

River name	Site	Date
Transect 1 is at downstream end <b>10 Spot-checks</b>		
		primary / secondary
Spot-Check	GPS	tick when finished page 1-2
10	9 8 7 6 5 4 3	2 1

<b>A<sub>l</sub> Banktop land-use and vegetation structure (UK_F)</b>									
Left Banktop Criteria (Break in slope, Stable use, non-hydrophilic Veg, Trashline, Rock cover discontinuous; Meander)									
Banktop height (m)									
Land-use: choose one from nat. BL, CW, MM, MN, MH, SH, RO, TH, RD, OW, WL; agr. BP, CP, EU, PO, OR, OL, VI, TL, RP, WM, RF, FM; urb. UR, IN, WT, MR, SR, RO, WR, SU, RA, QU, PG, AW; nv] - see Spot-Check key page 2 of Form page 3									
Land-use within 5m of Left Banktop									
Left Banktop (B, U, S, C)(circle if not homogeneous)									
Width of the Vegetation strip (m; >m)									
Left Bank Face (B, U, S, C)(circle if not homogeneous)									
Extension of Bank Face (m)									

<b>B<sub>l</sub> Physical attributes - Left Bank (UK_E)</b>									
Marginal&Bank features: Slope (Vert., Steep, Gentle)/(NV, NO, CoNfluence, Nat. Berm, Art. Berm)									
Berm/Floodplain width (m)									
Berm/Floodplain height (m)									
Bank Modification (NK, NO, RS, RI(N), RT(N), RE(N), PC(B), EM, TR)									
Material (NV, BE, BO, CO, GS, EA, PE, CL - CC, SP, WP, GA, BR, RR, TD, FA, LR, BI, CW)									

<b>A<sub>r</sub> Banktop land-use and vegetation structure (UK_F)</b>									
Right Banktop Criteria (Break in slope, Stable use, non-hydrophilic Veg, Trashline, Rock cover discontinuous; Meander)									
Banktop height (m)									
Land-use: choose one from nat. BL, CW, MM, MN, MH, SH, RO, TH, RD, OW, WL; agr. BP, CP, EU, PO, OR, OL, VI, TL, RP, WM, RF, FM; urb. UR, IN, WT, MR, SR, RO, WR, SU, RA, QU, PG, AW; nv] - see Spot-Check key page 2 of Form page 3									
Land-use within 5m of Right Banktop									
Right Banktop (B, U, S, C)(circle if not homogeneous)									
Width of the Vegetation strip (m; >m)									
Right Bank Face (B, U, S, C)(circle if not homogeneous)									
Extension of Bank Face (m)									

<b>B<sub>r</sub> Physical attributes - Right Bank (UK_E)</b>									
Marginal&Bank features: Slope (Vert., Steep, Gentle)/(NV, NO, CoNfluence, Nat. Berm, Art. Berm)									
Berm/Floodplain width (m)									
Berm/Floodplain height (m)									
Bank Modification (NK, NO, RS, RI(N), RT(N), RE(N), PC(B), EM, TR)									
Material (NV, BE, BO, CO, GS, EA, PE, CL - CC, SP, WP, GA, BR, RR, TD, FA, LR, BI, CW)									

<b>C Number of selected channel features (UK_C/K)</b>			I chann 	I chann 	II chann 	(Use /A if due to the presence of artificial manufacts)			I chann 	I chann 	II chann 
<b>C<sub>1</sub> - always count</b>			√ (pres.), E (> 33%) or W (Whole site)			<b>C<sub>2</sub> - always count &amp; position in Page 2</b>			√ (pres.), E (> 33%) or W (Whole site)		
Riffle(s)						NF - No Flow (dry)					
Pool(s)						CN - CoNfluence(s)					
Island/Mature island(s)						CB - Concave bar(s)					
Unvegetated point bar(s)						AB - Alternate Bars (pairs)					
Vegetated point bar(s)						TB - Transverse Bar(s)					
Unvegetated side bar(s)						BS - Bedscarp(s)					
Vegetated side bar(s)						NI - Channel Nickpoint/Headcut					
Notes						ED - Eroded alluvial deposits					
						ER- Areas with Exposed Roots in the channel					
						OD - Over-deepened channel					
						LE - Local erosion					

<b>D Extent of channel and bank features (UK_K)</b>			I chann 	I chann 	II chann 	(Use /A if of artificial origin)			I chann 	I chann 	II chann 
<b>Count if planned</b>			√ (pres.), E (> 33%) or W (Whole site)						√ (pres.), E (> 33%) or W (Whole site)		
Free fall						Exposed bedrock					
Chute flow						Vegetated bedrock/boulders					
Broken standing waves						Discrete unvegetated gravel deposit(s)					
Unbroken standing waves						Discrete unvegetated sand deposit(s)					
Rippled flow						Unvegetated silt deposit(s)					
Upwelling						Eroding cliff(s)					
Smooth flow						Stable cliff(s)					
No perceptible flow						Unvegetated mid-channel bar(s)					
Marginal deadwater						Vegetated mid-channel bar(s)					
Exposed boulders											

<b>Notes</b>	
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PHYSICAL ATTRIBUTES OF BANKS AND CHANNEL (UK_E)											Transect 1 is at downstream end	Main channel long ≈ 5 times water width
Water Sinuosity - <u>Left Bend</u> , <u>Straight</u> , <u>Right Bend</u>	Spot-check	10	9	8	7	6	5	4	3	2	1	
<b>Number of wetted channels (threads)</b>												
<b>E Erosion/Deposition features</b>	Ring EC, SC or EB if composed of sandy substrate											
<b>Left Bank (and close to)</b>												
Erosion/Habitat (NV, NO, EC, SC, EB-Eroding Bank, ET-Er. bank Top only, EE-Er. bank toE only, TOe, LE-Local Erosion)												
Deposition (NV, NO, PB(b), VP(b), SB(b), VS(b), Alternate Bars, Concave Bar, BigBlock, Sand Dep., SParse dep./BB, AR)												
<b>Right Bank (and close to)</b>												
Erosion/Habitat (NV, NO, EC, SC, EB-Eroding Bank, ET-Er. bank Top only, EE-Er. bank toE only, TOe, LE-Local Erosion)												
Deposition (NV, NO, PB(b), VP(b), SB(b), VS(b), Alternate Bars, Concave Bar, BigBlock, Sand Dep., SParse dep./BB, AR)												
<b>Main Channel (highest discharge)</b>												
Deposition, mid-channel (NV, NO, RO, EB, VR, BigBlock, MB, VB, MI, MULTiple bars, SP) / BB, AR												
Wet channel position: Left-Center-Right (LCR)												
Water Width (m)												
Maximum water depth (m; >m)												
<b>Secondary Channel (most dissimilar from I channel)</b>												
Deposition, mid-channel (NV, NO, RO, EB, VR, BigBlock, MB, VB, MI, MULTiple bars, SP) / BB, AR												
Wet channel position: Left-Center-Right (LCR)												
Water Width (m)												
Maximum water depth (m; >m)												
<b>Total Water Width (m)</b>												
<b>Total Channel Width (including bars; m)</b>												
<b>F Channel Habitat and Modification</b>	10	9	8	7	6	5	4	3	2	1		
<b>Main Channel (highest discharge)</b> AR (✓)												
Mesohabitat: pool (P) - riffle (R) - other (n)												
Channel Substrate (NV, BE, BO, CO, GP, SA, SI, CL, PE, RR, CC, AR)												
Flow type (FF, CH, BW, UW, CF, RP, UP, SM, NP, DR)												
Channel modification(s) (NK, NO, CV, RS, RI, DA, FO, TR)												
Artificial/Natural feature Code & Position (I channel) - Section C <sub>2</sub> /G; Pic n°; see Spot-Check key, page 4 (circle Section G feat. if eroded); report water depth if OD												
<b>Secondary Channel</b> AR (tick)												
Backwater(b)/Artificial channel(a)												
Channel Substrate (NV, BE, BO, CO, GP, SA, SI, CL, PE, AR)												
Flow type (FF, CH, BW, UW, CF, RP, UP, SM, NP, DR)												
Channel modification(s) (NK, NO, CV, RS, RI, DA, FO, RR, TR)												
Artificial/Natural feature Code & Position (I/II channel) - Section C <sub>2</sub> /G; Pic n°; see Spot-Check key, page 4 (circle Section G feat. if eroded); report water depth if OD - ONLY RECORD IF NOT ALREADY RECORDED IN MAIN CHANNEL												
<b>G ARTIFICIAL FEATURES (UK_D)</b>												
<b>(whole site: Sweep-up&amp;Spot-checks)</b>	Major(m)	Intern.(i)	Minor(s)									
B - Bridges				D - Deflectors/groyne/croy								
W - Weirs/slucices/dams				I - Intakes (including pipes)								
F - Fords				O - Outfalls								
none <input type="checkbox"/>	C - Culverts			other.....								
<b>H Channel vegetation types/Organic debris</b>	to be assessed over a 10m wide transect: use ✓ (present), E (>33% area), W											
none (tick) or Not Visible (NV)												
Liverworts/mosses/lichens												
Emergent broad-leaved herbs												
Emergent reeds/sedges/rushes/grasses												
Floating-leaved (rooted)												
Free-floating												
Amphibious												
Submerged broad-leaved												
Submerged liner-leaved												
Submerged fine-leaved												
Filamentous algae												
Living parts of Terrestrial Plants (TP)												
CPOM												
FPOM												
LOD/Xylal (e.g. fallen trees)												
	10	9	8	7	6	5	4	3	2	1	Sw_up	

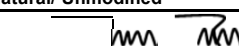


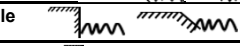
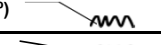

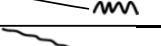

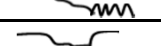
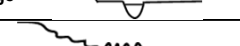
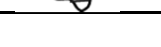


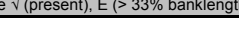
within a 1 m wide transect

within a 10 m wide transect

**I LAND-USE WITHIN 50m OF BANKTOP AND ON BANKFACE** Use √ (present), E (> 33% banklength) or W (whole stretch)

Natural	Left		Right		Natural	Left		Right	
	Top	Face	Face	Top		Top	Face	Face	Top
Broadleaf/mixed woodland/Mediterranean forest - BL					Natural grassland - GR				
Coniferous woodland (semi-natural) - CW					Moorland/heat - MH				
Dehezza/Montado/Sugherete (semi-natural) - MN					Rock, scree or sand dunes - RD				
Mediterranean 'macchia' - MM					Natural open water - OW				
Scrub & shrubs - SH					Wetland (e.g. bog, marsh, fen) - WL				
Tall herb/rank vegetation - TH					Other.....				
Agriculture	Top	Face	Face	Top	Urban	Top	Face	Face	Top
Broadleaf/mixed plantation/coppice - BP					Urban - UR				
Coniferous plantation - CP					Industry - IN				
Eucaliptus plantation - EU					Small houses (Suburban development)/Untilled land - SU				
Populus plantation - PO					Water treatment plan - WT				
Orchard - OR					Main road (e.g. > 10.5 m wide, highway) - MR				
Olive trees - OL					Road (e.g. not affecting river channel and banks) - SR				
Vineyard - VI					White road/large footway - WR				
Tilled land - TL					Railway - RA				
Grassland/pasture - RP					Quarrying - QU				
Winter water meadows - WM					Parkland or gardens - PG				
Rice fields - RF					Artificial open water - AW				
Farming/Breeding - FM					Other.....				
Field/land extensively irrigated					Other.....				

**J BANK PROFILES** Use √ (present), E (> 33% banklength) or W (whole stretch)

Natural/ Unmodified	Left	Right	Artificial/modified	Left	Right
Vertical /Undercut 			Resectioned (reprofiled) 		
Vertical with toe 			Reinforced - whole 		
Steep (35° < b ≤ 70°) 			Reinforced - top only 		
Gentle (≤ 35°) 			Reinforced - toe only 		
Composite 			Artificial two-stage 		
Natural berm 			Poached bank 		
Notes			Embanked 		
			Set-back embankment 		

**K EXTENT OF TREES AND ASSOCIATED FEATURES** Use √ (present), E (> 33% banklength) or W (whole stretch) \*record even if <1%

Trees (tick one box per bank)	Left	Right	Associated Features
None <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Shading of channel
Isolated/scattered <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	*Overhanging boughs
Regularly spaced, single <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	*Exposed bankside roots
Occasional clumps <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Underwater tree roots (TP)
Semi-continuous <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Large woody debris
Continuous <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fallen trees (inside the channel)
			Fallen/leaning trees on the lower bank

**L TREE VEGETATION** on banktop/bankface/channel Use √ (present), E (> 33% banklength) or W (whole stretch) \*record even if <1%

	Banktop	Bankface	Channel	Use P (present), E (> 33% banklength) or W	Banktop	Bankface	Channel
*Alder ( <i>Alnus</i> )				Ash ( <i>Fraxinus</i> )			
*Elm ( <i>Ulmus</i> )				Salt cedar ( <i>Tamarix</i> )			
Willow ( <i>Salix</i> )				Oleander ( <i>Nerium oleander</i> )			
Poplar ( <i>Populus</i> )				Platano ( <i>Platanus</i> )			
Not applied <input type="checkbox"/>				Other.....			
None <input type="checkbox"/>							

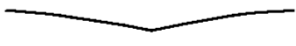

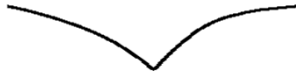




**M NOTABLE NUISANCE PLANT SPECIES** Use √ (present), E (> 33% banklength) or W (whole stretch) \*record even if <1%

	Banktop	Bankface	Channel		Banktop	Bankface	Channel
Bush/schrub	<i>Amorpha fruticosa</i>			Trees	<i>Ailanthus altissima</i>		
	<i>Arundo</i> spp.				<i>Robinia pseudoacacia</i>		
	<i>Buddleja davidii</i>			Aquatic	<i>Azolla caroliniana</i>		
	<i>Impatiens</i> spp.				<i>Elodea</i> spp.		
	<i>Reynoutria japonica</i>				<i>Lagarosiphon major</i>		
	<i>Rubus</i> spp.			Other.....			
Not applied <input type="checkbox"/>				Other.....			
None <input type="checkbox"/>							








**N FIELD SURVEY DETAILS**

Date: ...../...../20.....	Surveyor name:	Institute/Affiliation:
River name:	Accredited Surveyor code:	Data entry in db by:
Site Name/Number:	Is the site part of a river or an artificial channel?	River <input type="checkbox"/> Artificial <input type="checkbox"/>
Region/Province:	Are adverse conditions affecting survey?	No <input type="checkbox"/> Yes <input type="checkbox"/>
Site Reference/Code:	If yes, state	
Map Reference:	Is bed of river visible?	barely or not <input type="checkbox"/> partially <input type="checkbox"/> ±entirely <input type="checkbox"/>
Spot-check 2 (GPS):	Site surveyed from:	left bank <input type="checkbox"/> right bank <input type="checkbox"/> channel <input type="checkbox"/>
Spot-check 10 (GPS):	Was a range-finder used to measure channel/water width, etc.?	No <input type="checkbox"/> Yes <input type="checkbox"/>
	Number of photographs taken:	
	Photo references:	Application time:

**O PREDOMINANT VALLEY FORM** (within the horizon limit) (tick one box only)

Shallow vee <input type="checkbox"/>		Concave/bowl <input type="checkbox"/>	
Deep vee <input type="checkbox"/>		Asymmetrical valley <input type="checkbox"/>	
Gorge <input type="checkbox"/>		U-shaped valley <input type="checkbox"/>	
		No obvious valley sides <input type="checkbox"/>	
Distinct flat valley bottom? <input type="checkbox"/> No <input type="checkbox"/> Yes			
Natural terraces <input type="checkbox"/> No <input type="checkbox"/> Yes			

**P CHANNEL FORM** (tick one box only)

Meandering <input type="checkbox"/>		Sinuuous <input type="checkbox"/>	
Braided <input type="checkbox"/>		Constrained (natural) <input type="checkbox"/>	
Anastomosed <input type="checkbox"/>		Constrained (artificial) <input type="checkbox"/>	
Wandering <input type="checkbox"/>		Other (state) <input type="checkbox"/>	.....

**Q GENERAL FEATURES/DEGRADATION OF SITE** Use √ (present), E (> 33% banklength) or W (whole stretch)

Cut face on bar forms		Is the channel choked with vegetation?	
Lobate bars		Weed-cutting/Bank mowing	
Rocks roughened or with sharp edges & corners		Is channel obviously realigned?	
Coarse material in riffles embedded		Is channel obviously over-deepened?	
Siltation in pools		Is water impounded by weir/dam?	
Tillage of fields perpendicular to river course		Is river affected by hydro-peaking?	No <input type="checkbox"/> Yes <input type="checkbox"/>

**Q FEATURES OF SPECIAL INTEREST** Use √ (present), E (> 33% banklength) or W (whole stretch) \*record even if <1%

None <input type="checkbox"/>	Very large boulders (>1 m)	Fen(s)	Giant's Cauldrons
Braided channels	*Leafy debris	Bog(s)	Floodplain boulder deposits
Side channel(s) e.g. oxbow	Fringing reed-bank(s)	Wet woodland(s)	Other (state)
*Natural waterfall(s) >5m high	Quaking bank(s)	Marsh(es)	
*Natural waterfall(s) <5m high	*Sink hole(s)	Springs in channel and banks	
Natural cascade(s)	Backwater(s)(large areas)	Petrifying springs	
*Debris dam(s)	Water meadow(s)	Natural open water	

Riparian habitat(s) of HABITAT Directive: None  Not applied

Whole site

Notes

CNR-IRSA Water Research Institute, Brugherio (MI), Italy - e-mail: [cnr\\_rhs@irsa.cnr.it](mailto:cnr_rhs@irsa.cnr.it), tel ++39 039 216941, fax ++39 039 2004692  
 CARAVAGGIO was developed with the collaboration of CNR-ISE (Pallanza, VB, I) and APPA Bolzano (BZ, I) and is based on the River Habitat Survey method proposed by the U.K. Environment Agency



\_INHABIT feb11

Method developed and tested within the framework of the STAR and Euro-impacs E.U. projects

