Code no.	N	7	5	7		
Region Office						
Maintenance Unit						

Evaluation sheet (landslide)

Coordinates	Latitude			33° 53' 34.5"								
Coordinates	Longitude				73°	²⁴	' 38	3.0"				
Road Name					Km							

Date	12/9/2017
Inspector	asharat, Yasir, Sajid, Shafi

[Main body of landslide]

Mountain side	
Valley side	
Both	٧

[Causes]

1		Category	Check			
	5 " 6 1 .	exist clearly	٧			
	Result of photo interpretation	' lexist but partial and not clear				
-	interpretation	exist but not clear				
Topographical factor		large and new cracks, steps and subsidence				
lactor	Surface	small and old cracks, steps and subsidence				
	anomalies	anomalies slight deformation				
		no anomalies				
	0	fault, fracture zone				
	Geological structure	dip slope				
	Structure	undip slope/ no characteristic feature	٧			
		metamorphic rock (schist, quartzite, phyllite etc.)				
Caalasiaal	Main rock formation of	sedimentary rock (sandstone, limestone etc.)	٧			
Geological conditions	landslide body	igneous rock (granite etc.)				
Corrainorio		quaternary deposit (colluvial deposit etc.)				
		much springs / much seepage				
	Hydrological	little springs /little seepage	٧			
	feature	trace of water				
ı		no water observed				

[History]

	category					
	Existing record	obvious	٧			
	(documents or	slight				
Records of	patrimony)	none				
Landslide	Damago on	obvious				
road facilities and houses		slight	٧			
	none					

[Countermeasure]

Category		Check	Type of countermeasure
There is no countermeasure			
Effectiveness of countermeasure	No effect		Retaining walls to
	Some effect	٧	protect road
Countermeasure	High effect		

[Evaluation Rank]

Scale of disaster	Big	Medium	Small
Great risk	1	2	3
Medium risk	1	2	3
Low risk	2	3	4

Organization responsible for countermeasure works according to the scale of the disaster

Influence on the traffice when potential disaster

-Great risk: road closed for 2 days or more

-Big: Grant aid

-Medium: Major contractor in Pakistan

-Medium risk: road closed for 1 day or less

-Small: Local contractor

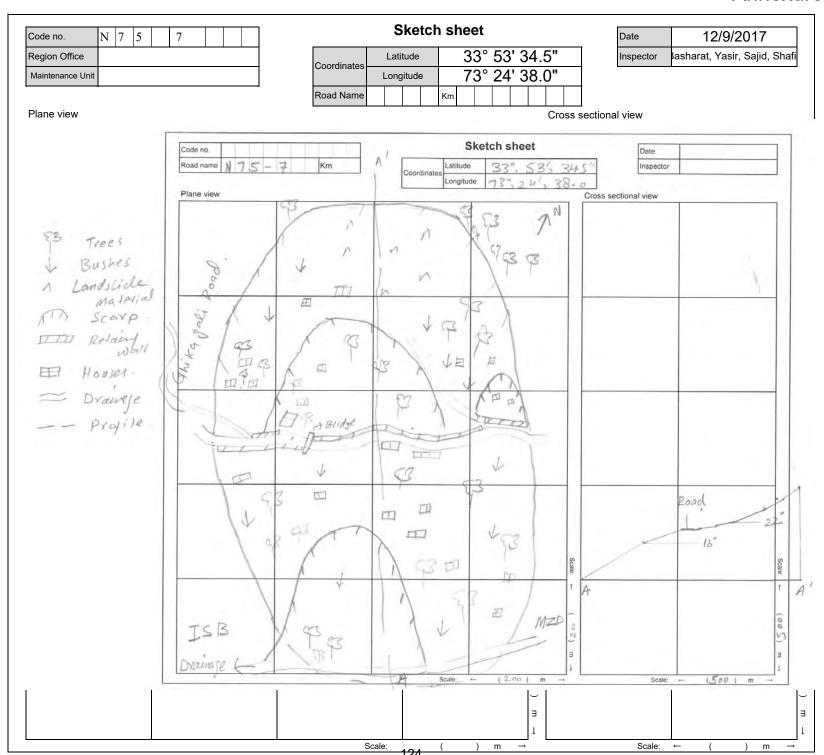
-Low risk: no road closure

[Expected size of disaster] (width, length, depth, etc.)

L= 1020 m, W= 650, D, 10-15 m

[Description]

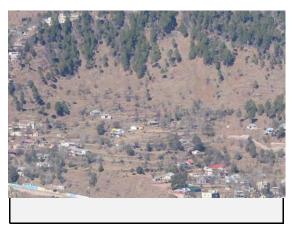
The N-75-7 passing through a very big old landslide which comprises almost 3 km² area . Lithology of the site is characterized by claystone, siltstone and sandstone of Miocene Murree Formation. The scarp of the landslide clearly indicates that it is an old landslide . This landslide has been reactivated many times in the past, consequently, small landslides were also observed within the landslide. The upper part of the slide is stable, however, at the toe the landslide material has been reactivated and there is potential for future landslide. A small landslide on the right



Code no.	N	7	5	7		
Region Office						
Maintenance Unit						

Coordinates		Lati	tude		33° 53' 34.5"							
Coordinates	Longitude		73° 24' 38.0"									
Road Name					Km							

Date	12/9/2017
Inspector	Basharat, Yasir, Sajid, Shafiq







Mountain side view of landslide

Valley side view of landslide

Road condition: Road passing through the center of the landslide



Existing countermeasures / anomalies: Retaining and gabion walls has been constructed to protect the road



Existing countermeasures / anomalies: Upto 4 cm cracks were observed in the retaining wall



Existing countermeasures / anomalies: Retaining wall has been constructed

Code no.	Ν	7	5	9			
Region Office							
Maintenance Unit							

		•												
	Coordinates	Latitude				33° 54'15.9"								
	Coordinates	Longitude				73° 24' 51"								
	Road Name					Km								

Date	12/7/2017
Inspector	Basharat, Yasir, Sajid, Shafid

[Causes]

Caus	500]		
item	factor	category	Check
Property of river	areas that river bed is 15°or more in watershed	0.50km ² or more 0.15km ² - 0.50km ²	
o ×	area	less than 0.15km ²	٧
ert		40°or more	
ō	steepest slope of river bed	30° - 40°	
Ь		less than 30°	٧
		0.20km ² or more	
	area that slope gradient is 30° or more in watershed area	0.08km ² - 0.20km ²	٧
	of more in watershed area	less than 0.08km²	
e Se	area that meadow and shrub	0.20km ² or more	
slop	(less than 10m height) occupy	0.02km ² - 20km ²	
of	in watershed area	less than 0.02km²	٧
Property of slope	artificial works that cause	certain	
ed o	negative effects	none	٧
7	new crack and/or slope	certain	٧
	failure in stream	none	
	traces of large slope failure	certain	٧
	in stream	none	

[Road structure]

structure	category of score	Check
i	10m or more	٧
	5m - 10m	
width	3m - 5m	
	less than 3m	
	less than 1m or	
	No bridge / box culvert	
Beam	1m - 2m	
height	2m - 3m	
	3m - 5m	
	5m or more	٧

[Potencial disaster mode]	Check
Damage of bridge/culvert	٧
Outflow of embankment	
Debris flooding on the road	

[History]

category of score	Check
There is a history about debris flow that were obstacles to the road traffic after construction of recent measures.	٧
There is a history about debris flow though there is no obstacle to traffic.	
There is no history of debris flow	

[Expected size of disaster] (width, length, depth, etc.)

L= 1000 m, W=30 m, D= 4 m

[Countermeasure]

Type of counterm	Check	
d to protect the road.	Culvert has	s also bee
Effect of existing countermesure	none · lov moderate high enough	

[Evaluation Rank]

[Evaluation Name]			
Scale of disaster Risk		Medium	Small
Great risk	1	2	3
Medium risk	1	2	3
Low risk	2	3	4

Organization responsible for countermeasure works according to the scale of the disaster

-Big: Grant aid

-Medium: Major contractor in Pakistan

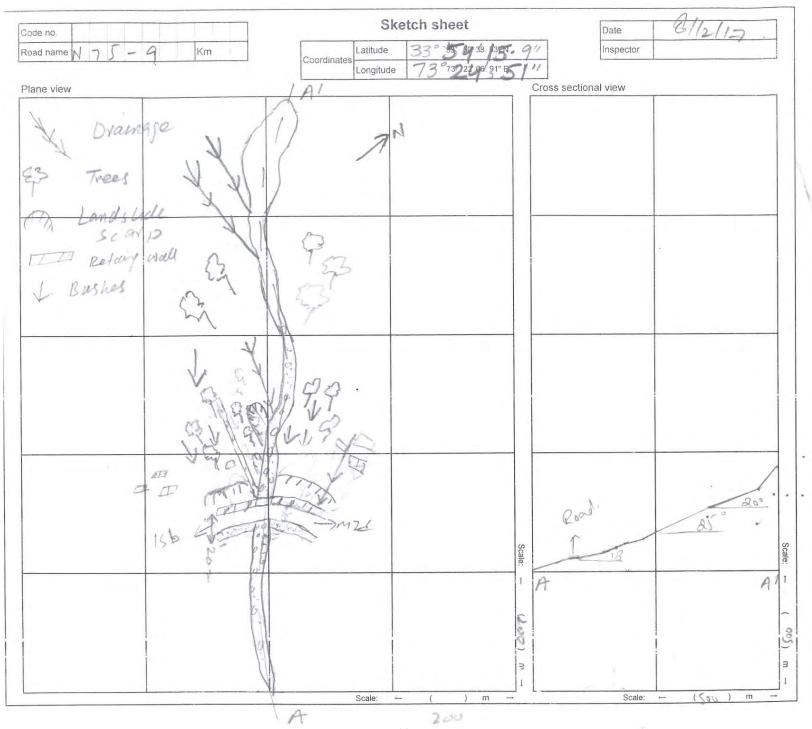
-Small: Local contractor

Influence on the traffice when potential

-Low risk: no road closure

[Description/comments]

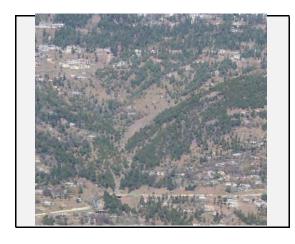
A seasonal stream crosses the highway at this location. Stream brings huge volume of debris every year. During 2007, the debris flow damaged the road completely. Big catachment area with debris fall/rock fall material are present on the upstream. Small landslides were also observed along the stream -Great risk: road closed for 2 days or more which contribute in the debris volume and have -Medium risk: road closed for 1 day or less potential to damage the road in future. Sandsone bed along the left side of the stream is dipping

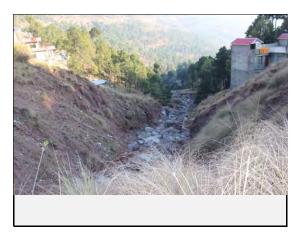


Code no.	Ν	7	5	9		
Region Office						
Maintenance Unit						

Coordinates	Latitude			33° 54'15.9"								
Coordinates	Longitude			73° 24' 51"								
Road Name					Km							

Date	12/7/2017
Inspector	asharat, Yasir, Sajid, Shafi







Mountain side view of the debris flow

Valley side view of the debris flow

Front view of the debris flow







The crack on road has been observed

Road condition

Existing countermeasures / anomalies: Retaining wall has been constructed at the toe of the slope failure

Code no.	Ν	7	5	2	0		
Region Office							
Maintenance Unit							

Coordinates	Latitude			33°55' 28.9"							
Coordinates	Longitude		73° 27' 3.5"								
Road Name			Km								

Date	24-11-2017
Inspector	Basharat, Yasir, Sajid, Shafid

[Causes]

item	factor	category	Check
Property of river	areas that river bed is 15°or more in watershed area	0.50km ² or more 0.15km ² - 0.50km ² less than 0.15km ²	٧
Property	steepest slope of river bed	40° or more 30° - 40° less than 30°	٧
	area that slope gradient is 30° or more in watershed area	0.20km ² or more 0.08km ² - 0.20km ² less than 0.08km ²	√
Property of slope	area that meadow and shrub (less than 10m height) occupy in watershed area	0.20km ² or more 0.02km ² - 20km ² less than 0.02km ²	√
орену	artificial works that cause negative effects	certain none	٧
Pr	new crack and/or slope failure in stream	certain none	٧
	traces of large slope failure in stream	certain none	٧

[Road structure]

structure	category of score	Check
	10m or more	٧
River	5m - 10m	
width	3m - 5m	
	less than 3m	
	less than 1m or	
	No bridge / box culvert	٧
Beam	1m - 2m	
height	2m - 3m	
	3m - 5m	
	5m or more	

[Potencial disaster mode]	Check
Damage of bridge/culvert	
Outflow of embankment	
Debris flooding on the road	٧

[History]

category of score	Check
There is a history about debris flow that were obstacles to the road traffic after construction of recent measures.	
There is a history about debris flow though there is no obstacle to traffic.	٧
There is no history of debris flow	

[Expected size of disaster] (width, length, depth, etc.)

L= 280 m, W=25 m, D=3-4m

[Countermeasure]

Type of counterme	easure	Check
as made for the outflo	w of debris	s materia
	none · lov	
Effect of existing	moderat	е
countermesure	high	
	enough	

[Evaluation Rank]

[Evaluation rank]			
Scale of disaster	Big	Medium	Small
Great risk	1	2	3
Medium risk	1	2	3
Low risk	2	3	4

Organization responsible for countermeasure works according to the scale of the disaster

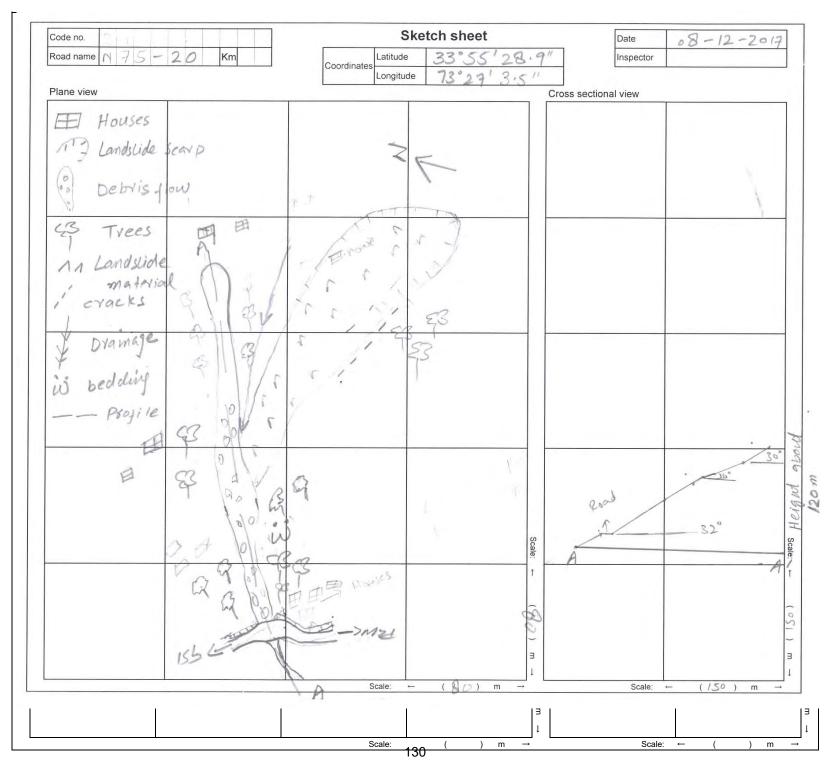
- -Big: Grant aid
- -Medium: Major contractor in Pakistan
- -Small: Local contractor

Influence on the traffice when potential disaster

- -Great risk: road closed for 2 days or mo
- -Low risk: no road closure

[Description/comments]

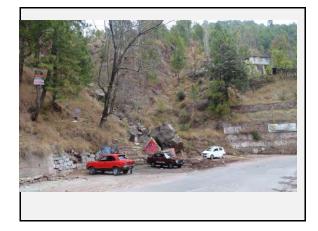
The site is marked by the presence of landslide and debris flow. Geology of the site is characterized by active fault and highly jointed claystone and sandstone. Due to erosion along two gullies debris material has been found in the stream bed. Beside, debris flow, there is also a potential landslide. Large open crack on the top indicates its future potential -Medium risk: road closed for 1 day or less failure. The debris flow and landslide are in dangering the stability of the road. Small retaining



Code no.	Ν	ı	75		2	0		
Road name								

Coordinates	Latitude	33°55' 28.9"				
-	Longitude	73° 27' 3.2"				

Date	24-11-2017
Inspector	asharat, Yasir, Sajid, Shafi





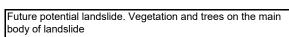


View of debris flow on the road

View of debris flow towards valley side

Road condition at location







Water seepages along the stream



Construction of small check dams to control debris flow

Code no.	N	7	5	2	8		
Region Office							
Maintenance Unit							

Coordinates	Latitude Longitude		33°59'16.6"									
Coordinates			73°29'2.7"									
Road Name					Km							

Date	12/8/2017
Inspector	Basharat, Yasir, Sajid, Shafid

[Causes]

[Causes]								
item	factor	category	Check					
Property of river	areas that river bed is 15°or more in watershed	0.50km ² or more 0.15km ² - 0.50km ²						
/ of	area	less than 0.15km²	٧					
ert)		40°or more						
οb	steepest slope of river bed	30° - 40°	٧					
۵		less than 30°						
	" ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '	0.20km ² or more						
	area that slope gradient is 30° or more in watershed area	0.08km² - 0.20km²						
	of more in watershed area	less than 0.08km²	٧					
9e	area that meadow and shrub	0.20km ² or more						
slo	(less than 10m height) occupy	0.02km² - 20km²						
ð	in watershed area	less than 0.02km²	٧					
Property of slope	artificial works that cause	certain						
edo.	negative effects	none	٧					
P	new crack and/or slope	certain						
	failure in stream	none	٧					
	traces of large slope failure	certain						
	in stream	none	٧					

|--|

structure	category of score	Check
	10m or more	٧
River	5m - 10m	
width	3m - 5m	
less than 3m		
	less than 1m or	
	No bridge / box culvert	
Beam	1m - 2m	
height	2m - 3m	
	3m - 5m	
	5m or more	٧

[Potencial disaster mode]	Check
Damage of bridge/culvert	٧
Outflow of embankment	
Debris flooding on the road	

[History]

category of score	Check
There is a history about debris flow that were obstacles to the road traffic after construction of recent measures.	
There is a history about debris flow though there is no obstacle to traffic.	
There is no history of debris flow	٧

[Expected size of disaster] (width, length, depth, etc.)

L= 440 m, W=12 m, D= 2-3 m

[Countermeasure]

Type of counterme	Ch	eck	
low of the debris. Ret	aining wall	s ha:	s bee
Effect of existing countermesure	none · lov moderate high		٧
	enough		

[Evaluation Rank]

[
Scale of disaster Risk	Big	Medium	Small
Great risk	1	2	3
Medium risk	1	2	3
Low risk	2	3	4

Organization responsible for countermeasure works according to the scale of the disaster

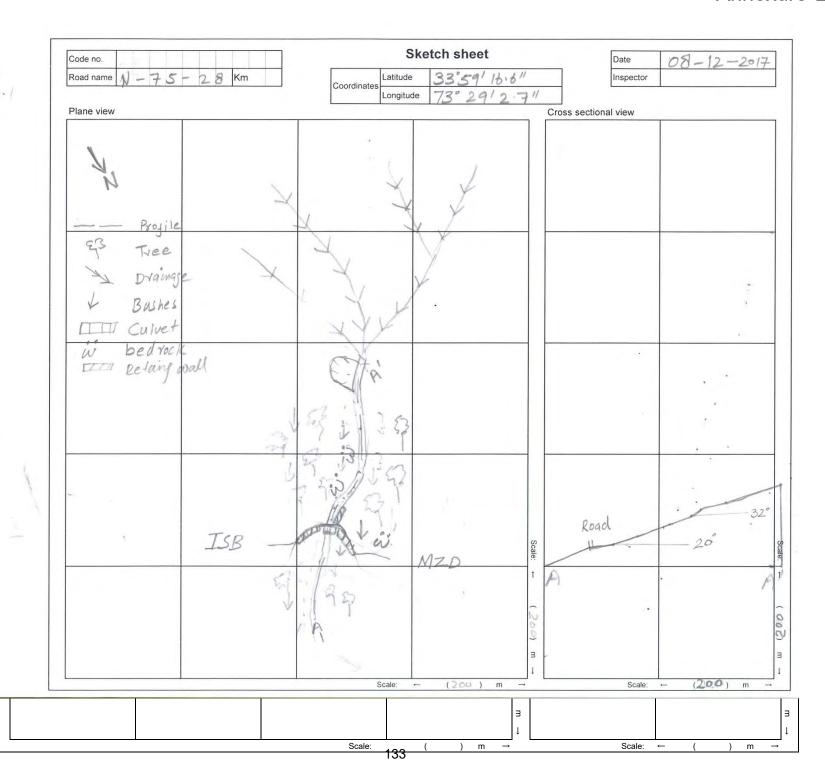
- -Big: Grant aid
- -Medium: Major contractor in Pakistan
- -Small: Local contractor

Influence on the traffice when potential disaster

- -Great risk: road closed for 2 days or more
- -Medium risk: road closed for 1 day or less
- -Low risk: no road closure

[Description/comments]

The site is located on a seasonal stream, where road has very sharp bend. Sides of the upstream are bounded by alternative beds of sandstone and claystone. Some boulders of size greater than 3 m³. The culvert has been constructed for the debris outflow. Vegetation is also present on both sides of the stream. As a countermeasure benching on upstream side was made which is partially damaged. Downstream side retaining walls are also present.



Code no.	N	7	5	2	8		
Region Office							
Maintenance Unit							

	Coordinates	Latitude			3	3°5	59'1	6.6) "			
ľ	Longitude			•	73°	29'	2.7'	ii .				
	Road Name					Km						

Date	12/8/2017
Inspector	Basharat, Yasir, Sajid, Shafiq



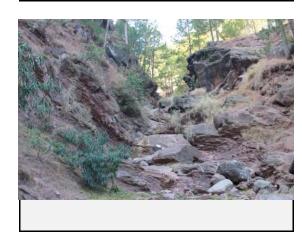




Front view of the debris flow:

Valley side view of the debris flow

Road condition at the site







Rock beds dipping towards the channel

Culvert has been constructed for the outflow of debris flow

Existing countermeasures / anomalies: Benches has been made on the upstream which has been partially destroyed

Code no.	Ν	7	5	3	3		
Region Office							
Maintenance Unit							

Evaluation sheet (Slope failure/Rockfall)

٠	ilaatioii s	,,,,	S	,,	, ~	<u>יוטף</u>	•	·u		<i>4</i> 1'	U,		<u> </u>
	Coordinates	L	Latitude			34°7'14.9"							
	Coordinates	Longitude				73°29'35.4"							
	Road name					Km							

[Disaster type] Rock fall

Slope failure √

[Main check object]

Cut slope

Natural slope

Date	12/7/2017
Inspector	Basharat, Yasir, Sajid, Shafiq

[Causes]

	tem	factor	cat	tegory of score	Check
topography	Collapsed factor	talus slope, clear convex break of slope, eroded toe of slope , overhang, water catchment slope	2 c	or more correspondences correspondences correspondences correspondence	٧
SL	Soil	susceptible to erosion less strength with water		arked ttle marked ne	٧
Geological conditions	Rock	high density of cracks and a weak layers, susceptible to erosion, fast weathering	ma a li No	٧	
eologica	ıre	dip slope of bedding plane	It c	٧	
Ğ	Structure	debris on impermeability bedrock, the upper part is a hard /the toe of slope is weak.	ma a li No	٧	
on		Topsoil, detached rock and unsteady rock	ins a li sta	٧	
Surface codition		Spring water	not see	٧	
Sur		Surface condition	bai inte ma	٧	
Profile		Height (H), dip (i)	dip height	H≥50m 30≦H<50m 15≦H<30m H<15m i≧70° 45°≦i<70°	٧
L		1		i<45°	٧
Anomaly	piping fallen	ce collapse, small fallen rock, gully, erosior, hole, subsidence, heaving, bending of tree root, tree, crack, open crack] anomaly of ermeasure	2 o cer noi	V	

[Countermeasure]

Type of countermeasures	
Effectiveness of existing countermeasures	Check
Potential slope failure are prevented enough, or, it is defended enough when it is generated.	
Potential slope failure are considerably prevented, or it is considerably defended when it is generated.	√
Potential slope failure are partly prevented, or it is partly defended when it is generated. However, it is not enough for the remaining factors.	
There is no countermeasure, or there is not effective even if countermeasures are not performed.	

[History]

Level of disaster history	Check
There is a history about large fallen rocks and slope failures that were obstacles to the road traffic after construction of recent measures.	√
There is a history about large fallen rocks and slope failures that gets to the road though there is no obstacle to traffic.	
There is a history about small fallen rocks and slope failures that did not get to the road.	
No disaster records	

[Expected size of disaster](width, length, depth, etc.)

L= 300 m, W= 220 m, D 5-6 m

[Evaluation Rank]

Scale of disaster		Medium	Small
Great risk	1	2	3
Medium risk	1	2	3
Low risk	2	3	4

[Description]

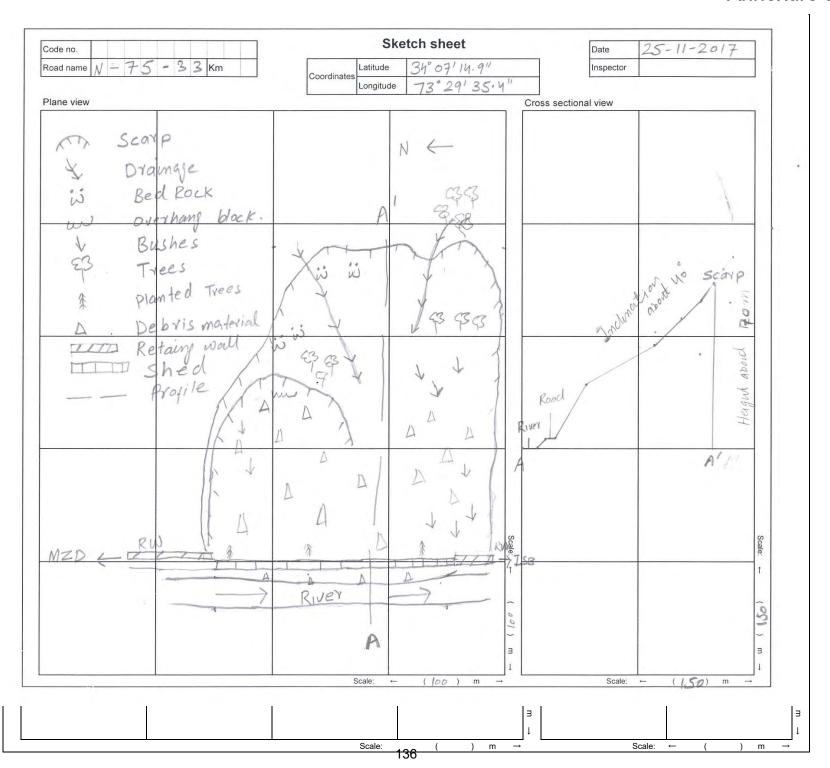
Landslide was initially triggered during 1992 flood. In March 2012, landslide was reactivated during the heavy rainfall. The landslide completely destroyed 200 meter road. The continuity of traffic along this road was disrupted more than one week during March 2012. This section is cut slope consisting of sandstone and shale.

Organization responsible for countermeasure works according to the scale of the disaster

- -Big: Grant aid
- -Medium: Major contractor in Pakistan
- -Small: Local contractor

Influence on the traffice when potential disaster

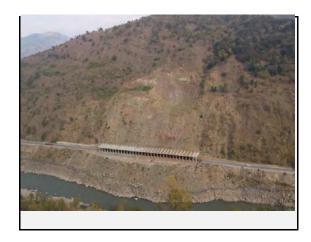
- -Great risk: road closed for 2 days or more
- -Medium risk: road closed for 1 day or less
- -Low risk: no road closure



Code no.	Ν	7	5	3	3		
Road name						Km	

Coordinates	Latitude	34°7'14.9"
	Longitude	73°29'35.4"

Date	25-11-2017
Inspector	Basharat, Yasir, Sajid, Shafiq







Full view of the landslide

View of landslide on Valley side:

Road condition:Cut slope at the start point



View of the slope failure at the middle point



Existing countermeasures / anomalies: View of shed as counter measure



View of fallen blocks on Shed

Code no.	Ν	15	4			
Region Office						
Maintenance Unit						

Evaluation sheet (landslide)

	Coordinates	Latitude				34° 55' 43.4"							
		L	Longitude			73° 40' 51.4"							
	Road Name					Km							

Date	6/19/2018				
Inspector	asharat, Yasir, Sajid, Shafi				

[Main body of landslide]

Mountain side	
Valley side	٧
Both	

[Causes]

-		Category	Check
		exist clearly	٧
	Result of photo interpretation	exist but partial and not clear	
T	Interpretation	exist but not clear	
Topographical factor		large and new cracks, steps and subsidence	
lactor	Surface	small and old cracks, steps and subsidence	٧
	anomalies	slight deformation	
		no anomalies	
	0	fault, fracture zone	
	Geological structure	dip slope	
	Structure	undip slope/ no characteristic feature	٧
		metamorphic rock (schist, quartzite, phyllite etc.)	٧
Caalasiaal	Main rock formation of	sedimentary rock (sandstone, limestone etc.)	
Geological conditions	landslide body	igneous rock (granite etc.)	٧
Conditions	·-···	quaternary deposit (colluvial deposit etc.)	
		much springs / much seepage	V
	Hydrological	little springs /little seepage	
	feature	trace of water	
		no water observed	

[History]

	category						
	Existing record	obvious	٧				
	(documents or	slight					
Records of	patrimony)	none					
Landslide	Damage on road	obvious	٧				
	facilities and	slight					
	houses	none					

[Countermeasure]

Category	Check	Type of countermeasure	
There is no countermeasure			
[ffastiveness of	No effect	٧	Retaining Wall has been
Effectiveness of countermeasure	Some effect		constructed
- Countonneasure	High effect		

[Evaluation Rank]

Scale of Risk disaster	Big	Small	
Great risk	1	2	3
Medium risk	1	2	3
Low risk	2	3	4

Organization responsible for countermeasure works according to the scale of the disaster

Influence on the traffice when potential disaster

-Big: Grant aid

-Medium: Major contractor in Pakistan

-Small: Local contractor

-Great risk: road closed for 2 days or more

-Medium risk: road closed for 1 day or less

-Low risk: no road closure

[Expected size of disaster] (width, length, depth, etc.)

L= 300m , W= 500m , D= 40 m

[Description]

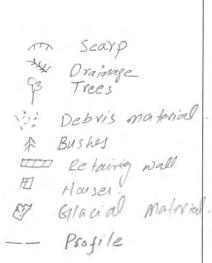
This landslide is located along N-15, about 3 km away from the Naran town. It is an old rotational landslide which has been reactivated due to road construction and rainfall. The upper part of the landslide is stable with vegetation cover, however, the landslide is active at the toe. Thick forest is also present on the left side of the slide. Due to re-activation of this slide about 100 meters road has been affected. Above the road the landslide scarp is clearly visible. Many detached boulders are hanging on the landslide scarp that can damage the road and the continuity of traffic. The boulders comprising of granite and schist ranges between 1-3 m3 size was present. A retaining wall above 2 m height has been constructed to protect the road from the slide material. However, the central part of this retaining wall has been damaged due to the reactivation of the slide material. Presently, there is no high risk to damage the road, however, in the future if the whole mass of the landslide body will move, lead to the damage and block the road for the continuity of traffic. For mitigation purpose, a retaining wall with a height of 5 meters has been suggested with proper drainage control.

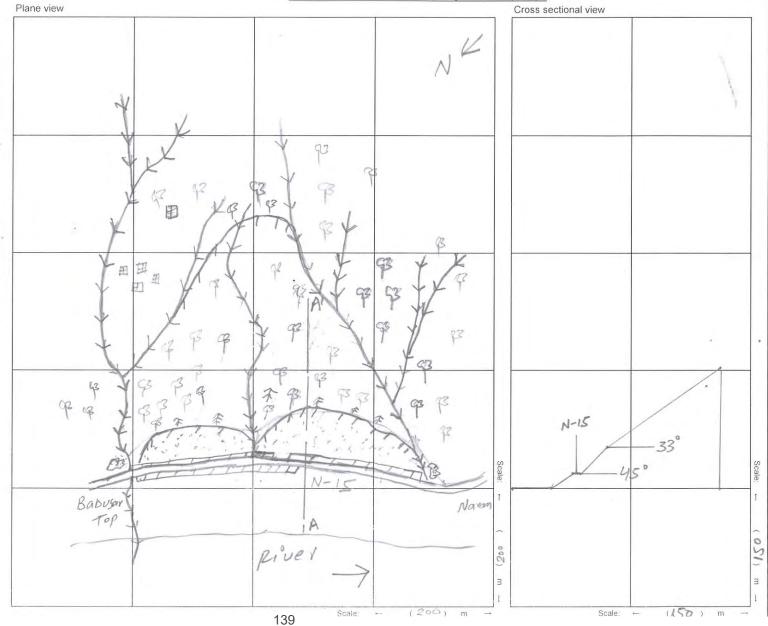
Code no.	Ν	1	5	4		
Region Office						
Maintenance Unit						

Sketch sheet

Coordinates	Latitude			34° 55' 43.4"								
Coordinates		Longitude				7	73°	40	' 5	1.4	"	
Road Name					Km							

Date	6/19/2018
Inspector	asharat, Yasir, Sajid, Shafi





Code no.	Ν	#	-	4			
Region Office							
Maintenance Unit							

Coordinates	Latitude			34° 55' 43.4"								
Coordinates		Longitude					73°	[°] 40	5′ 5′	1.4"		
Road Name					Km							

Date	6/19/2018
Inspector	Basharat, Yasir, Sajid, Shafi







Full view of the landslide

View of landslide on Valley side:

Road condition







View of the Landslide at the middle point

Existing countermeasures / anomalies: View of damaged Retaining Wall as counter measure

View of Glacier on the left flank of the Landslide

Code no.	Ν	1	5	_	8			
Region Office								
Maintenance Unit								

					•							
Coordinates	Latitude			34° 56' 17.8"								
Coordinates		Longitude			73° 40' 51.4"							
Road Name					Km							

Date	6/20/2018
Inspector	Yasir, Basharat, Shafiq, Sajid

[Causes]

item	factor	category	Check
of river	areas that river bed is 15°or more in watershed area	0.50km ² or more 0.15km ² - 0.50km ² less than 0.15km ²	٧
Property of river	steepest slope of river bed	40°or more 30° - 40° less than 30°	V
	area that slope gradient is 30° or more in watershed area	0.20km ² or more 0.08km ² - 0.20km ² less than 0.08km ²	٧
Property of slope	area that meadow and shrub (less than 10m height) occupy in watershed area	0.20km ² or more 0.02km ² - 20km ² less than 0.02km ²	٧
operty	artificial works that cause negative effects	certain none	٧
Ą	new crack and/or slope failure in stream	certain none	٧
	traces of large slope failure in stream	certain none	٧

[Road	structu	ıre

category of score	Check
10m or more	
5m - 10m	
3m - 5m	
less than 3m	٧
less than 1m or	
No bridge / box culvert	٧
1m - 2m	
2m - 3m	
3m - 5m	
5m or more	
	10m or more 5m - 10m 3m - 5m less than 3m less than 1m or No bridge / box culvert 1m - 2m 2m - 3m 3m - 5m

[Potencial disaster mode]	Check
Damage of bridge/culvert	
Outflow of embankment	
Debris flooding on the road	٧

[History]

[i iistory]	
category of score	Check
There is a history about debris flow that were obstacles to the road traffic after construction of recent measures.	٧
There is a history about debris flow though there is no obstacle to traffic.	
There is no history of debris flow	

[Expected size of disaster] (width, length, depth, etc.)

L= 1000 m, W= 600 m, D= 6 m

[Countermeasure]

Type of counterm	Check	
Gabio Retainir		
Effect of existing countermesure	none · lov moderat high	
	enough	

[Evaluation Rank]

[Evaluation Rank]			
Scale of disaster Risk		Medium	Small
Great risk	1	2	3
Medium risk	1	2	3
Low risk	2	3	4

Organization responsible for countermeasure works according to the scale of the disaster

-Big: Grant aid

-Medium: Major contractor in Pakistan

-Small: Local contractor

Influence on the traffice when potential

-Great risk: road closed for 2 days or more -Medium risk: road closed for 1 day or less

-Low risk: no road closure

[Description/comments]

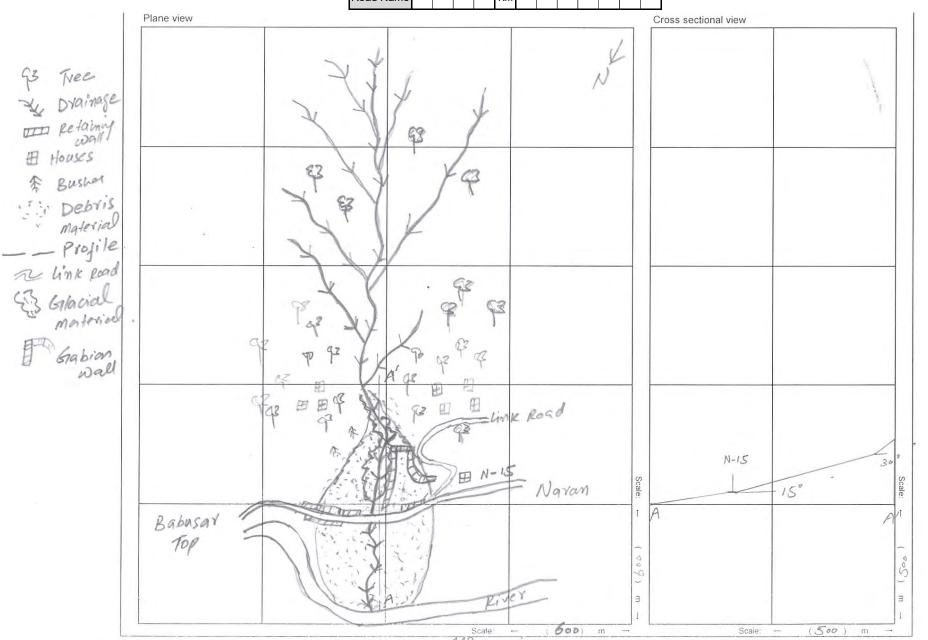
This is an active debris flow with large catchment area. The debris flow origin appears from the glacier valley. The debris material mainly comprises boulders, cobble, gravel, sand and silt. The size of the boulders ranges upto 5 m3. The debris flow has a large amount of water in the channel posing great and frequent risk to road. Very huge material is present on both the sides of the erosional channel. The gabion wall has seen at the mouth of the channel to control the debris, however, no culvert has been constructed for the outlet of the water and debris flow material. Therefore, this debris flow posing a significant threat for the continuity of traffic on the road, particularly during heavy rainfall. According to the local inhabitants a very serious debris flow disaster occurred after every five years at the site. For the mitigation measures it has been suggested to construct the culvert for the outlet of the

Code no.	Ν	1	5	8		
Region Office						
Maintenance Unit						

Sketch sheet

	Coordinates	Latitude			34º 56' 17.8"								
			Longitude				7	730	40)' 5	1.4	."	
	Road Name					Km							

Date	6/20/2018
Inspector	asir, Basharat, Shafiq, Saji



Code no.	Ν	1	5	_	8		
Region Office							
Maintenance Unit							

	Coordinates	Latitude				34º 56' 17.8"							
		Longitude			73° 40' 51.4"								
	Road Name					Km							

Date	6/20/2018
Inspector	Yasir, Basharat, Shafiq, Sajid







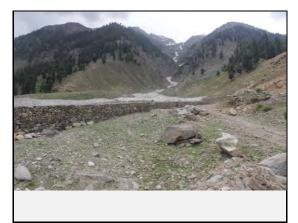
Mountain side view of the debris flow

Valley side view of the debris flow

Front view of the debris flow







The boulder has been found along the debris flow

Road condition

Existing countermeasures / anomalies:Gabion wall has been constructed along the Debris Flow

Code no.	Ν	1	5	_	9			
Region Office								
Maintenance Unit								

					•						•	
Coordinates	La	titu	de		34° 56' 22.4"							
Coordinates	Longitude				73° 42' 45.6"							
Road Name					Km							

Date	6/21/2018
Inspector	Yasir, Basharat, Shafiq, Sajid

[Causes]

item	factor	category	Check
Property of river	areas that river bed is 15°or more in watershed area	0.50km ² or more 0.15km ² - 0.50km ² less than 0.15km ²	٧
Property	steepest slope of river bed	40° or more 30° - 40° less than 30°	٧
	area that slope gradient is 30° or more in watershed area	0.20km ² or more 0.08km ² - 0.20km ² less than 0.08km ²	٧
Property of slope	area that meadow and shrub (less than 10m height) occupy in watershed area	0.20km ² or more 0.02km ² - 20km ² less than 0.02km ²	٧
operty	artificial works that cause negative effects	certain none	٧
Ā	new crack and/or slope failure in stream	certain none	٧
	traces of large slope failure in stream	certain none	٧

[Road structure]

[
structure	category of score	Check					
	10m or more						
River	5m - 10m						
width	3m - 5m						
	less than 3m	٧					
	less than 1m or						
	No bridge / box culvert	٧					
Beam	1m - 2m						
height	2m - 3m						
	3m - 5m						
	5m or more						

[Potencial disaster mode]	Check
Damage of bridge/culvert	٧
Outflow of embankment	٧
Debris flooding on the road	٧

[History]

[i iiotoi y]	
category of score	Check
There is a history about debris flow that were obstacles to the road traffic after construction of recent measures.	>
There is a history about debris flow though there is no obstacle to traffic.	
There is no history of debris flow	

[Expected size of disaster] (width, length, depth, etc.)

L= 500 m, W= 200 m, D= 8-10 m

[Countermeasure]

Type of counterm	Check	
Channel Diversio Retainir	U	Culvert
	none · lo	N √
Effect of existing	moderat	е
countermesure	high	
	enough	

[Evaluation Rank]

[Evaluation Name]										
Scale of disaster		Medium	Small							
Great risk	1	2	3							
Medium risk	1	2	3							
Low risk	2	3	4							

Organization responsible for countermeasure works according to the scale of the disaster

-Big: Grant aid

-Medium: Major contractor in Pakistan

-Small: Local contractor

Influence on the traffice when potential

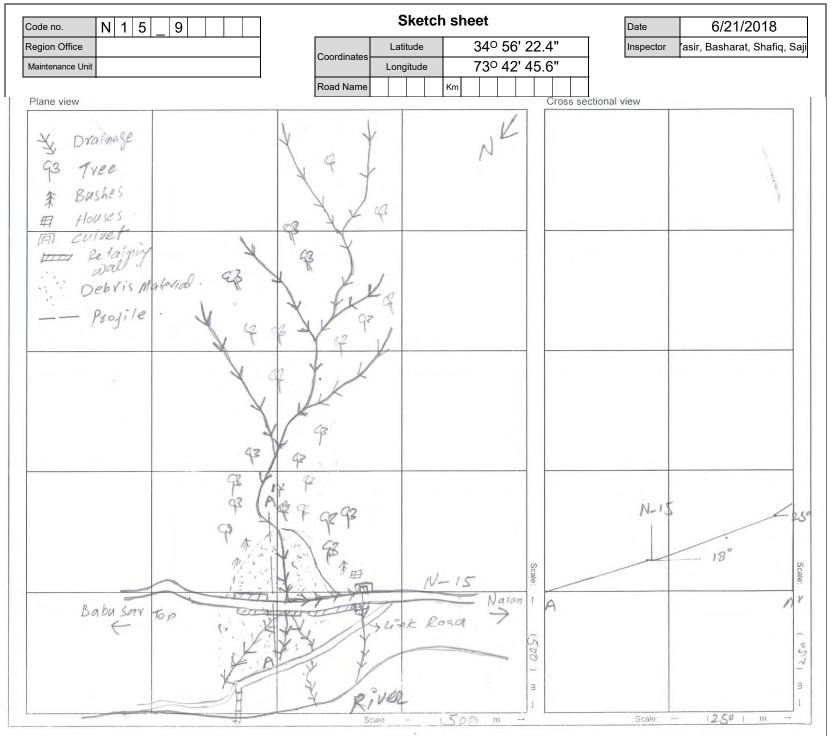
uisasiei

-Great risk: road closed for 2 days or more -Medium risk: road closed for 1 day or less

-Low risk: no road closure

[Description/comments]

The debris material might be active during the rainfall and can also lead to a debris flow disaster in future. Presently, the water is flowing through a narrow channel and along the road it is diverted through channel to reduce its impact on road damage. The loose debris comprises boulder, cobble, gravel, sand and silt. It is likely that future debris flow will continue along the slope. A retaining wall is constructed to protect the road which is also partly damaged. However, no countermeasures have been taken to drain the water and protect the road from the debris material. The debris flow posing risk of road damage in



Code no.	Ν	1	5	_	9		
Region Office							
Maintenance Unit							

Coordinates	Latitude			34º 56' 22.4"								
Longitude				73°	42	2' 4	5.6"					
Road Name					Km							

Date	6/21/2018
Inspector	Yasir, Basharat, Shafiq, Sajid





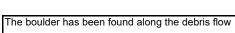


Mountain side view of the debris flow

Valley side view of the debris flow

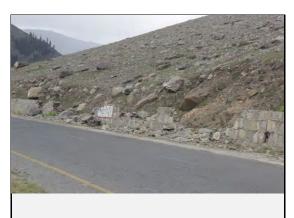
Outlet of Culvert constructed







Road condition



Existing countermeasures / anomalies:Retaining wall has been constructed along the Debris Flow which has been damaged by the debris material

Code no.	Ν	1	5	_	#			
Region Office								
Maintenance Unit								

Evaluation sheet (Slope failure/Rockfall)

_				_	<u>, </u>								_
	Coordinates	Latitude		34º 56' 19.9"									
	Coordinates	Longitude			7	⁷ 3 ⁰	5	0'	59	9.7	711		
	Road name					Km							

[Disaster type] Rock fall

Slope failure √

[Main check object]

Cut slope

Natural slope

Date	6/22/2018
Inspector	Yasir, Basharat, Shafiq, Sajid

[Causes]

I	tem	n factor		cat	egory of score	Check
topography	Collapsed factor	talus slope, clear convex break of slope, eroded toe of slope , overhang, water catchment slope		2 c 1 c	or more correspondences correspondences correspondences correspondence	٧
ns	Soil	susceptible to erosion less strength with water		irked ttle marked ne	٧	
Geological conditions	Rock	high density of cracks and a weak susceptible to erosion, fast weathering		irked ttle marked ne	√	
eologic	ıre	dip slope of bedding plane	It c No	orresponds. ne	٧	
Ď	Structure	debris on impermeability bedrock, the upper part is a hard /the toe of	ma a li No	٧		
ion		Topsoil, detached rock and unstea	ady rock	a li	tability ttle unstable bility	٧
Surface codition		Spring water			table spring waster epage ne	٧
Sur		Surface condition		bai inte ma	٧	
Profile		Height (H), dip (i)	dip height	H≥50m 30≤H<50m 15≦H<30m H<15m i≥70° 45°≤i<70°	√	
Anomaly	Surface collapse small fallen rock, gully, erosidn, piping hole, subsidence, heaving, bending of tree root, fallen tree, crack, open crack, anomaly of countermeasure				i≺45° r more correspondences · clarity tain · unclarity ne	√ √

[Count	ermeasure]

Type of countermeasures	
Culvert has been constructed along the slope failure	
Effectiveness of existing countermeasures	Check
Potential slope failure are prevented enough, or, it is defended enough when it is generated.	
Potential slope failure are considerably prevented, or it is considerably defended when it is generated.	
Potential slope failure are partly prevented, or it is partly defended when it is generated. However, it is not enough for the remaining factors.	
There is no countermeasure, or there is not effective even if countermeasures are not performed.	٧

[History]

Level of disaster history	Check
There is a history about large fallen rocks and slope failures that were obstacles to the road traffic after construction of recent measures.	
There is a history about large fallen rocks and slope failures that gets to the road though there is no obstacle to traffic.	
There is a history about small fallen rocks and slope failures that did not get to the road.	
No disaster records	√

[Expected size of disaster](width, length, depth, etc.)

L= 400m, W= 350m, D = 56 m

[Evaluation Rank]

Scale of disaster Risk	Big	Medium	Small
Great risk	1	2	3
Medium risk	1	2	3
Low risk	2	3	4

This slope failure is located about 100 meters away from the N-15. It is an active slope failure of loose material composed of boulder, cobble, gravel, sand and silt. On the back of the slope failure steep cliff is comprised of metamorphic rocks. Any impact to damage the road from the slope failure has not been observed. On the right side of the slope failure man made terraces has been formed. Active erosion on the slope leads to the

development of the gullies. A retaining wall is built to protect the road, however, no mitigation measures have been taken to stabilize the slope failure. The slope failure is not being considered to endanger the road.

Influence on the traffice when potential

disaster

-Great risk: road closed for 2 days or more -Medium risk: road closed for 1 day or less

-Low risk: no road closure

[Description]

Organization responsible for countermeasure works according to the scale of the disaster

- -Big: Grant aid
- -Medium: Major contractor in Pakistan
- -Small: Local contractor

Code no. N 1 5 24	Sket	ch sheet	Date 6/22/2018
Region Office	Latitude	34º 56' 19.9"	Inspector 'asir, Basharat, Shafiq, Saji
Maintenance Unit	Coordinates Longitude	73° 50' 59.7"	
	Road Name	Km	
Plane view		Cross sect	ional view
overharf			
Ounile		V	A
Profile. To Scarp		\sim	
or scarp			\ \ \
> Drainge			
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& Busher	1		
& Busher. So Trees			
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W.	y m		
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	Y K		
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L & Y	PR F	N-15+ A	A
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T I			2
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2 ivet		11271	

Code no.	Ν	1	5	_	24		
Region Office							
Maintenance Unit							

Coordinates	Latitude		34º 56' 19.9"							
Coordinates	Longitud	le	73° 50' 59.7"							
Road na	ame					Km				

Date	6/22/2018
Inspector	′asir, Basharat, Shafiq, Saji







Full view of the Slope Failure

View of Slope Failure on Valley side:

Road condition:Cut slope at the start point







View of the slope failure at the middle point

Existing countermeasures / anomalies. Damaged retaining Wall

View of Box Culvert at the toe of slope

Code no.	Ν	1	5	_	3	4		
Region Office								
Maintenance Unit								

						•						•	
Cc	Coordinates	Latitude			63	34°	5	8'	15	5.8	,"		
	Coordinates	Lo	ongitude			7	73°	5	5'	37	7 .1	"	
	Road Name					Km							

Date	6/23/2018
Inspector	Yasir, Basharat, Shafiq, Sajid

[Causes]

[Caus	ocoj .		
item	factor	category	Check
iver	areas that river bed is 15°or more in watershed	0.50km ² or more 0.15km ² - 0.50km ²	٧
Property of river	area	less than 0.15km ²	
ert)		40°or more	
rop	steepest slope of river bed	30° - 40°	
ш		less than 30°	٧
	area that slope gradient is 30°	0.20km ² or more	
	or more in watershed area	0.08km ² - 0.20km ²	
		less than 0.08km ²	٧
be	area that meadow and shrub	0.20km ² or more	
S	(less than 10m height) occupy in watershed area	0.02km ² - 20km ²	
of of	in watersned area	less than 0.02km ²	٧
Property of slope	artificial works that cause	certain	
5	negative effects	none	٧
	new crack and/or slope	certain	
	failure in stream	none	٧
	traces of large slope failure	certain	٧
	in stream	none	

[Road structure]

structure	category of score	Check
	10m or more	٧
River	5m - 10m	
width	3m - 5m	
ji	less than 3m	
	less than 1m or	
	No bridge / box culvert	٧
Beam	1m - 2m	
height	2m - 3m	
	3m - 5m	
	5m or more	

[Pote	ncial disaster mode]	Check
Dama	age of bridge/culvert	
Outflo	ow of embankment	
Debri	s flooding on the road	٧

[History]

[r notory]	
category of score	Check
There is a history about debris flow that were obstacles to the road traffic after construction of recent measures.	٧
There is a history about debris flow though there is no obstacle to traffic.	
There is no history of debris flow	

[Expected size of disaster] (width, length, depth, etc.)

L= 600m, W= 70m, D= 4-5 m

[Countermeasure]

Type of counterme	Cr	neck	
No Counter	Measure		
	none · lo		٧
Effect of existing	moderat	е	
countermesure	high		
	enough		

[Evaluation Rank]

[Evaluation rtank]			
Scale of disaster Risk	Big	Medium	Small
Great risk	(1)	2	3
Medium risk	1	2	3
Low risk	2	3	4

Organization responsible for countermeasure works according to the scale of the disaster

-Big: Grant aid

-Medium: Major contractor in Pakistan

-Small: Local contractor

Influence on the traffice when potential

lisaster

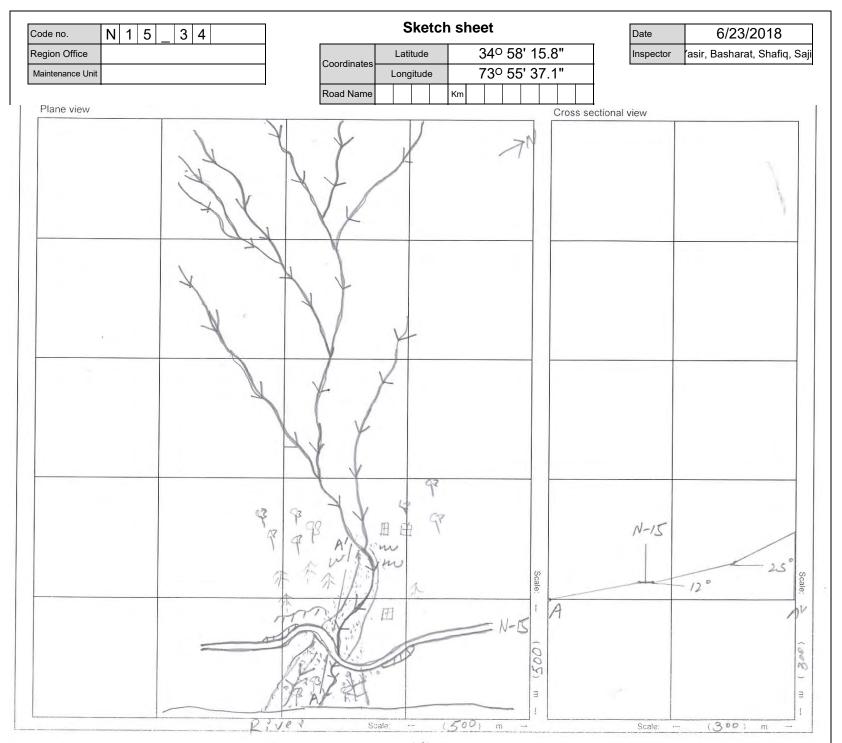
-Great risk: road closed for 2 days or more

-Medium risk: road closed for 1 day or less

-Low risk: no road closure

[Description/comments]

This is an active debris flow with large catchment area and flowing great amount of water. The debris is being mainly comprised of large boulders up to 5 m3 size. The loose material is present on both sides of the erosional channel. About 60 meters road has been damaged due to this debris flow. The debris flow has continuous water flowing on the road. A retaining wall is constructed to protect the road, however, no mitigation measures have been taken for the outflow of the water. To protect the road from this debris flow in the future, the construction of the bridge has been



Code no.	N	1	5	_	3	4		
Region Office								
Maintenance Unit								

Coordinates	Latitude		34º 58' 15.8"									
Coordinates	Longitude					73 ^c	55	5' 37	7.1"			
Road Name					Km							

Date	6/23/2018
Inspector	Yasir, Basharat, Shafiq, Sajid







Mountain side view of the debris flow

Valley side view of the debris flow

Front view of the debris flow







The boulder has been found along the debris flow

Road condition

Debris flowing on road

Code no.	Ν	15	5	3		
Region Office						
Maintenance Unit						

Evaluation sheet (landslide)

Coordinates	Latitude		35° 4' 28.0"									
Coordinates	Longitude					73°	² 56	3' 17	7.9"			
Road Name					Km							

Date	6/24/2018
Inspector	asharat, Yasir, Sajid, Shafi

[Main body of landslide]

Mountain side	
Valley side	
Both	٧

[Causes]

		Category	Check
	D 14 - 4 - 15 - 4 -	exist clearly	٧
	Result of photo interpretation	exist but partial and not clear	
Tanaanahiaal	Interpretation	exist but not clear	
Topographical factor		large and new cracks, steps and subsidence	
lactor	Surface	small and old cracks, steps and subsidence	٧
	anomalies	slight deformation	
		no anomalies	
	Caalasiaal	fault, fracture zone	٧
	Geological structure	dip slope	
	diadara	undip slope/ no characteristic feature	٧
		metamorphic rock (schist, quartzite, phyllite etc.)	٧
Coological	Main rock formation of	sedimentary rock (sandstone, limestone etc.)	
Geological conditions	landslide body	igneous rock (granite etc.)	٧
CONTAILIONIC		quaternary deposit (colluvial deposit etc.)	
		much springs / much seepage	
	Hydrological	little springs /little seepage	
	feature	trace of water	
		no water observed	٧

[History]

category				
	Existing record	obvious	٧	
	(documents or	slight		
Records of	patrimony)	none		
Landslide	Damage on road	obvious		
	facilities and	slight	٧	
	houses	none		

[Countermeasure]

Category	Check	Type of countermeasure	
There is no countermeasure			
Effectiveness of countermeasure	No effect	٧	Retaining Wall has been
	Some effect		constructed
	High effect		

[Evaluation Rank]

Scale of disaster	Big	Medium	Small
Great risk	1	2	3
Medium risk	1	2	3
Low risk	2	3	4

Organization responsible for countermeasure works according to the scale of the disaster

Influence on the traffice when potential disaster

-Great risk: road closed for 2 days or more

-Big: Grant aid

-Medium: Major contractor in Pakistan

-Medium risk: road closed for 1 day or less

-Small: Local contractor

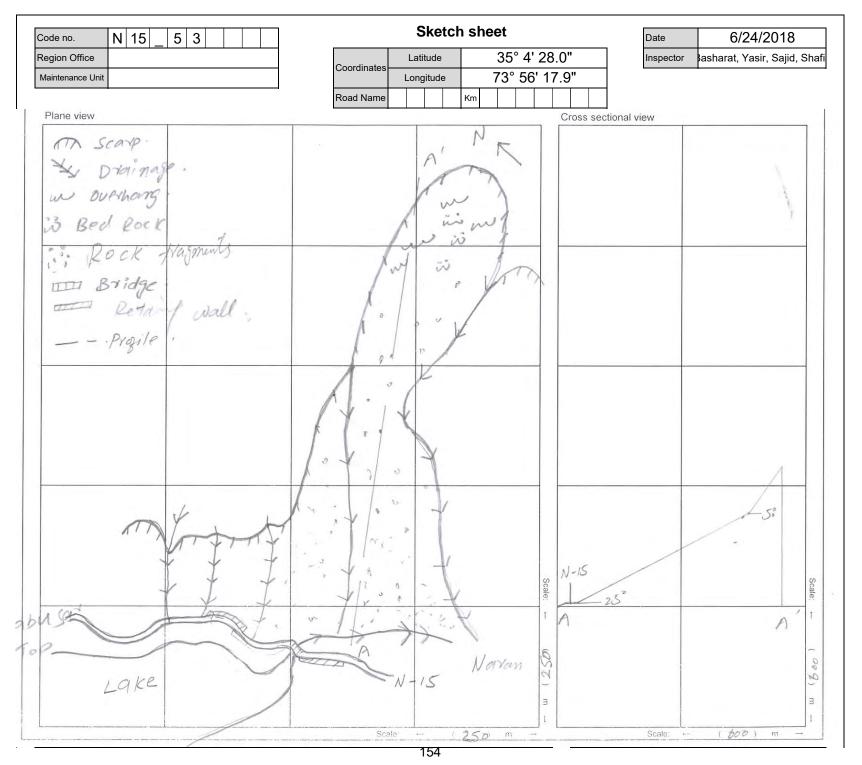
-Low risk: no road closure

[Expected size of disaster] (width, length, depth, etc.)

L= 1000m, W= 60m, D= 70 m

[Description]

This is an old rock avalanche which triggered due to any tectonic activity in the ancient time. It is presumed the rock avalanche has blocked the stream and created a lake which is known as Lalusar Lake. A channel has been constructed for the outflow of the water from the lake. The rock avalanche material is mainly composed of granite and granite gneisses. The huge boulders are present at the site up to more than 10 m3 sizes. Presently, this rock avalanche has no impact on the road, however, in future if rock avalanche material will be remoblized it may block the water channel and disrupt the road. A retaining wall has been constructed to protect the road.

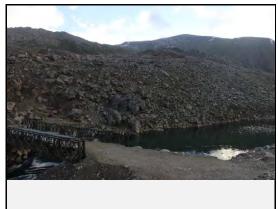


Code no.	Ν	#	_	5	3	1	
Region Office							
Maintenance Unit							

Coordinates	Latitude			35° 4' 28.0"								
Coordinates	Longitude			73° 56' 17.9"								
Road Name					Km							

Date	6/24/2018
Inspector	Basharat, Yasir, Sajid, Shafi







Full view of the landslide

View of landslide on Valley side:

Road condition







View of the Landslide at the middle point

Existing countermeasures / anomalies: View of damaged Retaining Wall as counter measure

View of the toe of Landslide cut by the stream

Code no.	Ν	1	5	_	6	1		
Region Office								
Maintenance Unit								

					•							
Coordinates	Latitude			35° 05' 46.6"								
Coordinates		Longitude			73° 57' 17.0"							
Road Name					Km							

Date	6/25/2018
Inspector	Yasir, Basharat, Shafiq, Sajid

[Causes]

item	factor	category	Check
Property of river	areas that river bed is 15°or more in watershed area	0.50km ² or more 0.15km ² - 0.50km ² less than 0.15km ²	٧
Property	steepest slope of river bed	40° or more 30° - 40° less than 30°	٧
	area that slope gradient is 30° or more in watershed area	0.20km ² or more 0.08km ² - 0.20km ² less than 0.08km ²	٧
Property of slope	area that meadow and shrub (less than 10m height) occupy in watershed area	0.20km ² or more 0.02km ² - 20km ² less than 0.02km ²	٧
operty	artificial works that cause negative effects	certain none	٧
P	new crack and/or slope failure in stream	certain none	٧
	traces of large slope failure in stream	certain none	٧

[Road structure]

category of score	Check
10m or more	٧
5m - 10m	
3m - 5m	
less than 3m	
less than 1m or	٧
No bridge / box culvert	
1m - 2m	
2m - 3m	
3m - 5m	
5m or more	
	10m or more 5m - 10m 3m - 5m less than 3m less than 1m or No bridge / box culvert 1m - 2m 2m - 3m 3m - 5m

[Potencial disaster mode]	Check
Damage of bridge/culvert	
Outflow of embankment	
Debris flooding on the road	٧

[History]

[i listory]	
category of score	Check
There is a history about debris flow that were obstacles to the road traffic after construction of recent measures.	>
There is a history about debris flow though there is no obstacle to traffic.	
There is no history of debris flow	

[Expected size of disaster] (width, length, depth, etc.)

L= 1000 m, W= 40 m, D= 3-4 m

[Countermeasure]

Type of counterm	Check	
Culv Retainin		
	none•lo\	
Effect of existing	moderat	е
countermesure	high	
	enough	

[Evaluation Rank]

[Lvaluation Nank]					
Scale of disaster Risk	Big	Medium	Small		
Great risk	(1)	2	3		
Medium risk	1	2	3		
Low risk	2	3	4		

Organization responsible for countermeasure works according to the scale of the disaster

-Big: Grant aid

-Medium: Major contractor in Pakistan

-Small: Local contractor

Influence on the traffice when potential

-Great risk: road closed for 2 days or more -Medium risk: road closed for 1 day or less

-Low risk: no road closure

[Description/comments]

This is an active debris flow located at the sharp bend along N-15. Presently, the erosional channel is covered with glacier and road has been severely damaged. The debris flow has very large surface run off with steep gradient. The water seeps beneath the road and boulders ranges between 1-3 m3 are present in the channel towards valley side. Due to this steep gradient debris flow posing serious debris flow disaster which cause to damage the road and discontinuity of the traffic. A culvert is constructed for the out flow of the water, however, it does not fulfill the requirement. The active landslides were also observed both side of the river bed along the road posing risk to damage the road. A retaining wall is constructed to protect the road which has been damaged due to the debris flow. For the mitigation purpose, a culvert for the outflow of the water and debris material should be redesign

Code no. N 1 5 _ 6 1		Sketcl	h sheet		Date	6/25/2018
Region Office	Coordinates-	Latitude	35º 05'	46.6"	Inspector	′asir, Basharat, Shafiq, Saji
Maintenance Unit	Coordinates	Longitude	73° 57'	17.0"		
· · · · · · · · · · · · · · · · · · ·	Road Name		Km			
Plane view				Cross section	nal view	
Drainge Lake Drainge Woverhoup The Scenup The Culvert - Projile Befaire Befaire With Culvert Culve			\(\frac{1}{N}\)			
ar della - Sul	A'					
				N-15 Scale:	19°	Scale: -
Babusar Top	Va la s	Novan	(500) m -	m (2)	Scale	= (50°) m -

Code no.	Ν	1	5	6	1		
Region Office							
Maintenance Unit							

Coordinates	Latitude Longitude		35° 05' 46.6"									
Coordinates			73° 57' 17.0"									
Road Name					Km							

Date	6/25/2018
Inspector	Yasir, Basharat, Shafiq, Sajid





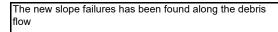


Mountain side view of the debris flow

Valley side view of the debris flow

Culvert outlet







Road condition



Existing countermeasures / anomalies:Retaining wall has been constructed along the Debris Flow

Code no.	Ν	1	5	_	7	2		
Region Office								
Maintenance Unit								

					_ •							
Coordinates	Latitude Longitude			35° 11' 2.3"								
Coordinates				74° 02' 38.1"								
Road Name					Km							

Date	6/26/2018
Inspector	Yasir, Basharat, Shafiq, Sajid

[Causes]

item	factor	category	Check
Property of river	areas that river bed is 15°or more in watershed area	0.50km ² or more 0.15km ² - 0.50km ² less than 0.15km ²	٧
Property	steepest slope of river bed	40° or more 30° - 40° less than 30°	٧
	area that slope gradient is 30° or more in watershed area	0.20km ² or more 0.08km ² - 0.20km ² less than 0.08km ²	٧
Property of slope	area that meadow and shrub (less than 10m height) occupy in watershed area	0.20km ² or more 0.02km ² - 20km ² less than 0.02km ²	٧
operty	artificial works that cause negative effects	certain none	٧
Ā	new crack and/or slope failure in stream	certain none	٧
	traces of large slope failure in stream	certain none	٧

[Road structure]

category of score	Check
10m or more	٧
5m - 10m	
3m - 5m	
less than 3m	
less than 1m or	
No bridge / box culvert	
1m - 2m	
2m - 3m	
3m - 5m	
5m or more	٧
	10m or more 5m - 10m 3m - 5m less than 3m less than 1m or No bridge / box culvert 1m - 2m 2m - 3m 3m - 5m

[Potencial disaster mode]	Check
Damage of bridge/culvert	
Outflow of embankment	٧
Debris flooding on the road	

[History]

[mistory]	
category of score	Check
There is a history about debris flow that were obstacles to the road traffic after construction of recent measures.	
There is a history about debris flow though there is no obstacle to traffic.	٧
There is no history of debris flow	

[Expected size of disaster] (width, length, depth, etc.)

L= 1000m, W= 29 m, D= 3-4 m

[Countermeasure]

Type of counterm	Check	
Culv Retainir		
Effect of existing	none · lov	
countermesure	high	
	enough	

[Evaluation Rank]

[Evaluation reality			
Scale of disaster		Medium	Small
Great risk	1	2	3
Medium risk	1	2	3
Low risk	2	3	4

Organization responsible for countermeasure works according to the scale of the disaster

-Big: Grant aid

-Medium: Major contractor in Pakistan

-Small: Local contractor

Influence on the traffice when potential

-Medium risk: road closed for 1 day or less

-Low risk: no road closure

[Description/comments]

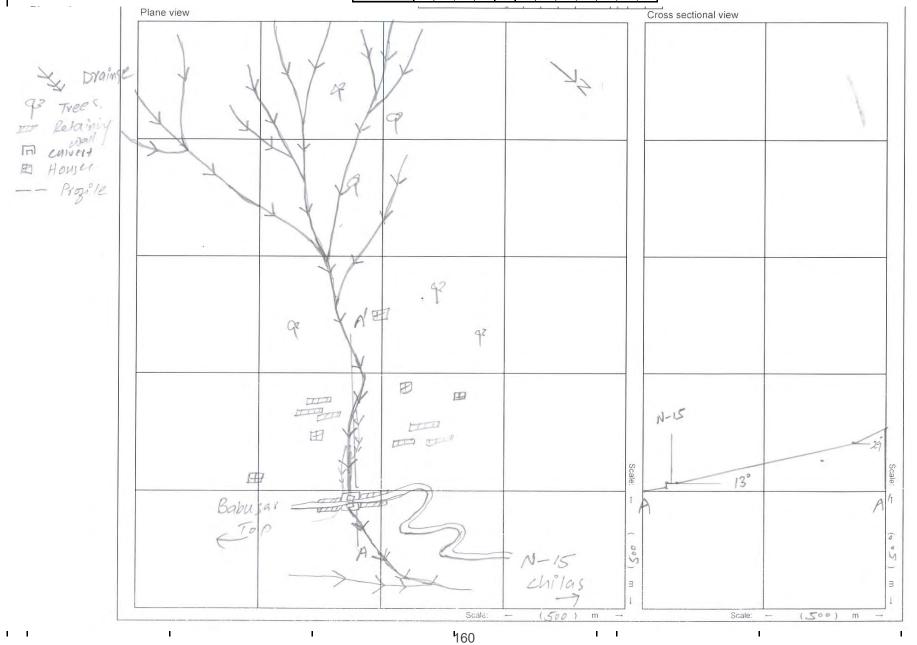
The debris flow is located along N-15 with large surface runoff. The debris flow origin appears from the top of the Babusar (13700 feet asl). This debris flow has very large catchment area and long run-out. It is a permanent stream with flowing water through out the year. The main source of water in the stream is glacier and springs. The shallow channel has been observed. A culvert has been constructed for the out let of the water, however, according to the local inhabitant during the heavey rain fall the water is following on the -Great risk: road closed for 2 days or more road. Man made terraces at the side of the stream has been developed. No damage of the road has been observed at the site. The width of the river beis about 50 meters. The size of the boulders in the stream ranges between 1 5m3. Retaining wall has been constructed to protect the road. For the mitigation purposes depth of the channel should be increased for the outloo

Code no.	Z	1	5	ı	7	2		
Region Office								
Maintenance Unit								
	4.	PI	ane	viow				

Sketch sheet

Coordinates	Latitude				35º 11' 2.3"							
Coordinates	Longitude			74º 02' 38.1"								
Road Name					Km							

Date	6/26/2018
Inspector	′asir, Basharat, Shafiq, Saji



Code no.	Ν	1	5	7	2		
Region Office							
Maintenance Unit							

Coordinates	Latitude			35º 11' 2.3"									
Coordinates		ong	jitude	е	74º 02' 38.					3.1"	1"		
Road Name					Km								

Date	6/26/2018
Inspector	Yasir, Basharat, Shafiq, Sajid







Mountain side view of the debris flow

Valley side view of the debris flow

Front view of the debris flow







The culvert inlet along the debris flow

Road condition

Existing countermeasures / anomalies:Check Dams has been constructed along the Debris Flow

Code no.	Ν	1	5	_	7	5	_	1	
Region Office									
Maintenance Unit									

					•						•	
Coordinates	Latitude			35° 15' 36.0"								
Coordinates	Longitude			74° 05' 28.1"								
Road Name					Km							

Date	6/27/2018
Inspector	Yasir, Basharat, Shafiq, Sajid

[Causes]

Caus			Charle
item	factor	category	Check
ē	areas that river bed is	0.50km ² or more	٧
ř	15°or more in watershed	0.15km ² - 0.50km ²	
y of	area	less than 0.15km ²	
ert		40°or more	
Property of river	steepest slope of river bed	30° - 40°	٧
Ф		less than 30°	
		0.20km ² or more	٧
	area that slope gradient is 30° or more in watershed area	0.08km ² - 0.20km ²	
	of filore iii watershed area	less than 0.08km²	
Se	area that meadow and shrub	0.20km ² or more	
ols	(less than 10m height) occupy	0.02km ² - 20km ²	
of	in watershed area	less than 0.02km²	٧
Property of slope	artificial works that cause	certain	
do	negative effects	none	٧
Ā	new crack and/or slope	certain	٧
	failure in stream	none	
	traces of large slope failure	certain	٧
	in stream	none	

[Road structure]

structure	category of score	Check
	10m or more	٧
River	5m - 10m	
width	3m - 5m	
	less than 3m	
	less than 1m or	
	No bridge / box culvert	٧
Beam	1m - 2m	
height	2m - 3m	
	3m - 5m	
	5m or more	

[Potencial disaster mode]	Check
Damage of bridge/culvert	
Outflow of embankment	
Debris flooding on the road	٧

[History]

[HISTOLY]	
category of score	Check
There is a history about debris flow that were obstacles to the road traffic after construction of recent measures.	٧
There is a history about debris flow though there is no obstacle to traffic.	
There is no history of debris flow	

[Expected size of disaster] (width, length, depth, etc.)

L= 1000 m, W= 45m, D= 7-8 m

[Countermeasure]

Type of counterm	Check	
Retainin	g walls	
	none•lo\	N √
Effect of existing	moderat	е
countermesure	high	
	enough	

[Evaluation Rank]

[Evaluation rtank]			
Scale of disaster		Medium	Small
Great risk	1	2	3
Medium risk	1	2	3
Low risk	2	3	4

Organization responsible for countermeasure works according to the scale of the disaster

-Big: Grant aid

-Medium: Major contractor in Pakistan

-Small: Local contractor

Influence on the traffice when potential

isasici

-Great risk: road closed for 2 days or more -Medium risk: road closed for 1 day or less

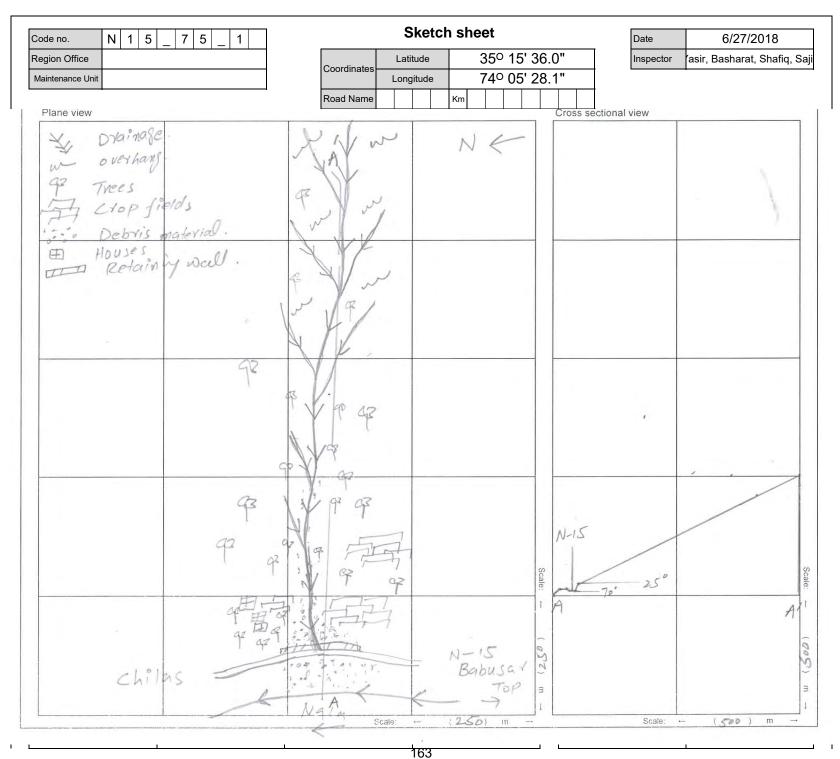
-Low risk: no road closure

[Description/comments]

This is an active debris flow along N-15. The debris flow event occurred in July 2017 due to a very heavy rainfall in the area. The debris flow origin from the cliff and lead to a serious debris flow disaster. According to the local inhabitant, three vehicles and local irrigation system have been damaged and road has been blocked more than a week. After one week the material has been removed from the road for the continuity of the traffic. The debris flow has very long run-out and transported a huge debris material which covered the entire road section. Still huge material is deposited along the road site. Large size of the boulders ranges between 15-m3 are present at the site. The boulders are comprised gabbro diorite and grantic rocks. It has been observed the debris flow is drained by the seasonal water. The gradient of the erosional channel is very steep and lead to potential in future disaster and significant damage of the road.

The area is still very unstable and there is a high potential for more events occur. In future,

The area is still very unstable and there is a high potential for more events occur. In future, there is possibility this debris flow block the Thak Nala and create a landslide dam. A retaining wall is constructed to protect the road which has been damaged due to this debris flow. For the mitigation purpose the construction of shed has been suggested to protect the roa in the future.



Code no.	N	1	5	_	7	5	_	1	
Region Office									
Maintenance Unit									

Latitude Coordinates			35º 15' 36.0"									
Coordinates		Longitude				74º 05' 28.1"						
Road Name					Km							

Date	6/27/2018
Inspector	Yasir, Basharat, Shafiq, Sajid





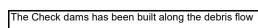


Mountain side view of the debris flow

Valley side view of the debris flow

Mid view of the debris flow







Road condition



Existing countermeasures / anomalies:Retaining Wall (Damaged) has been constructed along the Debris Flow

Code no.	Ν	1	5	_	7	5	_	2	
Region Office									
Maintenance Unit									

					•							
Coordinates	Latitude Longitude			35° 15' 40.2"								
Coordinates				74° 05' 28.2"								
Road Name					Km							

Date	6/28/2018
Inspector	Yasir, Basharat, Shafiq, Sajid

[Causes]

item	factor	category	Check
Property of river	areas that river bed is 15°or more in watershed area	0.50km ² or more 0.15km ² - 0.50km ² less than 0.15km ²	٧
Property	steepest slope of river bed	40° or more 30° - 40° less than 30°	٧
	area that slope gradient is 30° or more in watershed area	0.20km ² or more 0.08km ² - 0.20km ² less than 0.08km ²	٧
Property of slope	area that meadow and shrub (less than 10m height) occupy in watershed area	0.20km ² or more 0.02km ² - 20km ² less than 0.02km ²	٧
operty	artificial works that cause negative effects	certain none	٧
Ā	new crack and/or slope failure in stream	certain none	٧
	traces of large slope failure in stream	certain none	٧

[Road structure]

· alotal o	
category of score	Check
10m or more	٧
5m - 10m	
3m - 5m	
less than 3m	
less than 1m or	
No bridge / box culvert	٧
1m - 2m	
2m - 3m	
3m - 5m	
5m or more	
	10m or more 5m - 10m 3m - 5m less than 3m less than 1m or No bridge / box culvert 1m - 2m 2m - 3m 3m - 5m

[Potencial disaster mode]	Check
Damage of bridge/culvert	
Outflow of embankment	
Debris flooding on the road	٧

[History]

[HISIOTY]	
category of score	Check
There is a history about debris flow that were obstacles to the road traffic after construction of recent measures.	٧
There is a history about debris flow though there is no obstacle to traffic.	
There is no history of debris flow	

[Expected size of disaster] (width, length, depth, etc.)

L= 600 m, W= 54 m, D= 7-8 m

[Countermeasure]

Type of counterme	CI	neck	
No Counter	Measure		
	none•lo\	N	٧
Effect of existing	moderat	е	
countermesure	high		
	enough		

[Evaluation Rank]

[Evaluation rtank]			
Scale of disaster	Big	Medium	Small
Great risk	(1)	2	3
Medium risk	1	2	3
Low risk	2	3	4

Organization responsible for countermeasure works according to the scale of the disaster

-Big: Grant aid

-Medium: Major contractor in Pakistan

-Small: Local contractor

Influence on the traffice when potential

-Medium risk: road closed for 1 day or less

-Low risk: no road closure

[Description/comments]

This active debris flow also occurred in July 2017 during heavy rainfall at the 100 meters away from the previous location. The debris flow leads to similar disaster as N-15-75-1. Due to this debris flow about 60 meters road has been partially damaged. The source of the debris flow has very steep cliff. The debris flow comprises two water channel, however, both channels have been drained by seasonal water. The erosional channel has a very steep gradient. Detached boulders of the size range between 1-5m3 was present in -Great risk: road closed for 2 days or more the channel and large number of boulders are still hanging along the road that lead to further disaster. The area is still very unstable and there is a high potential for more events occur. Due to the recent debris flow no mitigation measures have been taken to protect the road. Therefore, construction of shed is suggested to protect the road in the future.

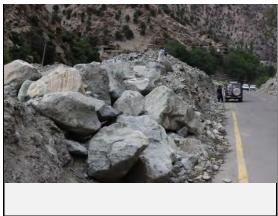
Code no. N 1 5 _ 7 5 _ 2	Sketch sheet	Date 6/28/2018
Region Office	Coordinates Latitude 35° 15′ 40.2″	Inspector 'asir, Basharat, Shafiq, Sa
Maintenance Unit	Longitude 74° 05' 28.2"	
Plane view	Road Name Km	ss sectional view
Drainage Res Wees Woverhouny Houses The Scarp Debris material Crop fields	B B B B B B B B B B B B B B B B B B B	1
The crop fields.	92 93	
	92 93	
		-15
chilas E	Scale: 1 A A Scale: 1 A A A A A A A A A A A A A A A A A A	30° 75°
	Scale: - (200) m -	Scale: - (300) m -

Code no.	N	1	5	7	5	_	2	
Region Office								
Maintenance Unit								

Coordinates		Latitude				35º 15' 40.2"						
Coordinates	Longitude				74° 05' 28.2"							
Road Name					Km							

Date	6/28/2018
Inspector	Yasir, Basharat, Shafiq, Sajid





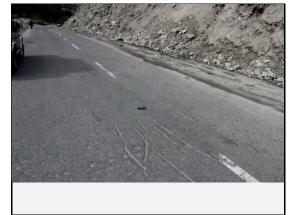


Mountain side view of the debris flow

Valley side view of the debris flow

Mid view of the debris flow







The Check dams has been built along the debris flow

Road condition

Existing countermeasures / anomalies: No Counter Measure

Code no.	Ν	1	5	_	7	8		
Region Office								
Maintenance Unit								

					•							
Coordinates	La	titu	de		35° 21' 18.8"							
Coordinates	Lo	ngi	tud	le	74° 08' 18.8"							
Road Name					Km							

Date	6/29/2018
Inspector	Yasir, Basharat, Shafiq, Sajid

[Causes]

Cau			<u> </u>
item	factor	category	Check
e	areas that river bed is	0.50km ² or more	٧
.≧	15°or more in watershed	0.15km ² - 0.50km ²	
v of	area	less than 0.15km ²	
Property of river		40°or more	
rop	steepest slope of river bed	30° - 40°	
Ь		less than 30°	٧
	ana dhad alama madiant ia 20°	0.20km ² or more	٧
	area that slope gradient is 30° or more in watershed area	0.08km² - 0.20km²	
	or more in waterened area	less than 0.08km²	
be	area that meadow and shrub	0.20km ² or more	
slo	(less than 10m height) occupy	0.02km ² - 20km ²	
of	in watershed area	less than 0.02km ²	٧
Property of slope	artificial works that cause	certain	٧
d _o	negative effects	none	
<u>~</u>	new crack and/or slope	certain	
	failure in stream	none	٧
	traces of large slope failure	certain	
	in stream	none	٧

[Road structure]

category of score	Check
10m or more	٧
5m - 10m	
3m - 5m	
less than 3m	
less than 1m or	
No bridge / box culvert	٧
1m - 2m	
2m - 3m	
3m - 5m	
5m or more	
	10m or more 5m - 10m 3m - 5m less than 3m less than 1m or No bridge / box culvert 1m - 2m 2m - 3m 3m - 5m

[Potencial disaster mode]	Check
Damage of bridge/culvert	
Outflow of embankment	
Debris flooding on the road	٧

[History]

category of score	Check
There is a history about debris flow that were obstacles to the road traffic after construction of recent measures.	٧
There is a history about debris flow though there is no obstacle to traffic.	
There is no history of debris flow	

[Expected size of disaster] (width, length, depth, etc.)

L= 600m, W= 60 m, D= 3-4 m

[Countermeasure]

Type of counterm	Check	
No Counter	r Measure	
	none•lo	N √
Effect of existing	moderat	е
countermesure	high	
	enough	

[Evaluation Rank]

[Evaluation rtank]			
Scale of disaster Risk		Medium	Small
Great risk	1	2	3
Medium risk	1	2	3
Low risk	2	3	4

Organization responsible for countermeasure works according to the scale of the disaster

-Big: Grant aid

-Medium: Major contractor in Pakistan

-Small: Local contractor

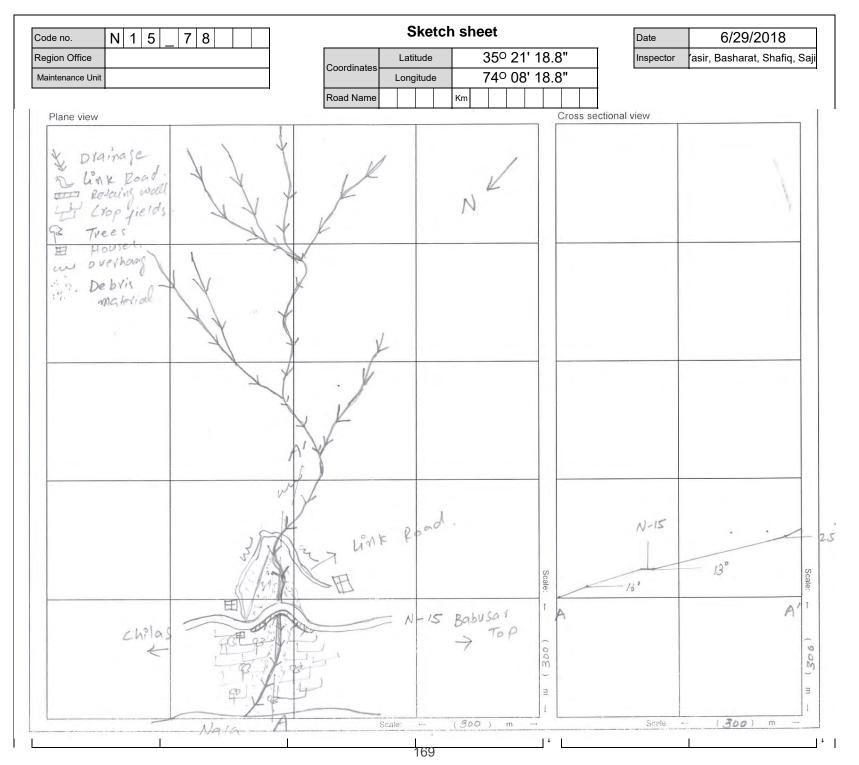
Influence on the traffice when potential

-Great risk: road closed for 2 days or more -Medium risk: road closed for 1 day or less

-Low risk: no road closure

[Description/comments]

This debris flow is located on N-15. It is an old debris flow with large catchment area. The unconsolidated debris material is present both sides of the erosional channel. A temporary house is constructed in the middle of the stream and is prone to disaster. No countermeasures have been taken to avoid the debris material on the road. Therefore the road has been damaged due to this debris flow. Presently water is not flowing in the stream, therefore, the stream has been drained by seasonal water. It is likely that future debris flow will continue on the road. For the mitigation purpose construction of the bridge or a culvert has been suggested for the smooth outflow of the water and the debris material



Code no.	N	1	5	_	7	8		
Region Office								
Maintenance Unit								

	Coordinates	Latitude					35°	21	' 18	3.8"	
			Longitude				74°	90	3' 18	3.8"	
	Road Name					Km					

Date	6/29/2018
Inspector	Yasir, Basharat, Shafiq, Sajid





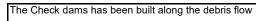


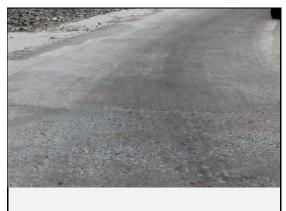
Mountain side view of the debris flow

Valley side view of the debris flow

Mid view of the debris flow







Road condition



Existing countermeasures / anomalies:No Counter Measure. House has been damaged along the Debris Flow

Code no.	Ν	-	9	0			0	1
Region Office								
Maintenance Unit								
Maintenance Unit								

Maintenance Onit	

[C	auses]				
	ltem	factor		cat	tegory of score	Check
topography	Collapsed factor	talus slope, clear convex break of slope, eroded toe of slope , overhang, water catchment slope		2 c	or more correspondences correspondences correspondences correspondence	٧
SL	Soil	susceptible to erosion less strength with water		irked ttle marked ne	٧	
Geological conditions	Rock	high density of cracks and a weak l susceptible to erosion, fast weathering		irked ttle marked ne	٧	
ologic	Ire	dip slope of bedding plane / Joint P	It c	orresponds. ne	٧	
Ğ	Structure	debris on impermeability bedrock, the upper part is a hard /the toe of weak.	ma a li No	٧		
on		Topsoil, detached rock and unstea	ins a li sta	٧		
Surface codition		Spring water	not see	٧		
Surl		Surface condition	bai inte ma	٧		
Profile		Height (H), dip (i)		height	H≧50m 30≦H<50m 15≦H<30m H<15m	٧
			dib	i≧70° 45°≦i<70° i<45°	٧	
Anomaly	piping fallep	ce collapse, small fallen rock, gully, e rhole, subsidence, heaving, bending tree, crack, open crack, anomaly of ermeasure			r more correspondences · clarity rtain · unclarity ne	√

Evaluation sheet (Slope failure/Rockfall)

-					\ -		_	_						
	Coordinates				Latitude			34° 52' 59.2"						
	Coordinates	L	Longitude			7:	20	4	5' :	50	.1	7"		
	Road name					Km								

Date	31/03/2018
Inspector	Yasir, Sajid, Shafique, Basharat

[Disaster type]

Rock fall	
Slope failure	
[Main check o	hiec

Cut slope Natural slope [Countermeasure]

[ecantermeasure]	
Type of countermeasures	
Box Culvert for drainage	
Effectiveness of existing countermeasures	Check
Potential slope failure are prevented enough, or, it is defended enough when it is generated.	
Potential slope failure are considerably prevented, or it is considerably defended when it is generated.	
Potential slope failure are partly prevented, or it is partly defended when it is generated. However, it is not enough for the remaining factors.	٧
There is no countermeasure, or there is not effective even if countermeasures are not performed.	

[History]

[1 110101 7]				
Level of disaster history				
There is a history about large fallen rocks and slope failures that were obstacles to the road traffic after construction of recent measures.	1			
There is a history about large fallen rocks and slope failures that gets to the road though there is no obstacle to traffic.				
There is a history about small fallen rocks and slope failures that did not get to the road.				
No disaster records				

[Expected size of disaster](width, length, depth, etc.)

L= 360 m, W= 315 m, D= 1-2 m

[Evaluation Rank]

[Eraidation rtaint]			
Scale of disaster		Medium	Small
Great risk	1	2	3
Medium risk	1	2	3
Low risk	2	3	4

Organization responsible for countermeasure works according to the scale of the disaster

- -Big: Grant aid
- -Medium: Major contractor in Pakistan
- -Small: Local contractor

This is a cut slope mainly triggered due to road construction. Active erosion is present leading to water gullies. Eroded talus is present along the road. Detached boulders are present on the slide. Part of the slide is prone to debris flow and also rock fall. Tension cracks are also observed. Two roads passes through the slide. Loose debris is present on the slide. It is disrupting the road traffic mainly during the rainy season. No mitigation

Influence on the traffice when potential

- -Great risk: road closed for 2 days or more
- -Medium risk: road closed for 1 day or less
- -Low risk: no road closure

ray 12 90.17 Sketch sheet N - 9 0 0 1 Code no. Date 31/03/2018 34° 52' 59.2" Region Office Latitude Inspector Yasir, Sajid, Shafique, Basharat Coordinates 72° 45' 50.17" Maintenance Unit Longitude Km 🕖 / Road name Plane view Cross sectional view MA Scarp Drainage Houses Tree Bushes Debris LinkRoad Scale: Scale:

Code no.	N	- 9	0		0	1		
Region Office							c	Coordina
Maintenance Unit								
								Roa
	1.0							
Full view of the slo								view of s

Coordinates	Latitude		34º 52' 59.2"							
Coordinates	Longitude				72	²⁰ 45' 5	0.1	7"		
Road na	ame					Km				

Date	31/03/2018
Inspector	′asir, Sajid, Shafique, Bashara



re on Valley side:



Road condition:Cut slope at the start point



View of the slope failure at the middle point

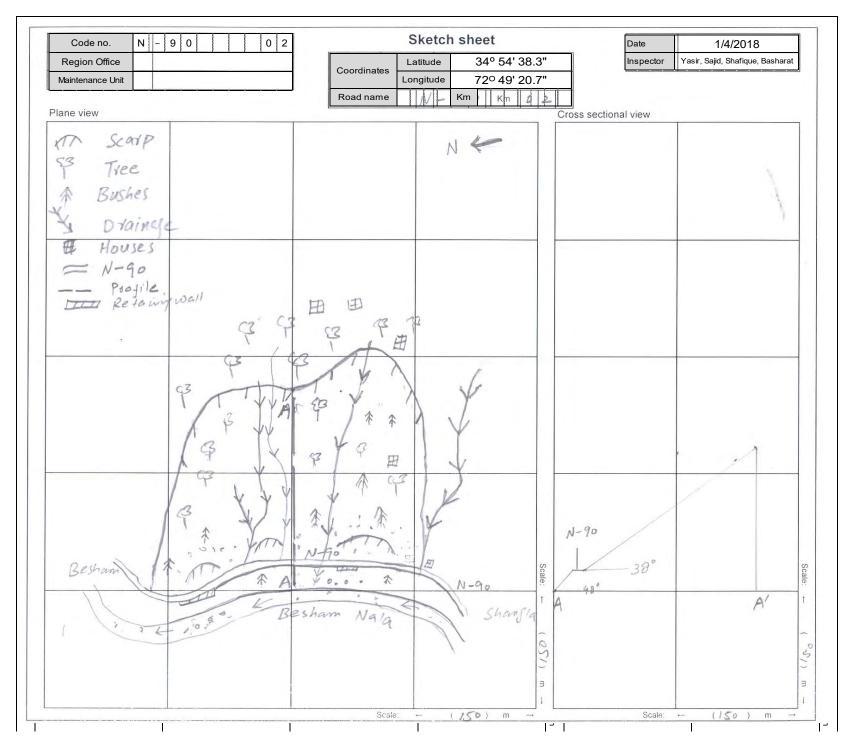


View of Gully erosion along the slope failure



Existing countermeasures / anomalies: View of culvert inlet at the toe of slope failure

	Cod	e no. N - 9 0 0 2]	Ev	aluation s	heet (Slo	pe fa	ailure	/Rock	fall)			Date	1/4/20	18
F	Regio	n Office			0 11 1	Latitude	•	34° :	54' 38.	3"	-			Inspector	Yasir, Sajid, Shafid	que, Basharat
М	ainten	ance Unit	1		Coordinates	Longitud	е	720	49' 20.	7"						
			J		Road name	$\overline{\Box}$	K	(m								
IC:	auses	1			. toda mamo											
_	tem	factor	category of score	Check				[0	Countern	neasure]						
hy	þ	talus slope,	3 or more correspondences	٧								Туре	of cour	ntermeasures		
grap	ollapse factor	clear convex break of slope,	2 correspondences		[Disaster	type]	_			_						
topography	Collapsed factor	eroded toe of slope , overhang, water catchment slope	1 correspondences		Rock t	all				C	heck da	ms alon	g gulley	s. Retaining wal	for N-90	
ţ			no correspondence marked	V			,	-		Eff	fectivene	es of ev	istina c	countermeasures	:	Check
	Soil	susceptible to erosion	a little marked		Slope fa	ilure 1		P	otential s						d enough when it is	
s	Ø	less strength with water	None		[Main ch	eck obied	:t1		enerated.	lope fallare	are pre-	rented e	nougn,	or, it is defende	a chough when it is	
ition	~	high density of cracks and a weak layers,	marked	٧	Cut slo	,no 1	Ĺ	Р	otential sl	ope failure	are cons	iderably	prever	nted, or it is cons	iderably defended	
puo	Rock	susceptible to erosion,	a little marked		Cut sic	ppe v		w	hen it is g	enerated.						
Geological conditions		fast weathering	None		Natural s	slope								it is partly defen		V
logi	40	dip slope of bedding plane / Joint Planes	It corresponds.	- /		· l		_		•				emaining factors		
Geo	Structure	debair on income ability beday to	None marked	٧ ٧					here is no re not perf		easure, c	r there i	s not et	ffective even if o	ountermeasures	
_	Stru	debris on impermeability bedrock, the upper part is a hard /the tee of clepe is	a little marked	<u>v</u>												
	0,	weak.	None		[History]									[Expected size of	disaster](width, length,	depth, etc.)
			instability	٧		Lev	el of o	disaster	history			Check	4			
		Topsoil, detached rock and unsteady rock	a little unstable		There is a histor							V				
tion			stability		obstacles to the	road traffic	after	construc	ction of red	cent measu	ires.	,				
Surface codition		•	notable spring water	٧	There is a histor		•			e failures th	nat gets				M 040 D 6	
ace (Spring water	seepage		to the road thoug					- f -: 4	4 11 1			L= 300	m, W= 310 m, D= 2	2-3 m
Surfa			none bare land with minor vagetation	٧	There is a histor not get to the roa	,	панта	allen rock	s and slop	e ialiures ti	nat did					
0)		Surface condition	intermediate (bare grass tree)	<u>`</u>												
			mainly structure, mainly tree		No disaster reco	rds										
			H≧50m	٧	[Evaluation Rank	[]						Descrip		•		
			注 30≦H<50m ② 15≦H<30m		Scale disas		Big	Me	edium	Small					ed during the road con Active soil erosion is p	
ile					Risk						4 1	to develo	oment of	f water gullies. The	check dams are devel	oped along the
Profile		Height (H), dip (i)	H<15m i≧70°		Great risk		1		2	3		•			ing debris is also prese ainly during the rainfall.	
			을 45°≦i<70°								1	hanging l	boulders	are also present.	Bedrock is impermeabl	e. Shrubs and
			i<45°	٧	Medium risk		1		2	(3)	!				s present mainly with the measures to protect the	
	Surfa	ce collapse, small fallen rock, gully, erosion,	2 or more correspondences · clarity	٧	Low risk		2		3	4	 		ло. 10 р.	occinii i to occinio.	medeance to protect an	o ondo.
nal	piping	hole, subsidence, heaving, bending of tree root,	certain · unclarity		LOWTISK		2		3	4						
Ano		tree, crack, open <u>crack, anomaly of</u> ermeasure	none		Organization res	•			sure works	3	Influ disa		the tra	ffice when poten	tial	
ш			1		-Big: Grant aid						-Gre	eat risk:	road clo	osed for 2 days o	or more	
					-Medium: Major	contractor	in Pal	kistan						closed for 1 day		
					-Small: Local cor	ntractor					-Lov	v risk: no	road o	closure		



Code no. N - 9 0 0 2	Photo sheet	Date 1/4/2018
Region Office	Coordinates Latitude 34° 54' 38.3"	Inspector Yasir, Sajid, Shafique, Bashara
Maintenance Unit	Longitude 72° 49' 20.7"	
	Road name Km	
Full view of the Slope Failure	View of Slope Failure on Valley side and existing road damage can be seen	Road condition:Cut slope at the start point
View of the slope failure at the middle point	Existing countermeasures / anomalies: View of check dam as counter measure	View of seepages in the slope failure

Cod	le no.	Ν	ı	9	0			0	3
Regio	n Office								
Mainten	ance Unit								
[Causes	5]								
Item					facto	or			
`									

_	auses Item	J factor	category of score					
-	ileiii		· ,	Check				
topography	Collapsed factor	talus slope, clear convex break of slope,	3 or more correspondences 2 correspondences	٧				
òod	fa fa	eroded toe of slope , overhan , water catchment						
t	0	slope	no correspondence					
		augentible to avaion	marked					
	Soil	susceptible to erosion less strength with water	a little marked					
SI		iess strength with water	None					
itior	`	high density of cracks and a weak layers,	marked	٧				
puc	Rock	susceptible to erosion,	a little marked					
al co	œ	fast weathering	None					
Geological conditions	ıre	dip slope of bedding plane / Joint Planes	ling plane / Joint Planes It corresponds. None					
Ğ	Structure	debris on impermeability bedrock,	marked	٧				
	Strı	the upper part is a hard /the toe of slope is	a little marked					
		weak.	None					
			instability	٧				
		Topsoil, detached rock and unsteady rock	a little unstable					
uo		stability						
Surface codition		Spring water	notable spring water \(\frac{1}{2}\) seepage					
ırfa			none					
S		Surface condition	bare land with minor vagetation √					
		Surface condition	intermediate (bare-grass-tree)					
\vdash			mainly structure, mainly tree H≧50m	٧				
				V				
			# 30≦H<50m 15≦H<30m					
ile		11 : 14 (11) - 12 - (2)						
Profile		Height (H), dip (i)	H<15m					
I_			i≧70°					
			ਊ 45°≦i<70°					
\vdash			i<45°	٧				
<u>~</u>		ce collapse, small fallen rock, gully, erosion,	2 or more correspondences ⋅ clarity V					
ma	piping	hole, subsidence, heaving, bending of tree root,	certain · unclarity					
Anomaly		tree, crack, open crack, anomaly of	none					
Ľ	COUPIE	cimea sure						

Evaluation sheet (Slope failure/Rockfall)

Coordinates	Latitude			(')	34° 55' 25.6"					
Coordinates	Longitude		7	'2 ⁰	5	0'	10).4	."	
Road name			Km							

Date	2/4/2018
Inspector	Yasir, Sajid, Shafique, Basharat

[Disaster type]

Rock fall	√
Slope failure	
[Main check o	bject

Cut slope

Natural slope

[Countermeasure]

Type of countermeasures	
No counter measures. Retaining wall for N-90. Box culvert for drainage	
Effectiveness of existing countermeasures	Check
Potential slope failure are prevented enough, or, it is defended enough when it is generated.	
Potential slope failure are considerably prevented, or it is considerably defended when it is generated.	
Potential slope failure are partly prevented, or it is partly defended when it is generated. However, it is not enough for the remaining factors.	
There is no countermeasure, or there is not effective even if countermeasures are not performed.	٧

[History]

Level of disaster history	Check
There is a history about large fallen rocks and slope failures that were obstacles to the road traffic after construction of recent measures.	√
There is a history about large fallen rocks and slope failures that gets to the road though there is no obstacle to traffic.	
There is a history about small fallen rocks and slope failures that did not get to the road.	
No disaster records	

[Expected size of disaster](width, length, depth, etc.)

L= 500 m, W= 550 m, D= 0-1 m

[Evaluation Rank]

<u> </u>			
Scale of disaster Risk	Big	Medium	Small
Great risk	1	2	3
Medium risk	1	2	3
Low risk	2	3	4

Organization responsible for countermeasure works according to the scale of the disaster

- -Big: Grant aid
- -Medium: Major contractor in Pakistan
- -Small: Local contractor

This is a cut slope located on the N90. The landslides is a slope failure triggered due to construction of the road. With the Schist and granite as a bed rock of the slide, part of the slide is also prone to rock fall with detached and hanging boulders. Active soil erosion mainly during the rain, is present on the slide leading to presence of talus is present along the road and gullies on the slide. Spring water is present in the slide. No effective counter measures are present. A

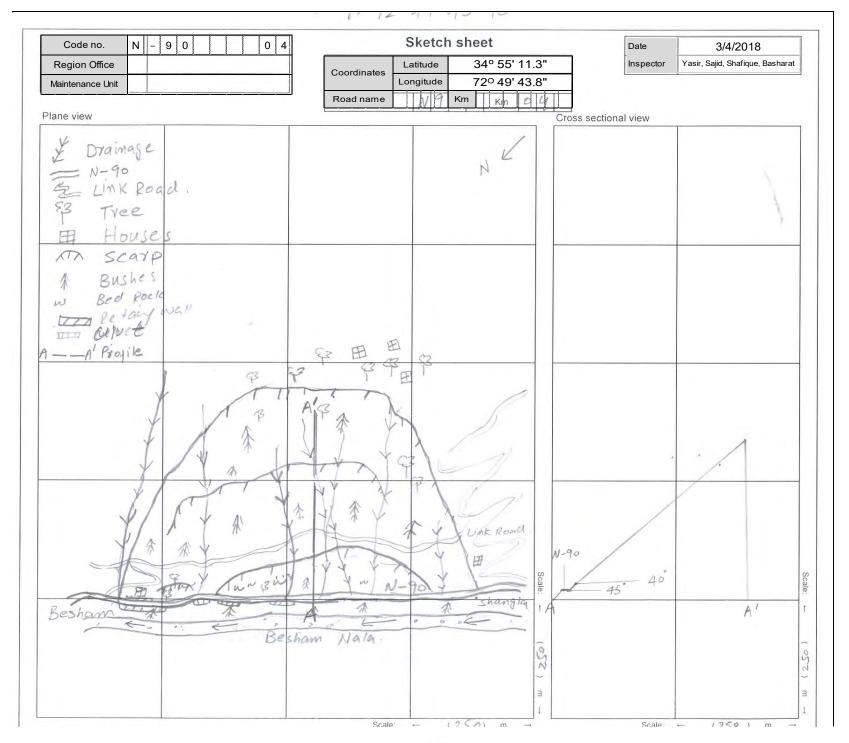
Influence on the traffice when potential

- -Great risk: road closed for 2 days or more
- -Medium risk: road closed for 1 day or less
- -Low risk: no road closure

1000 10 DO 1001 Sketch sheet N - 9 0 0 3 Code no. Date 2/4/2018 34° 55' 25.6" Yasir, Sajid, Shafique, Basharat Inspector Latitude Region Office Coordinates Longitude 72° 50' 10.4" Maintenance Unit Km Km 03 Road name Plane view Cross sectional view Profile MA SCAIP > Drainage Houses ELL Relains Nal w overhang A Bushes Debris Do Boulders N-90 450 Shang la 40 A Scale: (300) m (200)

Code no. N - 9 0 0 3	Photo sheet	Date 2/4/2018
Region Office	Coordinates Latitude 34° 55' 25.6"	Inspector rasir, Sajid, Shafique, Bashara
Maintenance Unit	Longitude 72° 50' 10.4"	
	Road name Km	
Full view of the slope failure	View of slope failure on Valley side:	Road condition:Cut slope at the start point
View of the slope failure at the middle point	Existing countermeasures / anomalies: View of Retaining Wall as counter measure	View of drainage that cuts the slope

	Regio	n Office ance Unit		Ev	Coordinates	eet (S atitude ngitude	34	failure ° 55' 11 ° 49' 43	.3"	kfall)			Date Inspector	3/4/20 Yasir, Sajid, Shafid	
IC:	auses	.1			Road name		Km								
	tem	factor	category of score	Check				[Counter	measure]						
hy	þ	talus slope,	3 or more correspondences	٧					_		Туре	of cour	ntermeasures		
grap	apse ctor	clear convex break of slope,	2 correspondences		[Disaster typ	e]									
topography	Collapsed factor	eroded toe of slope , overhang, water catchment slope	1 correspondences no correspondence		Rock fall				No counte	er measur	es. Reta	ning wa	all for N-90. Box	culvert for drainage	
			marked	٧	Olama failum	a √			E	Effectiven	ess of ex	isting c	countermeasures		Check
	Soil	susceptible to erosion less strength with water	a little marked		Slope failure	9 7		Potential	slope failui	re are pre	vented e	nough,	or, it is defended	d enough when it is	
SU		iess strength with water	None		[Main check	object]		generated	i.						
conditions	×	high density of cracks and a weak layers,	marked	٧	Cut slope						siderably	prever	nted, or it is cons	iderably defended	
con	Rock	susceptible to erosion, fast weathering	a little marked						generated						
		last weathering	None It corresponds.	٧	Natural slop	е							it is partly defended		
Geological	Φ	dip slope of bedding plane / Joint Planes	None	V				•		-				ountermeasures	
Gec	Structure	debris on impermeability bedrock,	marked						erformed.	neasure,	or triere i	S HOLE	nective even ii ci	ountermeasures	√
	Stru	the upper part is a hard /the toe of slope is	a little marked	٧											
		weak.	None		[History]								[Expected size of	disaster](width, length,	depth, etc.)
			instability	٧		Level	of disast	er history	1		Chec	}			
		Topsoil, detached rock and unsteady rock	a little unstable		There is a history about large fallen rocks and slope failures that were										
tion			stability		obstacles to the road										
codition		Spring water	notable spring water seepage	٧	There is a history about large fallen rocks and slope failures that to the road though there is no obstacle to traffic.						L= 500 m, W= 660 m, D= 1-2 m			I-2 m	
Surface		, ,	none		There is a history about small fallen rocks and slope failures tha										
Sur			bare land with minor vagetation	٧	not get to the road.				•						
		Surface condition	intermediate (bare · grass · tree) mainly structure, mainly tree		No disaster records										
\vdash			H≧50m	٧	[Evaluation Rank]						[Descrip	ntion			
			<u>보</u> 30≦H<50m	\dashv	Scale of								ld landslide whi	ich is retriggered o	during the
a)			. <u>©</u> 15≦H<30m		Risk	Big		Medium	Small					hed boulder are p	~
Profile		Height (H), dip (i)	H<15m		Great risk	1		2	3					the bedrock are	<i>'</i>
□			i≧70°		Great risk	'		2	3			•		n on the slide lead	
			<u>ਊ</u> 45°≦i<70°		Medium risk	1		2	(3)			•	•	ubs are present o measures are pr	
_			i<45°	٧						_	witar	110 110	protect t	the elide	coon to
naly	Surface collapse, small fallen rock, gully, erosion, 2 or more correspondences clarity V Low risk 2 3 4 piping hole, subsidence, heaving, bending of tree root, certain unclarity														
fallen tree, crack, open crack, anomaly of none Organization responsible for countermeasure						neasure works Influence on the traffice when potential disaster									
<u></u>			j		-Big: Grant aid	o or trie t	aisastei					road old	osed for 2 days o	or more	
					-ыg: Grant aid -Medium: Major cont	ractor in	Pakistan						closed for 1 day		
					-Small: Local contract		anistan				w risk: no		,	0. 1000	



Code no.	Ν	-	9	0		0	4
Region Office							
Maintenance Unit							

	l					40 551	4.4.	<u> </u>		
Coordinates	Latitude		34º 55' 11.3"							
Coordinates			7:	20 49'	43.	8"				
Road na	ame		Km							

Date	3/4/2018
Inspector	′asir, Sajid, Shafique, Bashara







Full view of the slope failure

View of slope failure on Valley side:

Road condition:Cut slope at the start point







View of the slope failure at the middle point

Existing countermeasures / anomalies: View of Retaining wall as counter measure

View of Drainage pipe and damaged retaining wall

Code no.	Ν	-	9	0			0	5
Region Office								
Maintenance Unit								

Coordinates	Latitude				35° 27' 33.5"							
Coordinates	Longitude			73° 58' 11.2"								
Road Name					Km							

Date	4/4/2018
Inspector	Yasir, Sajid, Shafique, Basharat

[Causes]

[Caus	esi		
item	factor	category	Check
of river	areas that river bed is 15°or more in watershed area	0.50km ² or more 0.15km ² - 0.50km ² less than 0.15km ²	٧
Property of river	steepest slope of river bed	40° or more 30° - 40° less than 30°	٧
	area that slope gradient is 30° or more in watershed area	0.20km ² or more 0.08km ² - 0.20km ² less than 0.08km ²	
Property of slope	area that meadow and shrub (less than 10m height) occupy in watershed area	0.20km ² or more 0.02km ² - 20km ² less than 0.02km ²	٧
operty	artificial works that cause negative effects	certain none	٧
Ā	new crack and/or slope failure in stream	certain none	٧
	traces of large slope failure in stream	certain none	٧

[Road structure]

structure	category of score	Check
	10m or more	
River	5m - 10m	
width	3m - 5m	
	less than 3m	٧
	less than 1m or	
	No bridge / box culvert	٧
Beam	1m - 2m	
height	2m - 3m	
	3m - 5m	
	5m or more	

[Potencial disaster mode]	Check
Damage of bridge/culvert	
Outflow of embankment	
Debris flooding on the road	٧

[History]

category of score	Check
There is a history about debris flow that were obstacles to the road traffic after construction of recent measures.	٧
There is a history about debris flow though there is no obstacle to traffic.	
There is no history of debris flow	

[Expected size of disaster] (width, length, depth, etc.)

L= 420 m, W=60 m, D= 2-3 m

[Countermeasure]

Type of counterm	Check	
Drainage Diver	sion by Loo	cals
Effect of existing	none · lo	
countermesure	high	
	enough	

[Evaluation Rank]

[= raidation rtaint]			
Scale of disaster		Medium	Small
Great risk	1	2	3
Medium risk	1	2	3
Low risk	2	3	4

Organization responsible for countermeasure works according to the scale of the disaster

-Big: Grant aid

-Medium: Major contractor in Pakistan

-Small: Local contractor

Influence on the traffice when potential

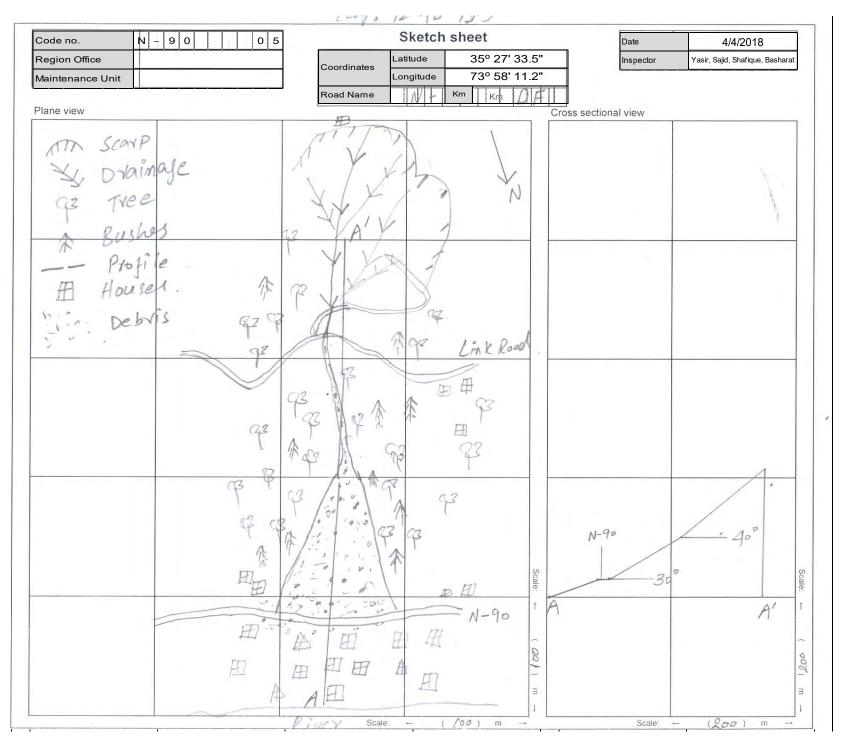
-Great risk: road closed for 2 days or more

-Low risk: no road closure

[Description/comments]

A very active debris flow mainly triggered during the intense monsoon rainfall of 2010 blocking the road for 3 weeks. The debris flow is active mainly during the rainy season blocking the road and obstructing the traffic. A channel is develop to drain the debris flow. Spring water is percolating in the slide debris. Active erosion leads to the development of gullies. -Medium risk: road closed for 1 day or less Hanging boulders are also present on the slide. Two roads are passes through the slide.

Annexure 4



Code no.	N	-	9	0		0	5
Region Office							
Maintenance Unit							

Coordinates		Lati	tude		35° 27' 33.5"							
Coordinates	Longitude			73º 58' 11.2"								
Road Name					Km							

Date	4/4/2018
Inspector	Yasir, Sajid, Shafique, Bashara







Mountain side view of the debris flow

Valley side view of the debris flow

Front view of the debris flow





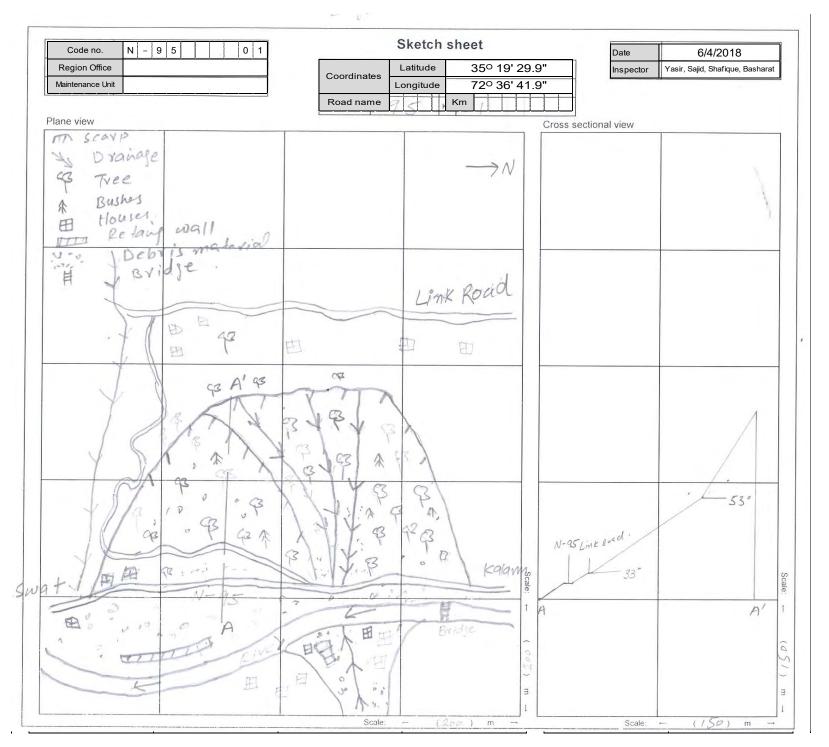


View of fallen block with the debris flow that can damage the population along the downstream.

Road condition

Existing countermeasures / anomalies: Drainage convertion by the locals to avoid the damages from the debris flow in future.

	Cod	e no. N - 9 5 0 1		Eva	aluation s	sheet	t (S	lope	failure	/Roc	kfall)		Date	6/4/20)18
F	Regio	n Office			Coordinate	Latitu	ıde	350	⁰ 19' 29	.9"	-		Inspect	or Yasir, Sajid, Shafi	ique, Basharat
М	ainten	ance Unit			Coordinates	Longit	ude	72°	² 36' 41	.9"			•	-	
_			ı		Road name			Km		$\top \Box$					
[Ca	auses]													
	tem	factor	category of score	Check					[Counterr	neasure]					
phy	r ged	talus slope,	3 or more correspondences	٧	[D:	u 40 cm - 1			<u> </u>			Type of c	countermeasures	S	
topography	Collapsed factor	clear convex break of slope, eroded toe of slope , overhang, water catchment	2 correspondences 1 correspondences	 	[Disaste	<u> </u>						No cou	inter measures		
top	ပိ	slope	no correspondence		Rock	fall						304			
П		susceptible to erosion	marked	٧	Slope fa	ailura	1				Effectivene	ss of existir	ng countermeas	ures	Check
	Soil	susceptible to erosion less strength with water	a little marked				٧				re are prev	ented enou	ıgh, or, it is defe	nded enough when it is	5
suc			None		[Main ch	neck obj	ject]		generated.		-				
conditions	Rock	high density of cracks and a weak layers, susceptible to erosion,	marked a little marked	- √	Cut sl	ope	$\sqrt{}$		Potential s when it is			derably pre	evented, or it is o	considerably defended	
	ጃ	fast weathering	None		A	-1			`	,		prevented	, or it is partly de	efended when it is	
Geological		dip slope of bedding plane / Joint Planes	It corresponds.	٧	Natural	slope							ne remaining fac		
eolo	inre	alp slope of beduing plant / John Plants	None								measure, e	r there is no	ot effective even	if countermeasures	٧
Ö	Structure	debris on impermeability bedrock,	marked	٧					are not per	tormed.					
	Ó	the upper part is a hard /the toe of slope is weak.	a little marked None		[History]								[Eypected cize	e of disaster](width, length	denth etc.)
H			instability	٧	[i iiətoiy]	Le	evel	of disast	ter history			Check	LAPCOICG SIZE	o or albasion filmiduri, lerigur	i, aopiii, 6i0.)
		Topsoil, detached rock and unsteady rock	a little unstable	<u> </u>	There is a history about large fallen rocks and slope failures that were										
tion			stability		obstacles to the road traffic after construction of recent measur										
codition		On river works or	notable spring water	 	There is a histor	,	_			oe failures	that gets			000 W 000 D	0.0
эсе (Spring water	seepage none	V	to the road thou There is a histor					no failure	that did		L= :	380 m, W= 620 m, D=	2-3 M
Surface			bare land with minor vagetation	٧ ٧	not get to the ro	•	Silidi	ı ıalı c ii i0	ons allu SIO	pe iallules	that did				
,		Surface condition	intermediate (bare grass tree)		No discotor ====	ordo									
			mainly structure, mainly tree		No disaster reco	ords									
			H≧50m	٧	[Evaluation Ran			-				Description		Invadelida I.a. 1111	46 18 - 1
			ਤਿ≦H<50m 15≦H<30m		Scal- disas Risk	e of ster	Big		Medium	Small				landslide. Loose debris of sand and silt. The slide is	
Profile		Height (H), dip (i)	E 15≦H<30m H<15m			$\overline{}$					d		, ,	ny season. Active soil eros s on the slide. Around 15	
Prc			i≧70°		Great risk		1		2	3		scarp is pro	one to rock fall tha	t often reach to the road.	Two road are
			을 45°≦i<70°		Medium risk		1		2	3	pı			dle of the slide and second damage the road and disr	
Ш			i<45°	٧	WEGIGIN NSK				€	J	4 L			. No countermeasure are	
کالا		ce collapse, small fallen rock, gully, erosion,	2 or more correspondences · clarity	٧	Low risk		2		3	4					
ome		hole, subsidence, heaving, bending of tree root, tree, crack, open crack, anomaly of	certain · unclarity none	 	Organization responsible for countermeasure works						Influ	ance on the	traffice when po	otential	
An		ermeusure			according to the	•			casure WOIK	79	disas		anice when po	oleilidi	
ш					-Big: Grant aid						-Gre	at risk: road	d closed for 2 da	ys or more	
					-Medium: Major	contract	tor in	Pakistan			-Med	lium risk: ro	oad closed for 1	day or less	
					-Small: Local co	ntractor					-Low	risk: no roa	ad closure		



Code no.	Ν	- 1	9	5		0	1
Region Office							
Maintenance Unit							

Coordinates	Latitude		35º 19' 29.9"								
Coordinates	Longitud		7:	2º 36' 4	41.9	9"					
Road na	ame				Km						

Date	6/4/2018
Inspector	′asir, Sajid, Shafique, Bashara







Full view of the slope failure

View of slope failure on Valley side and a river diversion structure built at the toe of the slope failure

Road condition:Cut slope at the start point







View of the slope failure at the left flank

Existing countermeasures / anomalies: View of check dams as counter measure

View of scarp of the slope failure

Code no.	Ν	-	9	5			0	2
Region Office								
Maintenance Unit								

					•							
Coordinates	Latitude Longitude			35° 20' 18.9"								
Coordinates				72° 36' 39.0"								
Road Name					Km							

Date	7/4/2018
Inspector	Yasir, Sajid, Shafique, Basharat

[Causes]

	Caus	sesj		
Ī	item	factor	category	Check
	er	areas that river bed is	0.50km ² or more	
	.≧	15°or more in watershed	0.15km ² - 0.50km ²	٧
	<u>6</u>	area	less than 0.15km ²	
	ert.		40° or more	٧
	Property of river	steepest slope of river bed	30° - 40°	
	۵		less than 30°	
ſ		tht -ltit i- 20°	0.20km ² or more	
		area that slope gradient is 30° or more in watershed area	0.08km ² - 0.20km ²	
		or more in materials and	less than 0.08km ²	٧
	e Oe	area that meadow and shrub	0.20km ² or more	
	Solo	(less than 10m height) occupy	0.02km ² - 20km ²	
	of	in watershed area	less than 0.02km ²	٧
	ř	artificial works that cause	certain	٧
	Property of slope	negative effects	none	
	new crack and/or slope		certain	٧
		failure in stream	none	
		traces of large slope	certain	٧
		failure in stream	none	

[Road structure]

structure	category of score	Check
River	10m or more 5m - 10m	
width	3m - 5m less than 3m	٧
	less than 1m or	
	No bridge / box culvert	٧
200	1m - 2m	
height	2m - 3m	
	3m - 5m	
	5m or more	

[Potencial disaster mode]	Check
Damage of bridge/culvert	
Outflow of embankment	
Debris flooding on the road	٧

[History]

category of score	Check
There is a history about debris flow that were obstacles to the road traffic after construction of recent measures.	٧
There is a history about debris flow though there is no obstacle to traffic.	
There is no history of debris flow	

[Expected size of disaster] (width, length, depth, etc.)

L= 1900 m, W=140 m, D= 1-2 m

[Countermeasure]

Type of countern	Type of countermeasure					
No Counter	r Measures					
Effect of existing	none · lo					
countermesure	high					
	enough					

[Evaluation Rank]

[Evaluation Rank]			
Scale of disaster		Medium	Small
Great risk	1	2	3
Medium risk	1	2	3
Low risk	2	3	4

Organization responsible for countermeasure works according to the scale of the disaster

-Big: Grant aid

-Medium: Major contractor in Pakistan -Small: Local contractor

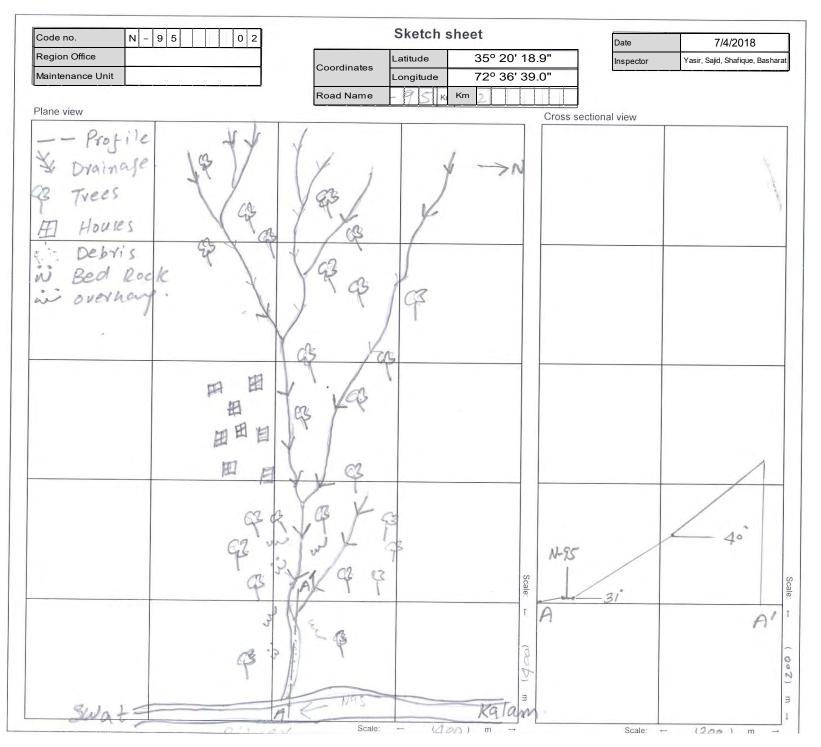
Influence on the traffice when potential

-Great risk: road closed for 2 days or more -Medium risk: road closed for 1 day or less

-Low risk: no road closure

[Description/comments]

This is an active debris flow. Channel of the DF is well developed with detached boulders and gravels. The DF is drained by the spring water. Source of the DF is steep scrap with detached and jointed boulders. Eroded talus is present. The slide is mainly triggered during the rainy season. The DF can affect the road and



Code no.	N	-	9	5			0	2
Region Office				•		•		
Maintenance Unit								
	40.6						t and	

Coordinates	Latitude			35º 20' 18.9"							
Coordinates		Longitude				72°	36	39	9.0"		
Road Name					Km						

Date	7/4/2018
Inspector	Yasir, Sajid, Shafique, Bashara







Mountain side view of the debris flow

Valley side view of the debris flow

Front view of the debris flow







A view of slope failures along the debris flow

Road condition

Existing countermeasures / anomalies: Retaining wall is being constructed at the toe of the debris flow

Code no.	Ν	-	9	5			0	3
Region Office								
Maintenance Unit								

_					•						•	
Coordinates	Latitude Longitude			35° 25' 19.6"								
Coordinates				72° 36' 5.6"								
Road Name					Km							

Date	8/4/2018
Inspector	Yasir, Sajid, Shafique, Basharat

[Causes]

item		ootogom/	Chaole
item	factor	category	Check
ē	areas that river bed is	0.50km ² or more	
.≧	15°or more in watershed	0.15km ² - 0.50km ²	٧
, of	area	less than 0.15km ²	
ert		40°or more	٧
Property of river	steepest slope of river bed	30° - 40°	
ď		less than 30°	
		0.20km ² or more	
	area that slope gradient is 30° or more in watershed area	0.08km ² - 0.20km ²	
	or more in waterened area	less than 0.08km²	√
e	area that meadow and shrub	0.20km ² or more	
slop	(less than 10m height) occupy	0.02km ² - 20km ²	
of	in watershed area	less than 0.02km ²	٧
Ę	artificial works that cause	certain	
Property of slope	negative effects	none	٧
Ā	new crack and/or slope	certain	٧
	failure in stream	none	
	traces of large slope	certain	٧
	failure in stream	none	

[Road structure]

ore	Check
	٧
	٧
rt	
	rt

[Potencial disaster mode]	Check
Damage of bridge/culvert	٧
Outflow of embankment	
Debris flooding on the road	

[History]

category of score	Check
There is a history about debris flow that were obstacles to the road traffic after construction of recent measures.	٧
There is a history about debris flow though there is no obstacle to traffic.	
There is no history of debris flow	

[Expected size of disaster] (width, length, depth, etc.)

L= 1200 m, W=50 m, D= 2-3 m

[Countermeasure]

Type of counterm	Check	
Drainage	e Culvert	
Effect of existing	none · lo	
countermesure	high enough	

[Evaluation Rank]

[= + a.a.a			
Scale of disaster	Big	Medium	Small
Great risk	1	2	3
Medium risk	1	2	3
Low risk	2	3	4

Organization responsible for countermeasure works according to the scale of the disaster

-Big: Grant aid

-Medium: Major contractor in Pakistan -Small: Local contractor

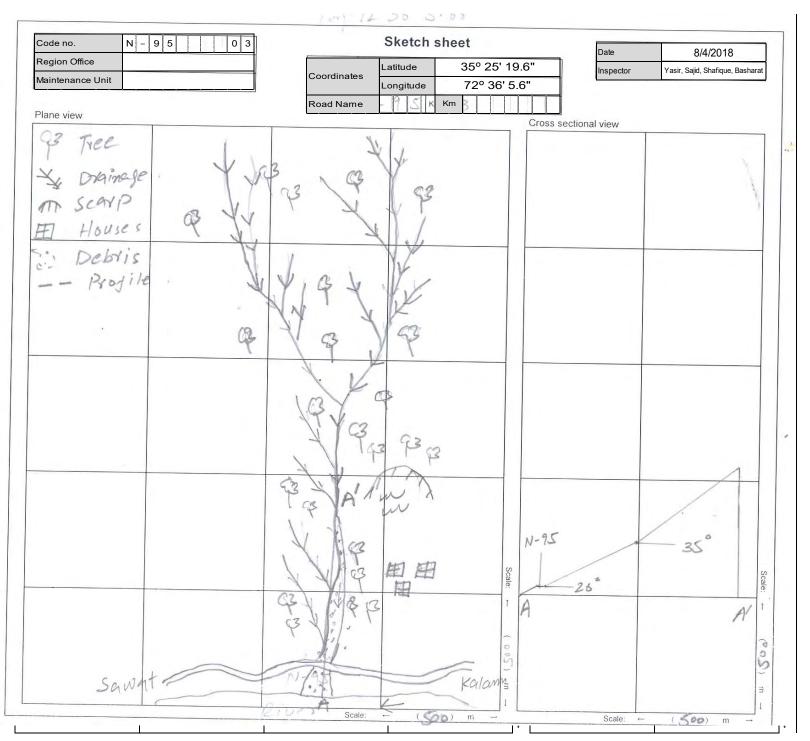
Influence on the traffice when potential

-Great risk: road closed for 2 days or more -Medium risk: road closed for 1 day or less

-Low risk: no road closure

[Description/comments]

An active debris flow. Water is coming in the slide from the upstream glaciers. Upstream of the debris flow is also prone to rock fall. Detached boulders are present in the DF channel. The DF can be activated during the rainfall. No counter measures are constructed to stabilize



Code no.	Ν	ı	9	5		0	3
Region Office							
Maintenance Unit							

Coordinates	Latitude				35º 25' 19.6"						
Longitude 72° 36' 5.6					.6"						
Road Name					Km						

Date	8/4/2018
Inspector	Yasir, Sajid, Shafique, Bashara







Mountain side view of the debris flow

Valley side view of the debris flow

Front view of the debris flow





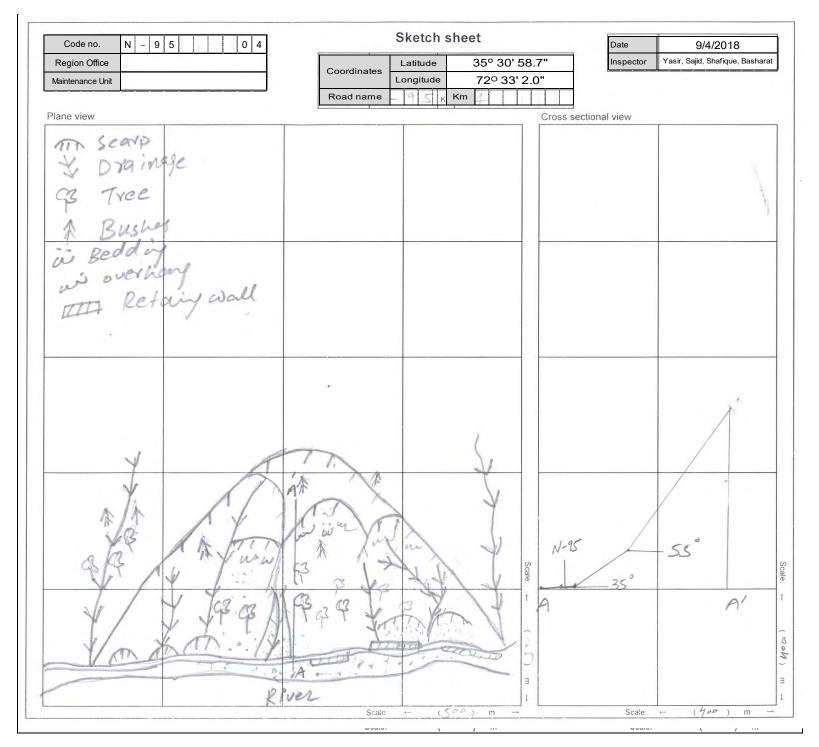


The damage on road has been observed with inlet of pipes for debris flow

Road condition

Existing countermeasures / anomalies: Culvert / Pipes has been installed at the toe of the debris flow

Code no. 9 5 0 4 **Evaluation sheet (Slope failure/Rockfall)** Date 9/4/2018 35° 30' 58.7" Latitude Region Office Inspector Yasir, Sajid, Shafique, Basharat Coordinates 720 33' 2.0" Longitude Maintenance Unit Road name Km [Causes] Item factor category of score [Countermeasure] 3 or more correspondences ٧ Type of countermeasures Collapsed factor talus slope, clear convex break of slope, 2 correspondences [Disaster type] eroded toe of slope , overhang, water catchmen Appro. 1m high Retainaing wall at the toe of Slope Failure 1 correspondences Rock fall no correspondence marked Effectiveness of existing countermeasures Check ٧ Slope failure susceptible to erosion a little marked Potential slope failure are prevented enough, or, it is defended enough when it is less strength with water generated. None [Main check object] marked Potential slope failure are considerably prevented, or it is considerably defended high density of cracks and a weak layers, Cut slope susceptible to erosion. a little marked when it is generated. fast weathering None Potential slope failure are partly prevented, or it is partly defended when it is Natural slope ٧ generated. However, it is not enough for the remaining factors. It corresponds. V dip slope of bedding plane / Joint Planes Structure None There is no countermeasure, or there is not effective even if countermeasures marked ٧ are not performed. debris on impermeability bedrock. the upper part is a hard /the toe of slope is a little marked None [Expected size of disaster](width, length, depth, etc.) [History] instability Level of disaster history Check ٧ a little unstable Topsoil, detached rock and unsteady rock There is a history about large fallen rocks and slope failures that were stability obstacles to the road traffic after construction of recent measures. notable spring water There is a history about large fallen rocks and slope failures that gets to the road though there is no obstacle to traffic. L= 780 m, W= 1500 m, D= 3-4 m Spring water seepage There is a history about small fallen rocks and slope failures that did not get to the road. bare land with minor vagetation Surface condition intermediate (bare · grass · tree) No disaster records mainly structure, mainly tree H≧50m [Evaluation Rank] [Description] 30≦H<50m Scale of It is a complex slide comprising of rock fall and debris flow. Debris is Big Medium Small comprised of boulders, gravels, sand and silt. Source of debris is from 15≦H<30m Risk steep outcrop with fractured and jointed rocks. Hanging and detached H<15m Height (H), dip (i) boulders are lying on the debris that are prone to sliding during the rainfall 1 2 3 Great risk i≥70° Soil erosion leads to development of water channels in the slide. The loose material on the slide is prone to debris flow during the rainy season. 45°≦i<70° ٧ (2) 3 Excavation of the loose debris for construction material also trigger the Medium risk i<45° slide. A small retaining wall is built, however, it is also damaged due to 2 or more correspondences · clarity Surface collapse, small fallen rock, gully, erosion, 2 Low risk certain · unclarity piping hole, subsidence, heaving, bending of tree root, fallen tree, <mark>crack, open crack, anomaly of</mark> none Organization responsible for countermeasure works Influence on the traffice when potential courterme sure according to the scale of the disaster -Big: Grant aid -Great risk: road closed for 2 days or more -Medium: Major contractor in Pakistan -Medium risk: road closed for 1 day or less -Small: Local contractor -Low risk: no road closure



Di Offi			
Region Office			
Maintenance Unit			

Coordinates	Latitude	35° 30' 58.7"					7"			
Longitude			72° 33' 2.0"							
Road na	ame					Km				

Date	9/4/2018
Inspector	′asir, Sajid, Shafique, Bashara







Full view of the slope failure

View of slope failure on Valley side:

Road condition:Cut slope at the start point







View of the slope failure at the middle point

Existing countermeasures / anomalies: View of Retaining Wall as counter measure

View of gully developed in the slope failure

Code no.	Ν	-	9	5			0	5
Region Office								
Maintenance Unit								

Evaluation sheet (debris flow)

Coordinates	Latitude		35° 30' 59.8"									
Coordinates	Longitude			72° 32' 7.5"								
Road Name					Km							

Date	10/4/2018
Inspector	Yasir, Sajid, Shafique, Basharat

[Causes]

[Caus	503		
item	factor	category	Check
of river	areas that river bed is 15°or more in watershed area	0.50km ² or more 0.15km ² - 0.50km ² less than 0.15km ²	٧
Property of river	steepest slope of river bed	40° or more 30° - 40° less than 30°	٧
	area that slope gradient is 30° or more in watershed area	0.20km ² or more 0.08km ² - 0.20km ² less than 0.08km ²	٧
Property of slope	area that meadow and shrub (less than 10m height) occupy in watershed area	0.20km ² or more 0.02km ² - 20km ² less than 0.02km ²	٧
operty	artificial works that cause negative effects	certain none	٧
P	new crack and/or slope failure in stream	certain none	٧
	traces of large slope failure in stream	certain none	٧

[Road structure]

structure	category of score	Check
	10m or more	
River	5m - 10m	٧
width	3m - 5m	
	less than 3m	
	less than 1m or	
	No bridge / box culvert	٧
Beam	1m - 2m	
height	2m - 3m	
	3m - 5m	
	5m or more	

[Potencial disaster mode]	Check
Damage of bridge/culvert	
Outflow of embankment	
Debris flooding on the road	٧

[History]

category of score	Check
There is a history about debris flow that were obstacles to the road traffic after construction of recent measures.	٧
There is a history about debris flow though there is no obstacle to traffic.	
There is no history of debris flow	

[Expected size of disaster] (width, length, depth, etc.)

L= 1280 m, W=460 m, D= 2-3 m

[Countermeasure]

Type of counterm	Check	
No Counter	Measures	
Effect of existing	none · lo	
countermesure	high	
	enough	

[Evaluation Rank]

Scale of disaster		Medium	Small
Great risk	1	2	3
Medium risk	1	2	3
Low risk	2	3	4

Organization responsible for countermeasure works according to the scale of the disaster

-Big: Grant aid

-Medium: Major contractor in Pakistan

-Small: Local contractor

Influence on the traffice when potential

-Great risk: road closed for 2 days or more -Medium risk: road closed for 1 day or less

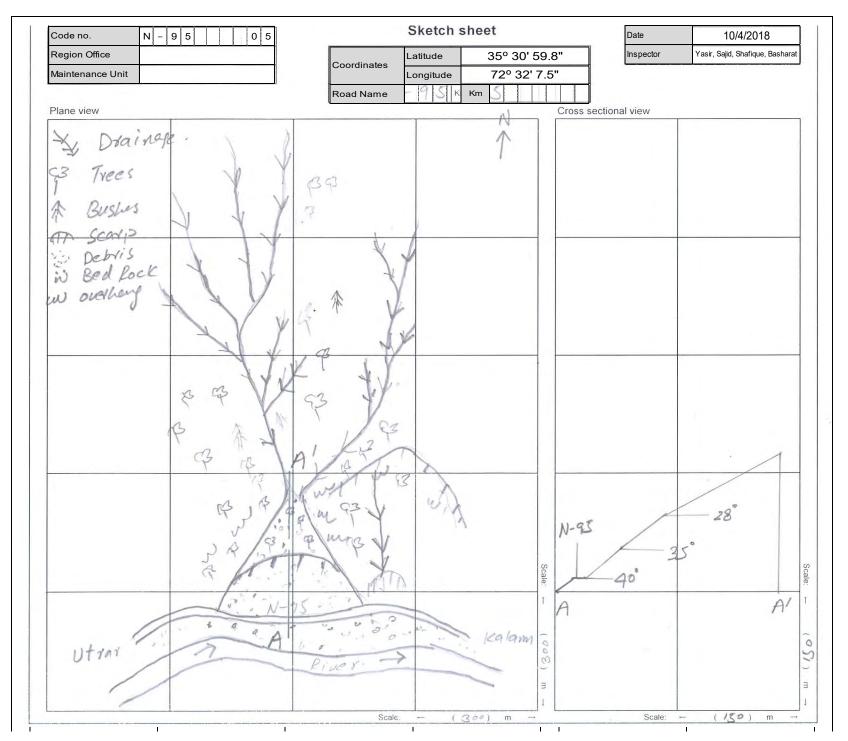
-Low risk: no road closure

[Description/comments]

This is an old debris flow and the road is built in the debris.

Debris is comprised of boulder, gravels, sand and silt.

Detached boulders are lying on the debris that are prone
to slide to the road. Active erosion leads to development of
gullies. Scarp of the slide is prone to rock fall. Eroded
talus is present along the road. Excavation of the loose
debris for construction material also trigger the slide. The
slide is frequently damaging the road and obstructing the
traffic, however, no mitigation measures are constructed
to stabilize the slide.

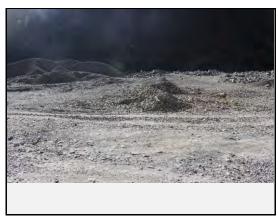


Code no.	Ν	-	9	5		0	5
Region Office							
Maintenance Unit							

Coordinates	Latitude				35º 30' 59.8"							
Coordinates	Longitude			72º 32' 7.5"								
Road Name				Km								

Date	10/4/2018
Inspector	Yasir, Sajid, Shafique, Bashara





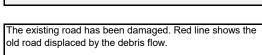


Mountain side view of the debris flow

Valley side view of the debris flow

Front view of the debris flow







Road condition



View of debris material and old road

Code no.	Z	1	4	5			0	1
Region Office								
Maintenance Unit								

Evaluation sheet (Slope failure/Rockfall)

_		,			٧,	<u></u>		. ~	•••		<u> </u>	• • •	_
	Coordinates	L	.ati	tud	е	(1)	35°	3	9'	37	7.3	"	
	Coordinates	Lo	ong	itu	de	7	'1	4	5'	58	3.9)"	
	Road name					Km							

Date	12/4/2018
Inspector	Yasir, Sajid, Shafique, Basharat

·	auses				
	tem	factor	cat	tegory of score	Check
topography	Collapsed factor	talus slope, clear convex break of slope, eroded toe of slope , overhang, water catchme it slope	2 c	or more correspondences correspondences correspondences correspondence	√
SU	Soil	susceptible to erosion less strength with water		irked ttle marked ne	٧
Geological conditions	Rock	high density of cracks and a weak layers susceptible to erosion, fast weathering		irked ttle marked ne	٧
eologic	are	dip slope of bedding plane / Joint Planes	It c	orresponds. ne	٧
Ö	Structure	debris on impermeability bedrock, the upper part is a hard /the toe of slope is weak.		irked ttle marked ne	٧
lon		Topsoil, detached rock and unsteady rock	a li	tability ttle unstable bility	٧
Surface codition		Spring water		table spring water epage ne	٧
Sur		Surface condition	inte	re land with minor vagetation ermediate (bare-grass-tree) sinly structure, mainly tree	٧
Profile		Height (H), dip (i)	dip height	H≥50m 30≤H<50m 15≤H<30m H<15m i≥70° 45°≤i<70°	V V
Anomaly	piping fallen	ce collapse, small fallen rock, gully, erosion, hole, subsidence, heaving, bending of tree root, tree, crack, open crack, anomaly of		i < 45° r more correspondences · clarity rtain · unclarity ne	٧

[Countermeasure]

[Disaster type]	
Rock fall	~
Slope failure	
FR.4	
[Main check o	bject]
Cut slope	bject] √

Type of countermeasures	
No Counter Measure for rock fall. Retaining wall for N-45	
Effectiveness of existing countermeasures	Check
Potential slope failure are prevented enough, or, it is defended enough when it is generated.	
Potential slope failure are considerably prevented, or it is considerably defended when it is generated.	
Potential slope failure are partly prevented, or it is partly defended when it is generated. However, it is not enough for the remaining factors.	
There is no countermeasure, or there is not effective even if countermeasures	٧

[History]

Level of disaster history	Check
There is a history about large fallen rocks and slope failures that were obstacles to the road traffic after construction of recent measures.	V
There is a history about large fallen rocks and slope failures that gets to the road though there is no obstacle to traffic.	
There is a history about small fallen rocks and slope failures that did not get to the road.	
No disaster records	

[Expected size of disaster](width, length, depth, etc.)

L= 140 m, W= 95 m, D= 0-0.5 m

[Evaluation Rank]

<u> </u>			
Scale of disaster Risk	Big	Medium	Small
Great risk	1	2	3
Medium risk	1	2	3
Low risk	2	3	4

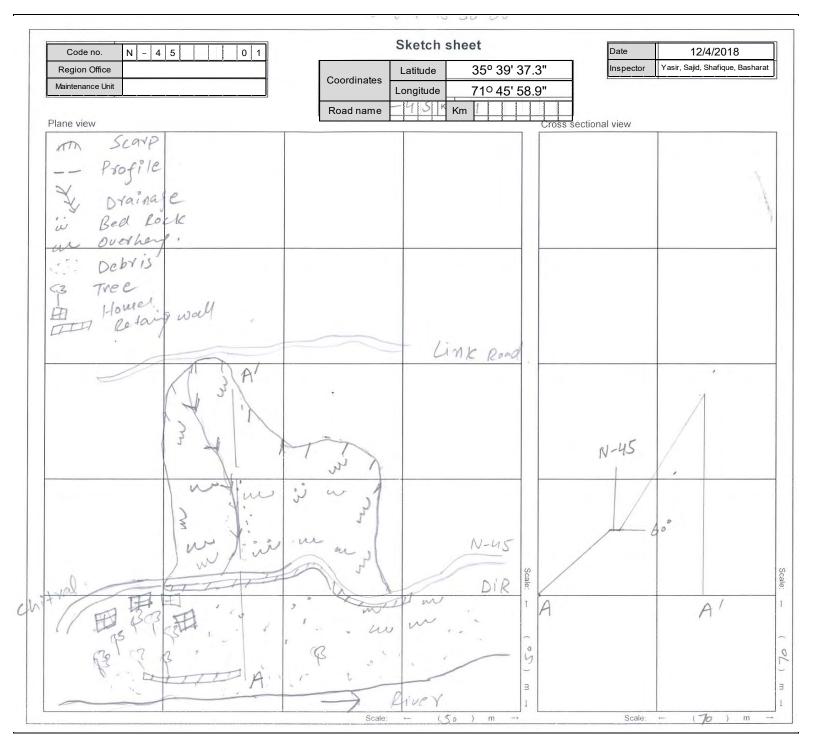
Organization responsible for countermeasure works according to the scale of the disaster

- -Big: Grant aid
- -Medium: Major contractor in Pakistan
- -Small: Local contractor

This cut slope is generated during excavation for N-45. Marble and quartzite is exposed in this section which is jointed and cracked with a risk of over hang blocks. Clayey material is found on both sides of the rock fall. Drainage is also found on the right side of the rock fall. This site is also under consideration for the exploration of Marble for decorative stone.

Influence on the traffice when potential disaster

- -Great risk: road closed for 2 days or more
- -Medium risk: road closed for 1 day or less
- -Low risk: no road closure



			Z	-	4	5		0	1
	Region Offi	се							
N	Maintenance I	Unit							



Coordinates	Latitude		35° 39' 37.3"							
Coordinates	Longitud	de	71º 45' 58.9"							
Road na	Road name					Km				

Date	12/4/2018
Inspector	′asir, Sajid, Shafique, Bashara







Full view of the landslide

View of landslide on Valley side:

Road condition:Cut slope at the start point





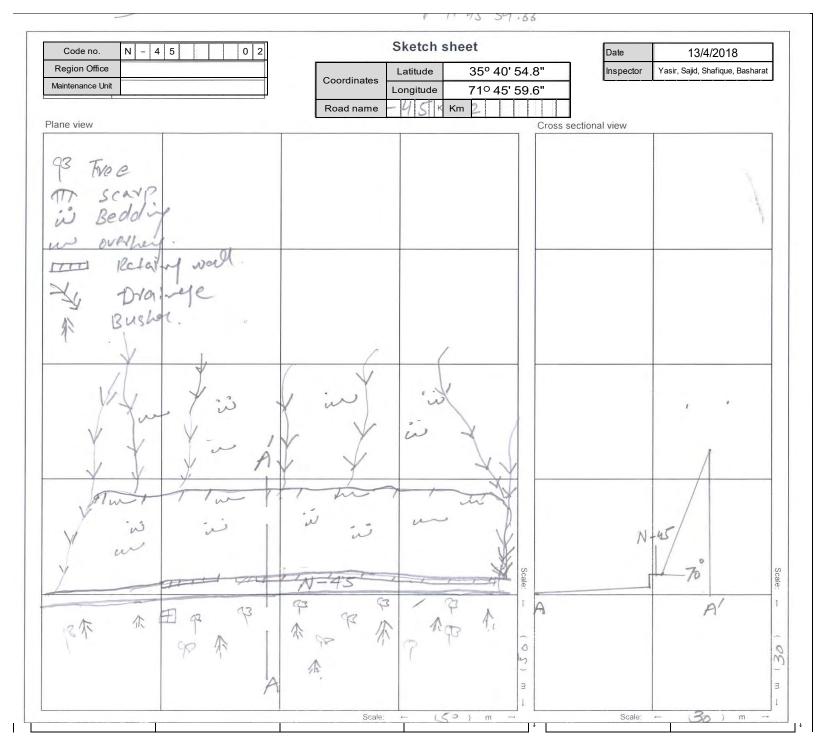


View of the slope failure at the middle point

Existing countermeasures / anomalies: View of retaining wall as counter measure for N-45

View of unconsolidated material with damaged retaining wall.

Code no. 4 5 0 2 **Evaluation sheet (Slope failure/Rockfall)** Date 13/4/2018 35° 40' 54.8" Latitude Region Office Inspector Yasir, Sajid, Shafique, Basharat Coordinates 710 45' 59.6" Longitude Maintenance Unit Road name Km [Causes] Item factor category of score [Countermeasure] or more correspondences ٧ Type of countermeasures talus slope, clear convex break of slope, eroded toe of slope, overhang, water catchment correspondences [Disaster type] l correspondences No Counter Measure for rock fall. Retaining wall for N-45 Rock fall overhang, water catchment slope no correspondence marked Effectiveness of existing countermeasures Check Slope failure susceptible to erosion a little marked Potential slope failure are prevented enough, or, it is defended enough when it is less strength with water generated. None Main check object marked Potential slope failure are considerably prevented, or it is considerably defended high density of cracks and a weak layers Cut slope susceptible to erosion. a little marked ٧ when it is generated. fast weathering None Potential slope failure are partly prevented, or it is partly defended when it is Natural slope generated. However, it is not enough for the remaining factors. It corresponds. V dip slope of bedding plare / Joint Planes Structure None There is no countermeasure, or there is not effective even if countermeasures marked are not performed. debris on impermeability bedrock. a little marked the upper part is a hard /the toe of slope is None [Expected size of disaster](width, length, depth, etc.) [History] instability Level of disaster history Check a little unstable Topsoil, detached rock and unsteady rock There is a history about large fallen rocks and slope failures that were stability obstacles to the road traffic after construction of recent measures. notable spring water There is a history about large fallen rocks and slope failures that gets to the road though there is no obstacle to traffic. Spring water L= 50 m, W= 130 m, D= 0 m seepage There is a history about small fallen rocks and slope failures that did not get to the road. bare land with minor vagetation Surface condition intermediate (bare · grass · tree) No disaster records mainly structure, mainly tree H≧50m [Evaluation Rank] [Description] 30≦H<50m Scale of This cut slope is generated during excavation for N-Medium Big Small 15≦H<30m Risk 45. Marble is exposed in this section which is H<15m Height (H), dip (i) cracked and some open cracks are also observed 1 2 3 Great risk i≥70° with a risk of over hang blocks. Drainage is also 45°≦i<70° found on the both sides of the rock fall. Bedding 2 3 Medium risk i<45° plane also corresponds to the dip slope. Highly 2 or more correspondences · clarity Surface collapse, small fallen rock, gully, erosion, $\left(4\right)$ 2 Low risk certain unclarity piping hole, subsidence, heaving, bending of tree root, fallen tree, crack, open crack, anomaly of none Organization responsible for countermeasure works Influence on the traffice when potential according to the scale of the disaster -Big: Grant aid -Great risk: road closed for 2 days or more -Medium: Major contractor in Pakistan -Medium risk: road closed for 1 day or less -Small: Local contractor -Low risk: no road closure



Code no.	N	-	4	5		0	2
Region Office							
Maintenance Unit							

Coordinates	Latitude		35° 40' 54.8"							
	Longitud	de		7	1º 45'	59.	6"			
Road na	Road name				Km					

Date	13/4/2018
Inspector	′asir, Sajid, Shafique, Bashara





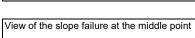


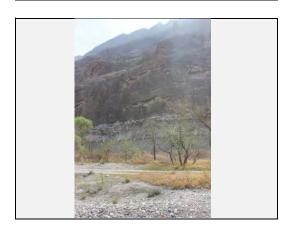
Full view of the slope Failure

View of Slope Failure on Valley side:

Road condition:Cut slope at the start point





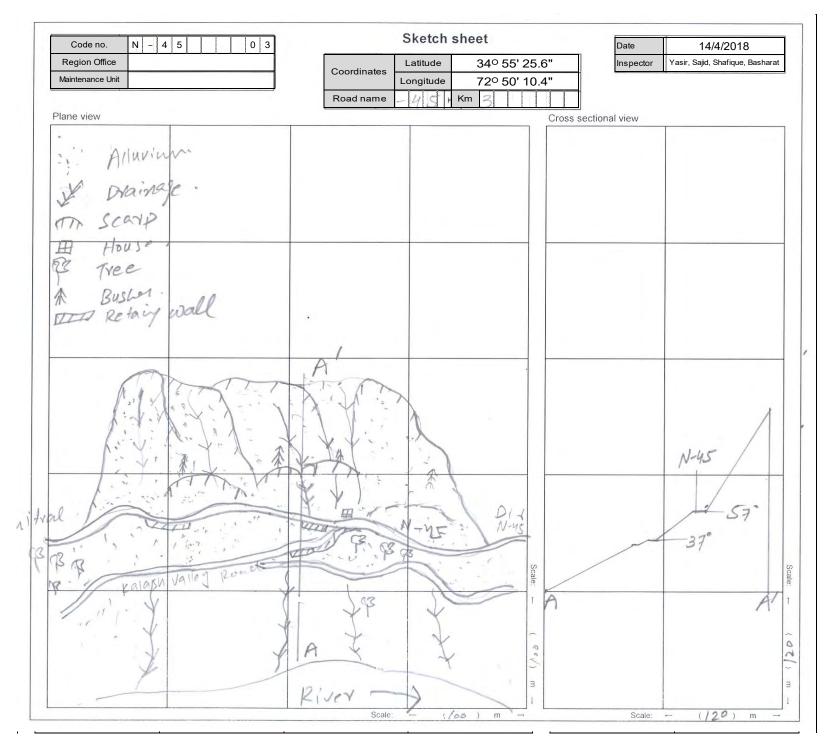


Existing countermeasures / anomalies:



View of drainage that cuts the slope

	Cod	le no. N - 4 5 0 3		Eva	aluation s	heet (S				rfall)	Date 14/4/20	18
F	Regio	n Office			Coordinates	Latitude	34	° 55' 25	5.6"		Inspector Yasir, Sajid, Shafiq	ue, Basharat
М	ainten	ance Unit			Joordinates	Longitude	72	° 50' 10).4"			
		•	•		Road name		Km					
_	auses											
	tem	factor	category of score	Check				[Counter	measure]	Time of cour		
aphy	sed	talus slope, clear convex break of slope,	3 or more correspondences 2 correspondences	٧	[Disaster type]						ntermeasures	
topography	Collapsed factor	eroded toe of slope , overhang, water catchment	1 correspondences	l		1	1			Small drainage at the	toe of the slope failure	
top	ა -	slope	no correspondence		Rock fa	all				J	·	
		susceptible to erosion	marked	٧	Slope fai	lure 1	1		Ef	ffectiveness of existing of	countermeasures	Check
	Soil	less strength with water	a little marked		<u>'</u>		_			e are prevented enough,	, or, it is defended enough when it is	
suc	ļ		None		[Main che	eck object]	7	generated				
nditi	Rock	high density of cracks and a weak layers, susceptible to erosion,	marked a little marked	$\vdash\vdash$	Cut slo	pe √		Potential s when it is	nted, or it is considerably defended			
Geological conditions	껖	fast weathering	None	٧	h					e are partly prevented, or	it is partly defended when it is	
gica		dip slope of bedding plane / Joint Planes	It corresponds.		Natural s	iope √				it is not enough for the r		
eolc	ure	arp stope of beduing plane / John Flanes	None	٧		_	_			easure, o r there is not e	effective even if countermeasures	V
Ю	Structure	debris on impermeability bedrock,	marked	٧				are not pe	erformed.			
	Ø	the upper part is a har <mark>d /the toe of slope is weak.</mark>	a little marked None	-	[Lioton/]						[Expected size of disaster](width, length, or	donth ata \
H			instability	٧	[History]	Leve	of disas	ter history		Check	Expected size of disaster](width, length, (αοριτι, σ ιό. <i>)</i>
		Topsoil, detached rock and unsteady rock	a little unstable	H	There is a history							
ion			stability		obstacles to the road traffic after construction of recent measures.							
odit			notable spring water		There is a history				pe failures t	that gets		_
ace c		Spring water	seepage	V	to the road though there is no obstacle to traffic. L= 322 m, W= 363 m, D= There is a history about small fallen rocks and slope failures that did						L= 322 m, W= 363 m, D= 4	-5 m
Surface codition			none bare land with minor vagetation	V	not get to the roa		ali ralien ro	ocks and slo	pe railures t	mai did		
0,		Surface condition	intermediate (bare grass tree)	<u>-</u>								
			mainly structure, mainly tree		No disaster recor	as						
			H≧50m	٧	[Evaluation Rank	4				[Description]		
			변 30≦H<50m	 	Scale disast		9	Medium	Small		rounded boulders, gravels, pebbles and ey matrix. About 0.5 to 1m thick sand la	
Profile		Height (H), dip (i)	ੁੱ 15≦H<30m H<15m		Risk	+				abserved at diff	erent lavels along the slope. Few boulde	ers at the top
Prc		rieight (17), dip (1)	i≧70°	\vdash	Great risk	1		2	3		slope failure which threaten the road and wide road section was highly susceptible	
			ਊ 45°≦i<70°		Modium rick	1		2	3	Minor scarps ar	re also observed. 1 feet wide drainage (o	damaged) is
Ш			i<45°	٧	Medium risk			4	3	also observed	d at the toe of slope failure. Gullies are o	bserved at
جَ		ce collapse, small fallen rock, gully, erosi <mark>c</mark> n,	2 or more correspondences · clarity certain · unclarity	٧	Low risk	2		3	4			
oma	piping fallen	hole, subsidence, heaving, bending of tree root, tree, crack, open crack, anomaly of	 	Organization	annoible f	00115455	occure	ko	Influence on the form	office when notantic!		
An		ermeasure	ļ	Organization resp according to the			easure worl	KS	disaster	affice when potential		
ш				-Big: Grant aid						osed for 2 days or more		
				-Medium: Major contractor in Pakistan -Medium risk: road closed for 1 day or less								
					-Small: Local con	tractor				-Low risk: no road	closure	



Code no.	N	-	4	5		0	3
Region Office							
Maintenance Unit							

	Coordinates	Latitude				34	4º 55' :	25.	6"		
		Longitud	de	72º 50' 10.4"							
	Road na	Road name					Km				

Date	14/4/2018
Inspector	′asir, Sajid, Shafique, Bashara





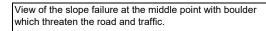


Full view of the Slope Failure

View of Slope Failure on Valley side:

Road condition:Cut slope at the start point







Existing countermeasures / anomalies: View of channel at the toe of Slope Failure



View of sandy layer in the alluvial deposits.

	Cod	le no. N - 4 5 0 4		E	valuation she	et (S	lope f	failure/R	Rockfa	ıll)		Date	15/4/20)18
R	egio	n Office			La	titude		55' 11.2"		•		Inspector	Yasir, Sajid, Shafiq	ue, Basharat
Ma	nten	ance Unit			Coordinates	ngitude	720	49' 43.9"	,				1	
IVIG	IIICII	and only				igitude		73 73.3	_					
[Ca	uses	5]			Road name		Km							
lte	m	factor	category of score	Check			-	[Countermea	asure]					
γ	7	talus slope,	3 or more correspondences	٧						-	Type of counte	ermeasures		
topography	factor	clear convex break of slope,	2 correspondences		[Disaster typ	e]								
Sod .	fa g	eroded toe of slope ,	1 correspondences		Rock fall			No C	ounter Mea	asure for	slope failure.	Culvert at one	of the gully drainage	
to	,	overhang, water catchment slope	no correspondence		T CON TAIL									
	_	susceptible to erosion	marked	٧	Slope failure	a 1			Effec	tiveness	of existing co	untermeasures	;	Check
	Soil	less strength with water	a little marked		S.SpS randic	'			e failure are	e preven	ted enough, o	r, it is defende	d enough when it is	
ns		<u> </u>	None		[Main check	object]		generated.						
Geological conditions	×	high density of cracks and a weak layers,	marked		Cut slope	$\sqrt{}$				e conside	rably prevente	ed, or it is cons	iderably defended	
ouc	Rock	susceptible to erosion,	a little marked		Gut Glope	'		when it is gene	erated.					
galc	ш_	fast weathering	None	٧	Natural slop	e 1						is partly defen		V
ogic		dip slope of bedding plane / Joint Planes	It corresponds.		rtatarar crop	` `		generated. Ho	wever, it is	not eno	ugh for the rer	naining factors	i.	V
eole	nre	aip slope of bodding plane / contribution	None	٧						ure, or th	ere is not effe	ective even if c	ountermeasures	
Ō	Structure	debris on impermeability bedrock,	marked	٧				are not perforr	med.					
	Str	the upper part is a har d /the too of slope is	a little marked				_							='
		weak.	None		[History]						E	expected size of	disaster](width, length,	depth, etc.)
			instability	٧		Level	of disaste	er history		(Check			
		Topsoil, detached rock and unsteady rock	a little unstable		There is a history about large fallen rocks and slope failures that were									
o			stability		obstacles to the road	traffic aft	er constru	uction of recen	t measures	S.	v			
codition			notable spring water		There is a history abo	ks and slope fa	ailures that	gets						
e CC		Spring water	seepage		to the road though th	ere is no	obstacle t	o traffic.				L= 309	m, W= 520 m, D= 2	-3 m
Surface			none	٧	There is a history abo	out small	fallen roc	ks and slope f	ailures that	t did				
Sur			bare land with minor vagetation	٧	not get to the road.									
		Surface condition	intermediate (bare-grass-tree) mainly structure, mainly tree		No disaster records									
T			H≧50m	٧	[Evaluation Rank]					[De	scription]			
			± 30≦H<50m		Scale of							ounded, angulai	r to sub angular bould	ers, gravels,
			 15≦H<30m		Risk	Big	N	1edium S	Small				silty clayey matrix. Ab	
Profile		Height (H), dip (i)	H<15m										rved at different lavels	
ď		J (// ==F (//	i≧70°		Great risk	1		2	3				nd section was highly a different intervals alo	
			£ 45°≦i<70°	٧									oth sides of the slope	
	i<45°				Medium risk	1	(2	3				ons due to material ov	
c								_		Ь	road No b	odrook is ovnor	and along this along fo	iluro
aly	Surface collapse, small fallen rock, gully, crosign, piping hole, subsidence, heaving, bending of tree root, certain unclarity				Low risk	2		3	4					
non f		tree, crack, open erack, anomaly of	none		Organization respons	sible for o	ounterme	asure works		Influenc	ce on the traffi	ce when noten	tial	
	countermeasure				Organization responsible for countermeasure works Influence on the traffice when potential according to the scale of the disaster disaster									
					-Big: Grant aid					-Great	risk: road clos	ed for 2 days o	or more	
				-Big: Grant aid -Great risk: road closed for 2 days or more -Medium: Major contractor in Pakistan -Medium: Major contractor in Pakistan -Medium: risk: road closed for 1 day or less										

-Low risk: no road closure

-Small: Local contractor

1 11 100 Sketch sheet Code no. N - 4 5 0 4 Date 15/4/2018 Region Office 34° 55' 11.2" Latitude Inspector Yasir, Sajid, Shafique, Basharat Coordinates Maintenance Unit 720 49' 43.9" Longitude 5 Km 4 Road name Plane view Cross sectional view (150) Scale: Scale: ← (150) m

Code no.	N	-	4	5		0	4
Region Office							
Maintenance Unit							

Coordinates	Latitude		34° 55' 11.2"							
	Longitud	de	72° 49' 43.9"							
Road na	Road name					Km				

Date	15/4/2018					
Inspector	′asir, Sajid, Shafique, Bashara					





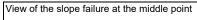


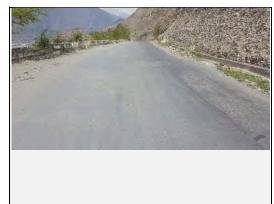
Full view of the Slope Failure

View of Slope Failure on Valley side:

Road condition:Cut slope at the start point





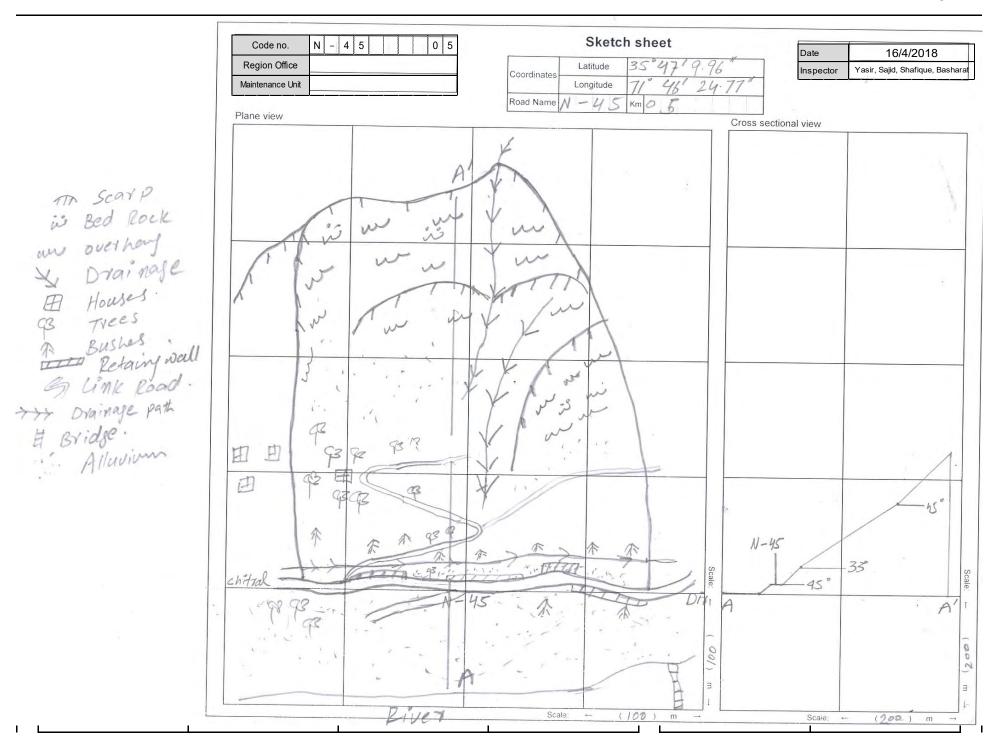


Existing countermeasures / anomalies: View of water channel at the toe of slope failure and parapit wall as counter measure



View of gully erosion in the middle of slope failure

F		e no. N - 4 5 0 5		Ev	valuation she	et (S		failure ° 47' 9.		fall)		Date 16/4/20 Inspector Yasir, Sajid, Shafiqi	_	
М	ainten	ance Unit			Coordinates ——	ngitude		46' 24				, , , , , , , , , , , , , , , , , , ,	,	
÷	auses em] factor	category of score	Check				[Counterr	measurel					
. 1		talus slope.	3 or more correspondences	٧			ĺ	Counten	neasurej		Type of cou	untermeasures		
topography	Collapsed factor	clear convex break of slope, eroded toe of slope , overhang, water catchment slope	2 correspondences 1 correspondences no correspondence		[Disaster typ	[Disaster type] Rock fall		Stepped retaining wall at the centre of slope failure.						
			marked			1			Effe	ectiveness	s of existing	countermeasures	Check	
S	Soil	susceptible to erosion less strength with water	a little marked None	٧	Slope failure			Potential s	slope failure	failure are prevented enough, or, it is defended enough when it is railure are considerably prevented, or it is considerably defended				
ndition	Rock	high density of cracks and a weak layers, susceptible to erosion,	marked a little marked	٧	Cut slope	√		Potential s when it is						
Geological conditions	<u>~</u>	fast weathering	None It corresponds.		Natural slop	e √				e are partly prevented, or it is partly defended when it is it is not enough for the remaining factors.			٧	
Geolo	Structure	dip slope of bedding plane / Joint Planes debris on impermeability bedrock,	None marked	٧	<u> </u>			There is no		asure, or t	there is not	effective even if countermeasures		
	Stru	the upper part is a har d /the tee of slope is weak.	a little marked None	٧	[History]							[Expected size of disaster](width, length,	denth etc.)	
Н	instability Topsoil, detached rock and unsteady rock a little unstable			٧	[Filstory]	Level	of disast	er history			Check	[Exposion size of disaster](Math, longth, t	doptiii, oto.)	
					There is a history ab				e failures tha					
uc		•	stability		obstacles to the road traffic after construction of recent measures.									
Surface codition	notable spring water Spring water seepage none				There is a history about large fallen rocks and slope failures that gets to the road though there is no obstacle to traffic. L= 460					L= 460 m, W= 275 m, D= 1-	-2 m			
rfac				٧	There is a history about small fallen rocks and slope failures that did									
Su		Surface condition	bare land with minor vagetation intermediate (bare-grass-tree) mainly structure, mainly tree	٧	not get to the road. No disaster records									
			H≧50m	٧	[Evaluation Rank]					[De	escription]			
ile			± 30≦H<50m		Scale of disaster	Big	1	Medium	Small	de	posit is also	posed along this slope failure. 4-5 m th o observed along the slope failure. High e slope failure. Minor scarps are also c	hly fractured	
Profile		Height (H), dip (i)	H<15m i≧70°		Great risk	1		2	3	1	feet wide dr	rainage (damaged) is also observed at Gullies are observed at different interva	the toe of	
			ਉ 45°≦i<70° i<45°	٧	Medium risk 1 2 3 Slope failure. Water channel for local supplie the top of the slope failure.					Water channel for local supplies is als				
maly	Securface collapse, small fallen rock, gully, erosign, piping hole, subsidence, heaving, bending of tree root, certain unclarity			Low risk 2 3 4										
fallen treen crack, open crack, anomaly of countermeasure					Organization responsible for countermeasure works according to the scale of the disaster				Influence on the traffice when potential disaster					
					-Big: Grant aid -Medium: Major cont -Small: Local contrac		Pakistan			-Mediu		closed for 2 days or more d closed for 1 day or less I closure		

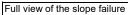


Code no.	Ν	-	4	5		0	5
Region Office							
Maintenance Unit							

Coordinates	Latitude	35° 47' 9.9"								
	Longitud	71º 46' 24.7"								
Road na	ame					Km				

Date	16/4/2018					
Inspector	′asir, Sajid, Shafique, Bashara					







View of slope failure on Valley side:



Road condition:Cut slope at the start point



View of the slope failure at the middle point



Existing countermeasures / anomalies: View of Stepped Retaining Wall as counter measure



View of water Supply Scheme passing in the middle of the slope failure