

# Appendix A

## Using the SHIM Data Dictionary v23.0

### *Specifications For GPS Accuracy*

Specifications for watercourse mapping will follow the *Specifications and Guidelines for Resource Surveys using GPS Technology* (REF, 1998), namely:

- The required survey accuracy (i.e. target accuracy) for the project must be:
- Network Horizontal Accuracy = 5m
- Interpretive Horizontal Accuracy = 5m
- All significant deflections, required to delineate the feature being mapped at the required accuracy, must be mapped.

Please refer to Module 5 (GPS Surveying Procedures) for GPS mapping specifications.

### *Configure GPS*

Be sure to configure the GPS unit according to RIC specifications included in SHIM Module 5.

### *Create Rover File*

Start new rover file: select appropriate file name structure (Stream name/ date). **Never** open a rover file from the previous day to add more information.

### ***Load SHIM data dictionary***

- Select *Stream* to Start GPS data collection for the watercourse centre line.
- Select *Pause* to pause data recording for the centre line while entering other information or to walk around large obstacles or impenetrable vegetation. Also, select pause when standing still for any reason.

### ***Start Mapping Stream Centreline***

- Select Dynamic Stream Line to Start GPS data collection
- Select Pause to add reference information.
- Select Resume to continue recording the positions of the Dynamic Stream Line (walk the centre of the bankfull width if possible; otherwise walk along one bank and record offsets (which must be taken into account when digitizing the final stream location back in the office), or nest location points with offsets every 15 to 25m for a point-to-point traverse.

### ***Record Start Point***

- Select *Nest / Point / Start Point* to capture the position of the start point (minimum 60 positions). According to the RIC standard a “point of commencement” (POC) is required to mark the beginning of a dynamic line. We will call this first point a start point.
- Select *Resume* to record 60 positions and *Enter* to save the start point
- Select *Resume* to continue mapping the centre line of the watercourse

### ***Enter Stream Reference Information***

- Entries for crew, date, and stream name are mandatory
- Select *Resume* to continue recording the positions of watercourse centre line (walk the centre of the bankfull width if possible; otherwise walk along one bank and record offsets for each segment. Offsets must be taken into account when digitizing the final stream location back in the office, or nest location points with offsets every 15 to 25m for a point-to-point traverse.

## ***Create a Stream Segment***

- To create a segment select *F3 or Seg*. A new segment for the watercourse centre line is made by selecting *F3 or Seg*. A stream segment should be made to mark the beginning of a homogenous set of stream characteristics such as riparian classification, channel characteristics, channel confinement and topography. Make sure that you do not end the line feature when saving a segment or you will have to enter all of the data again.
- Enter segment attributes. Enter all attributes that have changed for the new segment otherwise the attributes from the previous segment will be the default. A new stream segment is to be created where there is a significant change in:
  - segment class,
  - riparian class,
  - crown cover,
  - hydraulic type,
  - instream Fish Habitat cover,
  - channel characteristics,
  - gradient,
  - substrate.
- It is mandatory to enter the right and left bank riparian classification in order to save the segment.
- Select *Enter* to save the watercourse line feature at the end of the day and at the end of the watercourse.
- Use *Comments* to note why you ended mapping the watercourse.
- Stream segments are similar to reaches, except that they can be defined according to the objectives of the survey, riparian classification, the complexity of channel characteristics, channel confinement and topography, top of bank validation and available time and resources.

## ***Record a Cross-Section Point***

- *Nest* a Cross-Section Point at a representative site in each stream segment or every 250–500 meters depending on the variability of the stream and the objectives of the survey. Cross-sections can also be taken to validate riparian classification and top of bank.

## ***Habitat Features***

- Select *Habitat Features* on an opportunistic basis to capture the positions and attributes of *Culvert, Wildlife, Obstruction, Modification, Dishcharge, Erosion*, etc.

## ***Traverse***

- Select *Point* and then *Location Point* to add distance bearing and gradient for each successive point. If the GPS signal becomes inoperable due to high PDOP values in areas of channel confinement or dense canopy a traverse maybe necessary.

## ***End Point***

- Select *Nest / Point / End Point* to capture the position of the End point of the survey for that day. Select *Resume* to record 60 positions and select *Enter* to Save the End point.

## ***Monument***

- Select *Nest / Point / Monument* to capture the position of a Monument where appropriate, usually at the request of the local government.

## ***Map Tie Point***

- Select *Nest / Point / Map Tie Point* to record the GPS co-ordinates of a feature that is clearly visible on an orthophoto. This establishes a clear “tie” or point of reference between the GPS data and the existing mapping. Examples of map tie points include roads, buildings, and power lines that intersect the stream.

## ***Benchmark***

- Select *Nest / Point / Bench Mark* to record the position of a benchmark. A benchmark is a permanent feature (e.g., the corner of a building, a permanently installed metal stake) that is used to geo-reference a GPS survey or sampling location.

## *Using Stream Cards*

- If feature attributes are not captured using the GPS, then a Reference Point and Reference Point Number must be nested every 100m along the stream. A plastic or metal tag with the reference point number should be attached to a permanent object at the reference point. Feature attributes and the corresponding reference point number must be recorded on a SHIM Stream Card. The card information must be later integrated with GPS coordinates

## *Data Management*

- Upload data on a daily basis from the data logger to the PC.
- Export line segments and point features into Arcview and display in a view using predefined theme properties.
- Digitize a new best-fit line based on the point and line data.
- Break the new best-fit line into line segments.
- Copy attributes from each GPS line segment to each corresponding new line segment.

Each feature point must be assigned Reference Information for the stream in the GIS.