

ADDENDUM 1

JBA Project Code	2017s5871
Contract	Update to South Oxfordshire Strategic Flood Risk Assessment
Client	South Oxfordshire District Council
Day, Date and Time	13 December 2017
Author	Richard Pardoe
Reviewer	Alistair Clark
Subject	SFRA – Additional site (Berinsfield)



1 Introduction

This addendum to the South Oxfordshire Strategic Flood Risk Assessment (v4.0) has been prepared to provide an assessment of an additional site in Berinsfield (Site code 183), applying the same methodology that was used for the other strategic sites. Full details of the methodology and supporting text can be found in the main body of the report.

Annex A below describes the risk of flooding within the site from multiple sources, and Annex B contains the accompanying mapping.

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ANNEX A: Site Summary Sheet

South Oxfordshire District Council

Level 2 SFRA Detailed Site Summary Tables

Site code	183
Site name	Berinsfield

Site details	OS Grid reference	458216, 196453		
	Area	132.4 ha		
	Current land use	Largely greenfield with some farm buildings		
	Proposed site use	Residential and Employment		
	Flood risk vulnerability	More vulnerable		
Sources of flood risk	Existing watercourses	Drainage ditches exist in the south west and north east corners of the site, which eventually feed into the River Thames 400m south of the site.		
	Flood history	Flooding in January 2003 encroached on the western tip of the site, and a small area close to the road in the south of the site (457639 195747). The road to the south east also flooded in the same event. The River Thames to the south flooded in both 1992 and 2003 with the flood extent in the 1992 flood 200m from the site to the south east. Less than 1% of the site is covered by historic flood extent.		
	Fluvial	Proportion of site at risk in Flood Zones		
		FZ3b	FZ3a	FZ2
		4.1%	4.1%	4.7%
		FZ1		
		95.3%		
	Surface Water	Available modelled data: No detailed modelling exists for this area. The Risk of Flooding from Surface Water mapping provides an additional indication of fluvial flood risk from ordinary watercourses.		
		Flood characteristics: The south west corner of the site lies within the functional flood plain of the River Thames (Flood Zone 3b). This area is associated with the Watersports Centre lake that is located immediately to the south of the site.		
		The north west corner of the site overlaps with a small area of Flood Zone 2 associated with the flood event in 2003.		
		Proportion of site at risk (RoFSW)		
		30-year	100-year	1,000-year
		0.1%	0.6%	3.0%
		Description of surface water flow paths: Surface water flow paths exist associated with the drainage network in the south west and north east of the site.		
		The site shows potential for isolated pooling of surface water associated with the natural topography of the site in the centre, on the farm track, and close to the existing pond in the north of the site during a 1 in 1000-year (0.1% AEP) rainfall event.		
		More significant ponding of surface water may occur in the south of site in the 1 in 100-year and 1 in 30-year event in the location of the known flood extent from 2003.		

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	Groundwater	Areas Susceptible to Groundwater Flooding Map class (risk of groundwater emergence)				
		The majority of the site (63.7%) is an area where groundwater is >0.025m and <0.5m below the surface. This is classified as an area where there is a risk of groundwater flooding to both surface and subsurface assets. There is the possibility of groundwater emerging at the surface locally.				
		To the south west and north east groundwater may be at or close to the surface (16.5% of site). Groundwater may emerge at significant rates and has the capacity to flow overland and/or pond within any topographic low spots.				
		There is also a loop of negligible risk of groundwater flooding towards the edges of the site associated with local geology (19.8% of site).				
		There is no record of groundwater flooding in the area.				
	Reservoir	This site is not at risk of reservoir flooding.				
	Canal	The site is not located within 100m of a canal.				
Flood risk management infrastructure	Defences	Defence Type	Standard of Protection	Condition		
		The site does not receive protection from flood defences.				
	Residual risk	Culvert / structure blockage?	There are various culverts along the ditch that flows at the western boundary of the site. Of particular note is a screened culvert at the southern edge of the site that flow west to east adjacent to Burcot Lane.			
		Impounded water body failure?	The site is not at risk of inundation in the event of reservoir failure.			
		Defence breach / overtopping?	Breach Zone			
			The site is not at risk from breach of defences.			
Emergency planning	Flood warning	The site lies between the River Thames at Clifton Hampden, Dorchester and Little Wittenham and the River Thame from Chiselhampton to Drayton St Leonard Flood Warning Area. The south west and north east areas of the site are within the River Thame and Chalgrave Brook Flood Alert area. Environment Agency flood warnings are now issued to individuals via the Flood Information Service.				
	Access and egress	Access and egress to this site may be achieved via Burcot Lane or Dorchester Road to the south of the site or Fane Drive to the west of the site. Fluvial flooding and surface water ponding may occur along Burcot Lane, which lies within Flood Zone 3b (Functional Flood Plain) and may experience flooding, but access via Fane Drive is expected at all times.				
Climate Change	Climate change allowances for '2080s'	River Basin District		Central	Higher Central	Upper End
		Thames		25%	35%	65%
	Implications for the site	Climate change is unlikely to significantly change the Flood Zone classification of this site.				

South Oxfordshire District Council

Level 2 SFRA Detailed Site Summary Tables



Site code	183
Site name	Berinsfield

Requirement for drainage control and impact mitigation	Bedrock Geology	Gault and Upper Greensand mudstone, sandstone and limestone
	Superficial Geology	Sand and gravel river terrace deposits cover the southern two thirds of the site.
	Soils	Freely draining slightly acid loamy soils.
	SuDS	<p>This large, undeveloped site should be able to implement an exemplar SuDS scheme.</p> <p>This site has freely draining soils, but high groundwater across much of the site means options for deep infiltration SuDS may be limited.</p> <p>There are good opportunities for above ground SuDS, with neighbouring watercourses providing discharge locations for surface water from the site. The topography slopes gently towards the boundaries of the site, allowing for above ground conveyance along natural flow paths.</p> <p>Opportunities should be taken to deliver SuDS with multiple benefits, such as biodiversity, recreation and water resource education, through integration within the secondary school and proposed areas of greenspace.</p> <p>Further information on SuDS is available in the CIRIA SuDS Manual (2015) and on the Oxfordshire County Council website.</p>
	Groundwater Source Protection Zone	The site is not located within a Groundwater Source Protection Zone.
	Historic Landfill Site	The south east site boundary is designated by the Environment Agency as an historic landfill site.
	Opportunities for flood risk betterment	Opportunity to implement exemplar SuDS design following CIRIA and OCC guidance on runoff rates and volumes, contributing to the reduction of flood peaks downstream.
Recommendations for Local Plan policy	Sequential Test and Exception Test requirements	
	<p>The Sequential Test must be passed (see Section 4 of main report). Only once the Sequential Test is passed should the Exception Test be applied. It is expected that all built development will be sequentially located within Flood Zone 1, but the Exception Test would be required:</p> <ul style="list-style-type: none"> • If More Vulnerable and Essential Infrastructure is located in FZ3a. • If Highly Vulnerable development is located in FZ2 or Flood Zone 3a plus climate change. • If Essential Infrastructure is located in Flood Zone 3b <p>Development will not be permitted in the following scenarios:</p> <ul style="list-style-type: none"> • Highly Vulnerable development within FZ3a or Flood Zone 3a plus climate change and FZ3b. <p>More Vulnerable and Less Vulnerable development within FZ3b.</p>	

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	Recommendations for requirements of site-specific Flood Risk Assessment, including guidance for developers
	Flood risk assessment: <ul style="list-style-type: none">• At the planning application stage, a site-specific flood risk assessment and surface water drainage strategy will be required.• Consultation with OCC, the Lead Local Authority, should be undertaken at an early stage.• Hydraulic modelling may be required to determine the level of flood risk from the ordinary watercourse which crosses the site.• Other sources of flooding should also be considered as part of a site-specific flood risk assessment. Guidance for site design and making development safe: <ul style="list-style-type: none">• Development must seek opportunities to reduce overall level of flood risk at the site.• All development should integrate source control SuDS techniques to reduce the risk of flooding due to post-development runoff. SuDS design should follow current best practice (CIRIA Manual 2015) and OCC guidance on runoff rates and volumes, to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc.• Safe access and egress should be demonstrated in the 1 in 100 plus climate change event.• Drainage designs should 'design for exceedance' and accommodate existing surface water flow routes.

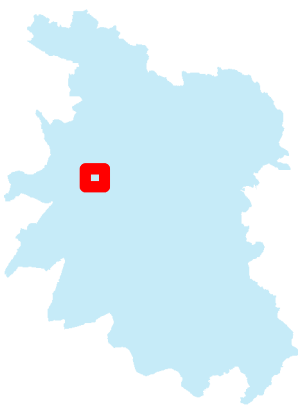
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ANNEX B: Site Mapping

South Oxfordshire SFRA Strategic Sites

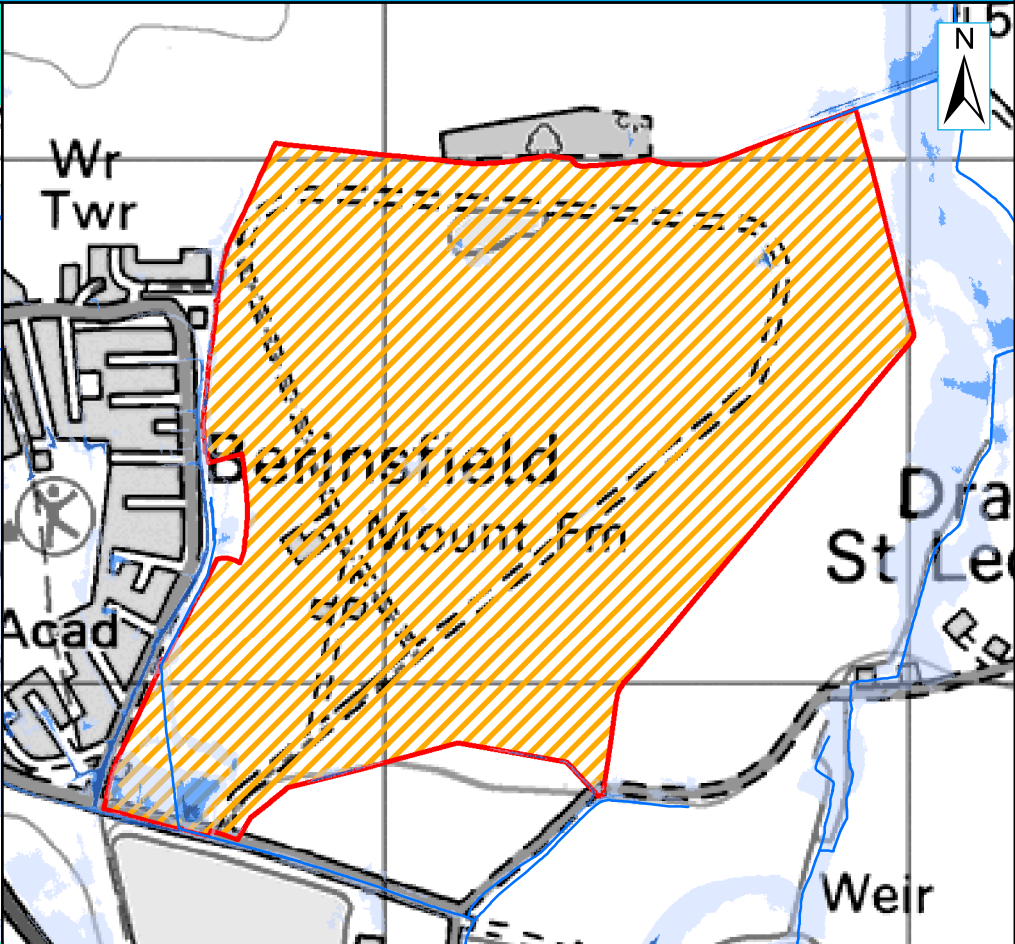
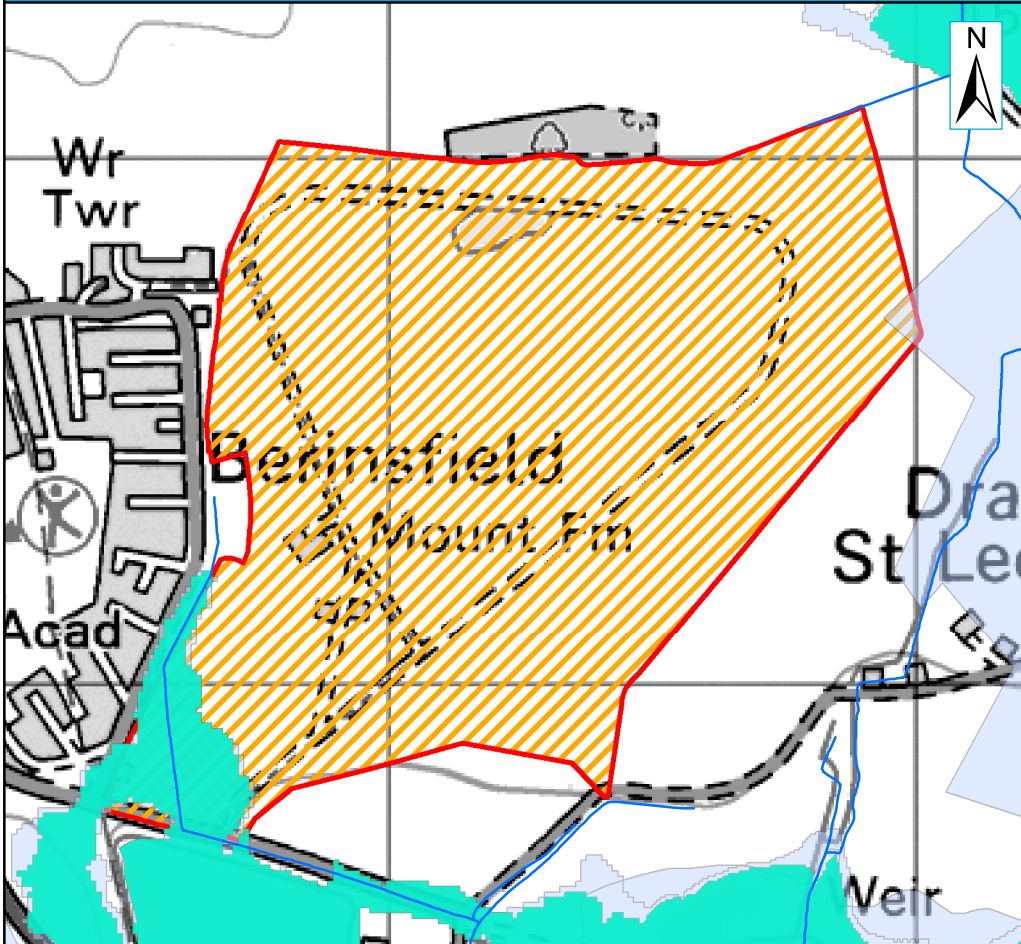


Site name Berinsfield

Site Ref. 183

Flood Zones

Risk of Flooding From Surface Water

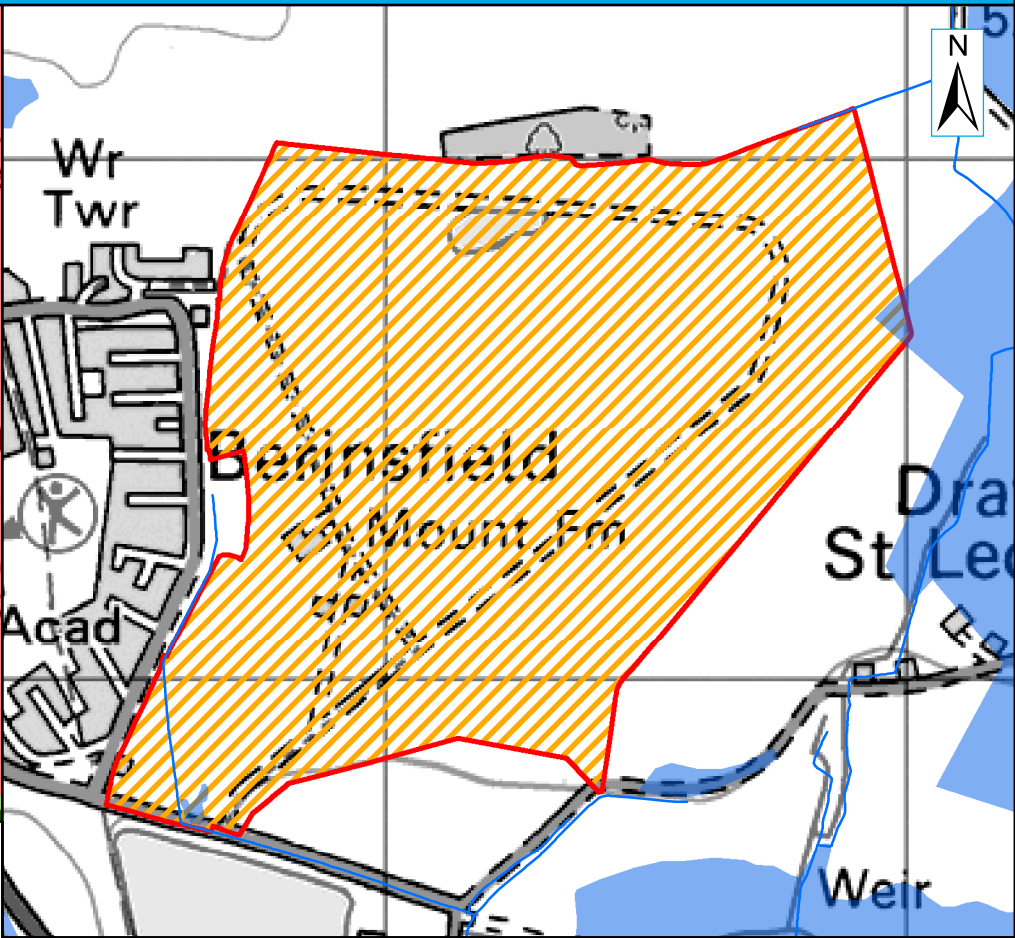
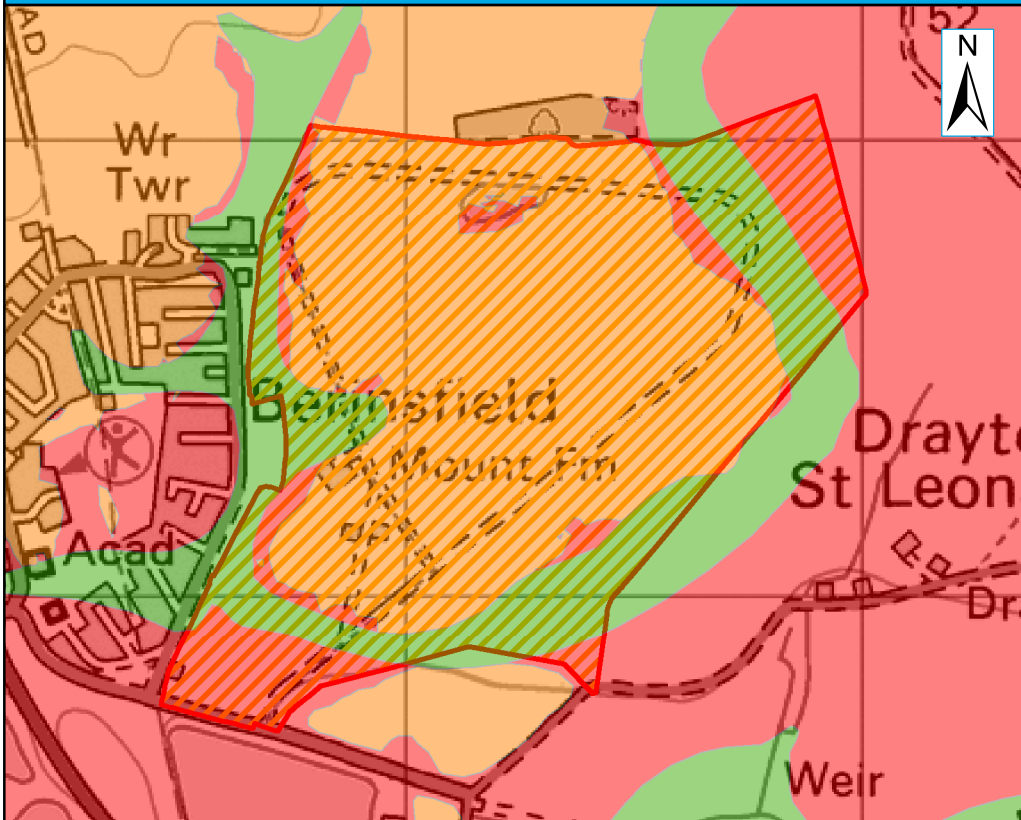


- Flood Zone 2
- Flood Zone 3a
- Flood Zone 3b
- Berinsfield
- Watercourse

- RoFSW 1 in 30 year extent (3.3% AEP)
- RoFSW 1 in 100 year extent (1% AEP)
- RoFSW 1 in 1000 year extent (0.1% AEP)
- Berinsfield

Risk of Flooding From Groundwater

Historic Flood Risk



- Negligible risk
- >5m below ground surface
- >0.5m and <5m below ground surface
- >0.025m and <0.5m below ground surface
- Within 0.025m of ground surface.
- Berinsfield

- Areas Benefiting from Flood Defences
- Recorded Flood Outlines
- Berinsfield
- Watercourse