

Appendix 1

Record sheets

This section includes the record sheets you will need to record your data. Make sufficient copies of each. The forms are:

- Site description record sheets
- Waterbug awareness result sheet
- Macro-invertebrate monitoring record sheets
- SIGNAL 2 score (major groups) result sheet
- SIGNAL 2 score (families) result sheet
- Habitat rating record sheet

Site description record sheets

Complete a site description record sheet for each one of your sites. Each time you visit your site, take a copy of the site description record sheet completed on the last visit to look for any changes. A site is a 100m length of the waterway. Face downstream when describing the left and right banks.

Background information

Date: _____ Time: _____ Name of Group: _____

Name of investigators: _____

Name of water body: _____

Site code: Map Name: _____

Easting (6 figs): Northing (7 figs):

Type of water body (tick a box):

- | | | | | |
|---------------------------------------|-----------------------------------|---|---------------------------------|--------------------------------------|
| <input type="checkbox"/> Pond/wetland | <input type="checkbox"/> Lake/dam | <input type="checkbox"/> Bore / piezometer | <input type="checkbox"/> Drain | <input type="checkbox"/> Estuary |
| <input type="checkbox"/> Creek/stream | <input type="checkbox"/> River | <input type="checkbox"/> Irrigation channel | <input type="checkbox"/> Spring | <input type="checkbox"/> Inlet / bay |

Position in the catchment: Upper Middle Lower

Site name: _____

Land title numbers of adjacent properties: _____

Estimated elevation: _____ Name of suburb, nearest town or settlement: _____

Brief description of access to site: _____

Comments: _____

Describe the weather both now and in the past 24 hours (tick a box):

	Clear/sunny	Overcast	Showers	Rain (steady)	Rain (heavy)
Weather now	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Past 24 hours	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

General Features of your Site

Bird's eye view of the site

Sketch a bird's eye view (a view looking down from above) of your stream site, showing curves in the stream, adjacent land on both sides, etc. Mark areas of vegetation, eroded banks, fences, roads, drains, etc. Try to draw about 100 metres of stream length. Remember, it is only a rough sketch. Label the sketch. Mark and number any photo sites and draw an arrow to show the direction from which each photograph was taken. Show the direction of stream flow and the scale of your sketch.

Describe the location of photo sites

1. Landscape features surrounding the site

2. Stream channel and banks

- a) Average width of wetted part of stream _____ (metres)
- b) Average width of channel, e.g. to base of roots of woody plants _____ (metres)
- c) Average depth of riffles at the site _____ (metres)
- d) Dominant size of bed material (boulder, cobble, gravel, sand or silt) _____
- e) Evidence of erosion (head cuts, undercutting banks, incised bed) _____

- f) Average height of the banks
- g) Levee banks present or absent
- h) Typical bank slope over 100m of stream (vertical or undercut, gradual or little slope, variable, artificial banks)
- i) Soil type and erosion potential

Left bank	Right bank

3. Description of the water

- a) Appearance of water – clear, oily sheen, foamy, frothy, milky, muddy, coloured brown, green, reddish or other - describe

- b) Smell of water - none, sewage, fish, chlorine, rotten eggs, other - describe _____

- c) Average water velocity high medium low

4. Plant material in the water (tick the best description)

- a) Presence of logs greater than 10cm in diameter in the water None Occasional Plentiful
- b) Large aquatic plants Present/absent Attached Free floating
- c) Algae in the waterway
 - i) Algae growing on submerged stones, twigs, etc None Occasional Plentiful Colour (green or brown)
 - ii) String-like algae (filamentous) None Occasional Plentiful Colour (green or brown)
 - iii) Detached "clumps" or "mats" of floating algae None Occasional Plentiful Colour (green or brown)

5. Riparian vegetation

	Left bank	Right bank
a) Average width of stream side vegetation		
b) Length of riverbank with vegetation overhanging the water		
c) Total length of riverbank with willow infestation		
d) Total length of each bank lined with native vegetation		

6. Evidence of animals and birds

Birds (describe/name) _____

Animals (describe/name) _____

7. General conditions affecting the stream

Note: the general conditions around the site that might be affecting your stream.

These conditions may include dead trees, degraded vegetation on bank, banks collapsed, eroded, stock erosion paths, mud in or entering stream, litter, rubbish in or next to stream, actively discharging pipes, other pipes, drains entering, dams, weirs across stream.

8. Land uses near the site

The way the land is used and managed can have a severe effect on the health of the waterway. Look at the surrounding land uses for a distance of up to 400m away from the site. Add comments if a land use or management practice appears to be causing problems.

	Land use area as a percentage of total	Comments
Agriculture	<input type="text"/> %	_____
Built environment	<input type="text"/> %	_____
Construction	<input type="text"/> %	_____
Recreation	<input type="text"/> %	_____
Bush, forests, nature reserves	<input type="text"/> %	_____
Other land uses	<input type="text"/> %	_____

9. Significant changes to the site since your last visit

Compare conditions at the site with those recorded on your site description record sheets from the last visit.

10. Ideas for action

While describing the site, you may think of some actions that could be taken to improve the habitat in and around your stream. Write them down here for reference.

11. Pipe and drain inventory

Record observations on each pipe and drainage ditch found on the banks or in the stream. Photocopy additional sheets sufficient for each pipe or drain that you are likely to find. Pipes or drains can be abandoned or active.

a) This information applies to: Pipe Drain Other (name)

b) Location of pipe/drain In-stream In bank Near stream

Describe location for purpose of adding to your base map _____

c) Type of pipe and diameter

	Diameter (m)		Diameter (m)
<input type="checkbox"/> Industrial outfall	<input type="text"/>	<input type="checkbox"/> Agricultural field drain	<input type="text"/>
<input type="checkbox"/> Sewage treatment plant outfall	<input type="text"/>	<input type="checkbox"/> Settlement pond drain	<input type="text"/>
<input type="checkbox"/> Storm drain	<input type="text"/>	<input type="checkbox"/> Parking area drain	<input type="text"/>
<input type="checkbox"/> Combined sewer overflow	<input type="text"/>	<input type="checkbox"/> Bridge culvert	<input type="text"/>
<input type="checkbox"/> Other (name)	<input type="text"/>	<input type="checkbox"/> Unknown	<input type="text"/>

d) Discharge flow

Rate of flow	<input type="checkbox"/> None	<input type="checkbox"/> Trickle	<input type="checkbox"/> Heavy	<input type="checkbox"/> Intermittent	<input type="checkbox"/> Steady
Appearance	<input type="checkbox"/> Clear	<input type="checkbox"/> Foamy	<input type="checkbox"/> Turbid	<input type="checkbox"/> Oily sheen	<input type="checkbox"/> Coloured (name)
Odour	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Fishy	<input type="checkbox"/> Chemical	<input type="checkbox"/> Chlorine

Other observations _____

e) Condition of the stream bank below the pipe or drain

No problem evident Sewage litter, e.g. toilet paper Rubbish, e.g. cans, paper Eroded Lots of algae

f) Additional comments

Use this space to expand on or explain information provided above. For example, you may want to add notes on the condition of the stream below the discharge.

Waterbug awareness result sheet

Photocopy the results sheet each time you collect data.

Background information

Date: _____ Time: _____ Name of Group: _____

Name of investigators: _____

Name of water body: _____

Site code: Map Name: _____

Easting (6 figs): Northing (7 figs):

Type of water body (tick a box):

- Pond/wetland Lake/dam Bore / piezometer Drain Estuary
 Creek/stream River Irrigation channel Spring Inlet / bay

Position in the catchment: Upper Middle Lower

Estimated elevation: _____ Name of suburb, nearest town or settlement: _____

Brief description of site: _____

Comments: _____

Results

1. Which type of waterbug collection method did you use?

- Riffles - rock rubbing method or kick method
 Edgewater, riffle or pool – leaf packs sorting method
 Aquatic plants – sieve or net sampling method

2. Tick the box (none, occasional, or plentiful) that best shows the number of each type of waterbug found.

Waterbugs	None	Occasional	Plentiful
Worm-like (Generally tolerant)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Animals with shells (Vary from tolerant to intolerant.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Crayfish-like (Generally intolerant)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Insect-like (Generally intolerant)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other types (describe)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Macro-invertebrate monitoring record sheet

Photocopy the results sheet each time you collect data.

Background information

Date: _____ Time: _____ Name of Group: _____

Name of investigators: _____

Name of water body: _____

Site code: Map Name: _____

Easting (6 figs): Northing (7 figs):

Type of water body (tick a box):

- Pond/wetland Lake/dam Bore / piezometer Drain Estuary
 Creek/stream River Irrigation channel Spring Inlet / bay

Position in the catchment: Upper Middle Lower

Estimated elevation: _____ Name of suburb, nearest town or settlement: _____

Brief description of site: _____

Comments: _____

Describe the weather both now and in the past 24 hours (tick a box):

	Clear/sunny	Overcast	Showers	Rain (steady)	Rain (heavy)
Weather now	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Past 24 hours	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Collection method

Sample type

- Kick sample Sweep sample Riffles Edgewater Replicate sample collected

SIGNAL 2 score (major groups) result sheet

Record the type and numbers of macro-invertebrates of each group (without weighting). Also record the weighting factor if you are using that method. Make extra copies of this record sheet as required.

Macro-invertebrate Major group (order, class and phyla)	Common name	SIGNAL 2 sensitivity grade	Number of specimens	Weight factor	Grade x weight factor
Total					

$$\text{SIGNAL scores without weighting} = \frac{\text{sum of grade numbers}}{\text{number of different groups found in sample}}$$

$$\text{SIGNAL scores with weighting} = \frac{\text{total of grade x weight factor}}{\text{total of weight factor}}$$

Refer to your Quadrant Diagram for further interpretation.

SIGNAL 2 score (families) result sheet

Record the type and numbers of macro-invertebrates of each group (without weighting). Also record the weighting factor if you are using that method. Make extra copies of this record sheet as required.

Macro-invertebrate Major group (order, class and phyla)	Common name	SIGNAL 2 sensitivity grade	Number of specimens	Weight factor	Grade x weight factor
Total					

$$\text{SIGNAL scores without weighting} = \frac{\text{sum of grade numbers}}{\text{number of different groups found in sample}}$$

$$\text{SIGNAL scores with weighting} = \frac{\text{total of grade x weight factor}}{\text{total of weight factor}}$$

Refer to your Quadrant Diagram for further interpretation.

Habitat rating record sheet

Photocopy the results sheet each time you collect data.

Background information

Date: _____ Time: _____ Name of Group: _____

Name of investigators: _____

Name of water body: _____

Site code: Map Name: _____

Easting (6 figs): Northing (7 figs):

Type of water body (tick a box):

- Pond/wetland Lake/dam Bore/piezometer Drain Estuary
 Creek/stream River Irrigation channel Spring Inlet/bay

Position in the catchment: Upper Middle Lower

Estimated elevation: _____ Name of suburb, nearest town or settlement: _____

Brief description of site: _____

Comments: _____

Describe the weather both now and in the past 24 hours (tick a box):

	Clear/sunny	Overcast	Showers	Rain (steady)	Rain (heavy)
Weather now	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Past 24 hours	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Habitat Rating

Rating the habitat. Circle your rating score for each part of the habitat below:

Habitat rating	Bank vegetation	Verge vegetation	In-stream cover	Erosion & stability	Pools, riffles and bends
Excellent	4	4	4	4	4
Good	3	3	3	3	3
Fair	2	2	2	2	2
Poor	1	1	1	1	1

If you wish to get a general rating for the site then add up all the numbers you circled for a total score. The minimum total is 5 and maximum 20.

Total score:	Stream Habitat Rating:
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Habitat rating		Overall condition of the habitat	Colour code for map
Excellent	18–20	Site in natural or virtually natural condition; excellent habitat condition.	Blue
Good	13–17	Some alteration from natural state; good habitat conditions.	Green
Fair	8–12	Significant alterations from the natural state but still offering moderate habitat; stable.	Yellow
Poor	5–7	Significant alterations from the natural state to very degraded. May have moderate to severe erosion or sedimentation problems.	Red