SHMAK Data Sheet – General Information

Site name:	**Stream/river name**:	
Site coordinates: Northing/Longitude _____ Easting/Latitude: _____ **Site description -** *access, how to locate top and bottom of reach, etc.*		
Date:	**Time started:**	**Time finished:**
Names of monitoring team present:		
Photopoint location marker *Description*: **Direction of photo:** Upstream ☐ Downstream ☐ **Frame (notes):**		
Weather now: ☐ Storm (heavy rain) ☐ Rain (steady rain) ☐ Showers (intermittent rain) ☐ Overcast ☐ Clear/sunny	**Rainfall in past 48 hours**: ☐ Storm (heavy rain) ☐ Rain (steady rain) ☐ Intermittent showers	**Water level**: ☐ High ☐ Slightly raised ☐ Normal ☐ Low **Streamflow (m^3/s):_____**
Assessment notes – *any unusual observations or changes since your last visit.*		
Length of reach (m):	**River width (m):**	**Maximum depth (m):**

Site Health Check	*Circle all that apply*					
Smell	nothing unusual	sewage	petrol/ chemical	dead animals	rotting vegetation	musty
Obstruction	nothing unusual	weeds	wood	rubbish	built structure	
Stream bed	nothing unusual	artificial	mud/ sediment	slime	scum	
Margin or bank	nothing unusual	erosion	livestock access	pollution source	rubbish	no vegetation
Appearance of the water	nothing unusual	murky	muddy	colour		
Rate of flow		fast	slow	none		
Top water surface	nothing unusual	oily film	foam	Slime/algae/ scum		

Main land use in catchment (circle one) Exotic forest Native vegetation Crop Pasture Orchard Industrial Residential other _____
Other land use in catchment (circle one) Exotic forest Native vegetation Crop Pasture Orchard Industrial Residential other _____
Upstream catchment disturbances – *note activities in the catchment that may impact the stream.*

SHMAK Data Sheet – Water Quality

Temperature (°C):

Conductivity (μS/cm):

Visual clarity (m): first measurement y1 = _____ m y2 = _____ m (y1 + y2)/2 = _____ m

second measurement y1 = _____ m y2 = _____ m (y1 + y2)/2 = _____ m

(y1 = distance where disc disappears, y2 = distance where disc reappears)

Method: **Clarity tube** ☐ **Black disc** ☐

Nutrients

Nitrate-N: _____ mg/L **Nitrate method**: **Aquaspex** ☐ **Lab** ☐ **Other** ☐

Phosphate: _____mg/L **Phosphate method: Hanna Checker** ☐ **Lab** ☐ **Other** ☐

Phosphate-P*: ____mg/L

*the Hanna Checker measures phosphate. To calculate phosphate-P, multiply phosphate by 0.326

E. coli* method** **Petrifilm** ☐ **MC Media Plates** ☐ **Lab ☐ **Other** ☐

If analysed by lab: Lab method:_____

Lab address:_____

Sample 1	Sample 2
Filtered: Yes ☐ If so, amount (mL) _____	Filtered: Yes ☐ If so, amount (mL) _____
Diluted: Yes ☐ If so, dilution ratio_____	Diluted: Yes ☐ If so, dilution ratio_____
Neither: Yes ☐ 1 mL	Neither: Yes ☐ 1 mL
No. *E. coli* (CFU on plate) _____	No. *E. coli* (CFU on plate) _____
No. *E. coli* (CFU per 100 mL) _____	No. *E. coli* (CFU per 100 mL) _____

SHMAK Data Sheet – Periphyton

Habitat type (choose one): Riffle ☐ Run ☐ **Main periphyton colour:** _____

Stone/view	Filaments >2 cm long	Mats**	*Microcoleus*	Didymo	Moss
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
Average %					

** Does not include *Microcoleus* or Didymo as these are recorded separately

***Microcoleus* assessment:**

Reach length: _____ m **Upstream end location:** _____ **Downstream end location:** _____

***Microcoleus* detached mats present**: Yes ☐ No ☐ ***Microcoleus* % cover of stream bed** _____

SHMAK Data Sheet - Macrophytes

		Column					Band (or column averages)
		1	2	3	4	5	
Cross section 1	Water surface (%)						
	Volume occupied (%)						
Cross section 2	Water surface (%)						
	Volume occupied (%)						
Cross section 3	Water surface (%)						
	Volume occupied (%)						
Cross section 4	Water surface (%)						
	Volume occupied (%)						
Cross section 5	Water surface (%)						
	Volume occupied (%)						
Average water surface (%):		**Average volume occupied (%):**					

SHMAK Data Sheet – Benthic Macroinvertebrates

Stream bed: Stony-bottom □ Muddy/sandy-bottom □

Sampling method: Stone method □ Kick net method: Riffle only □ Kick net method: All-habitat □

(All-habitat method) Range of habitat types:	% present in study area	No. of jabs with net
Aquatic plants		
Vegetated banks		
Roots/large wood		

*R= rare (1-4 animals), C = common (5-19 animals), A = abundant (20 or more animals)

		If present, record R, C or A*	tolerance score	Copy tolerance score if present
Mayflies	Flat mayfly		8	
	Spiny-gilled mayfly		9	
	Swimming mayfly		9	
	Tusked mayfly		8	
Stoneflies	Green stonefly		10	
	Other stonefly		8	
Caddisflies	Free-living caddisfly		6	
	Net-spinning caddisfly		6	
	Messy-net caddisfly		8	
	Stick-cased caddisfly		6	
	Stony-cased caddisfly		6	
	Smooth-cased caddisfly		9	
	Spiral-cased caddisfly		10	
	Micro-caddisfly		3	
Other insects	Dobsonfly		7	
	Dragonfly		6	
	Damselfly		5	
	Beetle		6	
	Water boatman/ backswimmer		5	
	Water treader		5	
True Flies	Crane fly		5	
	Sand fly		3	
	Mosquito		3	
	Midge		2	
	Other fly larva		3	
Spider-like	Dolomedes spider		5	
	Mite		5	
Crustaceans	Crayfish/koura		5	
	Amphipod		5	
	Isopod		5	
	Seed shrimp		3	
	Water flea		5	
	Shrimp		5	
Molluscs	Limpet		3	
	Mussel/kakahi		6	
	Fingernail clam		3	
	Flat spiral snail		3	
	Mud snail		4	
	Left-hand snail		3	
Worms	Leech		3	
	Segmented worm		1	
	Flatworm		3	
	TOTAL			

SHMAK Data Sheet -Physical Habitat Visual Assessment

Excellent	Good	Fair	Poor
1. Amount of deposited fine sediment			
a) stony-bottomed streams			
<10% of the stream bed in run habitats covered by sand or silt	10-20% of stream bed in run habitats covered by sand or silt.	20-50% of stream bed in run habitats is covered by sand or silt, score lower if deposits are >1cm deep	>50% of the stream bed in run habitats is covered by sand or silt, score lower if deposits are >1cm deep
b) soft-bottomed streams			
Sediment deposits in pools <1 cm deep	Sediment depth is up to 10% of max pool depth	Sediment depth is 10-30% of max pool depth	Sediment depth is >30% of max pool depth
8 7	6 5	4 3	2 1 0
2. Habitat for aquatic animals			
Circle all habit features that are present:			
Large wood root mats undercut banks overhanging vegetation macrophytes boulders cobble			
Abundant and diverse At least 4 of these habitat features present AND Large particles (cobbles, wood, roots) cover >75% of stream bed	**Adequate** 3 of these habitat features present AND Large particles cover at least 50% of stream bed	**Patchy and limited** 2 of these habitat features present AND Large particles cover at least 25% of stream bed	**Rare or absent** One or none of these features present AND Large particles cover <25% of stream bed
8 7	6 5	4 3	2 1 0
3. Flow types			
Circle all flow types present:			
pool riffle run chute/waterfall			
All least 3 of these flow types are present AND Variety of pool sizes and depths	3 flow types present but riffle habitat is scarce AND Some deep pools	Only 2 flow types present AND Deep pools absent	Only 1 flow type present AND Pools absent (includes uniformly deep streams)
8 7	6 5	4 3	2 1 0
4. Bank stability and erosion - rate each bank separately			
High Banks have very stable rock/soil type and/or dense vegetation cover AND <5% of bank length eroded by scouring or trampling	**Moderate** Banks have fairly stable soil type and/or moderate vegetation cover and/or root depth AND 5-30% of bank length eroded by scouring or trampling	**Low** Banks have somewhat unstable (crumbly) soil and/or sparse vegetation cover and/or shallow roots AND 30-60% of bank length eroded by slumping or trampling	**Very low** Banks have very unstable soil and little/no vegetation and few roots AND >60% of banks length eroded by slumping or trampling
Left Bank			
4	3	2	1
Right bank			
4	3	2	1

Excellent	Good	Fair	Poor
5. Bank vegetation (up to 10 m from stream) – rate each bank separately			
Mature native vegetation with intact understorey and ground cover	Regenerating native bush or mature with damaged understorey or mature exotic trees, flaxes, sedges	Shrubs or sparse tree cover with little understorey vegetation or long grasses or early-stage trees	Heavily grazed/mown grass or bare ground or impervious artificial surfaces
Left bank			
4	3	2	1
Right bank			
4	3	2	1
6. Riparian buffer width and intactness			
Continuous trees/shrubs along stream and no livestock access to stream AND wide (>10 m) buffer width	Trees/shrubs mostly continuous and livestock access limited AND moderate (5-10 m) buffer width	Fence only or patchy trees/shrubs with grazed/mown grass AND narrow (<5 m wide) buffer width	Few/no trees/shrubs and unlimited livestock access or obvious human impact AND absent or infrequent buffer width
Left bank			
4	3	2	1
Right bank			
4	3	2	1
7. Shade			
High shading (>70%) across stream	Moderate shade (40-70%) of water surface	Minimal shade (10-40%) of water surface	Little or no shading (<10%) of water surface
8 7	6 5	4 3	2 1 0
8. Channel alteration			
Natural stream bed and unmodified bank form OR Stream with natural channel profile and meander	Natural stream bed, some evidence of bank stabilisation (e.g. near bridges). No embankments or man-made structures in stream OR <20% of channel straightened	Significant proportion or stream bed or banks stabilised by man-made material OR embankments keep floodwaters within the channel OR 20-50% of channel straightened	Stream bed or banks stabilised over most of their length by man-made materials OR stream flow altered by instream structures (weirs, culverts) OR >50% of channel length straightened
8 7	6 5	4 3	2 1 0
TOTAL SCORE =			
How to interpret your score			
Excellent >55	**Good 40-55**	**Fair 24-39**	**Poor <24**

Streambed Composition – Wolman Walk or Visual Assessment

	Example	Number of particles	% stream bed
Bedrock	III		
Boulders (>25 cm)	IIIII II		
Large cobbles (12-25 cm)	IIIII IIIII IIIII		
Small cobbles (6-12 cm)	IIIII IIIII IIIII		
Large gravel (1.6-6 cm)	IIIII		
Small gravel (2-16 mm)	IIIII IIIII		
Sand/silt/mud (<2mm)	IIIII IIIII IIIII II		
Man-made	III		
Large wood (>5 cm diameter			
Small wood (<5cm diameter)	III		
Water plants (rooted)			
TOTAL	75		

SHMAK Data Sheet – Rubbish/Litter Level 1

	Excellent	Good	Fair	Poor
Amount of rubbish	On first glance, no rubbish visible; after close inspection little or no rubbish evident.	On first glance, little or no rubbish visible; after close inspection small amounts of rubbish evident.	Rubbish is evident in low to medium amounts on first glance. Streambank contains litter.	Rubbish distracts the eye on first glance. Substantial litter in stream and along bank.
Score	8 7	6 5	4 3	2 1
Threat to aquatic life	Rubbish, if any, mostly paper or wood products or other biodegradable materials.	Little or no persistent or buoyant rubbish or small items. Rubbish is mainly degradable, settleable or non-toxic, e.g. wood, glass, or metal.	Medium amount of persistent (e.g. plastic, rubber), toxic (e.g. cigarette butts), or buoyant (e.g. bags) items; or large deposits of settleable rubbish such as glass or metal.	Large amount of persistent (e.g. plastic, rubber), toxic (e.g. cigarette butts), buoyant (e.g. Styrofoam), or small rubbish items
	8 7	6 5	4 3	2 1
Threat to human health	No bacterial/viral hazards (medical waste, diapers, pet/human waste), no toxic substances (batteries, chemicals), no puncture or laceration hazards.	No medical waste or sources of toxic substances, but some puncture or laceration hazards (e.g. broken glass, metal debris).	Presence of **one** of the following: needles or medical waste; diapers or pet waste; toxic substances such as batteries or chemicals.	Presence of **more than one** of the following: needles or medical waste; diapers or pet waste; toxic substances such as batteries or chemicals.
	8 7	6 5	4 3	2 1
Dumping and littering	Any observed rubbish is incidental litter (less than 5 items) or carried downstream from another location.	Some evidence of instream or shoreline littering; and/or evidence of dumping of material. Material dumped is paper-based debris (e.g., fast food).	Prevalent instream or shoreline littering; and/or the presence of **one** large item (e.g., furniture, appliance, rubbish bag).	Significant littering; and/or evidence of repeated dumping, with **more than one** large item (e.g., furniture, shopping trolley, bags of rubbish).
	8 7	6 5	4 3	2 1
Accumulation of rubbish from upstream	Rubbish, if any, appears to have been directly deposited on the stream bed (no evidence of transport from upstream).	Less than 10 rubbish items. Items appear to be transported from upstream (based on evidence such as silt marks, faded colours or near high water mark).	10-50 items of rubbish items appear to be carried to the location from upstream, as evidence from location near high water mark or siltation marks.	Substantial quantities of rubbish (>50 items) appear to be carried from upstream and has accumulated at the site.
	8 7	6 5	4 3	2 1
Total Score = / 40				

SHMAK Data Sheet – Rubbish/Litter Level 2

General Information		
GPS coordinates (upstream):	GPS coordinates (downstream):	
Clean up start time:	Clean up finishing time:	No. of participants:
Sampling area (check all that apply) and measurements (in meters)		
☐ Left bank	☐ Right bank	☐ In stream
Site length (A):_____Width right bank (B): _____Width left bank (C): _____Avg stream width (D):_____		
Total bank area = (A X B) + (A X C):_____	Total stream area = (A X D): _____	
Audit information (identifying the litter)		
Audit start time:	Audit finish time:	No. of participants
Did you take photos ☐ Yes ☐ No		
Notes about the assessment		

The **Confidence column (H = high/L=low)** refers to how confidence you are in the weight of the items you measure. If the items are wet or covered in dirt, the weight won't be accurate.

		In Stream			On Stream Bank			
	Material Category	Count	Weight	H/L	Count	Weight	H/L	Notes
CLOTH	Backpacks & bags							
	Canvas, sailcloth & sacking							
	Carpet & furnishing							
	Clothing, hats, gloves, towels							
	Footwear							
	Other cloth							
	Rope							
	Unidentifiable cloth fragments							
PLASTIC	Baskets, crates, trays							
	Bottle caps, neck rings, tabs							
	Bottles (≤ 2 L)							
	Bottles, drums, jerrycans (> 2 L)							
	Cable ties & zip ties							
	Cigarettes, butts & filters							
	Cigarette lighters							
	Clothes pegs							
	Drink pack rings							
	Fiberglass fragments							
	Fishing gear							
	Fishing line							
	Fishing nets							
	Food containers							
	Food wrappers							
	Gardening & farming							
	Gloves							
	Lollipop sticks, cotton buds							
	Medical waste							
	Mesh bags							
	Other plastic							
	Parking tickets and receipts							
	Pens							
	Plastic bags							
	Plastic buoys							
	Plastic sheeting							
	Plastic utensils							
	Plastic vehicle parts							
	Rope							
	Safety & construction related							
	Shotgun wadding & shells							
	Strapping bands & tape							
	Straws							
	Syringes ⛔							
	Toys & sports							
	Unidentifiable hard fragments							
	Unidentifiable plastic fragments							
FOAMED PLASTIC	Ear plugs							
	Foam buoys							
	Foam sponge							
	Other foamed plastic							
	Polystyrene food packaging							
	Polystyrene insulation							
	Unidentifiable foam fragments							

		In Stream			On Stream Bank			
	Material Category	Count	Weight	H/L	Count	Weight	H/L	Notes
RUBBER	Balloons, toys, balls							
	Condoms							
	Inner-tubes & rubber sheet							
	Other rubber							
	Rubber bands							
	Rubber footwear							
	Rubber gloves							
	Tyres							
	Other rubber							
GLASS	Bottles & jars							
	Construction material							
	Fluorescent light bulbs							
	Glass buoys							
	Glass or ceramic fragments !							
	Light globes/bulbs							
	Other glass							
	Tableware							
WOOD	Cork							
	Fishing traps & pots							
	Matches, fireworks							
	Other wood							
	Processed timber & pallet crate							
METAL	Aluminium drink cans							
	Construction material							
	Fishing related							
	Foil wrappers							
	Gas bottles and drums (>4L)							
	Metal caps, lids, pull tabs							
	Metal vehicle parts							
	Other cans (≤4L)							
	Other metal							
	Sharps, needles, lancets ⛔							
	Tableware							
	Unidentifiable metal fragments							
PAPER	Cardboard boxes & fragments							
	Cups, food trays, wrappers							
	Fireworks							
	Other paper							
	Paper (incl. magazines)							
OTHER	Appliances and electronics							
	Batteries (household)							
	Batteries (non-household)							
	Boat parts							
	Faeces (pet waste in bags) ⛔							
	Paraffin or wax							
	Other							
	Personal care items							
	Sanitary items ⛔							