Date ___ / ___ / ___ Site code _____ Recorder name _____

Government of Western Australia
Department of Water and Environmental Regulation

SOUTH WEST INDEX OF RIVER CONDITION
FIELD SHEETS FOR SHORT-TERM ECOLOGICAL ASSESSMENT
COVER SHEET

Project code (WIN)		**Site code (TEXT REF)**	
Surface water allocation area		Site code (AWRC)	
River system		Site name	
River name		Short name	

Sampling event details			
Date at start of sampling period		Date at end of sampling period	
Organisation		Project manager(s)	
Field samplers			

This sampling event includes maintenance of WQ loggers deployed for long-term monitoring at this site	**Yes**	**No**

Site location & access details				***Existing site: use co-ordinates already registered with WIN***		**Yes**	**No**
Latitude (°S) *or* Northing (m)				Longitude (°E) *or* Easting (m)			
GPS accuracy (m)				Coordinate system - *include Zone for Northing & Easting*		GDA94	
Access details: *including street address and/or or nearest cross-road*							
Property owner				Phone / email			
Permission required	Yes	No	Details				
Notify before each visit	Yes	No	Details				
Key required	Yes	No	Details				
Send landholder data	Yes	No	Details				

	Site conditions that may affect interpretation of results *(tick)*		
	None		
	Increase in water level over sampling period	*Approx. increase in level (cm)*	
	Decrease in water level over sampling period	*Approx. decrease in level (cm)*	
	Change in flow (see *General site description* field sheet [page 4 of 4])		
	High rainfall during sampling period		
	High rainfall within the week prior to sampling		
	Evidence of recent fire at site		
	Evidence of recent fire in catchment		
	Obvious pollution		
	Traps set with access to air due to low DO (e.g. < 4 mg/L where traps are set)		
	Other (specify):		

	Site-specific equipment *(tick)*
	None
	Boat
	Kayaks
	Other (specify):

General comments

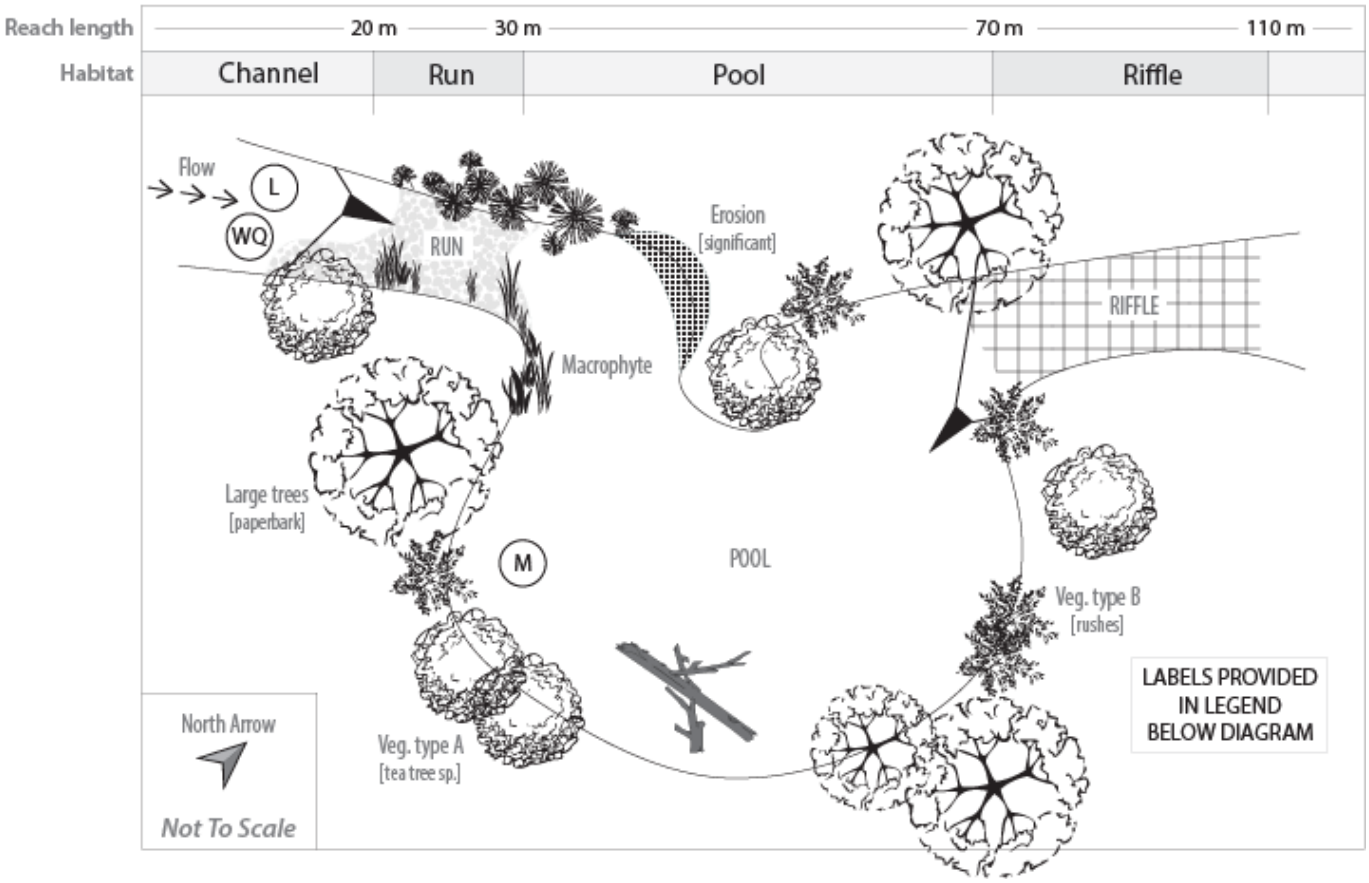
	Field sheets completed within this sampling event *(tick)*
	General site description
	Connectivity
	Aquatic habitat
	Vegetation
	Physical form & potential pollution
	Fish and crayfish
	Macroinvertebrates
	Water quality – in-situ readings & grab samples
	Water quality – logger deployment & retrieval [1]
	Water quality – logger maintenance [2]

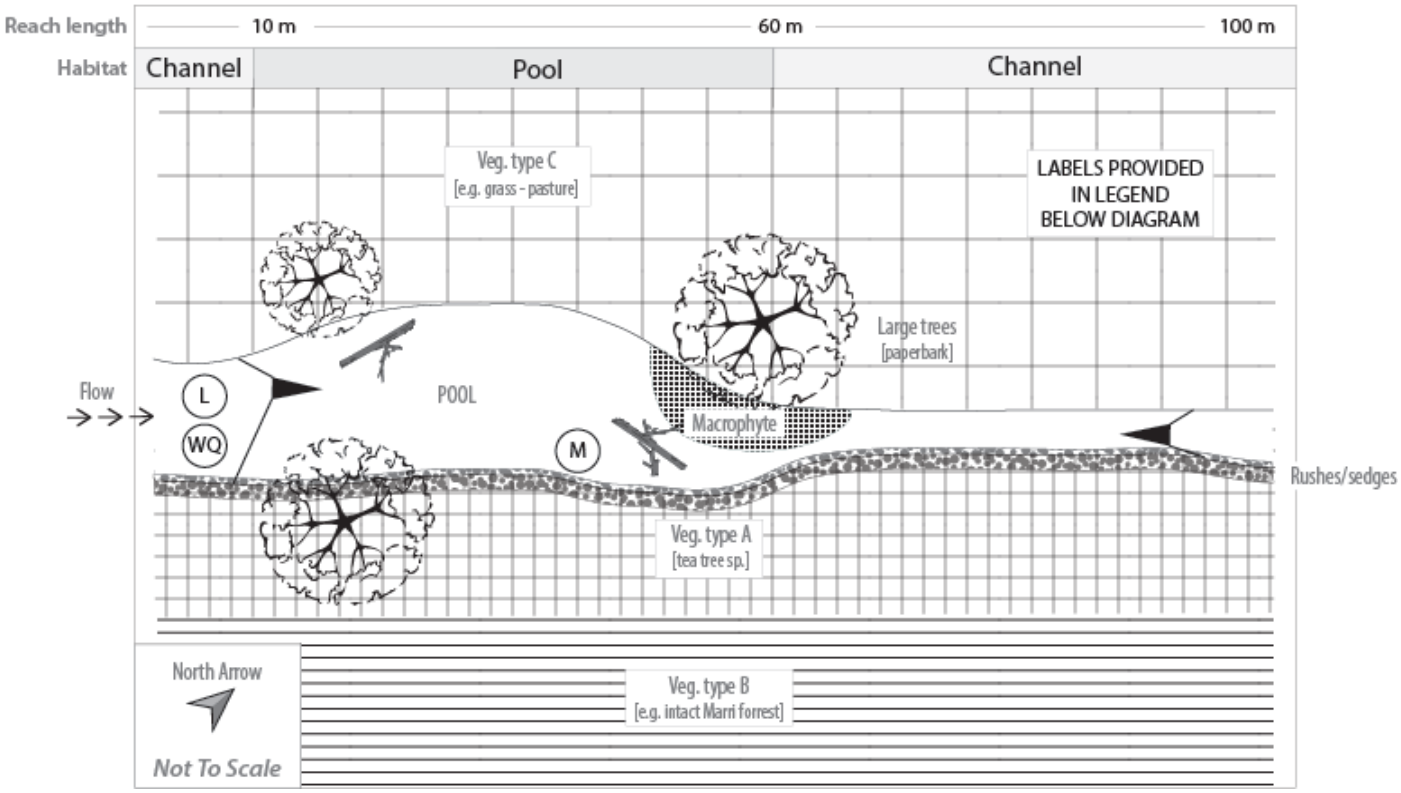
	Site photo checklist *(tick)*
	Upstream and downstream photos (top, middle, bottom)
	Representative site photos
	Representative site video
	Macroinvertebrate sampling area (if sampled)
	Connectivity and artificial structures
	Water quality logger site
	Water quality logger & probes at retrieval

[1] logger deployed & retrieved within the short-term ecological assessment period

[2] logger already deployed as part of long-term monitoring

EXAMPLE LONGITUDINAL DIAGRAM (AERIAL VIEW) – *two different drawing styles shown*





Date ___ / ___ / ___ Site code _____ Recorder name _____

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SOUTH WEST INDEX OF RIVER CONDITION - FIELD SHEETS
GENERAL SITE DESCRIPTION

LONGITUDINAL DIAGRAM (AERIAL VIEW)

Artists name _____

Essential features		Legend
Flow direction		→ → →
Water quality loggers		L
Macroinvertebrate sample		M
Water quality sample		WQ
Fyke nets	Dual wing	
	Single wing	
North arrow		↑ N

Possible features	DIY legend	Possible features	DIY legend
Macrophyte habitat			
Woody debris			
Significant erosion			
Natural or artificial barriers			
Riffles			
Pools			
Sandbars/sediment deposits			
Vegetation type A:			
Vegetation type B:			
Vegetation type C:			

If the species of vegetation is known, write this on the diagram or in the related box

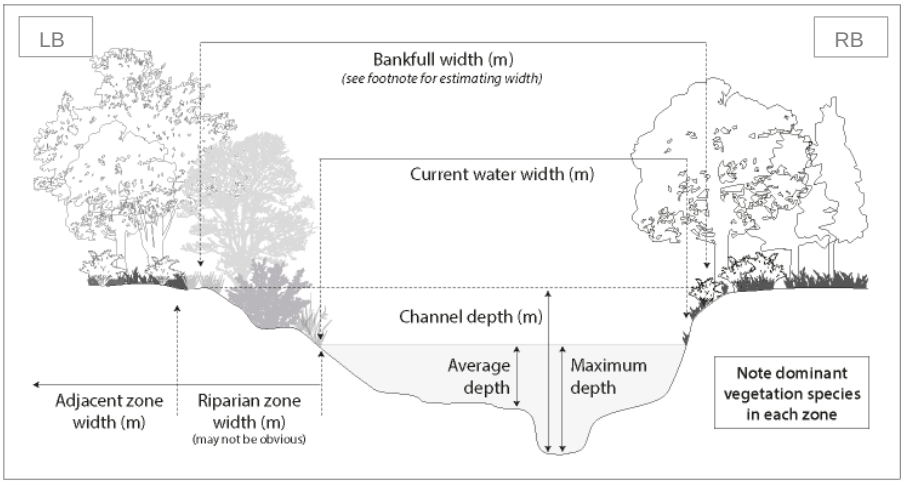
Date ___ / ___ / ___ Site code _____ Recorder name _____

SOUTH WEST INDEX OF RIVER CONDITION - FIELD SHEETS
GENERAL SITE DESCRIPTION

CROSS SECTION DIAGRAM

Artists name _____

Two diagrams may be required where high variability exists across a site (s*uggested information to include is shown in the diagram below*).



Bankfull width: Width of the channel at its maximum capacity; above which flooding of the surrounding area would occur. Measured perpendicular to the course of the river, with extent estimated based on vegetation type, high water marks on trees/rocks (including material carried by previous high-water events) and gradient of the bank.

Channel depth: The height of the banks from the base of the sediment (standing in the middle of the stream) to the top of the tallest bank.

Riparian zone: an area dominated by typically riparian-dependent vegetation species (refer to field guide for riparian species common in the south-west of WA), the width encompasses the extent of the canopy cover of riparian vegetation. Note: a distinct riparian is not always expected or obvious (e.g. rivers flowing through channels in bedrock or within intact forested catchments it may be narrow).

Adjacent zone: The area extending beyond the riparian zone – indicate the type and width of vegetation or land use present (as a guide, include up to 100 m width of adjacent vegetation or land use on each bank).

LB / RB: denotes the left bank (LB) and right bank (RB) of the river from a downstream-facing orientation

Date ___ / ___ / ___ Site code _____ Recorder name _____

SOUTH WEST INDEX OF RIVER CONDITION - FIELD SHEETS
GENERAL SITE DESCRIPTION

STREAM WIDTH MEASUREMENTS

	Top (upstream end)	**Middle**	**Bottom** (downstream end)
Bankfull width (m)			
Current water width (m)			

WATER DEPTH

Depth (m)	**Average water depth** (*tick one for each habitat type*)			
	Channel	**Pool**	**Riffle**	**Run**
Not present				
0 - 0.049				
0.05 - 0.24				
0.25 - 0.49				
0.5 - 0.99				
1.0 - 1.49				
1.5 - 2.00				
> 2.00				

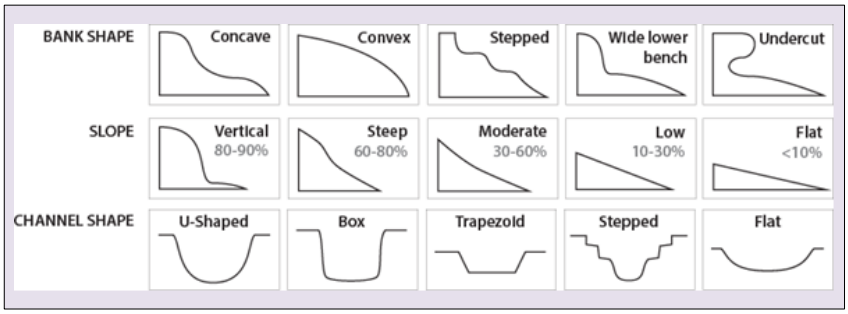
Depth (m)	**Maximum water depth** (*tick one for each habitat type*)			
	Channel	**Pool**	**Riffle**	**Run**
Not present				
0 - 0.049				
0.05 - 0.24				
0.25 - 0.49				
0.5 - 0.99				
1.0 - 1.49				
1.5 - 2.00				
> 2.00				

Water depth (*circle one*)		
Uniform	Moderately varied	Varied

CHANNEL DEPTH

Depth (m)	**River bed to top of bank** (*tick one for each bank*)	
	Left bank	**Right bank**
0 - 0.049		
0.05 - 0.24		
0.25 - 0.49		
0.5 - 0.99		
1.0 - 1.49		
1.5 - 2.00		
> 2.00		

BANK AND CHANNEL SHAPE *(circle all applicable for each category)*



CHANNELISATION - ARTIFICIAL

Signs of channelisation (*circle*)	**No**	**Yes** (*complete table below*)

If yes, is channelisation due to (*circle & describe below*)**:**	**Direct causes**	**Indirect causes**

Direct causes: deepening and straightening by humans to increase water flow (e.g. to reduce flooding).
Indirect causes: deepened systems with more vertical banks due to bank erosion and bed scouring; a result of increased flows from changes such as catchment clearing or hydrological modifications.

SOUTH WEST INDEX OF RIVER CONDITION - FIELD SHEETS
GENERAL SITE DESCRIPTION

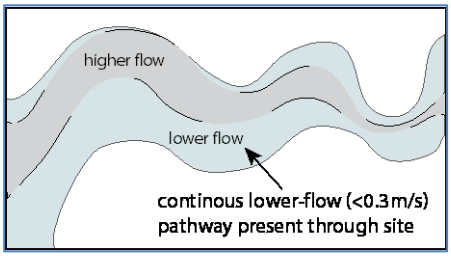
FLOW CONDITIONS

Flow meter/method used	

Flow conditions (flow in m/s)		**Record**						**Date**	**Comment**
Assessment site *(circle)*									
Flow category *(see description in table below)*		A	B	C	D	E			
Upper flow range		N/A	<0.1	0.1-0.3	0.3-0.6	0.6-1.5	>1.5		
Lower flow range		N/A	<0.1	0.1-0.3	0.3-0.6	0.6-1.5	>1.5		
For sites with flows > 0.3 m/s	Presence of rest areas [1]	No			Yes				
	Presence of flow pathway below 0.3 m/s *(see diagram below)*	No		<0.1		0.1 - 0.3			
Macroinvertebrate sampling location									
Minimum flow									
Maximum flow									
Water quality logger location									
Flow at deployment/maintenance									
Flow at retrieval *(for short-term assessments)*									

[1] Rest areas are areas of low-flow (<0.1m/s) where aquatic fauna can reside or recover when negotiating higher flows. These habitats are often seen in wider and/or deeper sections (e.g. pools), edges of streams (outside of main flow pathway) or around in-stream structures (backwaters).

Flow category	Description
A	Dry section(s) present (disconnected)
B	Flow not observed or detected with flow meter
C	Flow observed but below 0.1m/s (lower detection limit of meter)
D	Uniform flow (e.g. common in drains or under flood conditions)
E	Variable flow (flows recorded across multiple flow-ranges)



FLOW CONDITIONS – ADDITIONAL OBSERVATIONS OR ANECDOTAL EVIDENCE

e.g. abstraction pump or pipes observed, landholder mentioned changes in flow over time

Source (name/reference)	**Date**	**Comment**

WEATHER CONDITIONS

Rain							**Cloud cover (%)**	
Sample day 1		**Sample day 2**		**In past week**			**Sample day 1**	**Sample day 2**
Yes	No	Yes	No	Yes	No	Unknown		

Date ___ / ___ / ___ Site code _____ Recorder name _____

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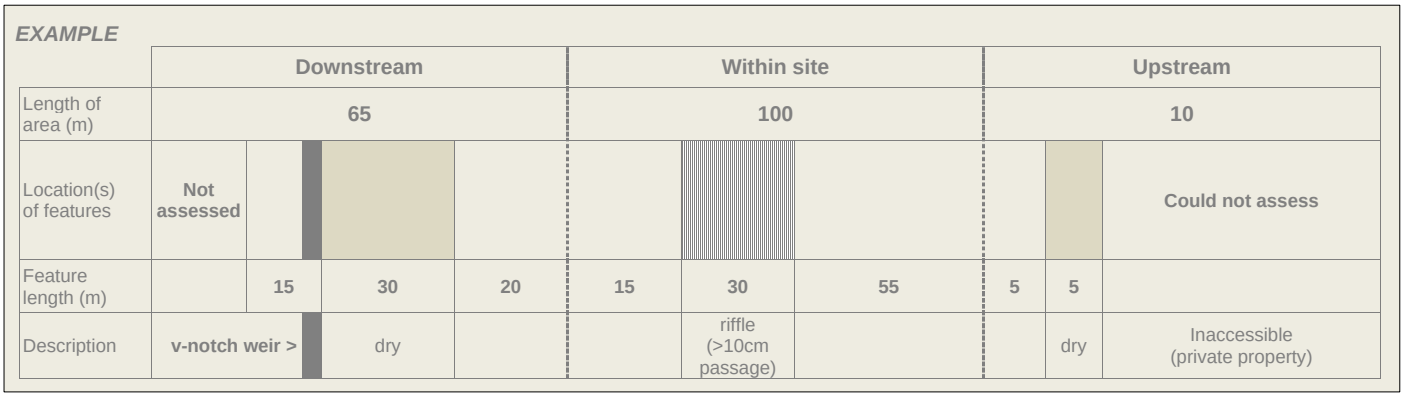
SOUTH WEST INDEX OF RIVER CONDITION - FIELD SHEETS
CONNECTIVITY

CONNECTIVITY ASSESSMENT DIAGRAM

Include any features (artificial and/or natural structures) that may affect connectivity e.g. v-notch weir, culvert, dry sections, riffle.
See example diagram below. Examples of feature are provided in the SWIRC field guide.

	Downstream of site	Within site	Upstream of site
Approx. length of area assessed (m)			
Location(s) of features			
Feature length (m)			
Description of feature(s)			

EXAMPLE



ARTIFICIAL STRUCTURES

Complete this table for any artificial features (e.g. weirs, culverts) within the total area assessed above.
NOTE: This information is required for the in-stream structure geodatabase only, not for RiverBank.

GPS Device ID		**Coordinate system** *include Zone for Northing & Easting*	

Structure type #	**Latitude (-°S) or Northing (m)**	**Longitude (°E) or Easting (m)**	**GPS Accuracy (m)**	**Way-point [1]**	**Increase in natural bed height (cm)** *[refer to diagram A in field guide]*						**Comments** (e.g. effect of structure on flow/turbulence, presence of bypass, part of gauging station)	**Photo & diagram [2] (*tick*)**
					<2	2-10	10-30	30-100	100-500	>500		
					<2	2-10	10-30	30-100	100-500	>500		
					<2	2-10	10-30	30-100	100-500	>500		
					<2	2-10	10-30	30-100	100-500	>500		
					<2	2-10	10-30	30-100	100-500	>500		

 # Structure types: weir or flow control structure (describe type of structure and whether it forms part of a gauging station), ford/causeway, culvert (box or pipe), dam, bridge, other (describe). Refer to the SWIRC field guide for examples of the different structure types.

[1] Way-point code as stored in GPS

[2] Photo taken & position indicated on Connectivity assessment diagram above

Date ___ / ___ / ___ Site code _____ Recorder name _____

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SOUTH WEST INDEX OF RIVER CONDITION - FIELD SHEETS
CONNECTIVITY

CONDITIONS AFFECTING FISH PASSAGE *(at time of sampling)*

DOWNSTREAM OF SITE (based on area assessed in Connectivity diagram)

	Circle category						**Comment**
Shallowest water depth along thalweg [1] (cm) *[refer to diagram B & C in field guide]*	Dry	Fall [2]	<2[3]	2-5[3]	5-10[3]	>10[3]	
Type of feature(s) at shallowest point along thalweg (natural or artificial) *Examples provided in field guide*	Sandy bed		Rock or Riffle		Weir (describe)		
	Culvert		Ford/ causeway		Other (describe)		

If the assessment area contained **a DRY SECTION** or **FALL, complete the table below**

Maximum vertical jump along thalweg *[refer to diagram E in field guide]*					**photo A**	**Comment**
Maximum vertical jump at obstacle (cm)	N/A	<2	2-10	10-30	>30	
Horizontal jump at obstacle (cm)	N/A	<2	2-10	10-30	>30	
Turbulence[4] below obstacle	Low		Moderate		High	

Position recorded on Connectivity diagram ☐ Photo taken [5] ☐

Maximum horizontal jump along thalweg - if greater than horizontal jump in A above *[refer to diagram E in field guide]*					**photo B**	**Comment**
Maximum horizontal jump at obstacle (cm)	N/A	<2	2-10	10-30	>30	
Vertical jump at obstacle (cm)	N/A	<2	2-10	10-30	>30	
Turbulence[4] below obstacle	Low		Moderate		High	

Position recorded on Connectivity diagram ☐ Photo taken [5] ☐

If an alternative route exists around the obstacle(s) described above, comment on any constraints to passage (e.g. depth/jump) *[refer to diagram C & F in field guide]*	**photo C**	**Comment**

Position recorded on Connectivity diagram ☐ Photo taken [5] ☐

[1] *thalweg: The deepest path along the assessment area (the line connecting the lowest points along a series of cross sections)*
[2] *fall: Where water flows over vertical drop resulting in an interruption of the water column (see Diagram D in field guide)*
[3] *cascade: if cascade is present (see Diagram D in field guide) describe length, slope, and velocity of feature and take a photo*
[4] *turbulence: **Low**: unbroken or mostly unbroken water surface; **Moderate**: areas of white-water and unbroken water; **High**: extensive white-water across entire cross-section of channel (refer to photo's in field guide)*
[5] *photos: include photo of the **label** (labels A to C above) when photographing the feature*

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SOUTH WEST INDEX OF RIVER CONDITION - FIELD SHEETS
CONNECTIVITY

CONDITIONS AFFECTING FISH PASSAGE *(at time of sampling)*

WITHIN SITE (based on area assessed in Connectivity diagram)

	Circle category						**Comment**
Shallowest water depth along thalweg [1] (cm) *[refer to diagram B & C in field guide]*	Dry	Fall [2]	<2[3]	2-5[3]	5-10[3]	>10[3]	
Type of feature(s) at shallowest point along thalweg (natural or artificial) *Examples provided in field guide*	Sandy bed		Rock or Riffle		Weir (describe)		
	Culvert		Ford/ causeway		Other (describe)		

If the assessment area contained **a DRY SECTION** or **FALL, complete the table below**

Maximum <u>vertical</u> jump along thalweg *[refer to diagram E in field guide]*						**photo D**	**Comment**
Maximum vertical jump at obstacle (cm)	N/A	<2	2-10	10-30	>30		
Horizontal jump at obstacle (cm)	N/A	<2	2-10	10-30	>30		
Turbulence[4] below obstacle	Low		Moderate		High		

Position recorded on Connectivity diagram ☐ Photo taken [5] ☐

Maximum <u>horizontal</u> jump along thalweg - if greater than horizontal jump in A above *[refer to diagram E in field guide]*						**photo E**	**Comment**
Maximum horizontal jump at obstacle (cm)	N/A	<2	2-10	10-30	>30		
Vertical jump at obstacle (cm)	N/A	<2	2-10	10-30	>30		
Turbulence[4] below obstacle	Low		Moderate		High		

Position recorded on Connectivity diagram ☐ Photo taken [5] ☐

If an alternative route exists around the obstacle(s) described above, comment on any constraints to passage (e.g. depth/jump) *[refer to diagram C & F in field guide]*	**photo F**	**Comment**

Position recorded on Connectivity diagram ☐ Photo taken [5] ☐

[1] *thalweg:* *The deepest path along the assessment area (the line connecting the lowest points along a series of cross sections)*

[2] *fall:* *Where water flows over vertical drop (waterfall or cascade of water) resulting in an interruption of the water column (see Diagram D in field guide)*

[3] *cascade:* *if cascade is present (see Diagram D in field guide) describe length, slope, and velocity of feature and take photo*

[4] *turbulence:* ***Low**: unbroken or mostly unbroken water surface;*
***Moderate**: areas of white-water and unbroken water;*
***High**: extensive white-water across entire cross-section of channel (refer to photo's in field guide)*

[5] *photos:* *include photo of the **label** (labels D to F above) when photographing the feature*

Date ___ / ___ / ___ Site code _____ Recorder name _____

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SOUTH WEST INDEX OF RIVER CONDITION - FIELD SHEETS
CONNECTIVITY

CONDITIONS AFFECTING FISH PASSAGE *(at time of sampling)*

UPSTREAM OF SITE (based on area assessed in Connectivity diagram)

	Circle category						**Comment**
Shallowest water depth along thalweg [1] (cm) *[refer to diagram B & C in field guide]*	Dry	Fall [2]	<2[3]	2-5[3]	5-10[3]	>10[3]	
Type of feature(s) at shallowest point along thalweg (natural or artificial) *Examples provided in field guide*	Sandy bed		Rock or Riffle		Weir (describe)		
	Culvert		Ford/ causeway		Other (describe)		

If the assessment area contained **a DRY SECTION** or **FALL, complete the table below**

Maximum <u>vertical</u> jump along thalweg *[refer to diagram E in field guide]*					**photo G**	**Comment**
Maximum vertical jump at obstacle (cm)	N/A	<2	2-10	10-30	>30	
Horizontal jump at obstacle (cm)	N/A	<2	2-10	10-30	>30	
Turbulence[4] below obstacle	Low		Moderate		High	

Position recorded on Connectivity diagram ☐ Photo taken [5] ☐

Maximum <u>horizontal</u> jump along thalweg - if greater than horizontal jump in A above *[refer to diagram E in field guide]*					**photo H**	**Comment**
Maximum horizontal jump at obstacle (cm)	N/A	<2	2-10	10-30	>30	
Vertical jump at obstacle (cm)	N/A	<2	2-10	10-30	>30	
Turbulence[4] below obstacle	Low		Moderate		High	

Position recorded on Connectivity diagram ☐ Photo taken [5] ☐

If an alternative route exists around the obstacle(s) described above, comment on any constraints to passage (e.g. depth/jump) *[refer to diagram C & F in field guide]*	**Photo I**	**Comment**

Position recorded on Connectivity diagram ☐ Photo taken [5] ☐

[1 - 4] *see notes below table on previous page (page 3 of 4 of Connectivity field sheet)*

[5] *photos – include photo of the **label** (labels G to I above) when photographing the feature*

FISH PASSAGE – SUMMARY ASSESSMENT

Fish passage summary assessment *(circle)*			
Connected	Potentially affected by flow *	Potentially affected by depth *	Impassable
Comments			

**for some/all fish species*

CONNECTIVITY - ANECDOTAL EVIDENCE

e.g. hydrographer said site is always connected; landholder mentioned changes in connectivity

Source (name/reference)	**Date**	**Comment** (e.g. location, time and connectivity)

Date ___ / ___ / ___ Site code _____ Recorder name _____

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SOUTH WEST INDEX OF RIVER CONDITION - FIELD SHEETS
AQUATIC HABITAT

STREAM HABITAT DIVERSITY

Habitat area (% cover)	
Channel	
Pool	
Riffle	
Run	
Total	**100 %**

Aquatic plants and macroalgae (excluding filamentous) (% cover)		
Area of site covered		**Species** (take photos if unknown)
Proportion emergent & inundated rushes/sedges		
Proportion submerged		
Proportion floating		
Total	**100**	

Woody debris *(circle one in each column)*			
Diversity		**Abundance**	
Expected (i.e. pre-European)	**Observed**	**Expected (i.e. pre-European)**	**Observed**
Unknown	None	Unknown	None
Wood of similar size	Wood of similar size	Sparse (few pieces)	Sparse (few pieces)
2-3 different sizes	2-3 different sizes	Moderate	Moderate
Variety of sizes	Variety of sizes	Dense (throughout most of site)	Dense (throughout most of site)

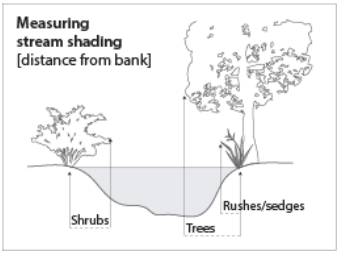
Types of biological substrate and sizes of wood present *(circle all relevant types and all applicable sizes of wood present)*								
Epiphytes	Algae	Detritus	Leaves	**Wood diameter (cm):**	< 5	5-9	10-49	≥ 50

Biological substrate cover	**Density** *(circle)* *[1= sparse, 5 = dense]*
0 - 9%	0 1 2 3 4 5
10 - 29%	1 2 3 4 5
30 - 59%	1 2 3 4 5
60 - 100%	1 2 3 4 5

Physical substrate *(circle all relevant categories)*	
Bedrock	Gravel (4 -16mm) [raw sugar - marble]
Boulders (> 256 mm) [soccer ball]	Sand (1 – 4 mm)
Cobble (64 - 256 mm) [cricket - soccer ball]	Silt (<1 mm)
Pebble (16 - 64 mm) [marble - cricket ball]	Clay (0.002mm)

% Bank length *(circle one in each category)*											
Overhanging roots draped in water				**Overhanging banks**				**Bank vegetation draped in water** *Relates to habitat (not shading)*			
None	1 - 9	10 - 49	50 - 100	None	1 - 9	10 - 49	50 - 100	None	1 - 9	10 - 49	50 - 100

Stream shading	**Percentage of bank length (%)**		**Average distance from bank (m)**	
Avg. stream width _____ m	**LB**	**RB**	**LB**	**RB**
Tree overhang				
Shrub overhang				
Grass/sedges/rushes overhang				



WATER AND SEDIMENT *(circle the appropriate description for each category)*

Sediment deposition	None or minor	Not obvious	Obvious

Type of sediment	Sand	Silt	Other:

Water odours	**Water Oils**	**Turbidity**	**Tannin staining ***		**Algae in water column**	**Algae on substrate**	**Sediment Plume ****	**Sediment oils**	**Sediment odours**
Normal/None	None	Clear	Clear		0%	0%	Small	Absent	Normal/None
Anaerobic	Slick	Slight	Slight		1 to 9%	1 to 9%	Moderate	Light	Anaerobic
Sewage	Sheen	Turbid	Light tea		10 to 49%	10 to 49%	Large	Moderate	Sewage
Petroleum	Globs	Opaque	Dark tea		50 to 74%	50 to 74%		Profuse	Petroleum
Chemical	Flecks		Black		75 -100%	75 -100%			Chemical

** tannin staining can be confused with turbidity when combined with systems containing fine suspended sediment (if hard to assess use filtered water sample)*
*** relates to amount of fine sediment generated and time take to settle (i.e. a large plume may extend for over one meter diameter)*

Date ___ / ___ / ___ Site code _____ Recorder name _____

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SOUTH WEST INDEX OF RIVER CONDITION - FIELD SHEETS
VEGETATION

RIPARIAN VEGETATION - NATIVE

Riparian layers present *	*(circle)*			**Width of riparian zone:**	Left bank _____ m	Right bank _____ m
Ground layer (rushes/sedges)	yes	no	reduced	**Dominant riparian species** *(tick)* *Add others not listed. If species is not known take photos and write 'refer to photos'.*		
Shrub layer (woody)	yes	no	reduced	Rushes/sedges	Paperbark tree	
Tree layer	yes	no	reduced	Teatree	Flooded gum	
				Peppermint tree		

Riparian zone* absent or reduced due to: *(tick)*	natural feature (e.g. bedrock)		human impact		fire/flood		unknown	
	other *(describe)*							

** For riparian zone definition see General site description field sheet (cross-section diagram) [page 2 of 4]*

STREAMSIDE ZONE VEGETATION (FIRST 10 m from edge of river) – NATIVE AND EXOTIC

	Left bank (% cover)					**Right bank** (% cover)				
	0	**1-9**	**10-49**	**50-74**	**75-100**	**0**	**1-9**	**10-49**	**50-74**	**75-100**
Bare ground (not bedrock)										
Ground cover/grasses/sedges/rushes										
Shrubs (woody, multi-stem) *										
Trees < 10m										
Trees > 10m										

** Shrubs include blackberry, tea-trees*

STREAMSIDE ZONE VEGETATION (FIRST 10 m) – PROPORTION OF EXOTIC

Record as a proportion of the total amount of vegetation present e.g. the left bank has 10-49% ground cover of which 75-100% is exotic.

	Left bank (% of total present)					**Right bank** (% of total present)				
	0	**1-9**	**10-49**	**50-74**	**75-100**	**0**	**1-9**	**10-49**	**50-74**	**75-100**
Ground cover/grasses/sedges/rushes										
Shrubs (woody, multi-stem) *										
Trees < 10m										
Trees > 10m										

** Shrubs include blackberry, tea-trees*

List exotic species (if known)	

STREAMSIDE ZONE VEGETATION (FIRST 10 m) – ORGANIC LITTER

Total organic litter (% cover) *(circle one)*					**Of organic litter present, how much is native (%)** *(circle one)*				
None	1-9	10-49	50-74	75-100	None	1-9	10-49	50-74	75-100

STREAMSIDE ZONE VEGETATION (FIRST 10 m) – RECRUITMENT of NATIVE WOODY VEGETATION *(circle one in each category)*

Recruitment evidence	**Recruitment type**	**Extent of recruitment**	**Recruitment health**
None	Trees	Limited	Poor
Natural	Shrubs	Moderate	Moderate
Planted	Both	Abundant	Healthy

BEYOND THE STREAMSIDE ZONE VEGETATION (10 to 100 m from edge of river)

DOMINANT FEATURE in each zone *(tick)*	**Left bank** (m from bank)			**Right bank** (m from bank)		
	10-49	**50-99**	**>100**	**10-49**	**50-99**	**>100**
Minimal vegetation – typical of urban / industry / mining						
Weeds/Grasses/Crops – typical of agriculture, may have a few scattered trees						
Remnant vegetation – mostly native trees/shrubs (may have exotic understorey)						
Forest – native trees, shrubs & understorey (few or no exotics)						
Plantations *(describe type)*						
Other *(describe)*						

Date ___ / ___ / ___ Site code _____ Recorder name _____

Government of Western Australia
Department of Water and Environmental Regulation

SOUTH WEST INDEX OF RIVER CONDITION - FIELD SHEETS
PHYSICAL FORM and POTENTIAL POLLUTION

AMOUNT OF EROSION

Length of bank affected (irrespective of severity)	*Tick one for each bank*	
	LB	**RB**
0 - 4 %		
5 - 19 %		
20 - 49 %		
50 - 100 %		

EROSION AND BANK STABILITY

SEVERITY of erosion and bank stability [over the 100m site]	*Tick one for each bank*	
	LB	**RB**
Severe: LITTLE TO NO STRUCTURAL INTEGRITY Banks are predominantly bare. Significant sections of erosion on outside bends (undercutting/slumping) and straight stretches (sediment deposits). Exposed roots obvious (where applicable), with significant loss of vegetation in eroding areas. Channel & bank shape and depth likely to change in near future.		
High: POOR STRUCTURAL INTEGRITY Evidence of bank instability (undercutting/slumping); with signs of soil loss from banks, and areas of sedimentation (sandbars/toes) and scouring. Some exposed roots (where applicable), with loss of vegetation in eroding areas. Erosion typically around outside bends.		
Low-Moderate: GOOD STRUCTURAL INTEGRITY Banks relatively stable – exposed and superficially eroding bank (erosion doesn't penetrate deeply into bank wall) or stabilised by only exotic grasses. Little likelihood of significant change to channel/bank shape, depth or loss of bank material in near future.		
Minor: EXCELLENT STRUCTURAL INTEGRITY Banks stable and mostly intact (minor slumping, undercutting or bare banks expected naturally): stabilised by vegetation or bedrock.		

Factors affecting bank stability	*Tick one or more for each bank*	
	LB	**RB**
None		
Feral animals		
Livestock access [*complete table below*]		
Human access		
Cleared vegetation		
Runoff		
Drain pipes		
Flow and waves		
Culvert, bridge, dam		
Other (specify)		

Stabilisation works	*Tick one or more for each bank*	
	LB	**RB**
None		
Rock wall protection		
Bank matting		
Logs/planks strapped to bank		
Concrete lining		
Revegetation plantings		
Fenced human access (deterrent)		
Fenced livestock access		
Fenced stock watering points		
Other (specify)		

LIVESTOCK ACCESS *(tick impacts (minor or major) observed for each category)*

CATEGORY	**Minor**	*Tick*	**Major**	*Tick*
Vegetation damage	Only small patches of vegetation grazed		Most groundcover vegetation grazed	
Bank damage	Isolated areas (1 or 2) of livestock damage		Near continuous livestock damage to stream	
Pugging	Isolated (1or 2) areas of pugging		Extensive pugging along the stream length	
Manure	≤2 significant manure deposits per site		>2 significant manure deposits per site	
Tracks	≤1 track per site		>1 track per site	
Types of livestock present				

Date ___ / ___ / ___ Site code _____ Recorder name _____

Government of Western Australia
Department of Water and Environmental Regulation

SOUTH WEST INDEX OF RIVER CONDITION - FIELD SHEETS
PHYSICAL FORM and POTENTIAL POLLUTION

POTENTIAL POLLUTION SOURCES

Record sources of potential pollution (actual pollutants may not be present / visible).

POINT SOURCES of potential pollution	**Within site** *Tick all applicable*	**Source** O / A / P *
None		
Pipe or drain - flowing		
Pipe or drain - not flowing		
Drum(s) or container(s)		
Dead (large) animal in river		
Livestock access to river bed		
Road crossing - sealed		
Road crossing - unsealed		
Road works - crossing /bridge		
Road bridge		
Railway bridge		
Other (describe)		

POINT SOURCES of potential pollution Ad-hoc notes and observations
Upstream from site

NON-POINT SOURCES of potential pollution	**Within site, <50m from banks** *Tick all applicable*	**Source** O / A / P *
None		
Agriculture (Ag) - crops		
Ag - turf/nursery/market garden		
Ag - vineyard/orchard		
Ag - horses		
Ag - cattle - dairy		
Ag - cattle - meat		
Ag – cattle/sheep - feed lot		
Ag - sheep/goat/lamas etc		
Ag - chickens		
Ag - pigs		
Plantation - pine		
Plantation - blue gums		
State forest – recently logged		
Waste disposal - landfill		
Road along river - sealed		
Road along river - unsealed		
Road works along river		
Railway along river		
Residential - urban		
Residential - rural		
Commercial - office/shop		
Education establishment		
Recreation - park/oval		
Recreation - water-based		
Industry - heavy/light/rural		
Industry - mining		
Sewage treatment plant		
Other (describe)		

NON-POINT SOURCES of potential pollution Ad-hoc notes and observations
Within site but > 50m from banks
Upstream from site

** Source: O = field officer observed during sampling, A = anecdotal (general knowledge, landholder information), P = aerial photo*

SOUTH WEST INDEX OF RIVER CONDITION - FIELD SHEETS
FISH AND CRAYFISH – FYKE NET DEPLOYMENT

DPIRD* (1800 815 507) Call Record #:		**Exemption # used**	

Department of Primary Industries and Regional Development (DPIRD) (pre July 2017 was Department of Fisheries).
Call at least 1hr prior to deployment (need exemption # and other details listed on exemption). Only need to call once per sampling trip.

Time deployment started (24 hr)	

	Deployment conditions *Circle appropriate response*													
Fyke net code *(see table below)*	**screen N or Y (&size)**		**Major habitat type**			**Water depth at frame (cm)**	**Stream cross section covered by fyke (%) ***			**Gaps (wings and frame)** *(see table below)*		**Distance between Fyke nets (m)**		
	N	Y	Channel	Pool	Riffle		0-9	10-49	50-89	None	AWF	<10m	10-80	80-120
			Run	Lake			90-94	95-99	100	BWF	EW	>120	N/A	
	N	Y	Channel	Pool	Riffle		0-9	10-49	50-89	None	AWF	<10m	10-80	80-120
			Run	Lake			90-94	95-99	100	BWF	EW	>120	N/A	
	N	Y	Channel	Pool	Riffle		0-9	10-49	50-89	None	AWF	<10m	10-80	80-120
			Run	Lake			90-94	95-99	100	BWF	EW	>120	N/A	
	N	Y	Channel	Pool	Riffle		0-9	10-49	50-89	None	AWF	<10m	10-80	80-120
			Run	Lake			90-94	95-99	100	BWF	EW	>120	N/A	
	N	Y	Channel	Pool	Riffle		0-9	10-49	50-89	None	AWF	<10m	10-80	80-120
			Run	Lake			90-94	95-99	100	BWF	EW	>120	N/A	
	N	Y	Channel	Pool	Riffle		0-9	10-49	50-89	None	AWF	<10m	10-80	80-120
			Run	Lake			90-94	95-99	100	BWF	EW	>120	N/A	

***** *'Stream cross section covered by fyke' includes gaps at edges, & above & below frame, wings & nets. If both wings are fully extended to edge of bank = 100%. Estimate coverage if spaces exist.*

Fyke net code	
Dual-wing fyke code	
UF-RA	Upstream – rectangle – type A [no skirting *]
DF-RA	Downstream – rectangle – type A [no skirting *]
UF-RB	Upstream – rectangle – type B [skirting *]
DF-RB	Downstream – rectangle – type B [skirting *]
UF-RC	Upstream – rectangle – type C [skirting, net & skirting mesh 12 mm]
DF-RC	Downstream – rectangle – type C [skirting, net & skirting mesh 12 mm]
UF-DD	Upstream – dome – type D [double wing *]
DF-DD	Downstream – dome – type D [double wing *]
Single-wing fyke code	
LF1-DE	Left bank fyke # 1 – dome – type E [single wing *] – most US left bank fyke
LF2-DE	Left bank fyke # 2 – dome – type E [single wing *]
LF3-DE	Left bank fyke # 3 – dome – type E [single wing *]
RF1-DE	Right bank fyke # 1 – dome – type E [single wing *] – most US right bank fyke
RF2-DE	Right bank fyke # 2 – dome – type E [single wing *]
RF3-DE	Right bank fyke # 3 – dome – type E [single wing *]

** Mesh of fyke net including skirting is 2 mm except for type C (12mm)*

Gaps (wings and frame) – also applicable to stop nets	
None	No gap above or below wing(s) & frame
AWF	Gap above wing(s) &/or frame
BWF	Gap below wing(s) &/or frame
EW	Gap at end of wing(s)

Additional information
Fyke net code:
Fyke net code:
Fyke net code:
Fyke net code:
Fyke net code:
Fyke net code:

Date ___ / ___ / ___ Site code ______________________ Recorder name ____________

Government of Western Australia
Department of Water and Environmental Regulation

SOUTH WEST INDEX OF RIVER CONDITION - FIELD SHEETS
FISH AND CRAYFISH – BOX TRAP DEPLOYMENT

DPIRD* (1800 815 507) Call Record #:		Exemption # used	

Department of Primary Industries and Regional Development (DPIRD) (pre July 2017 was Department of Fisheries).
Call at least 1hr prior to deployment (need exemption # and other details listed on exemption). Only need to call once per sampling trip.

Time deployment started (24 hr)	

☐ Bait: Chicken pellets ☐ Bait: Other ______________		☐ Traps set with access to air					Biological habitat type (tick all applicable, within approx. 2 m of trap)												Other information
							Vegetation			Macrophytes			Other						
Box trap code[1]	Left bank (L) Right bank (R) Centre (C)	Major habitat type C = channel P = pool Ri = riffle Ru = run L = lake			Water depth (cm)	Set between fykes (Y or N, NA)	Over-hanging water	Draped in water	Terrestrial (e.g. grass)	Emergent	Submerged	Floating	Algae	Overhanging banks	Tree roots	Detritus	woody debris (<5 cm)	woody debris (>5 cm)	- Location to aid collection - Habitat types not listed
		C	P	Ri															
		Ru	L																
		C	P	Ri															
		Ru	L																
		C	P	Ri															
		Ru	L																
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		C	P	Ri															
		Ru	L																
ADDITIONAL TRAPS – *state reason for deploying additional traps*																			
		C	P	Ri															
		Ru	L																
		C	P	Ri															
		Ru	L																
		C	P	Ri															
		Ru	L																
		C	P	Ri															
		Ru	L																
		C	P	Ri															
		Ru	L																

[1] Box trap code	
S	Small trap
L	Large trap
O	Large opera-house trap

Example of format			
code	S	L	O
# (label on trap)	14	152	101

NOTE: If trap does not have a number, use trap code e.g. S, L or O, followed by a letter starting with A, e.g. S-A, then L-B (if there are multiple traps with no numbers.

Date ___ / ___ / ___ Site code ______________________ Recorder name ____________

Government of Western Australia
Department of Water and Environmental Regulation

SOUTH WEST INDEX OF RIVER CONDITION - FIELD SHEETS
FISH & CRAYFISH – CONDITION OF BOX TRAPS & FYKES NETS AT COLLECTION

Time collection started (24 hr)	

BOX TRAPS

Box trap code	**Condition of box trap at collection** *(tick all applicable)*										
	No change	**Missing**	**Open**	**Hole or tear**	**Opening obstr-ucted**	**Upside down or on end**	**Opening out of water**	**All out of water**	**Covered in material**	**In anoxic sediment**	**Other collection notes**

FYKE NETS

Fyke net code	**Condition of fyke net at collection** *(tick all applicable)*											
	No change	**Missing**	**Water level risen**	**Access limited**	**Access prevented**	**Tail open**	**Tail hole or tear**	**Skirting or wings hole or tear**	**Skirting or wings fallen or detached**	**Stream cross section covered by fyke (%)**		
										0-9	10-49	50-89
										90-94	95-99	100
		Notes:										
										0-9	10-49	50-89
										90-94	95-99	100
		Notes:										
										0-9	10-49	50-89
										90-94	95-99	100
		Notes:										
										0-9	10-49	50-89
										90-94	95-99	100
		Notes:										
										0-9	10-49	50-89
										90-94	95-99	100
		Notes:										
										0-9	10-49	50-89
										90-94	95-99	100
		Notes:										

Date ___ / ___ / ___ Site code _____ Recorder name _____

SOUTH WEST INDEX OF RIVER CONDITION - FIELD SHEETS
FISH & CRAYFISH - SUPPORTING INFORMATION

LIST SPECIES OBSERVED VISUALLY BUT NOT CAUGHT IN TRAPS *(comment on numbers and size classes where possible)*	
Species	**Comment**

DOCUMENT ANY ADDITIONAL EVIDENCE OF SPECIES IN THE AREA, incorporating:
- **observations of nests/burrows or tracks** (e.g. from water rats or Engaewa (burrowing) crayfish)
- **anecdotal evidence** (e.g. from landholders, field officers, catchment management groups)

Species	**Comment** *(including source of information where relevant)*

SPECIES CODE

(Alphabetised by common name)

NATIVE FISH SPECIES	**Common name**	**Code**
Large fish *		
Acanthopagrus butcheri	Black bream	ABUT
Tandanus bostocki	Freshwater cobbler	TBOS
Geotria australis	Pouched lamprey	GAUS
Mugil cephalus	Sea mullet	MCEP
Aldrichetta forsteri	Yelloweye mullet	AFOR
Small fish *		
Nannatherina balstoni	Balston's pygmy perch	NBAL
Galaxiella nigrostriata	Black-stripe minnow	GNIG
Galaxias maculatus	Common jollytail	GMAC
Atherinosoma elongata	Elongate hardyhead	AELO
Nannoperca pygmaea	Little pygmy perch	NPYG
Bostockia porosa	Nightfish	BPOR
Lepidogalaxias salamandroides	Salamanderfish	LSAL
Afurcagobius suppositus	South-western goby	ASUP
Pseudogobius olorum	Blue-spot goby	POLO
Galaxias truttaceus	Trout minnow	GTRU
Leptatherina wallacei	Western hardyhead	LWAL
Galaxias occidentalis	Western minnow	GOCC
Galaxiella munda	Western mud minnow	GMUN
Nannoperca vittata	Western pygmy perch	NVIT
NATIVE CRAYFISH SPECIES	**Common name**	**Code**
Engaewa sp.	Burrowing crayfish	ENGA
Cherax quinquecarinatus	Gilgie	CQUI
Cherax crassimanus	Gilgie - restricted	CCRA
Cherax preissi	Koonac	CPRE
Cherax glaber	Koonac - glossy	CGLA
Cherax cainii	Marron - smooth	CCAI
Cherax tenuimanus	Marron - hairy	CTEN

EXOTIC FISH SPECIES	**Common name**	**Code**
***Large fish ***		
Salmo trutta	Brown trout	STRU
Cyprinus carpio	Common carp	CCAR
Oncorhynchus mykiss	Rainbow trout	OMYK
Perca fluviatilis	Redfin perch	PFLU
Small fish *		
Gambusia holbrooki	Eastern gambusia	GHOL
Carassius auratus	Goldfish	CAUR
Phalloceros caudimaculatus	One-spot livebearer	PCAU
Geophagus brasiliensis	Pearl cichlid	GBRA
Leiopotherapon unicolor	Spangled perch	LUNI
EXOTIC CRAYFISH	**Common name**	**Code**
Cherax quadricarinatus	Redclaw	CQUA
Cherax destructor **	Yabby	CDES
OTHER SPECIES (BY-CATCH)	**Common name**	**Code**
Westralunio carteri	Carter's freshwater mussel	WCAR
Chelodina colliei	Long-necked turtle	CCOL
Palaemonetes australis	South-west glass shrimp***	PAUS
	Shrimp (unknown sp.)***	SHRIMP
Caridina indistincta	Indistinct river shrimp***	CIND
Hydromys chrysogaster	Water rat (Rakali)	HCHR
Anura	Unknown frog or tadpole	ANUR
Heleioporus eyrei	Moaning frog	HEYR
Litoria moorei	Motorbike frog	LMOO
ADD ANY SPECIES NOT LISTED		

** Fish size categories relate to size class recorded on collection pages.*
*** Don't distinguish between sub-sp. C. destructor albidus and C. destructor destructor.*
**** The exotic species Caridina indistincta* has been found in SW rivers, it's very similar to PAUS. If unsure what species just write "SHRIMP"

Date ___ / ___ / ___ Site code ______________________ Recorder name ____________

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SOUTH WEST INDEX OF RIVER CONDITION - FIELD SHEETS
FISH & CRAYFISH - BOX TRAP & FYKE NET COLLECTION

Time collection started (24 hr)		Reminder: record condition of trap on page 3 of *Fish & crayfish - Condition of traps & nets at collection* field sheet

Trap or fyke code	Species code *	Size class	Size ranges (mm)*				Gender (tick if present) check until one of each found		Condition of individuals F = few, M = many, A = all								Comments e.g. – Size of largest over 'normal' range (see field guide) – Disease/injury symptoms – Type of parasites or commensals & infestation levels
		Cray-fish	0-20	20 - 50	50 - 76	76 - 100	100+										
		Small fish	0-20	20 - 50	50 - 100	100 +	other										
		Large fish	0-100	100-200	200-400	400+	-	F	M	Signs of breeding: (1) Nuptial colours (2) Urogenital papillae (3) Reddened vents (4) Gravid		Soft shell	Parasite or commensal	Injured	Lethargic	Dead	Disease	
Example: S 14	GOCC		|||	(32)	𝍸 ||	||		✓	✓	1				F			F	largest 120 mm Injured by CCAI White spot Distended bellies
										2								
										3								
										(4)	M							
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** Species codes and size categories are listed on Fish & crayfish field sheet [page 4 of 8], if nothing was caught in the trap place a dash in the Species code column.*

Date ___ / ___ / ___ Site code ______________________ Recorder name ____________

Government of Western Australia
Department of Water and Environmental Regulation

SOUTH WEST INDEX OF RIVER CONDITION - FIELD SHEETS
FISH & CRAYFISH - BOX TRAP & FYKE NET COLLECTION

Reminder: record condition of trap on page 3 of *Fish & crayfish - Condition of traps & nets at collection* field sheet

		Size class	**Size ranges (mm)***					**Gender** *(tick if present)* *check until one of each found*		**Condition of individuals** F = few, M = many, A = all								**Comments e.g.** – Size of largest over 'normal' range (see field guide) – Disease/injury symptoms – Type of parasites or commensals & infestation levels
		Cray-fish	0-20	20 - 50	50 - 76	76 - 100	100+											
		Small fish	0-20	20 - 50	50 - 100	100 +	other											
Trap or fyke code	Species code *	Large fish	0-100	100-200	200-400	400+	-	F	M	Signs of breeding: (1) Nuptial colours (2) Urogenital papillae (3) Reddened vents (4) Gravid		Soft shell	Parasite or Commensal	Injured	Lethargic	Dead	Disease	
										1								
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** Species codes and size categories are listed on Fish & crayfish field sheet [page 4 of 8], if nothing was caught in the trap place a dash in the Species code column.*

Date ___ / ___ / ___ Site code ______________________ Recorder name ____________

Government of Western Australia
Department of Water and Environmental Regulation

SOUTH WEST INDEX OF RIVER CONDITION - FIELD SHEETS
FISH & CRAYFISH - BOX TRAP & FYKE NET COLLECTION

Reminder: record condition of trap on page 3 of *Fish & crayfish - Condition of traps & nets at collection* field sheet

		Size class	Size ranges (mm)*					Gender (*tick if present*) *check until one of each found*		Condition of individuals F = few, M = many, A = all								Comments e.g. – Size of largest over 'normal' range (see field guide) – Disease/injury symptoms – Type of parasites or commensals & infestation levels
		Cray-fish	0-20	20 - 50	50 - 76	76 - 100	100+											
		Small fish	0-20	20 - 50	50 - 100	100 +	other											
Trap or fyke code	Species code *	Large fish	0-100	100-200	200-400	400+	-	F	M	Signs of breeding: (1) Nuptial colours (2) Urogenital papillae (3) Reddened vents (4) Gravid		Soft shell	Parasite or Commensal	Injured	Lethargic	Dead	Disease	
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** Species codes and size categories are listed on Fish & crayfish field sheet [page 4 of 8], if nothing was caught in the trap place a dash in the Species code column.*

Date ___ / ___ / ___ Site code ______________________ Recorder name ____________

Government of Western Australia
Department of Water and Environmental Regulation

SOUTH WEST INDEX OF RIVER CONDITION - FIELD SHEETS
FISH & CRAYFISH - BOX TRAP & FYKE NET COLLECTION

Reminder: record condition of trap on page 3 of *Fish & crayfish - Condition of traps & nets at collection* field sheet

Trap or fyke code	Species code *	Size class	**Size ranges (mm)***					**Gender** *(tick if present)* *check until one of each found*		**Condition of individuals** F = few, M = many, A = all								**Comments e.g.** – Size of largest over 'normal' range (see field guide) – Disease/injury symptoms – Type of parasites or commensals & infestation levels
		Cray-fish	0-20	20 - 50	50 - 76	76 - 100	100+											
		Small fish	0-20	20 - 50	50 - 100	100 +	other											
		Large fish	0-100	100-200	200-400	400+	-	F	M	Signs of breeding: (1) Nuptial colours (2) Urogenital papillae (3) Reddened vents (4) Gravid		Soft shell	Parasite or Commensal	Injured	Lethargic	Dead	Disease	
										1								
										2								
										3								
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										4								

** Species codes and size categories are listed on Fish & crayfish field sheet [page 4 of 8], if nothing was caught in the trap place a dash in the Species code column.*

Date ___ / ___ / ___ Site code _____ Recorder name _____

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SOUTH WEST INDEX OF RIVER CONDITION - FIELD SHEETS
MACROINVERTEBRATES

SAMPLE COLLECTION

Time collected (24 hr)		Collected by	
Picked by			
Chain of custody #		Sample #	

MACROINVERTEBRATE HABITAT SAMPLED - 10 m macroinvertebrate sample area only

Habitat	***Tick one***	**Habitat description *(as per AUSRIVAS sampling guide)***
Channel		Margins and central part of main channel, can sample along edges of bank; in leaf packs; woody debris; detritus (excludes riffles, macrophytes, fringing vegetation draped in water)
Macrophyte		Areas of submerged/floating/emergent and fringing vegetation draped in the water
Pool		Deeper areas with very slow-flowing water
Riffle		Areas of flowing, broken water over gravel, pebble, cobble or boulders

MACROINVERTEBRATE HABITAT TYPE OVER ENTIRE 100 M SITE

See above for habitat description, this is different to stream habitat on the *Aquatic Habitat* field sheet [page 1 of 1]

Habitat	**% of 100m site**
Channel	
Macrophyte	
Pool	
Riffle	
Total	**100%**

SAMPLE DEPTH

Average depth sample taken *(circle one)*			
< 25 cm	< 50cm	< 100 cm	< 200 cm

MINERAL SUBSTRATE AND HABITAT SURFACE AREA OF 10m MACROINVERTEBRATE SAMPLING AREA

Mineral substrate	**%**
Bedrock	
Boulders (> 256 mm or soccer ball)	
Cobble (64 - 256 mm or cricket to soccer ball)	
Pebble (16 - 64 mm or 5c piece to cricket ball)	
Gravel (4 -16 mm or raw sugar to 5c piece)	
Sand (1 – 4 mm)	
Silt (<1 mm)	
Clay (<0.002 mm)	
Total	**100%**

Habitat surface area	**%**	**Density** *(circle)* [1= sparse, 5 = dense]
Mineral substrate	100	N/A
Detritus		1 2 3 4 5
Leaves		1 2 3 4 5
Algae		1 2 3 4 5
Woody debris (all sizes)		1 2 3 4 5
Riparian veg draped in water		1 2 3 4 5
Emergent macrophytes		1 2 3 4 5
Submerged macrophytes		1 2 3 4 5
Floating macrophytes		1 2 3 4 5
Total (may be > 100%)		

WATER VELOCITY (FLOW) AT MACROINVERTEBRATE SAMPLING SITE

Flow recorded on *General site description* field sheet [page 4 of 4] *(circle)*	Yes	No *(complete table below)*

Meter or method used		Min velocity (m/s)		Max velocity (m/s)	
Where flow was below the detection limit of the flow meter, was flow visually observed			Yes		No

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SOUTH WEST INDEX OF RIVER CONDITION - FIELD SHEETS
MACROINVERTEBRATES

SAMPLING AND PICKING CONDITIONS *(circle)*

Circle any applicable issues encountered in either sampling or picking that could affect results (add others if needed)

Sampling	None	Lots of woody debris	High flow	Steep inundated banks	Habitat not clearly defined or limited	Silty sediment	Lots of floating macrophytes	Other:
Picking	None	Raining	Debris/algae in sample	Low water clarity	Other:			

MICROCRUSTACEANS *(tick)*

Estimate the abundance in the whole sample (note: microcrustaceans are NOT included or counted in the sample picked)

Tick one for each taxa	**None observed**	**1 - 9 individuals**	**10 – 99 individuals**	**100 – 999 individuals**	**> 1000 individuals**
Copepods					
Ostracods (seed shrimp)					
Cladocerans (water flea)					

METHOD USED TO PICK SAMPLE

WHOLE SAMPLE PICKED	Yes (*tick)*	
	Approximate number of macroinvertebrates picked	

OR

BOX SUB-SAMPLER USED	Yes *(tick)*	
	Number of cells picked	
	Number of cells in box	
	Approximate number of macroinvertebrates picked	

Use this space to keep count of individuals picked

INDIVIDUALS NOT PRESERVED

List any individuals found in the sample / box sub-sample that were not preserved in ethanol e.g. freshwater mussels
Include comments about number and size of individuals

Species name (or code*)	**Comments**

* *Use species codes and size classes from Fish & crayfish field sheet [pages 4 and 5] if applicable*

ADDITIONAL COMMENTS

Date ___ / ___ / ___ Site code _____ Recorder name _____

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SOUTH WEST INDEX OF RIVER CONDITION - FIELD SHEETS
WATER QUALITY – IN-SITU READINGS & GRAB SAMPLES

IN-SITU READINGS

Instrument Type		**Instrument Number**	

Pre-use calibration		**Date:**		
	SpC (mS/cm)	**pH 7 ***	**pH 10 ***	**DO** (100%)
		Temp (°C) =		
Pre–cal				
Post–cal				

Calibration notes

** pH varies with temperature, ensure pH is calibrated to the correct value with respect to temperature (see field guide for pH - temperature variations). Not necessary for YSI pro plus as it automatically calibrates for pH - temperature variations.*

In-situ reading and observations *(one surface reading [~0.1 m under the surface] taken to represent conditions at the site)*						**Date:**
Additional readings (taken for contextual or investigative purposes) can be recorded on page 2						
Flow code [1]	**Depth below surface** (m)	**Comments** – *observations about water quality sample location (e.g. iron floc, oil sheen, tannin staining)*				
Time on probe (24 h)	**Temperature** (°C)	**pH**	**SpC** (mS/cm)	**Salinity** (ppt)	**DO** (mg/L)	**DO** (% sat)

[1] *Flow at location of in-situ reading: D = dry, S = stationary, F = flowing*

Post-use check		**Date:**	
SpC (mS/cm)	**pH 7**	**pH 10**	**DO** (100%)

GRAB SAMPLE (*samples taken for laboratory analysis)*

Samples should be collected at the same time and location as the in-situ readings.
The list of analytes and the data collection, storage and analytical procedures are provided in the Sampling Analysis Plan for the project.

Grab samples taken		**Date**	**Time** (24 h) *	**Chain of Custody #**	**Sample #**
Yes	No				

** use the same time as recorded on the insitu reading*

Date ___ / ___ / ___ Site code _____ Recorder name _____

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SOUTH WEST INDEX OF RIVER CONDITION - FIELD SHEETS
WATER QUALITY – IN-SITU READINGS & GRAB SAMPLES

ADDITIONAL IN-SITU READINGS

Ad hoc data collected for contextual or investigative purposes

Purpose of additional data collection (e.g. to determine variability across a site)

Date	**Location within site**	**Time** (24 h)	**Depth** (m)	**Flow code**[1]	**Comments** [2]	**Temp** (°C)	**pH**	**SpC** (mS/cm)	**Salinity** (ppt)	**DO** (mg/L)	**DO** (% sat)

[1] *Flow at location of in-situ reading: D = dry, S = stationary, F = flowing*

[2] *Observations about water quality sample location (e.g. iron floc, oil sheen, tannin staining)*

Date ___ / ___ / ___ Site code _____ Recorder name _____

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SOUTH WEST INDEX OF RIVER CONDITION - FIELD SHEETS
WATER QUALITY - LOGGER DEPLOYMENT & RETRIEVAL
(short-term assessment only)

CALIBRATION OF LOGGER & PREPARATION FOR DATA RECORDING

Logger Type		**Logger #**		**Logger Name**	

Pre-use calibration			**Date:**		
	SpC (mS/cm)	**pH 7** ☐ ref soln changed	**pH 10**	**DO** (0%) *	**DO** (100%)
Pre–cal					
Post–cal					

** DO (0%) calibration is only required for Mantas with a Logger # starting with MM*

Initiating data recording (on computer)		
Logger formatted (to clear existing data)	Yes	No
Logging enabled	Yes	No
Log file name		
Log interval (mins)		

Calibration notes	

CALIBRATION OF ADDITIONAL WATER QUALITY INSTRUMENT *(used to check consistency with data from logger)*

Calibration information completed on *Water Quality – in-situ readings & grab samples* field sheet [page 1 of 2] *(Tick)*	

LOGGER LOCATION & DEPLOYMENT INFORMATION

Attach battery pack and ensure 5 red flashes occur	Battery pack #	

Logger deployment	Date (dd/mm/yyyy)		Time (24h)	

Logger location information *(circle all applicable)*					
Location in stream	In main flow		Off main flow		Other
Canopy cover over loggers (%)	0	1-9	10-49	50-74	>75
In-stream vegetation (within 1 m from loggers)	None	Emergent	Submerged	Floating	
Density of in-stream vegetation (1 m from loggers)	N/A	Sparse	Medium	Dense	
Density of algae in water column (1 m from loggers)	None	Sparse	Medium	Dense	
Riffles/cascades (within 50 m upstream of loggers)	Yes	No	If yes, record meters upstream:		

Water depth and flow				
Water Depth	Beside stake (cm)	Upstream:	Downstream:	
	Water surface to top of sensor cage (cm)			
	River bed to top of sensor cage (cm)			
Flow	Flow information captured on *General site description* field sheet [page 4 of 4] *(circle)*		Yes	No *(complete table below)*
	Meter or method used		Velocity (m/s)	
	Where flow was below the detection limit of the flow meter, was flow visually observed		Yes	No

Post-deployment in-situ WQ reading at logger location (additional water quality instrument)					
Time (24h)	**Temp** (°C)	**pH**	**SpC** (mS/cm)	**DO** (mg/L)	**DO** (%)

Record any additional WQ readings on the *Water Quality – in-situ readings & grab samples* field sheet [page 2 of 2] (e.g. to determine representativeness of the data logger site)

Species observations		
Any species observed are recorded on the ***'Fish & crayfish – supporting information'*** field sheet [page 4 of 8]	Yes	None observed

Date ___ / ___ / ___ Site code _____ Recorder name _____

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SOUTH WEST INDEX OF RIVER CONDITION - FIELD SHEETS
WATER QUALITY – LOGGER DEPLOYMENT & RETRIEVAL
(short-term assessment only)

LOGGER RETRIEVAL INFORMATION

Pre-retrieval in-situ WQ reading at logger location (additional water quality instrument)					
Time (24h)	**Temp** (ºC)	**pH**	**SpC** (mS/cm)	**DO** (mg/L)	**DO** (%)

Record any additional WQ readings on the *Water Quality – in-situ readings & grab samples* field sheet [page 2 of 2] (e.g. to determine representativeness of the data logger site)

Logger retrieval (Time entered water)	Date (dd/mm/yyyy)		Time (24h)	

Changes in conditions		
Any changes to site conditions over the sampling period, in particular flow or water depth, are recorded on the *Cover Sheet*	Yes	None observed

Species observations		
Any species observed are recorded on the *Fish & crayfish – supporting information* field sheet [page 4 of 8]	Yes	None observed

Additional notes:

Disturbance of logger - record any times the logger may have been disturbed (e.g. during fish sampling)	
Date: Time/s:	Description of disturbance
Date: Time/s:	Description of disturbance

POST USE CHECKS & DOWNLOAD

Post-use check - additional water quality instrument	
Recorded on *Water Quality – in-situ readings & grab samples* field sheet [page 1 of 2] *(tick)*	

Post-use check - logger		**Date:**	
SpC (mS/cm)	**pH 7**	**pH 10**	**DO** (100%)

Data download - logger	**Download successful** *(circle)*	Yes	No
Notes			

Date ___ / ___ / ___ Site code _____ Recorder name _____

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SOUTH WEST INDEX OF RIVER CONDITION - FIELD SHEETS
WATER QUALITY – LOGGER MAINTENANCE
(where logger already deployed for long-term monitoring)

Logger Type		**Logger #**		**Logger Name**	

CALIBRATION OF ADDITIONAL WATER QUALITY INSTRUMENT *(used to check consistency with data from logger)*

Calibration information completed on *Water Quality – in-situ readings & grab samples* field sheet [page 1 of 2] *(tick)*	

PRE-REMOVAL IN-SITU READING AT LOGGER LOCATION - ADDITIONAL WATER QUALITY INSTRUMENT

Pre-removal in-situ WQ reading at logger location (additional water quality instrument)					
Time (24h)	**Temp** (°C)	**pH**	**SpC** (mS/cm)	**DO** (mg/L)	**DO** (%)

Record any additional WQ readings on page 2 of *Water Quality – in-situ readings & grab samples* field sheet (e.g. to determine representativeness of the data logger site)

LOGGER DOWNLOAD AND MAINTENANCE

Time entered the water (24 hr)	

Data downloaded successfully	Yes	No	Notes:

Maintenance and re-calibration of logger						
	SpC (mS/cm)		**pH 7**	**pH 10**	**DO** (0%)	**DO** (100%)
Pre–cal reading						
Post–cal reading						
Reason for calibration *(circle)*	4 month		reference solution changed		4 month	4 month
			reference junction changed			
	other		4 month		other	other
			other			
Batteries replaced:	Yes	No	Battery voltage:		Battery pack #:	
Calibration notes						

Redeployment of logger				
Log file name (new)			Log interval (mins):	
Logger re-deployed	Yes	(5 red flashes observed after battery pack was attached)		
	No	State reason:		
	If new logger/battery pack used, record #	Logger:	Battery pack:	

POST-REDEPLOYMENT IN-SITU READING AT LOGGER LOCATION - ADDITIONAL WATER QUALITY INSTRUMENT

Post-deployment in-situ WQ reading at logger location (additional water quality instrument)					
Time (24h)	**Temp** (°C)	**pH**	**SpC** (mS/cm)	**DO** (mg/L)	**DO** (%)

Date ___ / ___ / ___ Site code _____ Recorder name _____

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SOUTH WEST INDEX OF RIVER CONDITION - FIELD SHEETS
WATER QUALITY – LOGGER MAINTENANCE
(where logger already deployed for long-term monitoring)

LOGGER RE-DEPLOYMENT INFORMATION

Logger location information *(circle all applicable)*					
Location in stream	In main flow	Off main flow	Other		
Canopy cover over loggers (%)	0	1-9	10-49	50-74	>75
In-stream vegetation (within 1 m from loggers)	None	Emergent	Submerged	Floating	
Density of in-stream vegetation (1 m from loggers)	N/A	Sparse	Medium	Dense	
Density of algae in water column (1 m from loggers)	None	Sparse	Medium	Dense	
Riffles/cascades (within 50 m upstream of loggers)	Yes	No	If yes, record meters upstream:		

Water depth & flow				
Water Depth	Beside stake (cm)	Upstream:	Downstream:	
	Water surface to top of sensor cage (cm)			
	River bed to top of sensor cage (cm)			
Flow	Flow information captured on *General site description* field sheet [page 4 of 4] *(circle)*		Yes	No *(complete table below)*
	Meter or method used		Velocity (m/s)	
	Where flow was below the detection limit of the flow meter, was flow visually observed		Yes	No

Time exited the water (24 hr)	

Weather conditions (circle)								
Rain today	Yes	No	Rain in past week	Yes	No	Unknown	Cloud cover (%)	

Changes in conditions		
Any changes to site conditions over the sampling period, in particular flow or water depth, are recorded on the *Cover Sheet*	Yes	None observed

Species observations		
Any species observed are recorded on the *Fish & crayfish – supporting information* field sheet [page 4 of 8]	Yes	None observed

Additional notes:

Disturbance of logger - record any times the logger may have been disturbed (e.g. during fish sampling)	
Date: Time/s:	Description of disturbance
Date: Time/s:	Description of disturbance