# Appendix A: Riverbank Observation Checklist and Legend

**Riverbank Observation Checklist**

River:

Location:

Reach:

Date:

Weather:

Bank Geometry: I / O / S / T

Bank Slope (S:1):_____

Bank Height:_____m (above present Red River water level)

Erosion at toe of slope: Y /N

Details:_____

Soil Type:_____

Groundwater:_____

Surface Water:_____

Vegetation Cover: Slope: N / F / E

River Edge: N / F / E

Top of Bank: N / F / E

Vegetation Type:

_____

Edge Erosion: _____m (relative to present Red River water level)

Type of Failure: Erosion Controlled/Failure Controlled/Surficial Failure/ Transition Bank

Bank Drainage: G / F / P

Evidence of Movement: TT / SC / FT / CT / SL / ET

Loading at top of bank: Y/N

Evidence of Recent Movement: Y/N

Details:_____

Accumulation of overbank deposits: Y/N

Details:_____

Presence of weak layers or sheared zones: Y/N

Details:

Previously altered section: Y/N

Existing Works:

Anthropogenic Influences:

Consequence Factors:

Distance to Consequence:

FieldNotes:

**PRIMARY WATERWAYS – DETAILED SITE RECONNAISSANCE**

**RIVERBANK CHARACTERIZATION DEFINITIONS**

**Reach:**

From Co-ordinate – Starting location, using the river co-ordinate system.

To Co-ordinate – Ending location, using the river co-ordinate system.

Length – Length of reach along river centerline, in metres.

Note – Left or right bank correspond to the viewer's left or right when looking upstream.

**Location**: Location of site. What street is the site located along? What cross streets is the site located between?

**Bank Geometry:**

I – Inside or convex bend

O-Outside or concave bend

S-Straight section of bank

T-Transition

**Bank Height:** Height, in metres, above the Regulated Summer Water Level (RSWL).

**Till Depth**: Depth to till in metres, below the RSWL.

**Bank Slope**: Slope of the existing riverbank.

**Retrogression Ratio**: 9H:1V, 6H:1V or 3H:1V divided by the existing slope gradient.

**Erosion at toe**: Is erosion visible at the toe of the riverbank?

**Surface Drainage**: Field observations regarding surface drainage.

**Groundwater:** Field observations regarding the location of seepage zones.

**Vegetation Cover:**

None (N) – Bank denuded of vegetation, exposed soil. For a regraded slope, "N" = grass only.

Few (F) – Some trees, bush and or grass etc.

Extensive (E) – Bank has many trees, thick bush, well grassed.

**Vegetation Type**: Type of vegetation present during site reconnaissance.

**Edge Erosion (m):** Height of exposed eroded face in metres relative to the river edge. Edge erosion is measured from the water level at the time of the site reconnaissance.

**Type of Failure:** Was the movement indicative of erosion controlled or failure controlled mechanisms?

**Bank Drainage:**

Good (G) – Bank is well drained.

Fair (F) – Bank is fairly drained.  It may be terraced or have stepped topography.

Poor (P) – Bank has ponding, heavy vegetation; slump block topography.

**Evidence of Movement:**

TT- Tilted trees

SC – Headscarp

FT –Failure terraces

CT – Tension cracks

SL- Slumping

ET – Toe Erosion

**Loading at Top of the Bank:** Is there a surcharged load at the top of the slope? If so, what is this load?

**Accumulation of Overbank Deposits:** Have overbank deposits accumulated on the slope? Where have the overbank deposits accumulated? Are the overbank deposits thick, thin or not present (none).

Thick

Thin

None

**Previously Altered Section:** Has remedial work been completed at this site in the past? If so, what work has been conducted at this site? Is this work permanent or temporary? Permanent work consists of rockfill columns, shear keys, granular ribs. Temporary work consists of slope re-grading, placement of erosion controlled blanket and rip rap.

**Existing Works:**

N-none

CW-crib retaining wall

GA-gabions

PT-piles, tie back

PW-pile retaining wall

RW-R.C. retaining wall

SW-shear wall

RG-rip rap, general

RT-rip rap at toe

SR–slope reduction

TE-terracing

FT-fill at toe

**Anthropogenic Influences:** What man- made structures are located near the site?

**Consequence Factors:** What structures or features may be impacted by slope movement?

**Distance to Consequences:** What is the distance to the structure or feature?

**Field Notes:** Observations collected during the site reconnaissance.

**Additional Information Required for the RAMS**

**Radius of Curvature:** The length of the radius, in metres, from the centre point of the arc to the centreline of the river. This defines how tight the meander is.

**Arc Angle:** The angle between the radii of curvature at the departure point at the beginning of the curve to the departure point at the end of the curve, in degrees.

**Length of Curve**: The distance from the river co-ordinate at the beginning of the curve to the river co-ordinate at the end of the curve in metres.

**Beginning of Curve (BC):** The river co-ordinate at the upstream departure point.

**End of Curve (EC):** The river co-ordinate the downstream departure point.

**Apex**: The river co-ordinate equidistant between the beginning of the curve and the end of the curve.

**U/S – D/S of Apex**: Indicates if the reach is upstream or downstream of the apex.

**River Width**: The width of the river, in metres, relative to NSWL.

**Radius to width ratio**: Radius of curvature divided by the river width.