RIVERINE FISH BARRIER ASSESSMENT TOOL: COARSE RESOLUTION (LEVEL A)

Site ref no: **WB ID and name**	**Date:**	**Time:**	**Surveyor names:**

1. SURVEY SITE DETAILS

River/stream name	
Tributary to:	
GPS co-ordinates	
No. photos taken:	
Photo id no range:	
Ownership (if known)	
Access notes:	

Antecedent conditions (circle one)	1	2	3	4	5
Flow conditions (circle one):	Bankfull	Elevated	Summer low level		
Adverse conditions impeding survey?	Y	N			
If yes, describe:					

2. STRUCTURE OF CONCERN

2.1. General characteristics

Type

Weir	Vertical	
	-Notched	
	Sloping	
	- Crump	
	- Flat-V	
	- Flume	
	Stepped	
Ford		

Bridge footing		
Natural barrier	Waterfall	
	Rapid	
	Debris dam	
Dam		
Culvert		
Sluice		
Abstraction off-take		

Material

PCC		TMB		PVC		SPS	
SST		CPC		MRY		OTH:	
SPA		CAL		CST			

Total width of barrier along crest (m):		
Total width of channel (m):		
Total wetted width at barrier crest (m)		
Is structure drowned presently?	Y	N
Is structure currently dry?	Y	N

2.2. Transversal sections (TS) including barrier parts or passage ways across total width of channel

Number of identified transversal sections (TS) across the total width of the channel	

TS description **Tick box if feature is present in the TS and enter the order the features are encountered by fish moving upstream across the barrier**	***Vertical drop:*** *(weir, outlet drop, waterfall overshot sluice)* *JUMP AND/OR DEPTH BARRIER*	***Slope:*** *(sloping weirs, fords, culverts, sloped fishway, rapids, chutes)* *SWIM AND/OR DEPTH BARRIER*	***Steps:*** *(stepped weir, box-pass fish ways, complex rapids* *SWIM AND JUMP AND/OR DEPTH BARRIER*	***Other:*** *Complex waterfalls, debris dams or combinations* *SWIM AND/OR JUMP / DEPTH BARRIER*	***Estimate of % of total channel flow going through TS at time of survey***	
TS 1						
Order (from downstream)						
TS 2						
Order (from downstream)						
TS 3						
Order (from downstream)						

2.3. Field sketch plan section indicating banks and identifying locations of each TS and photograph locations.

SECTION 7 FINAL PASSABILITY ASSESSMENT FOR SITE

COMPLETE AS AN OVERALL PASSABILITY SCORE TO INCLUDE INFORMATION FROM ALL TRANSVERSAL SECTIONS

Site ref no:

		UPSTREAM MIGRATION							DOWSTREAM MIGRATION						
						Degree of estimation							Degree of estimation		
		No barrier 1.0	Partial barrier Low impact 0.6	Partial barrier High impact 0.3	Complete barrier 0.0	All measurements undertaken	Measurement partially undertaken	All measurements estimated	No barrier 1.0	Partial barrier Low impact 0.6	Partial barrier High impact 0.3	Complete barrier 0.0	All measurements sundertaken	Measurement partially undertaken	All measurements estimated
Adult Salmon (AS)	current conditions														
	high flows														
Adult Trout (AT)	current conditions														
	high flows														
Adult Grayling (AG)	current conditions														
	high flows														
Cyprinids (C)	current conditions														
	high flows														
Adult Lamprey (AL)	current conditions														
	high flows														
Juvenile Eel (JE)	current conditions														
	high flows														
Juvenile Salmonids (JS)	current conditions														
	high flows														
Juvenile Lamprey (JL)	current conditions														
	high flows														
Adult Eel (AE)	current conditions														
	high flows														

Additional notes of relevance to fish passage (i.e. observations or information from other sources, and details of dry channels)

Note: Only complete scores for fish species that are known to be present in the catchment

3. VELOCITIES AND DEPTHS FOR AN INDIVIDUAL TRANSVERSAL SECTION (TS) *(except for abstraction points)*

Site ref no:

TS ID:

		Outlet / Foot (only if applicable)					Mid-Point (only if applicable)					Inlet / crest					*Depth / Veloc. assessment*			
Wetted width (m)																	No barrier	Partial barrier Low Impact	Partial barrier High Impact	Complete barrier
		LB				RB	LB				RB	LB				RB				
Transect point		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5				
DEPTH (M)																				
VELOCITY	0.6 depth																**1.0**	**0.6**	**0.3**	**0.0**
	Streambed																			
Adult Salmon (AS)																	≥ 0.15 m	0.11 - 0.14 m	0.08 - 0.1m	≤ 0.07 m
		US		DS			US		DS			US		DS						
use velocities at 0.6 depth																	≤2 m/s	2.1 - 2.5 m/s	2.6 - 2.9 m/s	≥ 3 m/s
Adult Trout (AT)																	≥ 0.1m	0.075 - 0.09 m	0.06 - 0.074 m	≤ 0.05 m
		US		DS			US		DS			US		DS						
use velocities at 0.6 depth																	≤2 m/s	2.1 - 2.5 m/s	2.6 - 2.9 m/s	≥ 3 m/s
Adult Grayling (AG)																	≥ 0.1m	0.075 - 0.09 m	0.06 - 0.074 m	≤ 0.05 m
		US		DS			US		DS			US		DS						
use velocities at 0.6 depth																	≤15 m/s	16 - 19 m/s	2 - 2.8 m/s	≥ 2.9 m/s
Cyprinids (C)																	≥ 0.1m	0.075 - 0.09 m	0.06 - 0.074 m	≤ 0.05 m
		US		DS			US		DS			US		DS						
use velocities at 0.6 depth																	≤ 1m/s	1.1 - 1.5 m/s	1.6 - 1.9 m/s	≥ 2 m/s
Adult Lamprey (AL)																	≥0.08 m	0.06 - 0.079 m	0.04 - 0.059 m	≤0.03 m
		US		DS			US		DS			US		DS						
use velocities at streambed																	≤ 0.5 m/s	0.6 - 0.99 m/s	1 - 1.4 m/s	≥ 1.5 m/s
Juvenile Eel (JE)																	≥ 0.05 m	0.03 - 0.049 m	0.021 - 0.03 m	≤ 0.02 m
		US		DS			US		DS			US		DS						
use velocities at streambed climbing substrate *																	≤ 0.3m/s	0.31 - 0.49 m/s	0.5 - 0.79 m/s	≥ 0.8 m/s
Juvenile Salmonid (JS)																	≥ 0.08 m	0.06 - 0.079 m	0.031 - 0.059 m	≤ 0.03 m
		US		DS			US		DS			US		DS						
use velocities at 0.6 depth																	≤15 m/s	15 - 19 m/s	2 - 2.8 m/s	≥ 2.9 m/s
Juvenile Lamprey (JL)																	≥ 0.02 m	0.011 - 0.019 m	0.006 - 0.01 m	≤ 0.005 m
												US		DS						
																	n.a.	n.a.	n.a.	n.a.
Adult Eel (AE)																	≥ 0.08 m	0.06 - 0.079 m	0.031 - 0.059 m	≤ 0.03 m
												US		DS						
																	n.a.	n.a.	n.a.	n.a.

*** Is there suitable wetted climbing substrate on face or edges for juvenile eels? If PRESENT enter 1.0. If ABSENT enter 0.0**

Notes:

For Upstream passability assessment:

1.Use both the **depth** and relevant **velocity** data.

2. Choose the **most limiting factor** that applies to the species/guild = either velocity or depth (e.g. for adult salmon (AS) if velocity is < 2.0 but depth is 0.09m then score for this point is 0.3).

3.Scan through the scores and circle the **maximum passability** score for each applicable location (inlet, midpoint, outlet)

For downstream passability assessment:

1.Only compete for **inlet**

2.Use only the **depth data** to determine the passability score

3.Scan through the scores and circle the **maximum passability** score

4. PHYSICAL ATTRIBUTES FOR AN INDIVIDUAL TRANSVERSAL SECTION (TS) | **Site ref no:** | **TS ID:**

4.1. FOR BARRIERS PRESENTING A VERTICAL DROP: WEIRS, CULVERT, FORD OR BRIDGE FOOTING OUTLETS, OVERSHOT SLUICES, WATERFALLS AND DEBRIS DAMS

	Vertical hydraulic head (m)	Eff. pool depth(m)	Effective resting locations? (Y,N)	Lip (Y, N)		Standing w ave (Y,N)	Levels of turbulence (H, M, L)	Debris blocking structure? (Y,N)		Structures damaging to DS migrants present? (Y,N)
				crest	foot					
measure										
								US	DS	DS
AS										
AT										
AG										
C										
AL										
JE										
JS										
JL										
AE										

4.2.FOR BARRRIERS PRESENTING A SLOPE: WEIRS , CULVERTS, FORDS BRIDGE FOOTINGS , RAPIDS ,CHUTES AND DIVERSION CHANNELS

	Total hydraulic head (inlet-outlet, m)	Effective length(m)	% Slope	Eff. pool depth (m)	Effective resting locations? (Y,N)	Lip (Y, N)		Standing w ave (Y,N)	Levels of turbulence (H, M, L)	Debris blocking structure? (Y,N)		Structures damaging to DS migrants present? (Y,N)
						crest	foot					
measure												
										US	DS	DS
AS												
AT												
AG												
C												
AL												
JE												
JS												
JL												
AE												

4.3.FOR BARRIERS PRESENTING STEPS: STEPPED WEIRS, BOX-TRAVESRSE TYPE FISHWAYS OR COMPLEX WATERFALLS

	Total Hydraulic head (m)	Effective length (m)	Eff. pool depth (m)	Step w ater depth(m)	Height of step(m)	Length of the step(m)	Number of steps	Effective resting locations? (Y,N)	Lip (Y,N)		Standing w ave (Y,N)	Levels of turbulence (H, M, L)	Debris blocking structure? (Y,N)		Structures damaging to DS migrants present? (Y,N)
									crest	foot					
measure															
													US	DS	DS
AS															
AT															
AG															
C															
AL															
JE															
JS															
JL															
AE															

Note: only complete tables in sections 4 and 5 for juvenile eels (JE) if NO climbing substrate is present

4.4 GAP DIMENSIONS AND PASSABILITY SCORES: FOR NOTCHED WEIRS, CULVERTS DEBRIS DAMS AND UNDERSHOT SLUICES

	Notched weirs		Culverts					Debris dams	Undershot Sluices
	Notch shape	Notch width (m)	Number of pipes	Gap shape	Gap width (m)	Tide gate present?	Tide gate width	Gap width (m)	Gap width (m)
measure									
AS									
AT									
AG									
C									
AL									
JE									
JS									
JL									
AE									

5. ABSTRACTION POINTS PASSABILITY ASSESSMENT FOR ABSTRACTION POINTS BOTH DOWNSTREAM (DS) AND UPSTREAM (US)

Screening for US migrating fish

US	Position in relation to channel flow	Angle to channel flow	Mesh gap size(m)	Effective screening?	Proportion of flow through abstraction(%)	Approaching Depth (m) and Velocities (m/s) to screen						Attraction flow to abstraction
measure						Depth						
						Vel.						
AS												
AT												
AG												
C												
AL												
JE												
JS												
JL												
AE												

Screening for DS migrating fish

DS	Position in relation to channel flow	Angle to channel flow	Mesh gap size(m)	Effective screening?	Proportion of flow through abstraction(%)	Approaching Depth (m) and Velocities (m/s) to screen						Attraction flow to abstraction
measure						Depth						
						Vel.						
AS												
AT												
AG												
C												
AL												
JE												
JS												
JL												
AE												

Note: only complete tables in sections 4 and 5 for juvenile eels (JE) if NO climbing substrate is present

6. PASSABILITY ASSESSMENT FOR AN INDIVIDUAL TRANSVERSAL SECTION (TS)

Site ref no:

Transversal Section ID:		UPSTREAM MIGRATION							DOWSTREAM MIGRATION						
		No barrier	Partial barrier Low impact	Partial barrier High impact	Complete barrier	Degree of estimation			No barrier	Partial barrier Low impact	Partial barrier High impact	Complete barrier	**Degree of estimation**		
						All measurements undertaken	Measurement partially undertaken	All measurements estimated					All measurements sundertaken	Measurement partially undertaken	All measurements estimated
		1.0	**0.6**	**0.3**	**0.0**				**1.0**	**0.6**	**0.3**	**0.0**			
Adult Salmon (AS)	current conditions														
	high flows														
Adult Trout (AT)	current conditions														
	high flows														
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	high flows														
Adult Eel (AE)	current conditions														
	high flows														

Additional notes:

Note: Only complete scores for fish species that are known to be present in the catchment