SITE 325: Telephone Exchange, 88-90 Brighton Road

1) PROPOSED DEVELOPMENT

Site ID	325
Site Address	Telephone Exchange, 88-90 Brighton Road
Site Area	0.334 ha
Current Use	Amenity land
Allocated Use	Conversion of existing building to residential use if no longer required as a telephone exchange in the future.
Vulnerability	More Vulnerable

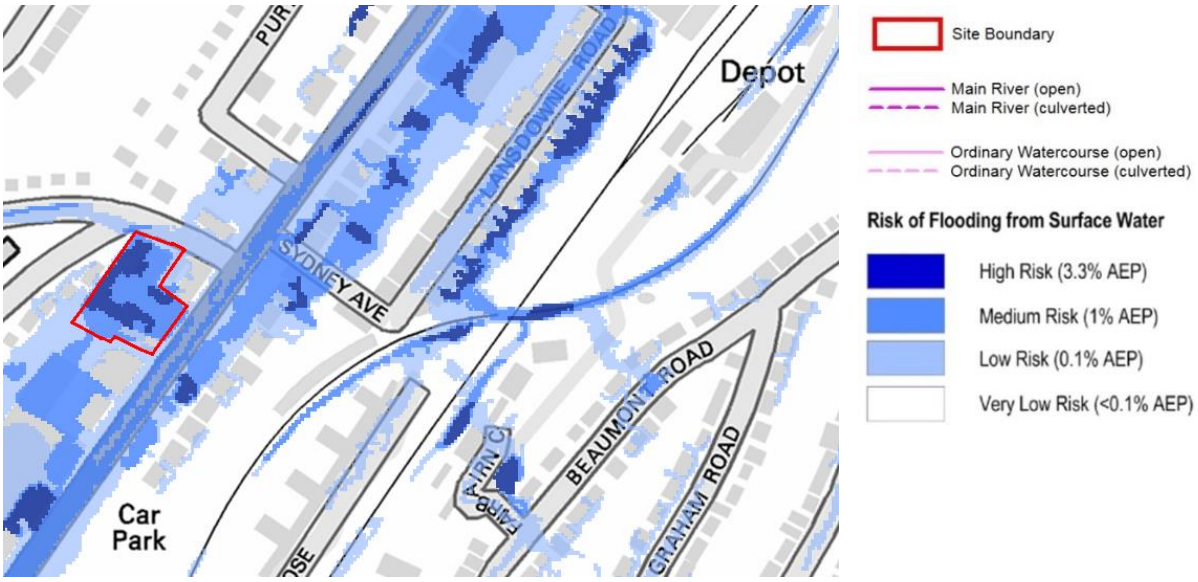
2) SUMMARY OF LEVEL 1 FLOOD RISK

Flood risk from rivers

The closest watercourse to the site is an ordinary watercourse located approximately 800m east of the site, running in parallel to Godstone Road. The site is located in Flood Zone 1, low probability of flooding from rivers.

It should be noted that ordinary watercourses have not have been included in the fluvial modelling of the River Wandle and therefore a fluvial flood risk from this watercourse may be present. As set out in Section 11.3.2 of the Level 1 SFRA, applicants considering development of this site may need to prepare a simple hydraulic model to enable a more accurate assessment of the probability of flooding associated with this ordinary watercourse to inform the site specific FRA. This should be carried out in line with industry standards and in agreement with the LLFA.

Flood risk from all other sources			**Limitations**
Risk of flooding to the potential development site and surrounding area	Surface Water flooding: (uFMfSW)	**High Risk** 1 in 30 year (3.3% annual probability)	The uFMfSW data does not show the susceptibility of individual properties to surface water flooding. The uFMfSW also does not take into account the details of the existing drainage system.
	Groundwater flooding: (BGS Susceptibility to Groundwater Flooding)	**Medium Risk** Potential for groundwater flooding to occur at surface, but no historic records of groundwater flooding	The dataset cannot be used on its own to indicate risk of groundwater flooding and should not be used to inform planning decisions at a site scale. It is suitable for use in conjunction with a large number of other factors, e.g. records of previous incidence of groundwater flooding, to establish relative risk of groundwater flooding.



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Historic records of flooding

Historic records of flooding from each source within a 100m radius of potential development site	Fluvial records	Surface water records	Groundwater records	Sewer records	Multiple source records	Other
	0	**1**	**0**	**0**	**0**	**1 (TW External)**

SITE 325: Telephone Exchange, 88-90 Brighton Road

3) RECOMMENDATIONS

In accordance with the NPPF, More Vulnerable development is considered compatible within Flood Zone 1 and does not require the application of the Exception Test. However, given the risk of surface water flooding to this site, the principles of the Exception Test should still be considered when developing on this site, namely:

1) *"it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk"* and
2) *"demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall"*.

The following information and recommendations are therefore provided for consideration.

Development Layout and Sequential Approach	An assessment of surface water flow paths should be made prior to site design, to encourage the location of buildings and more vulnerable aspects of the development away from those areas at risk of surface water ponding. Measures to manage surface water on the site should be considered early in the site masterplan to enable inclusion of attenuation SuDS where possible. Self-contained residential basements and bedrooms at basement level are not permitted in areas that have 'potential for groundwater to occur at the surface' (BGS Susceptibility to Groundwater Flooding). Less Vulnerable basements, basement extensions and conversions, such as car parking, must provide safe internal access to higher floors situated above ground level.Further ground investigations would be required at this site to confirm the the likelihood of groundwater occurrence.	Section 9.2
Finished Floor Levels	Although the majority of the site is within Flood Zone 1, it is good practice to set finished floor levels a minimum of 300mm above ground level in order to reduce the risk of flooding from surface water, which is at high risk in this area. It is recommended that consideration is given to the flow of surface water during the development of the site masterplan and layout to ensure effective management of surface water flows.	
Flood Resistance	Where there may be a future risk of surface water flooding on the site, flood resistant construction measures may be employed, such as raising property thresholds, and the use of landscaping to manage surface water and fluvial floodwater.	Section 9.4
Flood Resilience	Where parts of proposed buildings may be affected by surface water floodwaters, e.g. undercroft parking areas, flood resilient design techniques should be employed to minimise damage to buildings and structures. The use of concrete flooring and waterproof building materials could be considered.	Section 9.5
Flow Routing	Potential overland flow paths should be determined and appropriate solutions proposed to minimise the impact of the development, for example by configuring road and building layouts to preserve existing flow paths and improve flood routing, whilst ensuring that flows are not diverted towards other properties elsewhere.	Section 9.12
Surface Water Management	**Current risk of flooding** The site falls under Critical Drainage Area (CDA) Group8_040, which is an area with localised flooding issues. The potential development must not increase flood risk to areas within the CDA. The site is within Drainage Catchment 39, which is located at the west part of the borough. The uFMfSW indicates that the site lies within an area of high risk of surface water flooding extending across the site. The remainder of the site is shown to be at a medium risk of surface water flooding. There is one historic record of surface water flooding held by Croydon Council in this location.	
	Indicative existing runoff rate: 1.9 l/s (1 in 1 year), 7.2 l/s (1 in 100 year) **Indicative Greenfield Runoff Rate**: 5.0 l/s	Level 2 Appendix B
	SuDS Suitability Reference to the SWMP Appendix C2 Figure 5 identifies that infiltration of surface water into the ground is potentially uncertain and requires further investigation prior to the development of a Drainage Strategy for the site. **Groundwater Source Protection Zones (SPZs)** The site is within a SPZ1 (inner protection zone). Where infiltration SuDS are to be used for surface runoff from roads, car parking and public or amenity areas, they should have a suitable series of treatment steps to prevent the pollution of groundwater. Where infiltration SuDS are proposed for anything other than clean roof drainage in a SPZ1, the Environment Agency require a risk assessment to demonstrate that the SuDS scheme will not pose an unacceptable risk to the drinking water abstraction. The design of infiltration SuDS schemes and their treatment stages needs to be appropriate to the sensitivity of the location and subject to a relevant risk assessment considering the types of pollutants likely to be discharged, design volumes and the dilution and attenuation properties of the aquifer. Techniques which should be considered include green roofs, filter strips, detention basins and ponds, as well as permeable surfacing in combination with tanked systems.	Section 10.3 and 10.9

SITE 325: Telephone Exchange, 88-90 Brighton Road		
	Drainage Strategy and Approvals Croydon Council will require a Drainage Strategy to be prepared outlining the surface water management for the site, runoff rates and consideration of SuDS in line with the London Plan policy 5.13 and Local Plan policies. Where it is not possible to achieve greenfield runoff rates in accordance with the preferred standards set out in the London Plan policy 5.13 and Design and Construction SPG (April 2014), then justification must be provided. Arrangements for the future maintenance of the drainage system must be made and detailed in the Drainage Strategy. There is no automatic right to connect to the existing Thames Water network. Any potential diversions and/or discharges into a sewer or main river must be agreed with Thames Water or Environment Agency, respectively.	Section 10.6
	Indicative Unit Costs Green roofs ~ £90/m^2. Filter strips £2-4m^2. Detention basin £15-50m^3. Permeable paving ~ £30-50/m^2. Concrete storage tank £449-518/m^3.	Section 10.4

SITE 326 : Ambassador House, 3-17 Brigstock Road

1) PROPOSED DEVELOPMENT

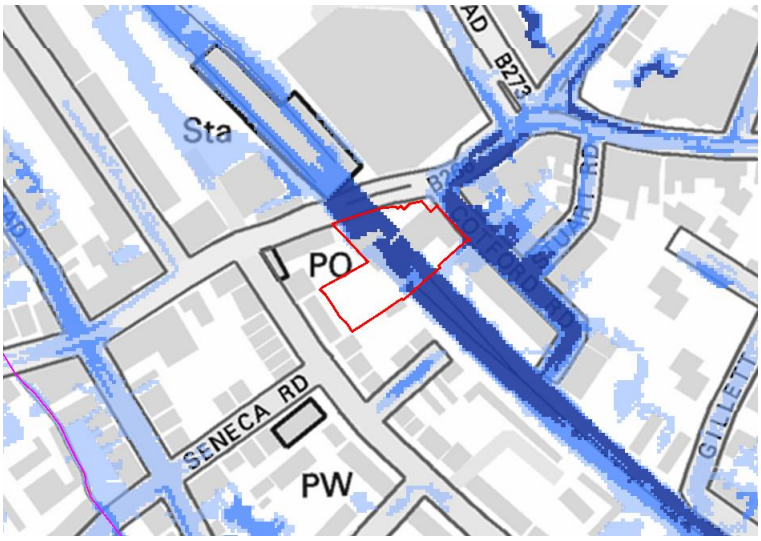
Site ID	326
Site Address	Ambassador House, 3-17 Brigstock Road
Site Area	0.366 ha
Current Use	Various retail units at ground level and offices above (with some community use)
Allocated Use	Mixed use conversion comprising residential, retail and community facilities
Vulnerability	More Vulnerable

2) SUMMARY OF LEVEL 1 FLOOD RISK

Flood risk from rivers

The site is located approximately 250m east of Norbury Brook, which is designated as a Main River. The site is located in Flood Zone 1, low probability of flooding from rivers.

Flood risk from all other sources			**Limitations**
Risk of flooding to the potential development site and surrounding area	Surface Water flooding: (uFMfSW)	**High Risk** 1 in 30 year (3.3% annual probability)	The uFMfSW data does not show the susceptibility of individual properties to surface water flooding. The uFMfSW also does not take into account the details of the existing drainage system.
	Groundwater flooding: (BGS Susceptibility to Groundwater Flooding)	**Low Risk** Limited potential for groundwater flooding to occur.	The dataset cannot be used on its own to indicate risk of groundwater flooding and should not be used to inform planning decisions at a site scale. It is suitable for use in conjunction with a large number of other factors, e.g. records of previous incidence of groundwater flooding, to establish relative risk of groundwater flooding.



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Historic records of flooding

Historic records of flooding from each source within a 100m radius of potential development site	Fluvial records	Surface water records	Groundwater records	Sewer records	Multiple source records	Other
	0	**2**	**0**	**1**	**0**	**0**

3) RECOMMENDATIONS

In accordance with the NPPF, More Vulnerable development is considered compatible within Flood Zone 1 and does not require the application of the Exception Test. However, given the risk of surface water flooding to this site, the principles of the Exception Test should still be considered when developing on this site, namely:

1) *"it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk"* and
2) *"demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall"*.

The following information and recommendations are therefore provided for consideration.

SITE 326 : Ambassador House, 3-17 Brigstock Road		
Development Layout and Sequential Approach	The proposed development is for mixed use. More Vulneable aspects should be located in areas of lowest surface water flood risk, Less Vulnerable areas can be situated at ground level. An assessment of surface water flow paths should be made prior to site design, to encourage the location of buildings and more vulnerable aspects of the development away from those areas at risk of surface water ponding. Measures to manage surface water on the site should be considered early in the site masterplan to enable inclusion of attenuation SuDS where possible.	Section 9.2
Finished Floor Levels	Although the majority of the site is within Flood Zone 1, it is good practice to set finished floor levels a minimum of 300mm above ground level in order to reduce the risk of flooding from surface water, which is at high risk in this area. It is recommended that consideration is given to the flow of surface water during the development of the site masterplan and layout to ensure effective management of surface water flows.	
Flood Resistance	Where there may be a future risk of surface water flooding on the site, flood resistant construction measures may be employed, such as raising property thresholds, and the use of landscaping to manage surface water and fluvial floodwater.	Section 9.4
Flood Resilience	Where parts of proposed buildings may be affected by surface water floodwaters, e.g. undercroft parking areas, flood resilient design techniques should be employed to minimise damage to buildings and structures. The use of concrete flooring and waterproof building materials could be considered.	Section 9.5
Flow Routing	Potential overland flow paths should be determined and appropriate solutions proposed to minimise the impact of the development, for example by configuring road and building layouts to preserve existing flow paths and improve flood routing, whilst ensuring that flows are not diverted towards other properties elsewhere.	Section 9.12
Surface Water Management	**Current risk of flooding** The site falls under Critical Drainage Area (CDA) Group8_049, which is an area with localised flooding issues. The potential development must not increase flood risk to areas within the CDA. The site is within Drainage Catchment 22, which is located at the west part of the borough. The uFMfSW indicates that the site lies within an area of high risk of surface water flooding in the central section of the site. Whilst there are large areas of the site which are shown to be at a very low risk of surface water flooding, there is a well-defined surface water flow paths which extends across the site into the surrounding area, following the route of the railway line wherein surface waters may pond as a result of the topographical hollow formed by the railway embankments. Surrounding highways are also shown to be at a high risk of surface water flooding such as Cotford Road. There are two historic records of surface water flooding held by Croydon Council in this location.	
	Indicative existing runoff rate: 1.8 l/s (1 in 1 year), 6.8 /s (1 in 100 year) **Indicative Greenfield Runoff Rate**: 5.0 l/s	Level 2 Appendix B
	SuDS Suitability Reference to the SWMP Appendix C2 Figure 5 identifies that infiltration of surface water into the ground is potentially unsuitable. Site investigations will be required prior to the development of a Drainage Strategy for the site. **Groundwater Source Protection Zones (SPZs)** The site is within a SPZ2 (outer protection zone). Where infiltration SuDS are to be used for surface runoff from roads, car parking and public or amenity areas, they should have a suitable series of treatment steps to prevent the pollution of groundwater. The design of infiltration SuDS schemes and their treatment stages needs to be appropriate to the sensitivity of the location and subject to a relevant risk assessment considering the types of pollutants likely to be discharged, design volumes and the dilution and attenuation properties of the aquifer. Water attenuation techniques which should be considered include green roofs , as wellas detention basins and ponds, as well as permeable surfacing in combination with tanked systems.	Section 10.3 and 10.9
	Drainage Strategy and Approvals Croydon Council will require a Drainage Strategy to be prepared outlining the surface water management for the site, runoff rates and consideration of SuDS in line with the London Plan policy 5.13 and Local Plan policies. Where it is not possible to achieve greenfield runoff rates in accordance with the preferred standards set out in the London Plan policy 5.13 and Design and Construction SPG (April 2014), then justification must be provided. Arrangements for the future maintenance of the drainage system must be made and detailed in the Drainage Strategy. There is no automatic right to connect to the existing Thames Water network. Any potential diversions and/or discharges into a sewer or main river must be agreed with Thames Water or Environment Agency, respectively.	Section 10.6

SITE 326 : Ambassador House, 3-17 Brigstock Road		
	Indicative Unit Costs Green roofs ~ £90/m^2. Filter strips £2-4m^2. Detention basin £15-50m^3. Permeable paving ~ £30-50/m^2. Concrete storage tank £449-518/m^3.	Section 10.4

SITE 332: Superstores, Drury Crescent

1) PROPOSED DEVELOPMENT

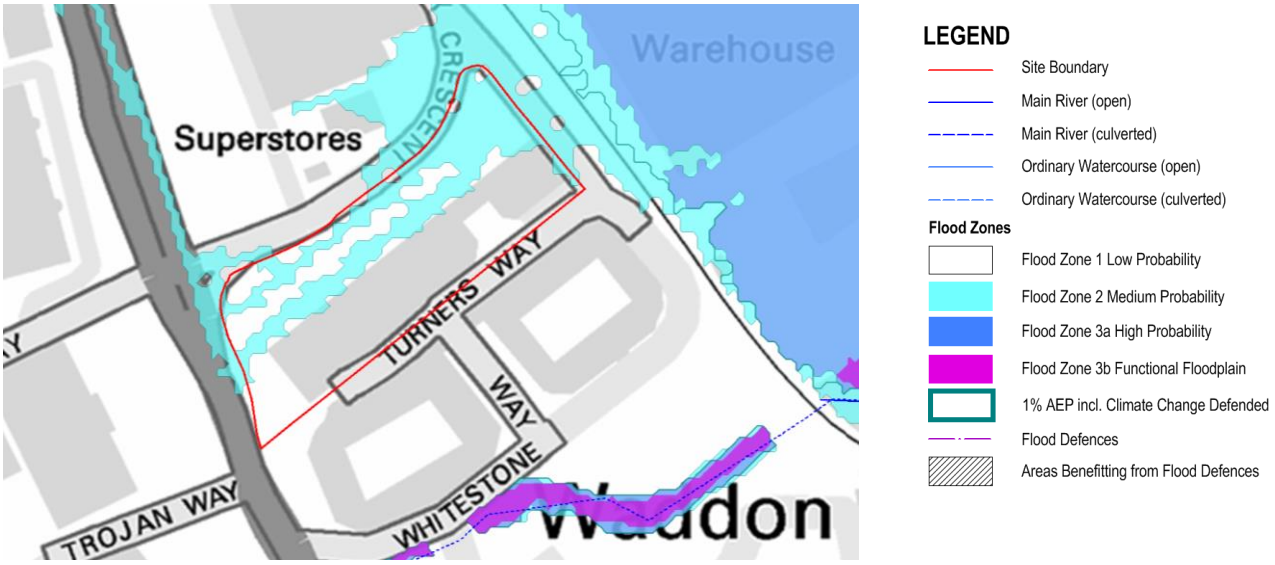
Site ID	332
Site Address	Superstores, Drury Crescent
Site Area	1.451 ha
Current Use	Retail Warehouses and car park
Allocated Use	Redevelopment of this area to a mixture of residential, retail, healthcare facility (if required by the NHS) and community uses to form the basis of a new residential community
Vulnerability	More Vulnerable

2) SUMMARY OF LEVEL 1 FLOOD RISK

Flood risk from rivers

The site is located approximately 150m north of the River Wandle, which is designated as a Main River. The site is located in Flood Zone 2.

Proportion of potential development site within Flood Zone	Flood Zone 3b	Flood Zone 3a	Flood Zone 2	Flood Zone 1	Area Benefiting of Defences
	0%	**0%**	**32%**	**68%**	**0%**



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Flood risk from all other sources			**Limitations**
Risk of flooding to the potential development site and surrounding area	Surface Water flooding: (uFMfSW)	**Medium Risk** 1 in 100 year (1% annual probability)	The uFMfSW data does not show the susceptibility of individual properties to surface water flooding. The uFMfSW also does not take into account the details of the existing drainage system.
	Groundwater flooding: (BGS Susceptibility to Groundwater Flooding)	**Medium Risk** Potential for groundwater flooding to occur at surface, but no historic records of groundwater flooding	The dataset cannot be used on its own to indicate risk of groundwater flooding and should not be used to inform planning decisions at a site scale. It is suitable for use in conjunction with a large number of other factors, e.g. records of previous incidence of groundwater flooding, to establish relative risk of groundwater flooding.

Historic records of flooding

Historic records of flooding from each source within a 100m radius of potential development site	Fluvial records	Surface water records	Groundwater records	Sewer records	Multiple source records	Other
	0	**0**	**0**	**0**	**0**	**0**

SITE 332: Superstores, Drury Crescent

3) RECOMMENDATIONS

In accordance with the NPPF, More Vulnerable development is considered compatible within Flood Zone 2 and does not require the application of the Exception Test. However, given the risk of surface water flooding to this site, the principles of the Exception Test should still be considered when developing on this site, namely:

1) *"it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk"* and
2) *"demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall"*.

The following information and recommendations are therefore provided for consideration.

Development Layout and Sequential Approach	The majority of the site lies within Flood Zone 1 and the rest is within Flood Zone 2. The proposed development is for mixed use. More Vulnerable development (residential and health care) should be preferably located in Flood Zone 1. If it is essential to build on Flood Zone 2, then all residential uses should manage the flood risk through raised finished floor levels. Measures to manage surface water on the site should be considered early in the site masterplan to enable inclusion of attenuation SuDS where possible. Self-contained residential basements and bedrooms at basement level are not permitted in areas that have 'potential for groundwater to occur at the surface' (BGS Susceptibility to Groundwater Flooding). Less Vulnerable basements, basement extensions and conversions, such as car parking, must provide safe internal access to higher floors situated above ground level.Further ground investigations would be required at this site to confirm the the likelihood of groundwater occurrence.	Section 9.2
Finished Floor Levels	The site is above the 1% AEP (1 in 100 year) flood event including an allowance for climate change, therefore there are no requirements in terms of policy for finished for levels. However, it is good practice to raise finished floor levels a minimum of 300mm above the 1% AEP (1 in 100 year).	Section 9.3
Safe Access/Egress	Access/Egress to the site is provided via Turners Way, south of the site, and Purley Way, west of the site.	Section 9.7
Flood Warning and Evacuation Plan	A Flood Warning and Evacuation Plan (FWEP) must be prepared for the site, detailing how flood warning will be provided how the safety of occupants and access to/from the development will be ensured and what will be done to protect development and contents. The FWEP should consider arrangements for the evacuation of basement car parks. Where possible, the FWEP should also detail the length of time before the site becomes inaccessible by emergency vehicles. **Flood Warning Areas** The local area is covered by the Environment Agency Flood Warning Areas 'River Wandle at Beddington Park including Hackbridge and Waddon, London Boroughs of Sutton and Croydon'. Residents of the site should ensure they are signed up to the Environment Agency Flood Warning system. **Emergency Rest Centres** The closest designated emergency rest centre for this site is The Salvation Army on Booth Street to the south east of the development site.	Section 9.14
Surface Water Management	**Current risk of flooding** The site is within Drainage Catchment 38, which is located at the north-west part of the borough. The potential development must not increase flood risk to other areas in the Drainage Catchment. The uFMfSW indicates that the site lies within an area of medium risk of surface water flooding mainly at the central and east parts of the site.	
	Indicative existing runoff rate: 7.4 l/s (1 in 1 year), 27.9 l/s (1 in 100 year) **Indicative Greenfield Runoff Rate**: 5.0 l/s	Section 10
	SuDS Suitability Reference to the SWMP Appendix C2 Figure 5 identifies that infiltration of surface water into the ground is potentially uncertain and requires further investigation prior to the development of a Drainage Strategy for the site. Techniques which should be considered include green roofs, filter strips, detention basins and ponds, as well as permeable surfacing in combination with tanked systems	Section 10.3 and 10.9

SITE 332: Superstores, Drury Crescent		
	Drainage Strategy and Approvals Croydon Council will require a Drainage Strategy to be prepared outlining the surface water management for the site, runoff rates and consideration of SuDS in line with the London Plan policy 5.13 and Local Plan policies. Where it is not possible to achieve greenfield runoff rates in accordance with the preferred standards set out in the London Plan policy 5.13 and Design and Construction SPG (April 2014), then justification must be provided. Arrangements for the future maintenance of the drainage system must be made and detailed in the Drainage Strategy. There is no automatic right to connect to the existing Thames Water network. Any potential diversions and/or discharges into a sewer or main river must be agreed with Thames Water or Environment Agency, respectively.	Section 10.6
	Indicative Unit Costs Green roofs ~ £90/m^2. Permeable paving ~ £30-50/m^2. Filter strips £2-4m^2. Detention basin £15-50m^3. Concrete storage tank £449-518/m^3.	Section 10.4

SITE 334: Valley Leisure Park, Hesterman Way

1) PROPOSED DEVELOPMENT

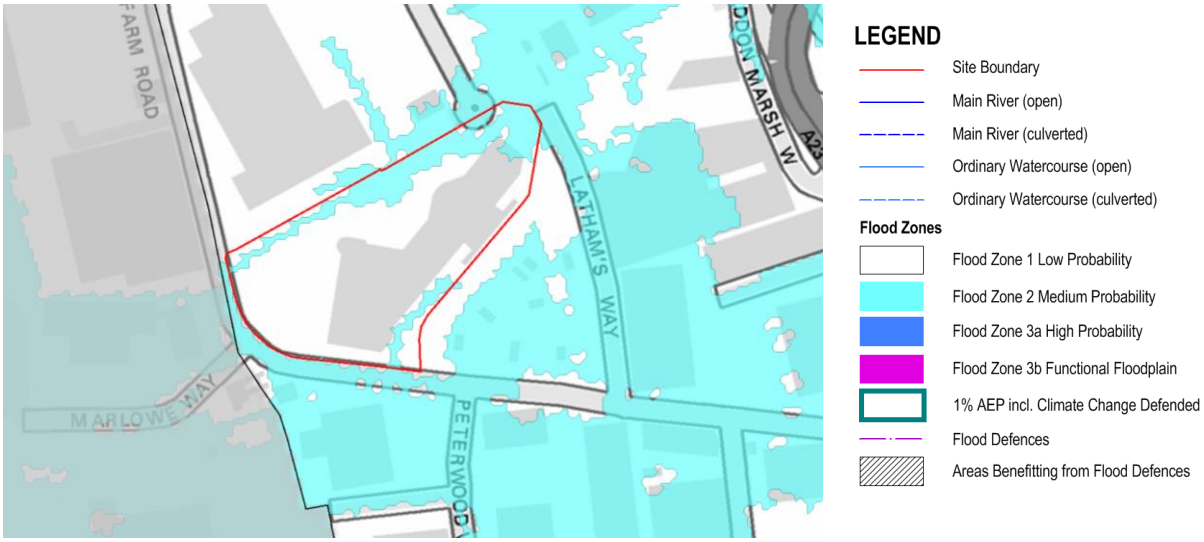
Site ID	334
Site Address	Valley Leisure Park, Hesterman Way
Site Area	2.416 ha
Current Use	Vue Cinema and Valley Park Leisure Complex
Allocated Use	Redevelopment of this area to a mixture of residential, retail, healthcare facility (if required by the NHS), community and leisure to form the basis of a new residential community and local centre.
Vulnerability	More Vulnerable

2) SUMMARY OF LEVEL 1 FLOOD RISK

Flood risk from rivers

The site is located approximately 700m north west of the River Wandle, which is designated as a Main River. The site is located in Flood Zone 2.

Proportion of potential development site within Flood Zone	Flood Zone 3b	Flood Zone 3a	Flood Zone 2	Flood Zone 1	Area Benefiting of Defences
	0%	**0%**	**18%**	**82%**	**0%**



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Flood risk from all other sources			**Limitations**
Risk of flooding to the potential development site and surrounding area	Surface Water flooding: (uFMfSW)	**High Risk** 1 in 30 year (3.3% annual probability)	The uFMfSW data does not show the susceptibility of individual properties to surface water flooding. The uFMfSW also does not take into account the details of the existing drainage system.
	Groundwater flooding: (BGS Susceptibility to Groundwater Flooding)	**Medium Risk** Potential for groundwater flooding to occur at surface, but no historic records of groundwater flooding	The dataset cannot be used on its own to indicate risk of groundwater flooding and should not be used to inform planning decisions at a site scale. It is suitable for use in conjunction with a large number of other factors, e.g. records of previous incidence of groundwater flooding, to establish relative risk of groundwater flooding.

Historic records of flooding

Historic records of flooding from each source within a 100m radius of potential development site	Fluvial records	Surface water records	Groundwater records	Sewer records	Multiple source records	Other
	0	**1**	**0**	**0**	**0**	**0**

SITE 334: Valley Leisure Park, Hesterman Way

3) RECOMMENDATIONS

In accordance with the NPPF, More Vulnerable development is considered compatible within Flood Zone 2 and does not require the application of the Exception Test. However, given the risk of surface water flooding to this site, the principles of the Exception Test should still be considered when developing on this site, namely:

1) *"it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk"* and
2) *"demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall"*.

The following information and recommendations are therefore provided for consideration.

Development Layout and Sequential Approach	The majority of the site lies within Flood Zone 1 and a smaller part lies within Flood Zone 2. Therefore, More Vulnerable developments should be preferably situated in Flood Zone 1. If it is essential to build on Flood Zone 2 , then all residential uses should be located in the first floor level or above. The uFmfSW shows that site and surrounding area may be at high risk of surface water flooding. An assessment of the local topography and surface water flow paths should be made during the development of the site design, to encourage the location of buildings and more vulnerable aspects of the development away from those areas at risk of surface water ponding. Measures to manage surface water on the site should be considered early in the site masterplan to enable inclusion of attenuation SuDS where possible. Self-contained residential basements and bedrooms at basement level are not permitted in areas that have 'potential for groundwater to occur at the surface' (BGS Susceptibility to Groundwater Flooding). Less Vulnerable basements, basement extensions and conversions, such as car parking, must provide safe internal access to higher floors situated above ground level.Further ground investigations would be required at this site to confirm the the likelihood of groundwater occurrence.	Section 9.2
Finished Floor Levels	Although the majority of the site is within Flood Zone 1, it is good practice to set finished floor levels a minimum of 300mm above ground level in order to reduce the risk of flooding from surface water, which is at high risk in this area. It is recommended that consideration is given to the flow or surface water during the development of the site masterplan and layout to ensure effective management of surface water flows.	Section 9.3
Flood Resistance	Where there may be a future risk of surface water flooding on the site, flood resistant construction measures may be employed, such as raising property thresholds, and the use of landscaping to manage surface water and fluvial floodwater.	Section 9.4
Safe Access/Egress	Access/Egress to the site is provided via Hesterman Way to the north of the site.	Section 9.7
Flow Routing	Potential overland flow paths should be determined and appropriate solutions proposed to minimise the impact of the development, for example by configuring road and building layouts to preserve existing flow paths and improve flood routing, whilst ensuring that flows are not diverted towards other properties elsewhere.	Section 9.12
Flood Warning and Evacuation Plan	A Flood Warning and Evacuation Plan (FWEP) must be prepared for the site, detailing how flood warning will be provided how the safety of occupants and access to/from the development will be ensured and what will be done to protect development and contents. The FWEP should consider arrangements for the evacuation of basement car parks. Where possible, the FWEP should also detail the length of time before the site becomes inaccessible by emergency vehicles. **Flood Warning Areas** The local area is covered by the Environment Agency Flood Warning Areas 'River Wandle at Beddington Park including Hackbridge and Waddon, London Boroughs of Sutton and Croydon'. Residents of the site should ensure they are signed up to the Environment Agency Flood Warning system. **Emergency Rest Centres** The closest designated emergency rest centre for this site is The Salvation Army on Booth Street to the south east of the development site.	Section 9.14
Surface Water Management	**Current risk of flooding** The site is within Drainage Catchment 38, which is located at the north-west part of the borough. The potential development must not increase flood risk to other areas in the Drainage Catchment. The uFMfSW indicates that the site lies within an area of high risk of surface water flooding There is one historic record of surface water flooding held by Croydon Council in this location.	

SITE 334: Valley Leisure Park, Hesterman Way		
	Indicative existing runoff rate: 12.2 l/s (1 in 1 year), 45.7 l/s (1 in 100 year) **Indicative Greenfield Runoff Rate**: 5.0 l/s	Section 10
	SuDS Suitability Reference to the SWMP Appendix C2 Figure 5 identifies that infiltration of surface water into the ground is potentially uncertain and requires further investigation prior to the development of a Drainage Strategy for the site. Techniques which should be considered include green roofs, filter strips, detention basins and ponds, as well as permeable surfacing in combination with tanked systems.	Section 10.3 and 10.9
	Drainage Strategy and Approvals Croydon Council will require a Drainage Strategy to be prepared outlining the surface water management for the site, runoff rates and consideration of SuDS in line with the London Plan policy 5.13 and Local Plan policies. Where it is not possible to achieve greenfield runoff rates in accordance with the preferred standards set out in the London Plan policy 5.13 and Design and Construction SPG (April 2014), then justification must be provided. Arrangements for the future maintenance of the drainage system must be made and detailed in the Drainage Strategy. There is no automatic right to connect to the existing Thames Water network. Any potential diversions and/or discharges into a sewer or main river must be agreed with Thames Water or Environment Agency, respectively.	Section 10.6
	Indicative Unit Costs Green roofs ~ £90/m^2. Permeable paving ~ £30-50/m^2. Filter strips £2-4m^2. Detention basin £15-50m^3. Concrete storage tank £449-518/m^3.	Section 10.4

SITE 337 : Zodiac Court, 161-183 London Road

1) PROPOSED DEVELOPMENT

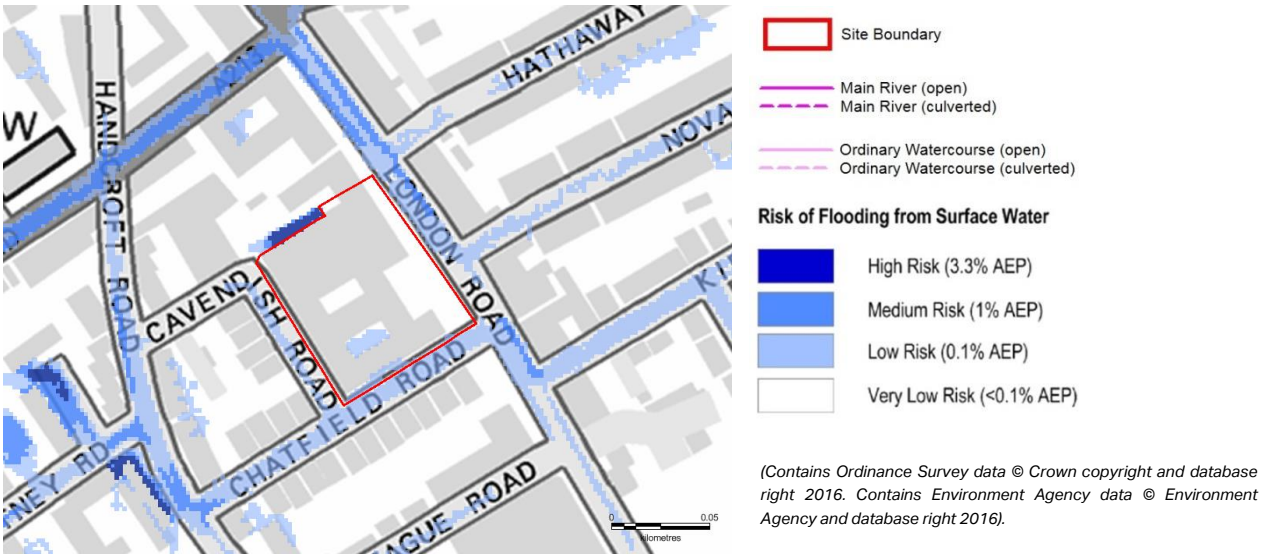
Site ID	337
Site Address	Zodiac Court, 161-183 London Road
Site Area	0.683 ha
Current Use	Residential building with ground floor commercial unit
Allocated Use	Residential redevelopment
Vulnerability	More Vulnerable

2) SUMMARY OF LEVEL 1 FLOOD RISK

Flood risk from rivers

The site is located approximately 1km north east of the River Wandle (culverted section), which is designated as a Main River. The site is located in Flood Zone 1, low probability of flooding from rivers.

Flood risk from all other sources			**Limitations**
Risk of flooding to the potential development site and surrounding area	Surface Water flooding: (uFMfSW)	**Low Risk** 1 in 1000 year (0.1% annual probability)	The uFMfSW data does not show the susceptibility of individual properties to surface water flooding. The uFMfSW also does not take into account the details of the existing drainage system.
	Groundwater flooding: (BGS Susceptibility to Groundwater Flooding)	**High Risk** Potential for groundwater flooding to occur at the surface and historic records of groundwater flooding.	The dataset cannot be used on its own to indicate risk of groundwater flooding and should not be used to inform planning decisions at a site scale. It is suitable for use in conjunction with a large number of other factors, e.g. records of previous incidence of groundwater flooding, to establish relative risk of groundwater flooding.



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Historic records of flooding

Historic records of flooding from each source within a 100m radius of potential development site	Fluvial records	Surface water records	Groundwater records	Sewer records	Multiple source records	Other
	0	**1**	**1**	**0**	**0**	**1 (TW Internal)**

3) RECOMMENDATIONS

In accordance with the NPPF, More Vulnerable development is considered compatible within Flood Zone 1 and does not require the application of the Exception Test. However, given the risk of surface water and groundwater flooding to this site, the principles of the Exception Test should still be considered when developing on this site, namely:

1) *"it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk"* and
2) *"demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall"*.

The following information and recommendations are therefore provided for consideration.

SITE 337 : Zodiac Court, 161-183 London Road		
Development Layout and Sequential Approach	There is one historic record of groundwater flooding held by Croydon Council within 100m of this site. Self-contained residential basements and bedrooms at basement level are not permitted in areas that have 'potential for groundwater to occur at the surface' (BGS Susceptibility to Groundwater Flooding). Due to a high risk of groundwater flooding, it is recommended that Low Vulnerable basements are also not permitted at this site. An assessment of surface water flow paths should be made prior to site design, to encourage the location of buildings and more vulnerable aspects of the development away from those areas at risk of surface water ponding. Measures to manage surface water on the site should be considered early in the site masterplan to enable inclusion of attenuation SuDS where possible.	Section 9.2
Flood Resistance	Where there may be a future risk of groundwater flooding on the site, flood resistant construction measures may be employed, such as raising property thresholds, and the use of landscaping to manage surface water and fluvial floodwater.	Section 9.4
Flood Resilience	Where parts of proposed buildings may be affected by groundwater floodwaters, e.g. undercroft parking areas, flood resilient design techniques should be employed to minimise damage to buildings and structures.	Section 9.5
Surface Water Management	**Current risk of flooding** The site is within Drainage Catchment 38, which is located to the north west of the borough. The potential development must not increase flood risk to other areas in the Drainage Catchment. The uFMfSW indicates that the site lies within an area of low risk of surface water flooding. The area adjacent to the north of the site is at high risk of surface water flooding.There is one historic record of surface water flooding held by Croydon Council in this location.	
	Indicative existing runoff rate: 3.5 l/s (1 in 1 year), 13.0 l/s (1 in 100 year) **Indicative Greenfield Runoff Rate**: 5.0 l/s	Level 2 Appendix B
	SuDS Suitability Reference to the SWMP Appendix C2 Figure 5 identifies that infiltration of surface water into the ground is potentially uncertain and requires further investigation prior to the development of a Drainage Strategy for the site. Techniques which should be considered include green roofs, filter strips, detention basins and ponds, as well as permeable surfacing in combination with tanked systems.	Section 10.3 and 10.9
	Drainage Strategy and Approvals Croydon Council will require a Drainage Strategy to be prepared outlining the surface water management for the site, runoff rates and consideration of SuDS in line with the London Plan policy 5.13 and Local Plan policies. Where it is not possible to achieve greenfield runoff rates in accordance with the preferred standards set out in the London Plan policy 5.13 and Design and Construction SPG (April 2014), then justification must be provided. Arrangements for the future maintenance of the drainage system must be made and detailed in the Drainage Strategy. There is no automatic right to connect to the existing Thames Water network. Any potential diversions and/or discharges into a sewer or main river must be agreed with Thames Water or Environment Agency, respectively.	Section 10.6
	Indicative Unit Costs Green roofs ~ £90/m^2. Filter strips £2-4m^2. Detention basin £15-50m^3. Permeable paving ~ £30-50/m^2. Concrete storage tank £449-518/m^3.	Section 10.4

SITE 347: Tesco, 2 Purley Road

1) PROPOSED DEVELOPMENT

Site ID	347
Site Address	Tesco, 2 Purley Road
Site Area	3.797 ha
Current Use	Tesco store & associated car park
Allocated Use	Mixed use residential, healthcare facility (if required by the NHS) and retail development
Vulnerability	More Vulnerable

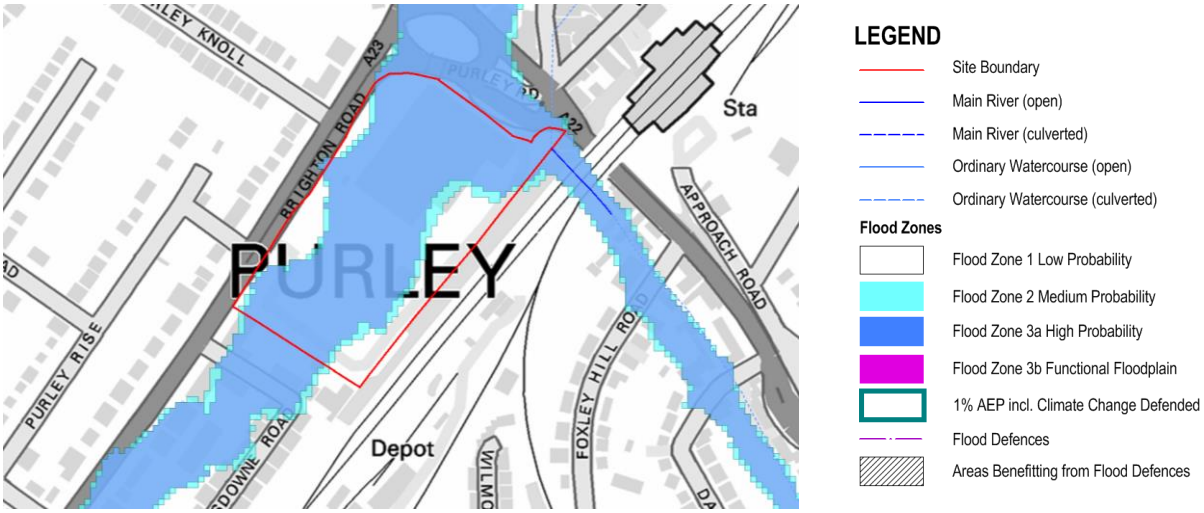
2) SUMMARY OF LEVEL 1 FLOOD RISK

Flood risk from rivers

The site is intersected by an Ordinary Watercourse (culverted) leading to a Main River to the north east of the site. The site is predominantly located in Flood Zone 3a.

It should be noted that ordinary watercourses have not have been included in the fluvial modelling of the River Wandle and therefore a fluvial flood risk from this watercourse may be present. As set out in Section 11.3.2 of the Level 1 SFRA, applicants considering development of this site may need to prepare a simple hydraulic model to enable a more accurate assessment of the probability of flooding associated with this ordinary watercourse to inform the site specific FRA. This should be carried out in line with industry standards and in agreement with the LLFA.

Proportion of potential development site within Flood Zone	Flood Zone 3b	Flood Zone 3a	Flood Zone 2	Flood Zone 1	Area Benefiting of Defences
	0%	**71%**	**6%**	**23%**	**0%**



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Flood risk from all other sources			**Limitations**
Risk of flooding to the potential development site and surrounding area	Surface Water flooding: (uFMfSW)	**High Risk** 1 in 30 year (3.3% annual probability)	The uFMfSW data does not show the susceptibility of individual properties to surface water flooding. The uFMfSW also does not take into account the details of the existing drainage system.
	Groundwater flooding: (BGS Susceptibility to Groundwater Flooding)	**Medium Risk** Potential for groundwater flooding to occur at surface, but no historic records of groundwater flooding	The dataset cannot be used on its own to indicate risk of groundwater flooding and should not be used to inform planning decisions at a site scale. It is suitable for use in conjunction with a large number of other factors, e.g. records of previous incidence of groundwater flooding, to establish relative risk of groundwater flooding.

Historic records of flooding

Historic records of flooding from each source within a 100m radius of potential development site	Fluvial records	Surface water records	Groundwater records	Sewer records	Multiple source records	Other
	0	**2**	**0**	**0**	**0**	**2 (TW External)**

SITE 347: Tesco, 2 Purley Road		
3) LEVEL 2 ASSESSMENT		
The fluvial hazard, depth and velocity outputs used in the Level 2 SFRA assessment for the River Wandle do not cover the site.		
4) RECOMMENDATIONS AND POLICIES		
Development Layout and Sequential Approach	A sequential approach to site layout should be used. The majority of the site is within Flood Zone 3a and smaller parts to the east and west of the site are within Flood Zones 1 and 2. The proposed development is for a mixed use, including residential, health care and retail. Development should be preferably located within Flood Zones 1 and 2. If it is essential to build on Flood Zones 2 and 3a, then all residential uses should be located in the first floor level or above. Measures to manage surface water on the site should be considered early in the site masterplan to enable inclusion of attenuation SuDS where possible. Self-contained residential basements and bedrooms at basement level are not permitted in areas that have 'potential for groundwater to occur at the surface' (BGS Susceptibility to Groundwater Flooding). Less Vulnerable basements, basement extensions and conversions, such as car parking, must provide safe internal access to higher floors situated above ground level.Further ground investigations would be required at this site to confirm the the likelihood of groundwater occurrence.	Section 9.2
Finished Floor Levels	For More Vulnerable development, a minimum freeboard of 300mm is required above the 1% AEP (1 in 100 year) peak fluvial flood level. In Flood Zone 2 and 3, all new sleeping accommodation should be restricted to the first floor or above. Internal ground floors below this level could however be occupied by the Less Vulnerable garages, non-sleeping residential rooms (e.g. kitchen, study, lounge) or car parking. The site is at high risk of surface water flooding and it is considered that the finished floor level requirement for fluvial flood levels would also protect the property from a 1% AEP (1 in 100 year) surface water flood event.	Section 9.3
Flood Resistance	Where there may be a future risk of surface water flooding on the site, flood resistant construction measures may be employed, such as raising property thresholds, and the use of landscaping to manage surface water and fluvial floodwater.	Section 9.4
Safe Access/Egress	Access/Egress to the site is provided via Foxley Hill Road to the east of the site..	Section 9.7
Flow Routing	Potential overland flow paths should be determined and appropriate solutions proposed to minimise the impact of the development, for example by configuring road and building layouts to preserve existing flow paths and improve flood routing, whilst ensuring that flows are not diverted towards other properties elsewhere.	Section 9.12
Flood Warning and Evacuation Plan	A Flood Warning and Evacuation Plan (FWEP) must be prepared for the site, detailing how flood warning will be provided how the safety of occupants and access to/from the development will be ensured and what will be done to protect development and contents. The FWEP should consider arrangements for the evacuation of basement car parks. Where possible, the FWEP should also detail the length of time before the site becomes inaccessible by emergency vehicles. **Flood Warning Areas** The local area is not covered by an Environment Agency Flood Warning Area. **Emergency Rest Centres** The closest designated emergency rest centre for this site is United Reformed Church on Sanderstead Hill.	Section 9.14
Surface Water Management	**Current risk of flooding** The site falls under Critical Drainage Area (CDA) Group8_040, which is an area with localised flooding issues. The potential development must not increase flood risk to areas within the CDA. The site is within Drainage Catchment 39, which is located at the west part of the borough. The uFMfSW indicates that the site lies within an area of high risk of surface water flooding mainly at the north part of the site, and there are areas of high risk of surface water flooding adjacently north of the site. There are two historic records of surface water flooding held by Croydon Council in this location.	
	Indicative existing runoff rate: 21.8 l/s (1 in 1 year), 81.6 l/s (1 in 100 year) **Indicative Greenfield Runoff Rate**: 7.6 l/s	Section 10

SITE 347: Tesco, 2 Purley Road

	SuDS Suitability Reference to the SWMP Appendix C2 Figure 5 identifies that (prior to the completion of a site investigation to determine precise local conditions) infiltration of surface water into the ground is potentially suitable for the site. **Groundwater Source Protection Zones (SPZs)** The site is within a SPZ1 (inner protection zone) and SPZ2 (outer protection zone). Where infiltration SuDS are to be used for surface runoff from roads, car parking and public or amenity areas, they should have a suitable series of treatment steps to prevent the pollution of groundwater. Where infiltration SuDS are proposed for anything other than clean roof drainage in a SPZ1, the Environment Agency require a risk assessment to demonstrate that the SuDS scheme will not pose an unacceptable risk to the drinking water abstraction. The design of infiltration SuDS schemes and their treatment stages needs to be appropriate to the sensitivity of the location and subject to a relevant risk assessment considering the types of pollutants likely to be discharged, design volumes and the dilution and attenuation properties of the aquifer. Techniques which should be considered include soakaways, green roofs, filter strips, detention basins and ponds, as well as permeable surfacing. Infiltration tests should be carried out to confirm SUDS suitability.	Section 10.3 and 10.9
	Drainage Strategy and Approvals Croydon Council will require a Drainage Strategy to be prepared outlining the surface water management for the site, runoff rates and consideration of SuDS in line with the London Plan policy 5.13 and Local Plan policies. Where it is not possible to achieve greenfield runoff rates in accordance with the preferred standards set out in the London Plan policy 5.13 and Design and Construction SPG (April 2014), then justification must be provided. Arrangements for the future maintenance of the drainage system must be made and detailed in the Drainage Strategy. There is no automatic right to connect to the existing Thames Water network. Any potential diversions and/or discharges into a sewer or main river must be agreed with Thames Water or Environment Agency, respectively.	Section 10.6
	Indicative Unit Costs Green roofs ~ £90/m^2. Permeable paving ~ £30-50/m^2. Filter strips £2-4m^2. Detention basin £15-50m^3. Concrete storage tank £449-518/m^3.	Section 10.4

5) EXCEPTION TEST CONSIDERATIONS

The NPPF states that there are two parts to the Exception Test that must be passed for development to be allocated or permitted:

1) *"it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk"* and
2) *"demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall"*.

The proposed development is for mixed use, including residential accommodation, a healthcare facility and retail development. The site is intersected by a culverted Ordinary Watercourse. It should be noted that ordinary watercourses have not have been included in the fluvial modelling of the River Wandle and applicants considering development of this site may need to prepare a simple hydraulic model to enable a more accurate assessment of the probability of flooding associated with this ordinary watercourse to inform the site specific FRA.

The More Vulnerable uses should be located in areas of lowest risk (Flood Zone 1 and areas at lower flood risk from surface water). If More Vulnerable development cannot be avoided within the 1% AEP (1 in 100 year) including an allowance for climate change, then finished floor levels must be raised accordingly and sleeping accommodation restricted the first floor or above. Depending on the modelled flood depth, flood resistant and resilient measures should be employed to mitigate the potential impacts of flooding. SuDS should be incorporated into the building design in order to reduce the risk of increasing flood risk elsewhere. It is recommended that basements are not considered at this site.

Therefore, on the basis that these mitigation measures are in place, it is likely that this site would pass the Exception Test.

SITE 350 : Wing Yip, 544 Purley Way

1) PROPOSED DEVELOPMENT

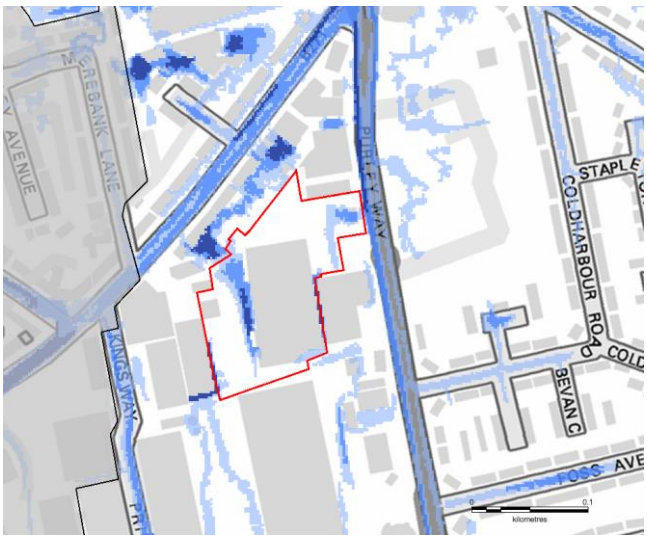
Site ID	350
Site Address	Wing Yip, 544 Purley Way
Site Area	1.552 ha
Current Use	Wing Yip retail warehouse & car park
Allocated Use	Redevelopment of a mix of residential, retail, commercial and community uses to form the basis of a new residential community.
Vulnerability	More Vulnerable

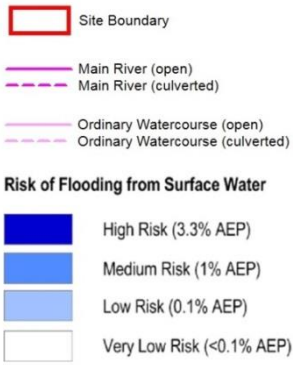
2) SUMMARY OF LEVEL 1 FLOOD RISK

Flood risk from rivers

The site is located approximately 1km south of the River Wandle (culverted section), which is designated as a Main River. The site is located in Flood Zone 1, low probability of flooding from rivers.

Flood risk from all other sources			**Limitations**
Risk of flooding to the potential development site and surrounding area	Surface Water flooding: (uFMfSW)	**High Risk** 1 in 30 year (3.3% annual probability)	The uFMfSW data does not show the susceptibility of individual properties to surface water flooding. The uFMfSW also does not take into account the details of the existing drainage system.
	Groundwater flooding: (BGS Susceptibility to Groundwater Flooding)	**Medium Risk** Potential for groundwater flooding to occur at surface, but no historic records of groundwater flooding	The dataset cannot be used on its own to indicate risk of groundwater flooding and should not be used to inform planning decisions at a site scale. It is suitable for use in conjunction with a large number of other factors, e.g. records of previous incidence of groundwater flooding, to establish relative risk of groundwater flooding.





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Historic records of flooding

Historic records of flooding from each source within a 100m radius of potential development site	Fluvial records	Surface water records	Groundwater records	Sewer records	Multiple source records	Other
	0	**1**	**0**	**0**	**0**	**0**

3) RECOMMENDATIONS

In accordance with the NPPF, More Vulnerable development is considered compatible within Flood Zone 1 and does not require the application of the Exception Test. However, given the risk of surface water flooding to this site, the principles of the Exception Test should still be considered when developing on this site, namely:

1) *"it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk"* and
2) *"demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall"*.

The following information and recommendations are therefore provided for consideration.

SITE 350 : Wing Yip, 544 Purley Way		
Development Layout and Sequential Approach	The proposed development is for mixed use. An assessment of surface water flow paths should be made prior to site design, to encourage the location of buildings and more vulnerable aspects of the development away from those areas at risk of surface water ponding. Measures to manage surface water on the site should be considered early in the site masterplan to enable inclusion of attenuation SuDS where possible. Self-contained residential basements and bedrooms at basement level are not permitted in areas that have 'potential for groundwater to occur at the surface' (BGS Susceptibility to Groundwater Flooding). Less Vulnerable basements, basement extensions and conversions, such as car parking, must provide safe internal access to higher floors situated above ground level. Further ground investigations would be required at this site to confirm the the likelihood of groundwater occurrence.	Section 9.2
Finished Floor Levels	Although the site is within Flood Zone 1, it is good practice to set finished floor levels a minimum of 300mm above ground level in order to reduce the risk of flooding from surface water, which is at high risk in this area.	
Flood Resistance	Where there may be a future risk of surface water flooding on the site, flood resistant construction measures may be employed, such as raising property thresholds, and the use of landscaping to manage surface water and fluvial floodwater.	Section 9.4
Flood Resilience	Where parts of proposed buildings may be affected by surface water floodwaters, e.g. undercroft parking areas, flood resilient design techniques should be employed to minimise damage to buildings and structures. The use of concrete flooring and waterproof building materials could be considered.	Section 9.5
Flow Routing	Potential overland flow paths should be determined and appropriate solutions proposed to minimise the impact of the development, for example by configuring road and building layouts to preserve existing flow paths and improve flood routing, whilst ensuring that flows are not diverted towards other properties elsewhere.	Section 9.12
Surface Water Management	**Current risk of flooding** The site is within Drainage Catchment 37, which is to the west of the Borough. The potential development must not increase flood risk to other areas in the Drainage Catchment. The uFMfSW indicates that the site lies within an area of high risk of surface water flooding both centrally to the site and to the eastern and western boundaries. The remainder of the site is predominantly at a very low risk of surface water flooding. The surrounding area is generally at a low or very low risk of surface water flooding. However, to the north of the site there are discrete areas of high surface water flood risk. There is one historic record of surface water flooding.	
	Indicative existing runoff rate: 8.2 l/s (1 in 1 year), 31.0 l/s (1 in 100 year) **Indicative Greenfield Runoff Rate**: 5.0 l/s	Level 2 Appendix B
	SuDS Suitability Reference to the SWMP Appendix C2 Figure 5 identifies that (prior to the completion of a site investigation to determine precise local conditions) infiltration of surface water into the ground is potentially suitable. Site investigations will be required prior to the development of a Drainage Strategy for the site. Techniques which should be considered include soakaways, green roofs, filter strips, detention basins and ponds, as well as permeable surfacing. Infiltration tests should be carried out onsite to confirm SUDS suitability.	Section 10.3 and 10.9
	Drainage Strategy and Approvals Croydon Council will require a Drainage Strategy to be prepared outlining the surface water management for the site, runoff rates and consideration of SuDS in line with the London Plan policy 5.13 and Local Plan policies. Where it is not possible to achieve greenfield runoff rates in accordance with the preferred standards set out in the London Plan policy 5.13 and Design and Construction SPG (April 2014), then justification must be provided. Arrangements for the future maintenance of the drainage system must be made and detailed in the Drainage Strategy. There is no automatic right to connect to the existing Thames Water network. Any potential diversions and/or discharges into a sewer or main river must be agreed with Thames Water or Environment Agency, respectively.	Section 10.6
	Indicative Unit Costs Green roofs ~ £90/m^2. Filter strips £2-4m^2. Detention basin £15-50m^3. Permeable paving ~ £30-50/m^2. Concrete storage tank £449-518/m^3.	Section 10.4

SITE 351: Furniture Village, 222 Purley Way

1) PROPOSED DEVELOPMENT

Site ID	351
Site Address	Furniture Village, 222 Purley Way
Site Area	0.684 ha
Current Use	Retail warehouse & car park
Allocated Use	Redevelopment of this area to a mixture of residential, retail, healthcare facility (if required by NHS) and community uses to form the basis of a new residential community.
Vulnerability	More Vulnerable

2) SUMMARY OF LEVEL 1 FLOOD RISK

Flood risk from rivers

The site is located approximately 400m north of the River Wandle (culverted section), which is designated as a Main River. The site is predominantly located in Flood Zone 2.

Proportion of potential development site within Flood Zone	Flood Zone 3b	Flood Zone 3a	Flood Zone 2	Flood Zone 1	Area Benefiting of Defences
	0%	**0%**	**82%**	**18%**	**0%**

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Flood risk from all other sources			**Limitations**
Risk of flooding to the potential development site and surrounding area	Surface Water flooding: (uFMfSW)	**High Risk** 1 in 30 year (3.3% annual probability)	The uFMfSW data does not show the susceptibility of individual properties to surface water flooding. The uFMfSW also does not take into account the details of the existing drainage system.
	Groundwater flooding: (BGS Susceptibility to Groundwater Flooding)	**Medium Risk** Potential for groundwater flooding to occur at surface, but no historic records of groundwater flooding	The dataset cannot be used on its own to indicate risk of groundwater flooding and should not be used to inform planning decisions at a site scale. It is suitable for use in conjunction with a large number of other factors, e.g. records of previous incidence of groundwater flooding, to establish relative risk of groundwater flooding.

Historic records of flooding

Historic records of flooding from each source within a 100m radius of potential development site	Fluvial records	Surface water records	Groundwater records	Sewer records	Multiple source records	Other
	0	**0**	**0**	**0**	**0**	**0**

SITE 351: Furniture Village, 222 Purley Way

3) RECOMMENDATIONS AND POLICIES

In accordance with the NPPF, More Vulnerable development is considered compatible within Flood Zone 2 and does not require the application of the Exception Test. However, given the risk of surface water flooding to this site, the principles of the Exception Test should still be considered when developing on this site, namely:

1) *"it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk"* and
2) *"demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall"*.

The following information and recommendations are therefore provided for consideration.

Development Layout and Sequential Approach	An assessment of surface water flow paths should be made prior to site design, to encourage the location of buildings and more vulnerable aspects of the development away from those areas at risk of surface water ponding. Measures to manage surface water on the site should be considered early in the site masterplan to enable inclusion of attenuation SuDS where possible. Self-contained residential basements and bedrooms at basement level are not permitted in areas that have 'potential for groundwater to occur at the surface' (BGS Susceptibility to Groundwater Flooding). Less Vulnerable basements, basement extensions and conversions, such as car parking, must provide safe internal access to higher floors situated above ground level. Further ground investigations would be required at this site to confirm the the likelihood of groundwater occurrence.	Section 9.2
Finished Floor Levels	The site is in Flood Zone 2. However, it is good practice to raise finished floor levels a minimum of 300mm above the 1% AEP (1 in 100 year), especially as the site is at high surface water flood risk.	Section 9.3
Flood Resistance	Where there may be a future risk of surface water flooding on the site, flood resistant construction measures may be employed, such as raising property thresholds, and the use of landscaping to manage surface water and fluvial floodwater.	Section 9.4
Safe Access/Egress	Access/Egress to the site is provided via the south part of Progress Way, located south-west of the sit, and Commerce Way, located south of the site.	Section 9.7
Flow Routing	Potential overland flow paths should be determined and appropriate solutions proposed to minimise the impact of the development, for example by configuring road and building layouts to preserve existing flow paths and improve flood routing, whilst ensuring that flows are not diverted towards other properties elsewhere.	Section 9.12
Flood Warning and Evacuation Plan	A Flood Warning and Evacuation Plan (FWEP) must be prepared for the site, detailing how flood warning will be provided how the safety of occupants and access to/from the development will be ensured and what will be done to protect development and contents. The FWEP should consider arrangements for the evacuation of basement car parks. Where possible, the FWEP should also detail the length of time before the site becomes inaccessible by emergency vehicles. **Flood Warning Areas** The local area is covered by the Environment Agency Flood Warning Areas for 'River Wandle at Beddington Park including Hackbridge and Waddon, London Boroughs of Sutton and Croydon'. Residents of the site should ensure they are signed up to the Environment Agency Flood Warning system. **Emergency Rest Centres** The closest designated emergency rest centre for this site is The salvation Army on Booth Street, to the south east of the development site.	Section 9.14
Surface Water Management	**Current risk of flooding** The site is within Drainage Catchment 38, which is located at the north west part of the borough. The potential development must not increase flood risk to other areas in the Drainage Catchment. The uFMfSW indicates that the site lies within an area of high risk of surface water flooding mainly at the north-west part of the site.	
	Indicative existing runoff rate: 3.5 l/s (1 in 1 year), 13.1 l/s (1 in 100 year) **Indicative Greenfield Runoff Rate**: 5.0 l/s	Section 10
	SuDS Suitability Reference to the SWMP Appendix C2 Figure 5 identifies that infiltration of surface water into the ground is potentially uncertain and requires further investigation prior to the development of a Drainage Strategy for the site. Site investigations will be required prior to the development of a Drainage Strategy for the site. Techniques which should be considered include green roofs, filter strips, detention basins and ponds, as well as permeable surfacing in combination with tanked systems	Section 10.3 and 10.9

SITE 351: Furniture Village, 222 Purley Way		
	Drainage Strategy and Approvals Croydon Council will require a Drainage Strategy to be prepared outlining the surface water management for the site, runoff rates and consideration of SuDS in line with the London Plan policy 5.13 and Local Plan policies. Where it is not possible to achieve greenfield runoff rates in accordance with the preferred standards set out in the London Plan policy 5.13 and Design and Construction SPG (April 2014), then justification must be provided. Arrangements for the future maintenance of the drainage system must be made and detailed in the Drainage Strategy. There is no automatic right to connect to the existing Thames Water network. Any potential diversions and/or discharges into a sewer or main river must be agreed with Thames Water or Environment Agency, respectively.	Section 10.6
	Indicative Unit Costs Green roofs ~ £90/m^2. Permeable paving ~ £30-50/m^2. Filter strips £2-4m^2. Detention basin £15-50m^3. Concrete storage tank £449-518/m^3.	Section 10.4

SITE 355: Sainsbury Supermarket, 2 Trafaglar Way

1) PROPOSED DEVELOPMENT

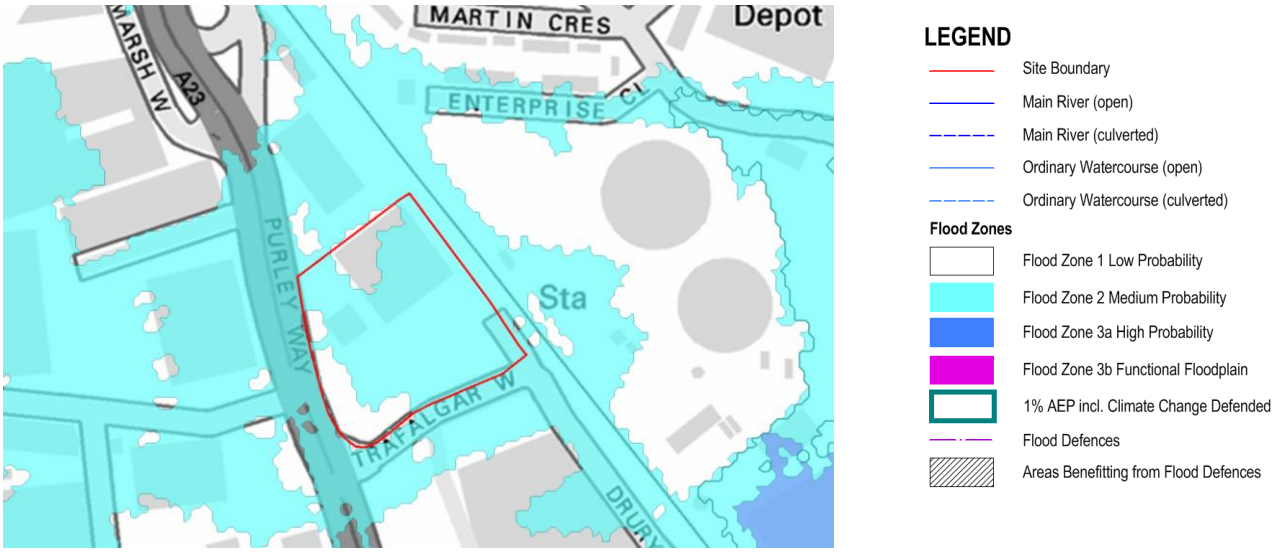
Site ID	355
Site Address	Sainsbury Supermarket, 2 Trafaglar Way
Site Area	1.293 ha
Current Use	Sainsbury's Store & car park
Allocated Use	Redevelopment of this area to a mixture of residential, retail, healthcare facility (if required by the NHS) and community uses to form the basis of a new residential community
Vulnerability	More Vulnerable

2) SUMMARY OF LEVEL 1 FLOOD RISK

Flood risk from rivers

The site is located approximately 450m north of the River Wandle, which is designated as a Main River. The site is predominantly located in Flood Zone 2.

Proportion of potential development site within Flood Zone	Flood Zone 3b	Flood Zone 3a	Flood Zone 2	Flood Zone 1	Area Benefiting of Defences
	0%	**0%**	**77%**	**23%**	**0%**



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Flood risk from all other sources			**Limitations**
Risk of flooding to the potential development site and surrounding area	Surface Water flooding: (uFMfSW)	**High Risk** 1 in 30 year (3.3% annual probability)	The uFMfSW data does not show the susceptibility of individual properties to surface water flooding. The uFMfSW also does not take into account the details of the existing drainage system.
	Groundwater flooding: (BGS Susceptibility to Groundwater Flooding)	**Medium Risk** Potential for groundwater flooding to occur at surface, but no historic records of groundwater flooding	The dataset cannot be used on its own to indicate risk of groundwater flooding and should not be used to inform planning decisions at a site scale. It is suitable for use in conjunction with a large number of other factors, e.g. records of previous incidence of groundwater flooding, to establish relative risk of groundwater flooding.

Historic records of flooding

Historic records of flooding from each source within a 100m radius of potential development site	Fluvial records	Surface water records	Groundwater records	Sewer records	Multiple source records	Other
	0	**0**	**0**	**0**	**0**	**0**

SITE 355: Sainsbury Supermarket, 2 Trafaglar Way

3) RECOMMENDATIONS AND POLICIES

In accordance with the NPPF, More Vulnerable development is considered compatible within Flood Zone 2 and does not require the application of the Exception Test. However, given the risk of surface water flooding to this site, the principles of the Exception Test should still be considered when developing on this site, namely:

1) *"it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk"* and
2) *"demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall"*.

The following information and recommendations are therefore provided for consideration.

Development Layout and Sequential Approach	The site lies within Flood Zone 2 associated with the River Wandle. The majority of the site lies within Flood Zone 2 and part of the sites is located within Flood Zone 1, therefore a sequential approach should be used. The proposed development is for residential use, which is classified as More Vulnerable development and should be located in Flood Zone 1. If it is essential to build on the Flood Zone 2 floodplain then all residential uses should be located in the first floor level or above. An assessment of surface water flow paths should be made prior to site design, to encourage the location of buildings and more vulnerable aspects of the development away from those areas at risk of surface water ponding. Measures to manage surface water on the site should be considered early in the site masterplan to enable inclusion of attenuation SuDS where possible. Self-contained residential basements and bedrooms at basement level are not permitted in areas that have 'potential for groundwater to occur at the surface' (BGS Susceptibility to Groundwater Flooding). Less Vulnerable basements, basement extensions and conversions, such as car parking, must provide safe internal access to higher floors situated above ground level. Further ground investigations would be required at this site to confirm the the likelihood of groundwater occurrence.	Section 9.2
Finished Floor Levels	For More Vulnerable development, a minimum freeboard of 300mm is required above the 1% AEP (1 in 100 year) including climate change peak fluvial flood level. The peak flood water level should be derived for the immediate vicinity of the site as part of a site-specific FRA. The site is at high risk of surface water flooding. It is considered that the finished floor level requirement for fluvial flood levels would also protect the property from a 0.33% AEP (1 in 30 year) surface water flood event.	Section 9.3
Flood Resistance	Where there may be a future risk of surface water flooding on the site, flood resistant construction measures may be employed, such as raising property thresholds, and the use of landscaping to manage surface water and fluvial floodwater.	Section 9.4
Safe Access/Egress	Access/Egress to the site is provided via Commerce Way to the south of the site.	Section 9.7
Flow Routing	Potential overland flow paths should be determined and appropriate solutions proposed to minimise the impact of the development, for example by configuring road and building layouts to preserve existing flow paths and improve flood routing, whilst ensuring that flows are not diverted towards other properties elsewhere.	Section 9.12
Flood Warning and Evacuation Plan	A Flood Warning and Evacuation Plan (FWEP) must be prepared for the site, detailing how flood warning will be provided how the safety of occupants and access to/from the development will be ensured and what will be done to protect development and contents. The FWEP should consider arrangements for the evacuation of basement car parks. Where possible, the FWEP should also detail the length of time before the site becomes inaccessible by emergency vehicles. **Flood Warning Areas** The local area is covered by the Environment Agency Flood Warning Areas for 'River Wandle at Beddington Park including Hackbridge and Waddon, London Boroughs of Sutton and Croydon'. Residents of the site should ensure they are signed up to the Environment Agency Flood Warning system. **Emergency Rest Centres** The closest designated emergency rest centre for this site is The salvation Army on Booth Street, to the south east of the development site.	Section 9.14

SITE 355: Sainsbury Supermarket, 2 Trafaglar Way		
Surface Water Management	**Current risk of flooding** The site is within Drainage Catchment 38, which is located at the north west part of the borough. The potential development must not increase flood risk to other areas in the Drainage Catchment. The uFMfSW indicates that the site lies within an area of high risk of surface water flooding mainly at the south-east part of the site. There is also a pathway of high risk of surface water flooding flowing adjacently to the west site boundary.	
	Indicative existing runoff rate: 6.6 l/s (1 in 1 year), 24.6 l/s (1 in 100 year) **Indicative Greenfield Runoff Rate**: 5.0 l/s	Section 10
	SuDS Suitability Reference to the SWMP Appendix C2 Figure 5 identifies that infiltration of surface water into the ground is potentially uncertain and requires further investigation prior to the development of a Drainage Strategy for the site. Techniques which should be considered include green roofs, filter strips, detention basins and ponds, as well as permeable surfacing in combination with tanked systems	Section 10.3 and 10.9
	Drainage Strategy and Approvals Croydon Council will require a Drainage Strategy to be prepared outlining the surface water management for the site, runoff rates and consideration of SuDS in line with the London Plan policy 5.13 and Local Plan policies. Where it is not possible to achieve greenfield runoff rates in accordance with the preferred standards set out in the London Plan policy 5.13 and Design and Construction SPG (April 2014), then justification must be provided. Arrangements for the future maintenance of the drainage system must be made and detailed in the Drainage Strategy. There is no automatic right to connect to the existing Thames Water network. Any potential diversions and/or discharges into a sewer or main river must be agreed with Thames Water or Environment Agency, respectively.	Section 10.6
	Indicative Unit Costs Green roofs ~ £90/m^2. Permeable paving ~ £30-50/m^2. Filter strips £2-4m^2. Detention basin £15-50m^3. Concrete storage tank £449-518/m^3.	Section 10.4

SITE 374 : Reeves Corner former buildings, 104-112 Church Street

1) PROPOSED DEVELOPMENT

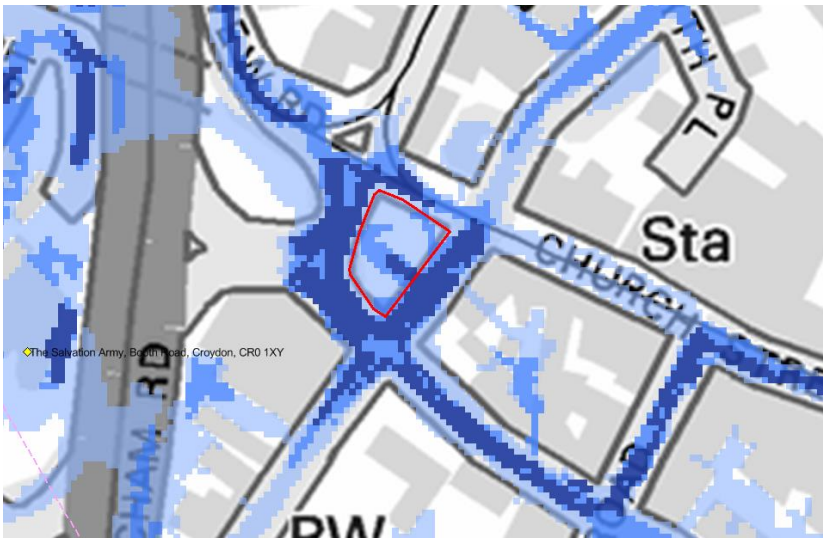
Site ID	374
Site Address	Reeves Corner former buildings, 104-112 Church Street
Site Area	0.076 ha
Current Use	Vacant Land with designated Secondary Retail Frontage
Allocated Use	Mixed use with residential to upper storeys and retail on ground floor
Vulnerability	More Vulnerable

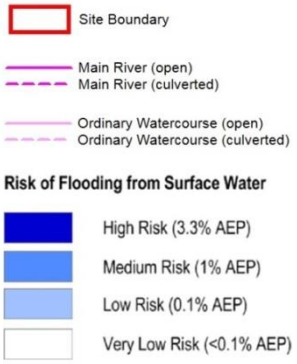
2) SUMMARY OF LEVEL 1 FLOOD RISK

Flood risk from rivers

The site is located approximately 250m east of the River Wandle, which is designated as a Main River. The site is located in Flood Zone 1, low probability of flooding from rivers.

Flood risk from all other sources			**Limitations**
Risk of flooding to the potential development site and surrounding area	Surface Water flooding: (uFMfSW)	**High Risk** 1 in 30 year (3.3% annual probability)	The uFMfSW data does not show the susceptibility of individual properties to surface water flooding. The uFMfSW also does not take into account the details of the existing drainage system.
	Groundwater flooding: (BGS Susceptibility to Groundwater Flooding)	**High Risk** Potential for groundwater flooding to occur at the surface and historic records of groundwater flooding	The dataset cannot be used on its own to indicate risk of groundwater flooding and should not be used to inform planning decisions at a site scale. It is suitable for use in conjunction with a large number of other factors, e.g. records of previous incidence of groundwater flooding, to establish relative risk of groundwater flooding.





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Historic records of flooding

Historic records of flooding from each source within a 100m radius of potential development site	Fluvial records	Surface water records	Groundwater records	Sewer records	Multiple source records	Other
	0	**1**	**1**	**0**	**0**	**0**

3) RECOMMENDATIONS

In accordance with the NPPF, More Vulnerable development is considered compatible within Flood Zone 1 and does not require the application of the Exception Test. However, given the risk of surface water and groundwater flooding to this site, the principles of the Exception Test should still be considered when developing on this site, namely:

1) *"it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk"* and
2) *"demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall"*.

The following information and recommendations are therefore provided for consideration.

SITE 374 : Reeves Corner former buildings, 104-112 Church Street		
Development Layout and Sequential Approach	An assessment of surface water flow paths should be made prior to site design, to encourage the location of buildings and more vulnerable aspects of the development away from those areas at risk of surface water ponding. Measures to manage surface water on the site should be considered early in the site masterplan to enable inclusion of attenuation SuDS where possible. Self-contained residential basements and bedrooms at basement level are not permitted in areas that have 'potential for groundwater to occur at the surface' (BGS Susceptibility to Groundwater Flooding). Less Vulnerable basements, basement extensions and conversions, such as car parking, must provide safe internal access to higher floors situated above ground level. Further ground investigations would be required at this site to confirm the the likelihood of groundwater occurrence.	Section 9.2
Finished Floor Levels	Although the majority of the site is within Flood Zone 1, it is good practice to set finished floor levels a minimum of 300mm above ground level in order to reduce the risk of flooding from surface water, which is at high risk in this area. It is recommended that consideration is given to the flow of surface water during the development of the site masterplan and layout to ensure effective management of surface water flows.	
Flood Resistance	Where there may be a future risk of surface water flooding on the site, flood resistant construction measures may be employed, such as raising property thresholds, and the use of landscaping to manage surface water and fluvial floodwater.	Section 9.4
Flood Resilience	Where parts of proposed buildings may be affected by surface water floodwaters, e.g. undercroft parking areas, flood resilient design techniques should be employed to minimise damage to buildings and structures. The use of concrete flooring and waterproof building materials could be considered.	Section 9.5
Flow Routing	Potential overland flow paths should be determined and appropriate solutions proposed to minimise the impact of the development, for example by configuring road and building layouts to preserve existing flow paths and improve flood routing, whilst ensuring that flows are not diverted towards other properties elsewhere.	Section 9.12
Surface Water Management	**Current risk of flooding** The site falls within Critical Drainage Area (CDA) Group8_042, which is an area with localised flooding issues. The potential development must not increase flood risk to areas within the CDA. The site is within Drainage Catchment 39, which is located at the west part of the borough. The uFMfSW indicates that the site lies within an area of high risk of surface water flooding, centrally to the eastern boundary of the site. The remainder of the site lies within an area of medium or low surface water flooding. A high risk of surface water flooding surrounds the site, particularly across the road network such as Cairo New Road and Church Street. There is one historic record of surface water flooding held by Croydon Council in this location.	
	Indicative existing runoff rate: 0.4 l/s (1 in 1 year), 1.5 l/s (1 in 100 year) **Indicative Greenfield Runoff Rate**: 5.0 l/s	Level 2 Appendix B
	SuDS Suitability Reference to the SWMP Appendix C2 Figure 5 identifies that infiltration of surface water into the ground is potentially uncertain and requires further investigation prior to the development of a Drainage Strategy for the site. **Groundwater Source Protection Zones (SPZs)** The site is within a SPZ1 (inner protection zone). Where infiltration SuDS are to be used for surface runoff from roads, car parking and public or amenity areas, they should have a suitable series of treatment steps to prevent the pollution of groundwater. Where infiltration SuDS are proposed for anything other than clean roof drainage in a SPZ1, the Environment Agency require a risk assessment to demonstrate that the SuDS scheme will not pose an unacceptable risk to the drinking water abstraction. The design of infiltration SuDS schemes and their treatment stages needs to be appropriate to the sensitivity of the location and subject to a relevant risk assessment considering the types of pollutants likely to be discharged, design volumes and the dilution and attenuation properties of the aquifer. Techniques which should be considered include green roofs, filter strips, detention basins and ponds, as well as permeable surfacing in combination with tanked systems.	Section 10.3 and 10.9

SITE 374 : Reeves Corner former buildings, 104-112 Church Street		
	Drainage Strategy and Approvals Croydon Council will require a Drainage Strategy to be prepared outlining the surface water management for the site, runoff rates and consideration of SuDS in line with the London Plan policy 5.13 and Local Plan policies. Where it is not possible to achieve greenfield runoff rates in accordance with the preferred standards set out in the London Plan policy 5.13 and Design and Construction SPG (April 2014), then justification must be provided. Arrangements for the future maintenance of the drainage system must be made and detailed in the Drainage Strategy. There is no automatic right to connect to the existing Thames Water network. Any potential diversions and/or discharges into a sewer or main river must be agreed with Thames Water or Environment Agency, respectively.	Section 10.6
	Indicative Unit Costs Green roofs ~ £90/m^2. Filter strips £2-4m^2. Detention basin £15-50m^3. Permeable paving ~ £30-50/m^2. Concrete storage tank £449-518/m^3.	Section 10.4