

# Modular River Physical (MoRPh) Field Survey (ver 13)

## Sheet 1 - GENERAL INFORMATION

**RECORD WHAT YOU SEE NOT WHAT YOU KNOW**



PROJECT DETAILS (Optional)	
Project name	
Correlation code	

PROJECT DETAILS (Optional)	
WFD Water Body ID	
Survey type (monitoring, pre-project post-project, post-recovery, scenario, training)	

1.1 SURVEYOR AND SURVEY CONDITIONS	
Surveyor	
Survey date and time	
Module surveyed from?	left / right / both banks
Bed visible?	Yes / No
Adverse conditions?	Yes / No
If yes, describe e.g. elevated flow, turbid water, etc	

1.2 MODULE NAME AND LOCATION	
River name	
Location/Reach name	
SubReach name (used to reference a sub-reach of contiguous modules)	
Module number (1, 2, 3... number from upstream to downstream within SubReach)	
Riverfly site reference (optional)	
Module length (m) (i)	
NGR / GPS - Midpoint	

1.3 CHANNEL DIMENSIONS (m)	
Cross section GPS	
1. MoRPh river width	
2. Left bank height	
3. Right bank height	
4. Bankfull width	
5. Water width	
6. Water depth	

(i) Determining your Module Length	
River width (m) (ii)	Module length (m)
< 5 m	10 m
5 to < 10 m	20 m
10 to < 20 m	30 m
20 to < 30 m	40 m
Large & navigable rivers and canals	50 m

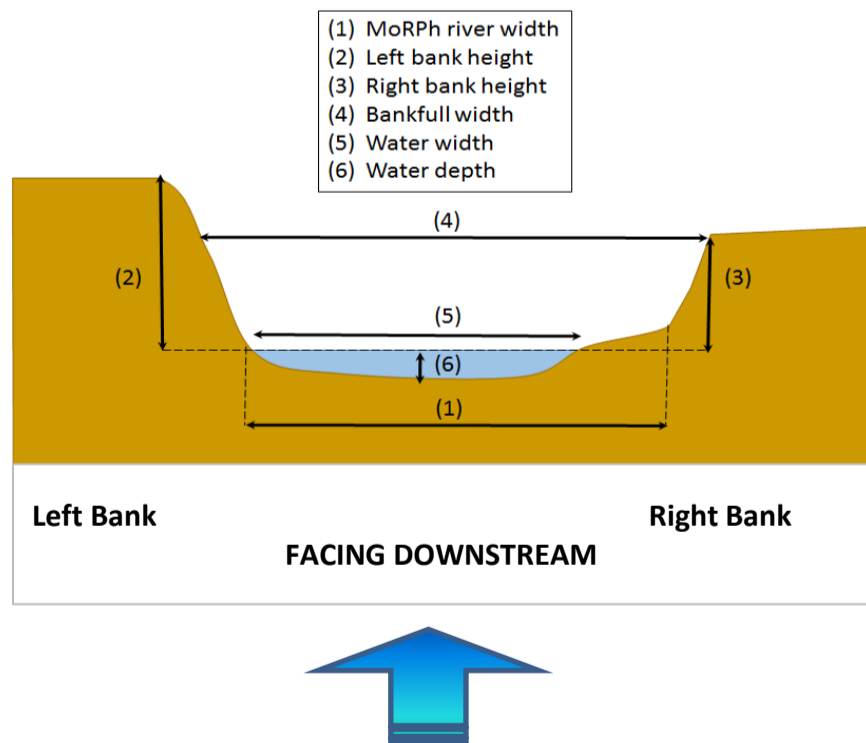
**Multi-MoRPh Channel Dimensions**  
**If surveying multiple adjoining modules: a minimum of ONE (REPRESENTATIVE) SET OF CHANNEL DIMENSIONS** should be measured for each group - up to 10 modules.  
**TIP!:-** Bridges provide a good location for estimating dimensions of larger rivers.

**(ii) Predominant MoRPh river width** is used to determine module length. It is estimated as the **typical water width plus any area of bare sediment or emergent aquatic plants at the water edge.**  
*If river  $\geq 30$  m wide it is usually too large for a full MoRPh Survey. For Large & navigable rivers and canals a reduced MoRPh survey is possible, focusing on the banktops and faces and those bed features that are visible*

**Identifying the LEFT AND RIGHT BANK**  
 The **LEFT** and **RIGHT BANK** of a river are on the left and right sides of the channel **when facing in a downstream direction with the water flowing away from you**

1.4 PHOTOGRAPHS (max 4)	
Fixed point photograph taken with NGR / GPS? (Y/N)	
Photo ref 1 (iv)	
Photo ref 2	
Photo ref 3	
Photo ref 4	

We recommend 3 photos from the midpoint, one across, one looking upstream and one downstream to cover entire module. Photo 4 could be of special features or to support notes/queries.



### NOTES

Use this box to enter details where you are unsure of any measurements / records you have made.



**RECORD WHAT YOU SEE NOT WHAT YOU KNOW (within 10 m of bank edge)**

MEASUREMENT CATEGORY	MEASUREMENT TYPE	CODE	ABUNDANCE
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2.1 BANK TOP - ARTIFICIAL / MANAGED GROUND COVER			LB	RB	LB	RB
Artificial ground cover	Artificial ground cover (Fp, Tr, Ic, Re, Sy, Ld, Ar, Pv, Pr, Pw, Ow)	DOMINANT TYPE			A / T / P / E	A / T / P / E
		SUB-DOMINANT TYPE (see (i))			A / P / E	A / P / E

<b>(i) SUB-DOMINANT TYPE ONLY RECORD</b> if it occupies > 20% of area within 10m of bank edge
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2.2 BANK TOP - NATURAL / LIGHTLY MANAGED GROUND COVER			LB	RB
Terrestrial vegetation	Unvegetated (bare soil / rock)		A / T / P / E	A / T / P / E
	Mosses / lichens		A / T / P / E	A / T / P / E
	Short/creeping herbs/grasses		A / T / P / E	A / T / P / E
	Tall herbs/grasses		A / T / P / E	A / T / P / E
	Scrub or shrubs		A / T / P / E	A / T / P / E
	Saplings or trees		A / T / P / E	A / T / P / E
	Fallen trees (ONLY those with a significant proportion on bank top)		A / T / P / E	A / T / P / E
	Leaning trees		A / T / P / E	A / T / P / E
	J-shaped trees		A / T / P / E	A / T / P / E
	Tree/shrub branches trailing into channel		A / T / P / E	A / T / P / E
	Large wood (wood pieces > 1m long, > 10 cm diameter)		A / T / P / E	A / T / P / E
	Predominant tree TYPE (Absent, Deciduous, Coniferous, Mixed)		A / D / C / M	A / D / C / M
Non-native invasive plant species	Himalayan balsam		A / T / P / E	A / T / P / E
	Japanese knotweed		A / T / P / E	A / T / P / E
	Giant hogweed		A / T / P / E	A / T / P / E
	Floating pennywort		A / T / P / E	A / T / P / E
	Other: NAME SPECIES			A / T / P / E
	Other: NAME SPECIES			A / T / P / E

<b>ABUNDANCE CODES</b> A/T/P/E abundance codes on <u>sheet 2</u> refer to proportion of <u>area</u> within 10 m of bank edge along the module length. Circle one of: A = absent, T = trace (< 5%), P = present (5% - <33%), E = extensive (> 33%)
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<b>PLANT IDENTIFICATION</b> See MoRPh field guide
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2.3 BANK TOP - WATER RELATED FEATURES			LB	RB
Water-related features	Pond	Disconnected from river at time of survey	A / T / P / E	A / T / P / E
		Connected to river by water-filled channel at time of survey	A / T / P / E	A / T / P / E
	Side channel - free flowing separate channel including tributaries and fish passes		A / T / P / E	A / T / P / E
	Wetland (recorded by dominant vegetation type)	Short non-woody vegetation (e.g. mosses, sedges)	A / T / P / E	A / T / P / E
		Tall, non-woody vegetation (e.g. reeds, rushes)	A / T / P / E	A / T / P / E
		Shrubs and trees (e.g. alder / willow carr)	A / T / P / E	A / T / P / E

<b>NOTES (ctd.)</b>
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 Sheet 3 - BANK FACE AND CHANNEL MARGIN MEASUREMENTS



**RECORD WHAT YOU SEE NOT WHAT YOU KNOW**

MEASUREMENT CATEGORY	MEASUREMENT TYPE	CODE	ABUNDANCE	NOTES				
<b>3.1 BANK FACE - PROFILE</b>								
Bank face - Profile	Natural / artificial bank profile	DOMINANT TYPE (V, Vo, Vu, Vt, St, Gt, Cm, Rs, Ts, Em, Sm, Pc)	Bank profile TYPE	LB	RB	LB	RB	(i) SUB-DOMINANT TYPE ONLY RECORD if it occupies > 20% of the bank length
		SUB-DOMINANT TYPE (see (i))	Bank profile TYPE			A / T / P / E	A / T / P / E	
<b>3.2 BANK FACE - MATERIALS</b>								
Bank face - Natural material	Bank face sediment (AR, BE, BO, CO, GP, SA, SI, CL, OR, PE, EA, NV)	Sediment SIZE (TOP 2/3)		LB	RB			WHICH PART OF THE BANK IS REINFORCED? A = absent T = mainly the top B = mainly the bottom W = Whole bank face
		Sediment SIZE (BOTTOM 1/3)				LB	RB	
Bank face - Reinforcement materials	Which part of the bank is reinforced? (SEE CODES IN BOX (ii))			A / T / B / W	A / T / B / W			ABUNDANCE CODES A/T/P/E abundance codes on sheet 3 refer to <b>proportion of bank length</b> occupied by feature, APART FROM 'Terrestrial vegetation on bank face' and 'Non-native invasive plant species' in section 3.4, which refer to <b>proportion of bank face area</b> : A = 0%, T = < 5%, P = 5% - < 33%, E = > 33%
	How extensive is the reinforcement horizontally along the module?			A / T / P / E	A / T / P / E			
	Bank reinforcement	DOMINANT TYPE (CC, CB, BR, SP, WP, BW, RR, GA, WS, RE, BC, WO)	Reinforcement TYPE					
SUB-DOMINANT TYPE (see (i))		Reinforcement TYPE						
<b>3.3 BANK FACE / CHANNEL MARGIN - FEATURES</b>								
Natural physical features	Bare / unvegetated side bar (< 50% vegetation cover)	Sediment SIZE		LB	RB	LB	RB	Maj (Major) = >20% channel width; Int (Intermediate) = 10-20% width; Min (Minor) = <10% width
	Vegetated side bar (>50% vegetation cover)	Sediment SIZE				A / T / P / E	A / T / P / E	
	Berm (if unsure whether berm/bench record as berm)					A / T / P / E	A / T / P / E	
	Bench (if unsure whether berm/bench record as berm)					A / T / P / E	A / T / P / E	
	Stable cliff (> 0.5 m)					A / T / P / E	A / T / P / E	
	Eroding cliff (> 0.5m)					A / T / P / E	A / T / P / E	
	Toe					A / T / P / E	A / T / P / E	
	Nest holes or animal burrows					A / T / P / E	A / T / P / E	
	Marginal backwater					A / T / P / E	A / T / P / E	
	Tributary junction / confluence: RECORD AS COUNT							
Artificial physical features	Pipes / outfalls (if appear potentially functional): RECORD AS COUNT							
	Jetty					Maj / Int / Min	Maj / Int / Min	
	Deflector					Maj / Int / Min	Maj / Int / Min	
	Other: INSERT FEATURE NAME					Maj / Int / Min	Maj / Int / Min	
<b>3.4 BANK FACE / CHANNEL MARGIN - VEGETATION</b>								
Terrestrial vegetation on bank face	Unvegetated (bare earth or rock)	A / T / P / E	A / T / P / E	LB	RB	LB	RB	Fallen trees (ONLY those with a significant proportion on bank face)
	Mosses / lichens	A / T / P / E	A / T / P / E			A / T / P / E	A / T / P / E	
	Short/creeping herbs/grasses	A / T / P / E	A / T / P / E			A / T / P / E	A / T / P / E	
	Tall herbs/grasses	A / T / P / E	A / T / P / E			A / T / P / E	A / T / P / E	
	Scrub or shrubs	A / T / P / E	A / T / P / E			A / T / P / E	A / T / P / E	
	Saplings or trees	A / T / P / E	A / T / P / E			A / T / P / E	A / T / P / E	
	Large wood (pieces > 1m long, > 10 cm diameter)	A / T / P / E	A / T / P / E			A / T / P / E	A / T / P / E	
Aquatic vegetation at bank-water margin	Liverworts, mosses, lichens	A / T / P / E	A / T / P / E			A / T / P / E	A / T / P / E	Amphibious
	Emergent broad-leaved	A / T / P / E	A / T / P / E			A / T / P / E	A / T / P / E	Filamentous algae
	Emergent linear-leaved (including horsetails)	A / T / P / E	A / T / P / E					
Non-native invasive plant species	Himalayan balsam	A / T / P / E	A / T / P / E			Other: RECORD SPECIES NAME	A / T / P / E	A / T / P / E
	Japanese knotweed	A / T / P / E	A / T / P / E					
	Giant hogweed	A / T / P / E	A / T / P / E			Other: RECORD SPECIES NAME	A / T / P / E	A / T / P / E
	Floating pennywort	A / T / P / E	A / T / P / E					





**RECORD WHAT YOU SEE NOT WHAT YOU KNOW**

MEASUREMENT CATEGORY	MEASUREMENT TYPE	ABUNDANCE	MEASUREMENT TYPE	ABUNDANCE	
<b>4.1 CHANNEL BED - MATERIALS</b>					
Channel bed - Natural materials	Bed sediment size	Bedrock (BE)	A / T / P / E	Silt (and finer non-sticky particles, SI)	A / T / P / E
		Boulder (BO)	A / T / P / E	Clay (CL)	A / T / P / E
		Cobble (CO)	A / T / P / E	Organic (leaves, twigs etc. not fully decomposed) (OR)	A / T / P / E
		Gravel-Pebble (GP)	A / T / P / E		Peat (PE)
		Sand (SA)	A / T / P / E	Patchy thin layer (some coarser particles protrude through the silt layer)	A / T / P / E
	Silt overlying coarser sediments	Continuous silt layer (the form of underlying coarser sediments is visible)	A / T / P / E		A / T / P / E

Channel bed - Reinforcement	Bed reinforcement extent		A / T / P / E	<b>(i) SUB-DOMINANT REINFORCEMENT TYPE: ONLY RECORD if it occupies &gt; 20% reinforced area</b>
	Bed reinforcement materials	DOMINANT TYPE (CC, CB, BR, SP, WP, BW, RR, GA, WS, RE, BC, WO)	Reinforcement TYPE	
		SUB-DOMINANT TYPE (see (i))	Reinforcement TYPE	

4.2 WATER SURFACE					
Water surface flow patterns	Flow types	Free fall (FF)	A / T / P / E	Rippled (RP)	A / T / P / E
		Chute (CH)	A / T / P / E	Smooth (SM)	A / T / P / E
		Broken standing waves (BW)	A / T / P / E	No perceptible flow (NP)	A / T / P / E
		Unbroken standing waves (UW)	A / T / P / E		A / T / P / E
		Upwelling (UP)	A / T / P / E	Dry (DR)	A / T / P / E

CATEGORY	MEASUREMENT TYPE	CODE / DESCRIPTION	ABUNDANCE	NOTES
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<b>4.3 CHANNEL BED - FEATURES</b>					
Channel bed - Natural physical features	Exposed bedrock		A / T / P / E	<b>ABUNDANCE CODES</b> A/T/P/E abundance codes on sheet 4 refer to proportion of the area of the river bed within the module length. Circle one of: A = absent, T = trace (< 5%), P = present (5% - <33%), E = extensive (> 33%)	
	Exposed unvegetated boulders / rocks (< 50% vegetation cover)		A / T / P / E		
	Exposed vegetated boulders / rocks (> 50% vegetation cover)		A / T / P / E		
	Bare / unvegetated mid channel bar (< 50% vegetation cover)		Sediment SIZE		A / T / P / E
	Vegetated mid channel bar (> 50% vegetation cover)		Sediment SIZE		A / T / P / E
	Island		A / T / P / E		
	Cascade		A / T / P / E		
	Pool: RECORD AS COUNT				
	Riffle: RECORD AS COUNT				
	Step (steep boulder/bedrock feature <2m high): RECORD AS COUNT				
Waterfall (steep boulder/bedrock feature >2m high): RECORD AS COUNT					

Channel bed - Artificial features	Large trash (car parts, trolleys, traffic cones etc)		A / T / P / E	<b>WEIR TYPES / SIZES</b> <b>Major:</b> permanent, impermeable, impounding structure across entire channel width <b>Intermediate:</b> semi-permeable, loose stone / wood structure across entire channel width <b>Minor:</b> highly permeable, transient feature across entire channel width
	Major weir (see (ii)): RECORD AS COUNT			
	Intermediate weir (see (ii)): RECORD AS COUNT			
	Minor weir (see (ii)): RECORD AS COUNT			
	Bridge piers in river bed: RECORD AS COUNT			
	Bridge shadow (see (iii))		Wide / Int / Narr	
	Culvert: RECORD AS COUNT			
<b>BRIDGE SHADOW</b> <b>Wide</b> = > 25 m channel length, <b>Int</b> (Intermediate) = 10-25 m, <b>Narr</b> (Narrow) = < 10m				

CATEGORY	MEASUREMENT TYPE	ABUNDANCE	MEASUREMENT TYPE	ABUNDANCE
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<b>4.4 CHANNEL BED - VEGETATION</b>					
Aquatic vegetation	Unvegetated (bare river bed)		A / T / P / E	Amphibious	A / T / P / E
	Liverworts, mosses, lichens (terrestrial & aquatic)		A / T / P / E	Submerged broad-leaved	A / T / P / E
	Emergent broad-leaved		A / T / P / E	Submerged linear-leaved	A / T / P / E
	Emergent linear-leaved (incl horsetails)		A / T / P / E	Submerged fine-leaved	A / T / P / E
	Floating leaved (rooted)		A / T / P / E	Filamentous algae	A / T / P / E
	Free floating		A / T / P / E	Channel choked with aquatic plants?	YES / NO
Terrestrial vegetation & tree features	Short/creeping herbs/grasses		A / T / P / E	Large wood (pieces > 1m long, 10cm diameter)	A / T / P / E
	Tall herbs/grasses		A / T / P / E	Discrete accumulations of organic material (e.g. twigs, leaves)	A / T / P / E
	Scrub or shrubs		A / T / P / E		
	Saplings or trees		A / T / P / E	Large wood dam (crosses entire width of channel bed): RECORD AS COUNT	
	Vegetation shading channel		A / T / P / E	Fallen trees (ONLY those with a significant proportion in channel): RECORD AS COUNT	
	Submerged tree roots		A / T / P / E		
Non-native invasive plant species	Trees/shrubs/saplings growing from submerged river bed		A / T / P / E		
	Himalayan balsam		A / T / P / E	Other: RECORD SPECIES NAME	A / T / P / E
	Japanese knotweed		A / T / P / E		
	Giant hogweed		A / T / P / E	Other: RECORD SPECIES NAME	A / T / P / E
Floating pennywort		A / T / P / E			