

SOUTHERN REGION GRMP SITE INSPECTION FORM



INSPECTION DATE:
^{TE:} May 10, 2023
IT:
TOTAL: 28
IAINTENANCE AREA (CMA):
DA IEN 4 R M

SUMMARY OF SITE INSTRUMENTATION:

6 vibrating wire piezometers and 2 slope inclinometers.

INSPECTED BY: Chris Gräpel (KCB) Peter Roy (KCB) Alex Frotten (AT) Roger Skirrow (AT)

LAST READING DATE: May 2019

PRIMARY SITE ISSUE: Monitoring landslide repairs on outside of bend of Belly River.

APPROXIMATE DIMENSIONS: Approximately 200 m at river bank, repaired slope is approximately 15 to 20 m high, and approximately 4H:1V from crest to toe.

DATE OF ANY REMEDIAL ACTION: Slide repair in 2012 consisted of toe berm, subsurface drainage, regraded slopes with slope benches and improved surface drainage, riprap longitudinal peaked stone toe protection (LPSTP) armouring with redirective vanes, and bio-engineering (including live staking).

ITEM	CONDITION EXISTS		DESCRIPTION AND LOCATION	NOTICABLE CHANGE FROM LAST INSPECTION		
	YES	NO		YES	NO	
Pavement Distress		Х			Х	
Slope Movement		Х			Х	
Erosion	x		High water events have displaced some of the riprap redirective vanes. Erosion of the bank at the west end of the site, directly upstream of the riprap, is getting worse.	×		
Seepage	X	I'	Wet zones at outlet of drains near toe of slope.		Х	
Culvert Distress	<u> </u>	Х			X	
COMMENTS						
Repaired slope in good condition with generally well-established vegetation.						
Erosion noted on the bank upstream of northwestern end of riprap. The bank erosion has the potential to wash out erode the slope behind the riprap causing the riprap to collapse at the upstream edge of the riprap repair. Once the riprap is compromised, further erosion of the riprap could occur quickly. Failure of the riprap could eventually cause toe erosion and reactivation of the slide. Additional erosion noted since the previous inspection in 2019.						

Inspection frequency should be increased from once per contract to every second year to monitor erosion. AT should design a repair at the upstream end of the riprap to halt erosion and redirect water away from the eroding bank.

LPSTP riprap armouring appears in good condition, although some minor displacement of riprap particles at the redirective vanes. No obvious changes since previous inspection.

There are mixed results with live staking of the slope toe. Willows on the left flank (down near the water) are doing





well, but the remainder of the planting is not very successful. It is possible that animals are eating the willows.

Lower bench is damp where drain outlets are present. Logs and stumps/roots were deposited on the lower bench by high-water event in 2017/2018. Some erosion at the toe of the slope near the south end of the site.

Maintenance/Repair/Monitoring Recommendations:

• A design should be completed to halt erosion and redirect water away from the eroding bank. Work would include civil/hydrotechnical design and environmental/regulatory permitting.

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Peter Roy, P.Eng. Civil Engineer



- Vibrating Wire Piezometer (VW) \otimes
- Flow Direction
- - · Slide Area
- X X Fence
- >---- Culvert
- Repair Area

. HORIZONTAL DATUM: NAD83 2. GRID ZONE: UTM ZONE 12N 3. IMAGE SOURCE: ESRI, MAXAR, EARTHSTAR GEOGRAPHICS AND THE GIS USER COMMUNITY. . LPST = LONGITUDINAL PEAKED STONE TOE PROTECTION

Klohn Crippen Berger

SCALE

PROJECT
SOUTHERN REGION GEOHAZARD RISK MANAGEMENT PROGRAM
TITI F
Site Plan
Olle Fian
S036 - Belly River
Hun 900.02 km 0.05
TWY OUU.UZ, KIII 9.00

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FIG No.

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PROJECT No.

1:1,500



Photo 1 Repair area. Photo taken facing north on May 10, 2023.

Photo 2 Bank erosion behind riprap at upstream end. Photo taken facing south on May 10, 2023.





Photo 3 Bank erosion behind riprap at upstream end. Photo taken facing southwest on May 10, 2023.



Photo 4 South end of repair area. Photo taken facing southwest on May 10, 2023.







Photo 5 Looking downslope. Photo taken facing west on May 10, 2023.

Photo 6 Repair area midslope. Photo taken facing north on May 10, 2023.



