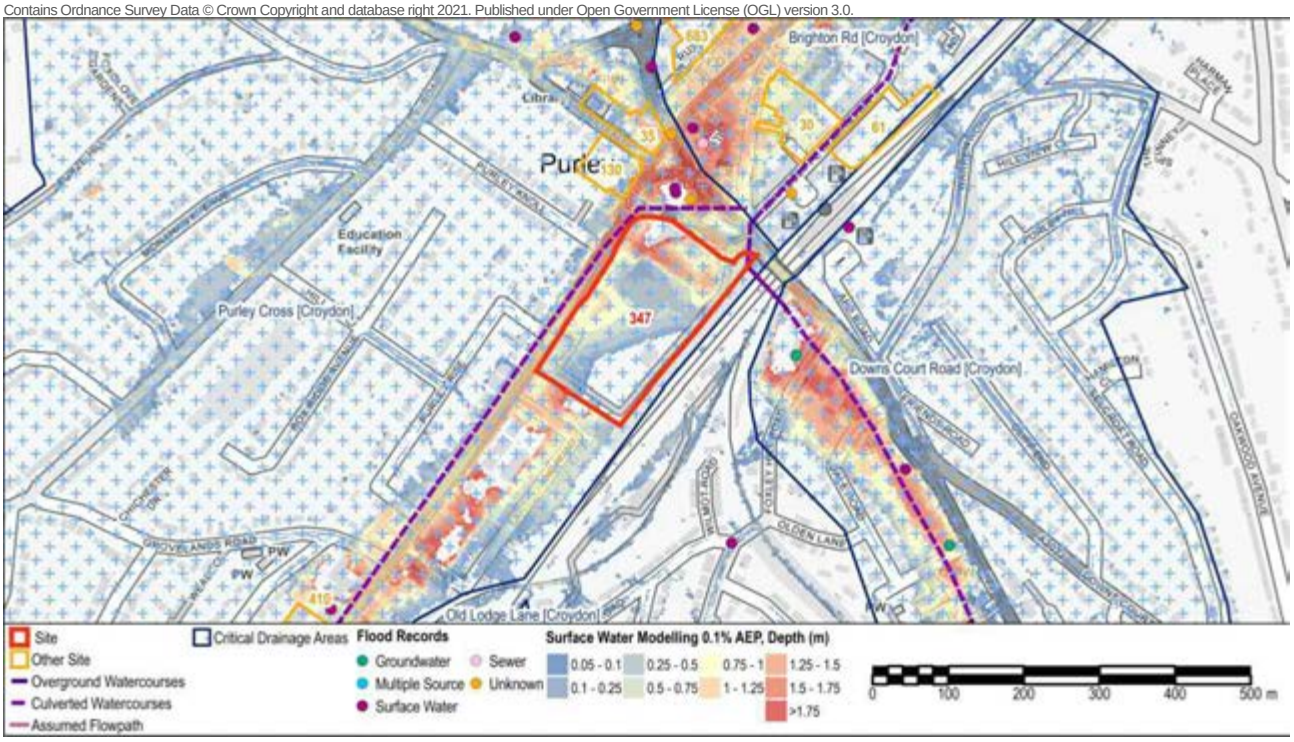

Figure 9 - Surface Water Modelling 0.1% AEP Flood Depth

Site Name: Tesco, 2 Purley Road

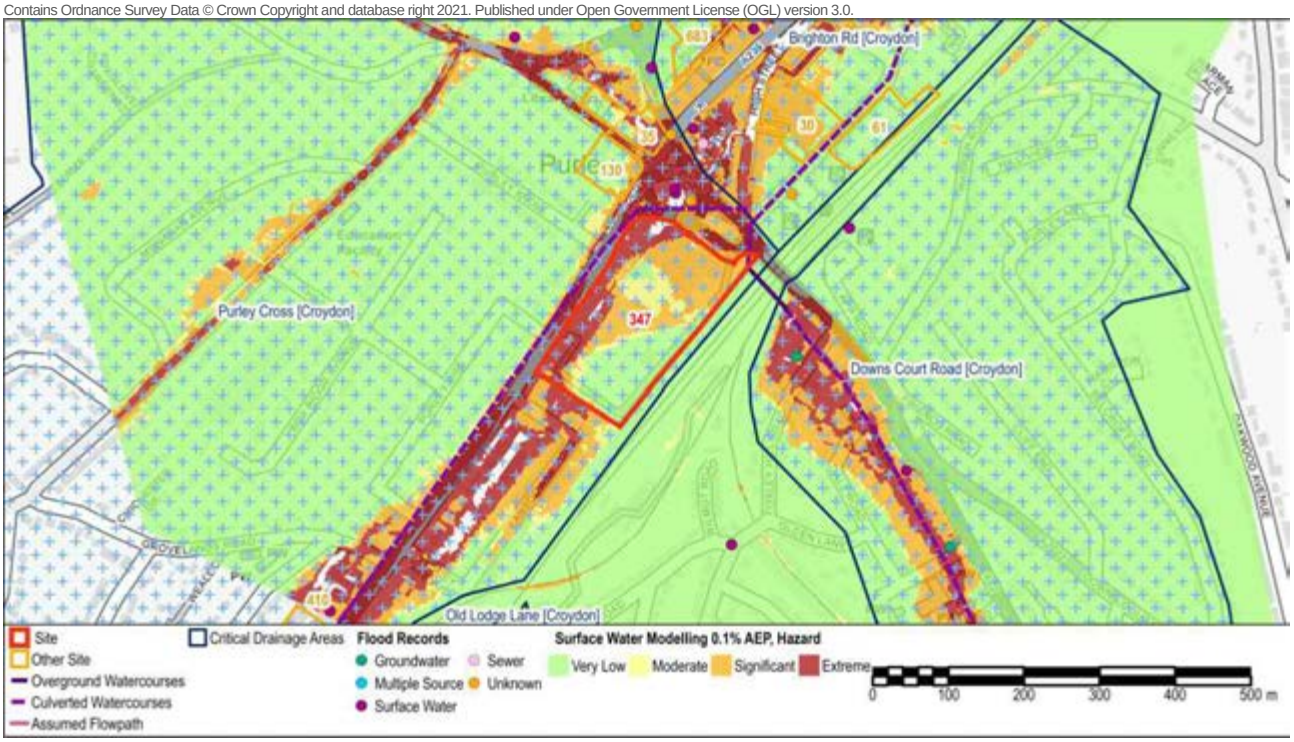

Figure 10 - Surface Water Modelling 0.1% AEP Flood Hazard

Groundwater Flooding			
Bedrock Geology	White Chalk Subgroup	**Superficial Geology**	-
Increased Potential for Elevated Groundwater		Yes	
Susceptibility to Groundwater Flooding (BGS)		Potential for groundwater flooding to occur at surface	

Other Sources	
Risk of flooding from reservoirs	The Long Term Flood Risk Map shows that the site is not at risk of flooding, in the event of a breach or failure of a reservoir.

Summary

The majority of the site (71%) is defined as Flood Zone 3, High probability of river flooding, and the remainder of the site in defined as Flood Zone 1 (23%), Low probability flood of river flooding and the Flood Zone 2 (6%), Medium Probability Flooding.

The Caterham Bourne flows from south east to north west across the northern edge of the site and joins a 1050mm diameter culvert that runs in a northern direction along Brighton Road, conveying runoff generated in the surroundings and flows from the Caterham Bourne and Merstham Bourne.
There are records of flooding along Brighton Road recorded in the SFRA, SWMP and PFRA. There are records of flooding from a range of sources including surface water, groundwater, multiple sources and unknown sources within 500m of the site. The site lies within the Brighton Road Critical Drainage Area (CDA).

This culverted part of the Wandle catchment was not included within the River Wandle modelling and therefore there are no modelling outputs for the 1% AEP fluvial flood event including 35% increase in peak river flows as a result of climate change (Figures 2 and 3).

The Risk of Flooding from Surface Water mapping identifies the potential for surface water to flow and pond southerly to northerly along the west part of the site, and east to west at the northern part of the site. There are records of surface water flooding in proximity to the site and it is located within a Critical Drainage Area (Group8_040, Purley Cross [Croydon]).

Surface water modelling undertaken by Arcadis (July 2020) is included in Figures 7-10 and covers the site and surrounding area. During the 1% AEP event, there is flooding to the north of the site reaching depths of over 1.75m with a hazard rating of Extreme, and some flooding to the west reaching depths of 0.5m, with a hazard rating of Significant. The rest of the site has a Low hazard rating. During the 0.1% AEP event most of the site is at risk of flooding, varying from 0.1m deep in the southern areas to over 1.75m deep in the north. The north and western areas of the site have an Extreme hazard rating with areas to the east in the Significant category and areas to the south east at Low.

Site Specific Recommendations

Site Name: Tesco, 2 Purley Road

The proposed use for the site is 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 in Flood Zone 1 and at lower risk of surface water flooding before consideration of areas at greater risk.
- Planning for the site should consider how it can 'make space for water' and consider the need to temporarily store surface water runoff during heavy rainfall events. Opportunities should be sought for providing strategic SuDS systems across multiple plots within this area.
- Development proposals 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.
- Finished floor levels for More Vulnerable development should be set above the modelled flood level for the 1% AEP event, including a 300mm freeboard. Flood depths for the modelled 1% AEP event are shown in Figure 7.
- Finished floor levels do not need to be raised for Less Vulnerable development, however flood resilience measures should be adopted within these developments to reduce potential damage during flooding and enable rapid re-occupancy.
- Surface water modelling shows that the main access routes throughout this area are at risk of flooding with a Significant or Extreme hazard rating during the 1% and 0.1% AEP events. Development proposals for the site should consider how safe access/egress can be provided during these events. In addition, given the potential for surface water to have rapid onset, a place of safe refuge should be provided within new developments above the modelled flood level for the 0.1% AEP event (Figure 9).
- A flood warning and evacuation plan should be prepared, in accordance with the Council's wider emergency planning response.
- This area is covered by the Environment Agency Flood Alert Area for Groundwater flooding in South East London (Areas at risk from Groundwater flooding including Caterham Bourne, Coulsdon Bourne, Beddington, Carshalton, Coulsdon, Kenley, Purley, South Croydon, Whyteleafe, Bromley, Bexley and Lewisham). This service has a wide geographic coverage and does not give time-specific warnings.
- The risk of groundwater flooding and groundwater levels should be further assessed as part of a Site Investigation for specific development proposals within the site.

Site Name: Capella Court & Royal Oak Centre, 725 Brighton Road

Site ID:	405	**Area (ha):**	0.74
Proposed Use:	Residential development and health facility. Retention and reconfiguration of existing uses and their floor space.	**Vulnerability Classification:**	More Vulnerable

Flood Zones and Historic Flooding

Flood Zone 1 (<0.1% AEP): 0%	**Flood Zone 2 (0.1% AEP):** 0%	**Flood Zone 3 (1% AEP):** 100%	**Flood Zone 3b (5% AEP):** 0%	**Area Benefiting from Defences:** 0%

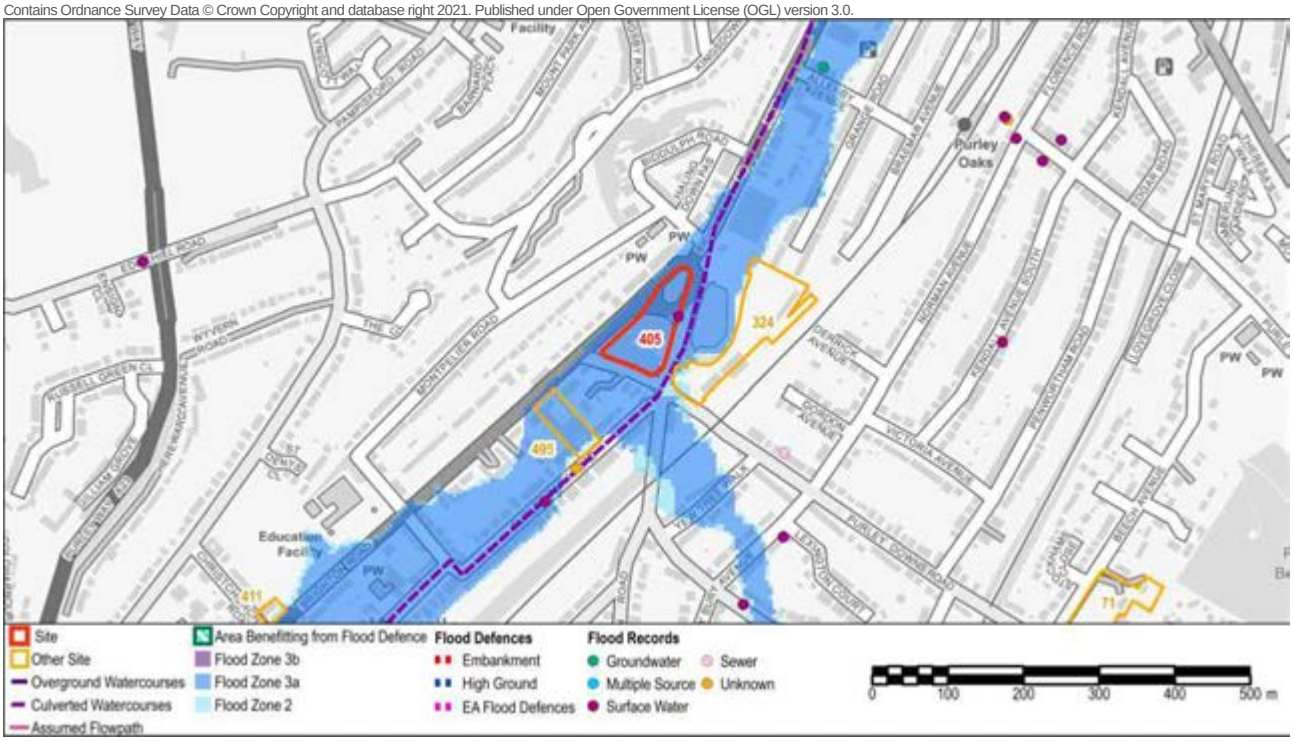

Figure 1 - Flood Zones and Flood Records

Flood Warning Area	None
Flood Records within 500m of the site:	Surface Water 8; Groundwater 1; Sewer 1; Multiple source 0; Unknown source 2

River Flooding

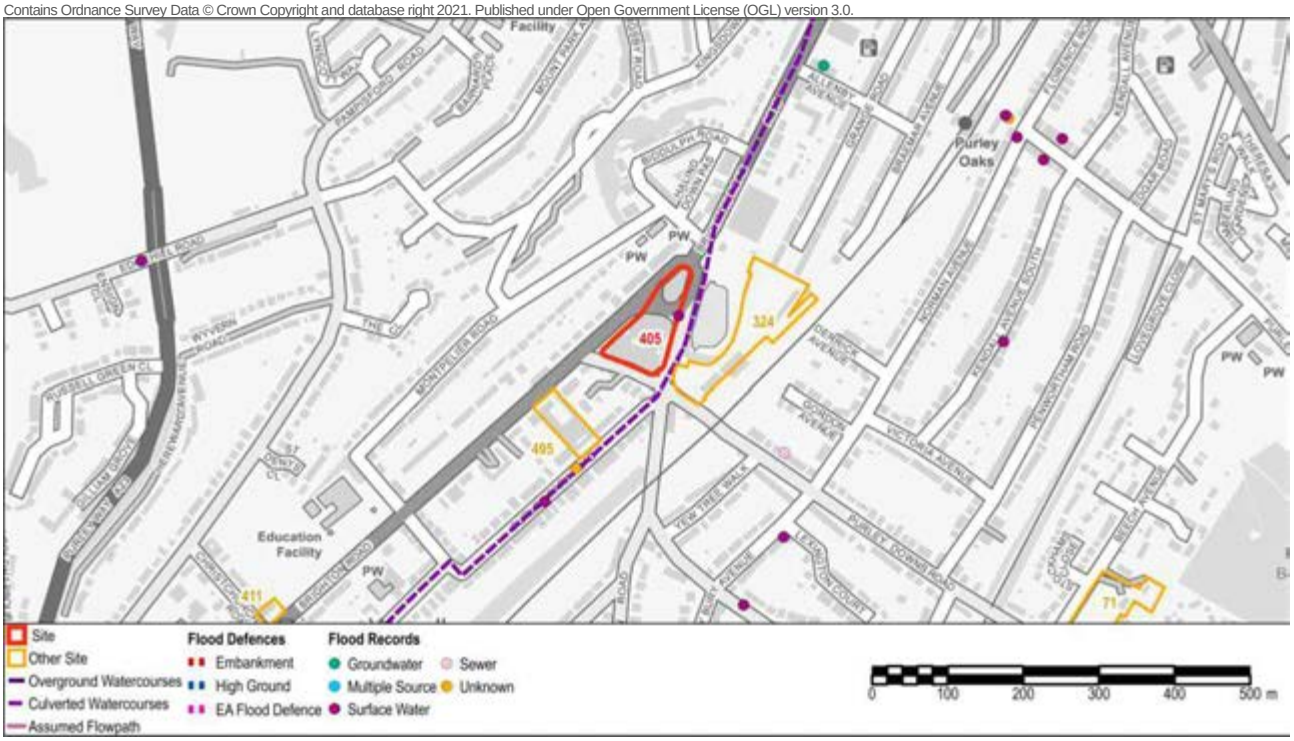

Figure 2 – River Wandle Maximum Flood Depth (1% AEP plus 35% climate change) Please note: Data does not extend to the extent of this figure.

Site Name: Capella Court & Royal Oak Centre, 725 Brighton Road

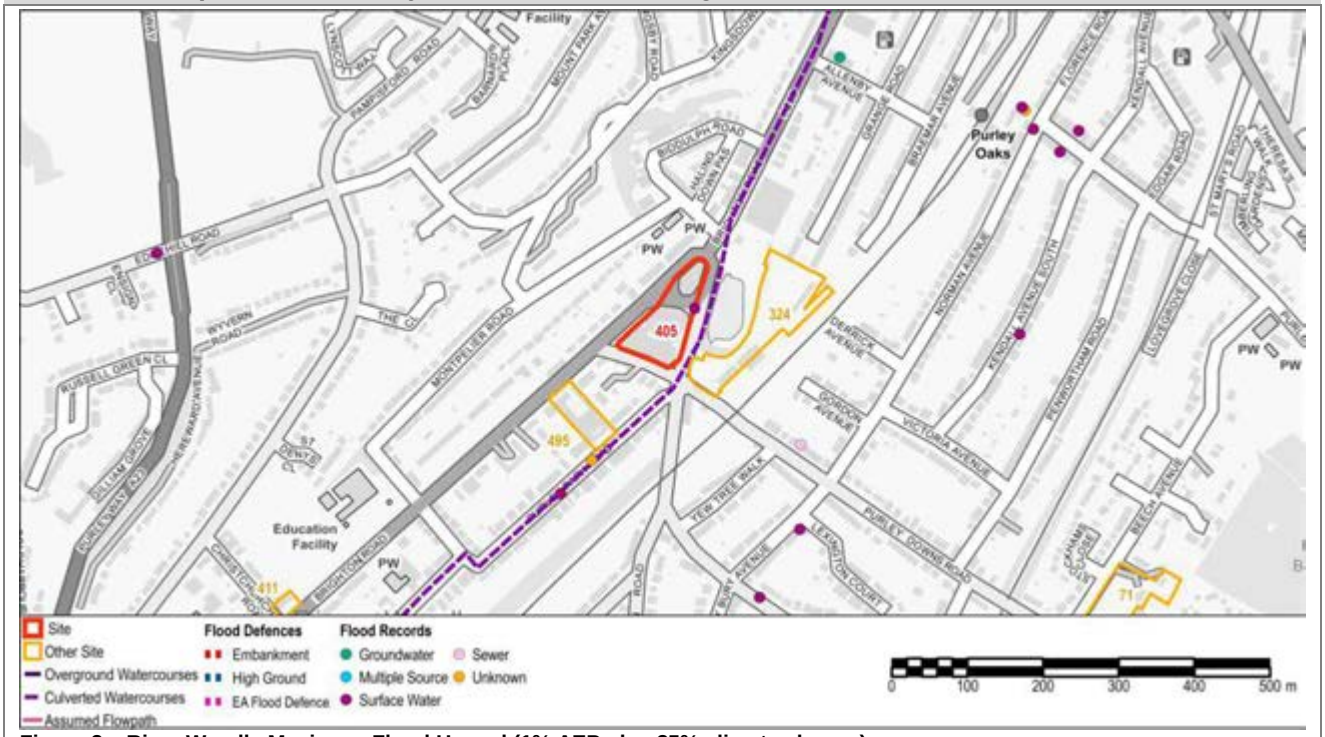

Figure 3 – River Wandle Maximum Flood Hazard (1% AEP plus 35% climate change) Please note: Data does not extend to the extent of this figure.

Surface Water Flooding	
Critical Drainage Area	Group8_041 - Brighton Rd [Croydon]
Drainage Catchment	DC39

Site Name: Capella Court & Royal Oak Centre, 725 Brighton Road

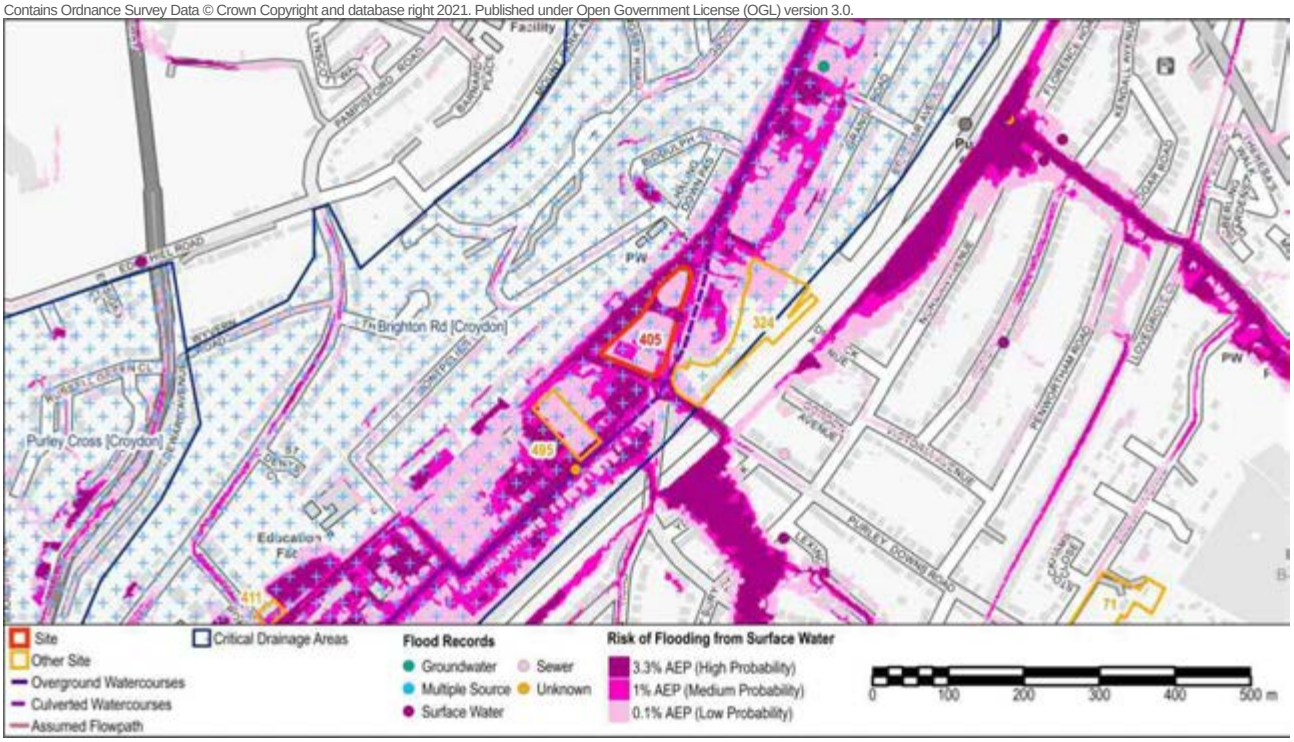

Figure 4 - Risk of Flooding from Surface Water (RoFSW) Flood Extents

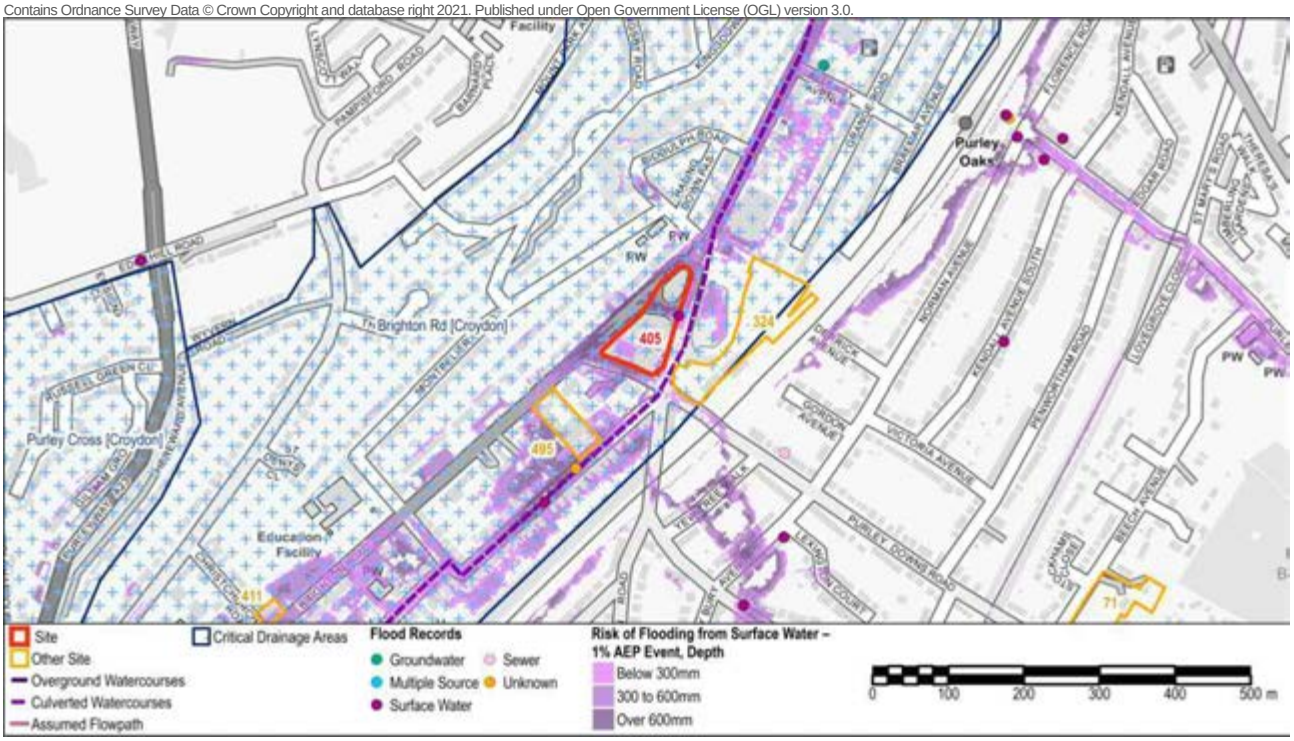

Figure 5 - Risk of Flooding from Surface Water (RoFSW) 1% AEP Flood Depth

Site Name: Capella Court & Royal Oak Centre, 725 Brighton Road

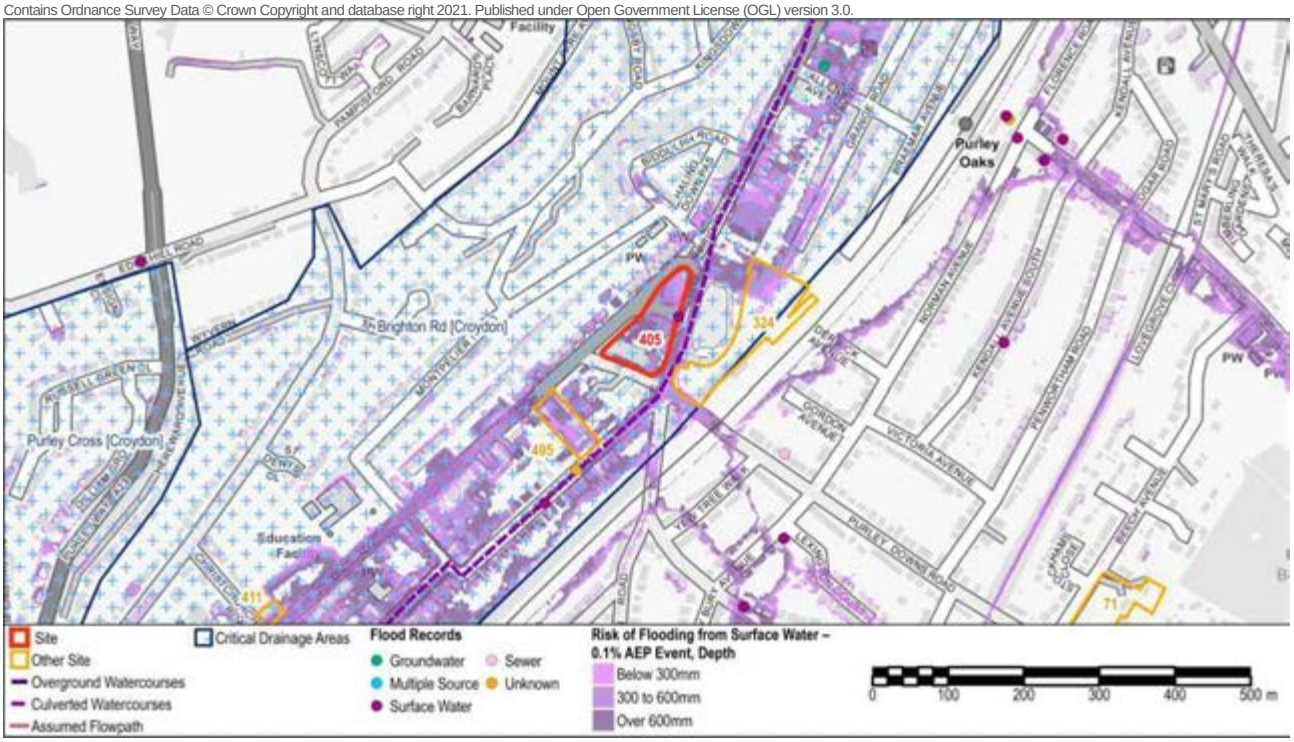

Figure 6 - Risk of Flooding from Surface Water (RoFSW) 0.1% AEP Flood Depth

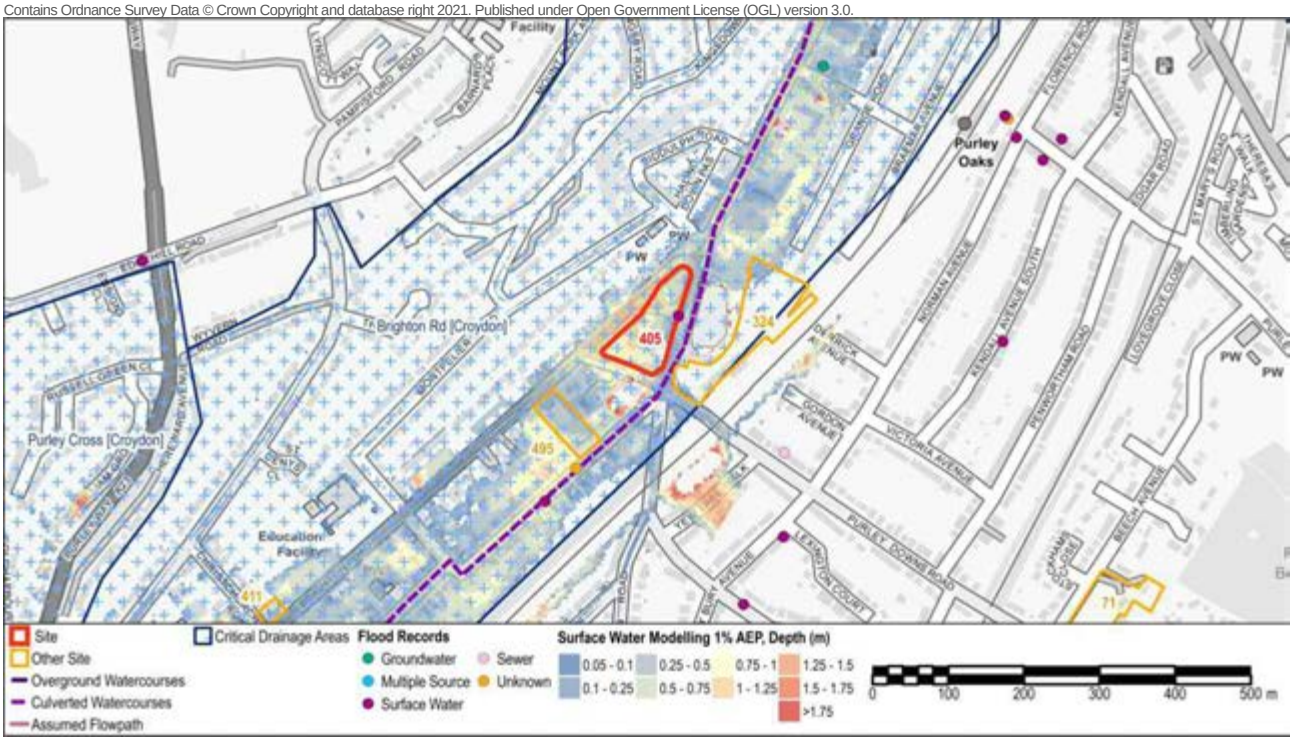

Figure 7 - Surface Water Modelling 1% AEP Flood Depth

Site Name: Capella Court & Royal Oak Centre, 725 Brighton Road

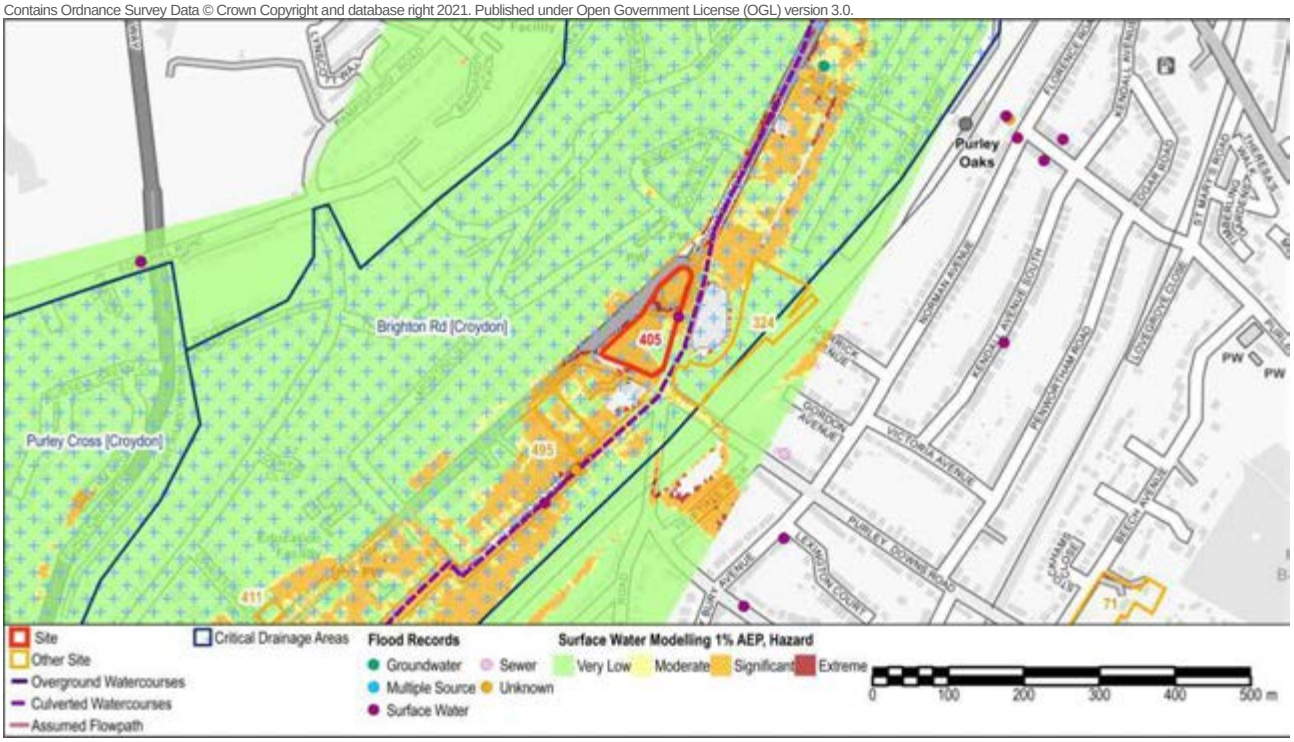

Figure 8 - Surface Water Modelling 1% AEP Flood Hazard

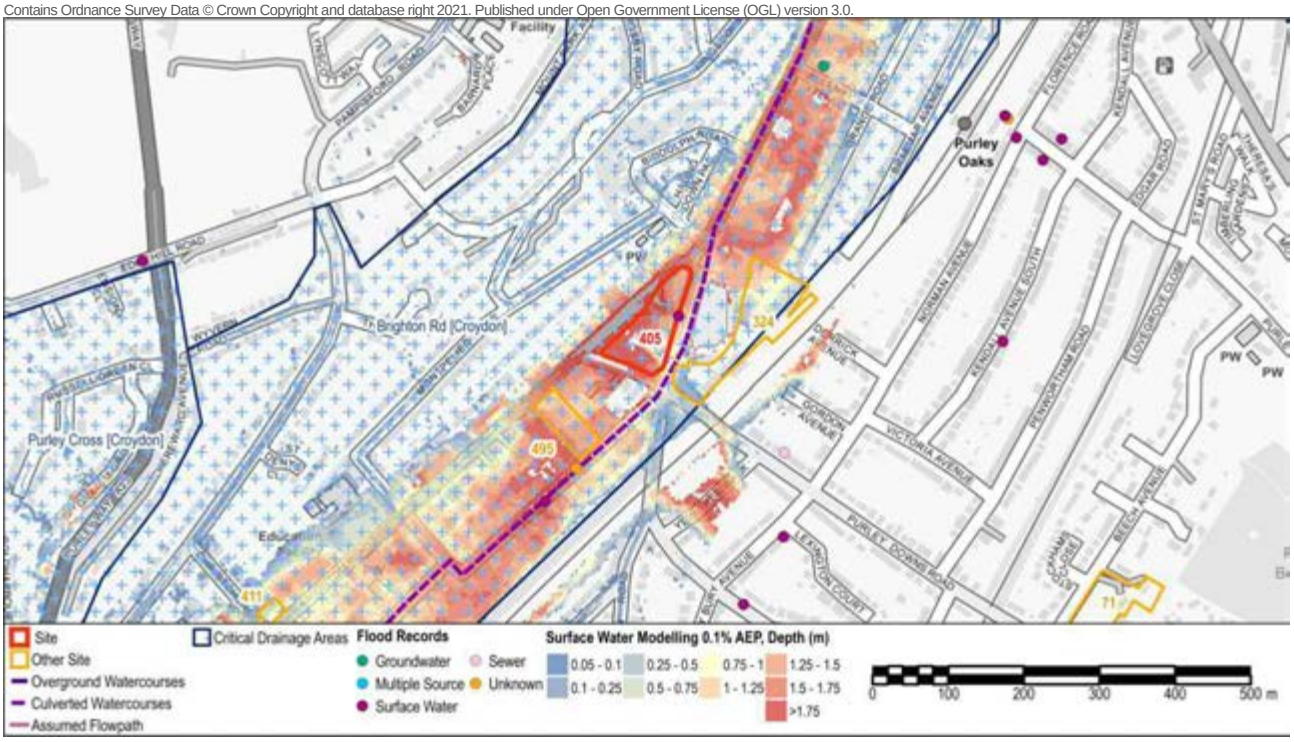

Figure 9 - Surface Water Modelling 0.1% AEP Flood Depth

Site Name: Capella Court & Royal Oak Centre, 725 Brighton Road

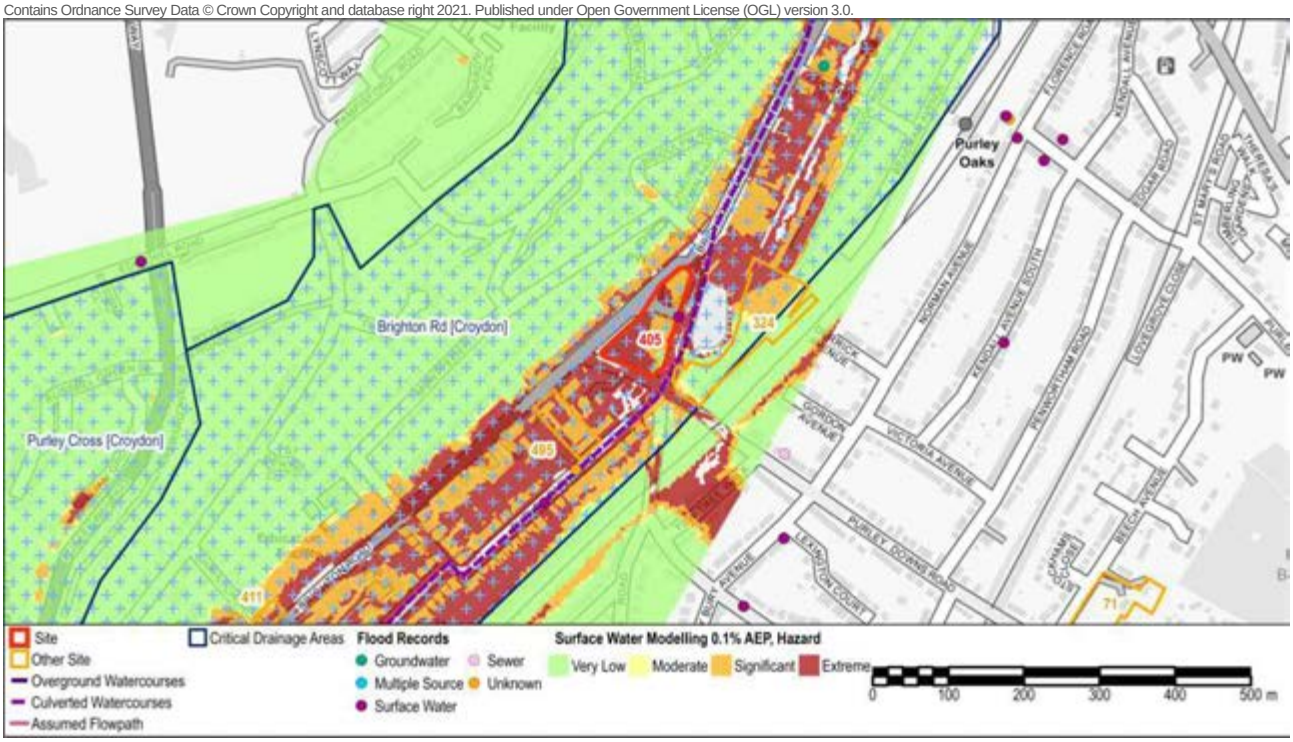

Figure 10 - Surface Water Modelling 0.1% AEP Flood Hazard

Groundwater Flooding			
Bedrock Geology	White Chalk Subgroup	**Superficial Geology**	-
Increased Potential for Elevated Groundwater		Yes	
Susceptibility to Groundwater Flooding (BGS)		Potential for groundwater flooding to occur at surface	

Other Sources	
Risk of flooding from reservoirs	The Long Term Flood Risk Map shows that the site is not at risk of flooding, in the event of a breach or failure of a reservoir.

Summary

The site is defined as Flood Zone 3, High probability of river flooding.

A 1050mm diameter culvert runs in a northern direction along Brighton Road, conveying runoff generated in the surroundings and flows from the intermittent watercourses of the Merstham Bourne and Caterham Bourne.

This culverted part of the Wandle catchment was not included within the River Wandle modelling and therefore there are no modelling outputs for the 1% AEP fluvial flood event including 35% increase in peak river flows as a result of climate change (Figures 2 and 3).

The Risk of Flooding from Surface Water mapping identifies the potential for surface water to flow from the roads surrounding the site towards the centre of the site. There are records of surface water flooding in proximity to the site and it is located within a Critical Drainage Area (Group8_041, Brighton Rd [Croydon]). There are records of flooding from a range of sources including surface water, groundwater, sewers and unknown sources within 500m of the site.

Surface water modelling undertaken by Arcadis (July 2020) is included in Figures 7-10 and covers the site and surrounding area. For the 1% AEP event, areas to the south of the site are shown to have flood depths between 0.75-1m with areas to the west reaching 1-1.25m. The hazard rating for this event is Significant to Extreme on the site and along Riddlesdown Road and Brighton Road. The majority of the site reaches flood depths over 1.75m in a 0.1% AEP event. Hazard mapping shows the hazard rating is Significant to Extreme.

Site Specific Recommendations

The proposed use for the site includes residential uses which are 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:

- Planning for the site should consider how it can 'make space for water' and consider the need to temporarily store surface water runoff during heavy rainfall events. Opportunities should be sought for providing strategic SuDS systems across multiple plots within this area.
- Development proposals 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.
- Development of the site should consider the footprint of the existing buildings are ensure no loss of floodplain storage. Development of the site should consider the surface water flow paths in the area and ensure there is no increase in flood risk to

Site Name: Capella Court & Royal Oak Centre, 725 Brighton Road

neighbouring areas. Opportunities should be taken to reduce the risk of surface water flooding to the surrounding areas through the layout of the development.

- Finished floor levels for More Vulnerable development should be set above the modelled flood level for the 1% AEP event, including a 300mm freeboard. Flood depths for the modelled 1% AEP event are shown in Figure 7.
- Finished floor levels do not need to be raised for Less Vulnerable development, however flood resilience measures should be adopted within these developments to reduce potential damage during flooding and enable rapid re-occupancy.
- Surface water modelling shows that the main access routes throughout this area are at risk of flooding with a Significant or Extreme hazard rating during the 1% and 0.1% AEP events. Development proposals for the site should consider how safe access/egress can be provided during these events. In addition, given the potential for surface water to have rapid onset, a place of safe refuge should be provided within new developments above the modelled flood level for the 0.1% AEP event (Figure 9).
- A flood warning and evacuation plan should be prepared, in accordance with the Council's wider emergency planning response.
- This area is covered by the Environment Agency Flood Alert Area for Groundwater flooding in South East London (Areas at risk from Groundwater flooding including Caterham Bourne, Coulsdon Bourne, Beddington, Carshalton, Coulsdon, Kenley, Purley, South Croydon, Whyteleafe, Bromley, Bexley and Lewisham). This service has a wide geographic coverage and does not give time-specific warnings.
- The risk of groundwater flooding and groundwater levels should be further assessed as part of a Site Investigation for specific development proposals within the site.

Site Name: Palmerston House, 814 Brighton Road

Site ID:	411	**Area (ha):**	0.07
Proposed Use:	Residential redevelopment.	**Vulnerability Classification:**	More Vulnerable

Flood Zones and Historic Flooding

Flood Zone 1 (<0.1% AEP): 73%	**Flood Zone 2 (0.1% AEP):** 26%	**Flood Zone 3 (1% AEP):** 1%	**Flood Zone 3b (5% AEP):** 0%	**Area Benefiting from Defences:** 0%

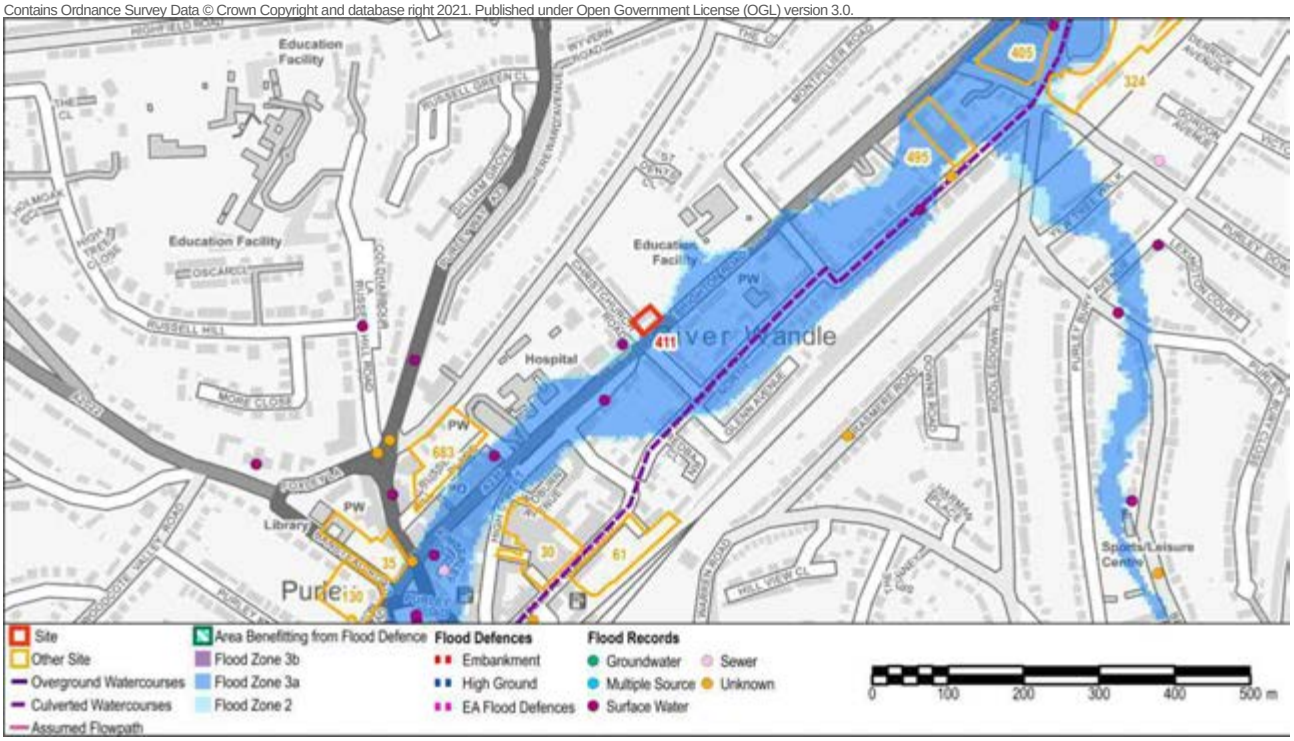

Figure 1 - Flood Zones and Flood Records

Flood Warning Area	None
Flood Records within 500m of the site:	Surface Water 12; Groundwater 0; Sewer 1; Multiple source 0; Unknown source 8

River Flooding

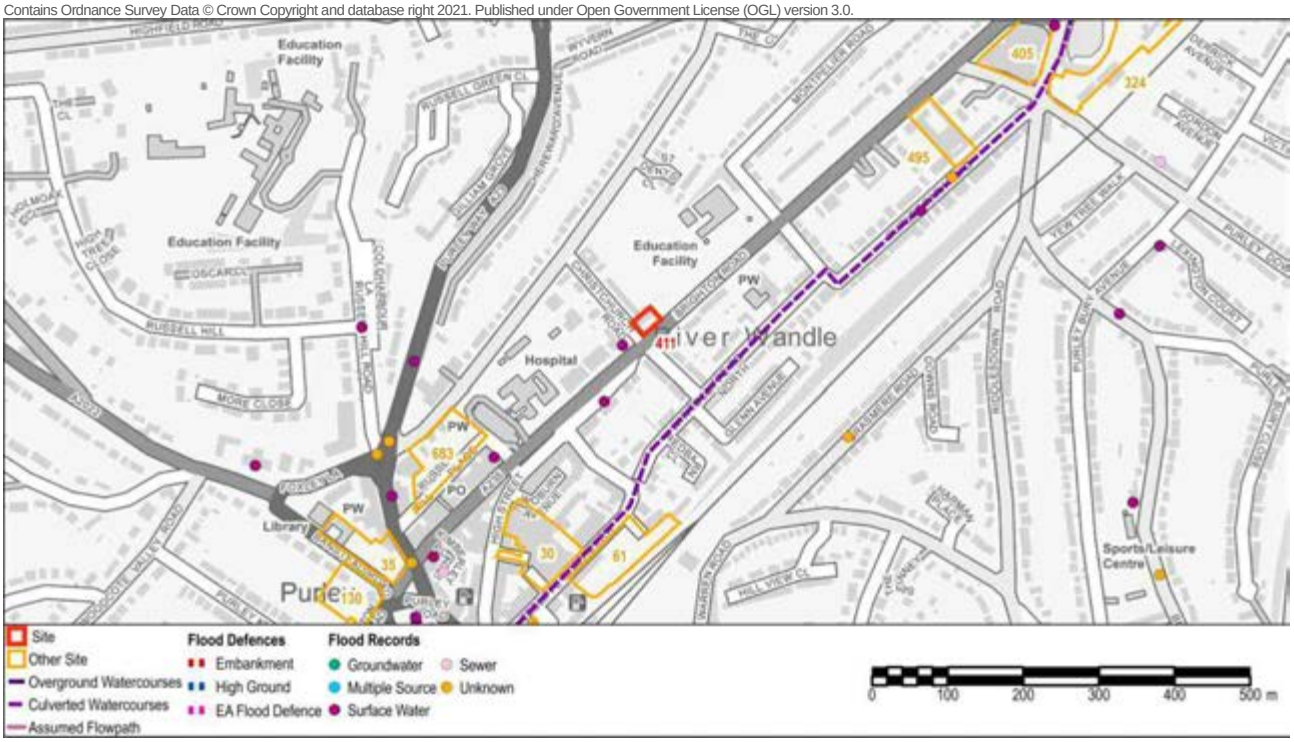

Figure 2 – River Wandle Maximum Flood Depth (1% AEP plus 35% climate change) Please note: Data does not extend to the extent of this figure.

Site Name: Palmerston House, 814 Brighton Road

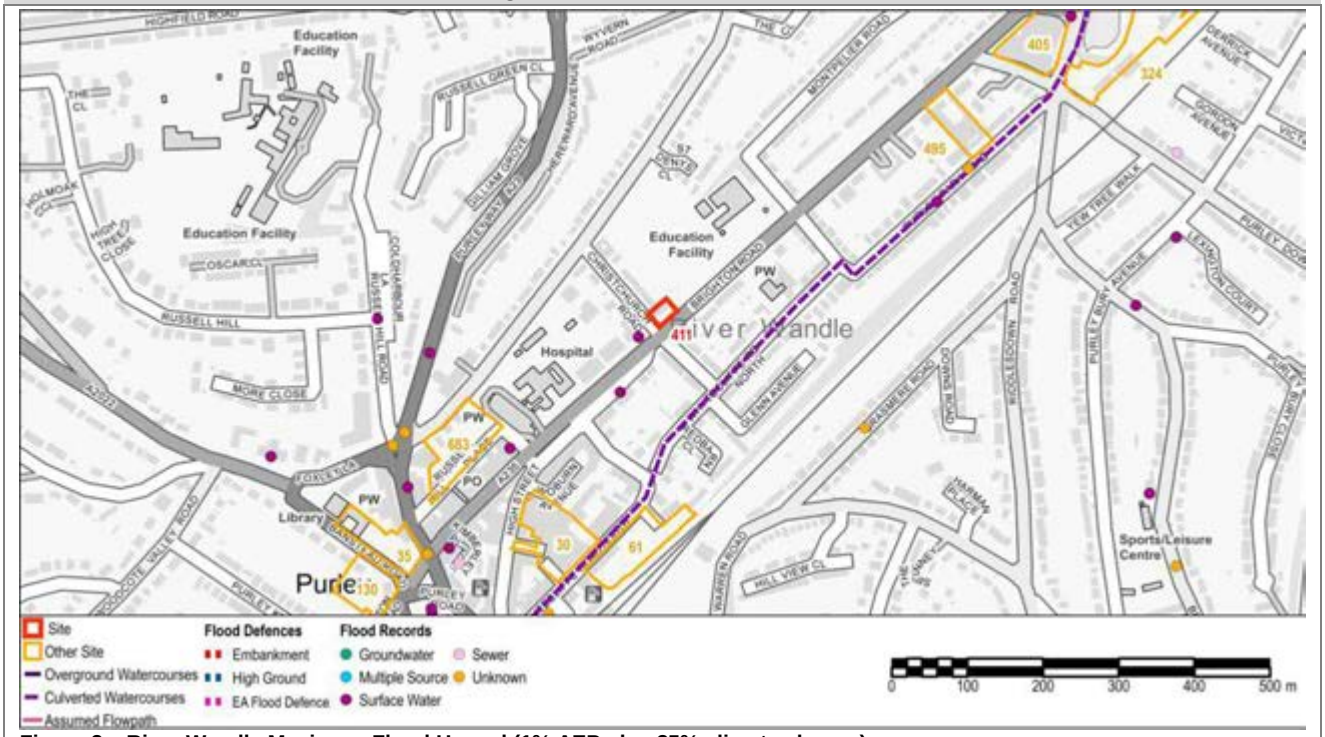

Figure 3 – River Wandle Maximum Flood Hazard (1% AEP plus 35% climate change) Please note: Data does not extend to the extent of this figure.

Surface Water Flooding	
Critical Drainage Area	Group8_041 - Brighton Rd [Croydon]
Drainage Catchment	DC39

Site Name: Palmerston House, 814 Brighton Road

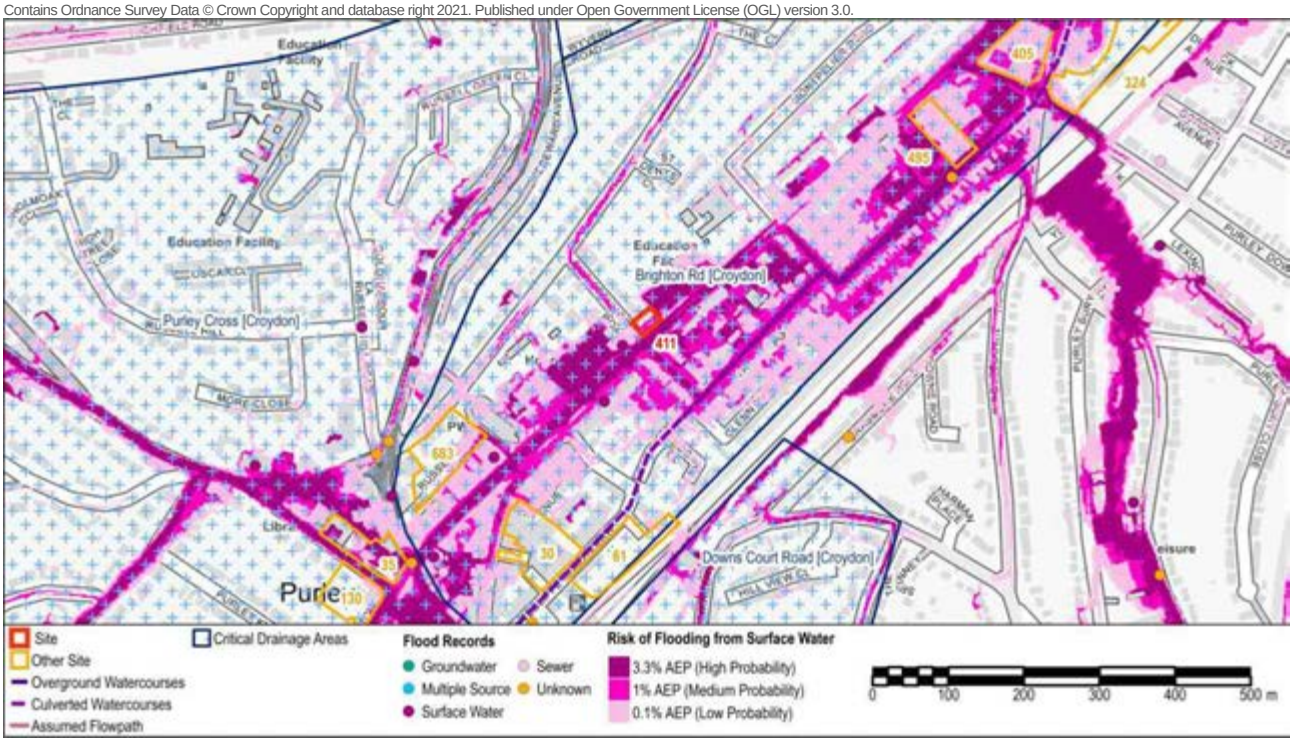

Figure 4 - Risk of Flooding from Surface Water (RoFSW) Flood Extents

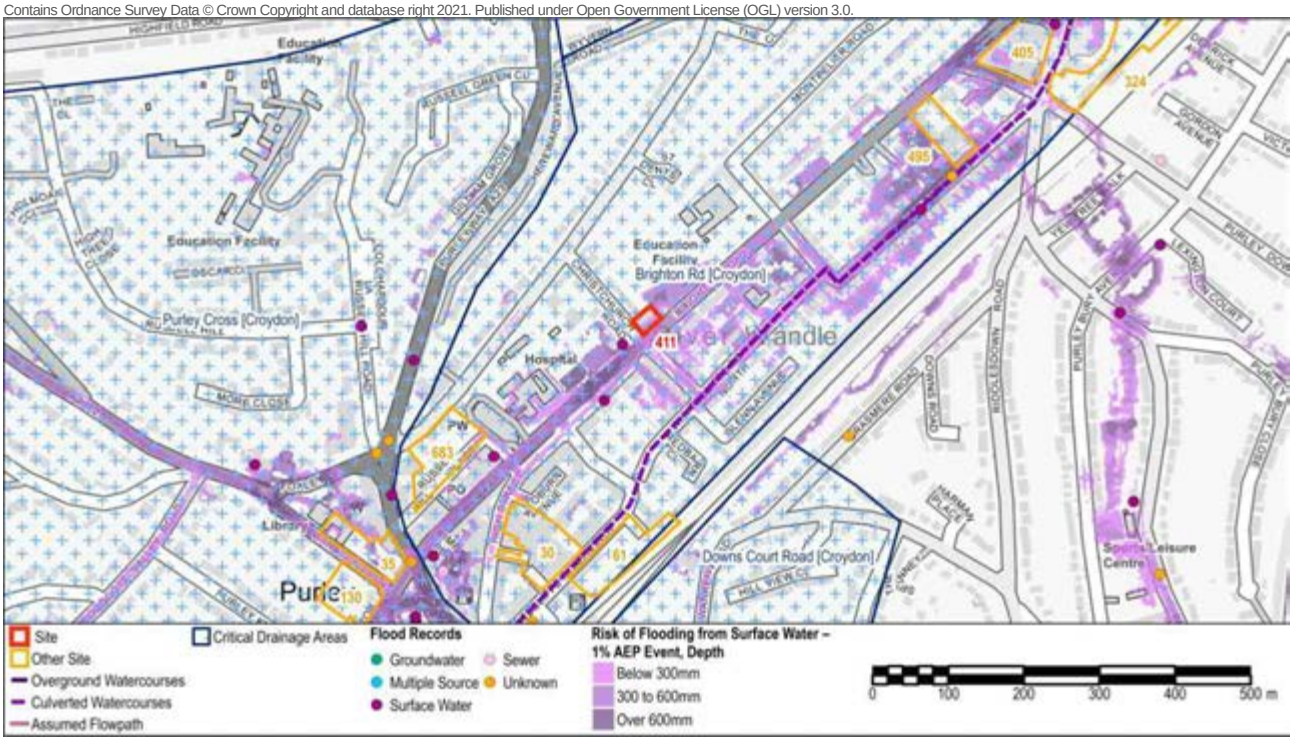

Figure 5 - Risk of Flooding from Surface Water (RoFSW) 1% AEP Flood Depth

Site Name: Palmerston House, 814 Brighton Road

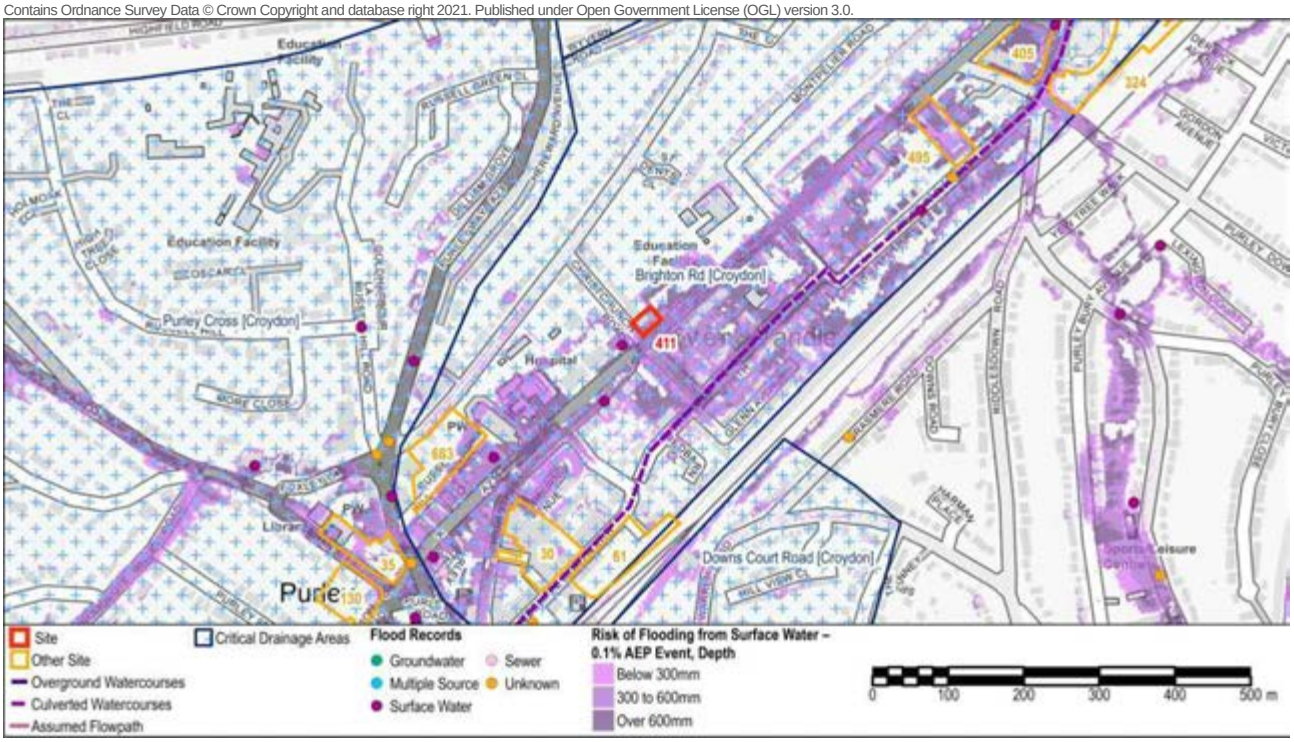

Figure 6 - Risk of Flooding from Surface Water (RoFSW) 0.1% AEP Flood Depth

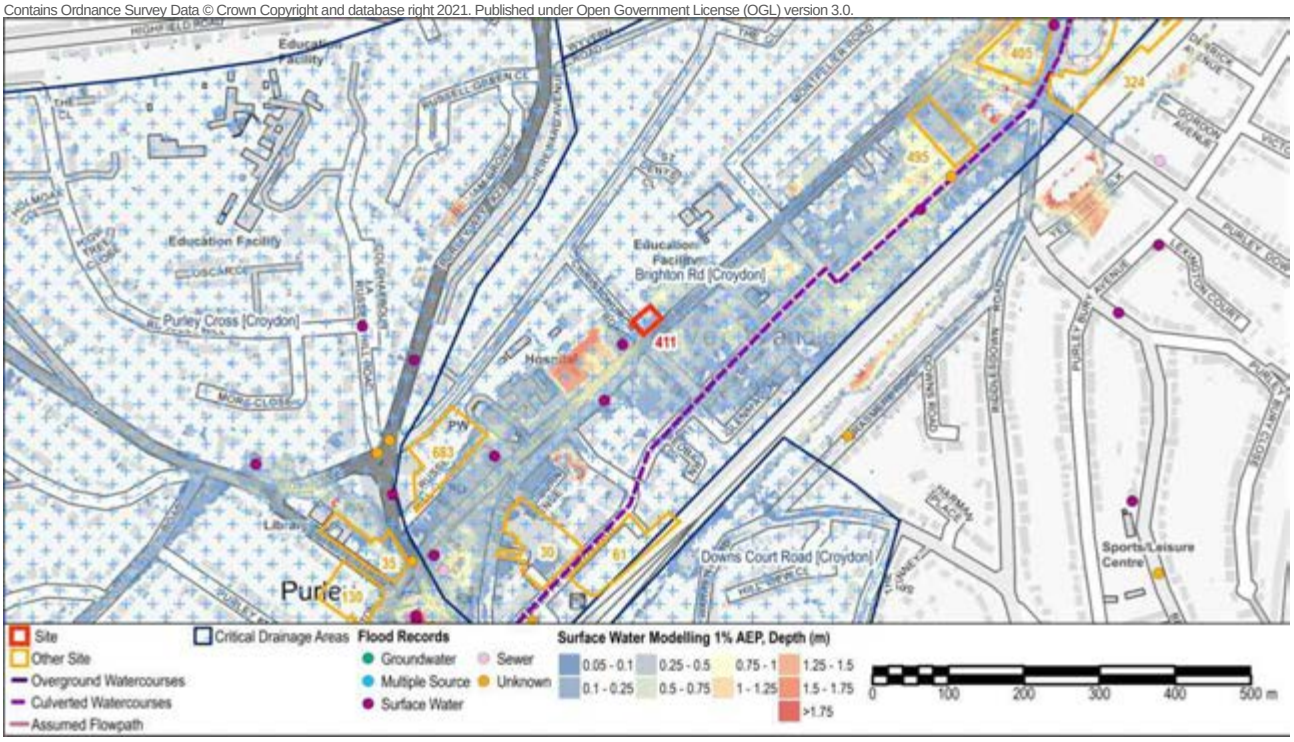

Figure 7 - Surface Water Modelling 1% AEP Flood Depth

Site Name: Palmerston House, 814 Brighton Road

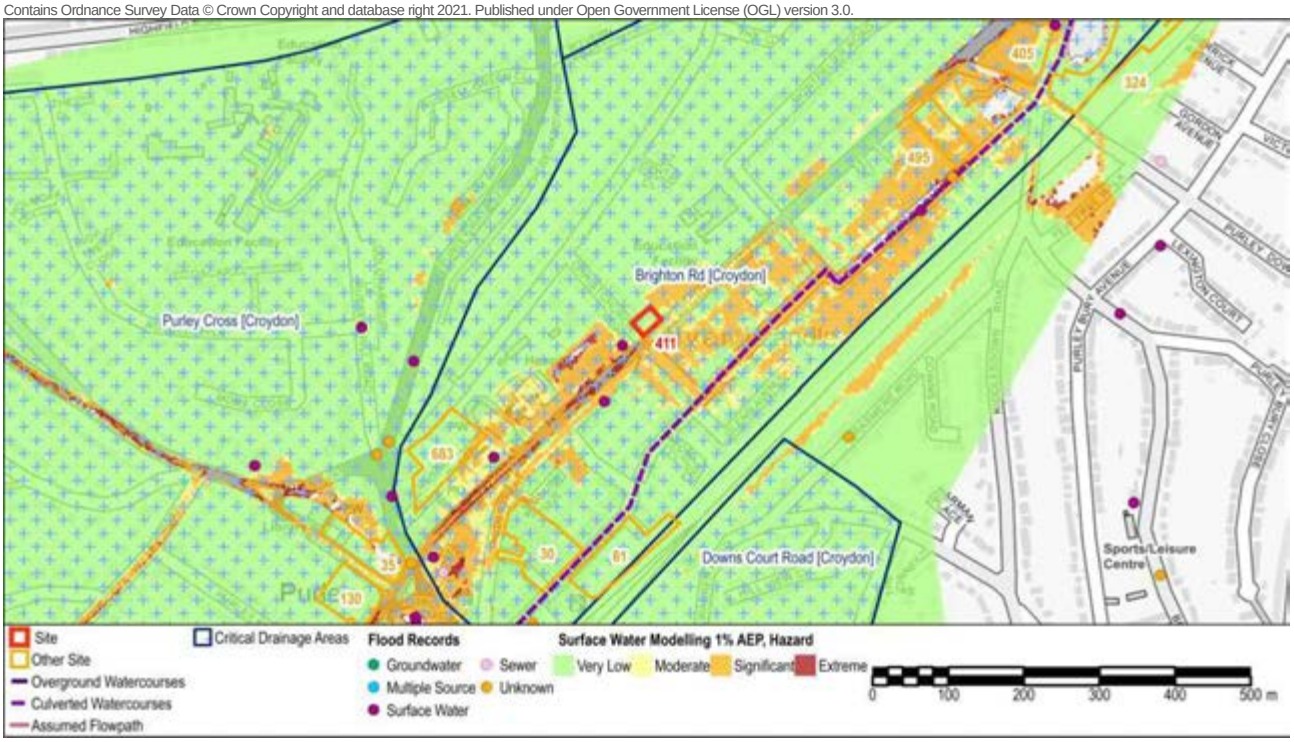

Figure 8 - Surface Water Modelling 1% AEP Flood Hazard

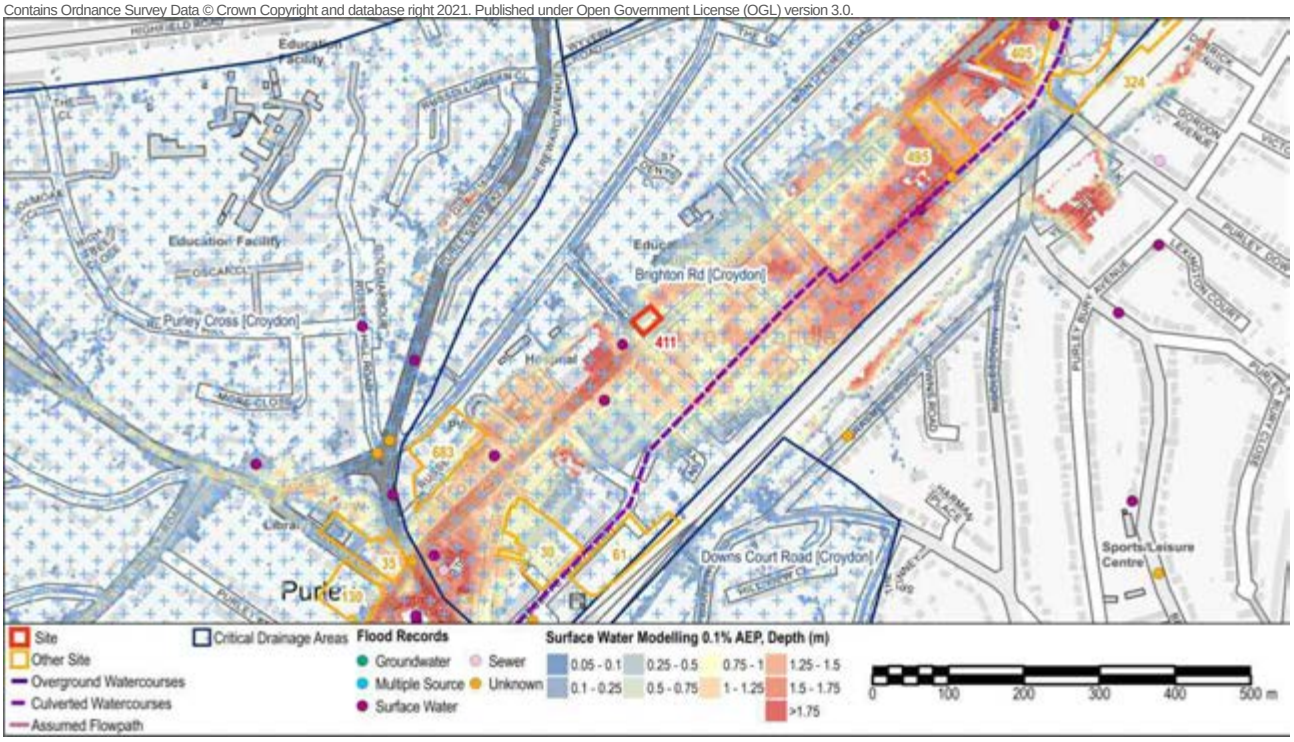

Figure 9 - Surface Water Modelling 0.1% AEP Flood Depth

Site Name: Palmerston House, 814 Brighton Road

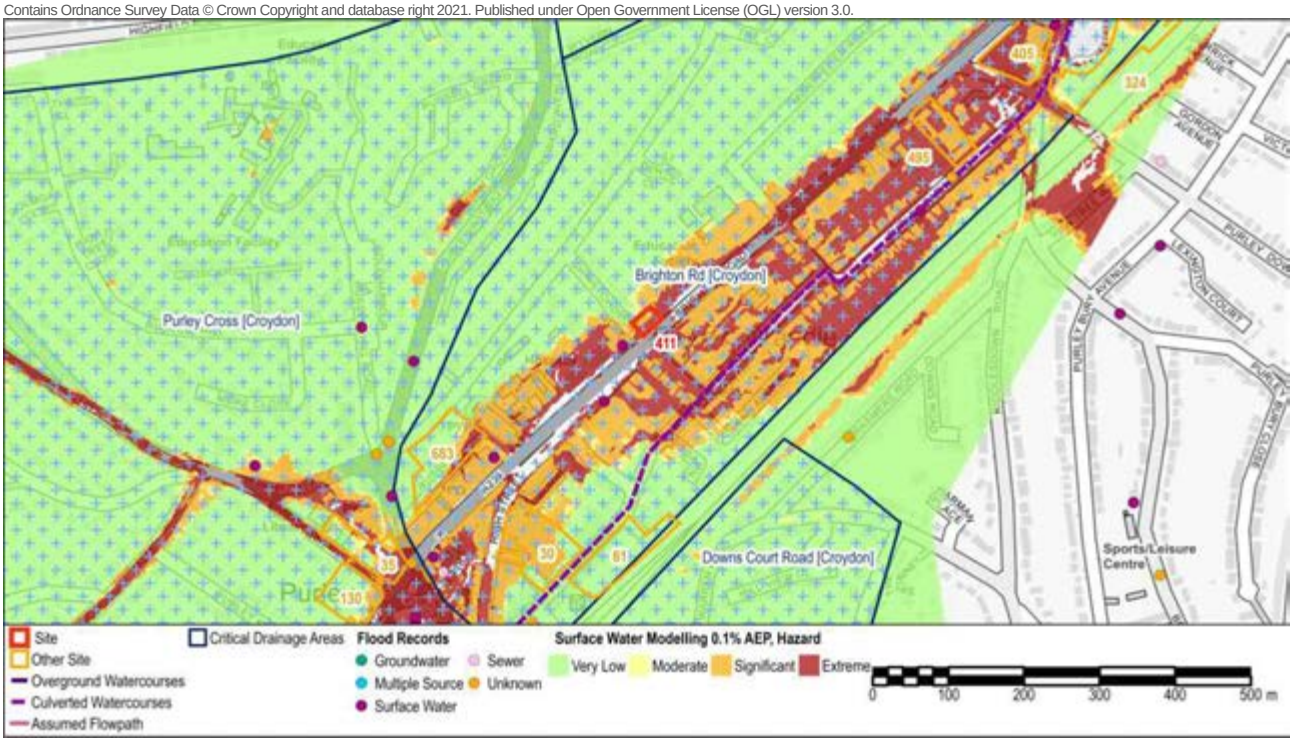

Figure 10 - Surface Water Modelling 0.1% AEP Flood Hazard

Groundwater Flooding			
Bedrock Geology	White Chalk Subgroup	**Superficial Geology**	-
Increased Potential for Elevated Groundwater		Yes	
Susceptibility to Groundwater Flooding (BGS)		Potential for groundwater flooding to occur at surface	

Other Sources	
Risk of flooding from reservoirs	The Long Term Flood Risk Map shows that the site is not at risk of flooding, in the event of a breach or failure of a reservoir.

Summary

The majority of the site (73%) is defined as Flood Zone 1, Low probability of river flooding, and the remainder of the site in defined as Flood Zone 2 (26%), Medium probability flood of river flooding and the Flood Zone 3 (1%), High probability flooding.

A 1050mm diameter culvert runs in a northern direction along Brighton Road 110m east from the site, conveying runoff generated in the surroundings and flows from the intermittent watercourses of the Merstham Bourne and Caterham Bourne to join the River Wandle.

This culverted part of the Wandle catchment was not included within the River Wandle modelling and therefore there are no modelling outputs for the 1% AEP fluvial flood event including 35% increase in peak river flows as a result of climate change (Figures 2 and 3).

The Risk of Flooding from Surface Water mapping identifies the potential for surface water to flow from east towards the centre of the site . There are records of surface water flooding in proximity to the site and it is located within a Critical Drainage Area (Group8_041, Brighton Rd [Croydon]).

There are records of flooding from a range of sources including surface water, groundwater, sewers and unknown sources within 500m of the site.

Surface water modelling undertaken by Arcadis (July 2020) is included in Figures 7-10 and covers the site and surrounding area. For the 1% AEP event, the south east of the site is shown to flood to depths of 0.1-0.25m, with a hazard rating of Low. During the 0.1% AEP event the north west of the site is shown to flood between 0.5-0.75m and the south east to be between 0.75-1m. The hazard rating is Significant to Extreme on the site and along Brighton Road.

Site Specific Recommendations

The proposed use for the site includes residential uses which are 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. Furthermore, even where the Exception Test is not required (in line with Table 3 of the PPG), in the light of the risk of surface water flooding in this area, steps should be taken to ensure that development is safe for its lifetime considering the impact of climate change, will not increase flood risk elsewhere, and where possible will reduce flood risk overall. To this end, the following recommendations are made for the site:

- Planning for the site should consider how it can ‘make space for water’ and consider the need to temporarily store surface water runoff during heavy rainfall events. Opportunities should be sought for providing strategic SuDS systems across multiple plots within this area.

Site Name: Palmerston House, 814 Brighton Road

- Development proposals 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.
- Development of the site should consider the footprint of the existing buildings are ensure no loss of floodplain storage. Development of the site should consider the surface water flow paths in the area and ensure there is no increase in flood risk to neighbouring areas. Opportunities should be taken to reduce the risk of surface water flooding to the surrounding areas through the layout of the development.
- Finished floor levels for More Vulnerable development should be set above the modelled flood level for the 1% AEP event, including a 300mm freeboard. Flood depths for the modelled 1% AEP event are shown in Figure 7.
- Finished floor levels do not need to be raised for Less Vulnerable development, however flood resilience measures should be adopted within these developments to reduce potential damage during flooding and enable rapid re-occupancy.
- Surface water modelling shows that the main access routes throughout this area are at risk of flooding with a Significant or Extreme hazard rating during the 1% and 0.1% AEP events. Development proposals for the site should consider how safe access/egress can be provided during these events. This is likely to be possible via Christchurch Road and north onto Pampisford Road. In addition, given the potential for surface water to have rapid onset, a place of safe refuge should be provided within new developments above the modelled flood level for the 0.1% AEP event (Figure 9).
- A flood warning and evacuation plan should be prepared, in accordance with the Council's wider emergency planning response.
- This area is covered by the Environment Agency Flood Alert Area for Groundwater flooding in South East London (Areas at risk from Groundwater flooding including Caterham Bourne, Coulsdon Bourne, Beddington, Carshalton, Coulsdon, Kenley, Purley, South Croydon, Whyteleafe, Bromley, Bexley and Lewisham). This service has a wide geographic coverage and does not give time-specific warnings.
- The risk of groundwater flooding and groundwater levels should be further assessed as part of a Site Investigation for specific development proposals within the site.

Site Name: Purley Back Lanes, 16-28 Pampisford Road

Site ID:	683	**Area (ha):**	0.62
Proposed Use:	Residential development and public car park including new industrial units.	**Vulnerability Classification:**	More Vulnerable

Flood Zones and Historic Flooding

Flood Zone 1 (<0.1% AEP): 99%	**Flood Zone 2 (0.1% AEP):** 0.5%	**Flood Zone 3 (1% AEP):** 0.5%	**Flood Zone 3b (5% AEP):** 0%	**Area Benefiting from Defences:** 0%

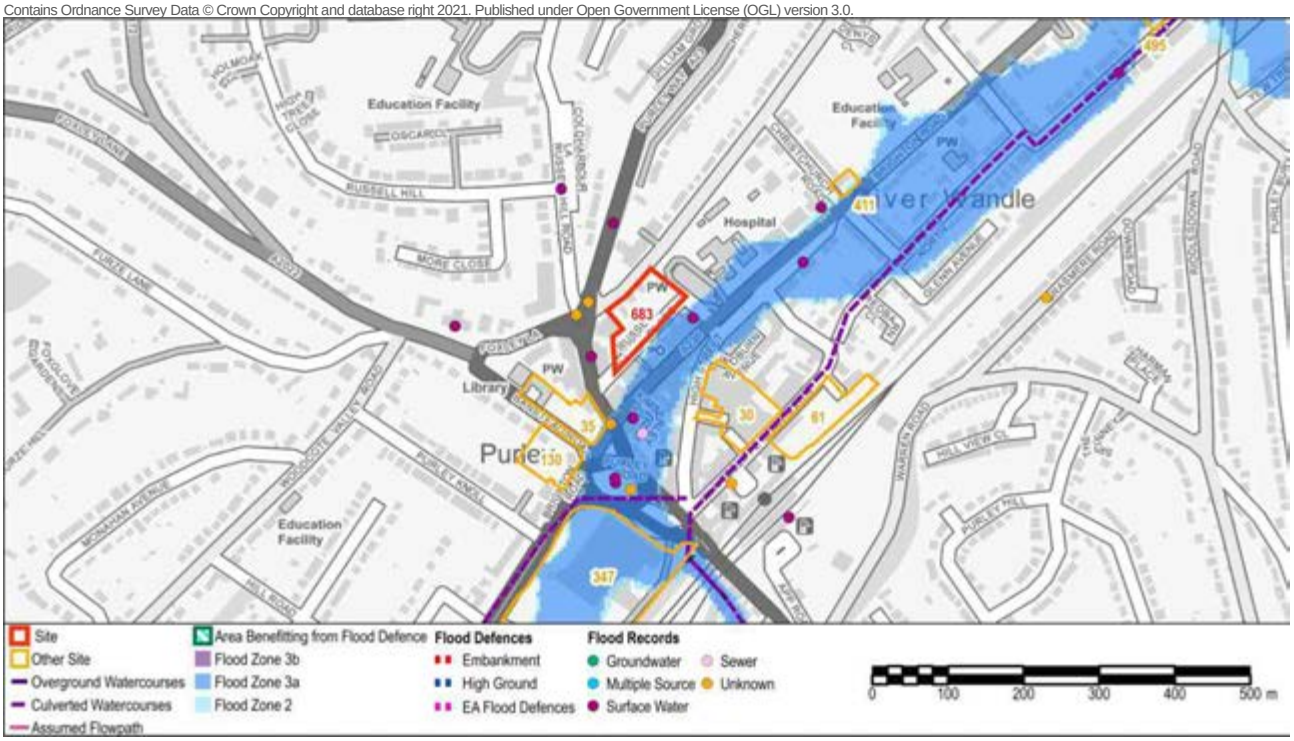

Figure 1 - Flood Zones and Flood Records

Flood Warning Area	None
Flood Records within 500m of the site:	Surface Water 11; Groundwater 1; Sewer 2; Multiple source 0; Unknown source 7

River Flooding

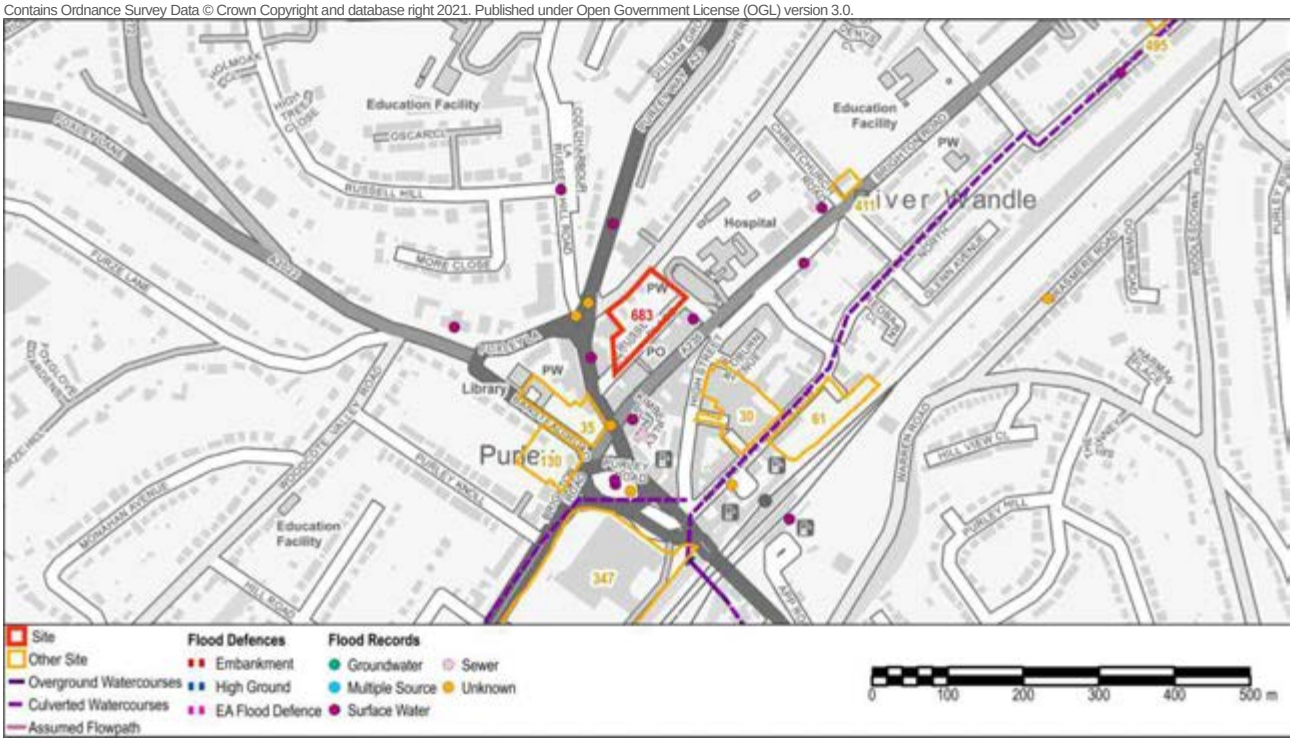

Figure 2 – River Wandle Maximum Flood Depth (1% AEP plus 35% climate change) Please note: Data does not extend to the extent of this figure.

Site Name: Purley Back Lanes, 16-28 Pampisford Road

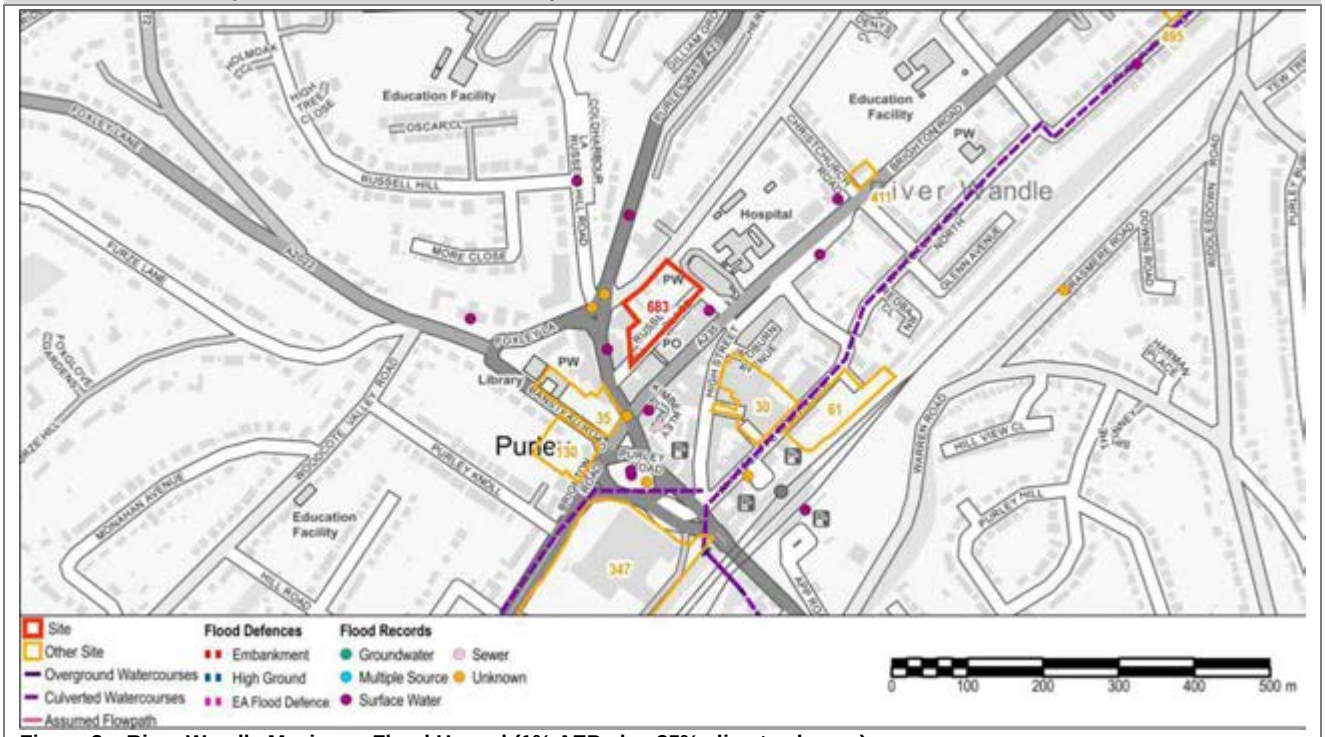

Figure 3 – River Wandle Maximum Flood Hazard (1% AEP plus 35% climate change) Please note: Data does not extend to the extent of this figure.

Surface Water Flooding	
Critical Drainage Area	Group8_041 - Brighton Rd [Croydon]
Drainage Catchment	DC39

Site Name: Purley Back Lanes, 16-28 Pampisford Road

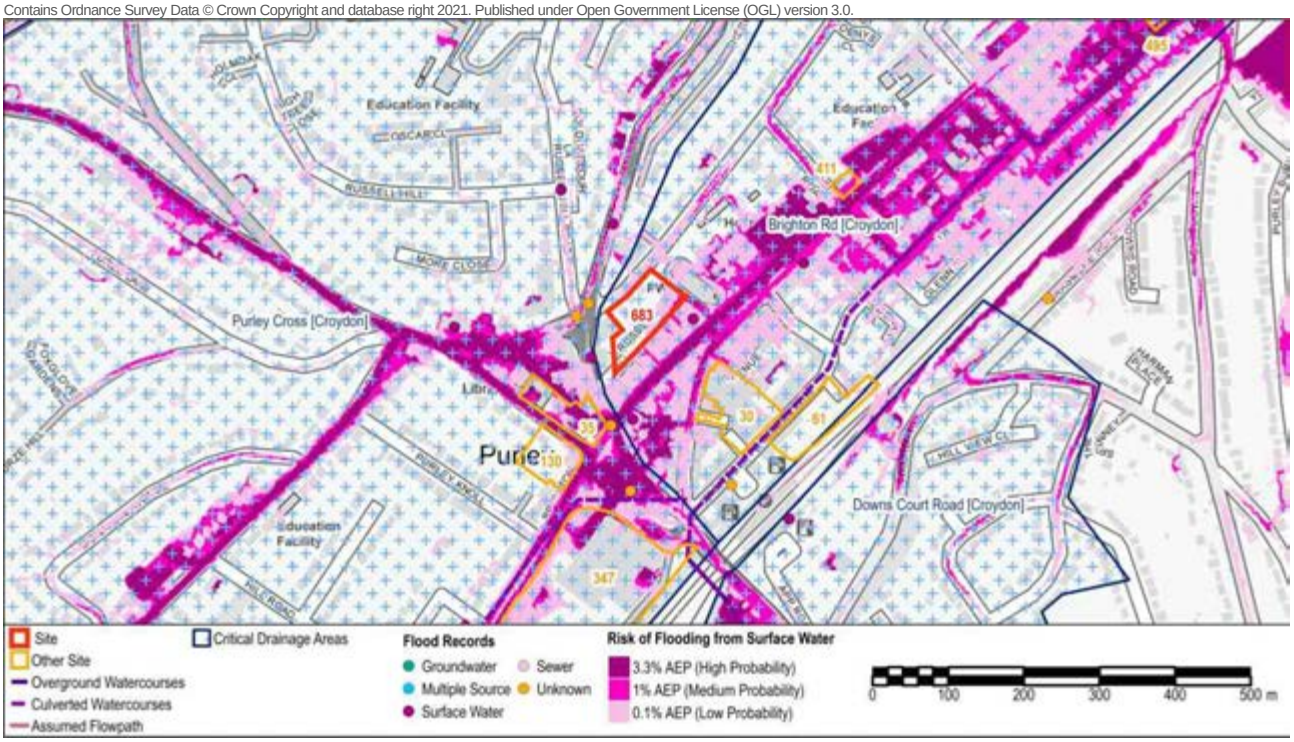

Figure 4 - Risk of Flooding from Surface Water (RoFSW) Flood Extents

Figure 5 - Risk of Flooding from Surface Water (RoFSW) 1% AEP Flood Depth

Site Name: Purley Back Lanes, 16-28 Pampisford Road

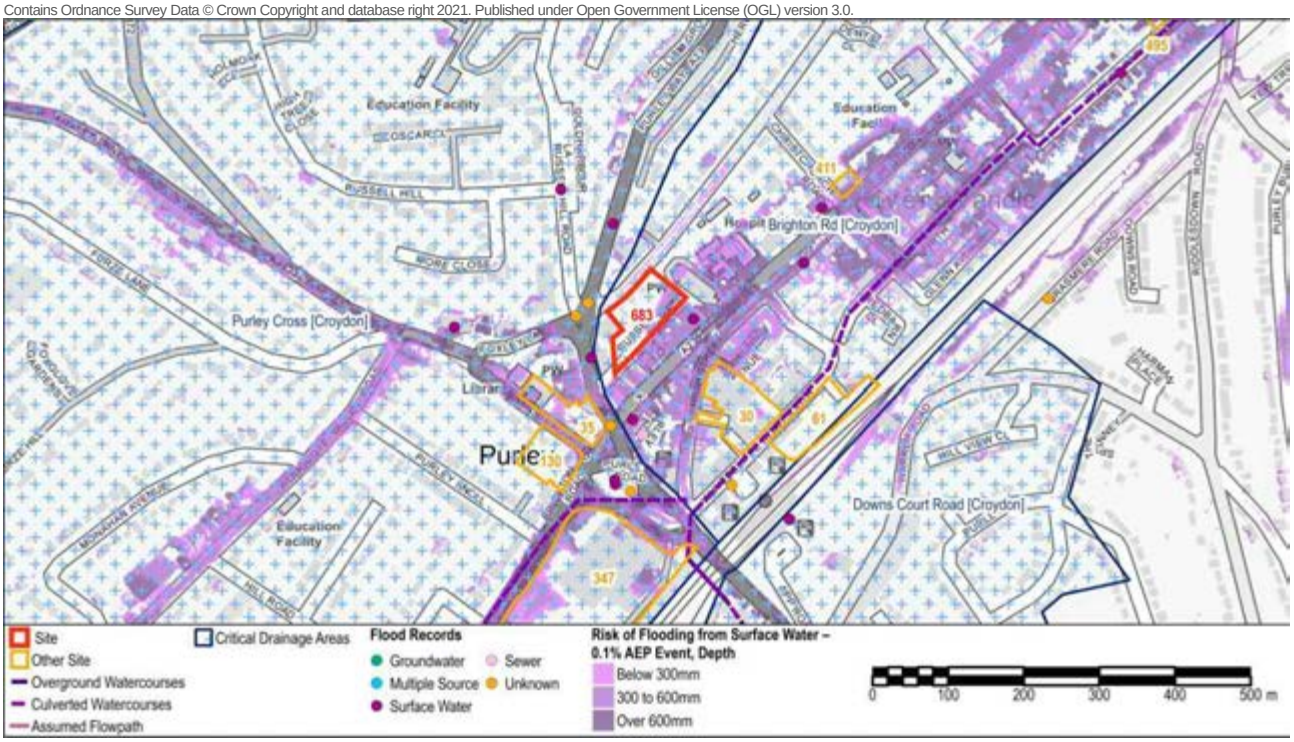

Figure 6 - Risk of Flooding from Surface Water (RoFSW) 0.1% AEP Flood Depth

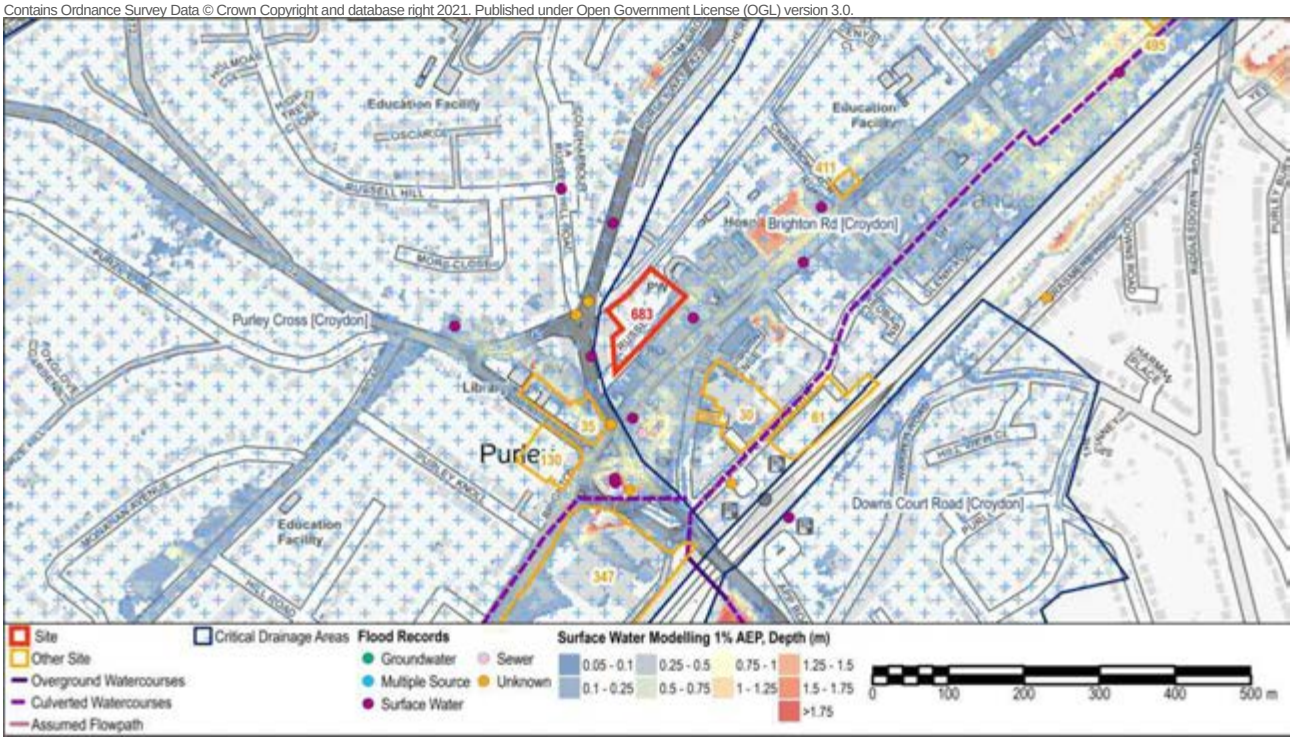

Figure 7 - Surface Water Modelling 1% AEP Flood Depth

Site Name: Purley Back Lanes, 16-28 Pampisford Road

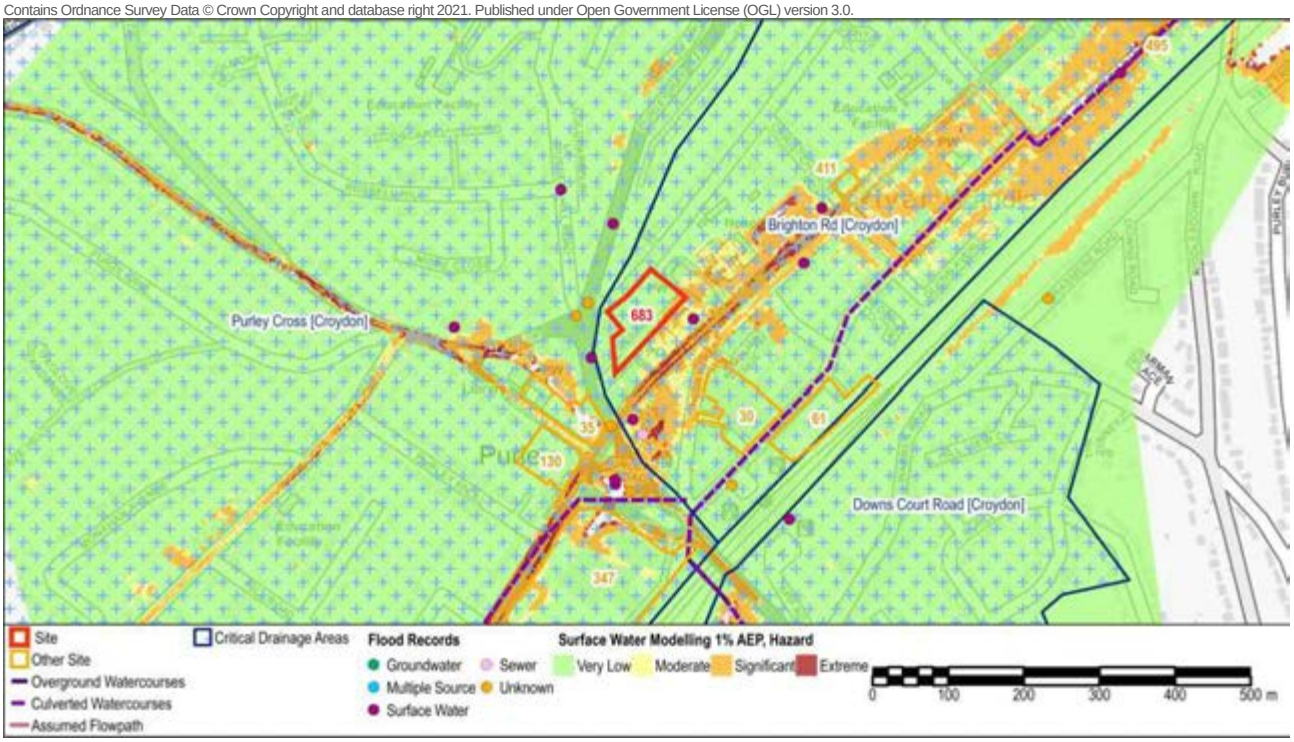

Figure 8 - Surface Water Modelling 1% AEP Flood Hazard

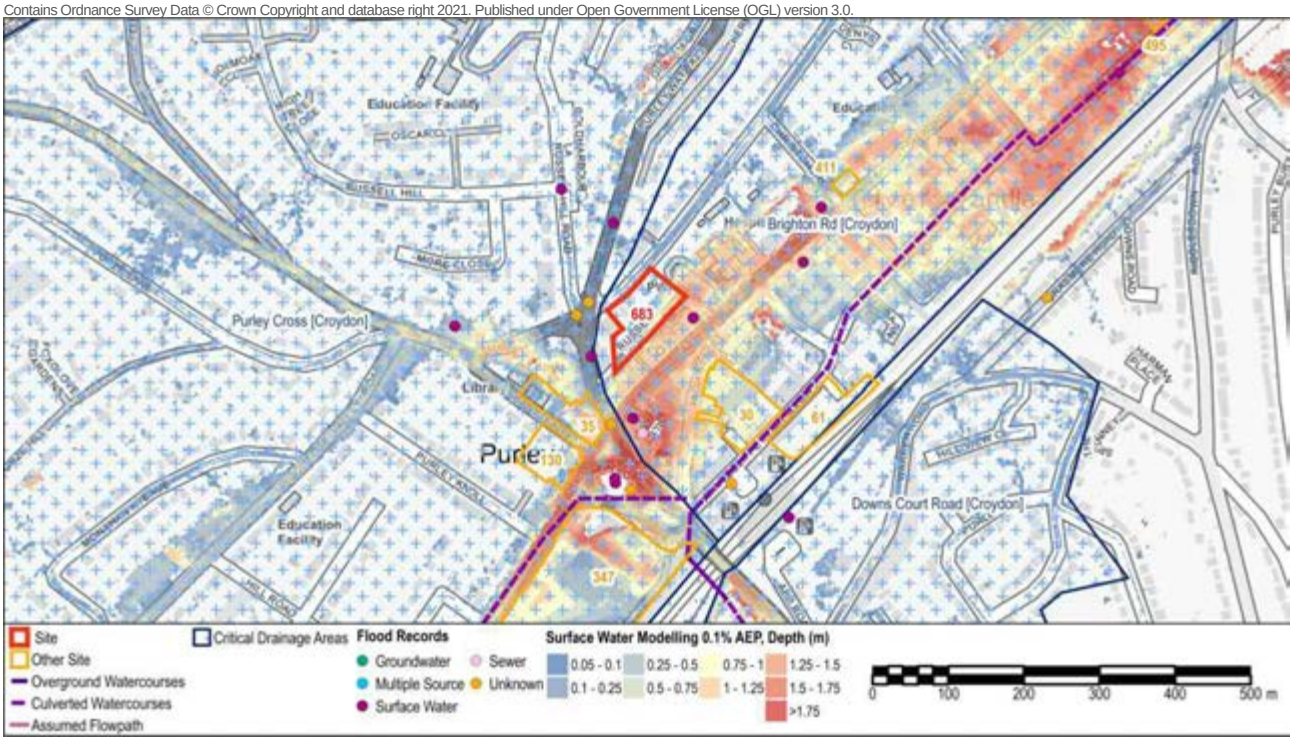

Figure 9 - Surface Water Modelling 0.1% AEP Flood Depth

Site Name: Purley Back Lanes, 16-28 Pampisford Road

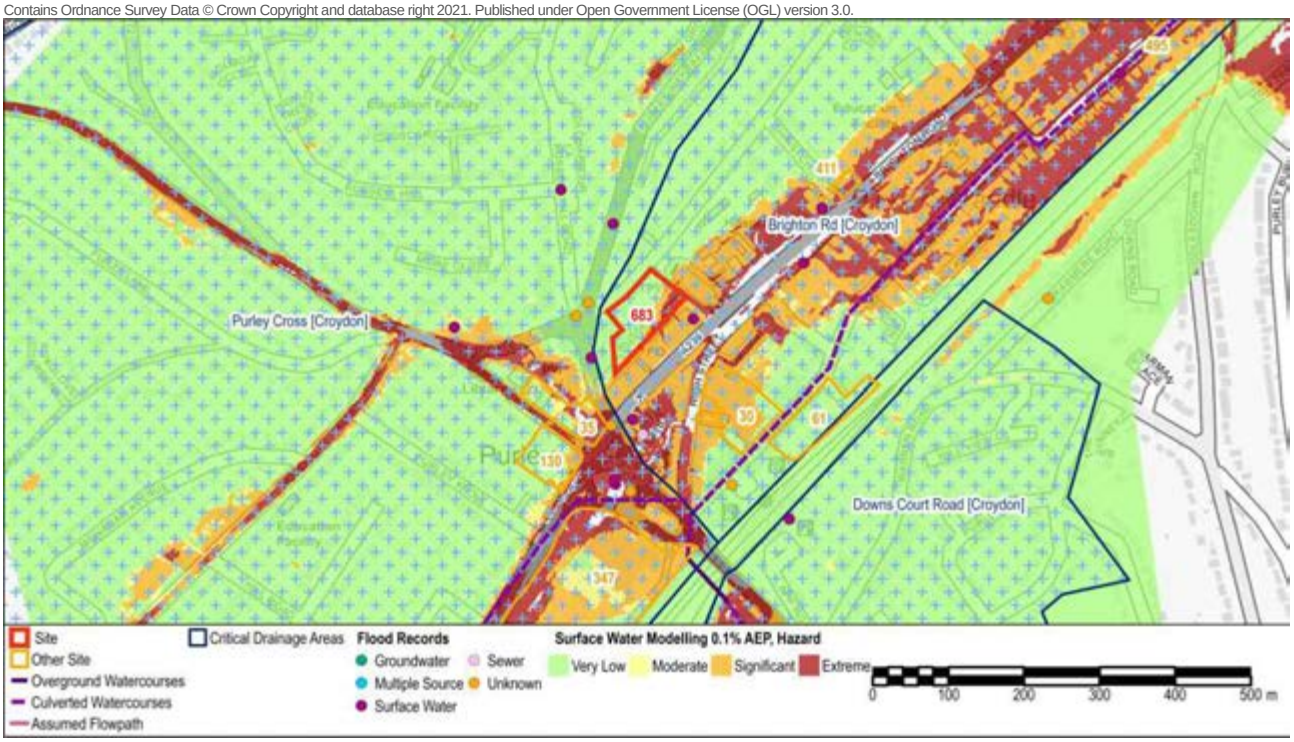

Figure 10 - Surface Water Modelling 0.1% AEP Flood Hazard

Groundwater Flooding			
Bedrock Geology	White Chalk Subgroup	**Superficial Geology**	-
Increased Potential for Elevated Groundwater		Yes	
Susceptibility to Groundwater Flooding (BGS)		Potential for groundwater flooding to occur at surface	

Other Sources	
Risk of flooding from reservoirs	The Long Term Flood Risk Map shows that the site is not at risk of flooding, in the event of a breach or failure of a reservoir.

Summary

The majority of the site (99%) is defined as Flood Zone 1, and the east fringe of the site adjacent to Russell Hill Place is defined as Flood Zone 2, Medium probability of river flooding and Flood Zone 3, High probability of river flooding.

A 1050mm diameter culvert runs in a northern direction along Brighton Road approximately 200m east from the site, conveying runoff generated in the surroundings and flows from the intermittent watercourses of the Merstham Bourne and Caterham Bourne to join the River Wandle.

This culverted part of the Wandle catchment was not included within the River Wandle modelling and therefore there are no modelling outputs for the 1% AEP fluvial flood event including 35% increase in peak river flows as a result of climate change (Figures 2 and 3).

The Risk of Flooding from Surface Water mapping identifies the potential for surface water to flow and pond 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 (Group8_041, Brighton Rd [Croydon]). There are records of flooding from a range of sources including surface water, groundwater, sewers and unknown sources within 500m of the site.

Surface water modelling undertaken by Arcadis (July 2020) is included in Figures 7-10 and covers the site and surrounding area. For the 1% AEP event, the north east of the site is shown to flood to depths of 0.1-0.5m, with a hazard rating of Low to Significant. During the 0.1% AEP event the north east of the site is shown to flood between 0.1-1.5m. The hazard rating is Significant to Extreme on the north east part of the site, elsewhere it is Low.

Site Specific Recommendations

The proposed use for the site includes residential uses which are defined as More Vulnerable. More Vulnerable development is permitted within Flood Zone 1 and 2 without the need for the Exception Test. However, in the light of the risk of surface water flooding in this area associated with the natural catchment of the culverted watercourse beneath Brighton Road and how this may increase in the future, steps should be taken to ensure that development is safe for its lifetime considering the impact of climate change, will not increase flood risk elsewhere, and where possible will reduce flood risk overall. To this end, the following recommendations are made for the site:

- Planning for the site should consider how it can ‘make space for water’ and consider the need to temporarily store surface water runoff during heavy rainfall events. Opportunities should be sought for providing strategic SuDS systems across multiple plots within this area.
- Development proposals 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.

Site Name: Purley Back Lanes, 16-28 Pampisford Road

- Development of the site should consider the footprint of the existing buildings are ensure no loss of floodplain storage. Development of the site should consider the surface water flow paths in the area and ensure there is no increase in flood risk to neighbouring areas. Opportunities should be taken to reduce the risk of surface water flooding to the surrounding areas through the layout of the development.
- Finished floor levels for More Vulnerable development should be set above the modelled flood level for the 1% AEP event, including a 300mm freeboard. Flood depths for the modelled 1% AEP event are shown in Figure 7.
- Finished floor levels do not need to be raised for Less Vulnerable development, however flood resilience measures should be adopted within these developments to reduce potential damage during flooding and enable rapid re-occupancy.
- Surface water modelling shows that the main access routes throughout this area are at risk of flooding with a Significant or Extreme hazard rating during the 1% and 0.1% AEP events. Development proposals for the site should consider how safe access/egress can be provided during these events. This is likely to be possible north onto Pampisford Road. In addition, given the potential for surface water to have rapid onset, a place of safe refuge should be provided within new developments above the modelled flood level for the 0.1% AEP event (Figure 9).
- A flood warning and evacuation plan should be prepared, in accordance with the Council's wider emergency planning response.
- This area is covered by the Environment Agency Flood Alert Area for Groundwater flooding in South East London (Areas at risk from Groundwater flooding including Caterham Bourne, Coulsdon Bourne, Beddington, Carshalton, Coulsdon, Kenley, Purley, South Croydon, Whyteleafe, Bromley, Bexley and Lewisham). This service has a wide geographic coverage and does not give time-specific warnings.
- The risk of groundwater flooding and groundwater levels should be further assessed as part of a Site Investigation for specific development proposals within the site.

Site Name: Stubbs Mead Depot, Factory Lane

Site ID:	946	**Area (ha):**	2.72
Proposed Use:	Residential and employment (industry and warehousing).	**Vulnerability Classification:**	More Vulnerable

Flood Zones and Historic Flooding

Flood Zone 1 (<0.1% AEP): 12%	**Flood Zone 2 (0.1% AEP):** 82%	**Flood Zone 3 (1% AEP):** 6%	**Flood Zone 3b (5% AEP):** 0%	**Area Benefiting from Defences:** 0%

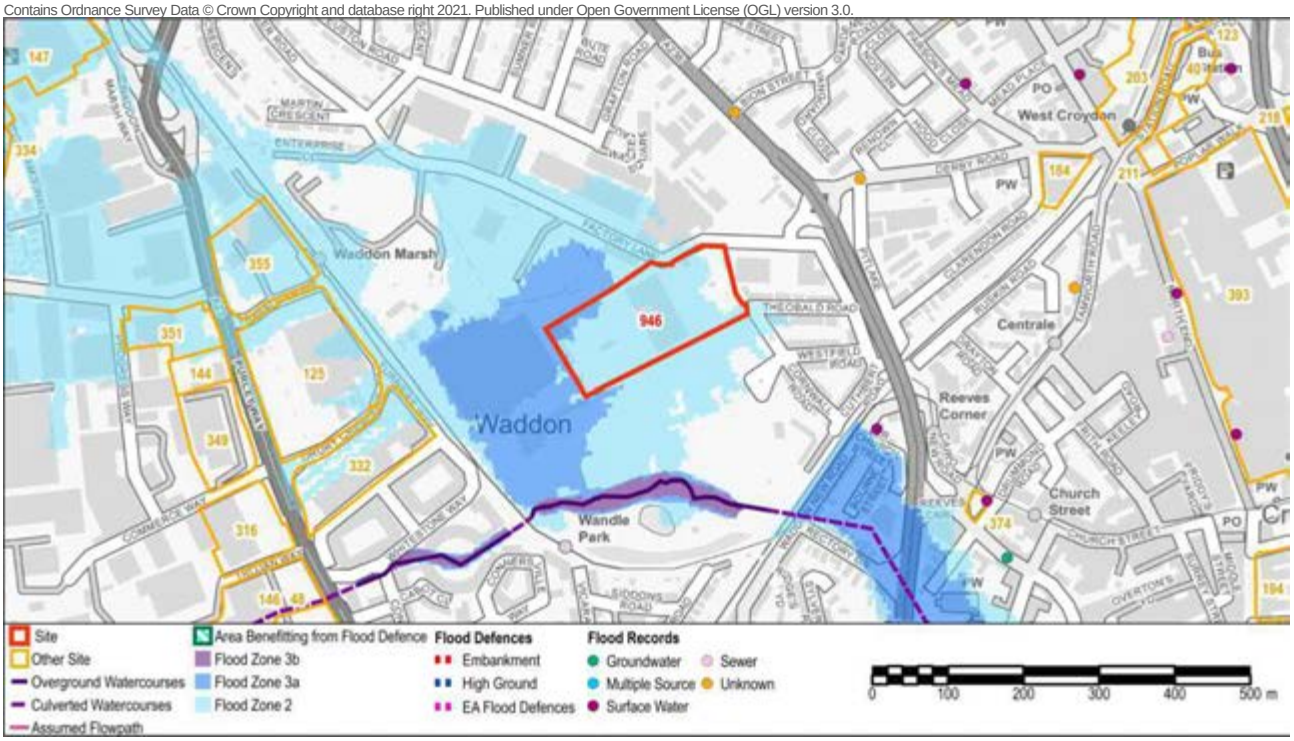

Figure 1 - Flood Zones and Flood Records

Flood Warning Area	River Wandle at Beddington Park
Flood Records within 500m of the site:	Surface Water 6; Groundwater 2; Sewer 1; Multiple source 0; Unknown source 4

River Flooding

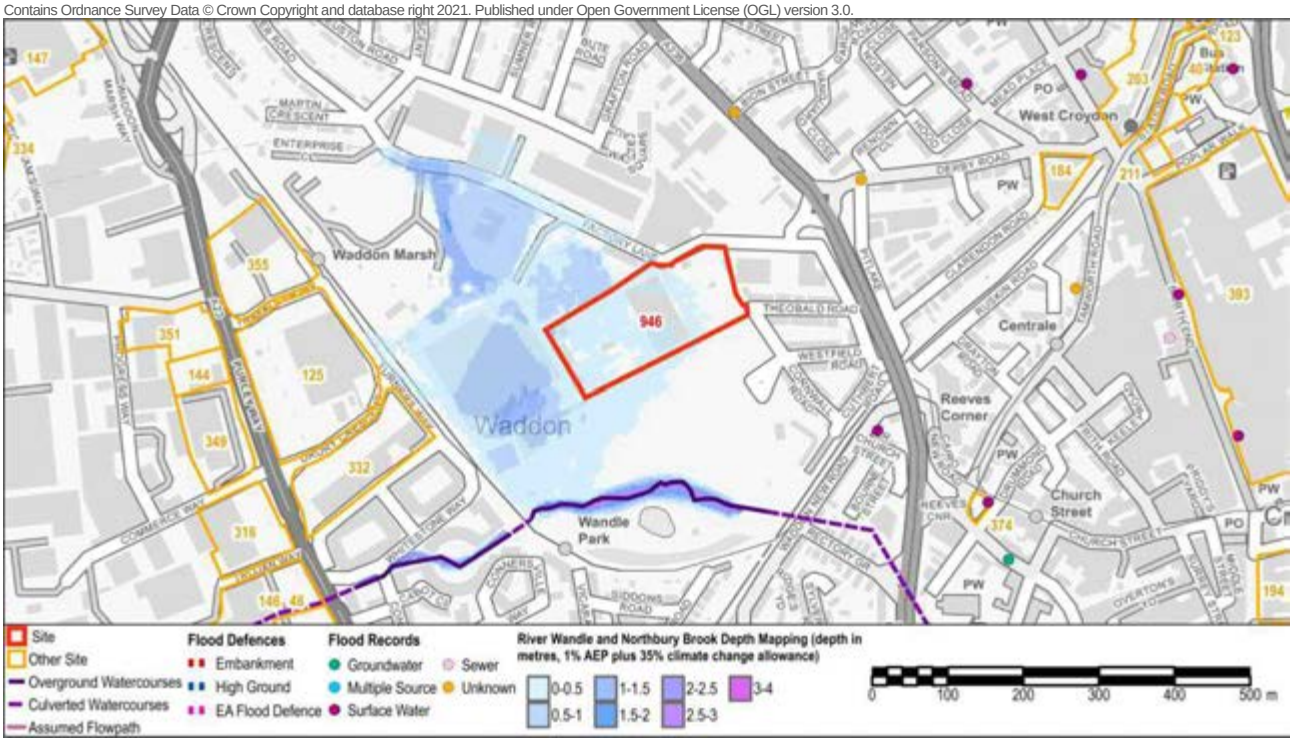

Figure 2 – River Wandle Maximum Flood Depth (1% AEP plus 35% climate change)

Site Name: Stubbs Mead Depot, Factory Lane

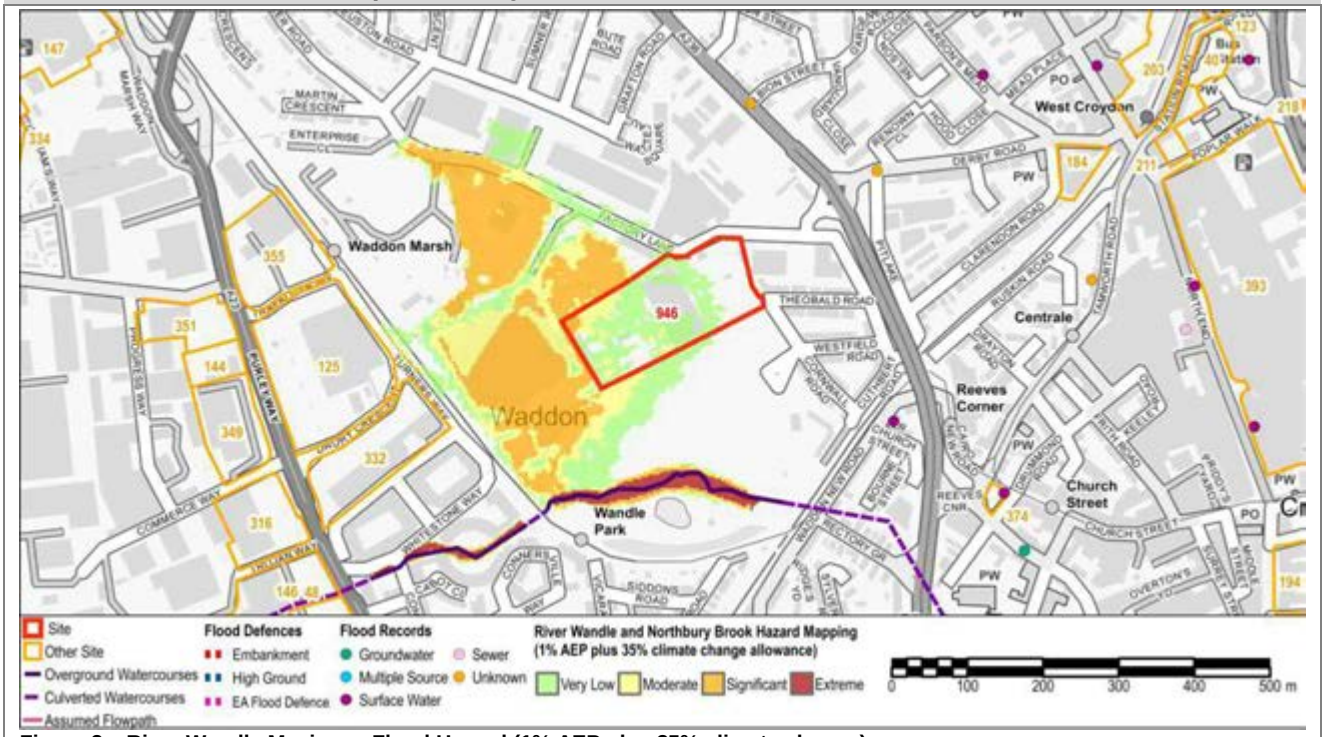

Figure 3 – River Wandle Maximum Flood Hazard (1% AEP plus 35% climate change)

Surface Water Flooding	
Critical Drainage Area	Group8_042 - South & Central Croydon [Croydon]
Drainage Catchment	DC38, DC39

Site Name: Stubbs Mead Depot, Factory Lane

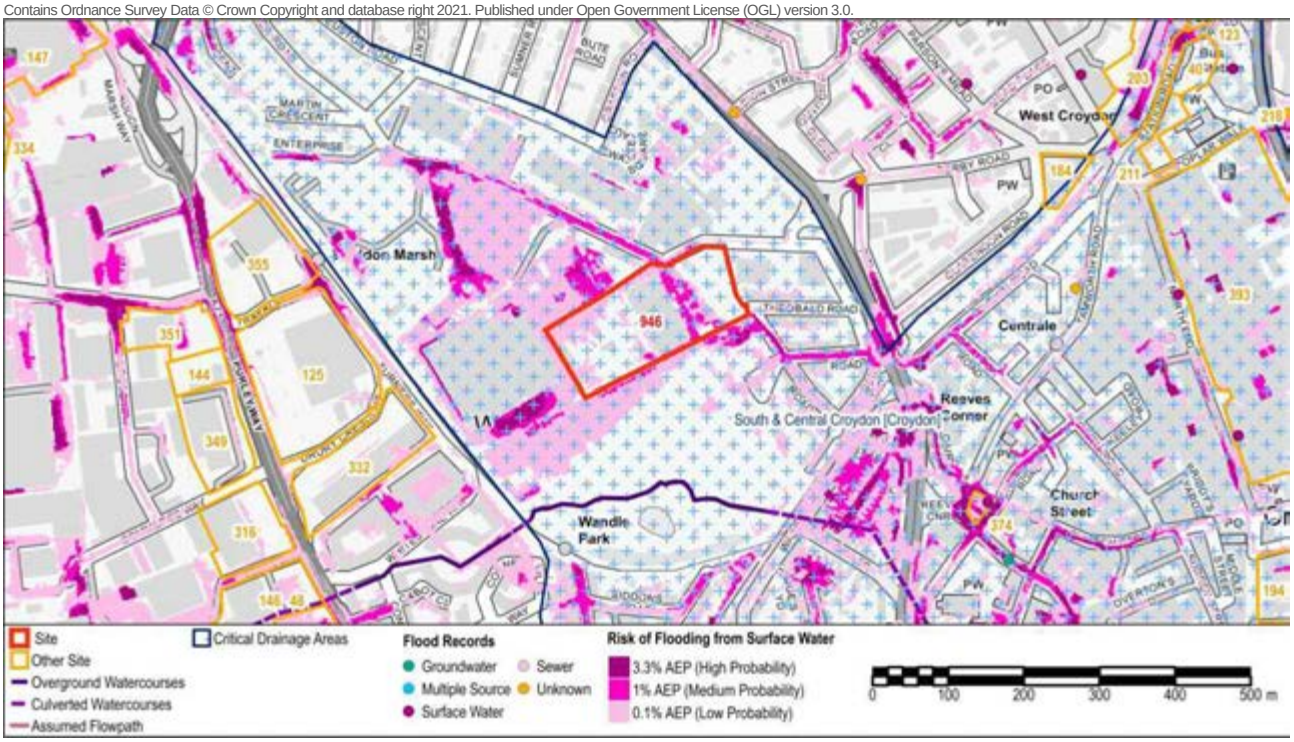

Figure 4 - Risk of Flooding from Surface Water (RoFSW) Flood Extents

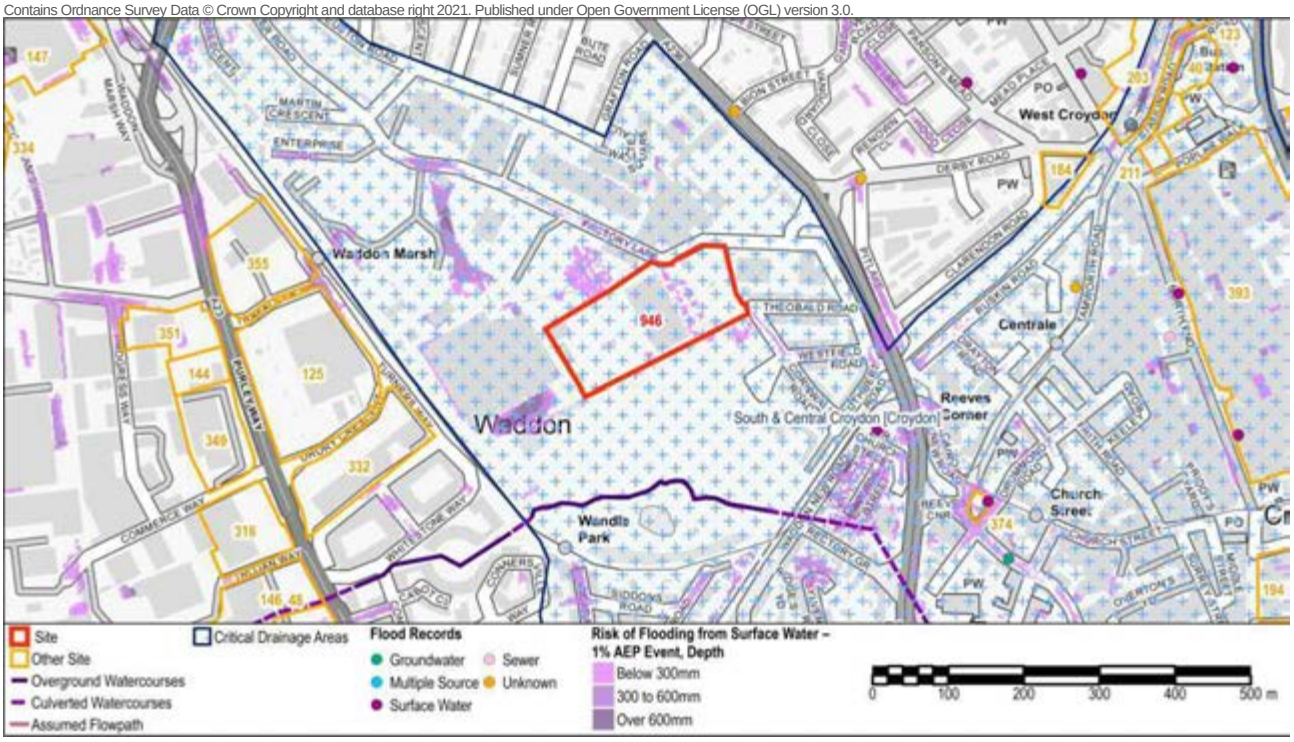

Figure 5 - Risk of Flooding from Surface Water (RoFSW) 1% AEP Flood Depth

Site Name: Stubbs Mead Depot, Factory Lane

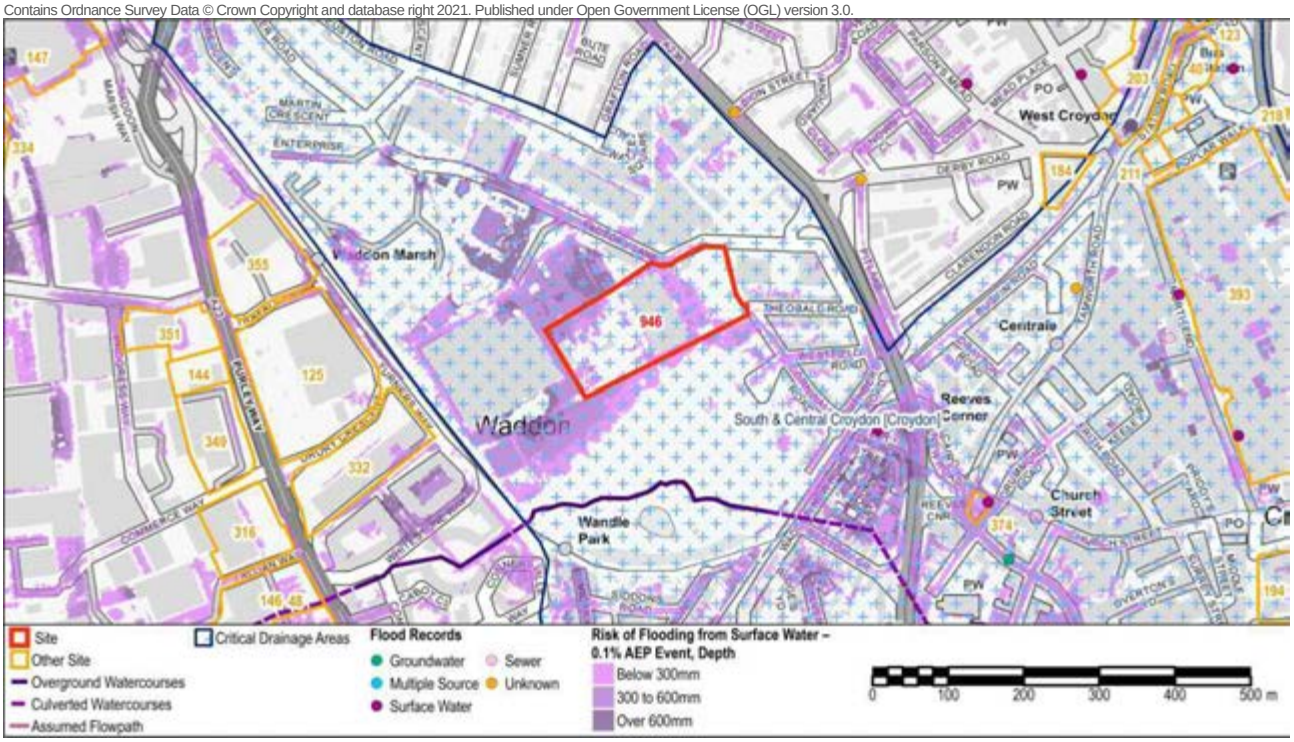

Figure 6 - Risk of Flooding from Surface Water (RoFSW) 0.1% AEP Flood Depth

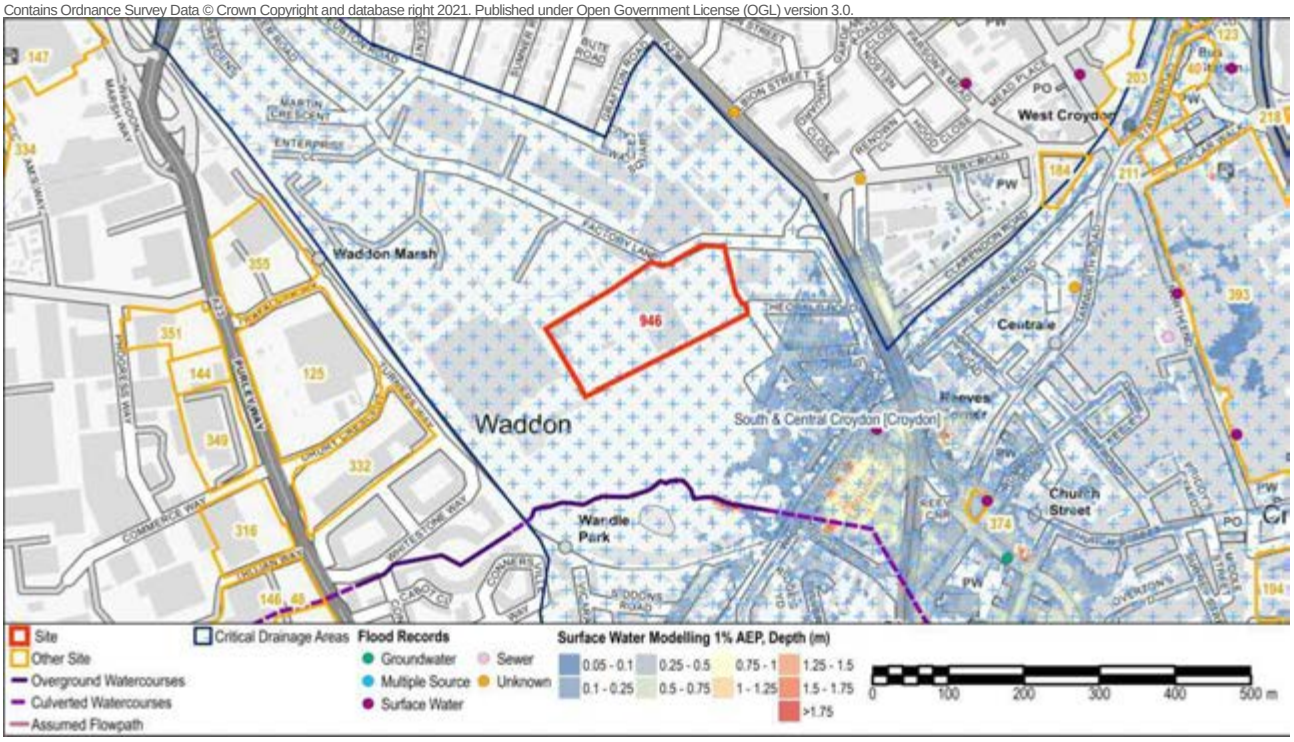

Figure 7 - Surface Water Modelling 1% AEP Flood Depth

Site Name: Stubbs Mead Depot, Factory Lane

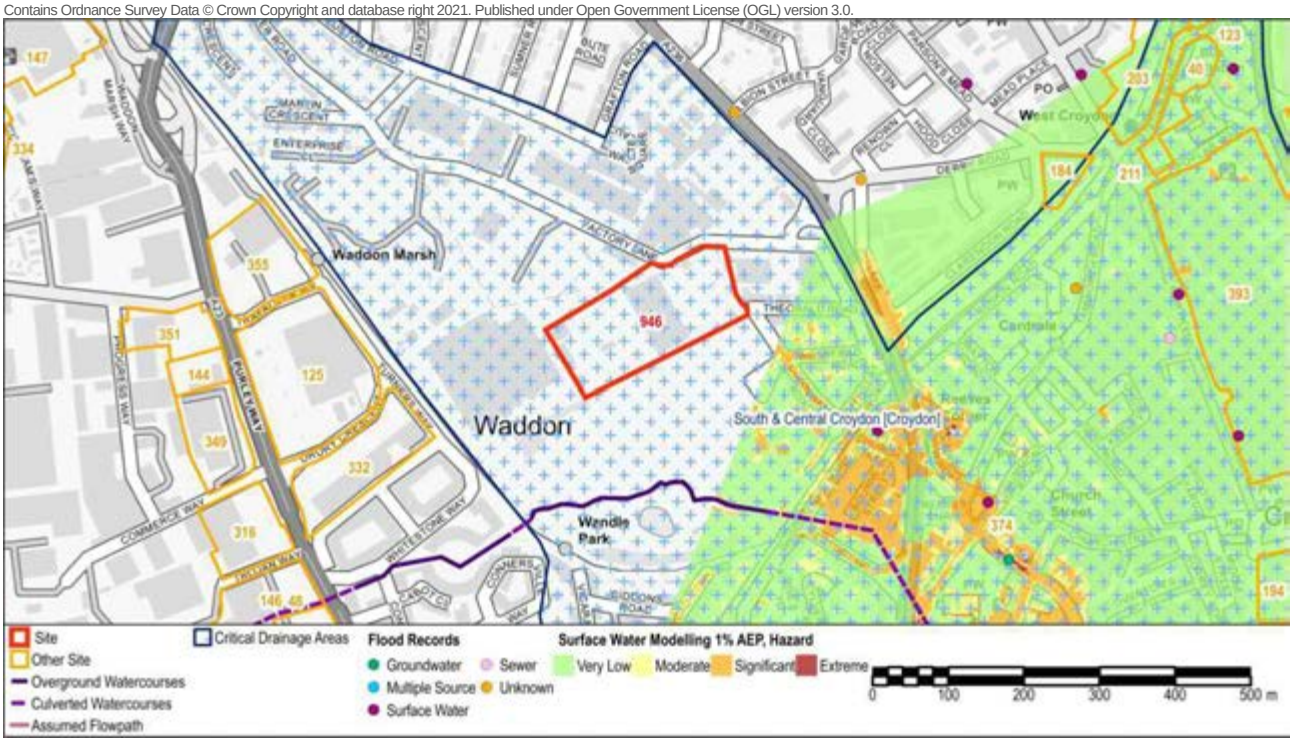

Figure 8 - Surface Water Modelling 1% AEP Flood Hazard

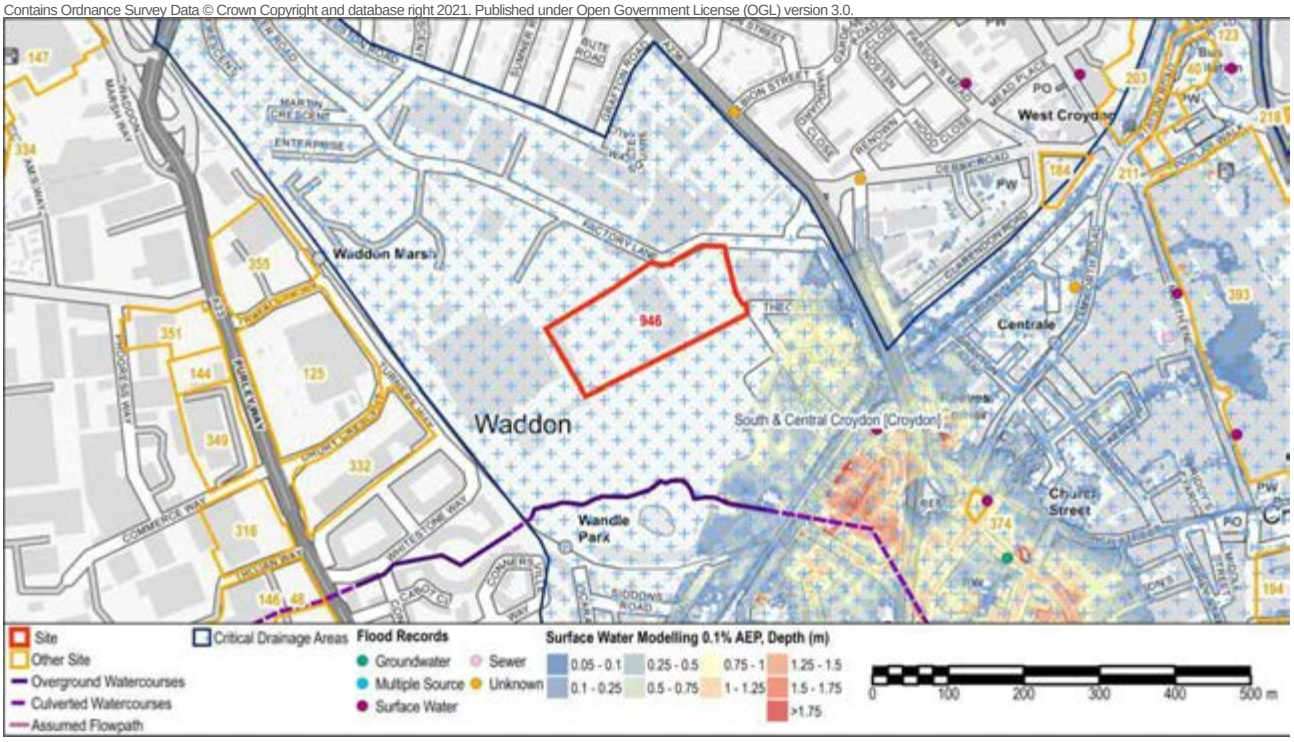

Figure 9 - Surface Water Modelling 0.1% AEP Flood Depth

Site Name: Stubbs Mead Depot, Factory Lane

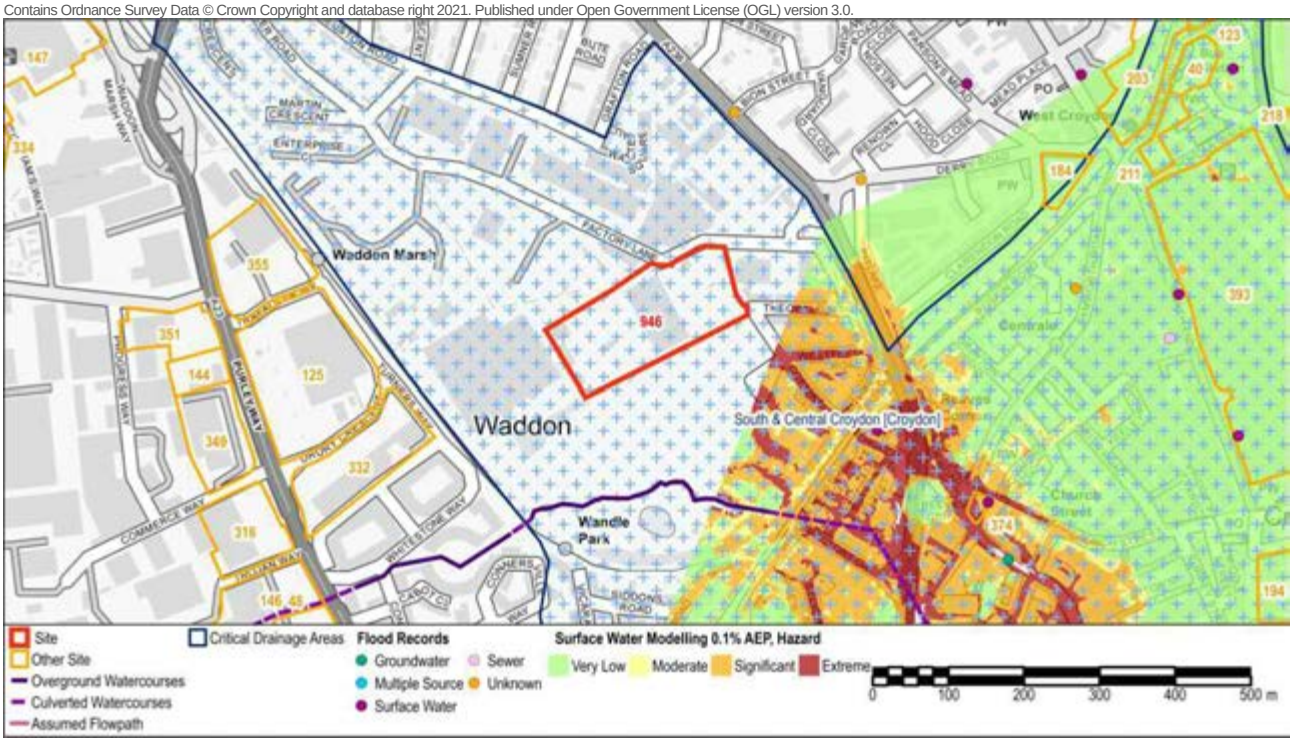

Figure 10 - Surface Water Modelling 0.1% AEP Flood Hazard

Groundwater Flooding			
Bedrock Geology	Lambeth Group	**Superficial Geology**	Sand And Gravel
Increased Potential for Elevated Groundwater		Yes	
Susceptibility to Groundwater Flooding (BGS)		Potential for groundwater flooding to occur at surface	

Other Sources	
Risk of flooding from reservoirs	The Long Term Flood Risk Map shows that the site is not at risk of flooding, in the event of a breach or failure of a reservoir.

Summary

The majority of the site is in Flood Zone 1, Low probability of river flooding with a small part of the northern and southern extent of the site is defined as Flood Zone 2, Medium probability of river flooding. The River Wandle is located approximately 720m south of the site.

Modelling outputs for the River Wandle modelling study show that the 1% AEP event including 35% allowance for climate change does not extend to reach the site (Figures 2 and 3). For the 1% AEP event including 70% increase in peak river flows as a result of climate change, flooding extends to the area to the east and south of the site along Latham's Way, with maximum flood levels of approximately 37.6 m AOD.

There are records of flooding from a range of sources including surface water and sewers within 500m of the site. There are no groundwater flooding records in this area.

The Risk of Flooding from Surface Water mapping identifies the potential for surface water to pond to the north of the site and along the south and south west edge of the site. There are records of surface water flooding in proximity to the site. The site is not located within a Critical Drainage Area.

The RoFSW maps show that in a 1% AEP event there is a risk of flooding between 0-300mm in small areas to the west and north west of the site and a risk of flooding between 0-600mm in the north of the site. In a 0.1% AEP event, the risk of flooding increases slightly with some areas to the east also experiencing flooding up to 600mm.

Site Specific Recommendations

The proposed use for the site is industrial, warehousing and distribution uses which are defined as Less Vulnerable. Less Vulnerable development is permitted in Flood Zone 2. The Exception Test is not required. However, given the risk of flooding from the River Wandle to the area local to the site in the future as a result of climate change, 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 fringe of the site along Latham's Way could be at risk of flooding from the River Wandle. A dry access/egress route into an area at low risk of flooding can be achieved along Beddington Farm Road. A place of safe refuge should be provided in the development, above the flood level for the 1% AEP event including 70% allowance for climate change.
- The site is located within the Flood Warning Area for River Wandle at Beddington Park. Occupants of the site should sign up to receive the Flood Warning Service.
- Flood warning and evacuation plans should be prepared, in accordance with the Council's wider emergency planning response. The flood warning and evacuation plan should set out the response of occupants upon receiving a flood warning (for example evacuating prior to a flood or remaining within their safe place of refuge).

Site Name: Stubbs Mead Depot, Factory Lane

- Planning for the site should consider how it can 'make space for water' and consider the need to temporarily store surface water runoff during heavy rainfall events. Opportunities should be sought for providing strategic SuDS systems in collaboration with other plots within the area.
- Development proposals 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 for specific development proposals on the site.