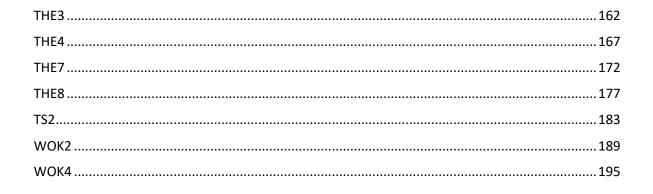




ALD5	3
BEEN1	7
BH1	12
BUR3	17
BUR14	22
CA10	
CA15	34
COM2	
СОМЗ	42
CS3	46
E12	53
ENG1	57
GS1	61
HSA6	65
HSA19	70
HSA23	76
HUN6	81
HUN10	
LAM1	92
LAM5	96
MID5	
NEW1	
NEW3	
PAD1	116
PAD3	
PAD4	
PAN5	
SCD4	
THA5	140
THA9	144
THA15	149
THE1	153
THE2	158

JBA consulting





JBA consulting

Sources of



Site code		ALD5					
Site name		Basingstoke Road/Fallows Road, Aldermaston Wharf					
Site details	OS Grid reference	SU 60091 667	71				
	Area	2.9 Ha					
	Current land use	Greenfield - Ag	gricultural				
	Proposed site use	Residential					
	NPPF Flood risk vulnerability	More vulnerab	le				
	Existing watercourses/bio diversity	There are no watercourses within the site boundary. The River Kennet (Main River) is located 140m south of the site, and a large lake is located 65m north west of the site.					
	Flood history	<ul> <li>The site is within the EA Recorded Flood Outline. The site has been by fluvial flooding on two previous incidents: June 1971 and Janua This was as a result of channel exceedance along the River Kenner south of the site.</li> <li>The Thames Water DG5 record shows that there have been six serioridents within the postcode area (RG7 4), of which two have result internal flooding of property.</li> </ul>					
				of site at risk	in Flood Zones		
		Proportion of the site at risk (%)	Flood Zone 3b 5% AEP	Flood Zone 3a 1% AEP	Flood Zone 2 0.1% AEP	Flood Zone 1	

	at risk (%)	5% AEP	1% AEP			
		0%	55%	3%	42%	
	Range of depths (m)	0.01m – 0.27m	0.01m – 0.57m	0.01m – 0.59m	N/A	
Fluvial	Available modelled data: The site is covered by the 2007 River Kennet (Newbury to Tyle Mill) 1D model. Depth grid outputs were provided for use in the SFRA.					

flood risk		Depth grid outputs were provided for use in the SFRA.				
nood nak		Flood characteristics:				
	ng. The site is within Flood EP event. A slightly larger mainder of the site is within ligible.					
		Pro	FSW)			
		1 in 30 (3.33% AEP)	1 in 100 (1% AEP)	1 in 1000 (0.1% AEP)		
	Surface Water	0%	0%	1%		
		<b>Description of surface water flow paths:</b> The site is at a low risk of surface water flooding.				
		Proportion of the site at risk in JBA Groundwater Map 1% AEP risk categories				
		Depth below surface 0-0.025m	Depth below surface 0.025-0.5m	Total in highest risk categories		
	Groundwater	0%	% 0%	0%		
		The site is predicted to be This Jacobs Groundwater risk of groundwater emerg	water flooding. not show the site to be at			



Site code	ALD5
Site name	Basingstoke Road/Fallows Road, Aldermaston Wharf

	Reservoir	The site is not at risk of flooding, in the rare event of a reservoir breach.				
	Canal	There are no canals within the vicinity of the site.				
	Defences	Defence Type	Standard of Protection	Condition		
		There are no defences present	t within the site			
Flood risk management infrastructure		Culvert / structure blockage?	N/A			
infrastructure	Residual risk	Impounded water body failure?	N/A			
		Defence breach /		Breach Zone		
		overtopping?	N/A			
	Flood warning	The site is within the following EA Flood Alert Area: River Kennet from Thatcham down to Reading.				
Emergency planning	Access and egress	The site is likley to be accessed via the A340 Basingstoke Road, with access at the northern border of the site. This route is at risk of fluvial f during the 0.1% AEP event (Flood Zone 2). The risk of surface water floot the road is low.				
	Climate change allowances for	River Basin District / Management Catchment	Central	Higher Central	Upper End	
	'2080s' (2016 allowances)	Thames (assessed within Level 2 SFRA)	25%	35%	70%	
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Kennet and tributaries (to be used for site-specific FRAs)	21%	35%	76%	
	Implications for the site	Modelling shows that climate change leads to a small increase in flood extent at the site. However, the extent of Flood Zone 3a + 70% CC does not extend beyond that of Flood Zone 2, and therefore climate change is unilkely to significantly impact the proposed site. The latest available climate change allowances must be used in site-specific Flood Risk Assssments.				



Site code		ALD5		
Site name		Basingstoke Road/Fallows Road, Aldermaston Wharf		
Bedrock Geology		London Clay Formation - Clay, Silt And Sand.		
Superficial Geology		Alluvium - Clay, Silt, Sand And Gravel.		

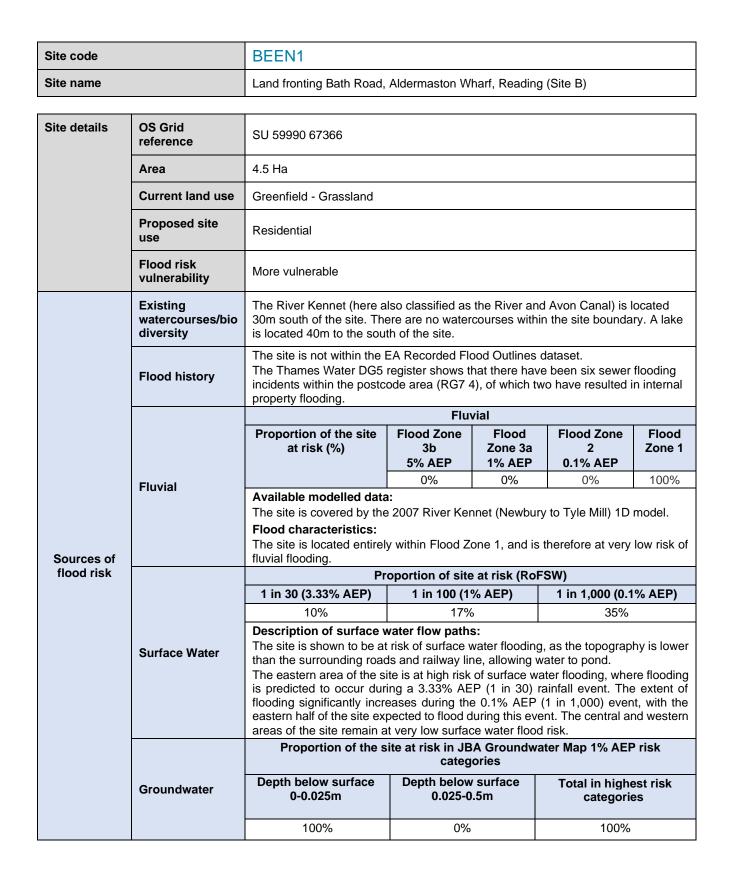
Geology	Alluvium - Clay, Silt, Sand And Gravel.					
Soils	Freely draining slightly acid loa	Freely draining slightly acid loamy soils				
SuDS Requirement for drainage control and impact mitigation	<ul> <li>meet the Defra Nation follow current best de</li> <li>Opportunities should deliver SuDS with mu and water resource e greenspace.</li> <li>'Natural', vegetated S will be preferred by W engineered' and belo</li> <li>All development shou. Conveyance features natural flow paths wh</li> <li>Storage for runoff from located out of fluvial f</li> <li>The impermeable been not be a suitable optic superficial deposits m depth but over a wide will be required to tes</li> <li>Additionally, the site i Zone 2. As such infilt there are suitable level</li> </ul>	<ul> <li>meet the Defra National Non-Statutory Technical Standards, and follow current best design practice (CIRIA Manual 2015).</li> <li>Opportunities should be taken on a greenfield site such as this to deliver SuDS with multiple benefits, such as biodiversity, recreation and water resource education, through integration with areas of greenspace.</li> <li>'Natural', vegetated SuDS (such as green roofs, swales and ponds) will be preferred by West Berkshire Council as LLFA over 'hard engineered' and below-ground drainage.</li> <li>All development should adopt source control SuDS techniques. Conveyance features should be designed above ground and following natural flow paths where possible.</li> <li>Storage for runoff from the development in extreme events should be located out of fluvial flood risk areas.</li> <li>The impermeable bedrock geology suggests that deep infiltration may not be a suitable option. However, the underlying permeable soil and superficial deposits may provide opportunity to infiltrate to a shallow depth but over a wider area. Site investigation and infiltration testing will be required to test suitability.</li> </ul>				
Groundwater Source Protection Zone	The site is within Groundwater	Source Protecti	on Zone 2.			
Historic Landfill Site	There are no historic landfill sit	tes within the site	e boundary.			
Opportunities for flood risk betterment	volumes, contributing to the re	Opportunities for using source control SuDS to manage runoff rates and volumes, contributing to the reduction of flood peaks downstream on the River Kennnet and existing surface water flow paths leaving the site.				
	Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications			
Cumulative impacts of development	Kennet and Holy Brook	High	The FRA should examine the cumulative impacts of potential peak runoff rates and volumes from the site (and other developments in the WFD catchment) on flood risk in the receiving watercourses.			
Sequential Test	and Exception Test requirement	S				





Site code	ALD5
Site name	Basingstoke Road/Fallows Road, Aldermaston Wharf
Recommend- ations for Local Plan policy	<ul> <li>he Sequential Test must be satisfied. If the Sequential Test has been passed, then Table 3 of the IPPG gives details of appropriate flood risk vulnerability for each Flood Zone. For this site, if More fulnerable (residential) development is proposed within Flood Zone 2, the Exception Test must be satisfied.</li> <li>large proprint of the site is a thigh fluvial flood risk (&gt;50% in Flood Zone 3), but flood depths are alatively shallow, therefore it could be possible to pass the Exception Test by making future evelopment safe through design.</li> <li>lowever, the site is currently considered unviable for large scale residential development.</li> <li>tecommendations for requirements of site-specific Flood Risk Assessment, including uidance for developers</li> <li>Flood risk assessment:</li> <li>At the planning application stage, a site-specific flood risk assessment and surface water drainage strategy will be required.</li> <li>Consultation with the Local Authority and the Environment Agency should be undertaken at an early stage.</li> <li>A site-specific flood risk assessment will be required because the site is within Flood Zone 2 and 3 and at risk from sources of flooding other than rivers and the sea. Government guidance on flood risk assessment-tor-planning-applications).</li> <li>Detailed modelling will be required to confirm Flood Zone and climate change extents (see 'Available modelled data'). The Environment Agency and LLFA should be consulted to obtain the latest hydraulic modelling information for the site at the time of the flood risk assessment. They will advise as to whether existing detailed models are available, and if so, whether they need to be updated.</li> <li>Climate change should be assessed using recommended climate change allowances at the time of the assessment identified as highly sensitive to the cumulative impacts of development and a site-specific flood risk. Assessment.</li> <li>The site is located within a catchment identified as highly sensitive to the cumulative impacts of</li></ul>

#### Level 2 SFRA Detailed Site Summary Tables



JBA



Site code		BEEN1					
Site name		Land fronting Bath Road, Aldermaston Wharf, Reading (Site B)					
		The site is at high groundwater flood risk, with groundwater levels expected to lie within 0.025m of the ground surface during a 1% AEP (1 in 100) event. The Jacobs Groundwater Flood Risk modelling does not show the site to be at risk of groundwater emergence.					
	Reservoir	The site is not at risk	of flooding, in the rare	event of a re	eservoir brea	ach.	
	Canal	The Kennet and Avon site, although the rail canal. The residual overtopping on the ca Flood Risk Assessme	way line forms a top risk of flooding to the nal should be assess	ographic bar ne site, in th	rier betwee ne event of	n the site and a breach or	
	Defences	Defence Type	Standard of F	Protection	0	Condition	
		There are no flood de	fences present.				
Flood risk management infrastructure		Culvert / structure blockage?	N/A				
	Residual risk	Impounded water body failure?	N/A				
		Defence breach / overtopping?	Breach Zone				
	Flood warning	The site is not within a	an EA Flood Alert or F	lood Warning	g Area.		
Emergency planning	Access and egress	The site is likely to be accessed via A4 Bath Road along the northern boundary of the site, or Station Road, which lies to the east. Bath Road is at very low fluvial flood risk, and is located within Flood Zone 1. The majority of Station Road is at very low risk of fluvial flooding, with a small area of flooding predicted to occur at the junction with A340 Basingstoke Road during a 0.1% AEP (1 in 1,000) event. Surface water flooding is predicted to affect westbound access on Bath Road during the 3.3% AEP (1 in 30) rainfall event, and inreases during the 1% (1 in 100) and 0.1% AEP events. However eastbound access is at low surface water flood risk. Adjacent to the site, Station Road is at very low risk of surface water flooding.					
	Climate change allowances for	River Basin Distri Catch		Central	Higher Central	Upper End	
	'2080s' (2016 allowances)	Thames (assessed wi	d within Level 2 SFRA) 25% 35%		35%	70%	
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Kennet and tributaries (to be used for site-specific FRAs)		21%	35%	76%	
	Implications for the site	The site remains in Flood Zone 1 when considering the impact of clir The latest available climate change allowances must be used in site Flood Risk Assssments.				-	



Site code	BEEN1
Site name	Land fronting Bath Road, Aldermaston Wharf, Reading (Site B)

	Bedrock Geology	London Clay Formatic	on - Clay, Silt and Sand			
	Superficial Geology	Beenham Grange Gravel Member - Sand and Gravel.				
	Soils	Freely draining slightly acid loamy soils.				
Requirement for drainage control and impact mitigation	SuDS	<ul> <li>the Defra Na current best</li> <li>All developm Conveyance natural flow p</li> <li>'Natural', veg be preferred and below-gi</li> <li>SuDS feature conveyance pathways.</li> <li>The impermes suggests tha However, the suggests tha infiltration test further site in drainage by i monitoring of</li> <li>The site is lo such infiltrati levels of trea environmenta</li> <li>Where below</li> </ul>	located within Groundwater Source Protection Zone 2. As ation techniques should only be used where there are suitab eatment and following the granting of any required ntal permits from the Environment Agency. by ground storage is proposed, the base of the feature must at least 1m above the highest groundwater level, to reduce			
	Groundwater Source Protection Zone	The site is within Grou	undwater Source Protect	ction Zone 2.		
	Historic Landfill Site	There are no historic I	andfill sites within the s	ite boundary.		
	Opportunities for flood risk betterment	for Opportunities for using source control SuDS to manage runoff rates and v contributing to the reduction of flood peaks downstream on the River Kennexisting surface water flow paths leaving the site.				
		Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications		
	Cumulative impacts of development	Kennet and Holy Brook	High	The FRA should examine the cumulative impacts of potential peak runoff rates and volumes from the site (and other developments in the WFD catchment) on flood risk in the receiving watercourses.		



Site code	BEEN1
Site name	Land fronting Bath Road, Aldermaston Wharf, Reading (Site B)

	Sequential Test and Exception Test requirements
	The site is within Flood Zone 1 but at risk from other sources of flooding. The Sequential Test must be passed. The Exception Test is not required under the NPPF, but it must be shown that the development will be safe for its lifetime and the risk can be managed through a sequential approach to design.
	Recommendations for requirements of site-specific Flood Risk Assessment, including guidance for developers
	Flood risk assessment:
	<ul> <li>At the planning application stage, a site-specific flood risk assessment and surface water drainage strategy will be required.</li> </ul>
Recommend-	<ul> <li>Consultation with the Local Authority and the Environment Agency should be undertaken at an early stage.</li> </ul>
ations for Local Plan policy	<ul> <li>A site-specific flood risk assessment will be required because the site is over 1ha in area within Flood Zone 1 and at risk from sources of flooding other than rivers and the sea. Government guidance on flood risk assessments must be followed (https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications).</li> <li>Other sources of flooding should also be considered as part of a site-specific flood risk</li> </ul>
	assessment, including surface water and groundwater.
	<ul> <li>Climate change should be assessed using recommended climate change allowances at the time of the assessment (<u>https://www.gov.uk/guidance/flood-risk-assessments-climate- change-allowances</u>) for the type of development and level of risk. The current allowances were published in February 2016 but may be subject to change in the future.</li> </ul>
	• The site is located within a catchment identified as highly sensitive to the cumulative impacts of development on flood risk. The site-specific FRA and surface water drainage strategy should consider the recommendations outlined for high sensitivity catchments in the West Berkshire Level 1 SFRA Cumulative Impacts Assessment Addendum.



Site code	BEEN1
Site name	Land fronting Bath Road, Aldermaston Wharf, Reading (Site B)
<ul> <li>Develo</li> <li>Safe a and ra</li> <li>Mitigat finishe</li> <li>Due to</li> <li>The d Infiltrat to be s used b</li> <li>the sto</li> <li>The le should recome (currer urban)</li> <li>Storag risk are</li> <li>The de are mat</li> <li>SuDS Docum and fol flows r</li> </ul>	<b>design and making development safe:</b> opment must seek opportunities to reduce overall level of flood risk at the site. iccess and egress should be demonstrated in the 1 in 100 plus climate change event ising of access routes must not impact on floodplain storage capacity. tion for seasonal high groundwater levels must be considered (for example by raising d floor levels to an appropriate height above ground level). the high groundwater flood risk, basements are not permitted. lesign of SuDS schemes must consider the seasonally high groundwater table. tion techniques may be ineffective and may pose a pollution risk. SuDS may need shallow and take up larger areas. Above ground conveyance and attenuation can be but care must be taken that groundwater does not enter the SuDS feature and reduce orage capacity and structural integrity of the design. wel of detail and method of assessment of surface water runoff rates and volumes I be appropriate to the scale and risk of the development and should include mended allowance for climate change and urban creep at the time of the assessment nttly +40% allowance for climate change and urban creep at the time of the assessment anaged via exceedance routes that minimise the risks to people and property. design must ensure that flows resulting from rainfall in excess of a 1 in 100-year event anaged via exceedance routes that minimise the risks to people and property. design must follow West Berkshire Council SuDS Supplementary Planning nent (SPD) standards, meet the Defra National Non-Statutory Technical Standards, llow current best design practice (CIRIA Manual 2015).The design must ensure that resulting from rainfall in excess of a 1 in 100-year event are managed via exceedance that minimise the risks to people and property.





Site code	BH1
Site name	Clappers Farm, Cross Lane, Beech Hill, Grazeley

Site details	OS Grid reference	SU 69253 65831					
	Area	75.1 Ha					
	Current land use						
	Proposed site use	Residential					
	NPPF Flood risk vulnerability	More vulnerable					
	Existing watercourses/bio diversity	The site is formed of two land parcels separated by Bloomfield Hatch Lane. Foudry Brook (Main River) forms the southern boundary of the eastern land parcel, and flows in a north-easterly direction through the south of the site. An unnamed ordinary watercourse flows north westwards along the northern boundary of the western land parcel. Within the site is an area of purple moor-grass and rush pastures, a protected habitat listed in S41 od the Natural Environment and Rural Communities Act, 2006. The habitat is dependant on wet or waterlogged soils and is sensitive to changes in the water table or flooding.					
	Flood history	The site is within the EA Recorded Flood Outline. Fluvial flooding has occurred within the site on two separate occasions: September 1992 and October 1993. These occurred as a result of channel exceedance along the Foudry Brook. The Thames Water DG5 register shows that there have been two external sewer flooding incidents to properties within the postcode area (RG7 2).					
		Pro	portion of site at	risk in Floo	od Zones		
		Proportion of the	Flood Zone 3b	Flood Zone 3a	Flood Zone 2	Flood Zone	
		site at risk (%)	5% AEP	1% AEP	0.1% AEP	1	
Sources of			14%	0%	1%	85%	
flood risk	Fluvial	Available modelled data:					
		The site is covered by the 2004 Foudry Brook 1D model.					
		<b>Flood characteristics:</b> The fluvial flood risk is located in the south of the eastern land parcel and closely follows the course of the Foudry Brook. A small increase in flood extent is shown between Flood Zone 3b (5% AEP) and Flood Zone 2 (0.1% AEP). The remainder of the site is within Flood Zone 1, where fluvial flood risk is negligible.					
			Proportion of site			JIDIE.	
		1 in 30 (3.33% AEP	-	(1% AEP)	-	0 (0.1% AEP)	
		5%		%		19%	
	Surface Water	<b>Description of surface water flow paths:</b> Surface water flood risk to the site follows the route of the Foudry Brook, and consequently overlaps with the Flood Zones. A flow path is shown to develop here during the 0.1% AEP (1 in 1,000) rainfall event, with areas of ponding occurring during the 3.33% (1 in 30) and 1% AEP (1 in 100) events. An area of ponding forms in the north west corner of the western land parcel, adjacent to the railway line, during the 3.3% AEP and greater rainfall events. During the 0.1% AEP event, multiple flow paths form in the north and east of the eastern land parcel, and flow either southwards towards the Foudry Brook, or eastwards into an unnamed ordinary watercourse.					





Site code		BH1					
Site name		Clappers Farm, Cross Lane, Beech Hill, Grazeley					
		Proportion of the site at risk in JBA Groundwater Map 1% AEP risk categories					
		Depth below s 0-0.025n		Depth below surface 0.025-0.5m	Total in highest risk categories		
		14%		5%	19%		
	Groundwater	Groundwater flood risk varies across the site. The highest risk is in the south of the site, adjacent to the Foudry Brook, where groundwater levels are expected to lie within 0.025m of the ground surface during a 1% AEP (1 in 100) event. In the eastern land parcel (north of Bloomfieldhatch Lane) the risk is also high, with groundwater levels expected to lie between $0.025 - 0.5m$ of the ground surface. In the west of the site, there is a large area (26%) of lower risk, where groundwater levels are expected to be $0.5 - 5m$ below the ground surface. The remainder of the site is at negligible flood risk. This Jacobs Groundwater Flood Risk modelling does not show the site to be at risk of groundwater emergence.					
	Reservoir	The site is not at	t risk of flo	ooding, in the rare event of a	a reservoir breach.		
	Canal		nals witin	the vicinity of the site.			
	Defences	Defence Type There are no def	fences pre	Standard of Protection esent on the site.	Condition		
Flood risk management infrastructure	Residual risk	Culvert / structure blockage?	structure Road, at the east of the site. A blockage to this structure ma				
		Impounded water body failure?	N/A				
		Breach Zone					
		Defence breach / overtopping?	N/A				
	Flood warning	<ul> <li>The site is within the following EA Flood Alert and Flood Warning Area</li> <li>Flood Alert Area: River Enborne and Foudry Brook</li> <li>Flood Warning Area: Foudry Brook from Stratfield Mortimer to Green Flood Warning Area</li> </ul>					
Emergency planning	Access and egress	<ul> <li>The following roads could be used to access to the site:</li> <li>Cross Lane, south of the site.</li> <li>Grazeley Road, east of the site.</li> <li>Bloomfieldhatch Lane, through the west of the site.</li> <li>Cross Lane and Grazeley Lane are affected by fluvial floding during the event (Flood Zone 3). Bloomfieldhatch Lane is within Flood Zone 1, when flood risk is low. Cross Lane and Grazeley Lane are also shown to be a surface water flooding. However this largely coincides with fluvial flood r the Foudry Brook. Bloomfieldhatch Lane is at low risk of surface water flooding.</li> </ul>					

Climate change

allowances for '2080s' (2016

Climate change allowances for

Implications for

'2080s' (2021

allowances)

the site

Bedrock

Geology

Superficial

Geology

Soils

Suds

allowances)

Site code

Site name

Climate

Change

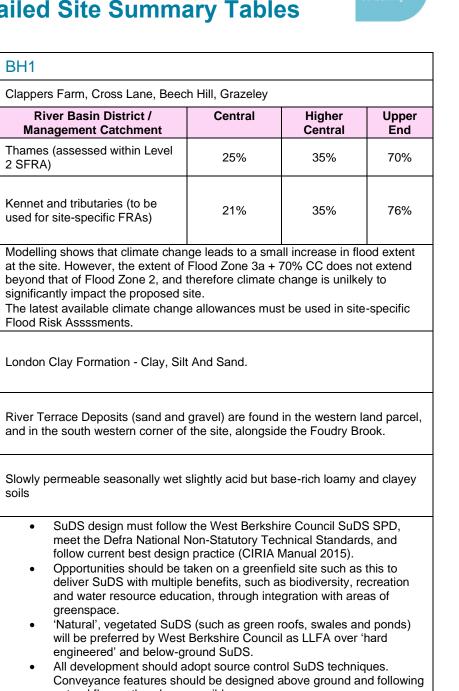
Requirement for drainage

control and

impact

mitigation

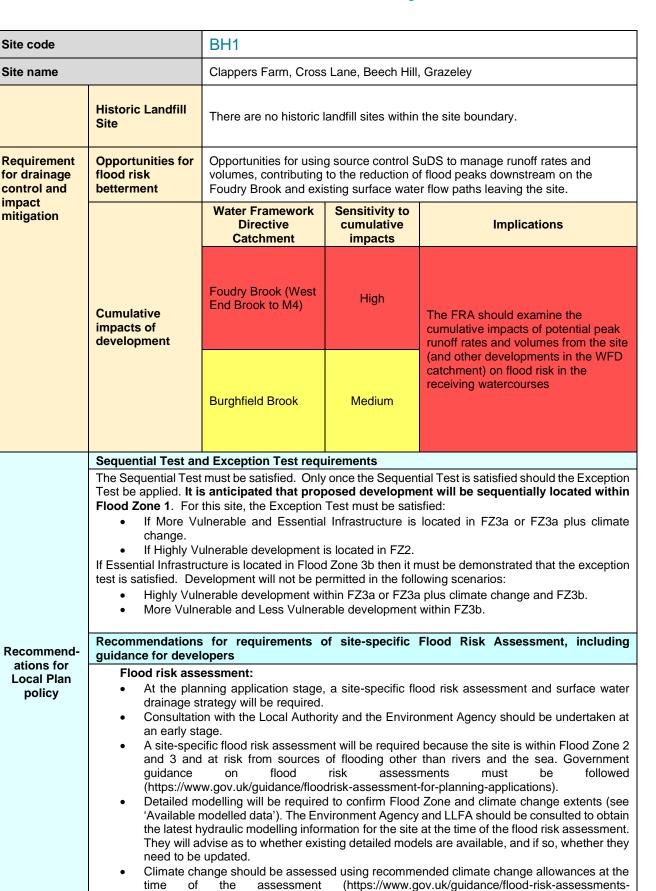




	<ul> <li>Conveyance features should be designed above ground and following natural flow paths where possible.</li> <li>Storage for runoff from the development in extreme events should be located out of fluvial flood risk areas.</li> <li>The impermeable bedrock geology and groundwater flood risk suggests that deep infiltration may not be a suitable option. However, the underlying permeable soil and superficial deposits may provide opportunity to infiltrate to a shallow depth but over a wider area. Site investigations and infiltration testing would be required to test suitability.</li> </ul>	
Groundwater Source Protection Zone	The site is not within a designated Groundwater Source Protection Zone.	

JBA

### Level 2 SFRA Detailed Site Summary Tables



JBA



Site code BH1				
Site name		Clappers Farm, Cross Lane, Beech Hill, Grazeley		
	<ul> <li>climatechange-allowances) for the type of development and level of risk. The allowances were published in February 2016 but may be subject to change in the f</li> <li>Other sources of flooding should also be considered as part of a site-specific l assessment, including surface water and groundwater.</li> <li>Blockage modelling should be conducted to assess the residual risk associated with blockage of the bridge structures over the Foudry Brook along Cross Lane and Road.</li> <li>The site is located within a catchment identified as highly sensitive to the cumulative of development on flood risk. The site-specific FRA and surface water drainage should consider the recommendations outlined for catchments of high sensitivity in Berkshire Level 1 SFRA Cumulative Impacts Assessment Addendum.</li> <li><b>Guidance for site design and making development safe:</b></li> <li>Development must seek opportunities to reduce overall level of flood risk both on ar for example by reducing volume and rate of runoff and creating space for flooding.</li> <li>Safe access and egress should be demonstrated in the 1 in 100 plus climate change</li> <li>Mitigation for seasonal high groundwater levels must be considered (for example to finished floor levels to an appropriate height above ground level).</li> <li>Due to the high groundwater flood risk, basements are not permitted.</li> <li>A site-specific surface water drainage strategy will be required.</li> <li>The design of SuDS schemes must consider the seasonally high groundwater floor areas.</li> <li>The design must ensure that flows resulting from rainfall in excess of a 1 in 100-yu are managed via exceedance routes that minimise the risks to people and properly are managed via exceedance routes that minimise the risks to people and properly areas. Above ground conveyance and attenuation car but care must be taken that groundwater does not enter the SuDS feature and restorage capacity and structural integrity of the design.</li> <li>Storage for runoff from the development in extr</li></ul>			
	be maintai	y Brook, which flows through the site, is a Main River. An 8m wide buffer should ned between the riverbank and any built structures, to enable the riparian owners Environment Agency to access and maintain the channel.		



Site code	BUR3
Site name	Land off Pingewood Road North, Burghfield Bridge, RG30 3XN

Site details	OS Grid reference	SU 67980 70336	SU 67980 70336						
	Area	0.16 ha							
	Current land use	Mix of greenfield and brow building on a small part or		inantly grassla	and but there is a	a storage			
	Proposed site use	Residential							
	Flood risk vulnerability	More vulnerable							
	Existing watercourses/bio diversity	There are no watercourse Kennet (Main River) is loc Kennet and Avon Canal is situated approximately 70 Pingewood Road North.	cated approxima s located 330m	tely 400m nor to the north. B	th of the site, and urghfield Main La	d the			
	Flood history	The site is not within the EA Historic Flood Map or the EA Recorded Flood Outline. However, the West Berkshire Flood Investigation Report for the Winter 2013/14 event identified that Pingewood Road North, located at the east of the site, was flooded and impassable. Internal flooding also occurred to properties in Burghfield Bridge Close, immediately north west of the site. The cause was reported to be a breach of the Kennet and Avon Canal, which led large volumes of water to enter the lakes in this location, causing them to overtop. The Thames Water DG5 record shows that there have been nine sewer flooding incidents in the postcode area (RG30 3), three of which have resulted in internal flooding to property.							
		Fluvial							
		Proportion of the site at risk (%)	Flood Zone 3b	Flood Zone 3a	Flood Zone 2	Flood Zone 1			
			5% AEP	1% AEP	0.1% AEP				
Sources of	Fluvial		0%	0%	42%	58%			
flood risk		Range of depths (m)	N/A N/A		0.01m – 0.27m	N/A			
		Maximum hazard	N/A	N/A	1.14 (Low hazard - Caution)	N/A			
		<b>Available modelled data:</b> The site is covered by the 2018 Kennet (Tyle Mill to Thames Confluence) 1D-2D hydraulic model.							
		<b>Flood characteristics:</b> The eastern side of the site is shown to be at a fluvial flood risk, with flooding expected to occur from the River Kennet during the 0.1% AEP event (Flood Zone 2). The western side of the site is within Flood Zone 1, and at low fluvial flood risk.							
		Pr	oportion of site	at risk (RoF	SW)				
		1 in 30	1 in 1	00	1 in 1,00	00			
		0%	0%		0%				
	Surface Water	Description of surface we The site is at very low sur events up to and including	face water risk,	with no floodin		ccur during			



Site code		BUR3							
Site name         Land off Pingewood Road North, Burghfield Bridge, RG30 3>					630 3XN				
		Areas Susceptible to Groundwater Flooding Map class (risk of groundwater emergence)							
	Groundwater	Depth below surface 0-0.025m	Depth below s 0.025-0.5					highest risk tegories	
	Ciounawater	100%		0%		100%			
		The site is at high risk of g whole site predicted to lie in 100) event.							
	Reservoir	The site is not at risk of flo	oding,	in the rare	event of a	reservoir	orea	ich.	
	Canal	There are no canals witin t due to breach f the Kenne							
	Defences	Defence Type		Standar	d of Protec	tion	C	Condition	
	Defences	There are no defences pre from any other defences.	esent v	vithin the si	te boundar	/. The site	e is r	not benefitting	
Flood risk		Culvert / structure blockage?		N/A					
management infrastructure	Residual risk	Impounded water body failure?		Due to flooding of areas adjacent to the situ Winter 2013/14, due to a breach on the Ker and Avon Canal, the risk of canal flooding to site should be assessed in detail within a s specific Flood Risk Assessment.			on the Kennet flooding to the		
		Defence breach / overtopping?		Breach Zone					
	Flood warning	overtopping?         N/A           The site is within the following EA Flood Alert Areas and Flood Warning Area:         •           •         Flood Alert Area: River Kennet from Thatcham down to Reading           •         Flood Warning Area: River Kennet from Theale down to Reading				ading			
Emergency planning	Access and egress	The site is likely to be accessed via Pingewood Road North, located to the ethe site. The access route is within Flood Zone 2 and therefore is at risk during a 0.19 fluvial flood event. Pingewood Road North is also at risk of surface water flood during the 0.1% AEP event (1 in 1,000).					to the east of a 0.1% AEP		
	Climate change allowances for	River Basin District / Management Catchment		ement	Central	Highe Centr		Upper End	
	'2080s' (2016 allowances)	Thames (assessed within Level 2 SFRA)		2 SFRA)	25%	35%		70%	
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Thames and South Chilterns (to be used for site-specific FRAs) 31%			43%		76%		
	Implications for the site	Climate change is predicted to significantly increase the risk of flooding to the site. The 1 in 100 + 35% and +70% climate change events extend to cover the eastern half of the site, with the 1 in 100 + 70% event extending beyond the 0.1% AEP (1 in 1,000) event, or Flood Zone 2, coverage within the site. The latest available climate change allowances must be used in site-specific Flood Risk Asssements.							



Site code	BUR3
Site name	Land off Pingewood Road North, Burghfield Bridge, RG30 3XN

	Bedrock Geology	Woolwich and Readin	g Beds Formation -	- Clay, Gravel, Sand and Silt			
	Superficial Geology	Alluvium – Clay, Silt a	Alluvium – Clay, Silt and Sand				
	Soils	Freely draining, slightly acid loamy soils					
Requirement for drainage control and impact mitigation	SuDS	the Defra Na current best Opportunitie SuDS with m resource edu 'Natural', veg be preferred and below-g All developm Conveyance natural flow p Storage for m located out of The bedrock mapping ind Therefore, in infiltration is should be ca including at I Infiltration te levels of surf SuDS featur	gn must follow the West Berkshire Council SuDS SPD, me lational Non-Statutory Technical Standards, and follow st design practice (CIRIA Manual 2015). les should be taken on a greenfield site such as this to del multiple benefits, such as biodiversity, recreation and wat ducation, through integration with areas of greenspace. egetated SuDS (such as green roofs, swales and ponds) of d by West Berkshire Council as LLFA over 'hard engineer ground SuDS. ment should adopt source control SuDS techniques. e features should be designed above ground and following w paths where possible. runoff from the development in extreme events should be cof fluvial flood risk areas. ck geology suggests variable infiltration potential, and dicates that the site is at high risk of groundwater flooding infiltration techniques may not be suitable at the site. If s proposed, it is recommended that further site investigati carried out to assess potential for drainage by infiltration, t least 12 months of groundwater level monitoring on site. rechniques should only be used where there are suitable urface water runoff treatment. ures in the south of the site, in the vicinity of the historic la eed to be designed with an impermeable liner, to prevent				
	Groundwater Source Protection Zone	A small area (75m <sup>2</sup> ) in the south west corner of the site is located within Flood Zone 3. The vast majority of the site is not within a Groundwater Source Protection Zone, however					
	Historic Landfill Site	There are historic landfill sites within the site boundary. However, Knights Farm North historic landfill site lies adjacent to the southern boundary of the site. Two further historic landfill sites are also located in close proximity, with Pingewood Road and Pleasant View Cottage located 75m and 15m away, respectively.					
	Opportunities for flood risk betterment	Opportunities for using source control SuDS to manage runoff rates and volumes contributing to the reduction of flood peaks on the River Kennet downstream and existing surface water flow paths leaving the site.					
		Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications			
	Cumulative impacts of development	Kennet and Holy Brook	High	The FRA should examine the cumulative impacts of potential peak runoff rates and volumes from the site (and other developments in the WFD catchment) on flood risk in the receiving watercourses.			
	Sequential Test an	d Exception Test requ	uirements				



Site code		BUR3			
Site name		Land off Pingewood Road North, Burghfield Bridge, RG30 3XN			
Recommend- ations for Local Plan policy	Test be applied. It Flood Zone 1. For If More Vul If Highly Vu If Essential Development will no Highly Vulr More Vuln Recommendations for developers Flood risk ass At the plan drainage st Consultation early stage A site-spect and 3 and on flood assessment Other sourd assessment Climate cht time of the allowances published it The site is development consider th Level 1 SF Guidance for st Development for example Safe access Mitigation the finished flo Due to the A site-spect The design techniquest and structu The surfac 1 in 100-ye and propert SuDS desit (SPD) stat	nning application stage, a site-specific flood risk assessment and surface water trategy will be required. In with the Local Authority and the Environment Agency should be undertaken at an b. The Local Authority and the Environment Agency should be undertaken at an b. The Local Authority and the Environment Agency should be undertaken at an b. The Local Authority and the Environment Agency should be undertaken at an b. The Local Authority and the Environment Agency should be undertaken at an b. The Local Authority and the Environment Agency should be undertaken at an b. The Local Authority and the Environment Agency should be undertaken at an b. The Local Authority and the Environment Agency should be undertaken at an b. The Local Authority and the Environment Agency should be undertaken at an b. The Local Authority and the Environment Agency should be undertaken at an b. The Local Authority and the Environment Agency should be undertaken at an the for-planning-applications). The Second flooding should also be considered as part of a site-specific flood risk the transformation of the sasessment (https://www.gov.uk/guidance/flood-risk-assessments-climate-change- the type of development and level of risk. The current allowances were in February 2016 but may be subject to change in the future. In Cated within a catchment identified as highly sensitive to the cumulative impacts of int on flood risk. The site-specific FRA and surface water drainage strategy should be recommendations outlined for high sensitivity catchments in the West Berkshire RA Cumulative Impacts Assessment Addendum. <b>Site design and making development safe:</b> Int must seek opportunities to reduce overall level of flood risk both on and offsite, a by reducing volume and rate of runoff and creating space for flooding. Is and egress should be demonstrated in the 1 in 100 plus climate change event. For seasonal high groundwater levels must be considered (for example by raising or levels to an appropriate height above ground level).			



BUR3
Land off Pingewood Road North, Burghfield Bridge, RG30 3XN
all in excess of a 1 in 100-year event are managed via exceedance routes that the risks to people and property



Site code		BUR14						
Site name		Herons Nest, Station Road, Theale						
Site details	OS Grid reference	SU 66413 70041						
	Area	31.3 ha						
	Current land use	Greenfield - former quarry	/ with land being	reinstated				
	Proposed site use	Employment, renewable e	energy					
	Flood risk vulnerability	Less vulnerable						
	Existing watercourses/bio diversity	the south eastern bounda site boundary, with a lake site, and a second lake is by the M4. Part of the site includes p which is an area of terrest	Part of the site includes part of the Theale Gravel Pits Local Wildlife Site (LWS) which is an area of terrestrial habitats adjacent to the large lake. There s also a trip of deciduous woodland, adjacent to the M4, which is a protected habitat					
	Flood history	The north west corner of the site is within the EA Historic Flood Map outline, where the adjacent lake flooded into the site boundary during the January 2003 flood event. The DG5 record shows that there has been a total of six sewer flooding incidents within the postcode area (RG7 4), two of which have resulted in internal flooding of property.						
		Fluvial						
		Proportion of the site at risk (%)	Flood Zone 3b 5% AEP	Flood Zone 3a 1% AEP	Flood Zone 2 0.1% AEP	Flood Zone 1		
Sources of			1%	10%	16%	73%		
flood risk		Range of depths (m)	0.38m	0.01m – 0.49m	0.02m – 1.96m	N/A		
		Maximum hazard	Significant (Dangerous for most)	Significant (Dangerou s for most)	Extreme (Dangerous for all)	N/A		
	Fluvial	<b>Available modelled data:</b> The site is covered by the River Kennet (Tyle Mill to Thames Confluence) 1D-2D hydraulic model, which was built in 2018. However, the Clayhill Brook is not within this model.						
		<b>Flood characteristics:</b> The north eastern boundary of the site, adjacent to the M4, and the centre of the site, are located within Flood Zone 3a, and are at risk of fluvial flooding during the 1% AEP (1 in 100) flood event. The extent of flooding increase during the 0.1% AEP (1 in 1,000) event, to cover the northern and eastern boundaries of the site. A very small proportion of the north western boundary of the site is also within Flood Zone 3b (5% AEP), and is associated with the large lake. The remainder of the site is within Flood Zone 1, where fluvial flood risk is low.						
			oportion of site	· · · ·				
	Surface Water	<b>1 in 30</b> 14%	<b>1 in 1</b> 19%		1 in 1,00 32%	00		
		1 + /0	1970	J	JZ /0			



Site code		BUR14			
Site name		Herons Nest, Station Road	d, Theale		
		Description of surface water flow paths:Surface water flood risk in the site is concentrated in the north and east of the site,following the route of the Clayhill Brook, as well as ponding against the highertopography of the M4 motorway. This flow path is present in the 3.33% (1 in 30),1% (1 in 100) and 0.1% AEP (1 in 1,000) events. A flow path also forms in thecentre of the site during the 3.33% AEP and greater rainfall events, and flowstowards the north eastern corner of the site, to pond against the M4 motorwayembankment. During the 0.1% AEP (1 in 1,000) rainfall event, isolated areas ofsurface water ponding form, extending to cover the western portion of the site.Areas Susceptible to Groundwater Flooding Map class (risk of groundwater emergence)			
		Depth below surface 0-0.025m	Depth below surface 0.025-0.5m	Total in highest risk categories	
	Groundwater	55%	43%	98%	
		The site is at moderate-high to high risk of groundwater flooding. Over half of the site is located within the highest risk category, where groundwater levels are likely to lie within 0.025m of the ground surface during a 1% AEP event. In the central and western portions of the site, groundwater levels are expected to lie between 0.025 – 0.5m of the ground surface during a flood event.			
	Reservoir	The site is not at risk of flooding, in the rare event of a reservoir breach.			
	Canal	There are no canals witin the site.			



Site code	BUR14
Site name	Herons Nest, Station Road, Theale

	Defences	Defence Type	Standar	d of Protect	ion	Condition
		There are no defences present within the site boundary. The site is not benefitting from any other defences.				
Flood risk management infrastructure	Residual risk	Culvert / structure blockage?	The Clayhill Brook appears to be culverter beneath the M4 motorway at the north easter corner of the site. Using RoFSW mapping as proxy (as it does not represent the culvert) blockage of the culvert is predicted to cause flooding to the north eastern portion of the site However, the impact of this blockage on th residual risk to the site should be assessed in detail within a site-specific Flood Ris Assessment.			e north eastern V mapping as a nt the culvert), dicted to cause rtion of the site. lockage on the be assessed in
		Impounded water body failure?	N/A			
		Defence breach /	N/A	Brea	ich Zone	
	Flood warning	overtopping?       N/A         The eastern side of the site is within both an EA Flood Alert and Flood Warning Area: <ul> <li>Flood Alert Area: River Kennet from Thatcham down to Reading</li> <li>Flood Warning Area: River Kennet from Theale to Reading</li> </ul>				
Emergency planning	Access and egress	The site can be accessed from Deans Copse Road, to the south of the site, and Bennett's Hill to the south of the site. The western end of Deans Copse Road is located within Flood Zone 3a and is predicted to flood during a 1% AEP (1 in 100) flood event. Bennett's Hill and the eastern end of Deans Copse Road and located within Flood Zone 1, where fluvial flood risk is low. Both access routes are shown to be at risk of suface water flooding during the 3.33% AEP (1 in 30) and greater rainfall events.				
	Climate change allowances for	River Basin District / Management Catchment		Central	Higher Central	Upper End
	'2080s' (2016 allowances)	Thames (assessed within Level 2 SFRA)		25%	35%	70%
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Kennet and tributaries (to be used for site-specific FRAs)		21%	35%	76%
	Implications for the site	Climate change is predicted to increase the risk of flooding to the site. The 1 in 100 + 35% and +70% climate change events extend to cover a greater area of th north and east of the site, with the 1 in 100 + 70% event extending beyond the 0.1% AEP (1 in 1,000) event, or Flood Zone 2, coverage within the site. The latest available climate change allowances must be used in site-specific Flood Risk Asssements.				



Site code		BUR14					
Site name		Herons Nest, Station Road, Theale					
	Bedrock Geology	A small area (1.5h Reading Bedrock	Most of the site is underlain by London Clay Group – Clay, Silt, Sand and Gravel A small area (1.5ha) in the northern of the site is underlain by Woolwich and Reading Bedrock – Clay, Silt, Sand and Gravel.				
	Superficial Geology	Most of the site is overlain by River Terrace Deposits (Undifferentiated) – San and Gravel. A small area (1.5ha) in the northern point of the site contains Alluv deposits – Clay, Silt and Sand.					
	Soils			ing, slightly acid loamy soils. The south of the lly high groundwater.			
Requirement for drainage control and impact mitigation	SuDS	<ul> <li>the Defra current b</li> <li>SuDS are as this or technique and follow</li> <li>'Natural', be prefer and below</li> <li>Storage f located o</li> <li>The imper the infiltra underlyin opportun recomme assess p of ground</li> <li>The site i Therefore suitable I environm</li> <li>Where be be located</li> </ul>	National Non-Sta est design practice e possible on all si he. All development es. Conveyance for wing natural flow p vegetated SuDS red by West Berks w-ground SuDS. for runoff from the ut of fluvial flood r ermeable bedrock ation techniques r g permeable bedrock ation techniques r g permeable soil a ity for shallower in ended that further otential for drainag water level monitor s located within G e, infiltration techn evels of treatment uental permits from elow ground storage	geology and groundwater flood risk indicate hay not be suitable at the site. However, the and superficial deposits may provide filtration depths. If infiltration is proposed, it is site investigation should be carried out to ge by infiltration, including at least 12 months bring on site. roundwater Source Protection Zone 3. iques should only be used where there are and following the granting of any required the Environment Agency. ge is proposed, the base of the feature must we the highest groundwater level, to reduce			
	Groundwater Source Protection Zone	The site is in Groundwater Source Protection Zone 3.					
	Historic Landfill Site	There are no historic landfill sites within the site boundary. There is a historic landfill site (Field Farm No.1) located 70m from the most easterly point of the site and is separated by the M4 motorway.					
	Opportunities for flood risk betterment	Opportunities for using source control SuDS to manage runoff rates and volume contributing to the reduction of flood peaks downstream on the River Kennet and existing surface water flow paths leaving the site.					
	Cumulative	Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications			
	impacts of development	Clayhill Brook d Exception Test r	Low	The FRA and surface water drainage strategy for the site must meet national and local standards. Management of flood risk beyond the site boundary should be considered.			



Site code		BUR14
Site name		Herons Nest, Station Road, Theale
Recommend- ations for Local Plan policy	Test be applied. It is Flood Zone 1. For If More Vul If Highly Vu If Essential Development will no Highly Vulr More Vuln Recommendations for developers Flood risk asse At the plan drainage st Consultation early stage A site-spect and 3 and 3 on flood assessmer Other sourd assessmer Other sourd assessmer Climate ch time of the allowances published i Modelling st the culvert The site is of development seek to red Safe access Mitigation ff finished flo Due to the A site-spect The design techniques and take up be taken th and structur The surfact	nning application stage, a site-specific flood risk assessment and surface water trategy will be required. In with the Local Authority and the Environment Agency should be undertaken at an



Site code	BUR14
Site name	Herons Nest, Station Road, Theale
be appropriallowance fragments allowance fragm	f detail and method of assessment of surface water runoff rates and volumes should riate to the scale and risk of the development and should include recommended for climate change and urban creep at the time of the assessment (currently +40% for climate change and a 10% increase in impermeable area for urban creep). gn must follow West Berkshire Council SuDS Supplementary Planning Document indards, meet the Defra National Non-Statutory Technical Standards, and follow it design practice (CIRIA Manual 2015). ned watercourse which forms the south eastern boundary of the site is an ordinary e. A sufficient width of buffer, to be agreed in consultation with West Berkshire ould be maintained between the riverbank and any built structures, to enable riparian



Site code	CA10
Site name	Sims Metal Management & J. Passey and Son Butchers, Turnpike Road, Newbury

Site details	OS Grid reference	SU 48981 68254						
	Area 1.5 ha							
	Current land use	Brownfield - Scrap yard						
	Proposed site use Residential							
	Flood risk vulnerability	More vulnerable	More vulnerable					
	Existing watercourses/bio diversity	An unnamed ordinary w beneath Waller Drive, a remain culverted throug confluence with the Rive site.	pproximately 20m h the site. The Riv	north of the sver Lambourn	ite, and is under (Main River) for	stood to ns a		
Sources of flood risk	Flood history	Map. West Berkshire Co reported that 42 propert area reported flooding of against the scrap yard w collapse. Flood waters t industrial units. A numb immediately north west The source of flooding i Newbury, which overwh culvert beneath Waller I event. Flood alleviation Waller Drive area, and I properties at high risk b The DG5 record shows	The site is not within the EA Recorded Flood Outline or the EA Historic Flood Map. West Berkshire Council Parish Flood Report for the July 2007 event reported that 42 properties (32 residential and 10 commercial) in the Waller Drive area reported flooding during the event. Flood water was reported to have ponded against the scrap yard wall, up to a depth of 1.5m, which caused the wall to collapse. Flood waters then flowed into Turnpike Industrial Estate, flooding all six industrial units. A number of residential properties in Fleetwood Close, located immediately north west of the site, were also internally flooded during the event. The source of flooding is understood to be runoff from fields to the north of Newbury, which overwhelmed the drainage system. The trash screen on the culvert beneath Waller Drive was also reported to be blocked with silt during the event. Flood alleviation options have been considered to provide protection to the Waller Drive area, and Property Flood Resilience measures were fitted to properties at high risk between 2015 - 2017. The DG5 record shows that there has been a total of 16 sewer flooding incidents within the postcode area (RG14 2), four of which have resulted in internal flooding					
		Fluvial						
		Proportion of the site at risk (%)	Flood Zone 3b 5% AEP	Flood Zone 3a 1% AEP	Flood Zone 2 0.1% AEP	Flood Zone 1		
	Fluvial		0%	0%	0%	100%		
		Available modelled data: The site is located just outside the extent of the River Kennet and Lambourn (Newbury) 1D-2D model.						
		Flood characteristics:						
		The site is located within				od risk.		
			Proportion of site					
	Surface Water	1 in 30	1 in 1		1 in 1,00	00		
		11%	21%	, D	41%			



Site code		CA10						
Site name		Sims Metal Management & J. Passey and Son Butchers, Turnpike Road, Newbury						
		<b>Description of surface water flow paths:</b> The surface water flood risk at the site follows a flow path, which follows the route of the ordinary watercourse through the centre of the site, from north to south. The flow path is present in the 3.33% (1 in 30), 1% (1 in 100) and 0.1% AEP (1 in 1,000) rainfall events. During a 0.1% AEP event, the extent of flooding increases to cover the north west corner of the site, where surface water ponds against an area of higher topography.						
		Areas Susceptible to Groundwater Flooding Map class (risk of groundwater emergence)						
	Groundwater	Depth below surface 0-0.025m	Dep	th below s 0.025-0.5		Total in highest risk categories		
		0%		0%			0	%
		There is a negligible risk o	of grour	ndwater flo	oding at the	e site.		
	Reservoir	The site is not at risk of flooding, in the rare event of a reservoir breach.					ich.	
	Canal	There are no canals witin	the vic	inity of the	site.			
	Defences	Defence Type		Standard of Protection		Condition		
		There are no defences present in this site, nor does the site benefit from any defences.						
Flood risk management infrastructure	Residual risk	Culvert / structure blockage?		passes th north of topograph may cau Waller Dr impact of site shou	The unnamed ordinary watercourse which basses through the site enters a culvert to the north of the site, at Waller Drive. Due to the opography of the site, blockage of this culvert nay cause flows to back up and flood onto Valler Drive, and may overtop into the site. The mpact of this blockage on the residual risk to the site should be assessed in detail within a site- specific Flood Risk Assessment.			
		Impounded water body failure?		N/A				
		Defence breach /		Breach Zone				
	Flood warning		nin an I	N/A				ng Area
Emergency planning	Access and egress	The site is not located within an EA Flood Alert Area or Flood Warning Area. The site can be accessed via Waller Drive or via Turnpike Industrial Estate, located off Turnpike Road. The access routes are located within Flood Zone 1, and is therefrore at low risk of fluvial flooding. However, both access routes are shown to be at risk of suface water flooding during the 3.33% AEP (1 in 30) and greater rainfall events.						
	Climate change allowances for	River Basin District / Management Catchment		ement	Central		gher ntral	Upper End
Climate Change	'2080s' (2016 allowances)	Thames (assessed within Leve		2 SFRA)	25%	3	5%	70%
	Climate change allowances for '2080s' (2021 allowances)	Kennet and tributaries (to be used for site-specific FRAs)		21%	3	5%	76%	



Site code		CA10		
Site name		Sims Metal Management & J. Passey and Son Butchers, Turnpike Road, Newbury		
	Implications for the site	The site remains within Flood Zone 1, accounting for the impact of climate change. The latest available climate change allowances must be used in site-specific Flood Risk Assssments.		





Site code	CA10
Site name	Sims Metal Management & J. Passey and Son Butchers, Turnpike Road, Newbury

Requirement for drainage	Bedrock Geology	Woolwich and Reading Beds Formation – Clay, Silt, Sand and Gravel					
	Superficial Geology	Sand and gravel of uncertain age and origin					
	Soils	Slowly permeable, seasoanlly wet, slightly acid but base-rich loamy and claye soils					
	SuDS	<ul> <li>the Defra Natio current best de</li> <li>All development Conveyance fe natural flow pa</li> <li>'Natural', vege be preferred by and below-gro</li> <li>Storage for rur located outside</li> <li>The bedrock g is recommend assess potention only be used we treatment, and</li> </ul>	OS design must follow the West Berkshire Council SuDS SPD, meet Defra National Non-Statutory Technical Standards, and follow ent best design practice (CIRIA Manual 2015). development should adopt source control SuDS techniques. veyance features should be designed above ground and following ural flow paths where possible. ural', vegetated SuDS (such as green roofs, swales and ponds) will preferred by West Berkshire Council as LLFA over 'hard engineered' below-ground SuDS. age for runoff from the development in extreme events should be ted outside areas of fluvial flood risk. bedrock geology suggests variable infiltration potential; therefore it ecommended that further site investigation should be carried out to ess potential for drainage by infiltration. Infiltration techniques should be used where there are suitable levels of surface water runoff tment, and following the granting of any required environmental nits from the Environment Agency.				
control and impact mitigation	Groundwater Source Protection Zone	The site is in Groundwater Source Protection Zone 3.					
	Historic Landfill Site	There are no historical landfill sites on the site or in the nearby vicinity.					
	Opportunities for flood risk betterment	Opportunities for using source control SuDS to manage runoff rates and volumes, contributing to the reduction of flood peaks on the River Kennet downstream and existing surface water flow paths leaving the site. Opportunities should be taken to open (or 'daylight') the culverted ordinary watercourse which passes through the site, to enhance biodiversity and reduce the risk of blockage to the structure.					
		Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications			
	Cumulative impacts of development	Lambourn (Source to Newbury)	Medium	The FRA and surface water drainage strategy should demonstrate wider betterment by demonstrating measures which can be put in place to contribute to a reduction in flood risk downstream.			
		d Exception Test requir	amanta				





Site code	CA10
Site name	Sims Metal Management & J. Passey and Son Butchers, Turnpike Road, Newbury

	The site is within Flood Zone 1 but at risk from other sources of flooding. The Sequential Test must be passed. The Exception Test is not required under the NPPF, but it must be shown that the development						
	will be safe for its lifetime and the risk can be managed through a sequential approach to design.						
	Recommendations for requirements of site-specific Flood Risk Assessment, including guidance						
	for developers						
	Flood risk assessment:						
	<ul> <li>At the planning application stage, a site-specific flood risk assessment and surface water drainage strategy will be required.</li> </ul>						
	Consultation with the Local Authority and the Environment Agency should be undertaken at an						
	<ul> <li>early stage.</li> <li>A site-specific flood risk assessment will be required because the site is greater than 1Ha in</li> </ul>						
	area, and at risk from sources of flooding other than rivers and the sea. Government guidance on flood risk assessments must be followed ( <u>https://www.gov.uk/guidance/floodrisk-assessment-for-planning-applications</u> ).						
	<ul> <li>Other sources of flooding should also be considered as part of a site-specific flood risk assessment, including surface water.</li> </ul>						
	<ul> <li>Detailed modelling will be required to confirm Flood Zone and climate change extents (see 'Available modelled data'). The Environment Agency and LLFA should be consulted to obtain the latest hydraulic modelling information for the site at the time of the flood risk assessment.</li> </ul>						
	They will advise as to whether existing detailed models are available, and if so, whether they need to be updated.						
	Climate change should be assessed using recommended climate change allowances at the						
	time of the assessment (https://www.gov.uk/guidance/flood-risk-assessments-climate-change-						
	<u>allowances</u> ) for the type of development and level of risk. The current allowances were published in February 2016 but may be subject to change in the future.						
Recommend- ations for	<ul> <li>Modelling should be conducted to assess the residual risk associated with potential blockage of the culvert within the site.</li> </ul>						
Local Plan policy	<ul> <li>The site is located within a catchment identified as moderately sensitive to the cumulative impacts of development on flood risk. The site-specific FRA and surface water drainage strategy should consider the recommendations outlined for catchments of medium sensitivity in the West Berkshire Level 1 SFRA Cumulative Impacts Assessment Addendum.</li> </ul>						
	Guidance for site design and making development safe:						
	• Development must seek opportunities to reduce overall level of flood risk both on and offsite, for example by reducing volume and rate of runoff and creating space for flooding.						
	• Safe access and egress should be demonstrated in the 1 in 100 plus climate change event.						
	<ul> <li>Resilience measures will be required to ensure that development is safe if buildings are situated within surface water risk areas.</li> </ul>						
	<ul> <li>Flow routes would need to be preserved if carrying out land-raising within the surface water risk area, including to provide a safe access route.</li> </ul>						
	• Opportunities should be taken to open (or 'daylight') the culverted ordinary watercourse which passes through the site, to enhance biodiversity and reduce the risk of blockage to the structure.						
	<ul> <li>A site-specific surface water drainage strategy will be required.</li> </ul>						
	• The surface water drainage design must ensure that flows resulting from rainfall in excess of a						
	1 in 100-year event are managed via exceedance routes that minimise the risks to people and property.						
	• The level of detail and method of assessment of surface water runoff rates and volumes should be appropriate to the scale and risk of the development and should include recommended						
	<ul> <li>allowance for climate change and urban creep at the time of the assessment (currently +40% allowance for climate change and a 10% increase in impermeable area for urban creep).</li> <li>SuDS design must follow West Berkshire Council SuDS Supplementary Planning Document</li> </ul>						
	(SPD) standards, meet the Defra National Non-Statutory Technical Standards, and follow current best design practice (CIRIA Manual 2015). The design must ensure that flows resulting from rainfall in excess of a 1 in 100-year event are managed via exceedance routes that minimise the risks to people and property.						



Site code	CA10				
Site name	Sims Metal Management & J. Passey and Son Butchers, Turnpike Road, Newbury				
An unnamed ordinary watercourse passes through the site. A sufficient width of buffer, to b     agreed in consultation with West Berkshire Council, should be maintained between th     riverbank and any built structures, to enable riparian owners to access and maintain the channel					



Site code		CA15							
Site name		Land at Long Lane, Newbury							
Site details	OS Grid reference	SU 48226 68861							
	Area	16.75 ha	16.75 ha						
	Current land use	Greenfield - Agriculture	Greenfield - Agriculture						
	Proposed site use	Residential							
	Flood risk vulnerability	More vulnerable							
	Existing watercourses/bio diversity	The site is formed of two no watercourses located River) is located 530m so	within the site bo						
	Flood history	Parish Flood Report for the backed up and caused flow The Thames Water DG5	The site is not covered by the EA Recorded Flood Outline. The West Berkshire Parish Flood Report for the July 2007 event indicates that the River Lambourn backed up and caused flooding to Shaw Hill, to the south of the site. The Thames Water DG5 record shows that there has been a total of 16 sewer flooding incidents within the postcode area (RG14 2), four of which have resulted						
			Fluv	vial	1				
	Fluvial	Proportion of the site at risk (%)	Flood Zone 3b 5% AEP	Flood Zone 3a 1% AEP	Flood Zone 2 0.1% AEP	Flood Zone 1			
			0%	0%	0%	100%			
Sources of flood risk		<ul> <li>Available modelled data:</li> <li>The site is not covered by a detailed hydraulic model.</li> <li>Flood characteristics:</li> <li>The site is located in Flood Zone 1, and is therefore the risk of fluvial flooding is low.</li> </ul>							
		Proportion of site at risk (RoFSW)							
		1 in 30	1 in 1		1 in 1,00	00			
		21%	24%		37%				
	Surface Water	<b>Description of surface water flow paths:</b> The surface water flood risk at the site follows the route of the lowest topography, which acts to channel surface water runoff through the centre of the site, from the north to the south. The flow path forms in the 3.33% (1 in 30) rainfall event, and extends to cover a greater area of the site during the 1% (1 in 100) and 0.1% AEP (1 in 1,000) rainfall events. During the 0.1% AEP (1 in 1,000) rainfall event, further surface water flow paths enter the west, north west, north east and south east of the site, and join the main flow path.							
	Groundwater	Areas Susceptible to G	roundwater Flo emerg		ass (risk of gro	undwater			
		Depth below surface 0-0.025m	Depth below surface Total in hi		Total in high categori				
		95%	3%		98%				

JBA consulting

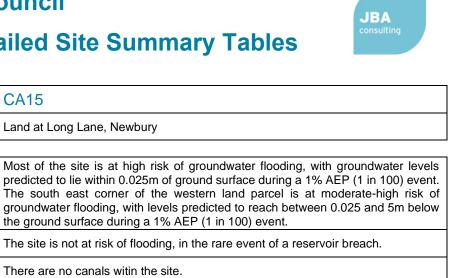
Site code

Site name

# Level 2 SFRA Detailed Site Summary Tables

Land at Long Lane, Newbury

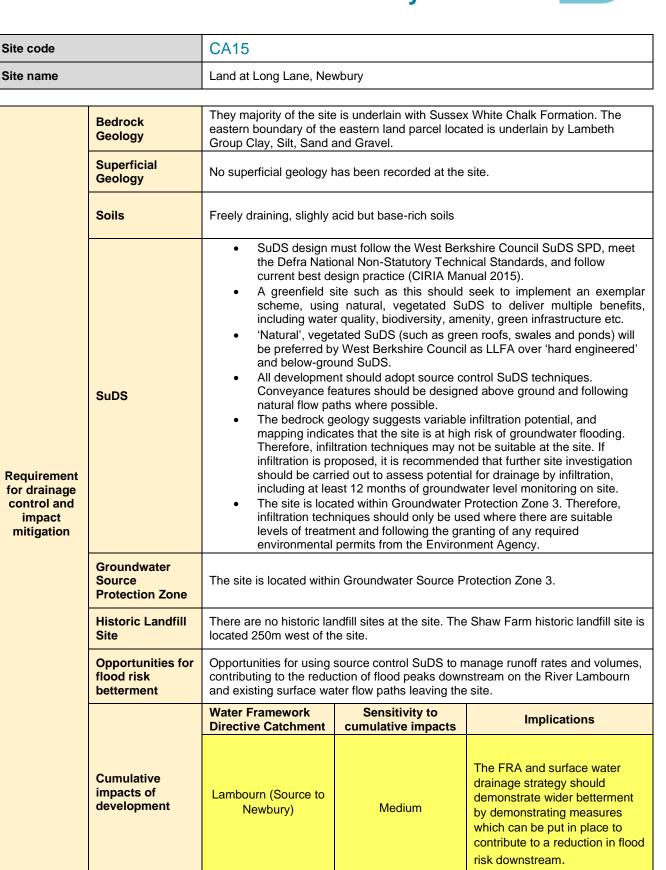
**CA15** 



		The south east corner of the western land parcel is at moderate-high risk of groundwater flooding, with levels predicted to reach between 0.025 and 5m below the ground surface during a 1% AEP (1 in 100) event.					
	Reservoir	The site is not at risk of flooding, in the rare event of a reservoir breach.					
	Canal	There are no canals witin the site.					
		Defence Type	Standard of Protection Condition			Condition	
	Defences	There are no defences present i defences.	n this site,	nor does the s	site benefit i	from any	
Flood risk management		Culvert / structure blockage?	N/A				
infrastructure	Residual risk	Impounded water body failure?	N/A	N/A			
		Defence breach / overtopping?	N/A	Breach Zone			
	Flood warning	The site is not located within an EA Flood Alert Area or an EA Flood Warning Area.					
Emergency planningAccess and egressThe B4009 (Long Lane) runs through the middle of site ar route for both land parcels of the site. The northern end Flood Zone 1, and therefore is at low fluvial flood risk. He of the road is at risk of flooding during the 0.1% AEP (1 in Lane is also at risk of surface water flooding during a 3 greater rainfall events.				d of the road is located in owever, the southern end n 1,000) flood event. Long			
	Climate change allowances for	River Basin District / Management Catchment		Central	Higher Central	Upper End	
	'2080s' (2016 allowances)	Thames (assessed within Level 2 SFRA)		25%	35%	70%	
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Kennet and tributaries (to be use site-specific FRAs)	21%	35%	76%		
	Implications for the site	The site remains within Flood Zone 1, when accounting for the impact of climate change. The latest available climate change allowances must be used in site-specific Flood Risk Assssments.					

Site code

### Level 2 SFRA Detailed Site Summary Tables



**Sequential Test and Exception Test requirements** 

JBA



Site code		CA15
Site name		Land at Long Lane, Newbury
Recommend- ations for Local Plan policy	<ul> <li>passed. The Excep will be safe for its lift</li> <li>Recommendations for developers</li> <li>Flood risk ass <ul> <li>At the pla drainage s</li> <li>Consultation early stage</li> <li>A site-special area, and is on flood assessment</li> <li>Other sourd assessment</li> <li>Other sourd assessment</li> <li>Climate chatter the site is impacts of should come Berkshire I</li> </ul> </li> <li>Guidance for set of should come Berkshire I</li> <li>Development seek to recome seek to re</li></ul>	nning application stage, a site-specific flood risk assessment and surface water trategy will be required. on with the Local Authority and the Environment Agency should be undertaken at an



Site code	COM2
Site name	Land north of Hill Top House, Churn Road, Compton

Site details	OS Grid reference	SU 51588 80150						
	Area	0.8 ha						
	Current land use	Greenfield - Agriculture						
	Proposed site use	Residential						
	Flood risk vulnerability	More vulnerable						
	Existing watercourses/bio diversity	There are no waterco approximately 200m s		boundary. Th	e River Pang is I	ocated		
	Flood history	not recorded as havin event, although signifi The Thames Water D	he site is not located within the EA Recorded Flood Outlines dataset. It is also be recorded as having been affected by flooding during the Winter 2013/14 yent, although significant flooding occurred to the south, within Compton village. The Thames Water DG5 register shows that there have been seven recorded ever flooding incidents within the postcode area (RG20 7), of which two led to ternal property flooding.					
	Fluvial	Fluvial						
		Proportion of the site at risk (%)	Flood Zone 3b 5% AEP	Flood Zone 3a 1% AEP	Flood Zone 2 0.1% AEP	Flood Zone 1		
			0%	0%	0%	100%		
Sources of flood risk		<ul> <li>Available modelled data: There is no detailed hydraulic fluvial model covering the site.</li> <li>Flood characteristics: The site is located within Flood Zone 1, and is therefore at negligible risk of fluvial flooding.</li> </ul>						
		Proportion of site at risk (RoFSW)						
		3.3% AEP	 1% A		0.1% AEP			
		(1 in 30)	(1 in 1	00)	(1 in 1,000)			
		0%	0%		0%			
	Surface Water	<b>Description of surface water flow paths:</b> The site is at very low risk of surface water flooding.						
		Proportion of the s	site at risk in JBA year) risk (		Map 1% AEP (1	in 100-		
	Groundwater	Depth below surfac 0-0.025m	e Depth below 0.025-0		Total in highest risk categories			
		0-0.025111	0.023-0	JJII	categorie	es		



Site code COM2						
Site name		Land north of Hill Top House, Churn Road, Compton				
		JBA Groundwater Mapping shows the site to be at moderate risk of groundwater flooding, with groundwater levels predicted to lie between 0.5m and 5m below the ground surface during a 1% AEP event. However, groundwater emergence modelling carried out by Jacobs following the Winter 2013/14 flood event, indicates that groundwater emergence is predicted to impact the south of the site during a 3.3% AEP flood event, and extend to cover the south of the site during a 1% AEP event.				
	Reservoir	The site is not at risk of flooding,	in the rare	event of a re	servoir brea	ach.
	Canal	There are no canals witin the site	e boundary	'.		
		Defence Type	Standar	d of Protection	on (	Condition
Flood risk	Defences	There are no defences within sit	e boundary	<i>י</i> .		
management		Culvert / structure blockage?	N/A			
	Residual risk	Impounded water body failure?	N/A			
		Defence breach / overtopping?	N/A	Bread	ch Zone	
	Flood warning	The site is not covered by an E Area.	Environment Agency Flood Alert or Flood Warning			
Emergency planning	Access and egress	The site is likely to be accessed fluvial and surface water flood r indicates that Churn Road is at r in 30) and 1% AEP (1 in 100) ev may be restricted at times of gro	isk. Howev isk of groui ents. There	ver, groundwa ndwater floodi efore, access t	iter emerge ng, during a	nce modelling a 3.3% AEP (1
	Climate change	River Basin District / Management Catchment		Central	Higher Central	Upper End
	allowances for '2080s' (2016 allowances)	Thames (assessed within Level 2 SFRA)		25%	35%	70%
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Thames and South Chilterns (to be used for site-specific FRAs) 31%			43%	76%
	Implications for the site	The site remains within Flood Zo on fluvial flood risk. The latest available climate char Flood Risk Assssments.	-	-		
	Bedrock Geology	The site is underlain by Sussex	White Chal	k Formation		
Requirement for drainage control and	Superficial Geology	There are no superficial geology	deposits r	ecorded on th	e site.	
impact mitigation	Soils	Shallow lime-rich soils over chal	k			



Site code		COM2				
Site name		Land north of Hill Top House, Churn Road, Compton				
	SuDS	<ul> <li>SuDS design must follow the West Berkshire Council SuDS SPD, meet the Defra National Non-Statutory Technical Standards, and follow current best design practice (CIRIA Manual 2015).</li> <li>A greenfield site such as this should seek to implement an exemplar scheme, using natural, vegetated SuDS to deliver multiple benefits, including water quality, biodiversity, amenity, green infrastructure etc.</li> <li>'Natural', vegetated SuDS (such as green roofs, swales and ponds) will be preferred by West Berkshire Council as LLFA over 'hard engineered' and below-ground SuDS.</li> <li>All development should adopt source control SuDS techniques. Conveyance features should be designed above ground and follow natural flow paths where possible.</li> <li>The bedrock geology suggests that infiltration may be suitable, although mapping and emergence modelling indicate that there is a risk of groundwater flood risk to the site. Therefore, it is recommended further site investigation should be carried out to assess potential for drainage by infiltration, including at least 12 months of groundwater level monitoring on site. Infiltration techniques should only be used where there are suitable levels of surface water runoff treatment.</li> <li>Due to the presence of a historic landfill site, soils may be contaminated in the south of the site. Therefore, in the south of the site, water should be stored above ground possible and SuDS features will need to be fitted with an impermeable liner, to prevent the leaching of pollutants.</li> <li>Where below ground storage is proposed, the base of the feature must be located at least 1m above the highest groundwater level, to reduce the risk of groundwater ingress or flotation.</li> </ul>				
	Groundwater Source Protection Zone Historic Landfill					
	Site Opportunities for flood risk betterment	southern portion of the site. Opportunities for using source control SuDS to manage runoff rates and volumes, and to provide additional storage for surface water runoff onsite, to contribute towards the reduction and delay of flood peaks reaching the River Pang.				
		Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications		
	Cumulative impacts of development	Pang	Medium	The FRA and surface water drainage strategy should demonstrate wider betterment by demonstrating measures which can be put in place to contribute		
	Sequential Test an	to a reduction in flood risk downstream.           Sequential Test and Exception Test requirements				
Recommend- ations for Local Plan policy	The site is within Flo passed. The Excep	bod Zone 1 but at risk fittion Test is not required	rom other sources ( under the NPPF, b	of flooding. The Sequential Test must be out it must be shown that the development h a sequential approach to design.		
, <b>. ,</b>	Recommendations for requirements of site-specific Flood Risk Assessment, including guidance for developers					
	Flood risk assessment:					



Site code	COM2
Site name	Land north of Hill Top House, Churn Road, Compton
<ul> <li>drainage st</li> <li>Consultatione are and a on flood assessmente</li> <li>Other sourd assessmente</li> <li>Climate chattime of the allowances published in the steries is impacts of a should construction.</li> </ul>	nning application stage, a site-specific flood risk assessment and surface water trategy will be required. on with the Local Authority and the Environment Agency should be undertaken at an e. cific flood risk assessment will be required because the site is greater than 1Ha in t risk from sources of flooding other than rivers and the sea. Government guidance risk assessments must be followed ( <u>https://www.gov.uk/guidance/floodrisk- nt-for-planning-applications</u> ). rces of flooding should also be considered as part of a site-specific flood risk ange should be assessed using recommended climate change allowances at the assessment ( <u>https://www.gov.uk/guidance/flood-risk-assessments-climate-change-</u> ) for the type of development and level of risk. The current allowances were in February 2016 but may be subject to change in the future. a located within a catchment identified as moderately sensitive to the cumulative development on flood risk. The site-specific FRA and surface water drainage strategy sider the recommendations outlined for catchments of medium sensitivity in the West Level 1 SFRA Cumulative Impacts Assessment Addendum.
<ul> <li>Development seek to reduce seek to red</li></ul>	site design and making development safe: ent must seek opportunities to reduce overall level of flood risk at the site and should luce the levels of flood risk downstream. Is and egress should be demonstrated in the 1 in 100 plus climate change event. for seasonal high groundwater levels must be considered (for example by raising or levels to an appropriate height above ground level). high groundwater flood risk, basements are not permitted. Stific surface water drainage strategy will be required. e water drainage design must ensure that flows resulting from rainfall in excess of a ear event are managed via exceedance routes that minimise the risks to people and f detail and method of assessment of surface water runoff rates and volumes should riate to the scale and risk of the development and should include recommended for climate change and a 10% increase in impermeable area for urban creep). gn must follow West Berkshire Council SuDS Supplementary Planning Document hdards, meet the Defra National Non-Statutory Technical Standards, and follow at design practice (CIRIA Manual 2015).



Site code	COM3
Site name	Land east of Mayfield Cottages, Cheseridge Road, Compton, RG20 7PL

Site details	OS Grid reference	SU 51424 79787							
	Area	1.8 ha	1.8 ha						
	Current land use	Agriculture (Greenfield)							
	Proposed site use	Residential							
	Flood risk vulnerability	More vulnerable							
	Existing watercourses/bio diversity	There are no watercourse (Main River) flows in an e				r Pang			
	Flood history	Thames Water DG5 regis	The site is not located within the EA Recorded Flood Outline dataset. The Thames Water DG5 register shows that there has been a total of 7 sewer flooding incidents within the postcode area (RG20 7), two of which resulted in internal flooding to property.						
			Fluv	vial					
	Fluvial	Proportion of the site at risk (%)	Flood Zone 3b 5% AEP	Flood Zone 3a 1% AEP	Flood Zone 2 0.1% AEP	Flood Zone 1			
			19%	0%	1%	80%			
Sources of flood risk		Available modelled data: The site is covered by broadscale, generalised modelling, with the model files not available for use in the Level 2 SFRA. Therefore, Flood Zone 3b has been used as a proxy for Flood Zone 3a. Flood characteristics: The northern part of the site is at risk of fluvial flooding from the River Pang during the 1% AEP (1 in 100) event. There is a small increase in flood extent during the 0.1% AEP (1 in 100) event. The remainder of the site is located within Flood Zone 1, and is at low fluvial flood risk.							
			SW)						
		1 in 30	1 in 100		1 in 1,000				
		0%	0%		22%				
	Surface Water	<b>Description of surface water flow paths:</b> There is no risk of surface water flooding predicted to occur at the site during the 3.3% AEP (1 in 30) and 1% AEP (1 in 100) rainfall events. During the 1% AEP (1 in 1,000) event, the northern portion of the site is at risk of surface water flooding, where runoff ponds against the higher topography in the south of the site.				1% AEP (1 er flooding,			
		Areas Susceptible to G	roundwater Flo emerg		lass (risk of gro	undwater			
	Groundwater	Depth below surface 0-0.025m	Depth below surface 0.025-0.5m		Total in highest risk categories				
		0%	0%		0%				
		0 %0 %The site is at a moderate risk of groundwater flooding, with groundwater levels predicted to reach 0.5 – 5m below the ground surface during a 1% AEP (1 in 100) event.							



Site code	COM3
Site name	Land east of Mayfield Cottages, Cheseridge Road, Compton, RG20 7PL

	Reservoir	The site is not at risk of flooding, in the rare event of a reservoir breach.					
	Canal	There are no canals witin the site.					
	Defenses	Defence Type	Standar	d of Protect	ion	Condition	
Flood risk management infrastructure	Defences	There are no defences present v from any other defences.	within the s	ite boundary	. The site is	not benefitting	
	Residual risk	Culvert / structure blockage?	The River Pang appears to be culverted belt the unnamed road at the east of the site, at t junction with Ilsley Road. Based on t topography of the site, blockage of this culv may cause the River Pang to back up and flo the north east of the site. However, the residu flood risk to the site, in the event of blockage the culvert, should be assessed in detail within site-specific Flood Risk Assessment.			the site, at the ased on the of this culvert k up and flood er, the residual of blockage to detail within a	
		Impounded water body failure?	N/A				
		Defence breach / overtopping?	N/A	Brea	ach Zone		
	Flood warning	The northern part of the site is located within the following EA Flood Alert Area: <ul> <li>River Pang from East IIsley to Pangbourne and Sulham Brook</li> </ul> <li>The site is not located within an EA Flood Warning Area.</li>					
Emergency planning	Access and egress	The site can be accessed via Cheseridge Road located to the west of the site, via Newbury Road at the east of the site. To the north, both access roads are at risk of fluvial flooding during the 1% AEP in 100) and 0.1% AEP (1 in 1,000) flood events. However to the south, the access roads are located within Flood Zone 1, and are at very low risk of fluvial flooding during a 0.7 AEP (1 in 1,000) rainfall event.					
	Climate change allowances for	River Basin District / Manag Catchment	jement	Central	Higher Central	Upper End	
	'2080s' (2016 allowances)	Thames (assessed within Level 2 SFRA)		25%	35%	70%	
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Thames and South Chilterns (to be used for site-specific FRAs)		31%	43%	76%	
	Implications for the site	impact of climate change. Howe been used to represent the exten	Fluvial flood risk to the site is predicted to increase when accounting for the impact of climate change. However, in this location, Flood Zone 2 (0.1% AE been used to represent the extent of Flood Zone 3a + climate change. The latest available climate change allowances must be used in site-specifi Flood Risk Assssments.				



Site code	COM3
Site name	Land east of Mayfield Cottages, Cheseridge Road, Compton, RG20 7PL

	Bedrock Geology	Sussex White Chalk Fo	rmation				
	Superficial Geology	There are no superficial geology deposits mapped at this site.					
	Soils	Freely draining lime-rich loamy soils					
Requirement for drainage control and impact mitigation	SuDS	<ul> <li>SuDS design must follow the West Berkshire Council SuDS SPD, meet the Defra National Non-Statutory Technical Standards, and follow current best design practice (CIRIA Manual 2015).</li> <li>Opportunities should be taken on a greenfield site such as this to deliver SuDS with multiple benefits, such as biodiversity, recreation and water resource education, through integration with areas of greenspace.</li> <li>'Natural', vegetated SuDS (such as green roofs, swales and ponds) will be preferred by West Berkshire Council as LLFA over 'hard engineered' and below-ground SuDS.</li> <li>All development should adopt source control SuDS techniques. Conveyance features should be designed above ground and following natural flow paths where possible.</li> <li>Storage for runoff from the development in extreme events should be located out of fluvial flood risk areas.</li> <li>The permeable underlying geology and low groundwater flood risk suggest that discharge of the site via infiltration may be feasible, subject to a site investigation and site-specific soakage testing, to assess the potential for drainage by infiltration. Infiltration techniques should only be used where there are suitable levels of surface water runoff treatment.</li> </ul>					
	Groundwater Source Protection Zone	The site is not within a Groundwater Source Protection Zone.					
	Historic Landfill Site	There are no historic landfill sites within the site boundary. The Hill Barn Road historic landfill site is located 250m south west of the site. Churn Road historic landfill site is located 250m north of the site.					
	Opportunities for flood risk betterment	Opportunities for using source control SuDS to manage runoff rates and contributing to the reduction of flood peaks downstream on the River Patient strain surface water flow paths leaving the site.					
	Cumulative	Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications			
	Cumulative impacts of development	Pang	Medium	The FRA and surface water drainage strategy should demonstrate wider betterment by demonstrating measures which can be put in place to contribute to a reduction in flood risk downstream.			
	Sequential Test an	d Exception Test requir	ements				



Site code COM3		
Site name		Land east of Mayfield Cottages, Cheseridge Road, Compton, RG20 7PL
Recommend- ations for Local Plan policy	Test be applied. It Flood Zone 1. For If More Vul If Highly Vul Tessentia Development will no Highly Vul More Vuln Recommendations for developers Flood risk ass At the pla drainage s Consultation early stage A site-spect and 3 and on flood assessmen Other sou assessmen Climate ch time of the allowances published i Modelling s the culvert The site is impacts of should con Berkshire I Guidance for s Development Safe acces A site-spect A site-spect The site is impacts of should con Berkshire I Guidance for s Development Safe acces A site-spect The site is impacts of Should con Berkshire I Subs desi (SPD) state current best from rainfar minimise th The level of be approp allowance	t must be satisfied. Only once the Sequential Test is satisfied should the Exception <b>is anticipated that proposed development will be sequentially located within</b> this site, the Exception Test must be satisfied: nerable and Essential Infrastructure is located in FZ3a or FZ3a plus climate change. ulnerable development is located in FZ2. I Infrastructure is located in Flood Zone 3b ot be permitted in the following scenarios: herable development within FZ3a or FZ3a plus climate change and FZ3b. erable and Less Vulnerable development within FZ3b. <b>a for requirements of site-specific Flood Risk Assessment, including guidance</b> <b>essment:</b> nning application stage, a site-specific flood risk assessment and surface water trategy will be required. on with the Local Authority and the Environment Agency should be undertaken at an



Site code CS3							
Site name		Sandleford Park, Newbury					
		1					
Site details	OS Grid reference	SU 46891 645	SU 46891 64545				
	Area	129.92Ha					
	Current land use	Woodland and	Woodland and parkland				
	Proposed site use	Residential					
	NPPF Flood risk vulnerability	More vulnerab	le				
	Existing watercourses/bio diversity	boundary of the tributary of the site. Small trib site. A further drains directly	The River Enborne, a Main River, flows westwards along the southern boundary of the site. An unnamed ordinary watercourse, which forms a tributary of the River Enborne, flows south westwards through the centre of the site. Small tributaries drain into this watercourse from the north and west of the site. A further small ordinary watercourse in the south east corner of the site drains directly into the River Enborne. A small pond is located in the north east corner of the site.				
	Flood history	Two isolated areas at the south and south west corner of the site are recorded to have flooded on 6 <sup>th</sup> September 1991, due to channel capacity exceedance on the River Enborne. The Thames Water DG5 record shows that there have been 28 sewer flooding incidents within the postcode area of RG14 6, of which 16 have resulted in internal flooding of property. Within postcode area RG14 6, there have been 30 sewer flooding incidents to external property.					
		Proportion of site at risk in Flood Zones					
		Proportion of the site at risk (%)	Flood Zone 3b 5% AEP	Flood Zone 3a 1% AEP 0%	Flood Zone 2 0.1% AEP 1%	Flood Zone 1 98%	
Sources of flood risk		Available modelled data: The site is covered by the 2007 River Enborne (MRL to Kennet Confluence) 1D model. As the River Enborne model is 1D-only, there are no detailed flood risk results for the site, but this model has been used to map Flood Zones. The ordinary watercourses within the site are not covered by a detailed hydraulic					
	Fluvial	<ul> <li>The ordinary watercourses within the site are not covered by a detailed hydrodel.</li> <li>Flood characteristics:</li> <li>The southern and south-western boundaries of the site are at risk of flowithin a 5% AEP flood event, and are therefore located within Flood Zor</li> <li>The area at risk of flooding at the south of the site increases during the 1% and 0.1% AEP events to extend slightly further into the site.</li> <li>A small area of Flood Zone 2 on the southern boundary of the site is define the historic flood outline from 6th September 1991 flood event.</li> <li>However, the Flood Zones do not represent the risk of flooding associated the ordinary watercourses within the site boundary. RoFSW mapping has used as a proxy to represent the risk of flooding from these watercourses.</li> </ul>			sk of flooding bod Zone 3b. the 1% AEP is defined by sociated with ing has been		
				ion of site at risk (F		(0.40/.455)	
	Surface Water	1 in 30 (3.33	-	1 in 100 (1% AEP)		(0.1% AEP)	
		2%		3%	6	5%	

JBA consulting



Site code		CS3			
Site name		Sandleford Park, Newbury	/		
		<ul> <li>Description of surface water flow paths:</li> <li>Surface water flood risk closely follows the routes of the ordinary wat within the site.</li> <li>Two flow paths form in the north and north west of the site, at Croo and Barn Copse, during the 3.3% AEP rainfall event and increase during the 1% AEP and 0.1% AEP rainfall events to flow southward River Enborne. A further flow path forms at the west of the site, ir Copse, and flows southwards following the route of the ordinary wate meet the River Enborne. During a 0.1% AEP rainfall event, contributin water flow paths form in the west and north of the site.</li> <li>A large surface water flow path is also predicted to form at the south during the 3.3%AEP event, which coincides with the floodplain of Enborne.</li> </ul>			
		Proportion of the site at risk in JBA Groundwater Map 1% AEP risk categories			
	Groundwater	Depth below surface 0-0.025m	Depth below surface 0.025-0.5m	Total in highest risk categories	
		0%	35%	35%	
		est of the site, following the upper reaches of the ordinary noderate to high risk of groundwater flooding, with dicted to lie between 0.025 – 0.5m below ground level ndwater flood event. In the remaining areas in the north levels are predicted to lie at least 5m below ground level.			
	Reservoir	The southern boundary of the site is at risk of flooding from Temple Lake and Milford Lake reservoirs, in the rare event of a reservoir breach.There are no canals within the vicinity of the site.			
	Canal				



Site code		CS3			
Site name		Sandleford Park, Newbury			
Defences		Defence Type	Standard of Protection	Conditio	on
		There are no defences present v	vithin the site.		
Flood risk		Culvert / structure blockage?	N/A		
management infrastructure	Residual risk	Impounded water body failure?	The southern boundary of the site is at flooding from Temple Lake and Milforr reservoirs, in the rare event of a re breach.		1ilford Lake
		Defence breach / overtopping?	N/A	Breach Zone	
	Flood warning	The southern boundary of the site is covered by the following Environment Agency Flood Alert and Flood Warning Areas: Flood Alert Areas: River Enborne and Foudry Brook. Flood Warning Areas: River Enborne from Gore End down to Aldermaston			
Emergency planning	Access and egress	The site may be accessed from Monks Lane to the north, the A339 Newtown Road to the east, and Kendrick Road or Warren Road to the west. All access routes are at low risk of fluvial flooding from Main Rivers, and are therefore located within Flood Zone 1. Newtown Road and Kendrick Road are at very low risk of surface water flooding. Areas of surface water ponding are predicted to form on Warren Road and Monks Lane during the 3.3% AEP rainfall event and form flow paths during the 0.1% AEP rainfall event. However, fluvial and surface water flood risk is not predicted to significantly impact access and egress at the site.			
	Climate change allowances for	River Basin District / Management Catchment	Central	Higher Central	Upper End
Climate Change	'2080s' (2016 allowances)	Thames (assessed within Level 2 SFRA)	25%	35%	70%
	Climate change allowances for '2080s' (2021 allowances)	Kennet and tributaries (to be used for site-specific FRAs)	21%	35%	76%

JBA consulting



Site code	CS3				
Site name	Sandleford Park, N	ewbury			
Implications for the site	the site, with the ext that of Flood Zone 3 The latest availabl specific Flood Risk that the 'Upper' pe site, which is classi To quantify the imp from the 2007 Rive carried out. Results (+76%) climate cha 0.18% higher than 5 the extent Flood Zo However, it is not ex the suitability of the	ent of Flood Zone 3 2. Therefore, clima e climate change Assssments. In line ak river flow clima fied as a large urba bacts of the new al er Enborne (MRL show that peak in- ange scenario in-c the Flood Zone 2 ( one 3a + CC increat xpected that the late e site for developr	leads to a small increase in 3a + 70% CC extending man te change is predicted to in allowances must be cons e with SFRA guidance, it is te change allowance is as an extension. Iowances, an initial compan to Kennet Confluence) ma -channel flows in the 1% AE hannel flows are predicted 0.1% AEP) peak flows. Thi ising further beyond that of rest climate change allowan nent, as the increase in flow within Flood Zone 3a + 2021 'Upper' allowance (1% AEP + 76% CC) Peak flow	rginally beyond npact the site. idered in site- recommended seessed at this rison of results odel has been EP plus 'Upper' to increase to s may result in Flood Zone 2. ces will impact	
		(m <sup>3</sup> /s)	(m <sup>3</sup> /s)		
	EN02.044 31.80 31.86 (+0.18%)				
	(10.1070)				



Site code		CS3				
Site name		Sandleford Park, Newbury				
	Bedrock Geology	Thames Group - Clay, Silt, Sand and Gravel				
	Superficial Geology	The north, west and east of the s river terrace deposits. The flood site is overlain by alluvium - dep	r Enborne at the south of the			
	Soils	Freely draining slightly acid loam Slowly permeable seasonally we soils cover the north and south o				
Requirement for drainage control and impact mitigation	SuDS	<ul> <li>Subs cover the horth and south of the site.</li> <li>SuDS design must follow the West Berkshire Count meet the Defra National Non-Statutory Technical St follow current best design practice (CIRIA Manual 2</li> <li>Opportunities should be taken on a greenfield site s deliver SuDS with multiple benefits, such as biodive and water resource education, through integration v greenspace.</li> <li>'Natural', vegetated SuDS (such as green roofs, sw will be preferred by West Berkshire Council as LLF/ engineered' and below-ground drainage.</li> <li>All development should adopt source control SuDS Conveyance features should be designed above ground trainage.</li> <li>Storage for runoff from the development in extreme located out of fluvial flood risk areas.</li> <li>The impermeable bedrock geology and moderately flood risk suggest that deep infiltration may not be a However, the underlying permeable soil and superfi provide opportunity to infiltrate to a shallow depth bi area. Site investigation and infiltration testing will be suitability.</li> <li>Where below ground storage is proposed, the base must be located at least 1m above the highest group.</li> </ul>		Technical Standards, and RIA Manual 2015). enfield site such as this to ch as biodiversity, recreation integration with areas of en roofs, swales and ponds) uncil as LLFA over 'hard e. ontrol SuDS techniques. ed above ground and following nt in extreme events should be I moderately high groundwater may not be a suitable option. il and superficial deposits may llow depth but over a wider esting will be required to test ed, the base of the feature		
	Groundwater Source Protection Zone	The site is located within Groundwater Source Protection Zone (GSPZ) 3.				
	Historic Landfill Site	There are no historic landfill sites within the site boundary.				
	Opportunities for flood risk betterment	Opportunities for using source control SuDS to manage runoff rates and volumes, contributing to the reduction of flood peaks downstream on the Ri Enborne and existing surface water flow paths leaving the site.				
		Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications		
	Cumulative impacts of development	Enborne (downstream A34 to Burghclere Brook)	Moderate	The FRA and surface water drainage strategy should demonstrate wider betterment by demonstrating measures which can be put in place to contribute to a reduction in flood risk downstream.		
	Sequential Test an	d Exception Test requirements				

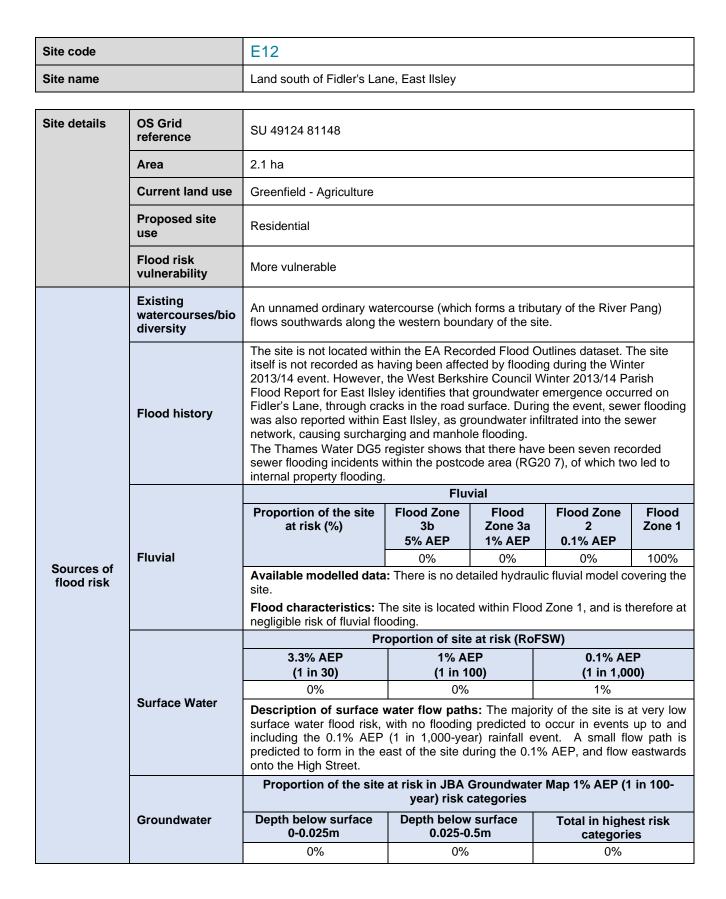




Site code		CS3
Site name		Sandleford Park, Newbury
	(SPD) stan current be: resulting fro	gn must follow West Berkshire Council SuDS Supplementary Planning Document idards, meet the Defra National Non-Statutory Technical Standards, and follow st design practice (CIRIA Manual 2015). The design must ensure that flows om rainfall in excess of a 1 in 100-year event are managed via exceedance routes se the risks to people and property.

JBA consulting

#### Level 2 SFRA Detailed Site Summary Tables



JBA



Site code		E12				
Site name		Land south of Fidler's Lane, East Ilsley				
		JBA Groundwater Mapping shows the site to be at moderate risk of groundwater flooding, with groundwater levels predicted to lie between 0.5m and 5m below the ground surface during a 1% AEP event. However, groundwater emergence modelling carried out by Jacobs following the Winter 2013/14 flood event, indicates that groundwater emergence is predicted to impact the north and east of the site during the 3.3% AEP event, and extend to cover the majority of the site during a 1% AEP flood event.				5m below the s following the is predicted to
	Reservoir	The site is not at risk of flooding,	in the rare	e event of a re	eservoir brea	ich.
	Canal	There are no canals witin the site	e boundary	<i>.</i>		
		Defence Type	Standar	d of Protect	ion C	Condition
	Defences	There are no defences within site	e boundary	/.		
Flood risk management infrastructure	Residual risk	Culvert / structure blockage?	e? Site, in the event of a blockage. However, the impact of this blockage should be assessed in			ppears to be the north west is the potential portion of the However, the e assessed in
		Impounded water body failure?	N/A			
		Defence breach / overtopping?	Breach Zone			
	Flood warning	The site is not covered by an E Area.		t Agency Flo	od Alert or F	Flood Warning
Emergency planning	Access and egress	The site is likely to be accessed via Fidler's Lane to the north, or High Street to the east. Both roads are at very low fluvial flood risk, although are at surface water flood risk. Surface water flooding is predicted to affect Fidler's Lane during the 1% AEP (1 in 100) and 0.1% AEP (1 in 1,000) rainfall events, and is expected to form on High Street during a 0.1% AEP (1 in 1,000) rainfall event. The junction between the two roads is at high surface water flood risk, with a flow path causing flooding during the 3.3% AEP (1 in 30) rainfall event. Groundwater emergence modelling indicates that both roads are also at risk of groundwater flooding, during a 3.3% AEP (1 in 30) and 1% AEP (1 in 100) events. Therefore, access to the site via Fidler's Lane and the High Street may be restricted at times of surface water and groundwater flooding.				
	Climate change	River Basin District / Manag Catchment	ement	Central	Higher Central	Upper End
Climate Change	allowances for '2080s' (2016 allowances)	Thames (assessed within Level :	2 SFRA)	25%	35%	70%
	Climate change allowances for '2080s' (2021 allowances)	Thames and South Chilterns (to for site-specific FRAs)	Thames and South Chilterns (to be used for site-specific FRAs)		43%	76%
	Implications for the site	on fluvial flood risk.	The site remains within Flood Zone 1, accounting for the impact of climate of on fluvial flood risk. The latest available climate change allowances must be used in site-specifi			-



Site code E12						
Site name		Land south of Fidler's Lane, East Ilsley				
	Bedrock Geology Superficial Geology	The site is underlain by Sussex White Chalk Formation There are no superficial deposits on the site.				
	Soils					
Requirement for drainage control and impact mitigation	SuDS	<ul> <li>SuDS design must follow the West Berkshire Council SuDS SPD, me the Defra National Non-Statutory Technical Standards, and follow current best design practice (CIRIA Manual 2015).</li> <li>A greenfield site such as this should seek to implement an exem scheme, using natural, vegetated SuDS to deliver multiple bene including water quality, biodiversity, amenity, green infrastructure etc.</li> <li>'Natural', vegetated SuDS (such as green roofs, swales and ponds) be preferred by West Berkshire Council as LLFA over 'hard enginee and below-ground SuDS.</li> <li>All development should adopt source control SuDS techniques. Conveyance features should be designed above ground and follow natural flow paths where possible.</li> <li>The bedrock geology suggests that infiltration may be suitable, althou mapping and emergence modelling indicate that the site is at risk of groundwater flooding. Therefore, it is recommended further site investigation should be carried out to assess potential for drainage by infiltration, including at least 12 months of groundwater level monitorir on site. Infiltration techniques should only be used where there are suitable levels of surface water runoff treatment.</li> <li>Where below ground storage is proposed, the base of the feature must be located at least 1m above the highest groundwater level, to reduce the risk of groundwater ingress or flotation.</li> </ul>				
	Groundwater Source Protection Zone	The site is not located within a Groundwater Source Protection Zone.				
	Historic Landfill Site	There are no historic landfill sites within the site boundary or within close proximity.				
	Opportunities for flood risk betterment	Opportunities for using source control SuDS to manage runoff rates and volumes, and to provide additional storage for surface water runoff onsite, to contribute towards the reduction and delay of flood peaks reaching the River Pang and the existing surface water flow path leaving the site.				
		Water Framework Directive Catchment	Implications			
	Cumulative impacts of development	Pang	Medium	The FRA and surface water drainage strategy should demonstrate wider betterment by demonstrating measures which can be put in place to contribute to a reduction in flood risk downstream.		
	Sequential Test an	d Exception Test requiremer	nts			



Site code	E12
Site name	Land south of Fidler's Lane, East IIsley

	The site is within Flood Zone 1 but at risk from other sources of flooding. The Sequential Test must be passed. The Exception Test is not required under the NPPF, but it must be shown that the development will be safe for its lifetime and the risk can be managed through a sequential approach to design.
	Recommendations for requirements of site-specific Flood Risk Assessment, including guidance for developers
	Flood risk assessment:
	<ul> <li>At the planning application stage, a site-specific flood risk assessment and surface water drainage strategy will be required.</li> </ul>
	<ul> <li>Consultation with the Local Authority and the Environment Agency should be undertaken at an early stage.</li> </ul>
	<ul> <li>A site-specific flood risk assessment will be required because the site is greater than 1Ha in area and at risk from sources of flooding other than rivers and the sea. Government guidance on flood risk assessments must be followed (<u>https://www.gov.uk/guidance/floodrisk-assessment-for-planning-applications</u>).</li> </ul>
	<ul> <li>Other sources of flooding should also be considered as part of a site-specific flood risk assessment, including surface water and groundwater.</li> </ul>
	<ul> <li>Detailed modelling will be required to confirm Flood Zone and climate change extents for the ordinary watercourse within the site (see 'Available modelled data'). The Environment Agency and LLFA should be consulted to obtain the latest hydraulic modelling information for the site at the time of the flood risk assessment. They will advise as to whether existing detailed models are available, and if so, whether they need to be updated.</li> </ul>
Recommend- ations for	<ul> <li>Climate change should be assessed using recommended climate change allowances at the time of the assessment (<u>https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances</u>) for the type of development and level of risk. The current allowances were published in February 2016 but may be subject to change in the future.</li> </ul>
Local Plan policy	<ul> <li>Modelling should be conducted to assess the residual risk associated with potential blockage of the subject within the site.</li> </ul>
policy	<ul> <li>the culvert within the site.</li> <li>The site is located within a catchment identified as moderately sensitive to the cumulative impacts of development on flood risk. The site-specific FRA and surface water drainage strategy should consider the recommendations outlined for catchments of medium sensitivity in the West Berkshire Level 1 SFRA Cumulative Impacts Assessment Addendum.</li> </ul>
	Guidance for site design and making development safe:
	<ul> <li>Development must seek opportunities to reduce overall level of flood risk at the site and should seek to reduce the levels of flood risk downstream.</li> </ul>
	<ul> <li>Safe access and egress should be demonstrated in the 1 in 100 plus climate change event.</li> </ul>
	A site-specific surface water drainage strategy will be required.
	<ul> <li>The surface water drainage design must ensure that flows resulting from rainfall in excess of a 1 in 100-year event are managed via exceedance routes that minimise the risks to people and property.</li> </ul>
	<ul> <li>The level of detail and method of assessment of surface water runoff rates and volumes should be appropriate to the scale and risk of the development and should include recommended allowance for climate change and urban creep at the time of the assessment (currently +40% allowance for climate change and a 10% increase in impermeable area for urban creep).</li> </ul>
	<ul> <li>SuDS design must follow West Berkshire Council SuDS Supplementary Planning Document (SPD) standards, meet the Defra National Non-Statutory Technical Standards, and follow current best design practice (CIRIA Manual 2015).</li> </ul>
	• The unnamed watercourse which forms the western boundary of the site is an ordinary watercourse. A sufficient width of buffer, to be agreed in consultation with West Berkshire Council, should be maintained between the riverbank and any built structures, to enable riparian owners to access and maintain the channel.



Site code		ENG1						
Site name		Englefield Estate Yard, The Street, Englefield, RG7 5ES						
Site details	OS Grid reference	SU 62825 72284						
	Area	1.1 Ha						
	Current land use	Brownfield - Estate yard						
	Proposed site use	Commercial and commun	ity facilities					
Flood risk vulnerability         Less vulnerable								
	Existing watercourses/bio diversity	There are no watercourse	es in the site bou	indary.				
	Flood history	The Thames Water DG5	The site is not located within the EA Recorded Flood Outline dataset. The Thames Water DG5 register shows that 14 sewer flooding incidents have been recorded within the postcode area (RG7 5), of which one has resulted in internal property flooding					
			Flu	vial				
		Proportion of the site at risk (%)	Flood Zone 3b 5% AEP	Flood Zone 3a 1% AEP	Flood Zone 2 0.1% AEP	Flood Zone 1		
	Fluvial		0%	0%	0%	100%		
		Available modelled data: The site is not covered by a hydraulic model. Flood characteristics:						
				, where fluvial flood risk is negligible.				
		Proportion of site at risk (RoFSW)           1 in 30 (3.33% AEP)         1 in 100 (1% AEP)         1 in 1,000 (0.1% AEP)						
Sources of flood risk		0%	09		1%			
	Surface Water	<b>Description of surface water flow paths:</b> The site is at very low surface water flood risk, with a small area of predicted to form against an existing building in the centre of the site during AEP (1 in 1,000) rainfall event.						
		Proportion of the s	ite at risk in JB categ		ter Map 1% AEF	risk		
	Groundwater	Depth below surface 0-0.025m	Depth below 0.025-0		Total in highe categorie			
	Groundwater	74%	26%	, D	100%			
		The site is at high risk of groundwater flooding, with groundwater levels across the majority of the site predicted to lie within 0.025m of the ground surface during a 1% AEP (1 in 100) event. In the north of the site, groundwater levels are predicted to lie between 0.025 – 0.5m of the ground surface during a flood event.						
	Reservoir	The site is not at risk of flo	ooding, in the ra	re event of a r	eservoir breach.			
	Canal	There are no canals withi	n the vicinity of t	he site.				





Site code	ENG1
Site name	Englefield Estate Yard, The Street, Englefield, RG7 5ES

	Defences	Defence Type	Standar	d of Protectio	on C	Condition	
		There are no flood defences with	within the site boundary.				
Flood risk management		Culvert / structure blockage?	N/A				
infrastructure	Residual risk	Impounded water body failure?	N/A				
		Defence breach /		Bread	ch Zone		
		overtopping?	N/A				
	Flood warning	The site is not within an EA Flood Alert or Flood Warning Area.					
Emergency planning	Access and egress	The site is likely to be accessed via The Street with current access to the south the site. The route is in Flood Zone 1 with neglgibile risk of fluvial flooding. Adjace to the site, there is a small area of surface water ponding within the highway whi is likley to occur duirng the 3.33% AEP event.					
	Climate change allowances for	River Basin District / Manag Catchment	jement	Central	Higher Central	Upper End	
	'2080s' (2016 allowances)	Thames (assessed within Level	2 SFRA)	25%	35%	70%	
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Thames and South Chilterns (to be used for site-specific FRAs)		31%	43%	76%	
	Implications for the site	The site remains in Flood Zone change. The latest available climate char Flood Risk Assssments.		Ū	•		



Site code	ENG1
Site name	Englefield Estate Yard, The Street, Englefield, RG7 5ES

	Bedrock Geology	Seaford Chalk Forma	tion.				
	Superficial Geology	Thatcham Gravel - Sand And Gravel.					
	Soils	Freely draining slightly acid loamy soils.					
Requirement for drainage control and impact mitigation	SuDS	<ul> <li>SuDS design must follow the West Berkshire Council SuDS SPD, meet the Defra National Non-Statutory Technical Standards, and follow current best design practice (CIRIA Manual 2015).</li> <li>SuDS are possible on all sites, including previously developed sites su as this one. All development should adopt source control SuDS techniques. Conveyance features should be designed above ground and following natural flow paths where possible.</li> <li>'Natural', vegetated SuDS (such as green roofs, swales and ponds) wi be preferred by West Berkshire Council as LLFA over 'hard engineerer and below-ground SuDS.</li> <li>The bedrock geology appears to be permeable, although mapping indicates that the site is at high risk of groundwater flooding, therefore infiltration techniques may not be suitable. It is recommended that furth site investigation should be carried out to assess and confirm the potential for infiltration.</li> <li>The site is located within Groundwater Source Protection Zone 3. As such infiltration techniques should only be used where there are suitable levels of treatment and following the granting of any required environmental permits from the Environment Agency.</li> <li>Where below ground storage is proposed, the base of the feature mus be located at least 1m above the highest groundwater level, to reduce the risk of groundwater ingress or flotation.</li> </ul>					
	Groundwater Source Protection Zone	The site is within Groundwater Source Protection Zone 3.					
	Historic Landfill Site	There are no historic landfill sites within the site boundary.					
	Opportunities for flood risk betterment	Opportunities for using source control SuDS to manage runoff rates and volumes, contributing to the reduction of flood peaks downstream and existing surface water flow paths leaving the site.					
		Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications			
	Cumulative impacts of development	Sulham Brook	Medium	The FRA and surface water drainage strategy should demonstrate wider betterment by demonstrating measures which can be put in place to contribute to a reduction in flood risk downstream.			
	Sequential Test an	d Exception Test requ	iirements				



Site code		ENG1				
Site name		Englefield Estate Yard, The Street, Englefield, RG7 5ES				
Site name Recommend- ations for Local Plan policy	passed. The Except will be safe for its life Recommendations for developers Flood risk assess • At the draina • Consu- at an e • A site- and loo rivers • Other assess • Climat the tim chang were p • The si impact strateg sensiti Adden • Develo • Mitigat finishe • Due to • The d Infiltrat to be s used b the sto	bod Zone 1 but at risk from other sources of flooding. The Sequential Test must be ion Test is not required under the NPPF, but it must be shown that the development etime and the risk can be managed through a sequential approach to design. <b>a for requirements of site-specific Flood Risk Assessment, including guidance</b> <b>nent:</b> planning application stage, a site-specific flood risk assessment and surface water ge strategy will be required. Iltation with the Local Authority and the Environment Agency should be undertaken early stage. specific flood risk assessment will be required because the site is over 1 ha in area cated within Flood Zone 1, as well as at risk from sources of flooding other than and the sea. Government guidance on flood risk assessments must be followed //www.gov.uk/guidance/flood-risk-assessment-for-planning-applications). sources of flooding should also be considered as part of a site-specific flood risk sment, including surface water and groundwater. e change should be assessed using recommended climate change allowances at ne of the assessment ( <u>https://www.gov.uk/guidance/flood-risk-assessments-climate- e-allowances</u> ) for the type of development and level of risk. The current allowances bublished in February 2016 but may be subject to change in the future. te is located within a catchment identified as moderately sensitive to the cumulative is of development on flood risk. The site-specific FRA and surface water drainage gy should consider the recommendations outlined for catchments of medium vity in the West Berkshire Level 1 SFRA Cumulative Impacts Assessment				



Site code	GS1
Site name	Land west of Spring Meadows, Allendale Farm, Great Shefford

Site details	OS Grid reference	SU 38782 758	34						
	Area	1.01Ha							
	Current land use	Greenfield - grassland							
	Proposed site use	Residential							
	NPPF Flood risk vulnerability	More vulnerab	More vulnerable						
	Existing watercourses/bio diversity	Stream, a Mair	There are no watercourses within the site boundary itself. The Great Shefford Stream, a Main River tributary of the River Lambourn, flows in a south westerly direction, approximately 100m east of the site.						
	Flood history	The site is identified as having been affected by groundwater flooding during the Winter 2013/2014 flood event. A total of 37 properties in Great Shefford were flooded during the event, with 16 properties flooded internally. The Thames Water DG5 record shows that there have been 20 sewer flooding incidents within the postcode area of RG17 7, of which 5 have resulted in internal flooding of property. The site is not identified as having previously flooded from fluvial sources, although the Great Shefford Stream near the site is reported to have overtopped its banks during the Winter 2013/14 flood event.							
			Proport	ion of	site at risk in Flo	od Zones			
		Proportion	Flood Z	one	Flood Zone	Flood Zone	Flood		
		of the site at risk (%)	3b 5% AE	Р	3a 1% AEP	2 0.1% AEP	Zone 1		
	Fluvial		0%		0%	0%	100%		
Sources of flood risk		Available modelled data: The site is not covered by a hydraulic model. Flood characteristics: The site is within Flood Zone 1, and is at very low risk of fluvial flooding.							
			Prop	ortion	of site at risk (R	oFSW)			
		1 in 30 (3.33	% AEP)	1 i	n 100 (1% AEP)	1 in 1000	(0.1% AEP)		
		0%			0%	2	2%		
	Surface Water	The site is at lo is at risk of flo event, which t water ponding	cription of surface water flow paths: site is at low risk of surface water flooding, The north east corner of risk of flooding from a surface water flow path during a 0.1% AE nt, which then drains into the Great Shefford Stream. An area o er ponding is also predicted to form beyond the northern boundary on a 1% AEP rainfall event.						
		Proportion	n of the site	at ris	k in JBA Ground	water Map 1%	AEP risk		
		Donth hole	ourfees	Dec	categories	Tetal in h	inheat rick		
		Depth below 0-0.025		Бер	th below surface 0.025-0.5m		ighest risk gories		
	Groundwater	0%			0%	(	)%		
		during a 1% . Emergence m	AEP ground odelling ide	dwater entifies	d to lie between ( flood event. How that the north of nce during a 3.3%	vever, Jacobs the site is pre	Groundwater edicted to be		



Site code		GS1					
Site name		Land west of Spring Meadows, Allendale Farm, Great Shefford					
		AEP (1 in 100-year) flood event. shallow, at less than 0.1m in dep		depths are predicte	d to remain		
	Reservoir	The site is not at risk of flooding,	in the rare ever	t of a reservoir brea	ch.		
	Canal	There are no canals within the vi	he vicinity of the site.				
		Defence Type	Standard of Protection	Conditio	'n		
Flood risk management infrastructure	Defences	There are no defences present v 120m east of the site in Spring N Council following the 2000/2001 However, the site is not expected risk is very low risk at the site.	leadows, which flooding which a	condition         Condition         Condition         Dod relief channel is located as re-built by West Berkshire ected Great Shefford. Inis defence, as fluvial flood         Breach Zone         Flood Alert or Flood Warning         ows to the east of the site, or orth of the site.         a 1% AEP (Flood Zone 3) and         ling during a 3.3% AEP and coinciding with the floodplain ess road is at risk of flooding during a 3.3% AEP and coinciding with the floodplain ess road is at risk of flooding during a fisk of shallow flooding during a f			
		Culvert / structure blockage?	N/A				
	Residual risk	Impounded water body failure?	N/A	d depths are predicted to remain ent of a reservoir breach. e. A flood relief channel is located n was re-built by West Berkshire affected Great Shefford. In this defence, as fluvial flood Breach Zone Market Street S			
		Defence breach / overtopping?	Breach Zone				
	Flood warning	The site is not covered by any Environment Agency Flood Alert or Flood Warning Areas.					
Emergency planning	Access and egress	The site is likely to be accessed from Spring Meadows to the east of the site, or the access track off A336 Wantage Road at the north of the site. Both access routes are at risk of flooding during the 1% AEP (Flood Zone 3) and 0.1% AEP (Flood Zone 2) fluvial flood events. Spring Meadows is at risk of surface water flooding during a 3.3% AEP and greater rainfall events, with the extent of flooding coinciding with the floodplain of the Great Shefford Stream. The northern access road is at risk of surface water flooding during the 1% AEP rainfall event, with the risk of flooding increasing at the junction of Wantage Road, which is at risk of flooding during a 3.3% AEP event. Both access routes are also at risk of shallow flooding due to groundwater emergence during a 3.3% AEP and 1% AEP event.					
	Climate change allowances for	River Basin District / Management Catchment	Central	Higher Central			
	'2080s' (2016 allowances)	Thames (assessed within Level 2 SFRA)	25%	35%	70%		
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Kennet and tributaries (to be used for site-specific FRAs)	21%	35%	76%		
	Implications for the site	The site remains in Flood Zone 2 change. The latest available climate char Flood Risk Assessments.		<b>°</b>			



Site code		GS1				
Site name		Land west of Spring Meadows, Allendale Farm, Great Shefford				
	Bedrock Geology	White Chalk Subgroup - Chalk				
	Superficial Geology	The east of the site is overlain by superficial head deposits of clay, silt sand and gravel.				
	Soils	The site is covered by freely draining lime-rich loamy soils.				
Requirement for drainage control and impact mitigation	SuDS	<ul> <li>SuDS design must follow the West Berkshire Council SuDS SPD, meet the Defra National Non-Statutory Technical Standards, and follow current best design practice (CIRIA Manual 2015).</li> <li>Opportunities should be taken on a greenfield site such as this to deliver SuDS with multiple benefits, such as biodiversity, recreation and water resource education, through integration with areas of greenspace.</li> <li>'Natural', vegetated SuDS (such as green roofs, swales and ponds) will be preferred by West Berkshire Council as LLFA over 'hard engineered' and below-ground drainage.</li> <li>All development should adopt source control SuDS techniques. Conveyance features should be designed above ground and following natural flow paths where possible.</li> <li>The bedrock geology suggests variable infiltration potential, but the site is at risk of groundwater flooding. Therefore, infiltration techniques may not be suitable at the site. If infiltration is proposed, it is recommended that further site investigation should be carried out to assess potential for drainage by infiltration, including at least 12 months of groundwater level monitoring on site.</li> <li>Where below ground storage is proposed, the base of the feature must be located at least 1m above the highest groundwater level, to reduce the risk of groundwater ingress or flotation.</li> </ul>				
	Groundwater Source Protection Zone	The site is not located within a Groundwater Source Protection Zone.				
	Historic Landfill Site	There are no historic landfill sites within the site boundary.				
	Opportunities for flood risk betterment	Opportunities for using source control SuDS to manage runoff rates and volumes, contributing to the reduction of flood peaks downstream on the Great Shefford Stream and River Lambourn and existing surface water flow paths leaving the site.				
		Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications		
	Cumulative impacts of development	Lambourn (Source to Newbury)	Moderate	The FRA and surface water drainage strategy should demonstrate wider betterment by demonstrating measures which can be put in place to contribute to a reduction in flood risk downstream.		









Site code		HSA6							
Site name		Land at Poplar Farm, Cold Ash							
Site details	OS Grid reference	SU 51188 692	61						
	Area	1.87Ha							
	Current land use	Agricultural far	mland and b	ouilding	gs				
	Proposed site use	Residential							
	NPPF Flood risk vulnerability	More vulnerab	le						
	Existing watercourses/bio diversity	watercourses/bio mapping suggests that an ordinary watercourse passes through							
	Flood history	The Thames V	The site is not identified as having flooded from fluvial sources. The Thames Water DG5 record shows that there have been 18 incidents of sewer flooding to external property within the postcode area of RG18 9.						
			Proporti	ion of site at risk in Flood Zones					
		Proportion of the site	Flood Zo 3b	one	Flood Zone 3a	Flood Zone 2	Flood Zone 1		
		at risk (%)	5% AEI	Р	1% AEP	0.1% AEP	Zone i		
			0%		0%	0%	100%		
	Fluvial	Available mod							
		The site is not covered by a detailed hydraulic model. Flood characteristics:							
		The site is at very low risk of fluvial flooding from Main Rivers, and is located within Flood Zone 1. RoFSW mapping has been used as a proxy to represent the risk of flooding from the ordinary watercourse likely to pass through the site							
Sources of		boundary.  Proportion of site at risk (RoFSW)							
flood risk		1 in 30 (3.33	1 in 30 (3.33% AEP) 1 in 100 (1% AEP)		1 in 1000 (0.1% AEP)				
		3%			14%	4	41%		
	Surface Water	<ul> <li>Description of surface water flow paths:</li> <li>Surface water flood risk on the site closely follows the expect ordinary watercourse, with a large flow path entering the north the site, and flowing in a south easterly direction onto Cold Ash H The flow path forms during a 3.3% AEP and greater rainfall evaluation around existing buildings on the site.</li> <li>A second flow path forms to the west, and flows eastwards ont boundary of the site during a 1% AEP and greater rainfall even northern flow path.</li> </ul>				ing the north w nto Cold Ash Hil ater rainfall eve eastwards onto	est corner of I Road. nt, and flows the southern		
		-		at ris	k in JBA Ground categories	water Map 1%	AEP risk		
	Groundwater	Depth below 0-0.025		Dep	th below surface 0.025-0.5m		ighest risk gories		
		0%			0%	C	%		
		The site is identified as at low risk of groundwater flooding.							



Site code	HSA6
Site name	Land at Poplar Farm, Cold Ash

	Canal	There are no canals within the vicinity of the site.			
	Defences	Defence Type	Standard of Protection	Conditio	n
		There are no defences present w Scheme is located 500m south of		he Cold Ash Flood A	Alleviation
Flood risk management infrastructure	Residual risk	Culvert / structure blockage? An ordinary watercourse is likely to below the site within a culvert. The loc and course of this culvert, as well as residual risk to the site in the event blockage, should be assessed in detail w a site-specific Flood Risk Assessment.			he location vell as the event of a detail within
		Impounded water body failure?	N/A		
		Defence breach /		Breach Zone	
		overtopping?	N/A		
	Flood warning	The site is not covered by an Env Area.		-	, i i i i i i i i i i i i i i i i i i i
Emergency planning	Access and egress	The site is likely to be accessed from Cold Ash Hill to the east. However, the is potential for alternative or additional access routes south of Orchard End the south and from Strouds Meadow to the north. All access routes are at low risk of fluvial flooding from Main Rivers, and a therefore located within Flood Zone 1. Strouds Meadow is at very low surface water flood risk. Orchard End is at risk of surface water flooding during a 1% AEP and 0.1% AE rainfall event, and leads onto Cold Ash Hill which is at risk of surface water flooding during a 3.3% AEP and greater rainfall events. At Cold Ash Hill, the branches of an ordinary watercourse form a confluence beyond the south eac corner of the site. However, the area of predicted flooding is relatively localise and flood risk is not predicted to significantly impact access and egress at the site.			
	Climate change allowances for	River Basin District / Management Catchment	Central	Higher Central	Upper End
	'2080s' (2016 allowances)	Thames (assessed within Level 2 SFRA)	25%	35%	70%
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Kennet and tributaries (to be used for site-specific FRAs)	21%	35%	76%
	Implications for the site	The site remains within Flood Zone 1, when accounting for the impact of climate change. The latest available climate change allowances must be used in site-specific Flood Risk Assessments.			

# Level 2 SFRA Detailed Site Summary Tables



	Bedrock Geology	Thames Group - Clay, Silt, Sand and Gravel				
Requirement for drainage control and impact mitigation	Superficial Geology	The site is overlain by head deposits of clay, silt, sand and gravel.				
	Soils	Freely draining slightly acid loamy soils are located within the site.				
	SuDS	<ul> <li>SuDS design must follow the West Berkshire Council SuDS SPD, meet the Defra National Non-Statutory Technical Standards, and follow current best design practice (CIRIA Manual 2015).</li> <li>Opportunities should be taken to deliver SuDS with multiple benefits, such as biodiversity, recreation and water resource education, through integration with areas of greenspace.</li> <li>'Natural', vegetated SuDS (such as green roofs, swales and ponds) will be preferred by West Berkshire Council as LLFA over 'hard engineered' and below-ground drainage.</li> <li>All development should adopt source control SuDS techniques. Conveyance features should be designed above ground and following natural flow paths where possible.</li> <li>Storage for runoff from the development in extreme events should be located out of fluvial flood risk areas.</li> <li>The impermeable bedrock geology suggests that deep infiltration may not be a suitable option. However, the underlying permeable soil and superficial deposits may provide opportunity to infiltrate to a shallow depth but over a wider area. Site investigation and infiltration testing will be required to test suitability.</li> <li>As the site is located upstream of Thatcham, a nationally designated Flood Risk Area for surface water flood risk, the development should seek betterment on existing runoff rates and volumes, and aim to meet greenfield runoff for the site.</li> <li>Opportunities for long term storage should be utilised on the site, to reduce and delay the timing of surface water runoff reaching downstream Thatcham, a nationally designated.</li> </ul>				
	Groundwater Source Protection Zone	The site is located within Groundwater Source Protection Zone (GSPZ) 3.				
	Historic Landfill Site	There are no historic landfill sites within the site boundary.				
	Opportunities for flood risk betterment	Opportunities for using source control SuDS to manage runoff rates and volumes, contributing to the reduction of flood peaks downstream on the River Kennet and existing surface water flow paths leaving the site.				
	Cumulative impacts of development	Water Framework Directive     Sensitivity       Catchment     to       impacts     Implications				

JBA consulting



Site code		HSA6			
Site name         Land at Poplar Farm, Cold Ash					
	The site is within Fl	Kennet (Lambourn confluence to Enborne confluence) ad Exception Test requirements lood Zone 1 but at risk from other exception Test is not required un	sources of floor		
	development will be to design. Recommendations	e safe for its lifetime and the risk of site-spaces of site-spaces of site-spaces of site-spaces of site-spaces	an be managed	through a sequential approach	
Recommend- ations for Local Plan policy	<ul> <li>Recommendations for requirements of site-specific Flood Risk Assessment, including guidance for developers</li> <li>Flood risk assessment:         <ul> <li>At the planning application stage, a site-specific flood risk assessment and surface water drainage strategy will be required.</li> <li>Consultation with the Local Authority and the Environment Agency should be undertaken at an early stage.</li> <li>A site-specific flood risk assessment will be required because the site is at risk from sources of flooding other than rivers and the sea. Government guidance on flood risk assessments must be followed (https://www.gov.uk/guidance/floodrisk-assessment-for-planning-applications).</li> <li>Detailed modelling will be required to confirm Flood Zone and climate change extents for the ordinary watercourse on the site (see 'Available modelled data'). The Environment Agency and LLFA should be consulted to obtain the latest hydraulic modelling information for the site at the time of the flood risk assessment. They will advise as to whether existing detailed models are available, and if so, whether they need to be updated.</li> <li>Climate change should be assessed using recommended climate change allowances at the time of the assessment (https://www.gov.uk/guidance/flood-risk-assessments-climatechange-allowances) for the type of development and level of risk. The current allowances were published in February 2016 but may be subject to change in the future.</li> <li>Other sources of flooding should also be considered as part of a site-specific flood risk assessment, including surface water and groundwater.</li> <li>The site is located within a catchment identified as highly sensitive to the cumulative impacts of development on flood risk. The site-specific FRA and surface water drainage strategy should consider the recommendations outlined for high sensitivity catchments in the West Berkshire Level 1 SFRA Cumulative Impacts</li></ul></li></ul>				





Site code HSA6	
Site name	Land at Poplar Farm, Cold Ash
sh rea (cu url • Su (S cu	he level of detail and method of assessment of surface water runoff rates and volumes around be appropriate to the scale and risk of the development and should include commended allowance for climate change and urban creep at the time of the assessment urrently +40% allowance for climate change and a 10% increase in impermeable area for ban creep). uDS design must follow West Berkshire Council SuDS Supplementary Planning Document PD) standards, meet the Defra National Non-Statutory Technical Standards, and follow urrent best design practice (CIRIA Manual 2015). The design must ensure that flows sulting from rainfall in excess of a 1 in 100-year event are managed via exceedance routes
	at minimise the risks to people and property.





Site code	HSA19
Site name	Land adjoining Lynch Lane, Lambourn

Site details	OS Grid reference	SU 32522 79315						
	Area	5.59 Ha	5.59 Ha					
	Current land use	Greenfield	Greenfield					
	Proposed site use	Residential	Residential					
	NPPF Flood risk vulnerability	More vulnerable						
	Existing watercourses/bio diversity	location close of the site. Maps dating up two parallel ch boundary and lakes situated Current mappi	laps dating up to the 1970s show that the watercourse historically flowed as vo parallel channels. A southern channel was located at the northern site bundary and a northern channel flowed through the series of long, online kes situated beyond the boundary of the site. urrent mapping only shows the northern channel, but LiDAR data suggests that the southern channel still remains and lies perched above the northern					
	Flood history	groundwater flu properties in La flooded interna The Thames V incidents within internal floodin	The north and west of the site are identified as having been affected by groundwater flooding during the Winter 2013/2014 flood event. A total of 21 properties in Lambourn were flooded during the event, with 12 properties flooded internally. The Thames Water DG5 record shows that there have been 20 sewer flooding incidents within the postcode area of RG17 8, of which 1 has resulted in internal flooding of property. The site is not located in the EA Recorded Flood Outlines dataset.					
Sources of		Proportion of site at risk in Flood Zones						
flood risk		Proportion of the site at risk (%)	Flood Zone 3b 5% AEP	Flood Zone 3a 1% AEP	Flood Zone 2 0.1% AEP	Flood Zone 1		
			8%	0%	0%	92%		
	Fluvial	Available modelled data:The site is covered by broadscale, generalised modelling, with the model filesnot available for use in the Level 2 SFRA. Therefore, Flood Zone 3b has beenused as a proxy for Flood Zone 3a.Flood characteristics:The modelled flood extents follow the route of the River Lambourn southernchannel at the site.The northern and north-eastern boundaries of the site are identified as at risk offlooding during a 1% AEP event. The extent of flooding is predicted to increase						
		marginally in tr		site during a 0.1% A ion of site at risk (				
	Surface Water	1 in 30 (3 33				(0.1% AEP)		
	Surface water			( <b>0.1% AEP)</b> 5%				
		076		∠ /0		070		





Site code		HSA19				
Site name		Land adjoining Lynch Lane, Lambourn				
		Description of surface water flow paths:         Surface water flood risk closely follows the route of the River Lambourn southern channel within the site.         A surface water flow path is predicted to pass south eastwards through the northern corner of the site during a 1% AEP and continues to flow along the north eastern boundary of the site. The extent of flooding increases marginally during the 0.1% AEP event. The area beyond the north east boundary of the site is at risk of flooding during the 3.3% AEP event.         Proportion of the site at risk in JBA Groundwater Map 1% AEP risk categories				
						EP risk
		Depth below surface 0-0.025m	Dep	oth below surfa 0.025-0.5m	ce Total in hi categ	
	Groundwater	0%		0%	09	%
		The site is at moderate risk of groundwater flooding, with expected to lie between 0.5m and 5m below ground level groundwater flood event.				
	Reservoir	The site is not at risk of flo	oding,	in the rare ever	nt of a reservoir bre	ach.
	Canal	There are no canals withir	n the vi	cinity of the site		
	Defences	Defence Type Standard of Protection Condition			on	
Flood risk management infrastructure	Residual risk	Culvert / structure       There are no culverts within the site.         Culvert / structure       There are no culverts within the site.         blockage?       bit the River Lambourn is bridged below Goose Green roa of the site. Using RoFSW mapping blockage of this culvert is not impact the site. However, the is blockage on residual risk to the sassessed in detail within a site-se Risk Assessment.			ulverted or l, 130m east g as a proxy, expected to apact of this te should be	
		Impounded water body failure?		N/A		
		Defence breach / overtopping?		N/A	Breach Zone	
	Flood warning	The southern boundary of the site is covered by the following Environment Agency Flood Alert and Flood Warning Areas: Flood Alert Areas: River Lambourn and its tributaries from Upper Lamb down to Newbury. Flood Warning Areas: N/A				
Emergency planning	Access and egress	The site will be accessed from Lynch Lane to the south east. The access ro is at low risk of fluvial flooding from Main Rivers, and is therefore located wi Flood Zone 1. Isolated areas of surface water ponding are predicted to form during a 1% A event on Lynch Lane. However, fluvial and surface water flood risk is predicted to significantly impact access and egress at the site.				cated within g a 1% AEP
Climate	Climate change	River Basin District		Central	Higher Central	Upper End
Climate Change	allowances for '2080s' (2016 allowances)	Thames		25%	35%	70%



Site code		HSA19			
Site name		Land adjoining Lynch Lane, Lambourn			
	Climate change allowances for '2080s' (2021 allowances)	Kennet and tributaries (to be used for site-specific FRAs)	21%	35%	76%
	Implications for the site	Fluvial flood risk to the site is predicted to increase marginally wh for the impact of climate change. However, in this location, Flood AEP) has been used to represent the extent of Flood Zone 3a + o change. The latest available climate change allowances must be used in s Flood Risk Assessments.			ne 2 (0.1% nate



Site code	HSA19
Site name	Land adjoining Lynch Lane, Lambourn

	Bedrock Geology	White Chalk Sub-group - Chalk		
	Superficial Geology	The north and east of the site are overlain by head deposits of clay, silt, sand and gravel. The floodplain of the River Lambourn at the north of the site is overlain by alluvium - deposits of clay, silt, sand and gravel.		
	Soils	Freely draining lime-rich loamy soils overlay the site.		
Requirement for drainage control and impact mitigation	SuDS	<ul> <li>SuDS design must follow the West Berkshire Council SuDS SPD, meet the Defra National Non-Statutory Technical Standards, and follow current best design practice (CIRIA Manual 2015).</li> <li>Opportunities should be taken on a greenfield site such as this to deliver SuDS with multiple benefits, such as biodiversity, recreation and water resource education, through integration with areas of greenspace.</li> <li>'Natural', vegetated SuDS (such as green roofs, swales and ponds) will be preferred by West Berkshire Council as LLFA over 'hard engineered' and below-ground drainage.</li> <li>All development should adopt source control SuDS techniques. Conveyance features should be designed above ground and following natural flow paths where possible.</li> <li>Storage for runoff from the development in extreme events should be located out of fluvial flood risk areas.</li> <li>The bedrock geology suggests good infiltration potential, although mapping indicates that the site is at moderate risk of groundwater flooding. Therefore, infiltration techniques may not be suitable at the site. If infiltration is proposed, it is recommended that further site investigation should be carried out to assess potential for drainage by infiltration, including at least 12 months of groundwater level monitoring on site. Infiltration techniques should only be used where there are suitable levels of surface water runoff treatment.</li> <li>Where below ground storage is proposed, the base of the feature must be located at least 1m above the highest groundwater level, to</li> </ul>		
	Groundwater Source Protection Zone	The site is not located within a Groundwater Source Protection Zone.		
	Historic Landfill Site	There are no historic landfill sites within the site boundary.		
	Opportunities for flood risk betterment	Opportunities for using source control SuDS to manage runoff rates and volumes, contributing to the reduction of flood peaks downstream on the River Lambourn and existing surface water flow paths leaving the site.		
	Cumulative impacts of development	Water Framework Directive CatchmentSensitivity to cumulative impactsImplications		



Site code		HSA19		
Site name		Land adjoining Lynch Lane, Lam	ibourn	
		Lambourn (Source to Newbury)	Moderate	The FRA and surface water drainage strategy should demonstrate wider betterment by demonstrating measures which can be put in place to contribute to a reduction in flood risk downstream.
	The Sequential Test Test be applied. It is Flood Zone 1. For If More Vu change. If Highly Vu If Essential Development will no Highly Vulr More Vuln	d Exception Test requirements must be satisfied. Only once the S s anticipated that proposed devi- this site, the Exception Test must ulnerable and Essential Infrastructure ulnerable development is located in Infrastructure is located in Flood to be permitted in the following sce- nerable development within FZ3a of erable and Less Vulnerable developments for requirements of site-spe	elopment will b be satisfied: ture is located n FZ2. Zone 3b. narios: or FZ3a plus clin opment within F	nate change and FZ3b.
Recommend- ations for Local Plan policy	guidance for devel Flood risk ass • At the plar drainage si • Consultatio an early sta • A site-spect and 3 and guidance (https://w • Detailed m channels a ordinary wa and LLFA si at the time models are • Climate ch time of t climatech allowances • Other sour assessmer • Modelling si of the culve • The site is impacts of strategy sh in the Wes	essment: aning application stage, a site-spectrategy will be required. on with the Local Authority and the age. ific flood risk assessment will be related as a site from sources of flooding on flood risk assessment will be related as a site from sources of flooding on flood risk assessment will be related as a site from sources of flooding on flood risk assessment will be related as a site for sources of flooding on flood risk assessment. The available, and if so, whether they ange should be assessed using related as a site flood risk assessment. The available, and if so, whether they ange-allowances) for the type of the assessment (https://www ange-allowances) for the type of the site bound also be cont, including surface water and groses the art beyond the site boundary. located within a catchment identidentide assess the and consider the recommendation t Berkshire Level 1 SFRA Cumula site design and making development	ecific flood risk a e Environment A equired because g other than riv assessments k-assessments k-assessment- m the arrangem Flood Zone and able modelled d atest hydraulic m hey will advise a need to be upd ecommended clin .gov.uk/guidan of development but may be sub considered as p undwater. residual risk ass fied as moderat site-specific FR his outlined for ca tive Impacts Ass ment safe:	assessment and surface water gency should be undertaken at e the site is within Flood Zone 2 ers and the sea. Government must be followed for-planning-applications). ent of the two River Lambourn climate change extents for the ata'). The Environment Agency todelling information for the site as to whether existing detailed ated. mate change allowances at the nce/flood-risk-assessments- and level of risk. The current oject to change in the future. art of a site-specific flood risk sociated with potential blockage tely sensitive to the cumulative A and surface water drainage atchments of medium sensitivity sessment Addendum.
	<ul> <li>The site is impacts of strategy sh in the Wes</li> <li>Guidance for s</li> <li>Development for example</li> <li>Safe access</li> </ul>	located within a catchment identi development on flood risk. The ould consider the recommendation t Berkshire Level 1 SFRA Cumula	site-specific FR ns outlined for ca tive Impacts Ass ment safe: uce overall level unoff and creati ated in the 1 in 2	A and surface water drainage atchments of medium sensitivity sessment Addendum. of flood risk both on and offsite, ng space for flooding. 100 plus climate change event.





Site code	HSA19
Site name	Land adjoining Lynch Lane, Lambourn
<ul> <li>Infiltration t larger areas that ground structural in</li> <li>Storage for areas.</li> <li>The design are manage</li> <li>The level of should be recommend (currently + urban creep</li> <li>SuDS desig (SPD) stan current bes resulting fro</li> </ul>	of SuDS schemes must take into account the seasonally high groundwater table. techniques may be ineffective, and SuDS may need to be shallow and take up s. Above ground conveyance and attenuation can be used but care must be taken dwater does not enter the SuDS feature and reduce the storage capacity and ntegrity of the design. runoff from the development in extreme events should be located out of flood risk must ensure that flows resulting from rainfall in excess of a 1 in 100-year event ed via exceedance routes that minimise the risks to people and property. of detail and method of assessment of surface water runoff rates and volumes appropriate to the scale and risk of the development and should include ded allowance for climate change and urban creep at the time of the assessment 40% allowance for climate change and a 10% increase in impermeable area for p). gn must follow West Berkshire Council SuDS Supplementary Planning Document dards, meet the Defra National Non-Statutory Technical Standards, and follow st design practice (CIRIA Manual 2015). The design must ensure that flows om rainfall in excess of a 1 in 100-year event are managed via exceedance routes se the risks to people and property.



Site name         Pirbright Institute Site, Compton           Site details         OS Grid reference         SU 51813 80218           Area         15.4 Ha           Current land use         Brownfield – vacant research centre           Proposed site use         Residential-led mixed use scheme with a mix of employment floorspace, green infrastructure and community uses           NPPF Flood risk vulnerability         More vulnerable           Flood history         There are no watercourses within the site boundary. The River Pang, a Main River, flows in an easterly direction beyond the southern boundary of the site.           Flood history         The site is not located within the EA Recorded Flood Outline dataset. Comptom was affected by flooding during the Winter 2013/4 1 flood event, with a total of 7 properties in the vilage experiencing flooding. of which 2 properties were internally flooded.           Flood history         Proportion of site at risk in Flood Zones           Proportion of site at risk in Flood Zones         Flood 2000           flood risk         Available modeliled data: The Flood Zones within the site are informed by broadscale, generalised modeling, with the model files not available for use in the LAVE 2 SFRA. Therefore, Flood Cones as (1% AEP) thas been used as a proxy for Flood Zone 30.           Flood characteristics:         The offood cone site at risk (RoFSW)           Therefore, Flood characteristics:         The offood risk. RoFSWD           Flood characteristics:         The set is at relat	Site code		HSA23					
Sources of flood risk         Function         SU 51813 80218           Area         15.4 Ha           Current land use         Brownfield – vacant research centre           Proposed site use         Residential-led mixed use scheme with a mix of employment floorspace, green infrastructure and community uses           NPPF Flood risk vulnerability         More vulnerable           Existing watercourses/bio diversity         There are no watercourses within the site boundary. The River Pang, a Main River, flows in an easterly direction beyond the southern boundary of the site. Compton was affected by flooding during the Winter 2013/14 flood event, with a total of 7 properties in the village experiencing flooding. of which 2 properties were internally flooded. The Thames Water OGS register shows that there are no sewer flooding incidents within the postcode area.           Flood history         Flood Zone of the site 3 this (%) 5%         Flood Zone 3 this (%) 5%         Flood Zone 100 d Zone 3 this (%) 5%         Flood Zone 3	Site name		Pirbright Institu	ute Site, Con	npton			
Sources of flood risk         Function         SU 51813 80218           Area         15.4 Ha           Current land use         Brownfield – vacant research centre           Proposed site use         Residential-led mixed use scheme with a mix of employment floorspace, green infrastructure and community uses           NPPF Flood risk vulnerability         More vulnerable           Existing watercourses/bio diversity         There are no watercourses within the site boundary. The River Pang, a Main River, flows in an easterly direction beyond the southern boundary of the site. Compton was affected by flooding during the Winter 2013/14 flood event, with a total of 7 properties in the village experiencing flooding. of which 2 properties were internally flooded. The Thames Water OGS register shows that there are no sewer flooding incidents within the postcode area.           Flood history         Flood Zone of the site 3 this (%) 5%         Flood Zone 3 this (%) 5%         Flood Zone 100 d Zone 3 this (%) 5%         Flood Zone 3			1					
Sources of flood risk         Floval         Flood aste proposed site use         Brownfield – vacant research centre           Proposed site use         Residential-led mixed use scheme with a mix of employment floorspace, green infrastructure and community uses           NPPF Flood risk vulnerability         More vulnerable           Existing watercourses/bio diversity         There are no watercourses within the site boundary. The River Pang, a Main River, flows in an easterly direction beyond the southern boundary of the site.           Flood history         There are no watercourses within the site boundary. The River Pang, a Main River, flows in an easterly direction beyond the southern boundary of the site.           Flood history         There are no watercourses within the site Accorded Flood Outline dataset. Compto was affected by flooding during the Winter 2013/14 flood event, with a total of 7 properties in the village experiencing flooding, of which 2 properties were internally flooded. The Thames Water DGS register shows that there are no sewer flooding incidents within the postcode area.           Flood history         Flood Zone at risk (%)         Flood Zone 5%         Flood Zone 95%	Site details		SU 51813 802	18				
Froposed site use         Residential-led mixed use scheme with a mix of employment floorspace, green infrastructure and community uses           NPPF Flood risk vulnerability         More vulnerable           Existing watercourses/bio diversity         There are no watercourses within the site boundary. The River Pang, a Main River, flows in an easterly direction beyond the southern boundary of the site. Compto was affected by flooding during the Vinter 2013/14 flood event, with a total of 7 properties in the village experiencing flooding, of which 2 properties incidents within the postcode area.           Flood history         The Thames Water DGS register shows that there are no sewer flooding incidents within the postcode area.           Flood nisk         Flood Zone at risk (%)         Flood Zone 5% APP         Flood Zone 1% AEP         Flood Zone 2 Cone 1           Fluvial         Flood Zone at risk (%)         Flood Zone 5% APP         Flood Zone 9 (Cone within the site are informed by broadscale, generalised modeling with the model flues not available for use in the Level 2 SFRA. Therefore, Flood Zone 3a (1% AEP) has been used as a proxy for Flood Zone 3b.         Flood cone site is at risk of fluvial flooding from the River Pang during a 1% AEP event, with a small increase in flood extent predicted during a 1% AEP 1% 2%           Surface Water         I in 30 (3.33% AEP)         1 in 100 (1% AEP)         1 in 1000 (0.1% AEP) 1%           The site is at relatively low surface water flood risk. Areas of localised ponding the 0.1% AEP eand greater rainfall events, adjacent to existing buildings, before leaving the site to join the River Pang.         1 in 100 (0.		Area	15.4 Ha					
Sources of flood risk         infrastructure and community uses           Sources of flood risk         Image: Source water of the second		Current land use	Brownfield – va	acant resear	ch cei	ntre		
Sources of flood risk         Fluvial         More vulnerable           Sources of flood risk         Existing watercourses/bio diversity         There are no watercourses within the site boundary. The River Pang, a Main River, flows in an easterly direction beyond the southern boundary of the site.           Flood history         The site is not located within the EA Recorded Flood Outline dataset. Compton was affected by flooding during the Winter 2013/14 flood event, with a total of 7 properties in the village experiencing flooding, of which 2 properties were internally flooded. The Thames Water DGS register shows that there are no sewer flooding incidents within the postcode area.           Flood history         Proportion of site at risk in Flood Zones of the site at risk (%)         Flood Zone 5%, AEP         Flood Zone 9, 0%         Flood Zone 9, 0%         Flood 95%           Fluvial         Flood Zone swithin the site are informed by broadscale, generalised modelling, with the model files not available for use in the Level 2 SFRA. Therefore, Flood Zone 3 (% AEP) has been used as a proxy for Flood Zone 3b.         Flood Zone 1 in the outse in flood event predicted during the 0.1% AEP event. The remainder of the site is located within Flood Zone 1, and is at low fluvial flood risk.           Surface Water         In 100 (1% AEP)         I in 100 (0.1% AEP)           1 in 30 (3.33% AEP)         1 in 100 (1% AEP)         1 in 1000 (0.1% AEP)           1 in 30 (3.33% AEP)         1 in 100 (1% AEP)         1 in 100 (0.1% AEP)           1 in so (4.333% AEP)         1 in 100 (1% AEP)         1 in 100 (0.1%		-						
Sources of flood risk         Flowing         Flow flow sufface water flow sufface water flow grant flow sufface water flow grant flow sufface water flow grant sufface grant sufface grant sufface grant sufface water flow grant sufface grant sufface grant sufface water flow grant sufface grant sufface grant sufface grant sufface water flow grant sufface grant su			More vulnerab	le				
Flood history         Compton was affected by flooding during the Winter 2013/14 flood event, with a total of 7 properties in the village experiencing flooding, of which 2 properties were internally flooded. The Thames Water DG5 register shows that there are no sewer flooding incidents within the postcode area.           Flood Data         Proportion of site at risk in Flood Zone incidents within the postcode area.         Flood Zone incidents within the postcode area.           Fluvial         Proportion of site at risk in Flood Zone incidents within the postcode area.         Flood Zone incidents within the postcode area.           Fluvial         Available modelled data: The Flood Zones within the site are informed by broadscale, generalised modelling, with the model files not available for use in the Level 2 SFRA. Therefore, Flood Zone 3a (1% AEP) has been used as a proxy for Flood Zone 3b.           Flood characteristics: The southern boundary of the site is at risk of fluvial flooding from the River Pang during a 1% AEP event, with a small increase in flood extent predicted during the 0.1% AEP event. The remainder of the site is located within Flood Zone 1, and is at low fluvial flood risk.           Surface Water         1 in 30 (3.33% AEP)         1 in 100 (1% AEP)         1 in 1000 (0.1% AEP)           1% AEP event, with a small increase in flood size during a 3.3% AEP         0 flood risk.         6%           Description of surface water flow paths: The site is at relatively low surface water flow paths form in the east of the site during a 3.3% AEP and greater rainfall events, adjacent to existing buildings, before leaving the site to join the River Pang.           Orgon dy r		watercourses/bio						
Sources of flood risk         Fluvial         Proportion of the site at risk (%)         Flood Zone 3b         Flood Zone 3a         Flood Zone 2 0.1% AEP         Flood Zone 1           Sources of flood risk         Fluvial         Available modelled data: The Flood Zones within the site are informed by broadscale, generalised modelling, with the model files not available for use in the Level 2 SFRA. Therefore, Flood Zone 3a (1% AEP) has been used as a proxy for Flood Zone 3b.         Flood characteristics: The southern boundary of the site is at risk of fluvial flooding from the River Pang during a 1% AEP event. The remainder of the site is located within Flood Zone 1, and is at low fluvial flood risk.           Surface Water         1 in 30 (3.33% AEP)         1 in 100 (1% AEP)         1 in 1000 (0.1% AEP)           1 v/k AEP and greater rainfall events, adjacent to existing buildings and areas of higher topography. Surface water flow paths form in the east of the site during a 0.1% AEP rainfall event, adjacent to existing buildings, before leaving the site to join the River Pang.         0.1% AEP risk categories           Groundwater         Proportion of the site at risk ID A Groundwater Map 1% AEP risk categories         Proportion of the site at risk in 1000 (event the site during a 0.1% AEP rainfall event, adjacent to existing buildings, before leaving the site to join the River Pang.		Flood history	Compton was a total of 7 pro were internally The Thames V	affected by f perties in the flooded. Vater DG5 re	iloodin e villag egister	g during the Winte ge experiencing flo shows that there	r 2013/14 flood oding, of which	event, with 2 properties
Sources of flood risk         of the site at risk (%)         3b 5% AEP         3a 1% AEP         2 0.1% AEP         Zone 1           Fluvial         Fluvial         Available modelled data: The Flood Zones within the site are informed by broadscale, generalised modelling, with the model files not available for use in the Level 2 SFRA. Therefore, Flood Zone 3a (1% AEP) has been used as a proxy for Flood Zone 3b.         Flood characteristics: The southern boundary of the site is at risk of fluvial flooding from the River Pang during a 1% AEP event, with a small increase in flood extent predicted during the 0.1% AEP event, with a small increase in flood extent predicted during the 0.1% AEP event, with a small increase in flood extent predicted during the 0.1% AEP event, with a small increase in flood extent predicted during the 0.1% AEP event, with a small increase in flood extent predicted during the 0.1% AEP event. The remainder of the site is located within Flood Zone 1, and is at low fluvial flood risk.           Surface Water         1 in 30 (3.33% AEP)         1 in 100 (1% AEP)         1 in 1000 (0.1% AEP)           1%         2%         6%           Description of surface water flow paths: The site is at relatively low surface water flood risk. Areas of localised ponding are predicted to form in the north, centre and south of the site during a 3.3% AEP and greater rainfall event, adjacent to existing buildings and areas of higher topography. Surface water flow paths form in the east of the site during a 0.1% AEP rainfall event, adjacent to existing buildings, before leaving the site to join the River Pang.           Groundwater         Depth below surface 0-0.025m         Depth below surface 0.025-0.5m         Tot				· ·			od Zones	
Sources of flood risk       Fluvial       5%       0%       0%       95%         Available modelled data: The Flood Zones within the site are informed by broadscale, generalised modelling, with the model files not available for use in the Level 2 SFRA. Therefore, Flood Zone 3a (1% AEP) has been used as a proxy for Flood Zone 3b.         Flood characteristics: The southern boundary of the site is at risk of fluvial flooding from the River Pang during a 1% AEP event, with a small increase in flood extent predicted during the 0.1% AEP event. The remainder of the site is located within Flood Zone 1, and is at low fluvial flood risk.         Surface Water       I in 30 (3.33% AEP)       1 in 100 (1% AEP)       1 in 1000 (0.1% AEP)         1%       2%       6%         Description of surface water flow paths: The site is a relatively low surface water flood risk. Areas of localised ponding are predicted to form in the north, centre and south of the site during a 3.3% AEP and greater rainfall events, adjacent to existing buildings and areas of higher topography. Surface water flow paths form in the east of the site during a 0.1% AEP rainfall event, and flow southwards around existing buildings, before leaving the site to join the River Pang.         Groundwater       Depth below surface 0-0.025m       Depth below surface 0.025-0.5m       Total in highest risk categories			of the site	3b		3a	2	
Sources of flood risk       Fluvial       The Flood Zones within the site are informed by broadscale, generalised modelling, with the model files not available for use in the Level 2 SFRA. Therefore, Flood Zone 3a (1% AEP) has been used as a proxy for Flood Zone 3b.         Flood risk       Flood characteristics:       The southern boundary of the site is at risk of fluvial flooding from the River Pang during a 1% AEP event, with a small increase in flood extent predicted during the 0.1% AEP event. The remainder of the site is located within Flood Zone 1, and is at low fluvial flood risk.         Surface Water       Proportion of site at risk (RoFSW)         1 in 30 (3.33% AEP)       1 in 100 (1% AEP)         1%       2%         6%       Description of surface water flow paths:         The site is at relatively low surface water flood risk. Areas of localised ponding are predicted to form in the north, centre and south of the site during a 3.3% AEP and greater rainfall events, adjacent to existing buildings and areas of higher topography. Surface water flow paths form in the east of the site during a 0.1% AEP rainfall event, and flow southwards around existing buildings, before leaving the site to join the River Pang.         Groundwater       Depth below surface       Depth below surface       Total in highest risk categories								95%
Proportion of site at risk (RoFSW)1 in 30 (3.33% AEP)1 in 100 (1% AEP)1 in 1000 (0.1% AEP)1%2%6%1%2%6%Description of surface water flow paths: The site is at relatively low surface water flood risk. Areas of localised ponding are predicted to form in the north, centre and south of the site during a 3.3% AEP and greater rainfall events, adjacent to existing buildings and areas of higher topography. Surface water flow paths form in the east of the site during a 0.1% AEP rainfall event, and flow southwards around existing buildings, before leaving the site to join the River Pang.GroundwaterDepth below surface 0-0.025mDepth below surface 0.025-0.5mTotal in highest risk categories		Fluvial	The Flood Zones within the site are informed by broadscale, generalised modelling, with the model files not available for use in the Level 2 SFRA. Therefore, Flood Zone 3a (1% AEP) has been used as a proxy for Flood Zone 3b. <b>Flood characteristics:</b> The southern boundary of the site is at risk of fluvial flooding from the River Pang during a 1% AEP event, with a small increase in flood extent predicted during the 0.1% AEP event. The remainder of the site is located within Flood Zone 1,					
Surface Water1 in 30 (3.33% AEP)1 in 100 (1% AEP)1 in 1000 (0.1% AEP)1%2%6%Description of surface water flow paths: The site is at relatively low surface water flood risk. Areas of localised ponding are predicted to form in the north, centre and south of the site during a 3.3% AEP and greater rainfall events, adjacent to existing buildings and areas of higher topography. Surface water flow paths form in the east of the site during a 0.1% AEP rainfall event, and flow southwards around existing buildings, before leaving the site to join the River Pang.GroundwaterDepth below surface 0-0.025mDepth below surface 0.025-0.5mTotal in highest risk categories			and is at low fi			of site at risk (R		
Surface Water       Description of surface water flow paths: The site is at relatively low surface water flood risk. Areas of localised ponding are predicted to form in the north, centre and south of the site during a 3.3% AEP and greater rainfall events, adjacent to existing buildings and areas of higher topography. Surface water flow paths form in the east of the site during a 0.1% AEP rainfall event, and flow southwards around existing buildings, before leaving the site to join the River Pang.         Groundwater       Depth below surface 0-0.025m       Depth below surface 0.025-0.5m       Total in highest risk categories			1 in 30 (3.33			•		(0.1% AEP)
Surface WaterThe site is at relatively low surface water flood risk. Areas of localised ponding are predicted to form in the north, centre and south of the site during a 3.3% AEP and greater rainfall events, adjacent to existing buildings and areas of higher topography. Surface water flow paths form in the east of the site during a 0.1% AEP rainfall event, and flow southwards around existing buildings, before leaving the site to join the River Pang.GroundwaterDepth below surface 0-0.025mDepth below surface 0.025-0.5mTotal in highest risk categories			1%				6	6%
Proportion of the site at risk in JBA Groundwater Map 1% AEP risk categories           Groundwater         Depth below surface 0-0.025m         Depth below surface 0.025-0.5m         Total in highest risk categories		Surface Water	The site is at relatively low surface water flood risk. Areas of localised ponding are predicted to form in the north, centre and south of the site during a 3.3% AEP and greater rainfall events, adjacent to existing buildings and areas of higher topography. Surface water flow paths form in the east of the site during a 0.1% AEP rainfall event, and flow southwards around existing buildings, before					
Groundwater Depth below surface Depth below surface 0-0.025m 0.025-0.5m Total in highest risk categories			-			k in JBA Ground	water Map 1%	AEP risk
		Groundwater	-		Dep	th below surface		
				////				



Site code		HSA23				
Site name		Pirbright Institute Site, Compton	ompton			
		The majority of the site is at moderate risk of groundwater flooding, with groundwater levels predicted to lie between 0.5 and 5m below ground level during a 1% AEP groundwater flood event. In the remaining northern area of the site, groundwater levels are predicted to lie at least 5m below ground level. Jacobs Groundwater Emergence Modelling indicates that the south of the site is at risk of groundwater emergence during a 3.3% AEP and 1% AEP flood event.				
	Reservoir	The site is not at risk of flooding,	in the rare ever	nt of a reservoir brea	ıch.	
	Canal	There are no canals within the v	icinity of the site			
	Defences	Defence Type	Standard of Protection	Conditio	'n	
		There are no defences present w	within the site.			
Flood risk management		Culvert / structure blockage?	N/A			
infrastructure	Residual risk	Impounded water body failure?	N/A			
		Defence breach /		Breach Zone		
		overtopping?	N/A			
	Flood warning	The southern boundary of the Agency Flood Alert and Flood W Flood Alert Areas: River Pang Brook. Flood Warning Areas: N/A	arning Areas:			
Emergency planning	Access and egress	The existing access from the Hig However, there is potential for a west. The High Street, and the junction risk of fluvial flooding during a flooding during a Zone 2) event. The remaining ar flooding, and are located within flooding, and are located within flooding is predicted surface water flooding is predicted	rom the High Street will form the main access for the site. tential for a minor access route from Churn Road to the the junction of Church Road with the High Street, are at during a 1% AEP (Flood Zone 3) and 0.1% AEP (Flood maining areas of Churn Road are at very low risk of fluvial ted within Flood Zone 1. y low risk of surface water flooding. However, extensive g is predicted to form on the High Street during a 3.3% AEP vent. Safe access and egress from the site is a constraint,			
	Climate change	River Basin District / Management Catchment	Central	Higher Central	Upper End	
	allowances for '2080s' (2016 allowances)	Thames (assessed within Level 2 SFRA)	25%	35%	70%	
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Thames and South Chilterns (to be used for site-specific FRAs)	31%	43%	76%	
	Implications for the site	Fluvial flood risk to the site is predicted to increase when accounting for the impact of climate change. However, in this location, Flood Zone 2 (0.1% AEP) has been used to represent the extent of Flood Zone 3a + climate change. The latest available climate change allowances must be used in site-specific Flood Risk Assessments.				

# Level 2 SFRA Detailed Site Summary Tables



	Bedrock Geology	White Chalk Subgroup - Chalk						
	Superficial Geology	The south of the site is overlain b	The south of the site is overlain by river terrace deposits of sa					
	Soils	Shallow lime-rich soils are locate freely draining lime-rich loamy so						
Requirement for drainage control and impact mitigation	SuDS	<ul> <li>meet the Defra National follow current best desig</li> <li>SuDS are possible on a such as this one. All development should conveyance features sh natural flow paths where</li> <li>Storage for runoff from the located out of fluvial flow</li> <li>The bedrock geology su mapping indicates a mo Therefore, infiltration ter infiltration is proposed, i investigation should be infiltration, including at la monitoring on site.</li> <li>Additionally, the site is la Zone 1. As such infiltration ter infiltration termination is required environmental</li> <li>Where below ground stored</li> </ul>	I Non-Statutory gn practice (CIR II sites, includin velopment shou OS (such as gre st Berkshire Cou ground drainage adopt source of hould be design e possible. the developmen od risk areas. uggests high infi derate risk of g chriques may n it is recommend carried out to as east 12 months ocated within G ion techniques of treatment ar permits from the orage is propose t 1m above the	g previously developed sites Id adopt source control SuDS en roofs, swales and ponds) uncil as LLFA over 'hard e. ontrol SuDS techniques. ed above ground and following at in extreme events should be Itration potential, although roundwater flooding. ot be suitable at the site. If led that further site ssess potential for drainage by of groundwater level roundwater Source Protection should only be used where ad following the granting of any e Environment Agency. ed, the base of the feature highest groundwater level, to				
	Groundwater Source Protection Zone	The south west corner of the site Protection Zone (GSPZ) 1.	is located withi	n Groundwater Source				
	Historic Landfill Site	There are no historic landfill sites within the site boundary.						
	Opportunities for flood risk betterment	Opportunities for using source co volumes, contributing to the redu Pang and existing surface water	ction of flood pe	eaks downstream on the River				
	Cumulative impacts of development	Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications				

JBA consulting





Site code		HSA23		
Site name		Pirbright Institute Site, Compton		
	The Sequential Test	Pang d Exception Test requirements must be satisfied. Only once the S s anticipated that proposed devo		
Recommend- ations for Local Plan policy	Flood Zone 1. For If More Vucchange. If Highly Vu If Essential Development will no Highly Vulre More Vulne Recommendations guidance for devel Flood risk asse At the plan drainage st Consultation an early sta A site-spect and 3 and guidance (https://w Detailed mo ordinary wa and LLFA s at the time models are Climate chat time of t climate chat time of t climate chat time of t strategy sh in the West Guidance for s Development	this site, the Exception Test must inerable and Essential Infrastructure infrastructure is located in Flood 2 in Infrastructure is located in Flood 2 in the permitted in the following sce- herable development within FZ3a of erable and Less Vulnerable develor opers essment: aning application stage, a site-spe- trategy will be required. on with the Local Authority and the age. iffic flood risk assessment will be re- at risk from sources of flooding on flood risk assessment will be re- at risk from sources of flooding odelling will be required to confirm atercourses on the site (see 'Avail should be consulted to obtain the la- e of the flood risk assessment. The available, and if so, whether they ange should be assessed using re- he assessment ( <u>https://www</u> ange-allowances) for the type of were published in February 2016 ces of flooding should also be co at, including surface water and gro located within a catchment identi development on flood risk. The ould consider the recommendation t Berkshire Level 1 SFRA Cumular <b>site design and making development</b> ent must seek opportunities to redu- e by reducing volume and rate of r	be satisfied: ture is located n FZ2. Zone 3b. narios: or FZ3a plus clin opment within FZ ecific flood risk a e Environment A equired because g other than riv assessments k-assessments k-assessments k-assessments flood Zone and able modelled d atest hydraulic m rey will advise a reed to be upd ecommended clin .gov.uk/guidan of development but may be sub considered as p undwater. fied as moderat site-specific FR ns outlined for ca tive Impacts Ass ment safe: uce overall level unoff and creati	in FZ3a or FZ3a plus climate nate change and FZ3b. Z3b. Risk Assessment, including assessment and surface water gency should be undertaken at a the site is within Flood Zone 2 ers and the sea. Government must be followed for-planning-applications). d climate change extents for the ata'). The Environment Agency nodelling information for the site as to whether existing detailed ated. mate change allowances at the nce/flood-risk-assessments- and level of risk. The current oject to change in the future. art of a site-specific flood risk tely sensitive to the cumulative A and surface water drainage atchments of medium sensitivity sessment Addendum. of flood risk both on and offsite, ng space for flooding.
	<ul> <li>Safe acces</li> <li>Mitigation f finished flo</li> </ul>	is and egress should be demonstr or seasonal high groundwater leve or levels to an appropriate height a ific surface water drainage strateg	ated in the 1 in f els must be con above ground le	100 plus climate change event. sidered (for example by raising vel).





Site code HSA23	
Site name	Pirbright Institute Site, Compton
<ul> <li>The design Infiltration t larger areas that ground structural ir</li> <li>Storage for areas.</li> <li>The design are manage</li> <li>The level of should be recommend</li> </ul>	of SuDS schemes must take into account the seasonally high groundwater table. techniques may be ineffective, and SuDS may need to be shallow and take up s. Above ground conveyance and attenuation can be used but care must be taken dwater does not enter the SuDS feature and reduce the storage capacity and ntegrity of the design. Trunoff from the development in extreme events should be located out of flood risk must ensure that flows resulting from rainfall in excess of a 1 in 100-year event ed via exceedance routes that minimise the risks to people and property. Of detail and method of assessment of surface water runoff rates and volumes appropriate to the scale and risk of the development and should include ded allowance for climate change and urban creep at the time of the assessment -40% allowance for climate change and a 10% increase in impermeable area for
(SPD) stan current bes resulting fro	gn must follow West Berkshire Council SuDS Supplementary Planning Document idards, meet the Defra National Non-Statutory Technical Standards, and follow st design practice (CIRIA Manual 2015). The design must ensure that flows om rainfall in excess of a 1 in 100-year event are managed via exceedance routes se the risks to people and property.





Site code	HUN6
Site name	Hungerford Trading Estate, Smitham Bridge Road, Hungerford, RG17 0QU

	OS Grid reference	SU 33065 68223				
	Area	0.7 ha				
	Current land use	Brownfield - Employment	(light industrial)			
	Proposed site use	Residential				
	Flood risk vulnerability	More vulnerable				
	Existing watercourses/bio diversity	The Shalbourne Brook (M eastwards along the west located 250m north of the The Shalbourne Brook is the NERC Act.	ern boundary of site.	the site. The	Kennet and Avor	n Canal is
	Flood history	The site is not located within either an EA Historic Flood Map. The Thames Water DG5 record shows that there have been eight sewer flooding incidents within the postcode area (RG17 0), three of which have resulted in internal flooding of the property.				
			Fluv			. <u>.</u>
		Proportion of the site at risk (%)	Flood Zone 3b	Flood Zone 3a	Flood Zone 2	Flood Zone 1
			5% AEP	1% AEP	0.1% AEP	
		Available modelled data	24%	0%	3%	73%
Sources of flood risk	Fluvial	The site is covered by brown available for use in the Le a proxy for Flood Zone 3a <b>Flood characteristics:</b> The western boundary of Brook during the 1% AEP during the 0.1% AEP (1 in Zone 1, and is therefore a	badscale, generativel 2 SFRA. The a. the site is at ris (1 in 100) flood e n 1,000) event.	erefore, Flood sk of fluvial flo event, with a s The remaind	d Zone 3b has bee boding from the S small increase in fl	en used as Shalbourne ood extent
	Fluvial	available for use in the Le a proxy for Flood Zone 3a <b>Flood characteristics:</b> The western boundary of Brook during the 1% AEP during the 0.1% AEP (1 i Zone 1, and is therefore a	the site is at ris (1 in 100) flood e n 1,000) event. tlow fluvial floo	erefore, Flood sk of fluvial fle event, with a s The remaind d risk.	d Zone 3b has been boding from the S small increase in fl er of the site is w	en used as Shalbourne ood extent
	Fluvial	available for use in the Le a proxy for Flood Zone 3a <b>Flood characteristics:</b> The western boundary of Brook during the 1% AEP during the 0.1% AEP (1 i Zone 1, and is therefore a	badscale, generativel 2 SFRA. The a. the site is at ris (1 in 100) flood e n 1,000) event.	erefore, Flood sk of fluvial fle event, with a s The remaind d risk. a at risk (Rof	d Zone 3b has been boding from the S small increase in fl er of the site is w	en used as Shalbourne ood extent ithin Flood
	Fluvial	available for use in the Le a proxy for Flood Zone 3a Flood characteristics: The western boundary of Brook during the 1% AEP during the 0.1% AEP (1 i Zone 1, and is therefore a Pr	the site is at ris (1 in 100) flood e n 1,000) event. at low fluvial floo	erefore, Flood sk of fluvial fle event, with a s The remaind d risk. e at risk (Rof 00	d Zone 3b has been booding from the S small increase in fl er of the site is w	en used as Shalbourne ood extent ithin Flood
	Fluvial	available for use in the Le a proxy for Flood Zone 3a Flood characteristics: The western boundary of Brook during the 1% AEP during the 0.1% AEP (1 i Zone 1, and is therefore a Pr 1 in 30 22% Description of surface v Surface water flood risk a a flow path draining in a n site during the 3.33% (1 1% AEP events, the flow reach the outline of the ex event, surface water floo existing building is at risk events, an area of surface	the site is at ris (1 in 100) flood e n 1,000) event. at low fluvial floo oportion of site 1 in 1 39% vater flow paths in 30) and great paths follow the isting building of d risk extends t of surface water e water ponding	erefore, Flood sk of fluvial fle event, with a s The remaind d risk. e at risk (Rof 00 5 s: s the route of rection along ter rainfall ev e western bou n the site. Ho o cover the r r flooding. Du g also forms i	d Zone 3b has been boding from the S small increase in fl er of the site is w <b>SW)</b> <b>1 in 1,00</b> 91% the Shalbourne E the western bound ents. During the 3 wever, during the najority of the site ring the 3.33% and n the south east of	Shalbourne ood extent ithin Flood D0 Brook, with dary of the 3.33% and and do not 0.1% AEP e, with the id 1% AEP
		available for use in the Le a proxy for Flood Zone 3a Flood characteristics: The western boundary of Brook during the 1% AEP during the 0.1% AEP (1 i Zone 1, and is therefore a Pr 1 in 30 22% Description of surface v Surface water flood risk a a flow path draining in a n site during the 3.33% (1 1% AEP events, the flow reach the outline of the ex event, surface water floo existing building is at risk	the site is at ris (1 in 100) flood e n 1,000) event. at low fluvial floo oportion of site 1 in 1 39% vater flow paths in 30) and great paths follow the isting building of d risk extends to of surface water e water ponding st surrounding h	erefore, Flood sk of fluvial file event, with a s The remaind d risk. a trisk (Rof 00 5 5 5 5 the route of rection along ter rainfall ev western bou n the site. Ho o cover the r r flooding. Du g also forms i nigher topogra	d Zone 3b has been boding from the S small increase in fl er of the site is w <b>FSW)</b> 1 in 1,00 91% the Shalbourne E the western boun- ents. During the 3 indary of the site a wever, during the najority of the site ring the 3.33% and n the south east of aphy.	An used as Shalbourne ood extent ithin Flood DO Brook, with dary of the 3.33% and and do not 0.1% AEP e, with the id 1% AEP of the site,



Site code		HUN6				
Site name		Hungerford Trading Estate, Smit	tham Bridge	Road, Hung	gerford, RG <sup>2</sup>	17 0QU
		98%2%100%The site is at a high of groundwater flooding, with groundwater levels across the majority of the site likely to lie within 0.025m of the ground surface during a 1% AEP event (1 in 100). Along the eastern boundary, groundwater levels are predicted to lie between 0.025 – 0.5m of the ground surface.				
	Reservoir	The site is not at risk of flooding,	•		eservoir brea	ach.
	Canal	The site is seperated from the K and therefore the site is conidered				
	Defenses	Defence Type	Standard	of Protecti	ion (	Condition
	Defences	There are no formal defences wi benefitting from defence.	ithin site bou	ndary, and	the site is no	ot identified as
Flood risk management infrastructure	Residual risk	Culvert / structure blockage?	re The Shalbourne Brook is culverted Smitham Bridge Road, to the north e of the site. Blockage of this culvert i cause flooding to the north of the site. the impact of this blockage on residual site should be assessed in detail wit specific Flood Risk Assessment.		th east corner ert is likely to site. However, dual risk to the	
		Impounded water body failure?	The site is not at risk of flooding due to reservoir breach.			
		Defence breach / overtopping?	N/A	Brea	ich Zone	
	Flood warning	<ul> <li>The western side of the site is within the following EA Flood Alert and Flood Warning Areas:</li> <li>Flood Alert Area: River Kennet and its tributaries from Berwick Basset down to Newbury</li> <li>Flood Warning Area: River Kennet and its tributaries at Hungerford</li> </ul>				
Emergency planning	Access and egress	The site is likely to be accessed via Smitham Bridge Road at the north of the site, or Chilton Way to the east. The section of Smitham Bridge Road immediately north of the site is at risk of fluvial flooding during 1% AEP (1 in 100) and 0.1% AEP (1 in 1,000) events. Chilton Way at the east of the site is located in Flood Zone 1, and is therefore at low fluvial flood risk. Smitham Bridge Road is at high surface water flood risk, with flooding predicted to occur during the 3.3% AEP (1 in 30) rainfall event and greater rainfall events. Chilton Way is at very low surface water flood risk.				
	Climate change allowances for	River Basin District / Manag Catchment	jement	Central	Higher Central	Upper End
	'2080s' (2016 allowances)	Thames (assessed within Level )	2 SFRA)	25%	35%	70%
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Kennet and tributaries (to be use site-specific FRAs)	ed for	21%	35%	76%
	Implications for the site	Fluvial flood risk to the site is predicted to increase when accounting for the impact of climate change. However, in this location, Flood Zone 2 (0.1% AEP) been used to represent the extent of Flood Zone 3a + climate change. The latest available climate change allowances must be used in site-specific Flood Risk Asssements.				.1% AEP) has e.



Site code	HUN6
Site name	Hungerford Trading Estate, Smitham Bridge Road, Hungerford, RG17 0QU

	Bedrock Geology	Sussex White Chalk Forma	ition			
	Superficial Geology	Alluvium – Clay, Silt and Sa	and			
	Soils	<ul> <li>Freely draining, slightly acid but base-rich, loamy soils</li> <li>SuDS design must follow the West Berkshire Council SuDS SPD, me the Defra National New Statutory Technical Standards, and follow</li> </ul>				
Requirement for drainage control and impact mitigation	SuDS	<ul> <li>SuDS design must follow the West Berkshire Council SuDS SPD, m the Defra National Non-Statutory Technical Standards, and follow current best design practice (CIRIA Manual 2015).</li> <li>All development should adopt source control SuDS techniques. Conveyance features should be designed above ground and followin natural flow paths where possible.</li> <li>'Natural', vegetated SuDS (such as green roofs, swales and ponds) be preferred by West Berkshire Council as LLFA over 'hard enginee and below-ground SuDS.</li> <li>Storage for runoff from the development in extreme events should b located out of fluvial flood risk areas.</li> <li>The bedrock geology suggests good infiltration potential, although mapping indicates that the site is at high risk of groundwater flooding. Therefore, infiltration techniques may not be suitable at the site. If infiltration is proposed, it is recommended that further site investigat should be carried out to assess potential for drainage by infiltration, including at least 12 months of groundwater level monitoring on site Infiltration techniques should only be used where there are suitable levels of surface water runoff treatment.</li> <li>Where below ground storage is proposed, the base of the feature m be located at least 1m above the highest groundwater level, to reduc the risk of groundwater ingress or flotation.</li> </ul>				
	Groundwater Source Protection Zone	The site is not within a Gro	undwater Source Prote	ction Zone.		
	Historic Landfill Site	There are no historic landfil	Il sites within the site bo	oundary or in the near vicinity.		
	Opportunities for flood risk betterment	Opportunities for using source control SuDS to manage runoff rates and volumes, contributing to the reduction of flood peaks downstream on the River Dun and existing surface water flow paths leaving the site.				
		Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications		
	Cumulative impacts of development	Shalbourne (source to Kennet at Hungerford)	Medium	The FRA and surface water drainage strategy should demonstrate wider betterment by demonstrating measures which can be put in place to contribute to a reduction in flood risk downstream.		
	Sequential Test an	d Exception Test requirem	ents			



Site code		HUN6
Site name		Hungerford Trading Estate, Smitham Bridge Road, Hungerford, RG17 0QU
Recommend- ations for Local Plan policy	Test be applied. It Flood Zone 1. For If More Vul If Highly Vul If Essential Development will no Highly Vulr More Vuln Recommendations for developers Flood risk asse At the plat drainage st Consultation early stage A site-spect and 3 and on flood assessment Other sourd assessment Detailed mo ordinary wa and LLFA st the time of are availab Climate ch time of the allowances published i Modelling st the culvert The site iss impacts of should con Berkshire L Guidance for ss Development seek to rec Safe access Mitigation for tinished flo Due to the A site-spect The design Infiltration for shallow and care must capacity ar The surfact	nning application stage, a site-specific flood risk assessment and surface water trategy will be required. on with the Local Authority and the Environment Agency should be undertaken at an



Site code	HUN6
Site name	Hungerford Trading Estate, Smitham Bridge Road, Hungerford, RG17 0QU
be appropriallowance f allowance f • SuDS desig (SPD) stan current bes • The Shalbo	f detail and method of assessment of surface water runoff rates and volumes should iate to the scale and risk of the development and should include recommended for climate change and urban creep at the time of the assessment (currently +40% or climate change and a 10% increase in impermeable area for urban creep). gn must follow West Berkshire Council SuDS Supplementary Planning Document indards, meet the Defra National Non-Statutory Technical Standards, and follow t design practice (CIRIA Manual 2015). purne Brook, a Main River, is located at the western boundary of the site. An 8m should be maintained between the riverbank and any built structures, to enable the



Site code	HUN10
Site name	Land off Smitham Bridge Road and Marsh Lane, Hungerford

Site details	OS Grid	SU 22220 60550				
	reference	SU 33220 68558				
	Area	3 Ha				
	Current land use	Greenfield – grassland				
	Proposed site use	Public open space and/or	marina			
	Flood risk vulnerability	Less vulnerable				
	Existing watercourses/bio diversity	The Kennet and Avon Ca Shalbourne Brook (Main I direction along the wester the site boundary, with on boundary, and a second v crossing the Kennet and v long linear water body is a The Kennet and Avon Ca Marsh Site of Special Scie wetland habitats that are alter the flooding regime of The Shalbourne Brook is the NERC Act.	River), a tributar on boundary of the watercourse flow Avon Canal at the also located in the nal forms the so entific Interest (So reliant upon sea of the SSSI. a chalk river who	y of the River ne site. The wa continuing north ring north east ne north east of uthern bound SSSI) which si son flooding. I ich is a protec	Dun, flows in a n atercourse branc thwards along the twards across the undary of the site corner of the site ary of the Freema upports a numbe Development mu ted habitat listed	ortherly thes within e western e site and e. A 100m an's r of ist not in S41 of
	Flood history	The site is not located within the EA Recorded Flood Outline dataset. The Thames Water DG5 register shows that there have been eight sewer flooding incidents within the postcode area (RG17 0), three of which have resulted in internal flooding of the property.				
		Fluvial				
		Proportion of the site at risk (%)	Flood Zone 3b	Flood Zone 3a	Flood Zone	Flood Zone 1
Sources of flood risk			<b>5% AEP</b> 32%	<b>1% AEP</b> 0%	0.1% AEP 3%	65%
	Fluvial	<ul> <li>Available modelled data: The site is situated adjacent to the extent of the 2007 1D River Kenr to Newbury) model. The Flood Zones within the site are informed generalised modelling, with the model files not available for use SFRA. Therefore, Flood Zone 3a (1% AEP) has been used as a Zone 3b.</li> <li>Flood characteristics: The western boundary and north west of the site are at risk of fluw the Shalbourne Brook during a 1% AEP (1 in 100) event, with a s flood extent predicted during the 0.1% AEP (1 in 1,000) event. T the site is located within Flood Zone 1, and is at low fluvial flood rist</li> </ul>		re informed by b ble for use in th used as a proxy risk of fluvial flo nt, with a small i 0) event. The rea	roadscale, he Level 2 / for Flood oding from ncrease in	
			oportion of site			
		1 in 30	1 in 1	· · · · · · · · · · · · · · · · · · ·	1 in 1,00	00
		51%	60%	60% 68%		
	Surface Water	<b>Description of surface water flow paths:</b> Surface water flood risk at the site largely follows the two branches of Shalbourne Brook, northwards along the western border of the site, and r eastwards across the north of the site. The railway line at the south of the site for a topographic barrier, causing flooding to extend across the south west, centre north of the site, during the 3.3% AEP (1 in 30) and greater rainfall events.				and north site forms centre and



Site code	HUN10	
Site name	Land off Smitham Bridge Road and Marsh Lane, Hungerford	

	Areas Susceptible to Groundwater Flooding Map class (risk of groundwater emergence)				
	Depth below surface 0-0.025m	Depth below surface 0.025-0.5m	Total in highest risk categories		
Groundwater	86% 8% 94%				
	<ul> <li>The site is at high risk of groundwater flooding. Across the majority of the site groundwater levels are predicted to lie within 0.025m of the ground surface durin a 1% AEP (1 in 100) event. The south east corner of the site is at a moderate moderate-high risk of flooding, with groundwater levels expected to lie betwee 0.025 – 0.5m, and 0.5 – 5m of the ground surface.</li> <li>The site is not at risk of flooding, in the rare event of a reservoir breach.</li> </ul>				
Reservoir					
Canal	The Kennet and Avon Canal forms the northern boundary of the site. Therefore, the site may be at risk of flooding, in the unlikely event of breach or overtopping of the canal bank.				



Site code	HUN10
Site name	Land off Smitham Bridge Road and Marsh Lane, Hungerford

	<b>_</b>	Defence Type	Standard	of Protecti	on C	ondition
	Defences	There are no defences present in defences.	n this site, no	r does the s	site benefit f	rom any
Flood risk management infrastructure	Residual risk	Culvert / structure blockage?		the north west e. Blockage of acking up and of the site. ckages on the e assessed in		
		Impounded water body failure?	N/A			
		Defence breach /		Brea	ch Zone	
		overtopping?	N/A			
Emergency planning	Flood warning Access and egress	<ul> <li>The western side of the site is within the following EA Flood Alert and Flood Warning Areas: <ul> <li>Flood Alert Area: River Kennet and its tributaries from Berwick Basset down to Newbury</li> <li>Flood Warning Area: River Kennet and its tributaries at Hungerford</li> </ul> </li> <li>The site would be accessed from Smitham Bridge Road to the south, via a private access road at the south eastern tip of the site (not shown on available OS Mapping). Other potential access routes would be via Parsonage Lane to the east of the site or Marsh Lane to the west.</li> <li>Smitham Bridge Road is predominantely at low fluvial flood risk, although a small area to the south east of the site is at risk of fluoding during a 1% AEP (1 in 100) fluvial flood event, where an ordinary watercourse is culverted below the road. Parsonage Lane and Marsh Lane are both located in Flood Zone 1, and therefore at low fuvial flood risk.</li> </ul>				
		To the south of the site, Smitham Bridge Road is at high surface water flood ris with flooding of the road predicted to occur during the 3.3% AEP (1 in 30) and greater rainfall events. Parsonage Lane is at risk of surface water flooding during a 1% AEP (1 in 10 and 0.1% AEP (1 in 1,000) rainfall event, and Marsh Lane is at risk of surface water flooding during 3.3% AEP (1 in 30) and greater rainfall events, particularly when the road passes below the railway line.				(1 in 30) and EP ( 1 in 100) surface water
	Climate change	River Basin District / Manag Catchment	ement	Central	Higher Central	Upper End
	allowances for '2080s' (2016 allowances)	r     Catchment     Central       Thames (assessed within Level 2 SFRA)     25%     35%				
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Kennet and tributaries (to be use site-specific FRAs)	ed for	21%	35%	76%
	Implications for the site	impact of climate change. Howe been used to represent the exten	the site is predicted to increase when accounting for the hange. However, in this location, Flood Zone 2 (0.1% AEP sent the extent of Flood Zone 3a + climate change. e climate change allowances must be used in site-specific ients.			



Site code	HUN10
Site name	Land off Smitham Bridge Road and Marsh Lane, Hungerford

	Bedrock Geology	Sussex White Chalk Forma	ition			
	Superficial Geology	Superficial geology has bee Silt and Sand.	en mapped at the eastern s	side the site: Alluvium - Clay,		
	Soils	Loamy and clayey floodplai	in soils with naturally high (	groundwater		
Requirement for drainage control and impact mitigation	SuDS	<ul> <li>Opportunities shou SuDS with multiple resource educatio</li> <li>'Natural', vegetate be preferred by W and below-ground</li> <li>All development s Conveyance featu natural flow paths</li> <li>Storage for runoff located out of fluvi</li> <li>The bedrock geold mapping indicates Therefore, infiltrati infiltration is propor should be carried including at least ' Infiltration techniqu levels of surface w</li> <li>Where below grou</li> </ul>	should adopt source control SuDS techniques. tures should be designed above ground and following is where possible. If from the development in extreme events should be vial flood risk areas. blogy suggests good infiltration potential, although es that the site is at high risk of groundwater flooding. ation techniques may not be suitable at the site. If bosed, it is recommended that further site investigation d out to assess potential for drainage by infiltration, t 12 months of groundwater level monitoring on site. ques should only be used where there are suitable water runoff treatment. bund storage is proposed, the base of the feature mus ist 1m above the highest groundwater level, to reduce			
	Groundwater Source Protection Zone	The site is not within a Gro	undwater Source Protection Zone.			
	Historic Landfill Site	There are no historic landfil	Il sites within the site bound	dary or in the near vicinity.		
	Opportunities for flood risk betterment	Opportunities for using source control SuDS to manage runoff rates and volumes, contributing to the reduction of flood peaks downstream on the River Kennet and existing surface water flow paths leaving the site.				
		Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications		
	Cumulative impacts of	Kennet and Avon Canal ad Dun above Hungerford	High	The FRA should examine the cumulative impacts of potential peak runoff rates		
	development	Shalbourne (source to Kennet at Hungerford)	Medium	and volumes from the site (and other developments in the WFD catchment) on flood risk in the receiving watercourses.		
	Sequential Test and Exception Test requirements					



Site code		HUN10
Site name		Land off Smitham Bridge Road and Marsh Lane, Hungerford
Recommend- ations for Local Plan policy	Test be applied. It Flood Zone 1. For If More Vul If Highly Vu If Essential Development will no Highly Vulr More Vuln Recommendations for developers Flood risk asse At the plan drainage st Consultation early stage A site-spect and 3 and on flood assessmer Other sound assessmer Other sound assessmer Detailed mo ordinary wa and LLFA st the time of are availab Climate ch time of the allowances published i Modelling st the culvert The site is development consider th Level 1 SF Guidance for st Safe access Mitigation of finished flo Due to the A site-spect The design Infiltration to shallow and care must capacity ar The surfact	nning application stage, a site-specific flood risk assessment and surface water trategy will be required. on with the Local Authority and the Environment Agency should be undertaken at an



Site code	HUN10
Site name	Land off Smitham Bridge Road and Marsh Lane, Hungerford
be appropriallowance for allowance for allowance for allowance for allowance for subS design (SPD) star current bessent for the Kenner determined canal and a for the Shalbor canad and a for the Shal	f detail and method of assessment of surface water runoff rates and volumes should iate to the scale and risk of the development and should include recommended for climate change and urban creep at the time of the assessment (currently +40% for climate change and a 10% increase in impermeable area for urban creep). gn must follow West Berkshire Council SuDS Supplementary Planning Document indards, meet the Defra National Non-Statutory Technical Standards, and follow t design practice (CIRIA Manual 2015). t and Avon Canal is located at the north of the site. A buffer, the distance to be in consultation with the Canal and River Trust, should be maintained between the any built structures, to enable access and maintenance. burne Brook, a Main River, is located at the western boundary of the site. An 8m should be maintained between the riverbank and any built structures, to enable the





Site code	LAM1
Site name	Land between Folly Road, Rockfel Road/Bridleways, Stork House Drive, Lambourn

Site details	OS Grid reference	SU 32167 78915					
	Area	3.05 ha					
	Current land use	Greenfield - Grassland					
	Proposed site use	Residential					
	Flood risk vulnerability	More vulnerable					
	Existing watercourses/bio diversity	There are no watercourse (classified as a Main Rive 560m east of the site. The Lambourn is a design as well as a chalk river wil Here, it is a winterbourne groundwater levels and cl	r downstream of nated SSSI and nich is a protecte stream and is th	Goose Gree a Special Are ed habitat liste erefore sensi	n) is located app a of Conservation ad in S41 of the N tive to changed in	roximately n (SAC), IERC Act.	
	Flood history	groundwater levels and changes to the flooding regime. The site is not located within the EA Recorded Flood Outlines dataset, and was not reported to be affected by the Winter 2013/14 groundwater flooding events in Lambourn. However, Groundwater emergence modelling calibrated to the Winter 2013/14 event predicted that the southern portion of the site was affected by flooding during the event. As the site is grassland, rather than habited property, this flooding may not have been reported during the event. Thames Water data indicates that a total of 20 sewer flooding incidents have been reported to properties in postcode area RG17 8, in which one property reported internal flooding.					
	Fluvial	Fluvial					
		Proportion of the site at risk (%)	Flood Zone 3b 5% AEP	Flood Zone 3a 1% AEP	Flood Zone 2 0.1% AEP	Flood Zone 1	
Sources of			0%	0%	0%	100%	
flood risk		<ul> <li>Available modelled data: There is no detailed hydraulic fluvial model covering the site.</li> <li>Flood characteristics: The site is located within Flood Zone 1, and is therefore at negligible risk of fluvial flooding.</li> </ul>					
		Proportion of site at risk (RoFSW)					
		3.3% AEP	1% AE		0.1% AE		
		(1 in 30)	(1 in 1	00)	(1 in 1,00	)0)	
	Surface Water	0%0%Description of surface water flow paths:The site is at very low risk of surface water flooding, with no flooding predicted to occur in events up to and including the 0.1% AEP (1 in 1,000-year) rainfall event.					
		0.1% AEP (1 in 1,000-yea	ar) rainfall event.				
		Areas Susceptible to G	,	oding Map c	lass (risk of gro	undwater	
	Groundwater		roundwater Flo	oding Map c ence) surface	lass (risk of gro Total in high categorio	est risk	



Site code LAM1							
Site name		Land between Folly Road, Rockfel Road/Bridleways, Stork House Drive, Lambourn					
		JBA Groundwater Mapping shows the site to be at a low to moderate risk groundwater flooding, with groundwater levels at the southern boundary predic to lie between 0.5m and 5m below the ground surface during a 1% AEP ever Across remaining areas of the site, groundwater levels are predicted to lie at le 0.5m below the ground surface. However, groundwater emergence modelling carried out by Jacobs following Winter 2013/14 flood event, indicates that groundwater emergence is predicted impact the south east of the site during a 3.3% AEP flood event, and extend cover the south of the site during a 1% AEP event.					
	Reservoir	The site is not at risk of flooding,	in the rare	event of a re	servoir brea	ach.	
	Canal	There are no canals witin the site	e boundary	<i>.</i>			
		Defence Type	Standar	d of Protection	on C	Condition	
Flood risk	Defences	There are no defences within the	e site boun	dary.			
management	Residual risk	Culvert / structure blockage?	N/A				
innastructure		Impounded water body failure?	N/A				
		Defence breach / overtopping?	Breach Zone				
	Flood warning	The site is not covered by an E Area.	N/A nvironmen	t Agency Floc	od Alert or I	Alert or Flood Warning	
Emergency planning	Access and egress	The site is likely to be accessed the south east, or using the exist Folly Road is at very low fluvial localised ponding predicted to during 1% AEP (1 in 100) and 0. is at very low risk of fluvial or Emergence Modelling indicates of groundwater flooding during events.	iting access flood risk, a form at the 1% AEP (1 surface v that both F	s track within and at low sur junction with in 1,000) rair vater flooding folly Road and	the site. face water h Upper La nfall events. J. However, d Rockfel R	flood risk, with mbourn Road Rockfel Road Groundwater oad are at risk	
	Climate change allowances for	River Basin District / Manag Catchment	jement	Central	Higher Central	Upper End	
	'2080s' (2016 allowances)	Thames (assessed within Level	2 SFRA)	25%	35%	70%	
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Kennet and tributaries (to be use site-specific FRAs)	ed for	21%	35%	76%	
	Implications for the site	The site remains within Flood Zo on fluvial flood risk. The latest available climate char Flood Risk Assssments.		C	·	C C	
Denni	Bedrock Geology	The site is underlain by Sussex	White Chal	k Formation			
Requirement for drainage control and	Superficial Geology	The eastern border of the site is overlain by superficial deposits of all silt and sand)				lluvium (clay,	





Site code	LAM1
Site name	Land between Folly Road, Rockfel Road/Bridleways, Stork House Drive, Lambourn

impact mitigation	Soils	Freely draining lime-rich	n loamy soils.			
	SuDS	<ul> <li>SuDS design must follow the West Berkshire Council SuDS SPD, meet the Defra National Non-Statutory Technical Standards, and follow current best design practice (CIRIA Manual 2015).</li> <li>A greenfield site such as this should seek to implement an exemplar scheme, using natural, vegetated SuDS to deliver multiple benefits, including water quality, biodiversity, amenity, green infrastructure etc.</li> <li>'Natural', vegetated SuDS (such as green roofs, swales and ponds) will be preferred by West Berkshire Council as LLFA over 'hard engineered' and below-ground SuDS.</li> <li>All development should adopt source control SuDS techniques. Conveyance features should be designed above ground and follow natural flow paths where possible.</li> <li>The bedrock geology suggests that infiltration may be suitable, although mapping indicates that groundwater flood risk is variable across the site. Therefore, it is recommended further site investigation should be carried out to assess potential for drainage by infiltration, including at least 12 months of groundwater level monitoring on site. Infiltration techniques should only be used where there are suitable levels of surface water runoff treatment.</li> <li>Where below ground storage is proposed, the base of the feature must be located at least 1m above the highest groundwater level, to reduce the risk of groundwater ingress or flotation.</li> </ul>				
	Groundwater Source Protection Zone	The site is not located within a Groundwater Source Protection Zone.				
	Historic Landfill Site	There are no historic landfill sites within the site boundary or within close proximity.				
	Opportunities for flood risk betterment	and to provide additiona	al storage for surface nd delay of flood pea	to manage runoff rates and volumes, water runoff onsite, to contribute ks reaching the River Lambourn and site.		
		Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications		
	Cumulative impacts of development	Lambourn (Source to Newbury)	Medium	The FRA and surface water drainage strategy should demonstrate wider betterment by demonstrating measures which can be put in place to contribute to a reduction in flood risk downstream.		
	Sequential Test an	d Exception Test requir	ements			
Recommend- ations for	The site is within Flo passed. The Excep will be safe for its life	ood Zone 1 but at risk fro tion Test is not required u etime and the risk can be	m other sources of fl inder the NPPF, but it managed through a	ooding. The Sequential Test must be t must be shown that the development sequential approach to design.		
Local Plan	Recommendations for developers	for requirements of sit	e-specific Flood Ris	sk Assessment, including guidance		
policy	Flood risk ass	essment:				
	<ul> <li>At the planning application stage, a site-specific flood risk assessment and drainage strategy will be required.</li> </ul>					



Site code	LAM1
Site name	Land between Folly Road, Rockfel Road/Bridleways, Stork House Drive, Lambourn
<ul> <li>early stage</li> <li>A site-spec area and a on flood assessmer</li> <li>Other sour assessmer</li> <li>Climate ch time of the allowances published i</li> <li>The site is impacts of should con Berkshire L</li> </ul> Guidance for so aseek to red Safe access <ul> <li>Mitigation fifinished flo</li> <li>Due to the</li> <li>A site-spect</li> <li>The surfact 1 in 100-yee property.</li> <li>The level of be appropriallowance allowance</li> <li>SuDS desi (SPD) star</li> </ul>	an with the Local Authority and the Environment Agency should be undertaken at an bill food risk assessment will be required because the site is greater than 1Ha in trisk from sources of flooding other than rivers and the sea. Government guidance risk assessments must be followed (https://www.gov.uk/guidance/floodrisk- thor-planning-applications). Trees of flooding should also be considered as part of a site-specific flood risk t, including surface water and groundwater. ange should be assessed using recommended climate change allowances at the assessment (https://www.gov.uk/guidance/flood-risk-assessments-climate-change- it) for the type of development and level of risk. The current allowances were in February 2016 but may be subject to change in the future. Is located within a catchment identified as moderately sensitive to the cumulative development on flood risk. The site-specific FRA and surface water drainage strategy sider the recommendations outlined for catchments of medium sensitivity in the West Level 1 SFRA Cumulative Impacts Assessment Addendum. <b>Site design and making development safe:</b> ant must seek opportunities to reduce overall level of flood risk at the site and should luce the levels of flood risk, basements are not permitted. Sife seasonal high groundwater levels must be considered (for example by raising or levels to an appropriate height above ground level). high groundwater flood risk, basements are not permitted. diffic surface water drainage strategy will be required. e water drainage design must ensure that flows resulting from rainfall in excess of a are event are managed via exceedance routes that minimise the risks to people and f detail and method of assessment of surface water runoff rates and volumes should for climate change and a 10% increase in impermeable area for urban creep). gn must follow West Berkshire Council SUDS Supplementary Planning Document hadards, meet the Defra National Non-Statutory Technical Standards, and follow st design practice (CIRIA Manu



Site code	LAM5
Site name	Windsor House Large Paddocks, Crowle Road, Lambourn

Site details	OS Grid	SU 32350 78668							
	reference	30 32330 78000							
	Area	3.07 ha							
	Current land use	Greenfield - Paddock (and	Greenfield - Paddock (and temporary overflow car park for local events)						
	Proposed site use	Residential and a LEAP (	Local Equipped	Play Area) / L	AP (Local Area f	or Play)			
	Flood risk vulnerability	More vulnerable							
	Existing watercourses/bio diversity	There are no watercourse (classified as a Main Rive 415m north east of the sit The Lambourn is a design a protected habitat listed stream and is therefore se to the flooding regime.	r downstream o e. nated SSSI and in S41 of the NE	f Goose Gree a SAC, as we RC Act. Here	n) is located app Il as a chalk river , it is a winterbou	oximately which is rne			
	Flood history	the site flooded during the Council 2013/14 Parish F February 2014 a 'significa of the high groundwater le access gates. Water level subsiding, and draining de Thames Water data indica	The site is not located within the EA Recorded Flood Outlines dataset. However, the site flooded during the Winter 2013/14 flood event. The West Berkshire Council 2013/14 Parish Flood Report for Lambourn states on 14 <sup>th</sup> and 15 <sup>th</sup> February 2014 a 'significant volume of water collected in the paddock as a result of the high groundwater levels', with water entering the site through the paddock access gates. Water levels on the site remained high for eight weeks, before subsiding, and draining down completely after a further two weeks. Thames Water data indicates that a total of 20 sewer flooding incidents have been reported to properties in the postcode area (RG17 8), in which one property						
	Fluvial	Fluvial							
		Proportion of the site at risk (%)	Flood Zone 3b	Flood Zone 3a	Flood Zone 2	Flood Zone 1			
Sources of			5% AEP	1% AEP	0.1% AEP				
flood risk		0%         0%         0%         100%           Available modelled data:         There is no detailed hydraulic fluvial model covering the site.         Flood characteristics:         The site is located within Flood Zone 1, and is therefore at negligible risk of fluvial flooding.							
		Proportion of site at risk (RoFSW)							
		3.3% AEP	1% A		0.1% AE				
		(1 in 30)	(1 in 1 40%	-	(1 in 1,00) 50%	0)			
	Surface Water	<b>Description of surface water flow paths:</b> Flood risk to the site is associated with an extensive surface water flow path, which originates north of Baydon, and flows into the south west of the site, ponding in the low-lying ground. The centre of the site is at risk of surface water flooding during the 1% and 0,1% AEP rainfall events, with flood extents covering up to half of the site.							
		Proportion of the site	at risk in JBA ( year) risk (		Map 1% AEP (1	in 100-			
	Groundwater	Depth below surface	Depth below surface Total in high						
		0-0.025m	0.025-0		Categories				



Site code LAM5							
Site name		Windsor House Large Paddocks	, Crowle R	oad, Lambour	'n		
		JBA Groundwater Mapping shows the site to be at moderate risk of groundwater flooding, with groundwater levels in the south of the site predicted to lie betwee 0.5m and 5m below the ground surface during a 1% AEP event. In the north of site, groundwater levels are predicted to lie at least 5m below the ground surface However, groundwater emergence modelling carried out by Jacobs following Winter 2013/14 flood event, indicates that groundwater emergence is predicted to reach 0.9m during a 3.3% AEP and 1% AEP flood events. Maxim flood depths in the centre of the site are predicted to reach 0.9m during a 3.3% AEP (1 in 30) event, and 1.0m during a 1% AEP (1 in 100) event.					
	Reservoir	The site is not at risk of flooding,	in the rare	event of a res	servoir brea	ich.	
	Canal	There are no canals witin the site	e boundary	'.			
		Defence Type	Standar	d of Protectio	on C	Condition	
Flood risk	Defences	There are no defences within sit	e boundary	<i>י</i> .			
management	Residual risk	Culvert / structure blockage?	N/A	N/A			
mastructure		Impounded water body failure?	N/A				
		Defence breach / overtopping?	Breach Zone				
	Flood warning	The site is not covered by an E Area.		t Agency Floo	Flood Alert or Flood Warning		
Emergency planning	Access and egress	The site is likely to be accessed the west. Both roads are at very surface water flood risk. However, Crowle Rod is at low t predicted to occur during the 1% events. Groundwater emergence risk of groundwater flooding, dur events. Therefore, access to the surface water and groundwater f	to moderate AEP (1 in e modelling ring a 3.3% site via Cre	flood risk. Ba e surface wate 100) and 0.1% g indicates tha 5 AEP (1 in 30	aydon Road er flood risk 6 AEP (1 in at Crowle R 0) and 1% <i>F</i>	is also at low , with flooding 1,000) rainfall load is also at AEP (1 in 100)	
	Climate change allowances for	River Basin District / Manag Catchment	jement	Central	Higher Central	Upper End	
	'2080s' (2016 allowances)	Thames (assessed within Level	2 SFRA)	25%	35%	70%	
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Kennet and tributaries (to be use site-specific FRAs)	ed for	21%	35%	76%	
	Implications for the site	The site remains within Flood Zo on fluvial flood risk. The latest available climate char Flood Risk Assssments.		-	-	-	
Dominant	Bedrock Geology	The site is underlain by Sussex <sup>1</sup>	White Chal	k Formation			
Requirement for drainage control and	Superficial Geology	There are no superficial geology deposits recorded on the site.					



Site code		LAM5				
Site name		Windsor House Large Paddocks, Crowle Road, Lambourn				
impact mitigation	Soils	Shallow lime-rich soils over chalk.				
	SuDS	<ul> <li>SuDS design must follow the West Berkshire Council SuDS SPD, meet the Defra National Non-Statutory Technical Standards, and follow current best design practice (CIRIA Manual 2015).</li> <li>A greenfield site such as this should seek to implement an exemplar scheme, using natural, vegetated SuDS to deliver multiple benefits, including water quality, biodiversity, amenity, green infrastructure etc.</li> <li>'Natural', vegetated SuDS (such as green roofs, swales and ponds) will be preferred by West Berkshire Council as LLFA over 'hard engineered' and below-ground SuDS.</li> <li>All development should adopt source control SuDS techniques. Conveyance features should be designed above ground and follow natural flow paths where possible.</li> <li>The bedrock geology suggests that infiltration may be suitable, although mapping and emergence modelling indicate that groundwater flood risk to the site is high. Therefore, it is recommended further site investigation should be carried out to assess potential for drainage by infiltration, including at least 12 months of groundwater level monitoring on site. Infiltration techniques should only be used where there are suitable levels of surface water runoff treatment.</li> <li>Where below ground storage is proposed, the base of the feature must be located at least 1m above the highest groundwater level, to reduce the risk of groundwater ingress or flotation.</li> </ul>				
	Groundwater Source Protection Zone	The site is not located wit	hin a Groundwater S	ource Protection Zone.		
	Historic Landfill Site	There are no historic land proximity.	Ifill sites within the site	e boundary or within close		
	Opportunities for flood risk betterment	and to provide additional	storage for surface w d delay of flood peaks	manage runoff rates and volumes, ater runoff onsite, to contribute reaching the River Lambourn and site.		
		Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications		
	Cumulative impacts of development	Lambourn (Source to Newbury)	Medium	The FRA and surface water drainage strategy should demonstrate wider betterment by demonstrating measures which can be put in place to contribute to a reduction in flood risk downstream.		
	Sequential Test an	d Exception Test require	ments			
Recommend- ations for Local Plan	passed. The Excep	tion Test is not required und	der the NPPF, but it n	ding. The Sequential Test must be nust be shown that the development equential approach to design.		
policy		for requirements of site-	specific Flood Risk	Assessment, including guidance		
	for developers	essment:				
	Flood risk assessment:					



Site code	LAM5
Site name	Windsor House Large Paddocks, Crowle Road, Lambourn
<ul> <li>drainage st</li> <li>Consultatione arry stage</li> <li>A site-spect area and at on flood assessment</li> <li>Other source including gr</li> <li>Climate chattime of the allowances published in</li> <li>The site is impacts of or should conserve be arread and a stressment of the allowance of a should conserve be arread and a stressment of the seek to red</li> <li>Safe access</li> <li>Mitigation ffinished floor</li> <li>Due to the and a stresspect of the surface of the surface</li></ul>	nning application stage, a site-specific flood risk assessment and surface water rategy will be required. In with the Local Authority and the Environment Agency should be undertaken at an . 



Site code	MID5
Site name	Land east of Colthrop Industrial Estate, Thatcham

Site details	OS Grid reference	SU 54374 66651							
	Area	5.1 На							
	Current land use	Greenfield - Agriculture							
	Proposed site use	Employment (general ind	ustrial / storage	or distribution)	)				
	Flood risk vulnerability	Less vulnerable							
	Existing watercourses/bio diversity	An unnamed watercourse site, before flowing westw located beyond the south Canal lies 150m to the so	ards along the s western bounda	southern borde	er. A balancing p	ond is			
	Flood history	reported to have flooded Thatcham. However, Wes report that runoff from the balancing pond on Gable cause flooding of Midgha The Thames Water DG5	The site is not within the EA Recorded Flood Outlines dataset. The site is not reported to have flooded during the July 2007 surface water flood event in Thatcham. However, West Berkshire Council Parish Flood Reports for the event report that runoff from the A4 Bath Road, and the surrounding fields, caused the balancing pond on Gables Way (to the south west of the site) to overtop and cause flooding of Midgham Marsh. The Thames Water DG5 register shows that seven sewer flooding incidents have been recorded within the postcode area (RG19 4), of which three have resulted in netronal property flooding.						
			Fluv	/ial					
		Proportion of the site at risk (%)	Flood Zone 3b 5% AEP	Flood Zone 3a 1% AEP	Flood Zone 2 0.1% AEP	Flood Zone 1			
	Fluvial		0%	0%	0%	100%			
Sources of flood risk		Available modelled data: The site is not covered by a hydraulic model. Flood characteristics: The site is entirely within Flood Zone 1, where fluvial flood risk is negligible.							
		Pr	Proportion of site at risk (RoFSW)						
		1 in 30 (3.33% AEP)	1 in 100 (	1% AEP)	1 in 1,000 (0.1% AEP)				
		0%	2%		26%				
	Surface Water	site during the 3.3% AEP During the 0.1% AEP (1 i site from A4 Bath Road, a	s predicted to fo (1 in 30) and gro n 1,000) a large nd flows south e	er flow paths: redicted to form in a low point in the north east of the n 30) and greater rainfall events. ,000) a large surface flow path enters the north of the lows south eastwards through the site, before ponding e south of the site. Remaining areas of the site are at					
		Proportion of the s	ite at risk in JB categ		ter Map 1% AEF	risk			
	Groundwater	Depth below surface 0-0.025m	Depth below 0.025-0		Total in highe categorie				
		46%	0%		46%				
		The north of the site is at predicted to lie within 0.02	nigh risk of grour 5m of the grour	ndwater floodi nd surface dur	ng, with groundw ing a 1% AEP ev	ater levels ent.			



Site code	MID5
Site name	Land east of Colthrop Industrial Estate, Thatcham

	Reservoir	The site is not at risk of flooding, in the rare event of a reservoir breach.					
	Canal	The Kennet and Avon Canal is located 150m south of the site. However, as the railway line at the south of the site forms a topographic barrier, breach or overtopping of the canal would be unlikely to diretly affect the site.					
	Defences	Defence Type	Standard of Prote		ion	Condition	
		There are no defences within the	site boun	dary.			
Flood risk management		Culvert / structure blockage?	N/A				
infrastructure	Residual risk	Impounded water body failure?	N/A				
		Defence breach /		Brea	ach Zone		
		overtopping?	N/A				
	Flood warning	The site is not within an EA Floo	d Alert or F	lood Warnin	g Area.		
Emergency planning	Access and egress	The site may be accessed via Bath Road at the northern border of the site, althoug preferred access is from Gables Way to the west. Within the vicinity of the site, be routes are located within Flood Zone 1, and therfore at very low risk of fluvi flooding. Localised areas of surface water ponding are predicted to form on bo Bath Road and Gables Way during a 3.33% AEP (1 in 30) and greater rainf events.					
	Climate change allowances for	River Basin District / Management Catchment		Central	Higher Central	Upper End	
	'2080s' (2016 allowances)	Thames (assessed within Level 2 SFRA)		25%	35%	70%	
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Kennet and tributaries (to be use site-specific FRAs)	Kennet and tributaries (to be used for site-specific FRAs)		35%	76%	
	Implications for the site	The site remains in Flood Zone 1 when accounting for the impact of climate change. The latest available climate change allowances must be used in site-specific Flood Risk Assssments.					



Site code	MID5
Site name	Land east of Colthrop Industrial Estate, Thatcham

	Bedrock Geology	London Clay Formation -	Clay, Silt And Sand.					
	Superficial Geology	The south of the site is ur	nderlain by: Alluvium - (	Clay, Silt, Sand And Gravel.				
	Soils	Slowly permeable seasonally wet slightly acid but base-rich loamy and classis.						
Requirement for drainage control and impact mitigation	SuDS	<ul> <li>the Defra Nation current best desi</li> <li>Opportunities sh SuDS with multip resource educat</li> <li>'Natural', vegeta be preferred by V and below-grour</li> <li>All development Conveyance fea natural flow path</li> <li>The limited perm that discharge of Groundwater flow be effective in th recommended th assess and conf</li> <li>Additionally, the Protection Zone where there are any required env</li> <li>Where below group</li> </ul>	<ul> <li>SuDS design must follow the West Berkshire Council SuDS SPD, methe Defra National Non-Statutory Technical Standards, and follow current best design practice (CIRIA Manual 2015).</li> <li>Opportunities should be taken on a greenfield site such as this to delive SuDS with multiple benefits, such as biodiversity, recreation and water resource education, through integration with areas of greenspace.</li> <li>'Natural', vegetated SuDS (such as green roofs, swales and ponds) we be preferred by West Berkshire Council as LLFA over 'hard engineerer and below-ground SuDS.</li> <li>All development should adopt source control SuDS techniques.</li> <li>Conveyance features should be designed above ground and following natural flow paths where possible.</li> <li>The limited permeability of the geology and soils on this site suggests that discharge of the site via infiltration is unlikely to be feasible.</li> <li>Groundwater flood risk varies across the site, and infiltration is unlikely be effective in the north of the site, where the risk is high. It is recommended that further site investigation should be carried out to assess and confirm the potential for infiltration.</li> <li>Additionally, the site is partially located within Groundwater Source Protection Zone 3. As such infiltration techniques should only be used where there are suitable levels of treatment and following the granting any required environmental permits from the Environment Agency.</li> </ul>					
	Groundwater Source Protection Zone	The site is within Groundwater Source Protection Zone 3.						
	Historic Landfill Site	There are no historic landfill sites within the site boundary.						
	Opportunities for flood risk betterment	Opportunities for using so contributing to the reducti existing surface water flow	on of flood peaks dowr	nanage runoff rates and volumes, nstream on the River Kennet and e.				
		Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications				
	Cumulative impacts of development	Kennet (Lambourn confluence to Enborne confluence)	High	The FRA should examine the cumulative impacts of potential peak runoff rates and volumes from the site (and other developments in the WFD catchment) on flood risk in the receiving watercourses.				
	Sequential Test an	d Exception Test require	ments					



Site code		MID5
Site name		Land east of Colthrop Industrial Estate, Thatcham
Site name	passed. The Except will be safe for its life Recommendations for developers Flood risk assess • At the draina • Consu- at an e • A site- within Gover (https: • Other assess • Detaile the ord Agence for the detaile • Climat the tim chang were p • The s impact strateg the We Guidance for s • Develo • Safe a and ra • Mitigat finishe • Due to • The de table. • Climat the tim chang were p • The s impact strateg the We • Safe a and ra • Mitigat finishe • Due to • The de table. •	Lood Zone 1 but at risk from other sources of flooding. The Sequential Test must be tion Test is not required under the NPPF, but it must be shown that the development etime and the risk can be managed through a sequential approach to design. a for requirements of site-specific Flood Risk Assessment, including guidance nent: planning application stage, a site-specific flood risk assessment and surface water users are strategy will be required. Jutation with the Local Authority and the Environment Agency should be undertaken early stagespecific flood risk assessment will be required because the site is over 1ha in area Flood Zone 1 and at risk from sources of flooding other than rivers and the sea. rmment guidance on flood risk assessments must be followed //www.gov.uk/guidance/flood-risk-assessment-for-planning-applications). sources of flooding should also be considered as part of a site-specific flood risk sment, including surface water and groundwater. ed modelling will be required to confirm Flood Zone and climate change extents for dinary watercourse within the site (see 'Available modelled data'). The Environment cy and LLFA should be consulted to obtain the latest hydraulic modelling information is site at the time of the flood risk assessment. They will advise as to whether existing ad models are available, and if so, whether thevel of the flood-risk-assessments-climate-eallowances of the assessed using recommended climate change allowances are of the assessed using recommended climate change allowances are of the assessment (https://www.gov.uk/guidance/flood-risk-assessments. time to lood risk. The current allowances are of the assessment (https://www.gov.uk/guidance/flood-risk-assessments. time to a start a valiable, and is o, whether they and surface water drainage gy should consider the recommendations outlined for high sensitivity catchments in est berkshire Level 1 SFRA Cumulative Impacts Assessment Addendum. site d



Site code	MID5
Site name	Land east of Colthrop Industrial Estate, Thatcham
an ordi Berksh	nnamed watercourse which forms the western and southern boundaries of the site is inary watercourse. A sufficient width of buffer, to be agreed in consultation with West hire Council, should be maintained between the riverbank and any built structures, to e riparian owners to access and maintain the channel.



Site code		NEW1							
Site name		London Road Industrial	Estate, Newb	ury					
Site details	OS Grid reference	SUL 47654 67207							
Sile details		SU 47654 67397							
	Area	9.5 Ha							
	Current land use	Brownfield - Employmer							
	Proposed site use	Residential, employmen	it, and retail						
	NPPF Flood risk vulnerability	More vulnerable							
	Existing watercourses/biod iversity	The River Kennet (Main southern boundary of th approximately 20m sout Both the River Kenner a River Kennet SSSI and the NERC Act.	e site. The Ke h of the site. Ind Kennet an	ennet and Avor d Avon Canal	n Canal is locate are designated a	d as the			
-	Flood history	The site is within the EA Recorded Flood Outline. Flooding occurred within the site during the June 1971 and March 1979 flood events as a result of channel exceedance. The Thames Water DG5 register identifies 16 sewer flooding incidents in total across the post code area RG14 2, of which seven reported internal flooding.							
		-		at risk in Floo	1				
		Proportion of the site at risk (%)	Flood Zone 3b 5% AEP	Flood Zone 3a 1% AEP	Flood Zone 2 0.1% AEP	Flood Zone 1			
			1%	65%	20%	14%			
		Range of depths (m)	N/A	0.02 - 0.57m	0.04m – 1.36m	N/A			
Sources of		Maximum Hazard	N/A	Significant - Danger to most	Extreme - Danger to all	N/A			
flood risk	Fluvial	<ul> <li>Available modelled data: The site is covered by the 2016 River Kennet and Lambourn (Newbury) 1D-2D model.</li> <li>The site is shown to be in an area benefiting from defence from the Newbury Flood Alleviation Scheme (FAS)</li> <li>Flood characteristics: The site is at high fluvial flood risk, with flooding from the River Kennet predicted to affect the majority of the site during a 1% AEP (1 in 100) event. The area of the site at risk increases during the 0.1% AEP (1 in 1,000) event. Small areas in both the north and south of the site are topographically higher than the remaining areas of the site, and are located within Flood Zone 1.</li> </ul>							
				te at risk (Rol					
		1 in 30 (3.33% AEP)		(1% AEP)	1 in 1000 (0.1	% AEP)			
	Surface Water	0%4%22%Description of surface water flow paths:The site is generally at a low risk of surface water flooding. Isolated areas of ponding are expected to form on Faraday Road and south of Marconi Road flood during the 3.3% AEP (1 in 30) and greater rainfall events. Surface water flood risk extends during the 0.1% AEP (1 in 1,000) rainfall event, to cover the remaining road network, and form ponding between existing buildings at Marconi Road, Ampere Road and Fleming Road.							





Site code	NEW1							
Site name		London Road Industrial Es	state,	Newbury				
		Proportion of the site at risk in JBA Groundwater Map 1% AEP risk categories						P risk
		Depth below surface 0-0.025m	Dept	oth below surface 0.025-0.5m		Tota	al in high categor	
		83%		17%			100%	I
	Groundwater	The site is at high risk of gro the highest risk category, 0.025m of the ground surfa levels are expected to be b is also considered as high The Jacobs Groundwater I at risk of groundwater eme	whe ace d betwe risk. Emer	ere ground luring a 1% een 0.025 rgence mo	Water level 6 AEP even – 0.5m of tl	s are t. In th ne gro	likely to ne south c und surfa	be within of the site, ce, which
	Reservoir	The site is not at risk of floo	oding	g, in the ra	re event of	a rese	rvoir brea	ach.
	Canal	The Kennet and Avon Can- is a residual risk to the site which should be assess Assessment.	e, in tl	he event c	of breach or	overte	oppng of t	the canal,
		Defence Type		Standar	d of Protec	tion	Con	dition
	Defences	Earth bank with steel she pilling at channel side		Not available			2	
		Earth flood embankment w gravel facing & capping (pa of Newbury FAS)		100			2	
Flood risk		Newbury FAS is expected to provide protection to the site during a flood events with a 1% (1 in 100) chance of occurring in any given year.					ood	
management infrastructure		Culvert / structure blockage?		N/A				
		Impounded water body failure?		N/A				
	Residual risk				ich Zo			
		overtopping? event of Kennet d			act on flood risk to the site, in the a breach event on the nearby River defences, should be assessed within ecific Flood Risk Assessment.			rby River sed within
	Flood warning	The site is within the follow • Flood Alert Area	: R	iver Kenn				
		<ul><li>Bassett down to Newbury</li><li>Flood Warning Area: River Kennet at Newbury</li></ul>						
Emergency planning	Access and egress	The site is likely to be accessed via the A339 to the west of the site or the to the north. The A339 is located within Flood Zone 3a, and is predict flood during the 1% AEP (1 in 100) event. The A4 is also at risk of flo during the 1% AEP (1 in 100) event, affecting access to the site from the reast. Both routes have a moderate surface water food risk, with small are ponding forming in the in the 1% AEP (1 in 100) and 0.1% AEP (1 in 1 rainfall events.					edicted to f flooding the north- ll areas of	
Climate	Climate change allowances for	River Basin District / Ma Catchment	anag	jement	Central		ligher entral	Upper End
Change	'2080s' (2016 allowances)	Thames (assessed within Level 2 SFRA)			25%		35%	70%

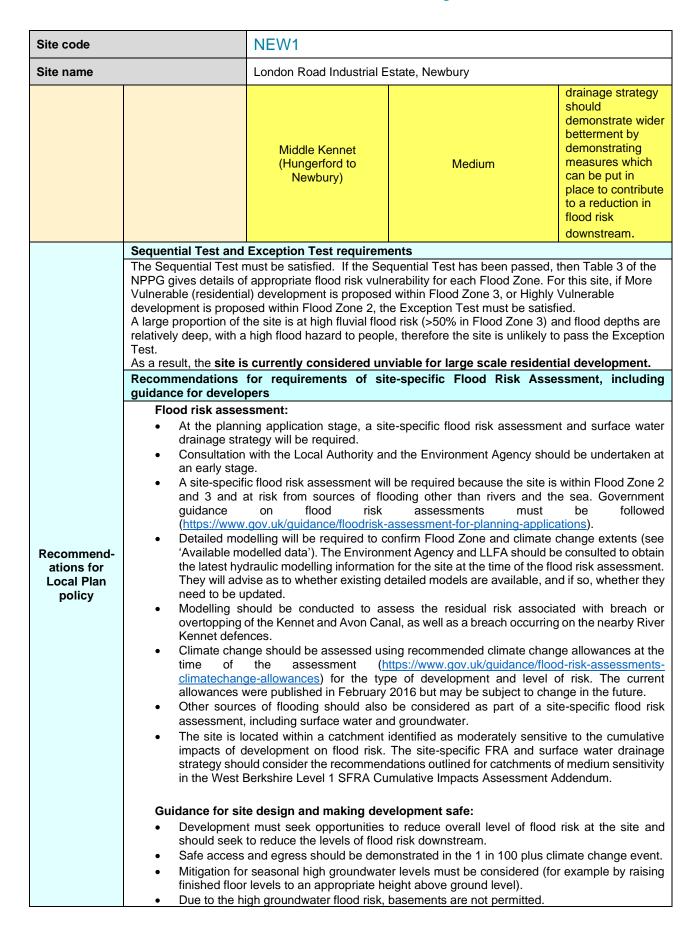


Site code		NEW1				
Site name		London Road Industrial Estate, Newbury				
Climate change allowances for '2080s' (2021 allowances)		Kennet and tributaries (to be used for site-specific FRAs)	21%	35%	76%	
	Implications for the site	Modelling indicates that the extent of Flood Zone 3a + 70% CC extend beyond that of Flood Zone 2, and therefore climate cha predicted to siginficantly impact the proposed site. The latest available climate change allowances must be used in Flood Risk Assssments.			s not	



Site code		NEW1		
Site name		London Road Industrial Estate, Newbury		
Requirement for drainage control and impact mitigation	Bedrock Geology	Seaford Chalk Formation.		
	Superficial Geology	The north of the site is overlain by deposits of alluvium, including clay, silt and sand.		
	Soils	The majority of the site is underlain by loamy and clayey floodplain soils with naturally high groundwater. The north of the site is underlain by freely draining slightly acid loamy soils. Site-based investigations would be required to fully understand the variety in soils across the site.		
	SuDS	<ul> <li>soils across the site.</li> <li>SuDS design must follow the West Berkshire Council SuDS SPD, meet the Defra National Non-Statutory Technical Standards, and follow current best design practice (CIRIA Manual 2015).</li> <li>SuDS are possible on all sites, including previously developed sites such as this one. All development should adopt source control SuDS techniques.</li> <li>'Natural', vegetated SuDS (such as green roofs, swales and ponds) will be preferred by West Berkshire Council as LLFA over 'hard engineered' and below-ground SuDS.</li> <li>Conveyance features should be designed above ground and following natural flow paths where possible.</li> <li>Storage for runoff from the development in extreme events should be located out of fluvial flood risk areas.</li> <li>The bedrock geology suggests high infiltration potential, although mapping indicates a high risk of groundwater flooding. Therefore, infiltration techniques may not be suitable at the site. If infiltration is proposed, it is recommended that further site investigation should be carried out to assess potential for drainage by infiltration, including at least 12 months of groundwater level monitoring on site. Infiltration techniques should only be used where there are suitable levels of surface water runoff treatment, and following the granting of any required environmental permits from the Environment Agency.</li> <li>Where below ground storage is proposed, the base of the feature must be located at least 1m above the highest groundwater level, to reduce the risk of groundwater ingress or flotation.</li> <li>SuDS features located near the historic landfill site in the centre of the site, may need to be designed with an impermeable liner, to prevent the leaching of pollutants.</li> </ul>		
	Groundwater Source Protection Zone	The site is in Groundwater Source Protection Zone 3.		
	Historic Landfill Site	The Faraday Road Estate landfill site is located within the centre of the site. The landfill site has contained industrial, commercial and residential waste, as well as liquid sludge.		
	Opportunities for flood risk betterment	The site forms a significant proportion of the Northbrook Stream catchment. Therefore, redevelopment of the site using source control SuDS to manage runoff rates and volumes, offers sigificant opportunities to reduce surface water flood risk downstream.		
	Cumulative impacts of	Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications
	development	Lambourn (Source to Newbury)	Medium	The FRA and surface water

### Level 2 SFRA Detailed Site Summary Tables



JBA



Site code	NEW1
Site name	London Road Industrial Estate, Newbury
<ul> <li>The design of Infiltration te be shallow a but care mu storage capa</li> <li>The surface a 1 in 100-ye and property</li> <li>The level of should be a recommended (currently +4 urban creep)</li> <li>SuDS design (SPD) stand</li> </ul>	detail and method of assessment of surface water runoff rates and volumes appropriate to the scale and risk of the development and should include ed allowance for climate change and urban creep at the time of the assessment 40% allowance for climate change and a 10% increase in impermeable area for



Site code	NEW3
Site name	Kennet Shopping Centre, Newbury, RG14 5EN

Site details	OS Grid reference	SU 47127 66969	SU 47127 66969					
	Area	2.2 Ha						
	Current land use	Retail, cafés, restaurants, cinema, and car parking						
	Proposed site use	Residential and po	ossibly al	so a h	otel to comp	lement t	he existing use	es
	NPPF Flood risk vulnerability	More vulnerable	More vulnerable					
	Existing watercourses/bio diversity	There are no wate also classified as t within 100m of the Both the River Ken River Kennet SSS NERC Act.	the Kenn northerr	et and h bour Kenn	Avon Cana dary of the s et and Avon	l) flows i site. Canal a	n an easterly c re designated	lirection as the
	Flood history	The site is not with DG5 record shows the postcode area resulted in interna	s that the (RG14 5	re hav 5), with	ve been seve n 10 incident	eral sewe	er flooding inci	dents within
			Proporti	on of	site at risk	in Flood	d Zones	
		Proportion of site at risk (%)	Floo Zone	3b	Flood Zone 3a		od Zone 2 1% AEP	Flood Zone 1
	Fluvial		<b>5% A</b>		<b>1% AEP</b> 0%		60%	40%
		Range of depths (m)	N/A		N/A	0.01	m – 0.28m	N/A
Sources of		Maximum hazard	N/A		N/A		oderate – igerous for some	N/A
flood risk		Available modell	ed data:					
		The site is covered by the 2016 River Kennet and Lambourn (Newbury) 1D-2D model.						
		<b>Flood characteristics:</b> A large area of the north and centre of the site is shown to be at fluvial flood risk, with flooding expected to occur during the 0.1% AEP event (Flood Zone 2). The southern area of the site is located within Flood Zone 1, where fluvial flood risk is low.						
			Prop	ortior	of site at ri	sk (RoF	SW)	
		1 in 30 (3.33% A	AEP)	1 in 100 (1% AEP)		EP)	1 in 1000 (0	-
	Surface Water	0%3%The site is at a low risk of surface water flooding, with a small area of ponding predicted to form at the western boundary of the site during the 0.1% AEP (1 in 1,000) rainfall event.						
		Proportion of		at ris	k in JBA Gr categories		iter Map 1% A	EP risk
	Groundwater	Depth below su 0-0.025m	rface	Dep	th below su 0.025-0.5m	rface	Total in hig catego	
		18%			82%		100%	



Site code		NEW3			
Site name	ite name Kennet Shopping Centre, Newbury, RG14 5EN				
		The site is within a high groundwater risk area. The highest risk is along the western and northern borders of the site, where groundwater levels are expected to lie within 0.025m of the ground surface during a 1% AEP event. The remaining areas of the site are at moderate to high risk, with groundwater levels expected to lie between 0.025 – 0.5m of the ground surface. This Jacobs Groundwater Emergence modelling does not show the site to be at risk of groundwater emergence.			
	Reservoir	The site is not at risk of flooding	, in the rare event of a re	eservoir brea	ich.
	Canal	The Kennet and Avon Canal flor is a residual risk to the site, in t which should be assessed in det	he event of breach or o	vertoppng of	f the canal,
	Defences	Defence Type	Standard of Protect	ion Co	ondition
Flood risk management		There are no defences within sit Culvert / structure blockage?	e boundary. N/A		
infrastructure	Residual risk	Impounded water body failure?	N/A		
		Defence breach / overtopping?		h Zone	
	Flood warning	overtopping?         N/A           The site is within the following EA Flood Alert and Flood Warning Areas:         •           •         Flood Alert Area: River Kennet and its tributaries from Berwick Bassett down to Newbury           •         Flood Warning Area: River Kennet at Newbury			
Emergency planning	Access and egress	The site may be accessed from several acces routes, inlcuding West Mills to the north, Bartholemew Street to the west, Market Street to the south, and Market Place to the east. Market Street is located in Flood Zone 1 and is at low fluvial flood risk. The remaining access routes are within Flood Zone 2, and predicted to be affected during the 1 in 1,000 (0.1% AEP) flood event. West Mills to the north is at low surface water flood risk, whereas flooding is predicted to form on Bartholemew Street and Market Place during the 3.3% AEP (1 in 30) and greater rainfall events. Market Street to the south is at risk during the 1% AEP (1 in 100) and 0.1% AEP (1 in 1,000) rainfall events.			
	Climate change allowances for	River Basin District / Management Catchment	Central	Higher Central	Upper End
	'2080s' (2016 allowances)	Thames (assessed within Level 2 SFRA)	25%	35%	70%
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Kennet and tributaries (to be used for site-specific FRAs)	21%	35%	76%
	Implications for the site	Modelling indicates that the extent of Flood Zone 3a + 70% CC does not extent beyond that of Flood Zone 2, and therefore climate change is not predicted to significantly impact the proposed site. The latest available climate change allowances must be used in site-specific Flood Risk Assessments.			predicted to



Site code	NEW3
Site name	Kennet Shopping Centre, Newbury, RG14 5EN

	Bedrock Geology	Seaford Chalk Formation.				
	Superficial Geology	Beenham Grange Gravel Mem	ber - Sand And	Gravel.		
	Soils	Freely draining slightly acid loamy soils.				
Requirement for drainage control and impact mitigation	SuDS	<ul> <li>SuDS design must follow the West Berkshire Council SuDS SPD meet the Defra National Non-Statutory Technical Standards, and follow current best design practice (CIRIA Manual 2015).</li> <li>SuDS are possible on all sites, including previously developed sit such as this one. All development should adopt source control Sutechniques. Conveyance features should be designed above gro and following natural flow paths where possible.</li> <li>'Natural', vegetated SuDS (such as green roofs, swales and pond will be preferred by West Berkshire Council as LLFA over 'hard engineered' and below-ground SuDS.</li> <li>Storage for runoff from the development in extreme events should located out of fluvial flood risk areas.</li> <li>The bedrock geology suggests high infiltration potential, although mapping indicates a high risk of groundwater flooding. Therefore, infiltration techniques may not be suitable at the site. If infiltration proposed, it is recommended that further site investigation should carried out to assess potential for drainage by infiltration, includin least 12 months of groundwater level monitoring on site.</li> <li>The site is located within Groundwater Source Protection Zone 3. such infiltration techniques should only be used where there are suitable levels of treatment and following the granting of any requentionmental permits from the Environment Agency.</li> <li>Where below ground storage is proposed, the base of the feature must be located at least 1m above the highest groundwater level, reduce the risk of groundwater ingress or flotation.</li> </ul>				
	Groundwater Source Protection Zone	The site is within Groundwater Source Protection Zone 3.				
	Historic Landfill Site	There are no historic landfill sites within the site boundary.				
	Opportunities for flood risk betterment	Opportunities for using source control SuDS to manage runoff rates and volumes, contributing to the reduction of flood peaks downstream on the Rive Kennet and existing surface water flow paths leaving the site.				
		Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications		
	Cumulative impacts of development	Middle Kennet (Hungerford to Newbury)	Medium	The FRA and surface water drainage strategy should demonstrate wider betterment by demonstrating measures which can be put in place to contribute to a reduction in flood risk downstream.		



Site code	NEW3
Site name	Kennet Shopping Centre, Newbury, RG14 5EN
Recommend- ations for Local Plan policy	<ul> <li>Sequential Test must be satisfied. Only once the Sequential Test is satisfied should the Exception Test be applied. It is anticipated that proposed development will be sequentially located within Flood Zone 1. For this site, the Exception Test must be satisfied:         <ul> <li>If More Vulnerable and Essential Infrastructure is located in FZ3a.</li> <li>If Highly Vulnerable development is located in FZ2 or Flood Zone 3 ap lus climate change.</li> <li>If Essential Infrastructure is located in FZ2 or Flood Zone 3 ap lus climate change and FZ3b.</li> </ul> </li> <li>If Essential Infrastructure is located in FIOd Zone 3b then it must be demonstrated that the exception test is satisfied. Development will not be permitted in the following scenarios:</li> <li>Highly Vulnerable development within FZ3a or Flood Zone 3a plus climate change and FZ3b.</li> <li>More Vulnerable and Less Vulnerable development within FZ3b.</li> <li>Recommendations for requirements of site-specific flood risk assessment, including guidance for developers</li> <li>Flood risk assessment:         <ul> <li>A the planning application stage, a site-specific flood risk assessment and surface water drainage strategy will be required.</li> <li>Consultation with the Local Authority and the Environment Agency should be undertaken at an early stage.</li> <li>A site-specific flood risk assessment-for-planning-applications).</li> <li>Detailed modelling will be required to confirm Flood Zone and dimate change extent (see 'Available modelled data'). The Environment Agency and Lire A should be consulted to abtain the latest hydraulic modelling information for the site at the time of the flood risk assessment. They will advise as to whether existing detailed models are available, and if so, whether they need to be updated.</li> <li>Climate change should be asseessed using recommended climate change in the future.</li></ul></li></ul>



Site code	NEW3
Site name	Kennet Shopping Centre, Newbury, RG14 5EN
should be recommend (currently + urban cree • SuDS desig (SPD) stan	of detail and method of assessment of surface water runoff rates and volumes appropriate to the scale and risk of the development and should include ded allowance for climate change and urban creep at the time of the assessment +40% allowance for climate change and a 10% increase in impermeable area for p). gn must follow West Berkshire Council SuDS Supplementary Planning Document hdards, meet the Defra National Non-Statutory Technical Standards, and follow st design practice (CIRIA Manual 2015).



Site code	PAD1
Site name	Land fronting Bath Road, Aldermaston Wharf, Reading (Site A)

Site details	OS Grid reference	SU 59990 67366	SU 59990 67366					
	Area	2.8 Ha	2.8 Ha					
	Current land use	Greenfield - Scrubland	Greenfield - Scrubland					
	Proposed site use	Residential	Residential					
	Flood risk vulnerability	More vulnerable						
	Existing watercourses/bio diversity	The River Kennet (here also classified as the River and Avon Cana 250m south of the site. There are no watercourses within the site be lakes are located 30m north west of the site, and 20m south of the site.						
	Flood history	The site is not within the The Thames Water De incidents within the po property flooding.	G5 register shows t	hat there have	e been six sewer			
			Flu	vial				
		Proportion of the site at risk (%)	Flood Zone 3b 5% AEP	Flood Zone 3a 1% AEP	Flood Zone 2 0.1% AEP	Flood Zone 1		
	Fluvial		0%	0%	0%	100%		
		Available modelled data: The site is covered by the 2007 River Kennet (Newbury to Tyle Mill) 1D model. Flood characteristics: The site is located entirely within Flood Zone 1, and is therefore at very low risk of fluvial flooding.						
		Proportion of site at risk (RoFSW)						
Sources of		1 in 30 (3.33% AEF	P) 1 in 100 (	(1% AEP)	1 in 1,000 (0.	1% AEP)		
flood risk		43%	-	2%	74%			
	Surface Water	<b>Description of surface water flow paths:</b> The site is shown to be at significant surface water flood risk, as the topography is lower than the surrounding roads and railway line, allowing water to pond. The eastern half of the site is at high risk of surface water flooding, where flooding is predicted to occur during a 3.33% AEP (1 in 30) rainfall event. The extent of flooding significantly increases during the 0.1% AEP (1 in 1,000) event, with the majority of the site expected to flood during this event.						
		Proportion of the site at risk in JBA Groundwater Map 1% AEP risk categories						
	Groundwater	Depth below surfact 0-0.025m	e Depth below 0.025-0		Total in highest risk categories			
		100%	0%		100%			
		The site is at high groundwater flood risk, with groundwater levels expected to lie within 0.025m of the ground surface during a 1% AEP (1 in 100) event. The Jacobs Groundwater Flood Risk modelling does not show the site to be at risk of groundwater emergence.						
		within 0.025m of the g The Jacobs Groundwa	round surface durir ater Flood Risk moc	ig a 1% AEP	(1 in 100) event.			



Site code		PAD1				
Site name		Land fronting Bath Road, Aldermaston Wharf, Reading (Site A)				
				0 4 6		
	Canal	The Kennet and Avon Canal is site is considered to be at low ris			the site, and	therefore the
	Defences	Defence Type	Standar	d of Protect	ion (	Condition
		There are no flood defences pres	sent.			
Flood risk management		Culvert / structure blockage?	N/A			
infrastructure	Residual risk	Impounded water body failure?	N/A			
		Defence breach /		Brea	ach Zone	
		overtopping?	N/A			
	Flood warning	The site is not within an EA Floo	d Alert or F	lood Warnin	g Area.	
Emergency planning	Access and egress	The site is likely to be accessed via A4 Bath Road along the northern boundary of the sites, Station Road to the west, or A340 Basingstoke Road to the south (preferred route). Bath Road is at very low fluvial flood risk, and is located within Flood Zone 1. The majority of Station Road is at very low risk of fluvial flooding, with a small area of flooding predicted to occur at the junction with A340 Basingstoke Road during a 0.1% AEP (1 in 1,000) event. Basingstoke Road is at very low risk of fluvial flooding. Surface water flooding is predicted to affect westbound access on Bath Road during the 3.3% AEP (1 in 30) rainfall event, and inreases during the 1% (1 in 100) and 0.1% AEP events. However eastbound access, north of the site, is at low surface water flood risk. Adjacent to the site, Station Road is at very low risk of surface water flooding, and isolated areas of ponding are prodcted to form on Basingstoke Road during the 0.1% AEP (1 in 1,000) rainfall event.				
	Climate change allowances for	River Basin District / Manag Catchment	ement	Central	Higher Central	Upper End
	'2080s' (2016 allowances)	Thames (assessed within Level :	2 SFRA)	25%	35%	70%
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Kennet and tributaries (to be use site-specific FRAs)	ed for	21%	35%	76%
	Implications for the site	The site remains in Flood Zone 1 when considering the impact of climate change. The latest available climate change allowances must be used in site-specific Flood Risk Assssments.			•	



Site code	PAD1
Site name	Land fronting Bath Road, Aldermaston Wharf, Reading (Site A)

	Bedrock Geology	London Clay Formatic	on - Clay, Silt and	Sand.		
	Superficial Geology	Beenham Grange Gra	avel Member - Sar	nd and Gravel.		
	Soils	Freely draining slightly acid loamy soils.				
Requirement for drainage control and impact mitigation	SuDS	<ul> <li>the Defra Na current best</li> <li>All developm Conveyance natural flow p</li> <li>'Natural', veg be preferred and below-gi</li> <li>SuDS feature conveyance pathways.</li> <li>The impermes suggests tha However, the suggests tha infiltration test further site in drainage by i monitoring of</li> <li>The site is lo such infiltrati levels of treat environments</li> <li>Where below be located at</li> </ul>	tional Non-Statute design practice (C ent should adopt features should b boaths where possi getated SuDS (suc by West Berkshin round SuDS. es should be desig features should be eable bedrock geo t infiltration techni e presence of sup t infiltration to a sl sting. If infiltration ivestigation should infiltration, includir n site. cated within Grou on techniques sho tment and followir al permits from the ground storage i	ch as green roofs, swales and ponds) will e Council as LLFA over 'hard engineered' gned outside of fluvial flood risk areas and emain above surface and follow natural blogy and high groundwater flood risk ques may not be suitable on this site. erficial deposits and freely draining soils hallow depth may be possible, subject to is proposed, it is recommended that d be carried out to assess potential for ng at least 12 months of groundwater level ndwater Source Protection Zone 2. As build only be used where there are suitable ng the granting of any required e Environment Agency. s proposed, the base of the feature must he highest groundwater level, to reduce		
	Groundwater Source Protection Zone	The site is within Groundwater Source Protection Zone 2.				
	Historic Landfill Site	There are no historic landfill sites within the site boundary.				
	Opportunities for flood risk betterment		uction of flood pea	SuDS to manage runoff rates and volumes, aks downstream on the River Kennet and g the site.		
	Cumulativa	Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications		
	Cumulative impacts of development	Kennet and Holy Brook	High	The FRA should examine the cumulative impacts of potential peak runoff rates and volumes from the site (and other developments in the WFD catchment) on flood risk in the receiving watercourses.		
	Sequential Test and Exception Test requirements					







Site code		PAD3						
Site name		Land at Padworth Lane,	Padworth					
		I						
Site details	OS Grid reference	SU 60860 67826						
	Area	11.5 Ha						
	Current land use	Greenfield - Field						
	Proposed site use	Residential						
	NPPF Flood risk vulnerability	More vulnerable						
	Existing watercourses/bio diversity	The Kennet and Avon Ca Kennet flows in a north e The River Kennet forms which is a protected hab north of Padworth Lane (	asterly direction the western bour tat listed in S41	50m east of ndary of floo of the NERC	the site. dplain grazing	marsh		
	Flood history	The EA Recorded Flood Outlines dataset shows the east of the site to have flooded as a result of channel exceedance along the River Kennet in June 1971. The flood extent from the January 2003 flood event (also caused by exceedance of the River Kennet) reached the eastern boundary of the site. The Thames Water DG5 register shows that there have been 14 sewer flooding incidents within the postcode area (RG7 5), with one incident of internal property flooding.						
		Proportion of site at risk in Flood Zones						
		Proportion of site at risk (%)	Flood Zone 3b 5% AEP 8%	Flood Zone 3a 1% AEP	Flood Zone 2 0.1% AEP	Flood Zone 1		
		Assolitable as a della di dat		170	9%	82%		
Sources of flood risk	Fluvial	Available modelled data: The site is covered by the River Kennet (Newbury to Tyle Mill) 2007 1D m Flood characteristics: The south east of the site is within Flood Zone 3b, with flooding is likely to during the 5% AEP (1 in 20) event. The same area is located within Flood 3a, where flooding is predicted during the 1% AEP event. Flood Zone 2 ex further into the site, with flooding predicted to affect the eastern border site during the 0.1% AEP (1 in 1,000) event. The remainder of the site is Flood Zone 1, where fluvial flood risk is negligible.						
			portion of site	•	-	40/ 4 == >		
		1 in 30 (3.33% AEP)	1 in 100 (1	2	1 in 1000 (0	,		
	Surface Water	0%3%Description of surface water flow paths:The site is at low risk of surface water flooding, with a small area in the south east corner of the site is predicted to flood during the 0.1% AEP (1 in 1,000) rainfall.						
		Proportion of the si	te at risk in JBA catego		ter Map 1% A	EP risk		
	Groundwater	Depth below surface 0-0.025m	Depth belov 0.025-0	v surface	Total in hig catego			
		94%	0.023-0		94%			
		1	1					



Site code PAD3							
Site name		Land at Padworth Lane, Padworth					
		The majority of the site is at high risk of groundwater flooding, with groundwater levels expected to lie within 0.025m of the ground surface during a 1% AEP event. The remaining areas of the site, along the eastern border, are shown to be at negligible risk of groundwater flooding. This Jacobs Groundwater Flood Risk modelling does not show the site to be at risk of groundwater emergence.					
	Reservoir	The site is not at risk of flooding,	in the rare	event of a r	eservoir brea	ach.	
	Canal	The Kennet and Avon Canal run a residual risk of flooding to the the canal. This risk should be a Flood Risk Assessment.	site, in the	event of a bi	each or ove	rtopping on	
	Defences	Defence Type	Standar	d of Protect	ion Co	ondition	
		There are no defences present w	vithin the s	ite.	·		
Flood risk management	Residual risk	Culvert / structure blockage?	N/A				
infrastructure		Impounded water body failure?	N/A				
		Defence breach / overtopping?	Breach Zone				
	Flood warning	The east of the site is within a Thatcham down to Reading.		od Alert Are	a: River K	ver Kennet from	
Emergency planning	Access and egress	The site is likley to be accessed south of the site. Adjacent to the flood risk. However, to the east, 5% AEP (1 in 20) and greater ev to the site is likely to be restricted	site, this ro Padworth vents. Ther	ute is at low f Lane is at ris efore, eastbo	uvial and surface water k of flooding during the und access and egress		
	Climate change allowances for	River Basin District / Manag Catchment	ement	Central	Higher Central	Upper End	
	'2080s' (2016 allowances)	Thames (assessed within Level 2 SFRA)		25%	35%	70%	
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Kennet and tributaries (to be used for site-specific FRAs)		21%	35%	76%	
	Implications for the site	Modelling shows that climate change leads to a small increase in flood exter at the site. However, the extent of Flood Zone 3a + 70% CC does not exter beyond that of Flood Zone 2, and therefore climate change is unilkely to significantly impact the proposed site. The latest available climate change allowances must be used in site-specifi Flood Risk Assssments.					



Site code	Site code PAD3						
Site name		Land at Padworth Lane, Padworth					
	Bedrock Geology	London Clay Formation - Clay, Silt and Sand.					
	Superficial Geology	Beenham Grange Gravel Member - Sand and Gravel.					
	Soils	Freely draining slightly acid loamy soils.					
Requirement for drainage control and impact mitigation	SuDS	<ul> <li>SuDS design must follow the West Berkshire Council SuDS SPD, meet the Defra National Non-Statutory Technical Standards, and follow current best design practice (CIRIA Manual 2015).</li> <li>Opportunities should be taken on a greenfield site such as this to deliver SuDS with multiple benefits, such as biodiversity, recreation and water resource education, through integration with areas of greenspace.</li> <li>'Natural', vegetated SuDS (such as green roofs, swales and ponds) will be preferred by West Berkshire Council as LLFA over 'hard engineered' and below-ground SuDS.</li> <li>All development should adopt source control SuDS techniques. Conveyance features should be designed above ground and following natural flow paths where possible.</li> <li>Storage for runoff from the development in extreme events should be located out of fluvial flood risk areas.</li> <li>The impermeable bedrock geology, location within Groundwater Source Protection Zone 2 and high groundwater flood risk suggest that deep infiltration may not be a suitable option. However, the underlying permeable soil and superficial deposits may provide opportunity to infiltrate to a shallow depth but over a wider area. If infiltration is proposed, it is recommended that further site investigation should be carried out to assess potential for drainage by infiltration, including at least 12 months of groundwater level monitoring on site. Infiltration techniques should only be used where there are suitable levels of surface water runoff treatment, and following the graning of any required environmental permits from the Environment Agency.</li> <li>Where below ground storage is proposed, the base of the feature must be located at least 1m above the highest groundwater level, to reduce the risk of groundwater ingress or flotation.</li> </ul>					
	Groundwater Source Protection Zone	The site is within Groundwater Source Protection Zone 2.					
	Historic Landfill Site	There are no historic landfill sites within the site boundary.					
	Opportunities for flood risk bettermentOpportunities for using source control SuDS to manage runoff ra volumes, contributing to the reduction of flood peaks downstread surface water flow paths leaving the site.						
		Water FrameworkSensitivity to cumulativeImplicationsDirective Catchmentimpacts					



Site code		PAD3			
Site name		Land at Padworth Lane, Padworth			
	Cumulative impacts of development	Kennet and Holy Brook	High	The FRA should examine the cumulative impacts of potential peak runoff rates and volumes from the site (and other developments in the WFD catchment) on flood risk in the receiving watercourses.	
	Sequential Test an	d Exception Test requi	rements		
	Test be applied. It is Flood Zone 1. For	s anticipated that propo this site, the Exception T	est must be sa		
	change. If Highly Vu If Essential Infrastru test is satisfied. Dev	Inerable development is cture is located in Flood 2 velopment will not be per	located in FZ2 Zone 3b then it mitted in the fo	must be demonstrated that the exception llowing scenarios:	
	0.1	•		Ba plus climate change and FZ3b.	
		erable and Less Vulnera	· · ·	Flood Risk Assessment, including	
	guidance for devel	-	Site Speeme	Hood Mak Assessment, moldaling	
Recommend- ations for Local Plan policy	<ul> <li>drainage st</li> <li>Consultationan early state</li> <li>A site-spection and 3 and guidance (https://www</li> <li>Detailed m 'Available rist the latest h They will are need to be</li> <li>Modelling overtopping</li> <li>Climate chat time of climatechat allowances</li> <li>Other sour assessmen</li> <li>The site is of develop should composite of the state of the should composite of the state of the should composite of the state of the state of the should composite of the state of the state of the should composite of the state of the state of the should composite of the state of</li></ul>	ning application stage, a rategy will be required. In with the Local Authorit age. ific flood risk assessmen at risk from sources of on flood r w.gov.uk/guidance/floodr odelling will be required nodelled data'). The Envi ydraulic modelling inform dvise as to whether existi updated. should be conducted to g of the Kennet and Avor ange should be assessed the assessment nge-allowances) for the were published in Febru ces of flooding should a it, including surface wate located within a catchmen ment on flood risk. The	y and the Envir t will be required f flooding other isk assess isk-assessment to confirm Floo ronment Agence ation for the sit ing detailed mo o assess the mo o canal. d using recommon (https://www. type of deve ary 2016 but ma also be consid r and groundwo in tidentified as site-specific F ons outlined for	highly sensitive to the cumulative impacts RA and surface water drainage strategy r high sensitivity catchments in the West	
	<ul> <li>Development</li> <li>for example</li> <li>Safe access</li> <li>Mitigation for finished flo</li> <li>Due to the</li> <li>A site-spect</li> <li>The design</li> </ul>	e by reducing volume and s and egress should be of or seasonal high ground or levels to an appropriat high groundwater flood r ific surface water drainag of SuDS schemes must	es to reduce ov d rate of runoff demonstrated i water levels mu e height above isk, basements ge strategy will take into accou	rerall level of flood risk both on and offsite, and creating space for flooding. In the 1 in 100 plus climate change event. Sust be considered (for example by raising ground level). The are not permitted.	



Site code	PAD3
Site name	Land at Padworth Lane, Padworth
<ul> <li>but care storage</li> <li>The lev should recomm (current urban c</li> <li>Storage areas.</li> <li>The des are mained are mained (SPD) is current resulting that mires to be compared to be compa</li></ul>	by and take up larger areas. Above ground conveyance and attenuation can be used must be taken that groundwater does not enter the SuDS feature and reduce the capacity and structural integrity of the design. All of detail and method of assessment of surface water runoff rates and volumes be appropriate to the scale and risk of the development and should include ended allowance for climate change and urban creep at the time of the assessment y +40% allowance for climate change and a 10% increase in impermeable area for eep). for runoff from the development in extreme events should be located out of flood risk ign must ensure that flows resulting from rainfall in excess of a 1 in 100-year event aged via exceedance routes that minimise the risks to people and property. esign must follow West Berkshire Council SuDS Supplementary Planning Document tandards, meet the Defra National Non-Statutory Technical Standards, and follow best design practice (CIRIA Manual 2015). The design must ensure that flows from rainfall in excess of a 1 in 100-year event are managed via exceedance routes imise the risks to people and property. nd Union Canal is located at the eastern boundary of the site. A buffer, the distance etermined in consultation with the Canal and River Trust, should be maintained in the canal and any built structures, to enable access and maintenance.



Site code	PAD4
Site name	Land adjacent Padworth IWMF, Padworth Lane, Lower Padworth

Site details	OS Grid reference	SU 60680 67510						
	Area	3.1 Ha						
	Current land use	Brownfield - Oil terminal						
	Proposed site use	Employment	Employment					
	Flood risk vulnerability More vulnerable							
	Existing watercourses/bio diversity	<ul> <li>There are no watercourses within the site boundary. The Kennet and A is located 40m east of the site. The River Kennet (Main River) is locate north east of the site.</li> <li>The site is north of the Padworth Lane Gravel Pits LWS.</li> </ul>						
	Flood history	The site is not within the EA Recorded Flood Outlines dataset. West Berkshire Council Parish Flood Reports identified that Padworth Lane flooded on 4/5 February 2014, due to surface water runoff from nearby fields, exacerbated by high groundwater levels in the area. The road was also reported as flooding up to a depth of 300mm during the July 2007 flood event. The Thames Water DG5 register identifies that six previous sewer flooding incidents have occurred within the RG7 4 postcode, of which two resulted in external flooding.						
	Fluvial			Fluvial				
		Proportion of the site at risk (%)	Flood Zone 3b 5% AEP	Flood Zone 3a 1% AEP	Flood Zone 2 0.1% AEP	Flood Zone 1		
			0%	0%	0%	100%		
Sources of flood risk		Available modelled data: The site is covered by the 2007 River Kennet (Newbury to Tyle Mill) 1D model. Flood characteristics: The site is within Flood Zone 1, and is therefore at very low risk of fluvial flood risk.						
noou nak				site at risk (RoF		noou noit.		
		1 in 30 (3.33% AEP)	-	00 (1% AEP)	1 in 1,000 (0.	1% AEP)		
		0%		1%	3%	.,,		
	Surface Water	<b>Description of surface water flow paths:</b> The site is at low risk of surface water flooding. Isolated areas of ponding are predicted to form in the south east corner of the site during the 1% AEP (1 in 100), and along the southern boundary of the site during a 0.1% AEP (1 in 1,000) rainfall event.						
		Proportion of the s		JBA Groundwa tegories	ter Map 1% AEF	P risk		
		Depth below surface 0-0.025m	Depth be	low surface 25-0.5m	Total in highe categorie			
	Groundwater	100%		0%	100%			
		The entire site is at high groundwater flood risk, with groundwater levels predicted to lie within 0.025m of the ground surface during a 1% AEP event. The Jacobs Groundwater Flood Risk modelling does not show the site to be at risk of groundwater emergence.						



Site code		PAD4					
Site name		Land adjacent Padworth IWMF, Padworth Lane, Lower Padworth					
	Reservoir	The site is not at risk of flooding,	, in the rare	event of a re	servoir brea	ach.	
	Canal	site. There is a residual risk to the	The Kennet and Avon Canal is located within 50m of the southern border of the site. There is a residual risk to the site, in the event of breach or overtopping of the canal, which should be assessed in detail within a site-specific Flood Risk Assessment.				
	Defences	Defence Type	Standar	d of Protectio	on (	Condition	
		There are no defences within the	e site boun	dary.			
Flood risk management		Culvert / structure blockage?	N/A				
infrastructure	Residual risk	Impounded water body failure?	N/A				
		Defence breach / overtopping?	N/A	Bread	h Zone		
			,		•		
	Flood warning	The site is not within an EA Flood Alert or Flood Warning Area.					
Emergency planning	Access and egress	The site is likely to be accessed of of the of the site. To the east of is at risk of flooding during a 5% the site in this direction. To the w The access route is at low surfa predicted to form during the 0.19	the site, th AEP (1 in 2 /est, fluvial ce water flo	e route is loca 20) event, which flood risk to P bod risk, with	ited in Floc th may affe adworth La solated are	d Zone 3, and ct access from ine is very low.	
	Climate change	River Basin District / Management Catchment		Central	Higher Central	Upper End	
	allowances for '2080s' (2016 allowances)	Thames (assessed within Level 2 SFRA)		25%	35%	70%	
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Kennet and tributaries (to be used for site-specific FRAs)		21%	35%	76%	
	Implications for the site	The site remains within Flood Zone 1, accounting for the impact of climate cha on fluvial flood risk. The latest available climate change allowances must be used in site-specific Flood Risk Assssments.				-	



Site code	PAD4
Site name	Land adjacent Padworth IWMF, Padworth Lane, Lower Padworth

	Bedrock Geology	London Clay Form	ation - Clay, Silt Ar	nd Sand.			
	Superficial Geology	Beenham Grange	Beenham Grange Gravel Member - Sand And Gravel.				
	Soils	Freely draining slig	Freely draining slightly acid loamy soils.				
Requirement for drainage control and impact mitigation	SuDS	<ul> <li>the Defra current be</li> <li>SuDS are as this or technique and follow</li> <li>'Natural', be prefer and below</li> <li>Mapping is at high may not be should be</li> <li>The site i such infilt levels of tenvironm</li> <li>Where be be locate the risk o</li> <li>Due to th contamin</li> </ul>	<ul> <li>the Defra National Non-Statutory Technical Standards, and foll current best design practice (CIRIA Manual 2015).</li> <li>SuDS are possible on all sites, including previously developed as this one. All development should adopt source control SuDS techniques. Conveyance features should be designed above g and following natural flow paths where possible.</li> <li>'Natural', vegetated SuDS (such as green roofs, swales and po be preferred by West Berkshire Council as LLFA over 'hard en and below-ground SuDS.</li> <li>Mapping suggests that the bedrock geology is impermeable, an is at high risk of groundwater flooding, therefore infiltration tech may not be suitable. It is recommended that further site investig should be carried out to assess and confirm the potential for in The site is located within Groundwater Source Protection Zone such infiltration techniques should only be used where there ar levels of treatment and following the granting of any required environmental permits from the Environment Agency.</li> <li>Where below ground storage is proposed, the base of the featube located at least 1m above the highest groundwater level, to the risk of groundwater ingress or flotation.</li> </ul>				
	Groundwater Source Protection Zone	The site is within Groundwater Source Protection Zone 2.					
	Historic Landfill Site	There are no historic landfill sites within the site boundary.					
	Opportunities for flood risk betterment	Opportunities for using source control SuDS to manage runoff rates and volumes contributing to the reduction of flood peaks downstream on the River Kennet and existing surface water flow paths leaving the site.					
	Cumulative	Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications			
	impacts of development	Kennet and Holy Brook	High	The FRA should examine the cumulative impacts of potential peak runoff rates and volumes from the site (and other developments in the WFD catchment) on flood risk in the receiving watercourses.			
	Sequential Test an	d Exception Test r	equirements				



Site code		PAD4			
Site name		Land adjacent Padworth IWMF, Padworth Lane, Lower Padworth			
Recommend- ations for Local Plan policy	passed. The Exceptivill be safe for its lift <b>Recommendations</b> for developers <b>Flood risk assessit</b> • At the draina • Consu- at an of • A site- within Gover (https: • Other asses • Climather the time change were p • Model overto • The s impact strated the W <b>Guidance for s</b> • Devel • Mitigather • Due to • The d table. need can be reduced • The less should recom- (curred) • SuDS Docur	ood Zone 1 but at risk from other sources of flooding. The Sequential Test must be tion Test is not required under the NPPF, but it must be shown that the development etime and the risk can be managed through a sequential approach to design. s for requirements of site-specific Flood Risk Assessment, including guidance			



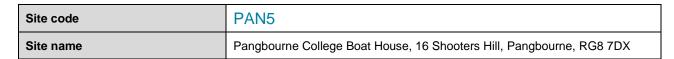
Site code	PAN5
Site name	Pangbourne College Boat House, 16 Shooters Hill, Pangbourne, RG8 7DX

Site details	OS Grid reference	SU 63093 76823	SU 63093 76823						
	Area	0.24 Ha							
	Current land use	Brownfield - Residential dwelling and boat club							
	Proposed site use	Residential and Boat Hou	Residential and Boat House						
	NPPF Flood risk vulnerability	More vulnerable							
	Existing watercourses/bio diversity	The River Thames (Main northern boundary of the		an easterly	direction along tl	ne			
	Flood history	affected by one reported to 2013-14 flood event, and The Thames Water DG5 flooding incidents to prop	The EA Recorded Flood Outlines shows that the site has previously been affected by one reported flood event. The flooding occurred during the Winter 2013-14 flood event, and as a result of surface water/local drainage. The Thames Water DG5 register shows that there have been 2 external sewer flooding incidents to property within the postcode area (RG8 7).						
		Propor	tion of site at	risk in Floo	d Zones				
	Fluvial	Proportion of the site at risk (%)	Flood Zone 3b 5% AEP	Flood Zone 3a 1% AEP	Flood Zone 2 0.1% AEP	Flood Zone 1			
			36%	7%	58%	35%			
		Range of depths (m)	N/A	0.05 – 0.24m	0.01 – 0.71m	N/A			
		Maximum Hazard	N/A	0.6 – Low: Caution	1.37 – Significant: Dangerous for most	N/A			
Sources of flood risk		Available modelled data: The site is covered by the 2018 River Thames (Sandford to Mapledurham) 1D-2D model.							
		<b>Flood characteristics:</b> The site is at high risk of fluvial flooding. The majority of the site is within Flood Zone 2 where flooding is predicted to occur during a 0.1% AEP event. The risk increases along the northern border where the site is within Flood Zone 3b, and at risk of flooding during the 5% AEP (1 in 20) event.							
		Pro	portion of site	e at risk (Ro	FSW)				
		1 in 30 (3.33% AEP)	1 in 100 (	(1% AEP)	1 in 1,000 (0	.1% AEP)			
	Surface Water	0%	1	%	7%				
		<b>Description of surface water flow paths:</b> The site is at low risk of surface water flooding. A small area along the northern border is at risk of flooding during a 0.1% AEP (1 in 1,000) rainfall event. However, this area of risk overlaps with the extent of fluvial flood risk.							
		Proportion of the sit		BA Groundw Jories	ater Map 1% Al	EP risk			
	Groundwater	Depth below surface 0-0.025m	Depth belo	ow surface -0.5m	Total in hig catego				
		28%	16	6%	44%	, 0			



Site code PAN5						
Site name		Pangbourne College Boat House, 16 Shooters Hill, Pangbourne, RG8 7DX				
		The northern boundary of the site is at high risk of groundwater flooding, when groundwater levels are expected to be within $0.025m$ during a 1% AEP (1 in 10 event. The risk reduces towards the southern border of the site, with a band risk where groundwater levels lie between $0.025 - 0.5m$ below the ground surface, and then $0.5 - 5m$ below the ground surface. This Jacobs Groundwater Flood Risk modelling does not show the site to be risk of groundwater emergence.				
	Reservoir	The site is not at risk of flooding, ir	n the rare	event of a	reservoir brea	ich.
	Canal	There are no canals within the vici	-			
	Defences	Defence Type	Stand Prote		Condit	ion
Flood risk		There are no defences present wit	r	oundary.		
management	Residual risk	Culvert / structure blockage? Impounded water body failure?	N/A N/A			
		Defence breach / overtopping?	Breach Zone			
	Flood warning	The site is within the following EA Flood Alert Area: River Thames from Pangbourne to Purley.				
Emergency planning	Access and egress	The site is likely to be accessed via the A329 (Shooter's Hill) with current access to the southern border of the site. This route is within Flood Zone 2, and predicted to be affected by flooding during the 0.1% AEP (1 in 1,000) event. The route is at low risk of surface water flooding, with flooding predicted to occur during the 0.1% AEP (1 in 1,000) rainfall event.				
	Climate change allowances for '2080s' (2016 allowances)	River Basin District / Manage Catchment	ment	Central	Higher Central	Upper End
		Thames (assessed within Level 2 SFRA)		25%	35%	70%
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Thames and South Chilterns (to be used for site-specific FRAs)		31%	43%	76%
	Implications for the site	Modelling shows that climate change leads to an increas site. The extent of Flood Zone 3a + 70% CC extends ma Flood Zone 2, and therefore climate change is likely to si proposed site. The latest available climate change allowances must be Flood Risk Assssments.		marginally bey o significantly in	ond that of mpact the	

## Level 2 SFRA Detailed Site Summary Tables



	Bedrock Geology	Lewes Nodular Ch	alk Formation.				
	Superficial Geology	Alluvium - Clay, Si	Alluvium - Clay, Silt, Sand And Gravel.				
	Soils	Loamy and clayey floodplain soils with naturally high groundwater.					
Requirement for drainage control and impact mitigation	SuDS	<ul> <li>meet the follow cui</li> <li>SuDS are such as t</li> <li>'Natural', will be progineere</li> <li>All develor Conveyar natural flor</li> <li>The bedralthough across the should be including</li> <li>Additionar Zone 1. A there are required to where be must be left.</li> </ul>	<ul> <li>meet the Defra National Non-Statutory Technical Standards, and follow current best design practice (CIRIA Manual 2015).</li> <li>SuDS are possible on all sites, including previously developed sites such as this one.</li> <li>'Natural', vegetated SuDS (such as green roofs, swales and ponds) will be preferred by West Berkshire Council as LLFA over 'hard engineered' and below-ground SuDS.</li> <li>All development should adopt source control SuDS techniques. Conveyance features should be designed above ground and follow natural flow paths where possible.</li> <li>The bedrock geology suggests that infiltration may be suitable, although mapping indicates that groundwater flood risk is variable across the site. Therefore, it is recommended further site investigat should be carried out to assess potential for drainage by infiltration, including at least 12 months of groundwater level monitoring on site</li> <li>Additionally, the site is located within Groundwater Source Protecting Zone 1. As such infiltration techniques should only be used where there are suitable levels of treatment and following the granting of a required environmental permits from the Environment Agency.</li> </ul>				
	Groundwater Source Protection Zone	The site is within Groudnwater Source Protection Zone 1.					
	Historic Landfill Site	There are no historic landfill sites within the site boundary.					
	Opportunities for flood risk betterment	volumes, contribut	ntrol SuDS to manage runoff rates and tion of flood peaks downstream on the River er flow paths leaving the site.				
	Cumulative	Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications			
	impacts of development	Thames Wallingford to Caversham	High	The FRA should examine the cumulative impacts of potential peak runoff rates and volumes from the site (and other developments in the WFD catchment) on flood risk in the receiving watercourses.			
	Sequential Test an	d Exception Test r	equirements				

JBA consulting

Site code



### Level 2 SFRA Detailed Site Summary Tables

PAN5

Site name		Pangbourne College Boat House, 16 Shooters Hill, Pangbourne, RG8 7DX
Site name	<ul> <li>FZ3a, and therefore multiple sources, ar evidence that both point of the site.</li> <li>Recommendations guidance for develoption of the site.</li> <li>Recommendations guidance for develoption of the site.</li> <li>Flood risk ass <ul> <li>At the plan drainage s</li> <li>Consultational and the site.</li> <li>A site-spece and 3 and guidance (https://www)</li> <li>Detailed models of the site site of develoption should correst of the site site site of the site site of the site site of the site site site site site site site sit</li></ul></li></ul>	t must be passed. For this site, More Vulnerable development is proposed with a, the Exception Test must be applied. The site is at high risk of flooding fro d therefore it may not be safe to develop the site for residential purposes. Stron parts of the Exception Test can be fulfilled will be required to justify development <b>is for requirements of site-specific Flood Risk Assessment, includin</b> <b>opers</b> <b>essment:</b> uning application stage, a site-specific flood risk assessment and surface wate trategy will be required. on with the Local Authority and the Environment Agency should be undertaken a age. if to flood risk assessment will be required because the site is within Flood Zone i at risk from sources of flooding other than rivers and the sea. Government on flood risk assessments must be follows w, gov.uk/guidance/floodrisk-assessment-for-planning-applications). odelling will be required to confirm Flood Zone and climate change extents (see nodelled data). The Environment Agency and LLFA should be consulted to obta ydraulic modelling information for the site at the time of the flood risk assessment dvise as to whether existing detailed models are available, and if so, whether the updated. ange should be assessed using recommended climate change allowances at the the assessment (https://www.gov.uk/guidance/flood-risk-assessment to, including should also be considered as part of a site-specific flood risk isider the recommendations outlined for high sensitivity catchments in the Wez- sider disting and making development safe: ant must seek opportunities to reduce overall level of flood risk both on and offsitu e by reducing volume and rate of runoff and creating space for flooding. is and egress should be demonstrated in the 1 in 100 plus climate change even or seasonal high groundwater levels must be considered (for example by raisin or levels to an appropriate height above ground level). high groundwater flood risk, basements are not permitted. iffe sources water drainage strategy
	finished flo Due to the A site-spec The design Infiltration be shallow but care m storage ca The level should be	or levels to an appropriate height above ground level). high groundwater flood risk, basements are not permitted. cific surface water drainage strategy will be required. of SuDS schemes must take into account the seasonally high groundwater table techniques may be ineffective and may pose a pollution risk. SuDS may need to and take up larger areas. Above ground conveyance and attenuation can be use ust be taken that groundwater does not enter the SuDS feature and reduce the pacity and structural integrity of the design. of detail and method of assessment of surface water runoff rates and volume appropriate to the scale and risk of the development and should include
	(currently - urban cree • Storage for areas. • The design are manag	ded allowance for climate change and urban creep at the time of the assessment +40% allowance for climate change and a 10% increase in impermeable area for p). runoff from the development in extreme events should be located out of flood rist in must ensure that flows resulting from rainfall in excess of a 1 in 100-year even ed via exceedance routes that minimise the risks to people and property. gn must follow West Berkshire Council SuDS Supplementary Planning Documer



Site code PAN5	
Site name	Pangbourne College Boat House, 16 Shooters Hill, Pangbourne, RG8 7DX
<ul> <li>resulting fro that minimi</li> <li>The River 1 buffer should</li> </ul>	st design practice (CIRIA Manual 2015). The design must ensure that flows om rainfall in excess of a 1 in 100-year event are managed via exceedance routes se the risks to people and property. Thames, a Main River, is located at the northern boundary of the site. An 8m wide IId be maintained between the riverbank and any built structures, to enable the ners and/or the Environment Agency to access and maintain the channel.





Site code	SCD4
Site name	Land to the north of Newbury

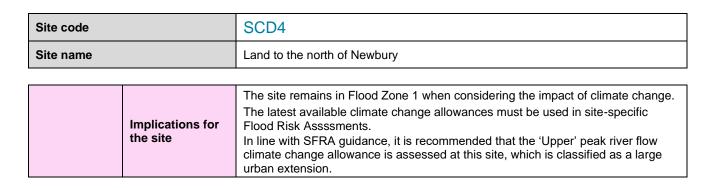
Site details	OS Grid reference	SU 46973 69560					
	Area	36 Ha					
	Current land use	Brownfield - Agriculture					
	Proposed site use	Residential-led mixed use facility)	development (r	etail, leisure/r	ecreation, comm	unity	
	Flood risk vulnerability	More vulnerable					
	Existing watercourses/bio diversity	east, and a smaller parcel In the eastern land parcel flows through the north we site. The River Lambourn The ordinary watercourse S41 of the NERC Act. The designated as a SSSI SAG	The site is formed of two land parcels, separated by the A339 a large parcel to the east, and a smaller parcel to the west. In the eastern land parcel, an ordinary watercourse (designated as a chalk river) flows through the north west border of the site, and south westwards through the site. The River Lambourn (Main River) is located 600m - 1km south of the site. The ordinary watercourse is a chalk river and is therefore a protected habitat in S41 of the NERC Act. The River Lambourn is also a chalk river, as well as being designated as a SSSI SAC. The western parcel of land is partly within both the High Wood LWS and Brick Kiln Wood LWS which provide habitat to deciduous				
	Flood history	The site is not within the E floodwater were reported (around Shaw Farm), duri and houses on the proper of the site, causing floodin	A Recorded Flot to flows through ng the July 200 ty, and led to th	ood Outlines d the valley in t 7 event. Flood e overtopping	he eastern land water affected the of the lakes dow	parcel ne barn nstream	
			Fluy		· · ·		
		Proportion of the site at risk (%)	Flood Zone 3b	Flood Zone 3a	Flood Zone 2	Flood Zone 1	
			5% AEP	1% AEP	0.1% AEP		
Sources of		Available modelled data	0%	0%	0%	100%	
flood risk	Fluvial	The site is not covered by		del.			
		Flood characteristics:	-				
		The site is entirely within Flood Zone 1, where fluvial flood risk is negligible. However, the Flood Zones do not represent the fluvial flood risk from the ordinary watercourse within the site boundary, which is better represented by the RoFSW mapping.					
		Proportion of site at risk (RoFSW)					
		1 in 30 (3.33% AEP)	1 in 100 (	-	1 in 1,000 (0.	1% AEP)	
		3%	3%		7%		
	Surface Water	<b>Description of surface water flow paths:</b> Large surface water flow paths pass though both land parcels on the site. On the western land parcel, a surface water flow path passes south eastwards through the site during a 3.3% AEP (1 in 30) rainfall event. During the 0.1% AEP (1 in 1,000) rainfall event, the surface water flood risk extends, and smaller flow paths enter the west of the site, from Oxford Road.					
		In the eastern land parcel, in 30) rainfall event, and f path increases in extent d the site at risk. Additional during the 0.1% AEP (1 in	ollows the route uring the 0.1% flow paths forr	e of the unnam AEP rainfall ev n in the north	ned chalk stream /ent, increasing t	. The flow the area of	



Site code	SCD4
Site name	Land to the north of Newbury

		Proportion of the site	e at risk in JBA catego		er Map 1% /	AEP risk	
		Depth below surface 0-0.025m	Depth below 9 0.025-0.5		Total in h categ	ighest risk Jories	
		12%	28%		4(	)%	
	Groundwater	Areas of both land parcels are at high risk of groundwater flooding during a 1% AEP event. The central band of the western land parcel, as well as the north and west of the eastern land parcel, are at high risk, where groundwater is likely to lie within 0.025m of the ground surface during a 1% AEP (1 in 100) event. A large area of the eastern land parcel is also shown to be at high risk, with groundwater levels expected to lie within 0.025 – 0.5m of the ground surface. In remaining areas of the western land parcel, groundwater levels are expected to lie within 0.5 – 5m below the surface. The Jacobs Groundwater Flood Risk modelling does not show the site to be at risk of groundwater emergence.					
	Reservoir	The site is not at risk of floo	oding, in the rare	e event of a r	eservoir brea	ach.	
	Canal	There are no canals within	the vicinity of th	e site.			
	Defences	Defence Type		d of Protect	ion C	Condition	
		There are no flood defences present within the site.					
Flood risk management	Residual risk	blockage? N/A					
infrastructure		Impounded water body failure?	N/A	N/A			
		Defence breach /         Breach Zone           overtopping?         N/A					
	Flood warning	The site is not within an EA	Flood Alert or F	-lood Warnin	g Area.		
Emergency planning	Access and egress	The site is likely to be accessed either via the A339, which separates the two land parcels of the site. The western land parcel may also be accessed by Oxford Road and the eastern land parcel may be accessed by Shaw Farm Road to the south, and by The Connection to the west. All of the access routes are located within Flood Zone 1, and are therefore at ver- low fluvial risk. The A339 is shown to be at high surface water flood risk, with highway flooding occurring during the 3.3% AEP (1 in 30) and greater rainfa events. Oxford Road and The Connection are also at high surface water flood risk, where				Oxford Road, the south,and erefore at very lood risk, with greater rainfall od risk, where	
				d to cross both roads during the 3.3% AEP rainfall event. very low risk of both fluvial and surface water flooding.			
	Climate change	River Basin District / M Catchment		Central	Higher Central	Upper End	
Climate	allowances for '2080s' (2016 allowances)	Thames (assessed within L		25%	35%	70%	
Change	Climate change allowances for '2080s' (2021 allowances)	Kennet and tributaries (to be used for site-specific FRAs)		21%	35%	76%	

### Level 2 SFRA Detailed Site Summary Tables



JBA consulting



Site code		SCD4			
Site name		Land to the north of Newbury			
	Bedrock Geology	The site has a varying geology. The majority of the western and eastern land parcels are underlain by Seaford Chalk Formation. The south west corner of the western land parcel, and the northern boundary of the eastern land parcel, are underlain by Lambeth Group (Clay, Silt and Sand). Site investigations will be required to fully understand the transition of geology across the site.			
	Superficial Geology	There are no superficial deposits recorded at the western land parcel. Sand and gravel deposits are located in the northern and eastern areas of the eastern land parcel.			
	Soils	Two soil types cover the site. The east of the western land parcel, as well as the south west and east of the eastern land parcel, contain freely draining slightly acid but base-rich soils. Remaining areas of the site are underlain by slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils. Site specific testing will be required to understand the transition in soil type across the site.			
Requirement for drainage control and impact mitigation	SuDS	<ul> <li>SuDS design must follow the West Berkshire Council SuDS SPD, meet the Defra National Non-Statutory Technical Standards, and follow current best design practice (CIRIA Manual 2015).</li> <li>Opportunities should be taken on a greenfield site such as this to deliver SuDS with multiple benefits, such as biodiversity, recreation and water resource education, through integration with areas of greenspace.</li> <li>'Natural', vegetated SuDS (such as green roofs, swales and ponds) will be preferred by West Berkshire Council as LLFA over 'hard engineered' and below-ground SuDS.</li> <li>All development should adopt source control SuDS techniques. Conveyance features should be designed above ground and following natural flow paths where possible.</li> <li>Bedrock geology and soils on the site have varying permeability, and there is a high risk of groundwater flooding to the site. Where the site is underlain by chalk and freely draining soils, infiltration may be suitable. However, it is recommended that further site investigation should be carried out to assess potential for drainage by infiltration, including at least 12 months of groundwater level monitoring on site. Infiltration techniques should be used where there are suitable levels of surface water runoff treatment.</li> <li>Where below ground storage is proposed, the base of the feature must be located at least 1m above the highest groundwater level, to reduce the risk of groundwater ingress or flotation.</li> <li>Due to the presence of a historic landfill site, soils may be contaminated in the south of the eastern land parcel. Therefore, surface water runoff in this location should be stored above ground, where possible and SuDS features will need to be fitted with an impermeable liner, to prevent the leaching of pollutants.</li> </ul>			
	Groundwater Source Protection Zone	The site is within Groundwater Source Protection Zone 3.			
	Historic Landfill Site	Shaw Farm Landfill site is 0.7 Ha in area, and is located in the south of the eastern land parcel.			
	Opportunities for flood risk betterment	Opportunities for using source control SuDS to manage runoff rates and volumes, contributing to the reduction of flood peaks downstream on the River Lambourn and existing surface water flow paths leaving the site.			



Site code		SCD4				
Site name		Land to the north of Newbury				
		Water				
	Cumulating	Framework Directive Catchment	Sensitivity to cumulative impacts	Implications		
	Cumulative impacts of development	Lambourn (Source to Newbury)	Medium	The FRA and surface water drainage strategy should demonstrate wider betterment by demonstrating measures which can be put in place to contribute to a reduction in flood risk downstream.		
	Sequential Test an					
	passed. The Except will be safe for its lif	tion Test is not requi etime and the risk c	ired under the NPPF, but an be managed through a	flooding. The Sequential Test must be it must be shown that the development a sequential approach to design. isk Assessment, including guidance		
	for developers			ion Accoccinent, meruang galaanee		
	Flood risk assess	nent:				
				ood risk assessment and surface water		
	<ul><li>drainage strategy will be required.</li><li>Consultation with the Local Authority and the Environment Agency should be undertaken</li></ul>					
	at an e	early stage.	-			
	A site-specific flood risk assessment will be required because the site is over 1ha in area     within Flood Zong 1 and strick from sources of flooding other than rivers and the asses					
	within Flood Zone 1 and at risk from sources of flooding other than rivers and the sea. Government guidance on flood risk assessments must be followed					
	(https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications).					
	<ul> <li>Other sources of flooding should also be considered as part of a site-specific flood risk assessment, including surface water and groundwater.</li> </ul>					
Recommend-	Detail the or Agenc for the	Detailed modelling will be required to confirm Flood Zone and climate change extents for the ordinary watercourse within the site (see 'Available modelled data'). The Environment Agency and LLFA should be consulted to obtain the latest hydraulic modelling information for the site at the time of the flood risk assessment. They will advise as to whether existing detailed models are available, and if so, whether they need to be updated.				
ations for Local Plan	<ul> <li>Climate change should be assessed using recommended climate change allowances at</li> </ul>					
policy		the time of the assessment (https://www.gov.uk/guidance/flood-risk-assessments-climate-				
	were a	change-allowances) for the type of development and level of risk. The current allowances were published in February 2016 but may be subject to change in the future.				
	The si impac strates	tive is located within a catchment identified as moderately sensitive to the cumulative cts of development on flood risk. The site-specific FRA and surface water drainage gy should consider the recommendations outlined for catchments of medium tivity in the West Berkshire Level 1 SFRA Cumulative Impacts Assessment				
	Guidance for s	site design and ma	king development safe:			
	<ul> <li>Development must seek opportunities to reduce overall level of flood risk at the site.</li> </ul>					
			h groundwater levels mus appropriate height above	at be considered (for example by raising		
			ter flood risk, basements			
	The d table. need t can be reduce	esign of SuDS schu Infiltration techniqu to be shallow and ta sused but care mus the storage capaci	emes must take into acc es may be ineffective and ake up larger areas. Abov t be taken that groundwat ty and structural integrity	ount the seasonally high groundwater may pose a pollution risk. SuDS may we ground conveyance and attenuation er does not enter the SuDS feature and of the design.		
	should	d be appropriate to	the scale and risk of	urface water runoff rates and volumes the development and should include ban creep at the time of the assessment		

JBA consulting



Site code	SCD4				
Site name	Land to the north of Newbury				
SuDS     Docun     and fo     flows r	htly +40% allowance for climate change and a 10% increase in impermeable area for creep). design must follow West Berkshire Council SuDS Supplementary Planning nent (SPD) standards, meet the Defra National Non-Statutory Technical Standards, llow current best design practice (CIRIA Manual 2015).The design must ensure that esulting from rainfall in excess of a 1 in 100-year event are managed via exceedance that minimise the risks to people and property.				



Site code	THA5
Site name	4 & 5 Colthrop Cottages & land adjacent, Colthrop Lane, Thatcham

Site details	e details OS Grid reference SU 54098 66314							
	Area	0.67 Ha						
	Current land use	Brownfield/greenfield mix - Residential (site of former residential dwellings). Some hardstanding remains on the site, but the remainder of the site is overgrown						
	Proposed site use	Residential	Residential					
	Flood risk vulnerability	More vulnerable						
	Existing watercourses/bio diversity	the Kennet and Avon Car The site is approximately	The River Kennet flows eastwards along the southern boundary of the site, and the Kennet and Avon Canal is located at the northern site boundary. The site is approximately 180m north of the River Kennet SSSI. The watercourse is also a chalk river, a protected habitat in S41 of the NERC Act.					
	Flood history	nationally significant Floo July 2007 surface water e flood at that time. The Thames Water DG5	The site is not within the EA Recorded Flood Outline dataset. Thatcham is in a nationally significant Flood Risk Area and experienced severe flooding during the July 2007 surface water event, but available records suggest that the site did not flood at that time. The Thames Water DG5 register shows that there have been seven sewer flooding incidents within the postcode area (RG7 5), of which three incidents					
			FI	uvial				
		Proportion of the site at risk (%)	Flood Zone 3b 5% AEP	Flood Zone 3a 1% AEP	Flood Zone 2 0.1% AEP	Flood Zone 1		
			58%	20%	9%	13%		
		Range of depths (m)	0.1m – 0.37m	0.1m – 0.44m	0.1m – 0.48m	N/A		
Sources of flood risk	Fluvial	as the northern and south is predicted to occur duri majority of the site during area in the west of the site very low.	a of the centre s are within Flo (1 in 20) even 00) and 0.1% / be within Flood	Mill) 1D-only model. re and east of the site, as well Flood Zone 3b, where flooding ent. Flood risk extends to the 6 AEP (1 in 1,000) events. An od Zone 1, where fluvial risk is				
				te at risk (RoF	-			
		<b>1 in 30 (3.33% AEP)</b> 0%	1 in 100 (	,	<b>1 in 1,000 (0.1</b> 90%	% АЕР)		
	Surface Water	0%46%90%Description of surface water flow paths:Approximately half of the site, is at moderate risk of surface water flood centre and east of the site predicted to flood during the 1% AEP (1 in 10 The area of risk increases to cover the majority of the site during a 0.1% of 1,000) rainfall event. It should be considered that the areas of surface water coincide with the Flood Zones.			00) event. AEP (1 in			
	Groundwater	Proportion of the s		IBA Groundwa egories	ter Map 1% AEF	P risk		



Site code	Site code THA5							
Site name		4 & 5 Colthrop Cottages & land adjacent, Colthrop Lane, Thatcham						
		Depth below surface 0-0.025m						
		0% 0%				0%		
		The site is at a negligible risk of groundwater flooding. This Jacobs Groundwater Flood Risk modelling does not show the site to be at of groundwater emergence.					te to be at risk	
	Reservoir	The site is not at risk of flooding, in the rare event of a reservoir breach.				ich.		
	Canal	a residual risk to the site, i	Avon Canal is located at the northern border of the site. There is the site, in the event of breach or overtopping of the canal, whice sed in detail within a site-specific Flood Risk Assessment.				e canal, which	
	Defences	Defence Type		Standard of Protec	tion	C	Condition	
		There are no defences pre	sent.					
Flood risk management		Culvert / structure blockage?		N/A				
infrastructure	Residual risk	Impounded water body failure?		N/A				
		Defence breach / overtopping?		Breach Zone				
	Flood warning	The site is within the follow down to Reading.	within the following EA Flood Alert Area: River Kennet from Thatcham				om Thatcham	
Emergency planning       Access and egress       The site is likely to be accessed via Colthrop Lane, west of the and south of the site, the access route is at risk of fluvial flooding (1 in 20) event. Therefore, fluvial flooding is likely to affect currently the only access point for the site. The surface water flood risk is low near to the site, with flooding duirng a 0.1% AEP (1 in 1,000) rainfall event, but increase boundary, where flooding is predicted to occur during a 3.33% greater rainfall events.					ing during a 5% AEP of access, as this is ng predicted to occur ses north of the site			
	Climate change allowances for	River Basin District / Management Catchment		Central		gher ntral	Upper End	
	'2080s' (2016 allowances)	Thames (assessed within Level 2 SFRA)		25%		5%	70%	
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Kennet and tributaries (to be used for site-specific FRAs)			3	5%	76%	
	Implications for the site	Modelling shows that climate change leads to an increase in flood extent a site. The extent of Flood Zone 3a + 70% CC does not extend beyond that a Zone 2, and therefore climate change is unlikely to significantly impact the proposed site. The latest available climate change allowances must be used in site-specific Flood Risk Assessments.			d that of Flood act the			

## Level 2 SFRA Detailed Site Summary Tables



JBA consulting

Site code	THA5
Site name	4 & 5 Colthrop Cottages & land adjacent, Colthrop Lane, Thatcham

Requirement for drainage control and impact	Bedrock Geology	Lambeth Group - Clay, Silt	and Sand.				
	Superficial Geology	Alluvium - Clay, Silt, Sand a	and Gravel.				
	Soils	Slowly permeable seasona soils.	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils.				
	SuDS	<ul> <li>SuDS design must follow the West Berkshire Council SuDS SPD, meet the Defra National Non-Statutory Technical Standards, and follow current best design practice (CIRIA Manual 2015).</li> <li>All development should adopt source control SuDS techniques. Conveyance features should be designed above ground and following natural flow paths where possible.</li> <li>'Natural', vegetated SuDS (such as green roofs, swales and ponds) will be preferred by West Berkshire Council as LLFA over 'hard engineered' and below-ground SuDS.</li> <li>Opportunities should be taken on a greenfield site such as this to deliver SuDS with multiple benefits, such as biodiversity, recreation and water resource education, through integration with areas of greenspace.</li> <li>The limited permeability of the underlying geology suggests that discharge of the site via infiltration may not be feasible, however shallow infiltration techniques may still be appropriate, subject to site-specific infiltration testing. Infiltration techniques should only be used where there are suitable levels of surface water runoff treatment.</li> </ul>					
mitigation	Groundwater Source Protection Zone	The site is within Groundwater Source Protection Zone 3.					
	Historic Landfill Site	There are no historic landfill sites within the site boundary.					
	Opportunities for flood risk betterment	Opportunities for using source control SuDS to manage runoff rates and volumes, contributing to the reduction of flood peaks downstream on the River Kennet and existing surface water flow paths leaving the site.					
		Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications			
	Cumulative impacts of development	Kennet (Lambourn confluence to Enborne confluence)	High	The FRA should examine the cumulative impacts of potential peak runoff rates and volumes from the site (and other developments in the WFD catchment) on flood risk in the receiving watercourses.			
	Sequential Test an	d Exception Test requirem	ents				
Recommend- ations for Local Plan policy	FZ3a, and therefore sources, and therefore that both parts of the	, the Exception Test must be ore it may not be safe to dev e Exception Test can be fulfil	applied. The site is velop the site for res led will be required	le development is proposed within at high risk of flooding from multiple sidential purposes. Strong evidence to justify development of the site.			
	for developers	s for requirements of site-specific Flood Risk Assessment, including guidance					



Site code	THA5
Site name	4 & 5 Colthrop Cottages & land adjacent, Colthrop Lane, Thatcham
<ul> <li>draina</li> <li>Consulation</li> <li>A site-2 and guidar (https:</li> <li>Other assess</li> <li>Climation</li> <li>Cli</li></ul>	planning application stage, a site-specific flood risk assessment and surface water ge strategy will be required. Itation with the Local Authority and the Environment Agency should be undertaken partly stage. specific flood risk assessment will be required because the site is within Flood Zone 3 and at risk from sources of flooding other than rivers and the sea. Government toe on flood risk assessments must be followed //www.gov.uk/guidance/floodrisk-assessment-for-planning-applications). sources of flooding should also be considered as part of a site-specific flood risk ment, including surface water and groundwater. e change should be assessed using recommended climate change allowances at e of the assessment (https://www.gov.uk/guidance/flood-risk-assessments-climate- e-allowances) for the type of development and level of risk. The current allowances published in February 2016 but may be subject to change in the future. Ing should be conducted to assess the residual risk associated with breach or pping of the Kennet and Avon Canal. ite is located within a catchment identified as highly sensitive to the cumulative ts of development on flood risk. The site-specific FRA and surface water drainage gy should consider the recommendations outlined for high sensitivity catchments in est Berkshire Level 1 SFRA Cumulative Impacts Assessment Addendum. <b>Site design and making development safe:</b> ppment must seek opportunities to reduce overall level of flood risk both on and for example by reducing volume and rate of runoff and creating space for flooding. ccess and egress should be demonstrated in the 1 in 100 plus climate change event. specific surface water drainage strategy will be required. ton techniques may be ineffective and may pose a pollution risk. SuDS may need shallow and take up larger areas. Above ground conveyance and attenuation can be wel of detail and method of assessment of surface water runoff rates and volumess I be appropriate to the scale and risk of the d



Site code	THA9
Site name	Land at Lower Way Farm, Thatcham, RG19 3TL

Site details	OS Grid	SU 49904 67234						
	reference	30 49904 87234						
	Area	2.87 Ha						
	Current land use	Residential dwelling and	garden, and form	ner farmstead				
	Proposed site use	Residential and 1 Ha pub	lic open space					
	Flood risk vulnerability	More vulnerable						
	Existing watercourses/bio diversity	ordinary watercourse whi south of the site. A series site. The site is approximately of the Kennet and Lambo	The site is approximately 50m north of the Thatcham Reed Beds SSSI that is part of the Kennet and Lambourne Floodplain SAC. It is also within the same distance of the Moor Ditch, an ordinary watercourse that is a chalk river, a protected					
	Flood history	The site is not within the I nationally significant Floo July 2007 surface water e that time. The Thames Water DG5	The site is not within the EA Recorded Flood Outlines dataset. Thatcham is in a nationally significant Flood Risk Area and experienced severe flooding during the July 2007 surface water event, but the site is not recorded as having flooded at that time. The Thames Water DG5 register shows that there have been two sewer flooding incidents within the postcode area (RG19 3), both of which resulted in external					
		Fluvial						
		Proportion of the site at risk (%)	Flood Zone 3b	Flood Zone 3a	Flood Zone 2	Flood Zone 1		
			5% AEP	1% AEP	0.1% AEP	Zone i		
0			0%	0%	15%	85%		
Sources of flood risk	Fluvial	Available modelled data: The site is covered by the 2007 River Kennet (Newbury to Tyle Mill) 1D-only model.						
		Flood characteristics: The site is at relatively low risk of fluvial flooding. The south of Flood Zone 2, where flooding is likely to occur during a 0.1% AEP ( The extent of Flood Zone 3a, the 1% AEP (1 in 100) flood ev southern boundary of the site, although does not enter the site. I of the site are located within Flood Zone 1, where fluvial flood risk				(1 in 1,000) event. vent, reaches the Remaining areas		
						gligible.		
		Pr	oportion of site	at risk (RoF	SW)			
		Pr 1 in 30	oportion of site 1 in 1	at risk (RoF 00	SW) 1 in 1,00			
	Surface Water	Pr	oportion of site 1 in 1 0% vater flow paths	at risk (RoF 00	SW)			
	Surface Water	Pr 1 in 30 0% Description of surface v	oportion of site 1 in 1 0% vater flow paths urface water floc	at risk (RoF 00 s: oding. A Groundwar	SW) 1 in 1,00 1%	00		
	Surface Water Groundwater	Pr 1 in 30 0% Description of surface v The site is at low risk of s	oportion of site 1 in 1 0% vater flow paths urface water floc ite at risk in JB	at risk (RoF3 00 s: oding. A Groundwar ories	SW) 1 in 1,00 1%	00 Prisk est risk		



Site code		THA9					
Site name		Land at Lower Way Farm, Thatcham, RG19 3TL					
		majority of the site predicted to (1 in 100) event. A small area a risk, with groundwater levels pre surface.	The Jacobs Groundwater Flood Risk modelling does not show the site to be at risk				
	Reservoir	The site is not at risk of flooding,	in the rare	event of a r	eservoir brea	ach.	
	Canal	There are no canals within the v	icinity of th	e site.			
	Defences	Defence Type	Standar	d of Protect	ion (	Condition	
Flood risk management		There are no flood defences pre Culvert / structure blockage?	sent in the N/A	site.			
infrastructure	Residual risk	Impounded water body failure?	N/A				
		Defence breach / overtopping?	Breach Zone				
<b>F</b>	Flood warning	0	EA Flood Alert and Flood Warning Areas: er Kennet and its tributaries from Berwick Bassett River Kennet at Newbury				
Emergency planning	Access and egress	The site is likely to be accessed via Lower Way, to the north of the site, or Prince Hold Road to the east. Both routes are located within Flood Zone 1, and are therefore at low fluvial flood risk. Surface water flood risk adjacent to the site is high, with ponding expected during a 3.3% AEP (1 in 30), extending to form surface water flow paths during the 0.1% AEP (1 in 1,000) rainfall event.					
	Climate change allowances for	River Basin District / Manag Catchment	jement	Central	Higher Central	Upper End	
	'2080s' (2016 allowances)	Thames (assessed within Level		35%	70%		
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Kennet and tributaries (to be used for site-specific FRAs)		21%	35%	76%	
	Implications for the site	Modelling shows that climate change leads to an increase in flood extent at the site. The extent of Flood Zone 3a + 70% CC does not extend beyond that of Flood Zone 2, and therefore climate change is unlikely to significantly impact the proposed site. The latest available climate change allowances must be used in site-specific Flood Risk Asssements.					



Site code	THA9
Site name	Land at Lower Way Farm, Thatcham, RG19 3TL

	Bedrock Geology	Lambeth Group - Clay, Si	ilt And Sand.					
	Superficial Geology	Beenham Grange Gravel	Beenham Grange Gravel Member - Sand And Gravel.					
	Soils	Freely draining slightly acid loamy soils.						
Requirement for drainage control and impact mitigation	SuDS	<ul> <li>SuDS design must follow the West Berkshire Council SuDS SP the Defra National Non-Statutory Technical Standards, and follo current best design practice (CIRIA Manual 2015).</li> <li>All development should adopt source control SuDS techniques. Conveyance features should be designed above ground and fo natural flow paths where possible.</li> <li>'Natural', vegetated SuDS (such as green roofs, swales and po be preferred by West Berkshire Council as LLFA over 'hard eng and below-ground SuDS.</li> <li>SuDS features should be designed outside of fluvial flood risk a conveyance features should remain above surface and follow n pathways.</li> <li>The impermeable bedrock geology suggests that infiltration tec may not be suitable on this site. Furthermore, the mapping sug there is high risk of groundwater flooding at this location, theref infiltration techniques may not be suitable. This should be confi site investigations and site-specific infiltration testing, to assess potential for infiltration.</li> <li>The site is located within Groundwater Source Protection Zone such infiltration techniques should only be used where there are levels of treatment and following the granting of any required environmental permits from the Environment Agency.</li> </ul>						
	Groundwater Source Protection Zone	The site is within Groundwater Source Protection Zone 3.						
	Historic Landfill Site	There are no historic landfill sites within the site boundary.						
	Opportunities for flood risk betterment	Opportunities for using source control SuDS to manage runoff rates and volumes, contributing to the reduction of flood peaks downstream on the River Kennet and existing surface water flow paths leaving the site.						
		Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications				
	Cumulative impacts of development	Lambourn (Source to Newbury)	Medium	The FRA and surface water drainage strategy should demonstrate wider betterment by demonstrating measures which can be put in place to contribute to a reduction in flood risk downstream.				
	Sequential Test an	d Exception Test require	ments					







Site code	THA9		
Site name	Land at Lower Way Farm, Thatcham, RG19 3TL		
	esulting from rainfall in excess of a 1 in 100-year event are managed via exceedance that minimise the risks to people and property.		



Site code		THA15						
Site name		Hollington Place, Thatcham						
Site details	OS Grid reference	SU 51360 67320						
	Area	0.2 Ha						
	Current land use	Brownfield and greenfield mix - Residential dwellings and residential gardens						
	Proposed site use	Residential, specialist res	idential, employ	ment, and a c	ommunity facility			
	Flood risk vulnerability	More vulnerable						
	Existing watercourses/bio diversity	There are no watercourse	es within the site	boundary.				
	Flood history	not identified as having flow which severely affected T The Thames Water DG5	The site is not located within the EA Recorded Flood Outlines dataset. The site is not identified as having flooding during the July 2007 surface water flood event, which severely affected Thatcham. The Thames Water DG5 register identifies that two previous sewer flooding incidents have occurred within the RG19 3 postcode, both resulting in external flooding					
	Fluvial		Flu	vial				
		Proportion of the site at risk (%)	Flood Zone 3b 5% AEP	Flood Zone 3a 1% AEP	Flood Zone 2 0.1% AEP	Flood Zone 1		
			0%	0%	0%	100%		
		Available modelled data: The site is not covered by within a hydraulic model. Flood characteristics:						
Sources of		The site is entirely within Flood Zone 1, where fluvial flood risk is negligible. Proportion of site at risk (RoFSW)						
flood risk		1 in 30 (3.33% AEP)		· · ·		0.1% AEP)		
		0%	00		1 in 1,000 (0.1% AEP) 1%			
	Surface Water	<b>Description of surface water flow paths:</b> The site is at very low risk of surface water flooding.						
		Proportion of the site at risk in JBA Groundwater Map 1% AEP risk categories						
	Groundwater	Depth below surface 0-0.025m	Depth below surface 0.025-0.5m		Total in highest risk categories			
		80%	20%	, D	100%			
		The majority of the site is at high risk of groundwater flooding, with groundwater levels are predicted to lie within 0.025m of the ground surface during a 1% AEP (1 in 100) event. Groundwater levels along the southern boundary are predicted to lie between 0.025 – 0.5m of the ground surface during a 1% AEP event. The Jacobs Groundwater Flood Risk modelling does not show the site to be at risk of groundwater emergence.						



Site code	THA15
Site name	Hollington Place, Thatcham

	Reservoir	The site is not at risk of flooding, in the rare event of a reservoir breach.					
	Canal	There are no canals witin the vicinity of the site.					
	Defences	Defence Type	Standar	d of Protectio	n (	Condition	
		There are no defences within the	e site boun	dary.			
Flood risk management		Culvert / structure blockage?	N/A				
infrastructure	Residual risk	Impounded water body failure?	N/A				
		Defence breach /		Breac	h Zone		
		overtopping?	N/A				
	Flood warning	The site is not within an EA Flood Alert or Flood Warning Area.					
Emergency planning	Access and egress	The site is likely to be accessed via Green Lane, with current access at the east of the site. This route is within Flood Zone 1, and is therefore at very low fluvial flood risk. The road is at risk of surface water flooding, with a flow path predicted to form during the 3.3% AEP (1 in 30) and greater rainfall events.					
	Climate change allowances for	River Basin District / Management Catchment		Central	Higher Central	Upper End	
	'2080s' (2016 allowances)	Thames (assessed within Level 2	el 2 SFRA) 25% 35% 7				
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Kennet and tributaries (to be used for site-specific FRAs)		21%	35%	76%	
	Implications for the site	The site remains in Flood Zone 1 when accounting for the impact of climate change. The latest available climate change allowances must be used in site-specific Flood Risk Assssments.					



Site code		THA15				
Site name		Hollington Place, Thatc	ham			
	Bedrock Geology	Lambeth Group - Clay,	Silt And Sand.			
Requirement for drainage control and	Superficial Geology	Thatcham Gravel - Sand And Gravel.				
impact mitigation	Soils	Freely draining slightly acid loamy soils.				
	SuDS	<ul> <li>SuDS design must follow the West Berkshire Council SuDS SPD, meet the Defra National Non-Statutory Technical Standards, and follow current best design practice (CIRIA Manual 2015).</li> <li>SuDS are possible on all sites, including previously developed sites such as this one. All development should adopt source control SuDS techniques. Conveyance features should be designed above ground and following natural flow paths where possible.</li> <li>'Natural', vegetated SuDS (such as green roofs, swales and ponds) will be preferred by West Berkshire Council as LLFA over 'hard engineered' and below-ground SuDS.</li> <li>Mapping suggests that the bedrock geology is impermeable, and the site is at high risk of groundwater flooding, therefore infiltration techniques may not be suitable. It is recommended that further site investigation should be carried out to assess and confirm the potential for infiltration.</li> <li>The site is located within Groundwater Source Protection Zone 3. As such infiltration techniques should only be used where there are suitable levels of treatment and following the granting of any required environmental permits from the Environment Agency.</li> <li>Where below ground storage is proposed, the base of the feature must be located at least 1m above the highest groundwater level, to reduce the risk of groundwater ingress or flotation.</li> </ul>				
	Groundwater Source Protection Zone	The site is within Groun	dwater Source Pr	otection Zone 3.		
	Historic Landfill Site	There are no historic landfill sites within the site.				
	Opportunities for flood risk betterment	Opportunities for using source control SuDS to manage runoff rates and volumes, contributing to the reduction of flood peaks downstream on the River Kennet and existing surface water flow paths leaving the site.				
		Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications		
	Cumulative impacts of development	Kennet (Lambourn confluence to Enborne confluence)	High	The FRA should examine the cumulative impacts of potential peak runoff rates and volumes from the site (and other developments in the WFD catchment) on flood risk in the receiving watercourses.		
Recommend- ations for Local Plan policy	The site is within Fl passed. The Except will be safe for its life	Sequential Test and Exception Test requirements The site is within Flood Zone 1 but at risk from other sources of flooding. The Sequential Test must be passed. The Exception Test is not required under the NPPF, but it must be shown that the development will be safe for its lifetime and the risk can be managed through a sequential approach to design. Recommendations for requirements of site-specific Flood Risk Assessment, including guidance				



Site code		THA15
Site name		Hollington Place, Thatcham
	draina Consu at an e Gover where	nent: planning application stage, a site-specific flood risk assessment and surface water ge strategy will be required. Itation with the Local Authority and the Environment Agency should be undertaken early stage. nment guidance specifies that a site-specific flood risk assessment will be required a site is within Flood Zone 2 and 3 or is greater than 1 Ha and at risk from sources ding other than rivers and the sea. This does not apply to the site. However, due to
	the ex unders follow • Other asses	tent of groundwater risk, it is advised that further investigations are undertaken to stand and manage risk. Government guidance on flood risk assessments must be ed ( <u>https://www.gov.uk/guidance/floodrisk-assessment-for-planning-applications</u> ). sources of flooding should also be considered as part of a site-specific flood risk sment, including surface water and groundwater.
	the tim <u>chang</u> were p • The s	the change should be assessed using recommended climate change allowances at the of the assessment ( <u>https://www.gov.uk/guidance/flood-risk-assessments-climate-e-allowances</u> ) for the type of development and level of risk. The current allowances bublished in February 2016 but may be subject to change in the future. tite is located within a catchment identified as highly sensitive to the cumulative
	strates the W	ts of development on flood risk. The site-specific FRA and surface water drainage gy should consider the recommendations outlined for high sensitivity catchments in est Berkshire Level 1 SFRA Cumulative Impacts Assessment Addendum.
	<ul> <li>Develo</li> <li>Mitiga finishe</li> <li>Due to</li> </ul>	site design and making development safe: opment must seek opportunities to reduce overall level of flood risk at the site. tion for seasonal high groundwater levels must be considered (for example by raising ad floor levels to an appropriate height above ground level). the high groundwater flood risk, basements are not permitted.
	table. need t can be reduce	esign of SuDS schemes must take into account the seasonally high groundwater Infiltration techniques may be ineffective and may pose a pollution risk. SuDS may to be shallow and take up larger areas. Above ground conveyance and attenuation a used but care must be taken that groundwater does not enter the SuDS feature and be the storage capacity and structural integrity of the design.
	should recom (curre urban	vel of detail and method of assessment of surface water runoff rates and volumes be appropriate to the scale and risk of the development and should include mended allowance for climate change and urban creep at the time of the assessment htly +40% allowance for climate change and a 10% increase in impermeable area for creep).
	Docun and fo flows r	design must follow West Berkshire Council SuDS Supplementary Planning nent (SPD) standards, meet the Defra National Non-Statutory Technical Standards, llow current best design practice (CIRIA Manual 2015). The design must ensure that resulting from rainfall in excess of a 1 in 100-year event are managed via exceedance that minimise the risks to people and property.



Site code	THE1
Site name	Whitehart Meadow, High Street, Theale

Site details	OS Grid reference	SU 64656 71711						
	Area	8 Ha	8 Ha					
	Current land use	Greenfield - Agriculture						
	Proposed site use	Employment or residentia	Employment or residential					
	NPPF Flood risk vulnerability	Less / More vulnerable						
	Existing watercourses/bio diversity	The Sulham Brook (Main then northwards along the watercourses, which form eastern and northern bou	e eastern site tributaries to	boundary. Un the Sulham B	named ordinary	,		
	Flood history	site is recorded as having result of channel exceeda The Thames Water DG5	The majority of the site is within the EA Recorded Flood Outline dataset. The site is recorded as having flooded on 6 June 1971 and 6 January 2003, as a result of channel exceedance along the Sulham Brook. The Thames Water DG5 register shows that there have been 14 sewer flooding incidents within the postcode area (RG7 5), of which one incident					
	Fluvial	Propor	tion of site a	at risk in Floo	d Zones			
		Proportion of the site at risk (%)	Flood Zone 3b 5% AEP	Flood Zone 3a 1% AEP	Flood Zone 2 0.1% AEP	Flood Zone 1		
				0%	0%	31%	69%	
Sources of flood risk		<ul> <li>Available modelled data: The site is not covered by a detailed hydraulic model. The extent of Flood Zone 2 in this location is based on the January 2003 recorded flood outline.</li> <li>Flood characteristics: The site is shown to be at risk of fluvial flooding, with the north and centre of the site located in Flood Zone 2, and expected to flood during the 0.1% AEP (1 in 1,000) event. The remainder of the site is in Flood Zone 1, and is therefore at negligible fluvial risk.</li> </ul>						
		Proportion of site at risk (RoFSW)						
		1 in 30 (3.33% AEP)		(1% AEP)	1 in 1000 (0.1% AEP)			
	Surface Water	0%1%8%Description of surface water flow paths:The site is at low risk of surface water flooding, with small areas of ponding in the south and west of the site expected to occur in the 0.1% AEP (1 in 1,000) rainfall event.						
		Proportion of the site a		A Groundwate c categories	er Map 1 in 100	-year (1%		
	Groundwater	Depth below surface 0-0.025m	Depth be	low surface 5-0.5m	Total in hig catego			
		82%		0%	82%	,		



Site code		THE1					
Site name		Whitehart Meadow, High Street,	Theale				
		The majority of the site is at high risk of groundwater flooding where groundwate levels are predicted to lie within 0.025m of the ground surface during a 1% AE event. The remainder of the site, in the north, is shown to be at a negligible rise of groundwater emergence. This Jacobs Groundwater Flood Risk modelling does not show the site to be risk of groundwater emergence.			a 1% AEP gligible risk		
	Reservoir	The site is not at risk of flooding,	in the rare	e event o	fare	eservoir brea	ch.
	Canal	There are no canals within the vi	icinity of th	e site.			
	Defences	Defence Type	Standa Protec			Conditi	on
		There are no defences present v					
Flood risk management infrastructure	Residual risk	Culvert / structure blockage?	There is a culvert exit at the western border the site, which is the limit of the Main Ri However, the culvert entrance is locate significant distance upstream of the site, therefore blockage of this culvert is expected to affect flood risk to the site.		Main River. located a le site, and ert is not		
		Impounded water body failure?	N/A				
		Defence breach / overtopping?N/A		В	reac	h Zone	
	Flood warning	The site is covered by two EA Flood Alert Areas: <ul> <li>River Pang from East IIsley to Pangbourne and Sulham Brook</li> <li>River Kennet from Thatcham down to Reading</li> </ul>			ook		
Emergency planning	Access and egress	The site is likley to be accessed via High Street, with current access to the south of the site. The route is located within Flood Zone 1 and therefore is at low fluvia flood risk. The risk of surface water flooding is also shown to low, with isolated areas of ponding predicted during the 1% AEP (1 in 100) and 0.1% AEP (1 in 1,000) rainfall events.			t low fluvial ith isolated		
	Climate change allowances for	River Basin District / Manag Catchment	jement	Centr	al	Higher Central	Upper End
	'2080s' (2016 allowances)	Thames (assessed within Level	2 SFRA)	25%	<b>)</b>	35%	70%
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Thames and South Chilterns (to be used for site-specific FRAs) 31% 43%		76%			
Implications for the siteAs no detailed modelling covers the site, F proxy for the impact of climate change on t event. This provides a conservative extent identified as at risk from a 1 in 100 + CC flo The latest available climate change allowar Flood Risk Assessments.		he 1% A of the p od even	EP ( ropo t.	1 in 100) fluv rtion of the s	rial flood ite		



Site code	THE1
Site name	Whitehart Meadow, High Street, Theale

	Bedrock Geology	Seaford Chalk Formation.	gh groundwater. follow the West Berkshire Council SuDS SPD, ional Non-Statutory Technical Standards, and design practice (CIRIA Manual 2015). on all sites, including previously developed sites II development should adopt source control SuDS yance features should be designed above ground al flow paths where possible. I SuDS (such as green roofs, swales and ponds) West Berkshire Council as LLFA over 'hard dow-ground SuDS. rom the development in extreme events should be al flood risk areas. gy suggests that infiltration may be suitable, ndicates that groundwater flood risk is high across it is recommended further site investigation should sess potential for drainage by infiltration, including of groundwater level monitoring on site. Infiltration only be used where there are suitable levels of				
	Superficial Geology	Alluvium - Clay, Silt, Sand a	Alluvium - Clay, Silt, Sand and Gravel.				
:	Soils	<ul> <li>Loamy soils with naturally high groundwater.</li> <li>SuDS design must follow the West Berkshire Council SuDS SPD, most the Defra National New Statutory Technical Standards, and</li> </ul>					
Requirement for drainage control and impact mitigation	SuDS	<ul> <li>meet the Defra Na follow current best</li> <li>SuDS are possible such as this one. A techniques. Convand following natu</li> <li>'Natural', vegetate will be preferred be engineered' and b</li> <li>Storage for runoff located out of fluvi</li> <li>The bedrock geold although mapping the site. Therefore be carried out to a at least 12 months techniques should surface water runo.</li> <li>Where below grout must be located at the site.</li> </ul>	ational Non-Statutory Technical Standards, and t design practice (CIRIA Manual 2015). e on all sites, including previously developed sites All development should adopt source control SuDS revance features should be designed above ground ural flow paths where possible. ed SuDS (such as green roofs, swales and ponds) y West Berkshire Council as LLFA over 'hard eelow-ground SuDS. from the development in extreme events should be ial flood risk areas. ogy suggests that infiltration may be suitable, indicates that groundwater flood risk is high across e, it is recommended further site investigation should ussess potential for drainage by infiltration, including s of groundwater level monitoring on site. Infiltration I only be used where there are suitable levels of				
:	Groundwater Source Protection Zone	The site is not within a desi	gnated Groundwater So	ource Protection Zone.			
	Historic Landfill Site	There are no historic site boundaries within the site boundary.					
1	Opportunities for flood risk betterment	Opportunities for using source control SuDS to manage runoff rates and volumes, contributing to the reduction of flood peaks downstream on the Sulham Brook and existing surface water flow paths leaving the site.					
		Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications			
	Cumulative impacts of development	Sulham Brook	Medium	The FRA and surface water drainage strategy should demonstrate wider betterment by demonstrating measures which can be put in place to contribute to a reduction in flood risk downstream.			



Site code		THE1
Site name		Whitehart Meadow, High Street, Theale
Site name	Test be applied. It is Flood Zone 1. For If More Vu change. If Highly Vu If Essential Infrastru test is satisfied. Dev Highly Vulr More Vuln Recommendations guidance for devel Flood risk asse At the plan drainage st Consultation an early sta A site-spece and 3 and guidance (https://ww Other sour assessmer Detailed m 'Available r the latest h They will as need to be Modelling so of the culve Climate chan time of climate chan allowances The site is impacts of strategy sh in the Wess Guidance for so Safe access and raising Mitigation f finished flo Due to the The level of should be recomment	must be satisfied. Only once the Sequential Test is satisfied should the Exception     s anticipated that proposed development will be sequentially located within     this site, the Exception Test must be satisfied:     ulnerable and Essential Infrastructure is located in FZ3a or FZ3a plus climate     ulnerable development is located in FZ2.     cture is located in Flood Zone 3b then it must be demonstrated that the exception     velopment will not be permitted in the following scenarios:     erable development within FZ3a or FZ3a plus climate change and FZ3b.     erable development within FZ3a or FZ3a plus climate change and FZ3b.     erable and Less Vulnerable development within FZ3b.     for requirements of site-specific flood risk assessment, including     loppers     essment:         ining application stage, a site-specific flood risk assessment and surface water         trategy will be required.         on with the Local Authority and the Environment Agency should be undertaken at         age.         if clood risk assessment will be required because the site is within Flood Zone 2         it at risk from sources of flooding other than rivers and the sea. Government         on flood risk assessment/or planning-applications).     res of flooding should also be considered as part of a site-specific flood risk     t, including surface water and groundwater.     dotelling will be required to confirm Flood Zone and climate change extents (see     modelled data). The Environment Agency and LLFA should be consulted to obtain     vytraulic modelling informary 2016 bur may be subject to change allowances at the         the assessment (Intps://www.gov.uk/guidance/flood-risk-assessments-         nge-should be consulted to assess the residual risk associated with potential blockage     art within the site.     ange should be demonstrated in the 1 in 100 plus climate change event     of access routes must to might above ground level).     high groundwater loved risk passessment and pevel of flood risk. Sussessmen



Site code	THE1
Site name	Whitehart Meadow, High Street, Theale
areas. The data are mains SuDS (SPD) current resultities that mains The S be mains be mains that that mains that mains that that that that that that that that	ge for runoff from the development in extreme events should be located out of flood risk esign must ensure that flows resulting from rainfall in excess of a 1 in 100-year event anaged via exceedance routes that minimise the risks to people and property. design must follow West Berkshire Council SuDS Supplementary Planning Document standards, meet the Defra National Non-Statutory Technical Standards, and follow it best design practice (CIRIA Manual 2015). The design must ensure that flows ng from rainfall in excess of a 1 in 100-year event are managed via exceedance routes inimise the risks to people and property. ulham Brook, which flows through the site, is a Main River. An 8m wide buffer should intained between the riverbank and any built structures, to enable the riparian owners r the Environment Agency to access and maintain the channel.



Site code		THE2					
Site name		Theale Primary School, Church Street, Theale					
Site details	OS Grid reference	SU 63907 71267					
	Area	0.6 Ha					
	Current land use	Brownfield - Primary Scho	ool				
	Proposed site use	Residential					
	Flood risk vulnerability	More vulnerable					
	Existing watercourses/bio diversity	There are no watercourse	es within the site	boundary.			
	Flood history	The site is not within the I The Thames Water DG5 incidents within the postco property flooding.	register shows t	hat there have	e been 14 sewer		
		Fluvial					
		Proportion of the site at risk (%)	Flood Zone Slood Zone 3a		Flood Zone	Flood Zone 1	
	Fluvial		<b>5% AEP</b> 0%	<b>1% AEP</b> 0%	0.1% AEP	100%	
		Available modelled data:The site is not covered by a hydraulic model.Flood characteristics:The site is entirely within Flood Zone 1 where flood risk is negligible.					
		Proportion of site at risk (RoFSW)					
		1 in 30 (3.33% AEP)	1 in 100 (1% AEP)		1 in 1,000 (0.	1% AEP)	
Sources of flood risk	Surface Water		0%       5%         ace water flow paths:       5%         site is at negligible risk of surface water flooding. A s       5%         ed to form in the west of the site during a 0.1% AEP (1)       1%				
		Proportion of the site at risk in JBA Groundwater Map 1% AEP categories					
		Depth below surface 0-0.025m	Depth below surface Total in higher 0.025-0.5m categorie				
	Groundwater	100%	0%		100%		
			within the highest groundwater flood risk category, wh kely to lie within 0.025m of the ground surface during a r Flood Risk modelling does not show the site to be at				
		AEP (1 in 100) event.	Flood Risk mod		-	-	
	Reservoir	AEP (1 in 100) event. The Jacobs Groundwater	Flood Risk mod ce.	lelling does n	ot show the site to	-	





Site code	THE2
Site name	Theale Primary School, Church Street, Theale

	Defences	Defence Type	Standar	d of Protect	ion (	Condition	
		There are no defences within site	e boundary.				
Flood risk management		Culvert / structure blockage?	N/A				
infrastructure	Residual risk	Impounded water body failure?	N/A				
		Defence breach /		Brea	ach Zone		
		overtopping?	N/A				
<b>F</b>	Flood warning	The site is not within an EA Floo	d Alert or F	lood Warnin	g Area.		
Emergency planning	Access and egress	The site is likely to be accessed via Church Street, with current access at the southern border of the site. The route is located within Flood Zone 1, and is at low risk of surface water flooding.					
	Climate change allowances for	River Basin District / Management Catchment		Central	Higher Central	Upper End	
	'2080s' (2016 allowances)	Thames (assessed within Level a	(assessed within Level 2 SFRA)		35%	70%	
Climate	Climate change allowances for '2080s' (2021 allowances)	Kennet and tributaries (to be use site-specific FRAs)	ed for	21%	35%	76%	
Change Climate change allowances for '2080s' (2021 allowances)		Thames and South Chilterns (to be used for site-specific FRAs)		31%	43%	76%	
	Implications for the site	The site remains in Flood Zone 1 when considering the impact of climate cha The latest available climate change allowances must be used in site-specific Flood Risk Assssments.			•		



Site code	THE2
Site name	Theale Primary School, Church Street, Theale

	Bedrock Geology	Seaford Chalk Formation					
	Superficial Geology	Beenham Grange Gravel	Beenham Grange Gravel Member - Sand and Gravel.				
	Soils	Loamy soils with naturally high groundwater.					
Requirement for drainage control and impact mitigation	SuDS	<ul> <li>SuDS design must follow the West Berkshire Council SuDS SPD, meet the Defra National Non-Statutory Technical Standards, and follow current best design practice (CIRIA Manual 2015).</li> <li>SuDS are possible on all sites, including previously developed sites such as this one. All development should adopt source control SuDS techniques. Conveyance features should be designed above ground and following natural flow paths where possible.</li> <li>'Natural', vegetated SuDS (such as green roofs, swales and ponds) will be preferred by West Berkshire Council as LLFA over 'hard engineered' and below-ground SuDS.</li> <li>Mapping suggests that there is high risk of groundwater flooding at this location, therefore infiltration techniques may not be suitable. This should be confirmed via site investigations to assess the potential for infiltration.</li> <li>The site is located within Groundwater Source Protection Zone 3. As such infiltration techniques should only be used where there are suitable levels of treatment and following the granting of any required environmental permits from the Environment Agency.</li> <li>Where below ground storage is proposed, the base of the feature must be located at least 1m above the highest groundwater level, to reduce the risk of groundwater ingress or flotation.</li> </ul>					
	Groundwater Source Protection Zone	The site is within Groundwater Source Protection Zone 3.					
	Historic Landfill Site	There are no historic landfill sites within the site boundary.					
	Opportunities for flood risk betterment	Opportunities for using source control SuDS to manage runoff rates and volumes, contributing to the reduction of flood peaks downstream and existing surface water flow paths leaving the site.					
		Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications			
	Cumulative impacts of development	Sulham Brook	Medium	The FRA should examine the cumulative impacts of potential peak runoff rates and volumes			
		Holy Brook	High	from the site (and other developments in the WFD catchment) on flood risk in the receiving watercourses.			
Recommend- ations for Local Plan	The site is within Fl passed. The Except will be safe for its life	ion Test is not required unc etime and the risk can be m	other sources of flood ler the NPPF, but it mu nanaged through a seq	ling. The Sequential Test must be ist be shown that the development uential approach to design.			
policy	Recommendations for requirements of site-specific Flood Risk Assessment, including guidance for developers						





Site code		THE2
Site name		Theale Primary School, Church Street, Theale
	draina • Consu- at an e • Gover where rivers ground manag (https: • Other assess • Climat the tim chang were p • The si cumul draina	planning application stage, a site-specific flood risk assessment and surface water ge strategy will be required. Illation with the Local Authority and the Environment Agency should be undertaken early stage. Inment guidance specifies that a site-specific flood risk assessment will be required a site is greater than 1 Ha in area and at risk from sources of flooding other than and the sea. The site is less than 1Ha in area, although due to the extent of dwater risk, it is advised that further investigations are undertaken to understand and ge risk. Government guidance on flood risk assessments must be followed //www.gov.uk/guidance/floodrisk-assessment-for-planning-applications). sources of flooding should also be considered as part of a site-specific flood risk sment, including surface water and groundwater. te change should be assessed using recommended climate change allowances at the of the assessment (https://www.gov.uk/guidance/flood-risk-assessments-climate- e-allowances) for the type of development and level of risk. The current allowances oublished in February 2016 but may be subject to change in the future. It is located within catchments identified as moderately and highly sensitive to the ative impacts of development on flood risk. The site-specific FRA and surface water ge strategy should consider the recommendations outlined for high sensitivity nents in the West Berkshire Level 1 SFRA Cumulative Impacts Assessment
	<ul> <li>Devela</li> <li>Mitiga finishe</li> <li>Due to</li> <li>The d table.</li> <li>need to can be reduce</li> <li>The le should recom (curren urban</li> <li>SuDS Docum and fo flows re</li> </ul>	site design and making development safe: opment must seek opportunities to reduce overall level of flood risk at the site. tion for seasonal high groundwater levels must be considered (for example by raising de floor levels to an appropriate height above ground level). the high groundwater flood risk, basements are not permitted. esign of SuDS schemes must take into account the seasonally high groundwater Infiltration techniques may be ineffective and may pose a pollution risk. SuDS may to be shallow and take up larger areas. Above ground conveyance and attenuation a used but care must be taken that groundwater does not enter the SuDS feature and a the storage capacity and structural integrity of the design. evel of detail and method of assessment of surface water runoff rates and volumes d be appropriate to the scale and risk of the development and should include mended allowance for climate change and urban creep at the time of the assessment ntly +40% allowance for climate change and a 10% increase in impermeable area for creep). design must follow West Berkshire Council SuDS Supplementary Planning nent (SPD) standards, meet the Defra National Non-Statutory Technical Standards, illow current best design practice (CIRIA Manual 2015).The design must ensure that resulting from rainfall in excess of a 1 in 100-year event are managed via exceedance that minimise the risks to people and property.



Site code	THE3
Site name	Station Plaza, Station Road, Theale, RG7 4AQ

Site details	OS Grid reference	SU 64372 71043								
	Area	1.04 Ha								
	Current land use	Brownfield – Employm	Brownfield – Employment (Offices)							
Proposed site use Residential, employment, retail, tourism, leisure/recreation										
	Flood risk vulnerability	More vulnerable	More vulnerable							
	Existing watercourses/bio diversity	There are no waterco River) flows in a north				Main				
	Flood history	previous flood inciden exceedance along the Report for the Winter 3 February 2014, due to Kennet at the road cro The Thames Water D	The site is within the EA Recorded Flood Outline dataset. There has been one previous flood incident, occurring on 6 June 1971, as a result of channel exceedance along the River Kennet. The West Berkshire Council Parish Flood Report for the Winter 2013/14 event identified that Station Road was closed on 5 February 2014, due to the depth of flooding, caused by backing up of the River Kennet at the road crossing. The Thames Water DG5 register shows that there have been six sewer flooding incidents within the postcode area (RG19 3), both of which two resulted in internal							
			Flu	vial						
		Proportion of the site at risk (%)	Flood Zone 3b 5% AEP	Flood Zone 3a 1% AEP	Flood Zone 2 0.1% AEP	Flood Zone 1				
	Fluvial		0%	70%	30%	0%				
		Range of Depths (m)	N/A	0.01m – 0.72m	0.03m – 0.87m	N/A				
Sources of flood risk		Maximum Hazard	N/A	Significant: Danger to most	Significant: Danger to most	N/A				
		Available modelled data: The site is covered by the 2018 River Kennet (Tyle Mill to Thames Confluence) 1D- 2D model.								
		<b>Flood characteristics:</b> The majority of the site is located within Flood Zone 3a, where fluvial flooding is expected during the 1% AEP (1 in 100) event. Remaining areas of the site are within Flood Zone 2, where flooding is expected during a 0.1% AEP (1 in 1,000) event.								
			Proportion of site	· · · ·	,					
		1 in 30 (3.33% AEP	, .	-	1 in 1,000 (0.1	% AEP)				
		3%	9%		24%					
	Surface Water	<b>Description of surface water flow paths:</b> A small area of ponding forms on the access road in the east of the site, during the 3.3% AEP (1 in 30) and 1% AEP (1 in 100) rainfall events. The risk extends during the 0.1% AEP (1 in 1,000) rainfall event, with a flow path entering the site from Brunel Road to the south.								
		Proportion of the site at risk in JBA Groundwater Map 1% AEP risk categories				, risk				



Site code		THE3						
Site name		Station Plaza, Station Road, Theale, RG7 4AQ						
		Depth below surface 0-0.025m	Dep	epth below surface 0.025-0.5m		Total in highest risk categories		
		23%		0%			23	3%
		levels lie within 0.025m o event. The remaining area	The east and south of the site is at high groundwater flood risk, where groundwater levels lie within 0.025m of the ground surface during a 1% AEP (1 in 100) flood event. The remaining areas of the site are at negligible risk of groundwater flooding. The Jacobs Groundwater Flood Risk modelling does not show the site to be at risk of groundwater emergence.					in 100) flood water flooding.
	Reservoir	The site is not at risk of flo	oding,	in the rare	event of a	reserv	oir brea	ich.
	Canal	There are no canals withir	n the vi	icinity of the	e site.			
	Defences	Defence Type		Standar	d of Protec	tion	C	Condition
		There are no flood defenc	es pre	sent within	the site.			
Flood risk management	Residual risk	Culvert / structure blockage?		N/A				
infrastructure		Impounded water body failure?						
		Defence breach / overtopping?		Breach Zone				
	Flood warning	<ul> <li>The site is within the following EA Flood Alert and Flood Warning Areas:</li> <li>Flood Alert Area: River Kennet from Thatcham down to Reading</li> <li>Flood Warning Area: River Kennet from Theale down to Reading</li> </ul>						
Emergency planning	Access and egress	The site is likely to be accessed via Brunel Road (with current access to the south or Station Road (with current access to the west). Both of these routes are with Flood Zone 3a, where flooding is likley to occur during the 1% AEP event. Th routes are at relatively low surface water flood risk, with flow paths forming durin the 0.1% AEP (1 in 1,000) rainfall event.					utes are within P event. The	
	Climate change allowances for	River Basin District / Management Catchment		ement	Central		gher Intral	Upper End
	'2080s' (2016 allowances)	Thames (assessed within Level 2 SFRA)		2 SFRA)	25%	3	5%	70%
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Kennet and tributaries (to be used for site-specific FRAs)		21%	3	5%	76%	
	Implications for the site	Modelling shows that climate change leads to an increase in flood extent at the site. The extent of Flood Zone 3a + 70% CC does not extend beyond that of F Zone 2, and therefore climate change is unlikely to significantly impact the proposed site. The latest available climate change allowances must be used in site-specific Flood Risk Asssements.				d that of Flood act the		



Site code	THE3
Site name	Station Plaza, Station Road, Theale, RG7 4AQ

	Bedrock Geology	Seaford Chalk Forma	tion.					
	Superficial Geology	Alluvium - Clay, Silt, S	Alluvium - Clay, Silt, Sand And Gravel.					
	Soils	Loamy and clayey floodplain soils with naturally high groundwater.						
Requirement for drainage control and impact mitigation	SuDS	<ul> <li>the Defra Na current best</li> <li>SuDS are por as this one. / techniques. and following</li> <li>'Natural', veg be preferred and below-gi</li> <li>As the entire attenuation fr measures wi rain lands.</li> <li>The bedrock east of the si soil has a hig infiltration ma testing would</li> <li>The site is lo such infiltrati levels of treat</li> </ul>	n must follow the West Berkshire Council SuDS SPD, meet ational Non-Statutory Technical Standards, and follow design practice (CIRIA Manual 2015). ossible on all sites, including previously developed sites such All development should adopt source control SuDS Conveyance features should be designed above ground g natural flow paths where possible. getated SuDS (such as green roofs, swales and ponds) will by West Berkshire Council as LLFA over 'hard engineered' ground SuDS. e site is at risk of fluvial flooding, it is not possible to locate features outside areas of flood risk. Therefore, source control ill be required to manage rainfall rates and volumes where c geology and surface deposits are permeable, although the site is at high risk of groundwater flooding. Additionally, the gh-water content, and therefore discharge of the site via aay not be suitable. Therefore site investigation and soakage d be required to understand infiltration potential at the site. cocated within Groundwater Source Protection Zone 3. As ion techniques should only be used where there are suitable atment and following the granting of any required tal permits from the Environment Agency.					
	Groundwater Source Protection Zone	The site is within Groundwater Source Protection Zone 3.						
	Historic Landfill Site	There are no historic landfill sites within the site boundary.						
	Opportunities for flood risk betterment	Opportunities for using source control SuDS to manage runoff rates and volumes, contributing to the reduction of flood peaks downstream on the River Kennet and existing surface water flow paths leaving the site.						
	Cumulative	Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications				
	impacts of development	Holy Brook	High	The FRA should examine the cumulative impacts of potential peak runoff rates and volumes from the site (and other developments in the WFD catchment) on flood risk in the receiving watercourses.				
	Sequential Test an	d Exception Test requ	uirements					





Site code	THE3
Site name	Station Plaza, Station Road, Theale, RG7 4AQ
flows r	llow current best design practice (CIRIA Manual 2015). The design must ensure that esulting from rainfall in excess of a 1 in 100-year event are managed via exceedance that minimise the risks to people and property.

JBA consulting



Site code	THE4
Site name	Kuehne & Nagel Distribution Centre, Brunel Road, Theale, RG7 4XE

Site details	OS Grid reference	SU 64847 71096							
	Area	2.6 Ha							
	Current land use	Brownfield - Employment (Storage and distribution)							
Proposed site use Employment, retail convenience store, private medical facilities (D1									
	Flood risk vulnerability	More vulnerable							
	Existing watercourses/bio diversity	An unnamed ordinary watercourse flows in an easterly direction along the northern border of the site. The River Kennet (Main River) is located 190m sou of the south.							
	Flood history	The site is within the EA Recorded Flood Outline dataset. The site previously flooded on 6 June 1971 as a result of channel exceedance along the River Kennet. The Thames Water DG5 register shows that there have been six sewer flooding incidents within the postcode area (RG7 4), of which two have resulted in internal property flooding.							
			Flu		T				
		Proportion of the site at risk (%)	Flood Zone 3b 5% AEP	Flood Zone 3a 1% AEP	Flood Zone 2 0.1% AEP	Flood Zone 1			
			0%	88%	12%	0%			
		Range of Depths (m)	N/A	0.03m – 0.67m	0.08m – 1.27m	N/A			
Sources of	Fluvial	Maximum Hazard	N/A	Significant: Danger to most	Significant: Danger to most	N/A			
flood risk		Available modelled data: The site is covered by the 2018 River Kennet (Tyle Mill to Thames Confluence) 1D- 2D model.							
		<b>Flood characteristics:</b> The majority of the site (excluding the north east of the site) is within Flood Zone 3a, where flooding is likely to occur during a 1% AEP (1 in 100) event. The remaining areas of the site are within Flood Zone 2, where flooding is likely to occur during the 0.1% AEP (1 in 1,000) event.							
		Pr	oportion of site	· · · · ·	SW)				
		1 in 30 (3.33% AEP)	1 in 100 (1	-	1 in 1,000 (0.1	% AEP)			
	0	0%	0%		35%				
	Surface Water	<b>Description of surface water flow paths:</b> The site is at low risk of surface water flooding, with flooding predicted to form across the east of the site during the 0.1% AEP event, where the topography is relatively low. The area of surface water flood risk is also located within the fluvial Flood Zones.							
	Groundwater	Proportion of the site at risk in JBA Groundwater Map 1% AEP risk categories				P risk			



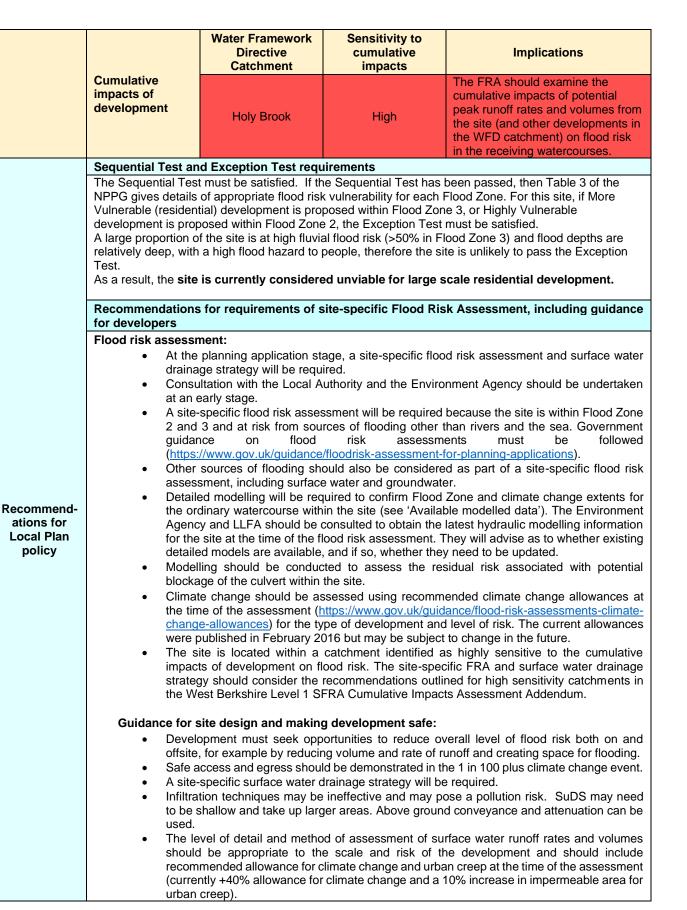
Site code THE4									
Site name		Kuehne & Nagel Distribution Centre, Brunel Road, Theale, RG7 4XE							
		Depth below surface 0-0.025m						lighest risk gories	
		0%		0%			0%		
		The site is at negligible risk of groundwater flooding. The Jacobs Groundwater Flood Risk modelling does not show the of groundwater emergence.					v the si	te to be at risk	
	Reservoir	The site is not at risk of flo	oding,	in the rare e	event of a r	eservo	oir brea	ch.	
	Canal	There are no canals within	the vi	cinity of the	site.				
	Defences	Defence Type		Standard	of Protect	tion	C	ondition	
		There are no flood defence	es pre						
Flood risk management infrastructure	Residual risk	Culvert / structure blockage?		The unnamed ordinary watercourse, flo along the northern boundary of the sit culverted below Waterside Drive. Blockar this culvert may result in backing up of watercourse, and subsequent flooding of site. The impact of this blockage on the res risk to the site should be assessed in detail a site-specific Flood Risk Assessment.			the site, is Blockage of ng up of the boding of the n the residual in detail within		
		Impounded water body failure?		N/A					
		Defence breach / overtopping?		Breach Zone					
	Flood warning	<ul> <li>The site is within the following EA Flood Alert and Flood Warning Area</li> <li>Flood Alert Area: River Kennet from Thatcham down to Read</li> <li>Flood Warning Area: River Kennet from Theale down to Read</li> </ul>				ading			
Emergency planning	Access and egress	The site is likely to be accessed via Brunel Road, to the south of the site. This rout is within Flood Zone 3a, where flooding is predicted to occur in a 1% AEP even The route is also at high surface water flood risk, with extensive ponding expecte to occur on the road during the 3.3% AEP and greater rainfall events. Therefore access to the site may be restricted during periods of fluvial and surface water flooding.					ite. This route % AEP event. ding expected its. Therefore,		
	Climate change allowances for	River Basin District / Managem Catchment		ement	Central		gher ntral	Upper End	
	'2080s' (2016 allowances)	Thames (assessed within			25%		5%	70%	
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Kennet and tributaries (to be used for site-specific FRAs)		ed for	21%	35	5%	76%	
	Implications for the site	Modelling shows that climate change leads to an increase in flood extent at the site. The extent of Flood Zone 3a + 70% CC does not extend beyond that of Flood Zone 2, and therefore climate change is unlikely to significantly impact the proposed site. The latest available climate change allowances must be used in site-specific Flood Risk Assesments.						d that of Flood ct the	



Site code	THE4
Site name	Kuehne & Nagel Distribution Centre, Brunel Road, Theale, RG7 4XE

	Bedrock Geology	Seaford Chalk Formation.
	Superficial Geology	Alluvium - Clay, Silt, Sand And Gravel.
	Soils	Loamy and clayey floodplain soils with naturally high groundwater
Requirement for drainage control and impact mitigation	SuDS	<ul> <li>SuDS design must follow the West Berkshire Council SuDS SPD, meet the Defra National Non-Statutory Technical Standards, and follow current best design practice (CIRIA Manual 2015).</li> <li>SuDS are possible on all sites, including previously developed sites such as this one. All development should adopt source control SuDS techniques. Conveyance features should be designed above ground and following natural flow paths where possible.</li> <li>'Natural', vegetated SuDS (such as green roofs, swales and ponds) will be preferred by West Berkshire Council as LLFA over 'hard engineered' and below-ground SuDS.</li> <li>As the entire site is at risk of fluvial flooding, it is not possible to locate attenuation features outside areas of flood risk. Therefore, source control measures will be required to manage rainfall rates and volumes where the rain lands.</li> <li>The bedrock geology and surface deposits are permeable, although the east of the site is at high risk of groundwater flooding. Additionally, the soil has a high-water content, and therefore discharge of the site via infiltration may not be suitable. Therefore source Protection Zone 3. As such infiltration techniques should only be used where there are suitable levels of treatment and following the granting of any required environmental permits from the Environment Agency.</li> </ul>
	Groundwater Source Protection Zone	The site is within Groundwater Source Protection Zone 3.
	Historic Landfill Site	There are no historic landfill sites within the site boundary.
	Opportunities for flood risk betterment	Opportunities for using source control SuDS to manage runoff rates and volumes, contributing to the reduction of flood peaks downstream on the River Kennet and existing surface water flow paths leaving the site.

### Level 2 SFRA Detailed Site Summary Tables



JBA

# West Berkshire Council Level 2 SFRA Detailed Site Summary Tables



<ul> <li>Storage for runoff from the development in extreme events should be located out of flood risk areas.</li> </ul>
• The design must ensure that flows resulting from rainfall in excess of a 1 in 100-year event are managed via exceedance routes that minimise the risks to people and property.
SuDS design must follow West Berkshire Council SuDS Supplementary Planning
Document (SPD) standards, meet the Defra National Non-Statutory Technical Standards,
and follow current best design practice (CIRIA Manual 2015). The design must ensure that
flows resulting from rainfall in excess of a 1 in 100-year event are managed via exceedance routes that minimise the risks to people and property.
• The unnamed watercourse which forms the north west boundary of the site is an ordinary
watercourse. A sufficient width of buffer, to be agreed in consultation with West Berkshire
Council, should be maintained between the riverbank and any built structures, to enable
riparian owners to access and maintain the channel.



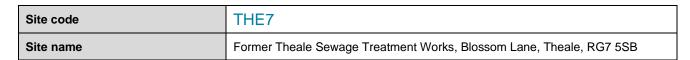
Site code	THE7
Site name	Former Theale Sewage Treatment Works, Blossom Lane, Theale, RG7 5SB

Site details	OS Grid reference	SU 64453 71907						
	Area	4.93 Ha						
	Current land use	Greenfield - Former sewa	ige treatment wo	orks				
	Proposed site use	Residential						
	Flood risk vulnerability	More vulnerable						
	Existing watercourses/bio diversity	The Sulham Brook (Main River) flows north westwards along the eastern boundary of the site. OS Mapping also indicate that a small unnamed waterco flows northwards through the site, which may have been associated with the previous treatment works.						
	Flood history	the east of the site occurr channel exceedance alon The Thames Water DG5	The east of the site is within the EA Recorded Flood Outline dataset. Flooding to the east of the site occurred on 6 January 2003 and 6 June 1971, as a result of channel exceedance along the Sulham Brook. The Thames Water DG5 register shows that there have been 14 sewer flooding incidents within the postcode area (RG7 5), of which one has resulted in internal					
			Fluv	/ial				
	Fluvial	Proportion of the site at risk (%)	Flood Zone 3b	Flood Zone 3a	Flood Zone 2	Flood Zone 1		
		at 115K (70)	5% AEP	1% AEP	0.1% AEP	Zone i		
			0%	0%	27%	73%		
Sources of flood risk		Available modelled data:There is no hydraulic modelling coverage (detailed or generalised) at the site. FloodZone 2 is based on the January 2003 historic flood outline. There is also no FloodZone 3a, and therefore Flood Zone 3 has been used as a proxy for Flood Zone 3b.Flood characteristics:The east of the site is within Flood Zone 2, where flooding is likely to occur duringa 0.1% AEP event (1 in 1,000). Remaining areas of the site are within Flood Zone						
		1, where flood risk is negligible.						
		÷	-	at risk (RoE	SW)			
		Pr	oportion of site					
		÷	-		SW) 1 in 1,000 (0.1 5%			
	Surface Water	Pr 1 in 30 (3.33% AEP)	oportion of site         1 in 100 (1)         0%         vater flow paths         r flooding is neg         shown to be at         rainfall event, v	% AEP)	1 in 1,000 (0.1 5% the majority of e water flooding	% AEP) the site. A during the		
	Surface Water	Pr 1 in 30 (3.33% AEP) 0% Description of surface w The risk of surface water small area of the site is s 0.1% AEP (1 in 1,000)	oportion of site 1 in 100 (1 0% vater flow paths r flooding is neg shown to be at rainfall event, v and south west ite at risk in JB	% AEP) s: ligible across risk of surface which is asso of the site. A Groundwa	1 in 1,000 (0.1 5% the majority of e water flooding ciated with smal	<b>% AEP)</b> the site. A during the Il areas of		
	Surface Water Groundwater	Pr 1 in 30 (3.33% AEP) 0% Description of surface water small area of the site is so 0.1% AEP (1 in 1,000) ponding across the north	oportion of site         1 in 100 (1)         0%         vater flow paths         r flooding is neg         shown to be at         rainfall event, v         and south west	% AEP)  s:  ligible across risk of surface vhich is asso of the site.  A Groundwa ories surface	1 in 1,000 (0.1 5% the majority of e water flooding ciated with smal	% AEP) the site. A during the II areas of P risk est risk		



Site code		THE7					
Site name	ame Former Theale Sewage Treatment Works, Blossom Lane, Theale, RG7 5SE					G7 5SB	
		A large proportion of the site, including western and central areas, is at high risk or groundwater flooding, with groundwater likely to lie within 0.025m of the ground surface during a 1% AEP event. The eastern portion of the site is at negligible risk of flooding. The Jacobs Groundwater Flood Risk modelling does not show the site to be at risk of groundwater emergence.					
	Reservoir	The site is not at risk of flooding	, in the rare	e event of a re	servoir brea	ach.	
	Canal	There are no canals within the v	icinity of th	e site.			
	Defences	Defence Type	Standar	d of Protection	on (	Condition	
Flood risk management infrastructure	Residual risk	There are no flood defences pre Culvert / structure blockage? Impounded water body failure?	sent within N/A N/A	the site.	he site.		
		Defence breach / overtopping?	N/A	Brea	ch Zone		
Emergency planning	Flood warning	<ul> <li>The east of the site is within the following EA Flood Alert Areas and a Flood Warning Areas:</li> <li>Flood Alert Area:         <ul> <li>River Pang from East IIsley to Pangbourne and Sulham Brook</li> <li>River Kennet from Thatcham down to Reading</li> </ul> </li> <li>Flood Warning Area:         <ul> <li>Sulham Brook for Theale</li> </ul> </li> </ul>					
	Access and egress	At present, the existing access routes of the site include the small track (leading on to Blossom Lane) to the west and the M4 to the east. Both of these routes are within Flood Zone 1, and are therefore at very low fluvial flood risk. The M4 and the western access track are at very low surface water flood risk. However, Blossom Lane is at risk of flooding during a 3.3% AEP (1 in 30) and greater rainfall events.					
	Climate change allowances for	River Basin District / Manag Catchment	jement	Central	Higher Central	Upper End	
	'2080s' (2016 allowances)	Thames (assessed within Level 2 SFRA)		25%	35%	70%	
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Thames and South Chilterns (to be used for site-specific FRAs)		31%	43%	76%	
	Implications for the site	As no detailed modelling covers the site, Flood Zone 2 has been used as a proxy for the impact of climate change on the 1% AEP (1 in 100) fluvial flood event. This provides a conservative extent of the proportion of the site identified as at risk from a 1 in 100 + CC flood event. The latest available climate change allowances must be used in site-specific Flood Risk Assssments.				od event. tified as at	

### Level 2 SFRA Detailed Site Summary Tables



	Bedrock Geology	Seaford Chalk Formation.
	Superficial Geology	Alluvium - Clay, Silt, Sand And Gravel.
	Soils	Loamy soils with naturally high groundwater.
Requirement for drainage control and impact mitigation	SuDS	<ul> <li>SuDS design must follow the West Berkshire Council SuDS SPD, meet the Defra National Non-Statutory Technical Standards, and follow current best design practice (CIRIA Manual 2015).</li> <li>All development should adopt source control SuDS techniques. Conveyance features should be designed above ground and following natural flow paths where possible.</li> <li>'Natural', vegetated SuDS (such as green roofs, swales and ponds) will be preferred by West Berkshire Council as LLFA over 'hard engineered' and below-ground SuDS.</li> <li>SuDS features should be designed outside of fluvial flood risk areas and conveyance features should remain above surface and follow natural pathways.</li> <li>The bedrock geology and surface deposits are permeable, although the east of the site is at high risk of groundwater flooding. Additionally, the soil has a high-water content, and therefore discharge of the site via infiltration may not be suitable. Therefore site investigation and soakage testing would be required to understand infiltration potential at the site. Infiltration techniques should only be used where there are suitable levels of treatment.</li> <li>Where below ground storage is proposed, the base of the feature must be located at least 1m above the highest groundwater level, to reduce the risk of groundwater ingress or flotation.</li> </ul>
	Groundwater Source Protection Zone	The site is not within a Groundwater Source Protection Zone.
	Historic Landfill Site	There are no historic landfill sites within the site boundary.
	Opportunities for flood risk betterment	Opportunities for using source control SuDS to manage runoff rates and volumes, contributing to the reduction of flood peaks downstream on the Sulham Brook and existing surface water flow paths leaving the site.

JBA consulting

## West Berkshire Council Level 2 SFRA Detailed Site Summary Tables



		Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications
	Cumulative impacts of development	Sulham Brook	Medium	The FRA and surface water drainage strategy should demonstrate wider betterment by demonstrating measures which can be put in place to contribute to a reduction in flood risk downstream.
	Sequential Test an	d Exception Test requir	ements	
Recommend- ations for Local Plan policy	The Sequential Test Test be applied. It is Flood Zone 1. For If More Vull If Highly Vull test is satisfied. Dev Highly Vull More Vuln Recommendations for developers Flood risk assessm At the drainag Consu at an e A site- 2 and guidan (https:// 0 Other assess Detailed the Su the sit consul flood availad Climat the tim change were p The sit impact strateg sensiti Adden <b>Guidance for s</b> Develo	must be satisfied. Only is anticipated that prop this site, the Exception To nerable and Essential Infi ulnerable development is cture is located in Flood velopment will not be per- nerable development with erable and Less Vulnerat for requirements of sit planning application stag ge strategy will be required tation with the Local Aut early stage. specific flood risk assess 3 and at risk from sourcine on flood //www.gov.uk/guidance/fl sources of flooding shou ad modelling will be required than Brook (currently no e (see 'Available modelly ted to obtain the latest hy risk assessment. They oble, and if so, whether the e change should be ass te of the assessment (htt e-allowances) for the type oublished in February 201 te is located within a cato s of development on flood y should consider the vity in the West Berks dum.	once the Sequentia <b>posed developmen</b> est must be satisfied rastructure is locate located in FZ2. Zone 3b then it mu- mitted in the followir in FZ3a or FZ3a plu- ble development witte <b>e-specific Flood R</b> ge, a site-specific flood additional the Environal ment will be require es of flooding other risk assession ordrisk-assessmenn ild also be conside water and groundwater red to confirm Floo t modelled within the edata'). The Environal varied to be update essed using recommendations sold risk. The site-sport recommendations shire Level 1 SFF <b>development safe:</b> unities to reduce ov be demonstrated in ust not impact on floo undwater levels must priate height above od risk, basements must take into acc ay be ineffective and	d in FZ3a or FZ3a plus climate change. ust be demonstrated that the exception ng scenarios: us climate change and FZ3b. hin FZ3b. <b>Tisk Assessment, including guidance</b> bod risk assessment and surface water ronment Agency should be undertaken d because the site is within Flood Zone r than rivers and the sea. Government ments must be followed <u>t-for-planning-applications</u> ). red as part of a site-specific flood risk ater. d Zone and climate change extents for e site) and ordinary watercourse within ironment Agency and LLFA should be nformation for the site at the time of the whether existing detailed models are ed. mended climate change allowances at <u>idance/flood-risk-assessments-climate-</u> nd level of risk. The current allowances ct to change in the future. moderately sensitive to the cumulative ecific FRA and surface water drainage outlined for catchments of medium RA Cumulative Impacts Assessment erall level of flood risk at the site.

# \_\_\_\_\_

# West Berkshire Council



Г



Site code		THE8				
Site name		Land adjacent J12 of M4, Theale				
		I				
Site details	OS Grid reference	SU 64760 71467				
	Area	5.5 Ha				
	Current land use	Field				
	Proposed site use	Residential and employm	ent			
	Flood risk vulnerability	More vulnerable				
	Existing watercourses/bio diversity	An unnamed ordinary wat Sulham Brook (Main Rive further ordinary watercour is located 70m south of th	r) is located at thrse, which appear	he eastern bou	undary of the site	e. A
	Flood history	<ul> <li>The site is within the EA Recorded Flood Outlines dataset and has previously flooded on two occasions: <ul> <li>June 1971</li> <li>January 2003</li> </ul> </li> <li>Both of these events occurred as a result of channel exceedance along the River Kennet (south of the site).</li> <li>The Thames Water DG5 register shows that there have been six sewer flooding incidents within the postcode area (RG7 5), of which two have resulted in internal property flooding.</li> </ul>				
		Proportion of the site at risk (%)	Flux Flood Zone 3b 5% AEP	vial Flood Zone 3a 1% AEP	Flood Zone 2 0.1% AEP	Flood Zone 1
			0%	0%	90%	10%
Sources of flood risk	Fluvial	<ul> <li>Available modelled data: The site is covered by the 2018 River Kennet (Tyle Mill to Thames Conflue 2D model.</li> <li>Flood characteristics: The majority of the site is located within Flood Zone 2, where flooding is p to occur during the 0.1% AEP (1 in 1,000) event. A small area at the net corner of the site is within Flood Zone 1, and is at very low fluvial flood risk It should be noted that Flood Zone 2 in this location is based on histor extents, and the River Kennet (Tyle Mill to Thames Confluence) model reproduced that flood waters to reach the site during the 0.1% AEP event.</li> </ul>			s predicted north east isk. storic flood	
			oportion of site	•	-	
		1 in 30 (3.33% AEP)	1 in 100 (	-	1 in 1,000 (0.	
	Surface Water	2%5%19%Description of surface water flow paths:Surface water flood risk varies across the site, with areas of ponding forming in the south west, north and south east of the site during the 3.33% AEP (1 in 30) and greater rainfall events. The areas of ponding extend significantly during the 0.1%				
	Groundwater	AEP (1 in 1,000) rainfall event, particularly along the southern boundary of the site Proportion of the site at risk in JBA Groundwater Map 1% AEP risk categories				



Site code		THE8					
Site name		Land adjacent J12 of M4, Theale					
		Depth below surface 0-0.025m		epth below surface 0.025-0.5m Total in highest risk categories			
		100%		0%		10	0%
		The entirety of the site is at high groundwater flood risk, where groundwater lev are predicted to lie within 0.025m of the ground surface during a 1% AEP (1 in 1 event. The Jacobs Groundwater Flood Risk modelling does not show the site to be at of groundwater emergence.					AEP (1 in 100)
	Reservoir	The site is not at risk of flo	oding, i	n the rare event o	a reserv	voir brea	ach.
	Canal	There are no canals withir	the vic	inity of the site.			
	Defences	Defence Type		Standard of Pro	tection	0	Condition
		There are no defences wit	hin the	site boundary.			
Flood risk management		Culvert / structure blockage?		N/A			
infrastructure	Residual risk	Impounded water body failure?		N/A			
		Defence breach / overtopping?	_	Breach Zone			
	Flood warning	The site is within both an EA Flood Alert and Flood Warning Area: <ul> <li>Flood Alert Area: River Kennet from Thatcham down to Reading</li> <li>Flood Warning Area: River Kennet from Theale down to Reading</li> </ul>					
Emergency planning	Access and egress	<ul> <li>There are several routes which currently provide access to the proposed site.</li> <li>The site could be accessed to the south via the A4 Bath Road, with current access to the south of the site. This route is within Flood Zone 2, where flooding is predict o occcur during a 0.1% AEP (1 in 1,000) event. However, the route is at very risk of surface water flooding.</li> <li>Alternatively, the site could be accessed via Hoad Way, wth current access to west of the site. This route is also located within Flood Zone 2 and at risk of surface flooding during the 0.1% AEP rainfall event.</li> <li>The site could also be accessed from the north, with current access from H</li> </ul>					besed site. current access ng is predicted is at very low access to the risk of surface
	Climate change	Street. This route is at very low fluvial and River Basin District / Management Catchment			al H	igher entral	Upper End
	allowances for '2080s' (2016 allowances)		ames (assessed within Level 2 SFRA)			35%	70%
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Kennet and tributaries (to site-specific FRAs)	Kennet and tributaries (to be used for site-specific FRAs)			35%	76%
	Climate change allowances for '2080s' (2021 allowances)	Thames and South Chilter for site-specific FRAs)	ns (to b	be used 31%		43%	76%



Site code		THE8
Site name		Land adjacent J12 of M4, Theale
Implications for the site		Modelling shows that the extent of Flood Zone 3a + 70% CC does not extend into the site, or beyond that of Flood Zone 2. Therefore, climate change is unilkely to significantly impact flood risk at the proposed site.
		The latest available climate change allowances must be used in site-specific Flood Risk Assssments.



Site code	THE8
Site name	Land adjacent J12 of M4, Theale

	Bedrock Geology	Seaford Chalk Formatic	Seaford Chalk Formation.				
	Superficial Geology	Alluvium - Clay, Silt, Sa	Alluvium - Clay, Silt, Sand And Gravel.				
	Soils	Loamy and clayey floodplain soils with naturally high groundwater.					
Requirement for drainage control and impact mitigation	SuDS	<ul> <li>the Defra Natio current best de</li> <li>A greenfield s scheme, using including wate</li> <li>'Natural', vege be preferred by and below-gro</li> <li>All developmen Conveyance fe natural flow pa</li> <li>Storage for rur located out of f</li> <li>The bedrock g mapping and in site. Therefore carried out to a least 12 month techniques sho surface water</li> <li>Where below g</li> </ul>	gn must follow the West Berkshire Council SuDS SPD, lational Non-Statutory Technical Standards, and follow it design practice (CIRIA Manual 2015). Id site such as this should seek to implement an ex- sing natural, vegetated SuDS to deliver multiple b ater quality, biodiversity, amenity, green infrastructure egetated SuDS (such as green roofs, swales and ponde d by West Berkshire Council as LLFA over 'hard engine ground SuDS. ment should adopt source control SuDS techniques. the features should be designed above ground and follow <i>y</i> paths where possible. Trunoff from the development in extreme events should of fluvial flood risk areas. the geology suggests that infiltration may be suitable, alt ind indicates that there is a high groundwater flood risk fore, it is recommended further site investigation should to assess potential for drainage by infiltration, including onths of groundwater level monitoring on site. Infiltration should only be used where there are suitable levels of ter runoff treatment.				
	Groundwater Source Protection Zone	The site is not within a Groundwater Source Protection Zone.					
	Historic Landfill Site	There are no historic landfill sites within the site boundary.					
	Opportunities for flood risk betterment	Opportunities for using a contributing to the reduce water flow paths leaving	runoff rates and volumes, and existing surface				
		Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications			
	Cumulative	Sulham Brook	Medium	The FRA should examine the cumulative impacts of potential peak			
	impacts of development	Holy Brook	High High High High High High High High				
	Sequential Test an	d Exception Test requir	ements				





Site code		THE8				
Site name		Land adjacent J12 of M4, Theale				
Site name	Test be applied. For If More Vul If Highly Vul If Essential Infrastru- test is satisfied. Dev Highly Vulr More Vuln Recommendations for developers Flood risk assess Flood risk assess At the draina Consu- at an e A site- 2 and guidar (https: Other assess Detaile the ord Agence for the detaile Climate the time change were p The s impace stratege the We Guidance for s Develop Safe a and ra Mitigar finishe Due to The datable. need to can be reduced The les shouldor recom (current urban Storage risk ar The datable. need to can be reduced Storage risk ar The datable. need to can be reduced The les shouldor Storage risk ar The datable. The datable. need to can be reduced The les shouldor Storage risk ar The datable. The datable. need to can be reduced The les shouldor The datable. need to can be reduced The les shouldor recom (current urban Storage risk ar The datable. need to can be reduced Storage risk ar The datable. The datable. need to can be reduced The les shouldor recom (current urban Storage risk ar The datable. The data	t must be satisfied. Only once the Sequential Test is satisfied should the Exception this site, the Exception Test must be satisfied: nerable and Essential Infrastructure is located in FZ3a or FZ3a plus climate change. Jinerable development is located in FZ2. Icture is located in Flood Zone 3b then it must be demonstrated that the exception velopment will not be permitted in the following scenarios: nerable and Less Vulnerable development within FZ3b. erable and Less Vulnerable development within FZ3b. erable and Less Vulnerable development within FZ3b. for requirements of site-specific Flood Risk Assessment, including guidance nent: planning application stage, a site-specific flood risk assessment and surface water ge strategy will be required. Itation with the Local Authority and the Environment Agency should be undertaken sarly stage. specific flood risk assessment will be required because the site is within Flood Zone 3 and at risk from sources of flooding other than rivers and the sea. Government uce on flood risk assessment-for-planning-applications). sources of flooding should also be considered as part of a site-specific flood risk sment, including surface water and groundwater. ad modelling will be required to confirm Flood Zone and climate change extents for inary watercurse within the site (see 'Available modelled dati). The Environment y and LLFA should be consulted to obtain the latest hydraulice modeling information site at the time of the flood risk assessment. They will advise as to whether existing di models are available, and if so, whether they need to be updated. e change should be assessed using recommended climate change allowances sublished in February 2016 but may be subject to change in the future. It is located within a catchment identified as highly sensitive to the cumulative is of development on flood risk. The site-specific FRA and surface water drainage yy should consider the recommendations outlined for high sensitivity catchments in set Berkshire Level 1 SFRA Cumulative Impacts				



Site code		THE8
Site name		Land adjacent J12 of M4, Theale
	Docun and fo flows r routes • The u	design must follow West Berkshire Council SuDS Supplementary Planning nent (SPD) standards, meet the Defra National Non-Statutory Technical Standards, llow current best design practice (CIRIA Manual 2015).The design must ensure that esulting from rainfall in excess of a 1 in 100-year event are managed via exceedance that minimise the risks to people and property. nnamed watercourse which forms the eastern boundary of the site is an ordinary course. A sufficient width of buffer, to be agreed in consultation with West Berkshire
		il, should be maintained between the riverbank and any built structures, to enable n owners to access and maintain the channel.





Site code		TS2						
Site name		Long Copse Farm, Enborne						
Site details	OS Grid reference	SU 43837 649	05					
	Area	15.21Ha	5.21Ha					
	Current land use	Travelling show	wpersons yar	d (he	adquarters for Zip	pos Circus) and	agricultural	
	Proposed site use	Travelling show plots)	wpersons yar	d – p	rovision of additio	nal accommoda	tion (24	
	NPPF Flood risk vulnerability	More vulnerable						
	Existing watercourses/bio diversity	northerly direc watercourse is tributary cross site. There is a	An ordinary watercourse, which is a tributary of the River Kennet, flows in a northerly direction along the eastern and western boundaries of the site. The vatercourse is formed of two branches at the south of the site, with the eastern ributary crossing the centre of the site to join a confluence in the west of the site. There is a further confluence at the north west corner of the site, and the ongoing watercourse flows in a north easterly direction along the northern					
	Flood history	The site is not located within the EA Recorded Flood Outline dataset. The Thames Water DG5 register shows that there are no sewer flooding incidents within the postcode area.						
		Proportion of site at risk in Flood Zones						
		Proportion of the site	Flood Zor 3b	ne	Flood Zone 3a	Flood Zone 2	Flood Zone 1	
		at risk (%)	5% AEP		1% AEP	0.1% AEP	Zone i	
			3%		0%	<1%	96%	
Sources of flood risk	Fluvial	Available modelled data: The ordinary watercourse at the north of the site is covered by broadscale, generalised modelling, with the model files not available for use in the Level 2 SFRA. Therefore, Flood Zone 3b has been used as a proxy for Flood Zone 3a. The remaining ordinary watercourses within the site are not covered by a detailed hydraulic model.						
		<b>Flood characteristics:</b> The northern boundary of the site is at risk of flooding during a 1% AEP (Flood Zone 3), with the extent of flooding increasing marginally during a 0.1% AEP (Flood Zone 2) event. However, the Flood Zones do not represent the risk of flooding associated with the ordinary watercourses in the east and west of the site. RoFSW mapping has been used as a proxy to represent the risk of flooding from these watercourses.						
			Propo	ortion	of site at risk (R	oFSW)		
	Surface Water	1 in 30 (3.33	8% AEP)	1 i	n 100 (1% AEP)	1 in 1000	(0.1% AEP)	
		7%			11%	1	9%	



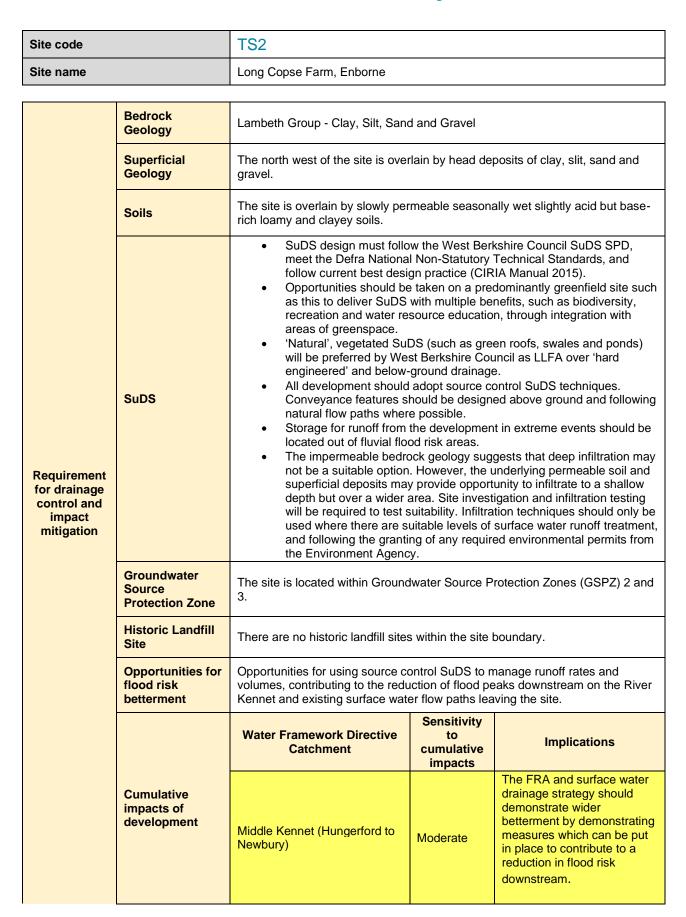
Site code		TS2					
Site name		Long Copse Farm, Enborne					
		Description of surface water flow paths:Surface water flood risk closely follows the routes of the ordinary watercoursewithin the site.Two flow paths enter the south west of the site, and one flow path enters the south east corner of the site, during the 3.3% AEP rainfall event and increase is extent during the 1% AEP and 0.1% AEP rainfall.The two south western flow paths form a confluence downstream of Skinner' Green Lane, and flow north eastwards along the western boundary of the site The flow path is joined by additional surface water flow paths from the west during a 1% AEP rainfall event.The south eastern flow path flows around existing buildings in the site during 0.1% AEP rainfall event, and flows westward across the site, to form confluence with the south western flow path.The combined flow path flows in a north easterly direction along the north western and northern boundaries of the site.Proportion of the site at risk in JBA Groundwater Map 1% AEP risk categoriesDepth below surfaceTotal in highest risk					enters the increase in f Skinner's of the site. n the west te during a to form a
							hest risk
	Groundwater	0%		0.025-0.5m         categor           0%         0%			
		The site is at very low risk	of gro	undwater floodir	ıg.		
	Reservoir	The site is not at risk of flooding, in the rare event of a reservoir breach.					ch.
	Canal	There are no canals within	the vi	cinity of the site.			
	Defences	Protection			Conditio	'n	
		There are no defences present within the site.					
Flood risk management		Culvert / structure     N/A       blockage?     N/A					
infrastructure	Residual risk	Impounded water body failure?					
		Defence breach /			Brea	ach Zone	
	Flood warning	overtopping?         The southern boundary of Agency Flood Alert and Flood Alert and Flood Alert Areas: River to Newbury.         Flood Warning Areas: N/	ood W Kenne	arning Areas:	-	-	
Emergency planning	Access and egress	The site will be accessed from Skinner's Green Lane to the south. The access route is at low risk of fluvial flooding from Main Rivers, and is therefore located within Flood Zone 1. However, Skinner's Green Lane is at risk of surface water flooding, which relates to the ordinary watercourse which crosses the road. This flooding is predicted to form in a 3.3% AEP and greater rainfall events. Safe access and egress from the site is a constraint, and should be considered in detail within a site-specific Flood Risk Assessment.					nich relates predicted to
Climate	Climate change allowances for	River Basin District / Management Catchme		Central	Hig	gher Central	Upper End
Change	'2080s' (2016 allowances)	Thames (assessed within Level 2 SFRA)		25%		35%	70%





Site code TS2						
Site name		Long Copse Farm, Enborne				
	Climate change allowances for '2080s' (2021 allowances)	Kennet and tributaries (to be used for site-specific FRAs)	21%	35%	76%	
Implications for the site		Fluvial flood risk to the site is predicted to increase when accounting for the impact of climate change. However, in this location, Flood Zone 2 (0.1% AEP) has been used to represent the extent of Flood Zone 3a + climate change. The latest available climate change allowances must be used in site-specific Flood Risk Assessments.				

## Level 2 SFRA Detailed Site Summary Tables



JBA



Site code		TS2
Site name		Long Copse Farm, Enborne
Recommend- ations for Local Plan policy	The Sequential Test Test be applied. It is Flood Zone 1. For If More Vu change. If Highly Vu If Essential Development will no Highly Vulr More Vuln Recommendations guidance for devel Flood risk assa At the plan drainage st Consultation an early sta A site-spect and 3 and guidance (https://w Detailed more ordinary wa and LLFA st at the time models are Climate cha time of t climatecha allowances Other sour assessmer The site is impacts of strategy sh in the West Safe acces A site-spect Infiltration for areas. The design are manag The level of should be	essment: nning application stage, a site-specific flood risk assessment and surface water trategy will be required. on with the Local Authority and the Environment Agency should be undertaken at



Site code	TS2
Site name	Long Copse Farm, Enborne
urban     SuDS     (SPD     curren     result	ntly +40% allowance for climate change and a 10% increase in impermeable area for creep). design must follow West Berkshire Council SuDS Supplementary Planning Document o standards, meet the Defra National Non-Statutory Technical Standards, and follow to best design practice (CIRIA Manual 2015). The design must ensure that flows ng from rainfall in excess of a 1 in 100-year event are managed via exceedance routes inimise the risks to people and property.



Site code	WOK2
Site name	Pierces Farm, Goodboy's Lane, Mortimer, RG7 3AH

Site details	OS Grid reference	SU 68123 66496							
	Area	76.5 Ha							
	Current land use	Greenfield - Agriculture	Greenfield - Agriculture						
	Proposed site use	Residential-led mixed use	edevelopment						
	Flood risk vulnerability	More vulnerable							
	Existing watercourses/bio diversity	The site is formed of three Goring Lane, and two larg An unnamed ordinary wat western land parcel, conti flows through the eastern flows along the southern b below Goodboy's Lane. A western land parcel. There are no watercourse Brook (ordinary watercourse	le parcels, sepa ercourse flows in nues below She land parcel. A s boundary of the pond is also loo s within the nor	rated by Good north eastward ecpcot Lane an econd unnam western land p cated at the so	boy's Lane. ds through the la nd Goodboy's La ed ordinary wate parcel, before pa puthern boundary cel. However, Bu	rge ne and ercourse ssing v of the			
	Flood history	The site is not located within the EA Recorded Flood Outlines dataset.							
		Fluvial							
Sources of flood risk		Proportion of the site at risk (%)	Flood Zone 3b 5% AEP 0%	Flood Zone 3a 1% AEP	Flood Zone 2 0.1% AEP 0%	Flood Zone 1			
	Fluvial	Available modelled data:         The site is not covered by a hydraulic model.         Flood characteristics:         The site is located entirely within Flood Zone 1, and is therefore classifie fluvial flood risk. However, the Flood Zones do not represent the risk associated with the ordinary watercourses within the site boundary mapping has been used as a proxy to represent the risk of flooding to watercourses.							
			oportion of site						
	Surface Water	1 in 30 (3.33% AEP)	1 in 100 (		1 in 1,000 (0.	1% AEP)			
		1%	39	6	12%				





Site code		WOK2				
Site name		Pierces Farm, Goodboy's Lane, Mortimer, RG7 3AH				
		<ul> <li>Description of surface water flow paths:</li> <li>Surface water flood risk follows the routes of the ordinary watercourses within the site.</li> <li>A flow path forms in the north of the large western land parcel during the 3.3% AEP (1 in 30) rainfall event, and during the 0.1% AEP (1 in 1,000) event, flowing north eastwards across Sheepcot Lane and Goodboy's Lane, before entering the eastern land parcel. Within the eastern land parcel, areas of ponding form along the route of the watercourse during the 3.3% AEP (1 in 30) rainfall event, an extend to form a north easterly flow path during the 1% AEP (1 in 100) rainfall event.</li> <li>Additional flow paths form in the south east and eastern borders of the eastern land parcel during the 1% AEP and 0.1% AEP rainfall events.</li> <li>A large area of ponding forms at the south of the western land parcel during the 3.3% AEP rainfall event, to flow north eastwards, along the route of the existing watercourse. Additional flow paths form along the vent.</li> <li>The small northern land parcel is at very low risk of surface water flooding.</li> </ul>				
		Proportion of the site at risk in JBA Groundwater Map 1% AEP risk categories				
		Depth below surface 0-0.025m	Depth below surface 0.025-0.5m	Total in highest risk categories		
Ground	dwater	9%	0%	9%		
		The entirety of the northern land parcel, as well as a small area along the northern border of the eastern land parcel, are at high risk of groundwater flooding. Here, groundwater levels are predicted to lie within 0.025m of the ground surface during a 1% AEP event. The remainder of the site is at negligible risk of groundwater flooding.				
Reserv	voir	The site is not at risk of flo	oding, in the rare event of a	a reservoir breach.		
Canal		There are no canals within	the vicinity of the site.			





Site code	WOK2
Site name	Pierces Farm, Goodboy's Lane, Mortimer, RG7 3AH

	Defences	Defence Type	Standard of I	Protection		Condition		
		There are no defence	s within the site bound	dary.				
Flood risk management infrastructure	Residual risk	Culvert / structure blockage?						
		Impounded water body failure?	N/A					
		Defence breach / overtopping?	N/A	Breach Zo	one			
	Flood warning	The site is not within an EA Flood Alert or Flood Warning Area.						
	Flood warning		an EA Flood Alert or Flood Warning Area.					
Emergency planning	Access and egress	The eastern and western land parcels are likely to be accessed via Good Lane, whereas the northern land parcel may be accessed by Goodboy's Lan Goring Lane. To the west of the northern land parcel, Goring Lane is located within Flood 3 b (where flooding is expected duirng the 5% AEP event), and is at risk of flood during a 3.3% AEP and greater rainfall events. Therefore access to the site the west may be affected during times of flood. Goodboy's Lane is located within Flood Zone 1, and is therefore at low fluvial risk. Surface water flooding is predicted to form at the north of Goodboy's during the 1% AEP and 0.1% AEP rainfall events.				boy's Lane or nin Flood Zone risk of flooding the site from low fluvial flow podboy's Lane		
	Climate change allowances for	River Basin Distri Catch		Central	Higher Central	Upper End		
	'2080s' (2016 allowances)	Thames (assessed within Level 2 SFRA)		25%	35%	70%		
Climate Change	Climate change allowances for '2080s' (2021 allowances)	Kennet and tributaries site-specific FRAs)	s (to be used for	21%	35%	76%		
	Implications for the site	The site remains in Fl change. The latest available cl Flood Risk Assssmen	•					



Site code	WOK2
Site name	Pierces Farm, Goodboy's Lane, Mortimer, RG7 3AH

	Bedrock Geology	London Clay Formation - Clay, Silt And Sand.					
	Superficial Geology	The northern parcel of Gravel.	The northern parcel of land is underlain by River Terrace Deposits - Sand and Gravel.				
	Soils	Slowly permeable sea soils.					
Requirement for drainage control and impact mitigation	SuDS	<ul> <li>SuDS design must follow the West Berkshire Council SuDS SPD, methe Defra National Non-Statutory Technical Standards, and follow current best design practice (CIRIA Manual 2015).</li> <li>Opportunities should be taken on a greenfield site such as this to del SuDS with multiple benefits, such as biodiversity, recreation and wateresource education, through integration with areas of greenspace.</li> <li>'Natural', vegetated SuDS (such as green roofs, swales and ponds) we preferred by West Berkshire Council as LLFA over 'hard engineer and below-ground SuDS.</li> <li>All development should adopt source control SuDS techniques. Conveyance features should be designed above ground and followin natural flow paths where possible.</li> <li>The limited permeability of the geology and soils on this site suggests that discharge of the site via infiltration is unlikely to be feasible. Groundwater flood risk varies across the site, and infiltration is unlike be effective in the north of the site, where the risk is high. It is recommended that further site investigation should be carried out to assess and confirm the potential for infiltration.</li> <li>Additionally, the site is partially located within Groundwater Source Protection Zone 2 and 3. As such, infiltration techniques should only used where there are suitable levels of treatment and following the granting of any required environmental permits from the Environment Agency.</li> </ul>					
	Groundwater Source Protection Zone	The northern parcel of land is within Groundwater Source Protection Zone 2. The southern parcel of land is split between Groundwater Source Protection Zone 2 and 3.					
	Historic Landfill Site	There are no historic I	andfill sites within the s	ite boundary.			
	flood risk con		Opportunities for using source control SuDS to manage runoff rates and volume contributing to the reduction of flood peaks downstream on the Foudry Brook ar existing surface water flow paths leaving the site				
		Water Framework Directive Catchment	Sensitivity to cumulative impacts	Implications			
	Cumulative impacts of development	Burghfield Brook	Medium	The FRA and surface water drainage strategy should demonstrate wider betterment by demonstrating measures which can be put in place to contribute to a reduction in flood risk downstream.			
	Sequential Test an	d Exception Test requ	lirements				
Recommend- ations for	The site is within Flo passed. The Except	within Flood Zone 1 but at risk from other sources of flooding. The Sequential Test must be ne Exception Test is not required under the NPPF, but it must be shown that the development of for its lifetime and the risk can be managed through a sequential approach to design.					



Site code		WOK2
Site name		Pierces Farm, Goodboy's Lane, Mortimer, RG7 3AH
Local Plan policy	Recommendations for developers	s for requirements of site-specific Flood Risk Assessment, including guidance
	Flood risk assess • At the draina • Consu- at an e • A site- within Gover (https: • Other assess • Detaile the ord Agend for the detaile • Model blocka • Climat the tim chang were p • The si impac	nent: planning application stage, a site-specific flood risk assessment and surface water ige strategy will be required. Iltation with the Local Authority and the Environment Agency should be undertaken early stage. -specific flood risk assessment will be required because the site is over 1 Ha in area Flood Zone 1 and at risk from sources of flooding other than rivers and the sea. mment guidance on flood risk assessments must be followed ://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications). sources of flooding should also be considered as part of a site-specific flood risk sment, including surface water and groundwater. ed modelling will be required to confirm Flood Zone and climate change extents for dinary watercourses within the site (see 'Available modelled data'). The Environment zy and LLFA should be consulted to obtain the latest hydraulic modelling information e site at the time of the flood risk assessment. They will advise as to whether existing ad models are available, and if so, whether they need to be updated. Iling should be conducted to assess the residual risk associated with potential age of the culverts within the site. te change should be assessed using recommended climate change allowances at the of the assessment ( <u>https://www.gov.uk/guidance/flood-risk-assessments-climate- e-allowances</u> ) for the type of development and level of risk. The current allowances bublished in February 2016 but may be subject to change in the future. It is located within a catchment identified as moderately sensitive to the cumulative ts of development on flood risk. The site-specific FRA and surface water drainage gy should consider the recommendations outlined for catchments of medium
	Guidance for s Develo Safe a and ra Mitiga finishe Due to The d table. need t can be reduce The le should recom (curren urban Storag risk ar The de are ma SuDS Docur and fo flows r	ivity in the West Berkshire Level 1 SFRA Cumulative Impacts Assessment adum. <b>Site design and making development safe:</b> opment must seek opportunities to reduce overall level of flood risk at the site. access and egress should be demonstrated in the 1 in 100 plus climate change event aising of access routes must not impact on floodplain storage capacity. tion for seasonal high groundwater levels must be considered (for example by raising ed floor levels to an appropriate height above ground level). the high groundwater flood risk, basements are not permitted. esign of SuDS schemes must take into account the seasonally high groundwater Infiltration techniques may be ineffective and may pose a pollution risk. SuDS may to be shallow and take up larger areas. Above ground conveyance and attenuation a used but care must be taken that groundwater does not enter the SuDS feature and a the storage capacity and structural integrity of the design. evel of detail and method of assessment of surface water runoff rates and volumes d be appropriate to the scale and risk of the development and should include immended allowance for climate change and urban creep at the time of the assessment ntly +40% allowance for climate change and a 10% increase in impermeable area for creep). ge for runoff from the development in extreme events should be located out of flood



Site code	WOK2
Site name	Pierces Farm, Goodboy's Lane, Mortimer, RG7 3AH
agreed	al ordinary watercourses pass through the site. A sufficient width of buffer, to be d in consultation with West Berkshire Council, should be maintained between the ank and any built structures, to enable riparian owners to access and maintain the el.



Site code		WOK4				
Site name		Land at Grazeley				
Site details	OS Grid reference	SZ 69302 16800				
	Area	262 Ha				
	Current land use	Greenfield - Agriculture				
	Proposed site use	Residential				
	Flood risk vulnerability	More vulnerable				
Sources of flood risk	Existing watercourses/bio diversity	<ul> <li>The site is formed of six land parcels: two small parcels in the north south of the M4), two large land parcels (covering Burnt House Far by the railway line) and two medium-sized land parcels to the south the railway line, covering Poundgreen).</li> <li>The Foudry Brook, a main river, is located 300m east of the small la Several tributary watercourses of the Foudry Brook pass through th         <ul> <li>Eastern boundary watercourse (ordinary watercourse) northwards along the eastern borders of the site, before jo Foudry Brook via a culvert at the junction of Kybers Lane/Road South.</li> <li>Western watercourse (ordinary watercourse): an unnar watercourse passes north eastwards through the central la passing below the railway line, before meeting the eastern</li> </ul> </li> </ul>		House Farm, ar to the south (to t the small land p s through the site <b>atercourse):</b> flow te, before joining bers Lane/Pinge <b>e):</b> an unnamed he central land p the eastern bound ows north eastware ay line before en vs north eastware At the railway line the site. Notably ster of smaller land ay line in the wes	nd divided he west of varcels. e: vs the ewood ordinary varcels, ndary ards along vards along vards tering the ds he it flows the two kes is d parcel. st of the	
	Flood history	<ul> <li>The central land parcels are identified within the EA Recorded Flood Out dataset as having flooded on 6 January 2003, due to channel exceedance the surrounding watercourses. Flooding is recorded as having occurred at the existing lakes around Pinge Wood in the north west of the site.</li> <li>The site itself is not recorded as having been affected by flooding during Winter 2013/14 event.</li> </ul>				ce from around
			Flu	vial	I	
		Proportion of the site at risk (%)	Flood Zone 3b 5% AEP	Flood Zone 3a 1% AEP	Flood Zone 2 0.1% AEP	Flood Zone 1
			20%	3%	19%	58%
	Fluvial	Maximum Flood Depth (m)	0.04 - 0.89	0.05 -1.88	0.05 - 2.34	N/A
		Maximum Flood Hazard	1.34 (Danger to most)	1.83 (Danger to most)	2.06 (Danger to all)	N/A

JBA consulting



Site code		WOK4		
Site name		Land at Grazeley		
		2018 (Tyle Mill to Thames east of the railway line is M4) 2017 1D-2D hydraul models overlap, the Env Kennet 2018 model, which The southern western se generalised modelling, wi SFRA. In this location, Flo <b>Flood characteristics:</b> T forms a topographic barri flooding predicted to occur at risk of flooding during th with the existing lakes ar depths and hazards within In the north and north wes	s Confluence) 1D-2D hydra covered by the Foudry Bro ic model. Where the Rive ironment Agency has reco n is the most recent model of ction of the site appears to the model files not ava od Zone 3b has been used he site is at high risk of fluv ier, causing water to pond r during a 5% AEP (1 in 20) e 1% AEP (1 in 100) event, a nd ordinary watercourses. In the site are associated with t of the site, Flood Zone 2 is	b be covered by broadscale, ilable for use in the Level 2 as a proxy for Flood Zone 3a. vial flooding. The railway line in the east of the site, with event. The west of the site is and areas of flooding coincide The highest maximum flood
			oportion of site at risk (Ro	FSW)
		3.3% AEP (1 in 30)	1% AEP (1 in 100)	0.1% AEP (1 in 1,000)
		11%	24%	47%
	Surface Water	<b>Description of surface v</b> site are at high surface wa AEP (1 in 30) and greater the 1% AEP (1 in 100) ra north west of the site. Floc AEP (1 in 1,000) rainfall e backs up against the topo Surface water flood risk in	vater flow paths: The easily ter flood risk, with flooding painfall events. The extension and all event, to cover the expoding is predicted to extend event, particularly in the cegraphic barrier of the railwant these locations coincides and the second event.	tern and central areas of the predicted to occur in the 3.3% t of flooding increases during kisting lakes in the north and significantly during the 0.1% ntre of the site, where runoff
		Proportion of the site at risk in JBA Groundwater Map 1% AEP (1 in 100- year) risk categories		
		Depth below surface 0-0.025m	Depth below surface 0.025-0.5m	Total in highest risk categories
		33%	2%	35%
	Groundwater	JBA Groundwater Mapping shows the site to be at high risk of g flooding, with groundwater levels in the northern portion and south we the site predicted to lie within 0.025m of the ground surface during a 1% In the north of the site, alongside the railway line, groundwater levels ar to lie between 0.025 and 0.5m of the ground surface. The areas of predicted high groundwater levels coincide with deposi sands and gravels, which can allow connectivity of water close to surface.		ion and south west corner of fface during a 1% AEP event. undwater levels are predicted ncide with deposits of fluvial
	Reservoir	The site is not at risk of flo	oding, in the rare event of a	a reservoir breach.
		There are no canals witin the site boundary.		





Site code		WOK4			
Site name		Land at Grazeley			
Flood risk         management         infrastructure         Residual risk		Defence Type	Standard of Protect	ion C	Condition
		There are no formal defences wi the centre of the site forms a top defence to the west of the site fro flood event.	thin site boundary. How ographic barrier, which	vever, the rail provides an	lway line in informal
		Culvert / structure blockage?	Burghfield Brook and the unnamed ordinary watercourse which flow eastwards through the central parcels of the site are culverted below railway line. Blockage of this structure is likely to cause flooding to the west of the site. The eastern boundary watercourse is culverted below Kybes Lane, at the junction with Pingewood Road South. There is potential for the watercourse to back up and cause flooding to the north eastern corner of the site, in the event of a blockage. However, the impact of these blockages on the residual risk to the site should be assessed in detail within a site-specific Flood Risk Assessment.		
		Impounded water body failure?	N/A		
		Defence breach / overtopping?	Breach Zone		
Flood warning         The site is covered by the following Environment Age Warning Areas:           Flood Alert Areas:         River Kennet from Thatcham down and Foudry Brook,           Flood Warning Areas:         River Kennet from Theale do		ncy Flood Al	ert and Flood		
	Flood warning	Flood Alert Areas: River Kenne and Foudry Brook, Flood Warning Areas: River K	ennet from Theale dov	wn to Readir	ng, Properties
Emergency planning	Flood warning Access and egress	Flood Alert Areas: River Kenne and Foudry Brook,	Kennet from Theale down of the stratic from Stratfiel from Goring Lane to the Fuller's Lane in the central at risk of fluvial flooding Surface water flooding a 3.3% AEP (1 in 30) a	wn to Readir d Mortimer to e south wes ttre, and Ping g, during the is also predi and greater r	ng, Properties o Green Park t, Burnthouse gewood Road 5% AEP (1 in icted to affect ainfall events.
	Access and egress Climate change	Flood Alert Areas: River Kenne and Foudry Brook, Flood Warning Areas: River K Closest to the River Kennet, Fou The site is may be accessed fr Lane/Rider's Lane to the west, I South in the north. All roads are 20) and greater flood events. S access routes to the site during Therefore, access from the site i	Kennet from Theale down dry Brook from Stratfiel rom Goring Lane to the Fuller's Lane in the cen at risk of fluvial flooding Surface water flooding a 3.3% AEP (1 in 30) a s predicted to be affected	wn to Readir d Mortimer to e south wes ttre, and Ping g, during the is also predi and greater r	ng, Properties o Green Park t, Burnthouse gewood Road 5% AEP (1 in icted to affect ainfall events.
	Access and egress	Flood Alert Areas: River Kenne and Foudry Brook, Flood Warning Areas: River K Closest to the River Kennet, Fou The site is may be accessed fi Lane/Rider's Lane to the west, I South in the north. All roads are 20) and greater flood events. S access routes to the site during Therefore, access from the site i water flood events. River Basin District / Manag	Xennet from Theale dov dry Brook from Stratfiel rom Goring Lane to the Fuller's Lane in the cen at risk of fluvial flooding Surface water flooding a 3.3% AEP (1 in 30) a s predicted to be affecte ement Central	wn to Readin d Mortimer to e south wes thre, and Ping g, during the is also predia and greater r ed during fluw Higher	ng, Properties o Green Park t, Burnthouse gewood Road 5% AEP (1 in icted to affect ainfall events. <i>v</i> ial and surfce
	Access and egress Climate change allowances for '2080s' (2016	Flood Alert Areas: River Kenne and Foudry Brook, Flood Warning Areas: River K Closest to the River Kennet, Fou The site is may be accessed fi Lane/Rider's Lane to the west, I South in the north. All roads are 20) and greater flood events. S access routes to the site during Therefore, access from the site i water flood events. River Basin District / Manag Catchment	Kennet from Theale dov idry Brook from Stratfiel rom Goring Lane to the Fuller's Lane in the cen at risk of fluvial flooding Surface water flooding a 3.3% AEP (1 in 30) a s predicted to be affectedementCentral2 SFRA)25%	wn to Readin d Mortimer to e south wes thre, and Ping g, during the is also predia and greater r ed during fluw Higher Central	ng, Properties o Green Park t, Burnthouse gewood Road 5% AEP (1 in icted to affect ainfall events. <i>v</i> ial and surfce <b>Upper End</b>



Site code		WOK4		
Site name		Land at Grazeley		
	Bedrock Geology Superficial Geology	The site is underlain by bedrock composed of clay, silt, sand and gravel, with Thames Group covering the majority of the site, and Lambeth Group covering the north. The northern and central areas of the site are overlain by superficial river terrace deposits of sand and gravel. The north of the site contains loamy soils with naturally high groundwater. The		
Soilssouth contains and clayey soils• SuDS of the Decourrent• A greet schemening• All dev• Convey• All dev• Convey• All dev• Convey• The be• The be• The be• The be• The be• The be• Storage• Convey• Convey• Storage• Convey• Convey• SuDS• SuDS• SuDS• SuDS to an of the risk• SuDS to an of the risk• SuDS to an of the risk		south contains slowly permeable, seasonally wet, slightly acid but base-rich loamy and clayey soils.		
		<ul> <li>SuDS design must follow the West Berkshire Council SuDS SPD, meet the Defra National Non-Statutory Technical Standards, and follow current best design practice (CIRIA Manual 2015).</li> <li>A greenfield site such as this should seek to implement an exemplar scheme, using natural, vegetated SuDS to deliver multiple benefits, including water quality, biodiversity, amenity, green infrastructure etc.</li> <li>'Natural', vegetated SuDS (such as green roofs, swales and ponds) will be preferred by West Berkshire Council as LLFA over 'hard engineered' and below-ground SuDS.</li> <li>All development should adopt source control SuDS techniques. Conveyance features should be designed above ground and follow natural flow paths where possible.</li> <li>Storage for runoff from the development in extreme events should be located outside areas of fluvial flood risk.</li> <li>The bedrock geology suggests variable infiltration potential, and mapping indicates that the site is located within Groundwater Source Protection Zone 1, and is at high risk of groundwater flooding. Therefore, infiltration techniques may not be suitable at the site. If infiltration is proposed, it is recommended that further site investigation should be carried out to assess potential for drainage by infiltration, including at least 12 months of groundwater level monitoring on site. Infiltration techniques should only be used where there are suitable levels of surface water runoff treatment, and following the granting of any required environmental permits from the Environment Agency.</li> </ul>		
	Groundwater Source Protection Zone	The centre and east of the site is located within Groundwater Source Protection Zone (GSPZ) 1, with adjacent areas located within GSPZs 2 and 3.		
	Historic Landfill Site	The Moores Farm historic landfill site is located in the north of the site (central land parcel), and is recorded to have contained industrial, commercial and household waste, as well as liquid sludge.		
	Opportunities for flood risk betterment	Opportunities for using source control SuDS to manage runoff rates and volumes, and to provide additional storage for surface water runoff onsite, to contribute towards the reduction and delay of flood peaks reaching the Foudry Brook and the existing surface water flow path leaving the site.		
		Water FrameworkSensitivity toDirective Catchmentcumulative impacts		





Site code		WOK4		
Site name		Land at Grazeley		
	Cumulative impacts of development Sequential Test an	Burghfield Brook d Exception Test requir	Medium	The FRA and surface water drainage strategy should demonstrate wider betterment by demonstrating measures which can be put in place to contribute to a reduction in flood risk downstream.
	Test be applied. It i Flood Zone 1. For If More Vul If Highly Vul If Essential Infrastru test is satisfied. Dev Highly Vulr More Vuln Recommendations for developers Flood risk asso	is anticipated that prop this site, the Exception To nerable and Essential Inf ulnerable development is acture is located in Flood velopment will not be per nerable development with erable and Less Vulneral for requirements of sit essment:	bosed development will est must be satisfied: rastructure is located in F located in FZ2. Zone 3b then it must be mitted in the following sc in FZ3a or FZ3a plus clir ble development within F e-specific Flood Risk A	nate change and FZ3b.
Recommend- ations for Local Plan policy	<ul> <li>drainage si</li> <li>Consultatic early stage</li> <li>A site-spect and 3 and 3 on flood assessment</li> <li>Other sourd assessment</li> <li>Detailed modinary wat and LLFA side the time of are availab</li> <li>Modelling side the culverts</li> <li>Climate chot time of the</li> </ul>	trategy will be required. on with the Local Authority cific flood risk assessmer at risk from sources of flo risk assessments mu <u>nt-for-planning-application</u> rces of flooding should nt, including surface wate odelling will be required atercourses within the site should be consulted to ob the flood risk assessme ble, and if so, whether the should be conducted to as s within the site. ange should be assesse assessment ( <u>https://www</u>	y and the Environment A nt will be required becau oding other than rivers a list be followed ( <u>https</u> <u>ist</u> ). also be considered as r and groundwater. to confirm Flood Zone a e (see 'Available modelle tain the latest hydraulic n nt. They will advise as to y need to be updated. ssess the residual risk as ed using recommended of <u>v.gov.uk/guidance/flood-</u>	gency should be undertaken at an se the site is within Flood Zone 2 nd the sea. Government guidance s://www.gov.uk/guidance/floodrisk- part of a site-specific flood risk nd climate change extents for the d data'). The Environment Agency nodelling information for the site at whether existing detailed models sociated with potential blockage of climate change allowances at the risk-assessments-climate-change-
	allowances published i • The site is impacts of should con Berkshire L • Developme seek to red • Safe acces • Mitigation f finished flo	c) for the type of develop n February 2016 but may be located within a catchr development on flood risk sider the recommendation level 1 SFRA Cumulative site design and making ent must seek opportunitie luce the levels of flood risk so and egress should be opportunities	by the subject to change in nent identified as model with the site-specific FRA as no outlined for catchment a Impacts Assessment Act development safe: es to reduce overall level sk downstream. demonstrated in the 1 in dwater levels must be co e height above ground le	<ul> <li>k. The current allowances were the future.</li> <li>rately sensitive to the cumulative nd surface water drainage strategy s of medium sensitivity in the West Idendum.</li> <li>of flood risk at the site and should</li> <li>100 plus climate change event.</li> <li>onsidered (for example by raising vel).</li> </ul>



Site code WOK4		
Site name	Land at Grazeley	
<ul> <li>The design Infiltration to shallow and capacity and The surfact 1 in 100-yea property.</li> <li>The level of be appropriation allowance allowance suDS desition (SPD) start current bestion</li> <li>Several or of in consultary</li> </ul>	cific surface water drainage strategy will be required. In of SuDS schemes must take into account the seasonally high groundwater table. techniques may be ineffective and may pose a pollution risk. SuDS may need to be d take up larger areas. Above ground conveyance and attenuation can be used but be taken that groundwater does not enter the SuDS feature and reduce the storage and structural integrity of the design. e water drainage design must ensure that flows resulting from rainfall in excess of a ear event are managed via exceedance routes that minimise the risks to people and f detail and method of assessment of surface water runoff rates and volumes should riate to the scale and risk of the development and should include recommended for climate change and urban creep at the time of the assessment (currently +40% for climate change and a 10% increase in impermeable area for urban creep). Ign must follow West Berkshire Council SuDS Supplementary Planning Document ndards, meet the Defra National Non-Statutory Technical Standards, and follow st design practice (CIRIA Manual 2015). dinary watercourses pass through the site. A sufficient width of buffer, to be agreed tion with West Berkshire Council, should be maintained between the riverbank and ructures, to enable riparian owners to access and maintain the channel.	