

**SITE 174 : 30-38 Addiscombe Road**

**1) PROPOSED DEVELOPMENT**

<b>Site ID</b>	174
<b>Site Address</b>	30-38 Addiscombe Road
<b>Site Area</b>	0.35 ha
<b>Current Use</b>	Vacant Site
<b>Allocated Use</b>	Residential development
<b>Vulnerability</b>	More Vulnerable

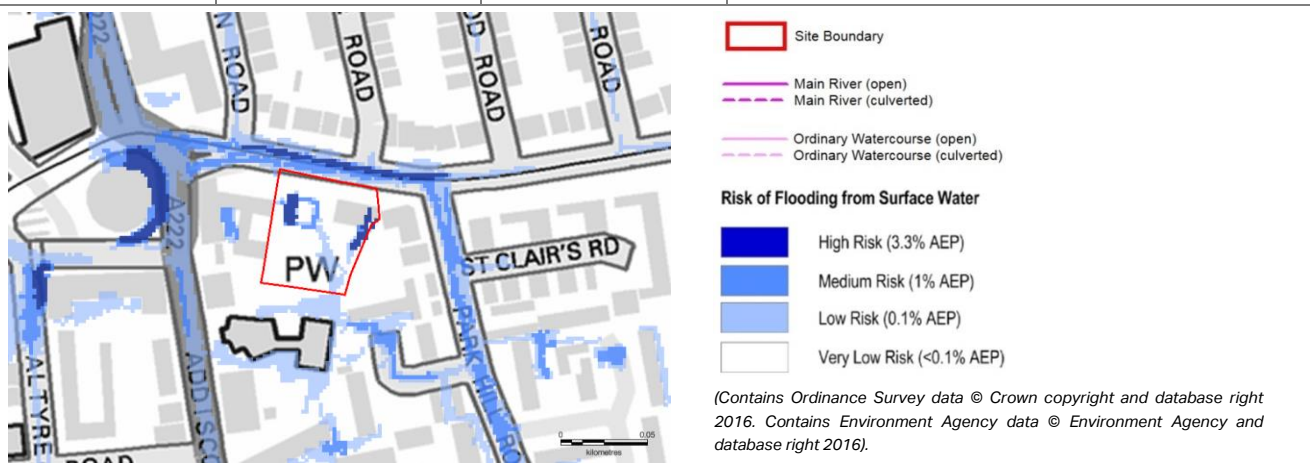
**2) SUMMARY OF LEVEL 1 FLOOD RISK**

**Flood risk from rivers**

The site is located in Flood Zone 1, low probability of flooding from rivers. The closest watercourse to the site is an ordinary watercourse located approximately 950m east of the site, draining in Shirley Park Golf Course.

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
<i>Risk of flooding to the potential development site and surrounding area</i>	Surface Water flooding: (uFMfSW)	<b>High Risk</b> 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)	<b>Low Risk</b> 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.



**Historic records of flooding**

<i>Historic records of flooding from each source within a 100m radius of potential development site</i>	Fluvial records	Surface water records	Groundwater records	Sewer records	Multiple source records	Other
	0	0	0	0	0	<b>3 (TW Internal) 5 (TW External)</b>

**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.

<b>SITE 174 : 30-38 Addiscombe Road</b>		
<b>Development Layout and Sequential Approach</b>	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
<b>Finished Floor Levels</b>	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. 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.	
<b>Flood Resistance</b>	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
<b>Flood Resilience</b>	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
<b>Flow Routing</b>	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
<b>Surface Water Management</b>	<p><b>Current risk of flooding</b></p> <p>The site is within Drainage Catchment 22, which is located at the north part of the borough. The potential development must not increase flood risk to other areas in the Drainage Catchment.</p> <p>The uFMfSW indicates that the site lies within an area of high risk of surface water flooding, and the surrounding areas, mainly north and west of the site, are at high to medium risk of surface water flooding.</p>	
	<p><b>Indicative existing runoff rate:</b> 1.8 l/s (1 in 1 year), 6.8 l/s (1 in 100 year)</p> <p><b>Indicative Greenfield Runoff Rate:</b> 5.0 l/s</p>	Level 2 Appendix B
	<p><b>SuDS Suitability</b></p> <p>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.</p> <p>Techniques which should be considered include soakaways, green roofs, filter strips, detention basins and ponds, as well as permeable surfacing. Infiltration rates should be tested on site prior to confirming the drainage strategy and appropriate SuDS.</p>	Section 10.3 and 10.9
	<p><b>Drainage Strategy and Approvals</b></p> <p>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.</p> <p>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.</p> <p>Arrangements for the future maintenance of the drainage system must be made and detailed in the Drainage Strategy.</p> <p>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.</p>	Section 10.6
	<p><b>Indicative Unit Costs</b></p> <p>Green roofs ~ £90/m<sup>2</sup>.</p> <p>Filter strips £2-4m<sup>2</sup>.</p> <p>Detention basin £15-50m<sup>3</sup>.</p> <p>Permeable paving ~ £30-50/m<sup>2</sup>.</p> <p>Concrete storage tank £449-518/m<sup>3</sup>.</p>	Section 10.4

**SITE 190 : Car park to the rear of Leon House, 22-24 Edridge Road**

**1) PROPOSED DEVELOPMENT**

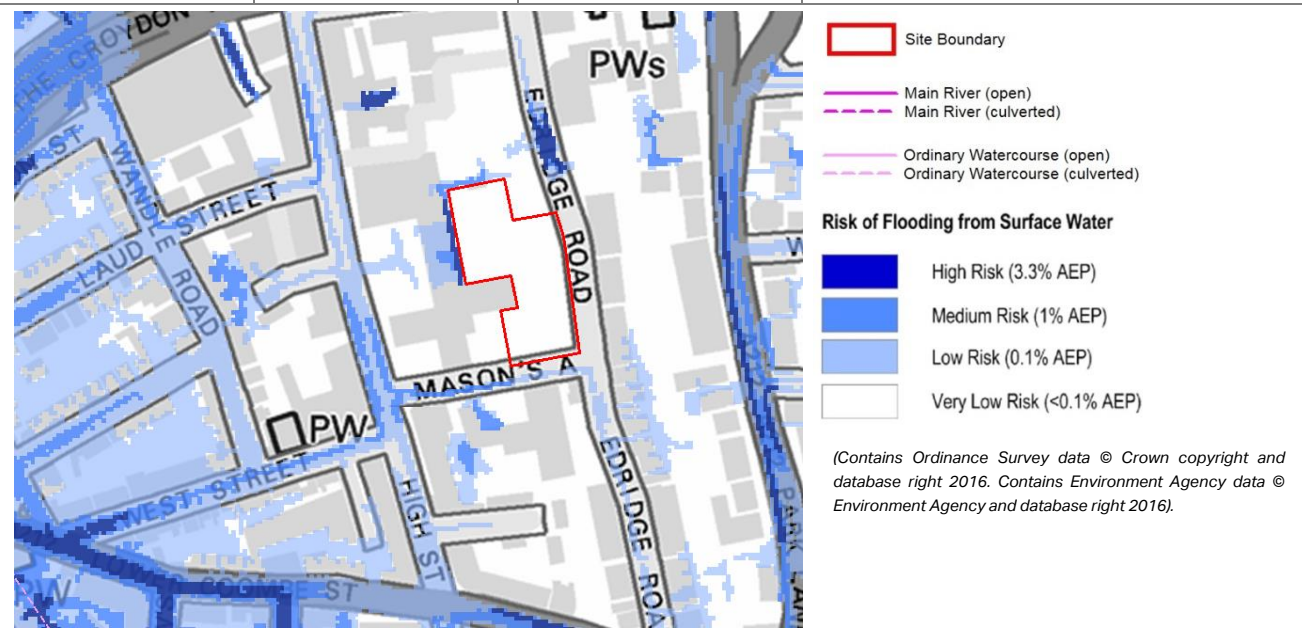
<b>Site ID</b>	190
<b>Site Address</b>	Car park to the rear of Leon House, 22-24 Edridge Road
<b>Site Area</b>	0.40 ha
<b>Current Use</b>	2 storey parking area serving Leon House
<b>Allocated Use</b>	Residential development
<b>Vulnerability</b>	More Vulnerable

**2) SUMMARY OF LEVEL 1 FLOOD RISK**

**Flood risk from rivers**

The site is located approximately 1km south 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	
<i>Risk of flooding to the potential development site and surrounding area</i>	Surface Water flooding: (uFMfSW)	<b>Low Risk</b> 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.  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.
	Groundwater flooding: (BGS Susceptibility to Groundwater Flooding)	<b>Medium Risk</b> Potential for groundwater flooding to occur at surface, but no historic records of groundwater flooding	



**Historic records of flooding**

<i>Historic records of flooding from each source within a 100m radius of potential development site</i>	Fluvial records	Surface water records	Groundwater records	Sewer records	Multiple source records	Other
	0	0	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. The following information and recommendations are provided for consideration.

## SITE 190 : Car park to the rear of Leon House, 22-24 Edridge Road

<b>Development Layout and Sequential Approach</b>	<p>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. Most of the site is at low risk of surface water flooding with a narrow strip along the western boundary at high risk.</p> <p>Measures to manage surface water on the site should be considered early in the site masterplan to enable inclusion of attenuation SuDS where possible.</p> <p>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.</p>	Section 9.2
<b>Surface Water Management</b>	<p><b>Current risk of flooding</b></p> <p>The site falls under 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 low risk of surface water flooding.</p>	
	<p><b>Indicative existing runoff rate:</b> 2.1 l/s (1 in 1 year), 7.8 l/s (1 in 100 year)  <b>Indicative Greenfield Runoff Rate:</b> 5.0 l/s</p>	Level 2 Appendix B
	<p><b>SuDS Suitability</b></p> <p>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. Site investigations will be required prior to the development of a Drainage Strategy for the site.</p> <p><b>Groundwater Source Protection Zones (SPZs)</b></p> <p>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.</p> <p>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.</p> <p>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.</p> <p>Techniques which should be considered include soakaways, green roofs, filter strips, detention basins and ponds, as well as permeable surfacing. Infiltration rates should be tested on site prior to confirming the drainage strategy and appropriate SUDS.</p>	Section 10.3 and 10.9
	<p><b>Drainage Strategy and Approvals</b></p> <p>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.</p> <p>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.</p> <p>Arrangements for the future maintenance of the drainage system must be made and detailed in the Drainage Strategy.</p> <p>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.</p>	Section 10.6
	<p><b>Indicative Unit Costs</b></p> <p>Green roofs ~ £90/m<sup>2</sup>.  Filter strips £2-4m<sup>2</sup>.  Detention basin £15-50m<sup>3</sup>.  Permeable paving ~ £30-50/m<sup>2</sup>.  Concrete storage tank £449-518/m<sup>3</sup>.</p>	Section 10.4

**SITE 194 : St George's Walk, Katharine House and Park House, Park Street**

**1) PROPOSED DEVELOPMENT**

<b>Site ID</b>	194
<b>Site Address</b>	St George's Walk, Katharine House and Park House, Park Street
<b>Site Area</b>	1.94 ha
<b>Current Use</b>	Office & retail (including financial and food & drink) buildings between Katharine Street and Park Street
<b>Allocated Use</b>	Residential and retail with new civic space
<b>Vulnerability</b>	More Vulnerable

**2) SUMMARY OF LEVEL 1 FLOOD RISK**

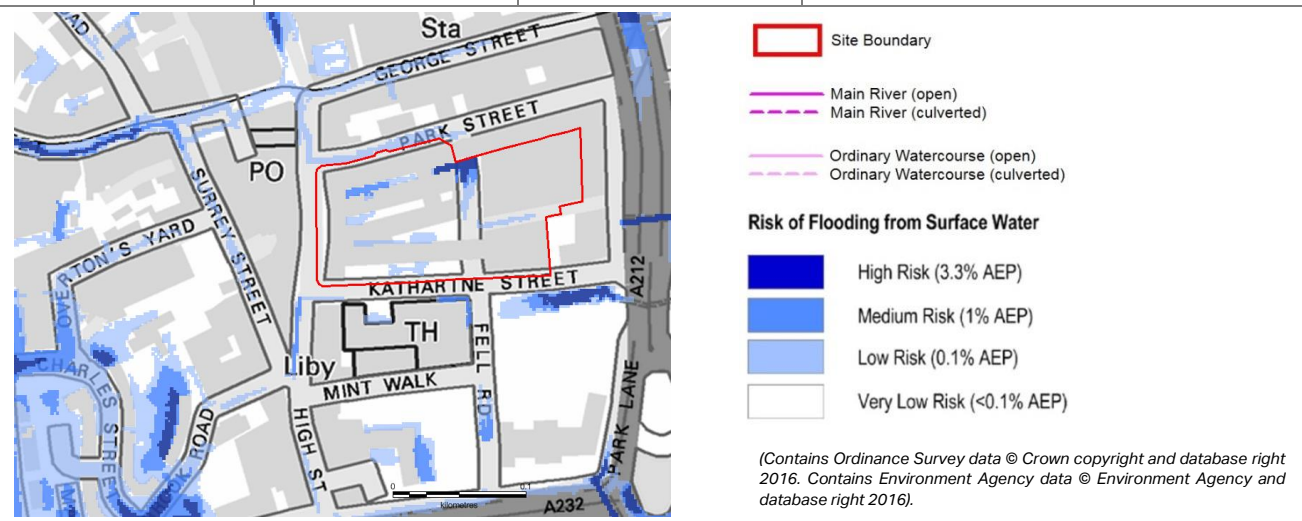
**Flood risk from rivers**

The site is located approximately 800m east of the River Wandle, which is designated as a Main River. It is also located 450m east of a culverted ordinary watercourse. The site is located in Flood Zone 1, low probability of flooding from rivers.

**Flood risk from all other sources**

**Limitations**

<i>Risk of flooding to the potential development site and surrounding area</i>	Surface Water flooding: (uFMfSW)	<b>High Risk</b> 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.  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.
	Groundwater flooding: (BGS Susceptibility to Groundwater Flooding)	<b>Medium Risk</b> Potential for groundwater flooding to occur below surface, but no historic records of groundwater flooding	



**Historic records of flooding**

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

**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.

<b>SITE 194 : St George's Walk, Katharine House and Park House, Park Street</b>		
<b>Development Layout and Sequential Approach</b>	The proposed development is mixed use. An assessment of surface water flow paths should be made prior to site design, to encourage the location of 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
<b>Finished Floor Levels</b>	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. 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.	
<b>Flood Resistance</b>	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
<b>Flood Resilience</b>	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
<b>Flow Routing</b>	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
<b>Surface Water Management</b>	<p><b>Current risk of flooding</b></p> <p>The site falls under 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.</p> <p>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 pathways of high risk of surface water flooding almost 250m east and west of the site, as well as an area of high risk south of the site. There is one historic record of surface water flooding held by Croydon Council in this location.</p>	
	<p><b>Indicative existing runoff rate:</b> 9.4l/s (1 in 1 year), 35.4 l/s (1 in 100 year)</p> <p><b>Indicative Greenfield Runoff Rate:</b> 5.0 l/s</p>	Level 2 Appendix B
	<p><b>SuDS Suitability</b></p> <p>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.</p> <p><b>Groundwater Source Protection Zones (SPZs)</b></p> <p>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.</p> <p>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.</p> <p>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.</p> <p>Techniques which should be considered include green roofs, filter strips, detention basins and ponds, as well as permeable surfacing in combination with tanked systems.</p>	Section 10.3 and 10.9
	<p><b>Drainage Strategy and Approvals</b></p> <p>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.</p> <p>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.</p> <p>Arrangements for the future maintenance of the drainage system must be made and detailed in the Drainage Strategy.</p> <p>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.</p>	Section 10.6

**SITE 194 : St George's Walk, Katharine House and Park House, Park Street**

	<b>Indicative Unit Costs</b> Green roofs ~ £90/m <sup>2</sup> . Filter strips £2-4/m <sup>2</sup> . Detention basin £15-50/m <sup>3</sup> . Permeable paving ~ £30-50/m <sup>2</sup> . Concrete storage tank £449-518/m <sup>3</sup> .	Section 10.4
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**SITE 195 : Leon House, 233 High Street**

**1) PROPOSED DEVELOPMENT**

<b>Site ID</b>	195
<b>Site Address</b>	Leon House, 233 High Street
<b>Site Area</b>	0.56 ha
<b>Current Use</b>	High rise office building.
<b>Allocated Use</b>	Conversion to residential or mixed use residential/office with retention of retail on the ground floor.
<b>Vulnerability</b>	More Vulnerable

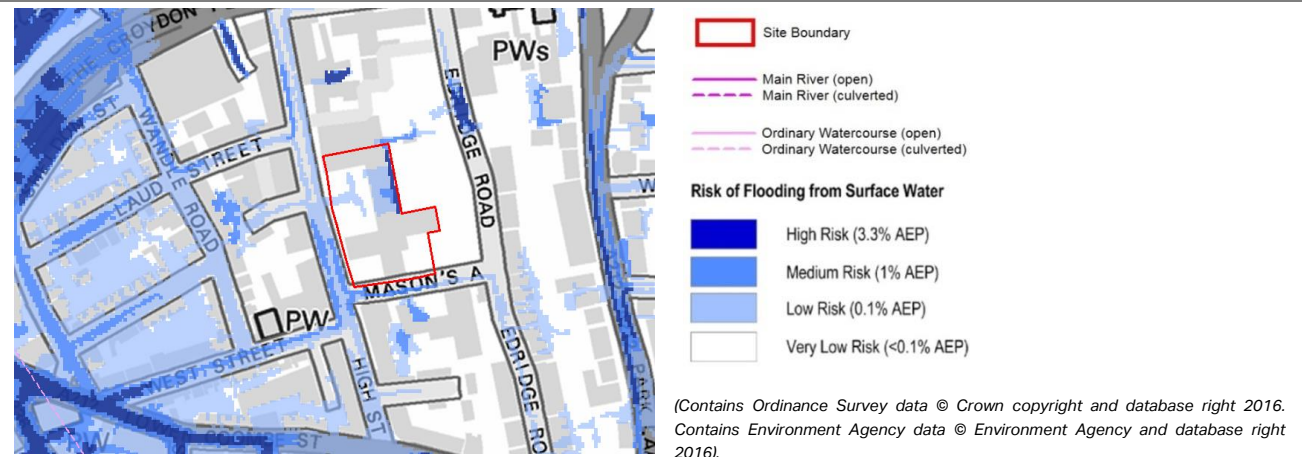
**2) SUMMARY OF LEVEL 1 FLOOD RISK**

**Flood risk from rivers**

The site is shown to be located within Flood Zone 1, low probability of flooding from rivers. However the culverted River Wandle, which is incorporated in to the surface water sewer system, is located below ground approximately 280m east of the site.

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.

<b>Flood risk from all other sources</b>		<b>Limitations</b>	
<i>Risk of flooding to the potential development site and surrounding area</i>	Surface Water flooding: (uFMfSW)	<b>High Risk</b> 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)	<b>Medium Risk</b> 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**

<i>Historic records of flooding from each source within a 100m radius of potential development site</i>	Fluvial records	Surface water records	Groundwater records	Sewer records	Multiple source records	Other
	0	0	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.



<b>SITE 195 : Leon House, 233 High Street</b>		
<b>Development Layout and Sequential Approach</b>	<p>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 More Vulnerable aspects of the development away from those areas at risk of surface water ponding.</p> <p>Measures to manage surface water on the site should be considered early in the site masterplan to enable inclusion of attenuation SuDS where possible.</p> <p>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 must be provided. Further ground investigations would be required at this site to confirm the the likelihood of groundwater occurrence.</p>	Section 9.2
<b>Finished Floor Levels</b>	<p>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. 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.</p>	
<b>Flood Resistance</b>	<p>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.</p>	Section 9.4
<b>Flood Resilience</b>	<p>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.</p>	Section 9.5
<b>Flow Routing</b>	<p>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.</p>	Section 9.12
<b>Surface Water Management</b>	<p><b>Current risk of flooding</b></p> <p>The site falls under 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.</p> <p>The uFMfSW indicates that the site lies within an area of high risk of surface water flooding mainly at the north east of the site, and there are pathways of medium risk of surface water adjacent to the west of the site. Highway corridors approximately 250m away from the site are shown to be at a high risk of surface water flooding.</p>	
	<p><b>Indicative existing runoff rate:</b> 2.9 l/s (1 in 1 year), 10.8 l/s (1 in 100 year)  <b>Indicative Greenfield Runoff Rate:</b> 5.0 l/s</p>	Level 2 Appendix B
	<p><b>SuDS Suitability</b></p> <p>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.</p> <p><b>Groundwater Source Protection Zones (SPZs)</b></p> <p>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.</p> <p>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.</p> <p>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.</p> <p>Techniques which should be considered include soakaways, green roofs, filter strips, detention basins and ponds, as well as permeable surfacing. Infiltration rates should be tested on site prior to confirming the drainage strategy and appropriate SUDS.</p>	Section 10.3 and 10.9

## SITE 195 : Leon House, 233 High Street

	<p><b>Drainage Strategy and Approvals</b></p> <p>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.</p> <p>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.</p> <p>Arrangements for the future maintenance of the drainage system must be made and detailed in the Drainage Strategy.</p> <p>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.</p>	Section 10.6
	<p><b>Indicative Unit Costs</b></p> <p>Green roofs ~ £90/m<sup>2</sup>.</p> <p>Filter strips £2-4m<sup>2</sup>.</p> <p>Detention basin £15-50m<sup>3</sup>.</p> <p>Permeable paving ~ £30-50/m<sup>2</sup>.</p> <p>Concrete storage tank £449-518/m<sup>3</sup>.</p>	Section 10.4

**SITE 201 : Lidl, Easy Gym and car park, 99-101 London Road**

**1) PROPOSED DEVELOPMENT**

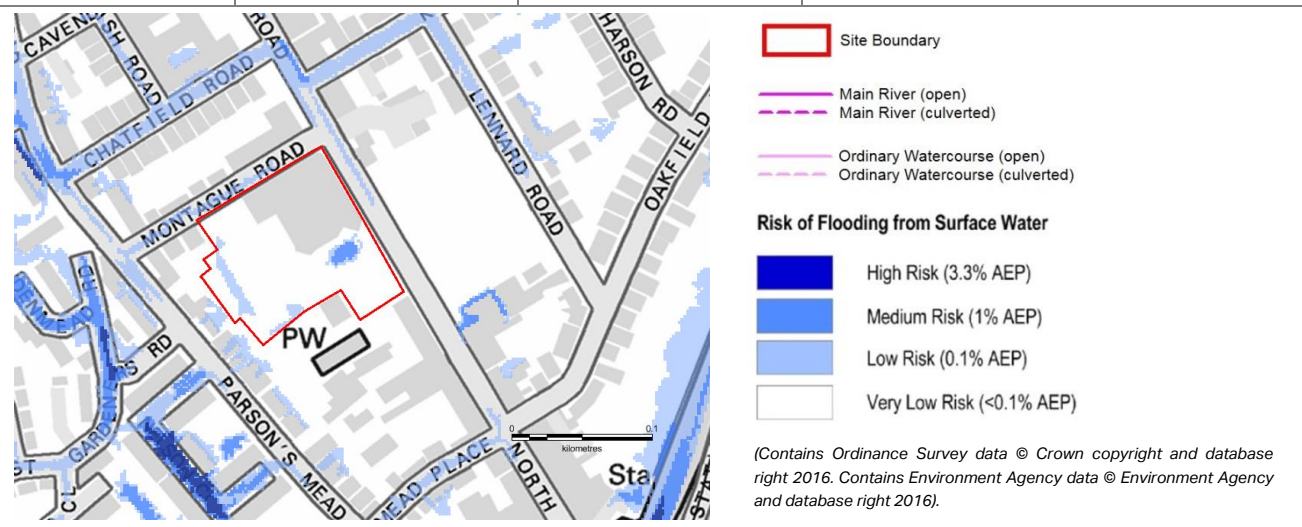
<b>Site ID</b>	201
<b>Site Address</b>	Lidl, Easy Gym and car park, 99-101 London Road
<b>Site Area</b>	1.13 ha
<b>Current Use</b>	Supermarket, gym and car park
<b>Allocated Use</b>	Primary school with residential development on upper floors
<b>Vulnerability</b>	More Vulnerable

**2) SUMMARY OF LEVEL 1 FLOOD RISK**

**Flood risk from rivers**

The site is located approximately 750m north 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	
<i>Risk of flooding to the potential development site and surrounding area</i>	Surface Water flooding: (uFMfSW)	<b>Medium Risk</b> 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)	<b>Medium Risk</b> Potential for groundwater flooding to occur below 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**

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

**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 201 : Lidl, Easy Gym and car park, 99-101 London Road		
<b>Development Layout and Sequential Approach</b>	The proposed development is for a primary school and residential uses, both of which are classed as More Vulnerable. 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
<b>Flood Resistance</b>	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
<b>Flood Resilience</b>	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
<b>Flow Routing</b>	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
<b>Surface Water Management</b>	<b>Current risk of flooding</b> The site is within Drainage Catchment 39, which is located at the 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 to the east of the site. The majority of the site falls within an area of very low flood risk from surface water, with small areas of low flood risk from surface water. There is one historic record of surface water flooding held by Croydon Council in this location.	
	<b>Indicative existing runoff rate:</b> 5.9 l/s (1 in 1 year), 22.0 l/s (1 in 100 year) <b>Indicative Greenfield Runoff Rate:</b> 5.0 l/s	Level 2 Appendix B
	<b>SuDS Suitability</b> 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
	<b>Drainage Strategy and Approvals</b> 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
	<b>Indicative Unit Costs</b> Green roofs ~ £90/m <sup>2</sup> . Filter strips £2-4m <sup>2</sup> . Detention basin £15-50m <sup>3</sup> . Permeable paving ~ £30-50/m <sup>2</sup> . Concrete storage tank £449-518/m <sup>3</sup> .	Section 10.4

## SITE 203 : West Croydon station and shops, 176 North End

### 1) PROPOSED DEVELOPMENT

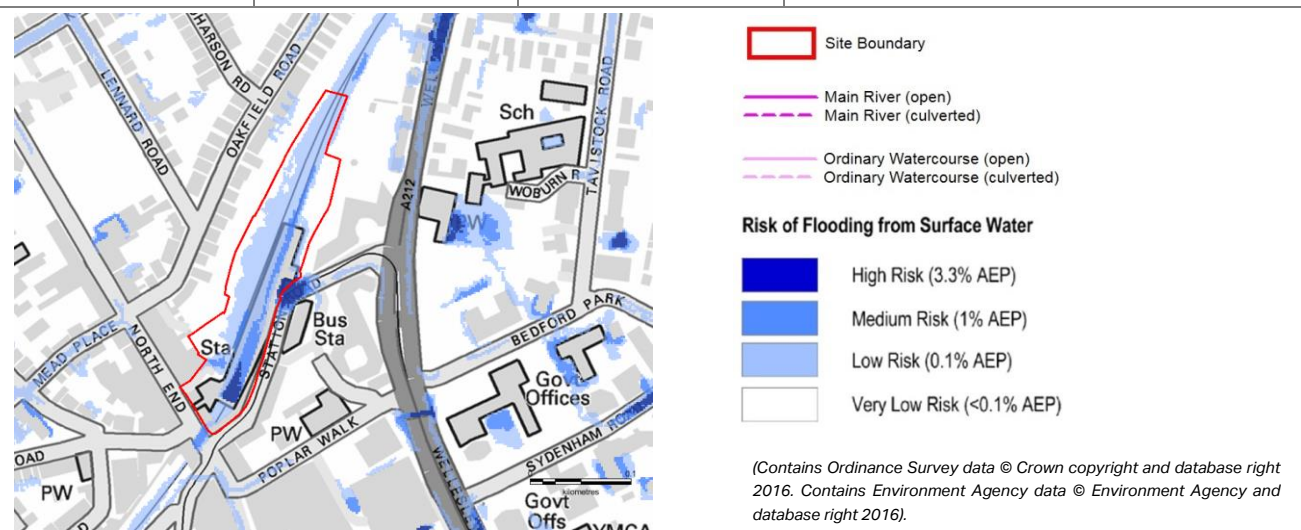
<b>Site ID</b>	203
<b>Site Address</b>	West Croydon station and shops, 176 North End
<b>Site Area</b>	1.75 ha
<b>Current Use</b>	West Croydon railway station, retail units on Station Road, London Road and North End, station car park and Network Rail yard
<b>Allocated Use</b>	Remodelling of station and redevelopment to provide an improved transport interchange, cycle hub, retail & office units with residential development above.
<b>Vulnerability</b>	More Vulnerable

### 2) SUMMARY OF LEVEL 1 FLOOD RISK

#### Flood risk from rivers

The site is located approximately 750m north 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	
<i>Risk of flooding to the potential development site and surrounding area</i>	Surface Water flooding: (uFMfSW)	<b>High Risk</b> 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)	<b>Medium Risk</b> Potential for groundwater flooding to occur below 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

<i>Historic records of flooding from each source within a 100m radius of potential development site</i>	Fluvial records	Surface water records	Groundwater records	Sewer records	Multiple source records	Other
	0	2	0	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 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.

<b>SITE 203 : West Croydon station and shops, 176 North End</b>		
<b>Development Layout and Sequential Approach</b>	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. The site is at high to low surface water flood risk associated with runoff from the railway. 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
<b>Finished Floor Levels</b>	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. It is recommended that consideration is given to the flow of surface water from the railway during the development of the site masterplan and layout to ensure effective management of surface water flows.	
<b>Flood Resistance</b>	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
<b>Flood Resilience</b>	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
<b>Flow Routing</b>	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
<b>Surface Water Management</b>	<p><b>Current risk of flooding</b></p> <p>The site is within Drainage Catchment 39, which is located at the west part of the borough. The potential development must not increase flood risk to other areas in the Drainage Catchment.</p> <p>The uFMfSW indicates that the site predominantly falls within an area of low risk of surface water flooding. However, centrally to the site there is a medium risk of surface water flooding, with discrete areas to the south and east of the site being shown as high risk. In the surrounding area, surface water flood risk is generally low. However, Station Road and the A212 have areas shown to be at high risk from surface water flooding. There are two historic records of surface water flooding held by Croydon Council in this location.</p>	
	<p><b>Indicative existing runoff rate:</b> 9.5 l/s (1 in 1 year), 35.6 l/s (1 in 100 year)</p> <p><b>Indicative Greenfield Runoff Rate:</b> 5.0 l/s</p>	Level 2 Appendix B
	<p><b>SuDS Suitability</b></p> <p>Reference to the SWMP Appendix C2 Figure 4 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.</p> <p><b>Groundwater Source Protection Zones (SPZs)</b></p> <p>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.</p> <p>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.</p> <p>Techniques which should be considered include green roofs, filter strips, detention basins and ponds, as well as permeable surfacing in combination with tanked systems.</p>	Section 10.3 and 10.9
	<p><b>Drainage Strategy and Approvals</b></p> <p>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.</p> <p>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.</p> <p>Arrangements for the future maintenance of the drainage system must be made and detailed in the Drainage Strategy.</p> <p>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.</p>	Section 10.6

**SITE 203 : West Croydon station and shops, 176 North End**

	<b>Indicative Unit Costs</b> Green roofs ~ £90/m <sup>2</sup> . Filter strips £2-4m <sup>2</sup> . Detention basin £15-50m <sup>3</sup> . Permeable paving ~ £30-50/m <sup>2</sup> . Concrete storage tank £449-518/m <sup>3</sup> .	Section 10.4
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**SITE 236 : Apollo House, Wellesley Road**

**1) PROPOSED DEVELOPMENT**

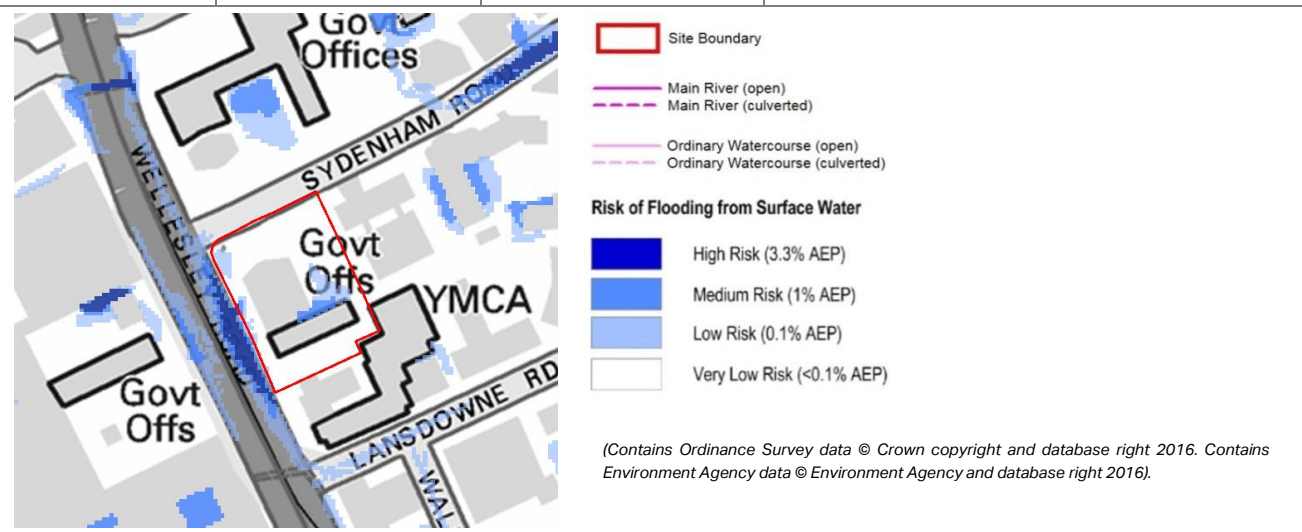
<b>Site ID</b>	236
<b>Site Address</b>	Apollo House, Wellesley Road
<b>Site Area</b>	0.58 ha
<b>Current Use</b>	Office building
<b>Allocated Use</b>	Offices and residential and/or hotel (with healthcare facility if required by the NHS)
<b>Vulnerability</b>	More Vulnerable

**2) SUMMARY OF LEVEL 1 FLOOD RISK**

**Flood risk from rivers**

The site is located approximately 900m north 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
<i>Risk of flooding to the potential development site and surrounding area</i>	Surface Water flooding: (uFMfSW)	<b>Medium Risk</b> 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)	<b>Medium Risk</b> Potential for groundwater flooding to occur below 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	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 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 236 : Apollo House, Wellesley Road		
<b>Development Layout and Sequential Approach</b>	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. Wellesley Road on the western site boundary is at high risk of surface water flooding, therefore access to the site should be made available out the back (east) of the building with a connection to Lansdowne Road. 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
<b>Flood Resistance</b>	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
<b>Flood Resilience</b>	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
<b>Flow Routing</b>	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
<b>Surface Water Management</b>	<p><b>Current risk of flooding</b> The site is within Drainage Catchment 39, which is located at the 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 to the western boundary of the site. The majority of the site is actually shown to be at a very low risk of surface water flooding. The highway corridors surrounding the site i.e. the A212 and Sydenham Road are shown to be at high risk of surface water flooding.</p>	
	<p><b>Indicative existing runoff rate:</b> 2.9 l/s (1 in 1 year), 11.0 l/s (1 in 100 year) <b>Indicative Greenfield Runoff Rate:</b> 5.0 l/s</p>	Level 2 Appendix B
	<p><b>SuDS Suitability</b> 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.</p> <p><b>Groundwater Source Protection Zones (SPZs)</b> 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. Techniques which should be considered include green roofs, filter strips, detention basins and ponds, as well as permeable surfacing in combination with tanked systems.</p>	Section 10.3 and 10.9
	<p><b>Drainage Strategy and Approvals</b> 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.</p>	Section 10.6
	<p><b>Indicative Unit Costs</b> Green roofs ~ £90/m<sup>2</sup>. Filter strips £2-4m<sup>2</sup>. Detention basin £15-50m<sup>3</sup>. Permeable paving ~ £30-50/m<sup>2</sup>. Concrete storage tank £449-518/m<sup>3</sup>.</p>	Section 10.4

**SITE 294 : Croydon College Annexe, Barclay Road**

**1) PROPOSED DEVELOPMENT**

<b>Site ID</b>	294
<b>Site Address</b>	Croydon College Annexe, Barclay Road
<b>Site Area</b>	0.14 ha
<b>Current Use</b>	The former art block of Croydon College
<b>Allocated Use</b>	Residential redevelopment with community uses and Creative and Cultural Industries Enterprise Centre.
<b>Vulnerability</b>	More Vulnerable

**2) SUMMARY OF LEVEL 1 FLOOD RISK**

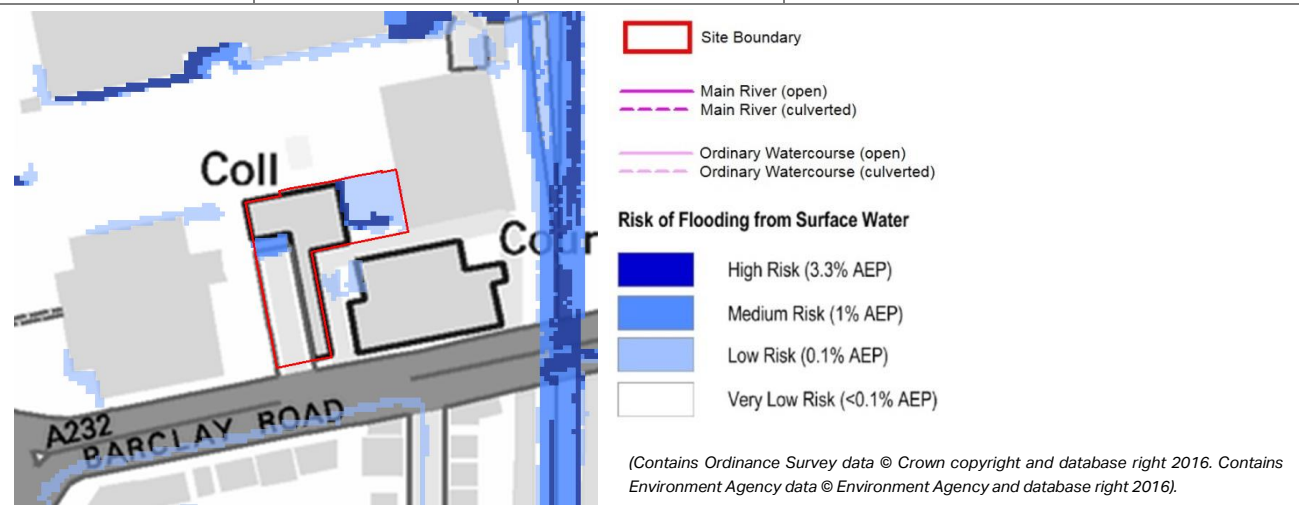
**Flood risk from rivers**

The site is located approximately 750m to the north east of an Ordinary Watercourse (below ground). The site is located in Flood Zone 1, low probability of flooding from rivers.

**Flood risk from all other sources**

**Limitations**

<i>Risk of flooding to the potential development site and surrounding area</i>	Surface Water flooding: (uFMfSW)	<b>High Risk</b> 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)	<b>Low Risk</b> 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.



**Historic records of flooding**

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

**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.

<b>SITE 294 : Croydon College Annexe, Barclay Road</b>		
<b>Development Layout and Sequential Approach</b>	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
<b>Flood Resistance</b>	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
<b>Flood Resilience</b>	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
<b>Flow Routing</b>	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
<b>Surface Water Management</b>	<p><b>Current risk of flooding</b></p> <p>The site is within Drainage Catchment 39, which is located at the west part of the borough. The potential development must not increase flood risk to other areas in the Drainage Catchment.</p> <p>The uFMfSW indicates that the site lies within an area of high risk of surface water flooding to the east of the site, there is well-defined surface water flow risk to the east of the site which is shown to be an area of high surface water flood risk.</p>	
	<p><b>Indicative existing runoff rate:</b> 1.7 l/s (1 in 1 year), 6.2 l/s (1 in 100 year)</p> <p><b>Indicative Greenfield Runoff Rate:</b> 5.0 l/s</p>	Level 2 Appendix B
	<p><b>SuDS Suitability</b></p> <p>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.</p> <p><b>Groundwater Source Protection Zones (SPZs)</b></p> <p>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.</p> <p>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.</p> <p>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.</p> <p>Techniques which should be considered include green roofs, filter strips, detention basins and ponds, as well as permeable surfacing in combination with tanked systems.</p>	Section 10.3 and 10.9
	<p><b>Drainage Strategy and Approvals</b></p> <p>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.</p> <p>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.</p> <p>Arrangements for the future maintenance of the drainage system must be made and detailed in the Drainage Strategy.</p> <p>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.</p>	Section 10.6
<p><b>Indicative Unit Costs</b></p> <p>Green roofs ~ £90/m<sup>2</sup>.</p> <p>Filter strips £2-4m<sup>2</sup>.</p> <p>Detention basin £15-50m<sup>3</sup>.</p> <p>Permeable paving ~ £30-50/m<sup>2</sup>.</p> <p>Concrete storage tank £449-518/m<sup>3</sup>.</p>	Section 10.4	

**SITE 314: Valley Park (B&Q and Units A-G Daniell Way), Hesterman Way**

**1) PROPOSED DEVELOPMENT**

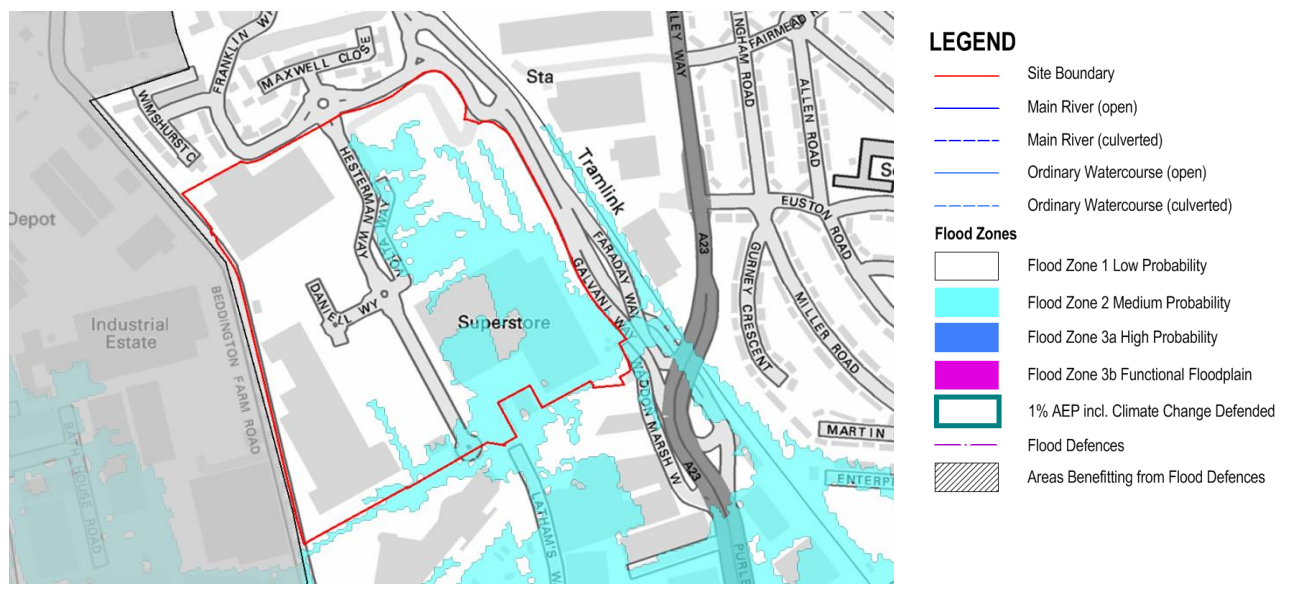
<b>Site ID</b>	314
<b>Site Address</b>	Valley Park (B&Q and Units A-G Daniell Way), Hesterman Way
<b>Site Area</b>	11.5 ha
<b>Current Use</b>	Out of town retail warehouses and surface car parking
<b>Allocated Use</b>	Redevelopment of this area to a mixture of residential, retail, healthcare facility (if required by the NHS), community and leisure to form the basis of a new residential community and local centre.
<b>Vulnerability</b>	More Vulnerable

**2) SUMMARY OF LEVEL 1 FLOOD RISK**

**Flood risk from rivers**

The site is located approximately 1km north of the River Wandle, which is designated as a Main River. The site is located in Flood Zone 2 associated with the River Wandle.

<i>Proportion of potential development site within Flood Zone</i>	Flood Zone 3b	Flood Zone 3a	Flood Zone 2	Flood Zone 1	Area Benefiting of Defences
	<b>0%</b>	<b>0%</b>	<b>28%</b>	<b>72%</b>	<b>0%</b>



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**Flood risk from all other sources**      **Limitations**

<i>Risk of flooding to the potential development site and surrounding area</i>	Surface Water flooding: (uFMfSW)	<b>High Risk</b> 1 in 30 year (3.33% 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)	<b>Medium Risk</b> 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**

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

## SITE 314: Valley Park (B&Q and Units A-G Daniell Way), Hesterman Way

### 3) RECOMMENDATIONS

In accordance with the NPPF, Less Vulnerable development is considered compatible within Flood Zone 2 and does not require the application of the Exception Test. However, given the risk of fluvial and surface water flooding to the area surrounding the 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.

<b>Development Layout and Sequential Approach</b>	<p>The majority of the site lies within Flood Zone 1 and part of the site lies within Flood Zone 2. Therefore, More Vulnerable development should be directed to Flood Zone 1. If it is essential to build on Flood Zone 2, then all residential uses should have a finished floor level above the 1 in 100 year plus climate change level.</p> <p>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.</p> <p>Measures to manage surface water on the site should be considered early in the site masterplan to enable inclusion of attenuation SuDS where possible.</p> <p>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. Further ground investigations would be required at this site to confirm the the likelihood of groundwater occurrence.</p>	Section 9.2
<b>Finished Floor Levels</b>	<p>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.</p> <p>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 3.3% AEP (1 in 30 year) surface water flood event.</p>	Section 9.3
<b>Flood Resistance</b>	<p>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.</p>	Section 9.4
<b>Safe Access/Egress</b>	<p>Access/Egress to the site is provided via Franklin Way to the north of the site.</p>	Section 9.7
<b>Flow Routing</b>	<p>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.</p>	Section 9.12
<b>Flood Warning and Evacuation Plan</b>	<p>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.</p> <p><b>Flood Warning Areas</b></p> <p>The local area is covered by the Environment Agency Flood Warning Areas for the '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.</p> <p><b>Emergency Rest Centres</b></p> <p>The closest designated emergency rest centre for this site is The Salvation Army on Booth Road to the south east of the development site.</p>	Section 9.14
<b>Surface Water Management</b>	<p><b>Current risk of flooding</b></p> <p>The site is within Drainage Catchment 39, which is located at the west part of the borough. The potential development must not increase flood risk to other areas in the Drainage Catchment.</p> <p>The uFMfSW indicates that there are areas of high risk of surface water flooding across the site from its centre along its eastern part. There is one historic record of surface water flooding held by Croydon Council in this location.</p>	

### SITE 314: Valley Park (B&Q and Units A-G Daniell Way), Hesterman Way

	<p><b>Indicative existing runoff rate:</b> 71.3 l/s (1 in 1 year), 267.4 l/s (1 in 100 year)  <b>Indicative Greenfield Runoff Rate:</b> 28.4 l/s</p>	Section 10
	<p><b>SuDS Suitability</b>  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 unsuitable for the site. Site investigations will be required prior to the development of a Drainage Strategy for the site.  Other water attenuation techniques which should be considered include green roofs, as well as detention basins and ponds as well as permeable surfacing in combination with tanked systems</p>	Section 10.3 and 10.9
	<p><b>Drainage Strategy and Approvals</b>  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.</p>	Section 10.6
	<p><b>Indicative Unit Costs</b>  Green roofs ~ £90/m<sup>2</sup>.  Permeable paving ~ £30-50/m<sup>2</sup>.  Filter strips £2-4m<sup>2</sup>.  Detention basin £15-50m<sup>3</sup>.  Concrete storage tank £449-518/m<sup>3</sup>.</p>	Section 10.4

**SITE 320 : S G Smith, 409-411 Beulah Hill**

**1) PROPOSED DEVELOPMENT**

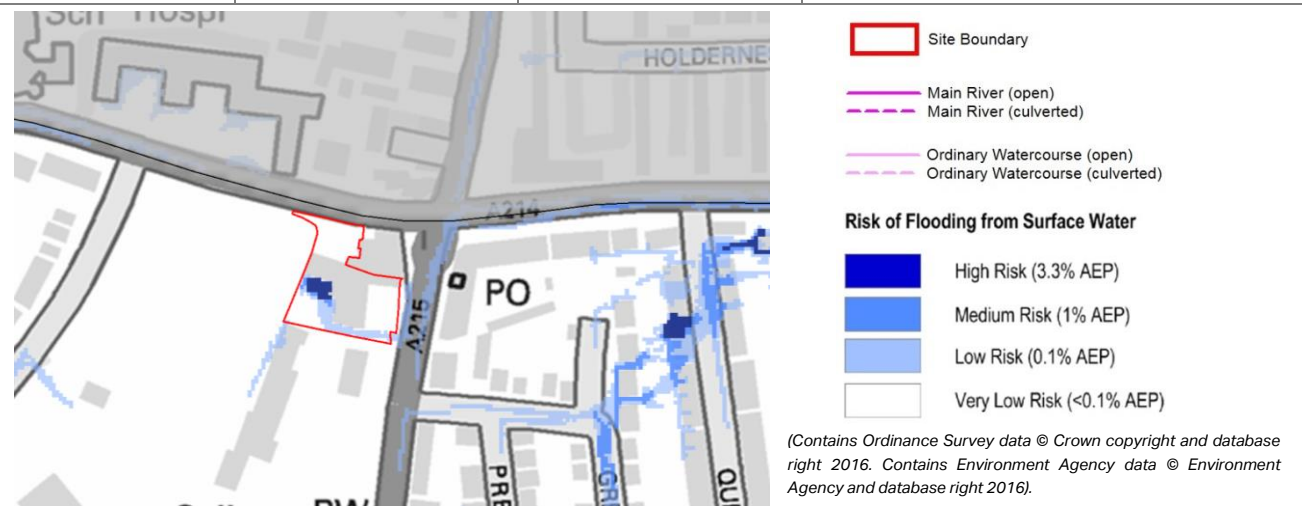
<b>Site ID</b>	320
<b>Site Address</b>	S G Smith, 409-411 Beulah Hill
<b>Site Area</b>	0.36 ha
<b>Current Use</b>	Former Car showroom
<b>Allocated Use</b>	Retail supermarket on ground floor with residential above.
<b>Vulnerability</b>	More Vulnerable

**2) SUMMARY OF LEVEL 1 FLOOD RISK**

**Flood risk from rivers**

The site is located approximately 1.35km north 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	
<i>Risk of flooding to the potential development site and surrounding area</i>	Surface Water flooding: (uFMfSW)	<b>High Risk</b> 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)	<b>Low Risk</b> 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.



**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	1 (TW External)

**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.

<b>SITE 320 : S G Smith, 409-411 Beulah Hill</b>		
<b>Development Layout and Sequential Approach</b>	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
<b>Finished Floor Levels</b>	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. 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.	
<b>Flood Resistance</b>	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
<b>Flood Resilience</b>	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
<b>Flow Routing</b>	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
<b>Surface Water Management</b>	<p><b>Current risk of flooding</b></p> <p>The site is within Drainage Catchment 20, which is located to the north part of the borough. The potential development must not increase flood risk to other areas in the Drainage Catchment.</p> <p>The uFMfSW indicates that the site lies within an area of high risk of surface water flooding to the western boundary of the site. The majority of the site is shown to be at a very low risk of surface water flooding. The majority of the area surrounding the site is also shown to be at a very low risk of surface water flooding. To the east of the site, the A215 is shown to have areas of low surface water flood risk. There is one historic record of surface water flooding held by Croydon Council in this location.</p>	
	<p><b>Indicative existing runoff rate:</b> 1.4 l/s (1 in 1 year), 5.1 l/s (1 in 100 year)</p> <p><b>Indicative Greenfield Runoff Rate:</b> 5.0 l/s</p>	Level 2 Appendix B
	<p><b>SuDS Suitability</b></p> <p>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 unsuitable. Site investigations will be required prior to the development of a Drainage Strategy for the site.</p> <p>Attenuation techniques which should be considered include green roofs, and detention basins and ponds, as well as permeable surfacing in combination with tanked systems.</p>	Section 10.3 and 10.9
	<p><b>Drainage Strategy and Approvals</b></p> <p>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.</p> <p>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.</p> <p>Arrangements for the future maintenance of the drainage system must be made and detailed in the Drainage Strategy.</p> <p>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.</p>	Section 10.6
	<p><b>Indicative Unit Costs</b></p> <p>Green roofs ~ £90/m<sup>2</sup>.</p> <p>Filter strips £2-4m<sup>2</sup>.</p> <p>Detention basin £15-50m<sup>3</sup>.</p> <p>Permeable paving ~ £30-50/m<sup>2</sup>.</p> <p>Concrete storage tank £449-518/m<sup>3</sup>.</p>	Section 10.4



**SITE 324: Purley Oaks Depot Site**

**1) PROPOSED DEVELOPMENT**

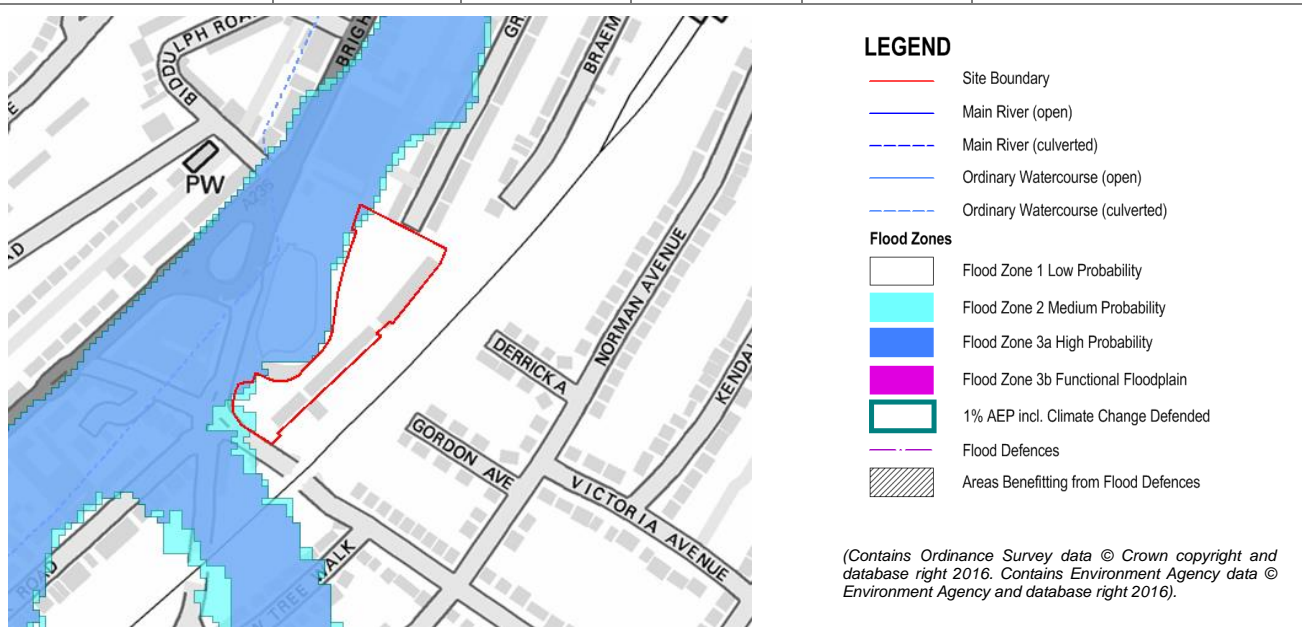
<b>Site ID</b>	324
<b>Site Address</b>	Purley Oaks Depot Site
<b>Site Area</b>	0.967 ha
<b>Current Use</b>	Unknown
<b>Allocated Use</b>	Gypsy and traveller site
<b>Vulnerability</b>	Highly Vulnerable

**2) SUMMARY OF LEVEL 1 FLOOD RISK**

**Flood risk from rivers**

The site is located approximately 60m east of a culverted ordinary watercourse (River Wandle). The majority of the site is located within Flood Zone 1, while small parts of the site to the west are within Flood Zones 2 and 3a. The site is not included in the Hazard Modelling of the River Wandle.

<i>Proportion of potential development site within Flood Zone</i>	Flood Zone 3b	Flood Zone 3a	Flood Zone 2	Flood Zone 1	Area Benefiting of Defences
	<b>0%</b>	<b>2%</b>	<b>5%</b>	<b>93%</b>	<b>0%</b>



**Flood risk from all other sources** **Limitations**

<i>Risk of flooding to the potential development site and surrounding area</i>	Surface Water flooding: (uFMfSW)	<b>Medium Risk</b> 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)	<b>Medium Risk</b> Potential for groundwater flooding to occur at surface, but no historic records of groundwater flooding	

**Historic records of flooding**

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

## SITE 324: Purley Oaks Depot Site

### 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

<b>Development Layout and Sequential Approach</b>	<p>The majority of the site is lies within Flood Zone 1 and small part of the site to the west are located within Flood Zones 2 and 3a. The proposed development is classified as 'highly Vulnerable'. This highly vulnerable velopment should be preferably located in Flood Zone 1, covering the largest part of the site. Development in the Flood Zone 2 areas of the site should be avoided. Highly Vulnerable development should not be permitted within Flood Zone 3a, according to NPPF guidance.</p> <p>An assessment of surface water flow paths should be made prior to site design, to encourage the location of buildings and vulnerable aspects of the development away from those areas at risk of surface water ponding.</p> <p>Measures to manage surface water on the site should be considered early in the site masterplan to enable inclusion of attenuation SuDS where possible.</p> <p>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.</p>	Section 9.2
<b>Finished Floor Levels</b>	<p>Although the proposed development is for a gypsy and traveller site, consideration for raising any permanent or sleeping accommodation areas above ground level should be made to reduce the risk of surface water flooding.</p>	Section 9.3
<b>Flood Resistance</b>	<p>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 where this is possible given the proposed development, and the use of landscaping to manage surface water and fluvial floodwater.</p>	Section 9.4
<b>Safe Access/Egress</b>	<p>Access/Egress to the site is provided via Norman Avenue to the east of the proposed site.</p>	Section 9.7
<b>Flow Routing</b>	<p>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.</p>	Section 9.12
<b>Flood Warning and Evacuation Plan</b>	<p>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 vulnerable residents. Where possible, the FWEP should also detail the length of time before the site becomes inaccessible by emergency vehicles.</p> <p><b>Flood Warning Areas</b></p> <p>The local area is not covered by the Environment Agency Flood System.</p> <p><b>Emergency Rest Centres</b></p> <p>The closest designated emergency rest centre for this site is United Reformed Church on Sanderstead Hill, approximately 1.3km east of the development site.</p>	Section 9.14
<b>Surface Water Management</b>	<p><b>Current risk of flooding</b></p> <p>The site is within Drainage Catchment 39, which is located at the west part of the borough. The potential development must not increase flood risk to other areas in the Drainage Catchment. The site is also located within the Critical Drainage Area (CFA_041)</p> <p>The uFMfSW indicates that the site lies within an area of medium risk of surface water flooding, and there are pathways of high risk of surface water flooding almost 50m west of the site.</p> <p><b>Indicative existing runoff rate:</b> 5.3 l/s (1 in 1 year), 19.8 l/s (1 in 100 year)</p> <p><b>Indicative Greenfield Runoff Rate:</b> 5.0 l/s</p>	Section 10

**SITE 324: Purley Oaks Depot Site**

	<p><b>SuDS Suitability</b></p> <p>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. Site investigations will be required prior to the development of a Drainage Strategy for the site.</p> <p><b>Groundwater Source Protection Zones (SPZs)</b></p> <p>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.</p> <p>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.</p> <p>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 infiltration SUDS such as soakaways, green roofs, filter strips, detention basins and ponds, as well as permeable surfacing. Infiltration tests should be carried out on site to confirm SUDS suitability.</p>	Section 10.3 and 10.9
	<p><b>Drainage Strategy and Approvals</b></p> <p>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.</p> <p>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.</p> <p>Arrangements for the future maintenance of the drainage system must be made and detailed in the Drainage Strategy.</p> <p>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.</p>	Section 10.6
	<p><b>Indicative Unit Costs</b></p> <p>Green roofs ~ £90/m<sup>2</sup>.</p> <p>Permeable paving ~ £30-50/m<sup>2</sup>.</p> <p>Filter strips £2-4/m<sup>2</sup>.</p> <p>Detention basin £15-50/m<sup>3</sup>.</p> <p>Concrete storage tank £449-518/m<sup>3</sup>.</p>	Section 10.4

**5) Exception Test Considerations**

In accordance with the NPPF, Highly Vulnerable development would need to pass the Exception Test. The Exception Test should therefore 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"*.

For this development site, the proposed development type is Highly Vulnerable and should be located in areas of low hazard and flood risk within Flood Zone 1, which covers the majority of the site. SuDS should be incorporated into the site layout in order to reduce the risk of increasing flood risk elsewhere. As the majority of the site is Flood Zone 1 and all of the development should be able to be accommodated within this area, it is therefore considered likely that this site would pass the Exception Test.