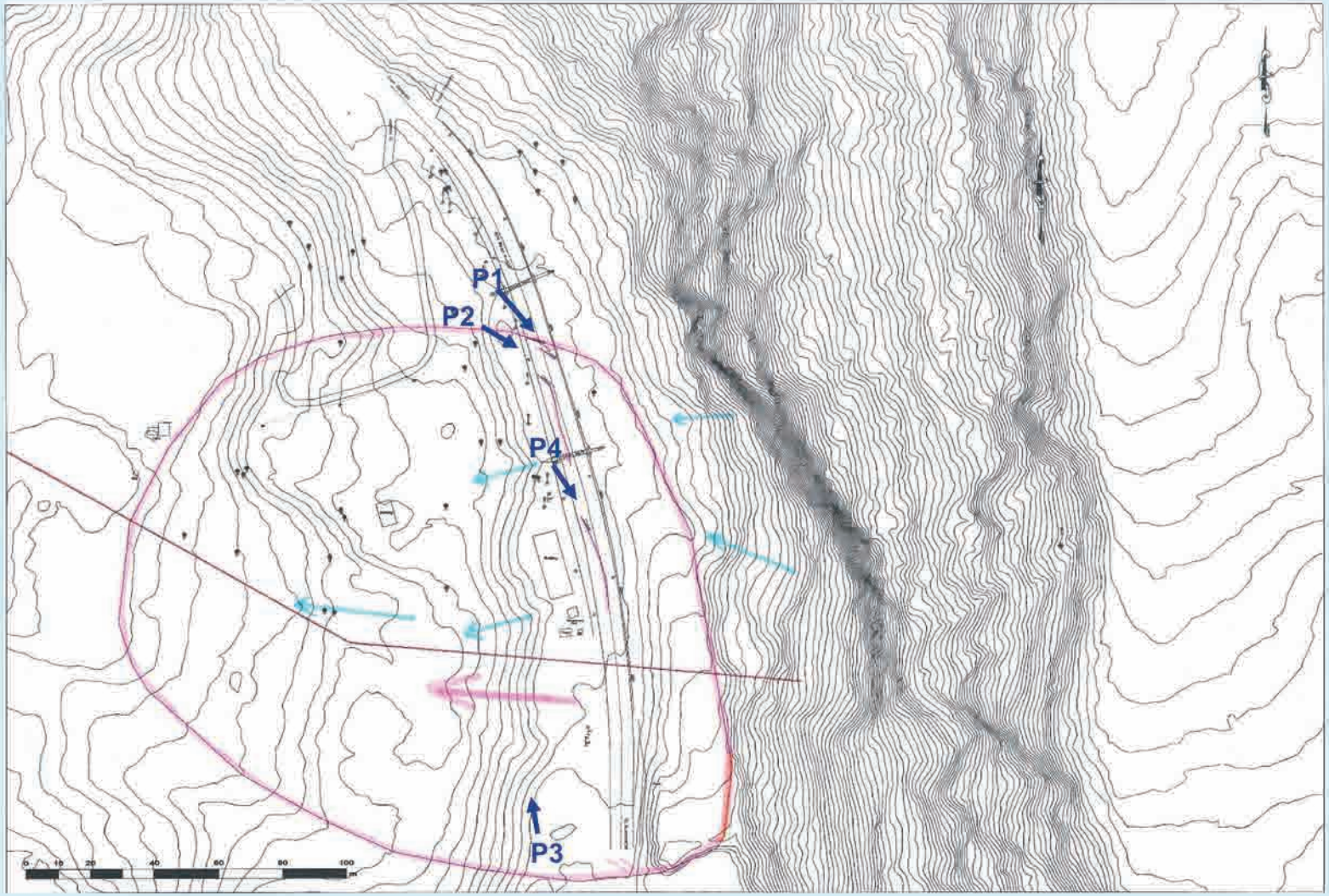
Inventory Sheet A

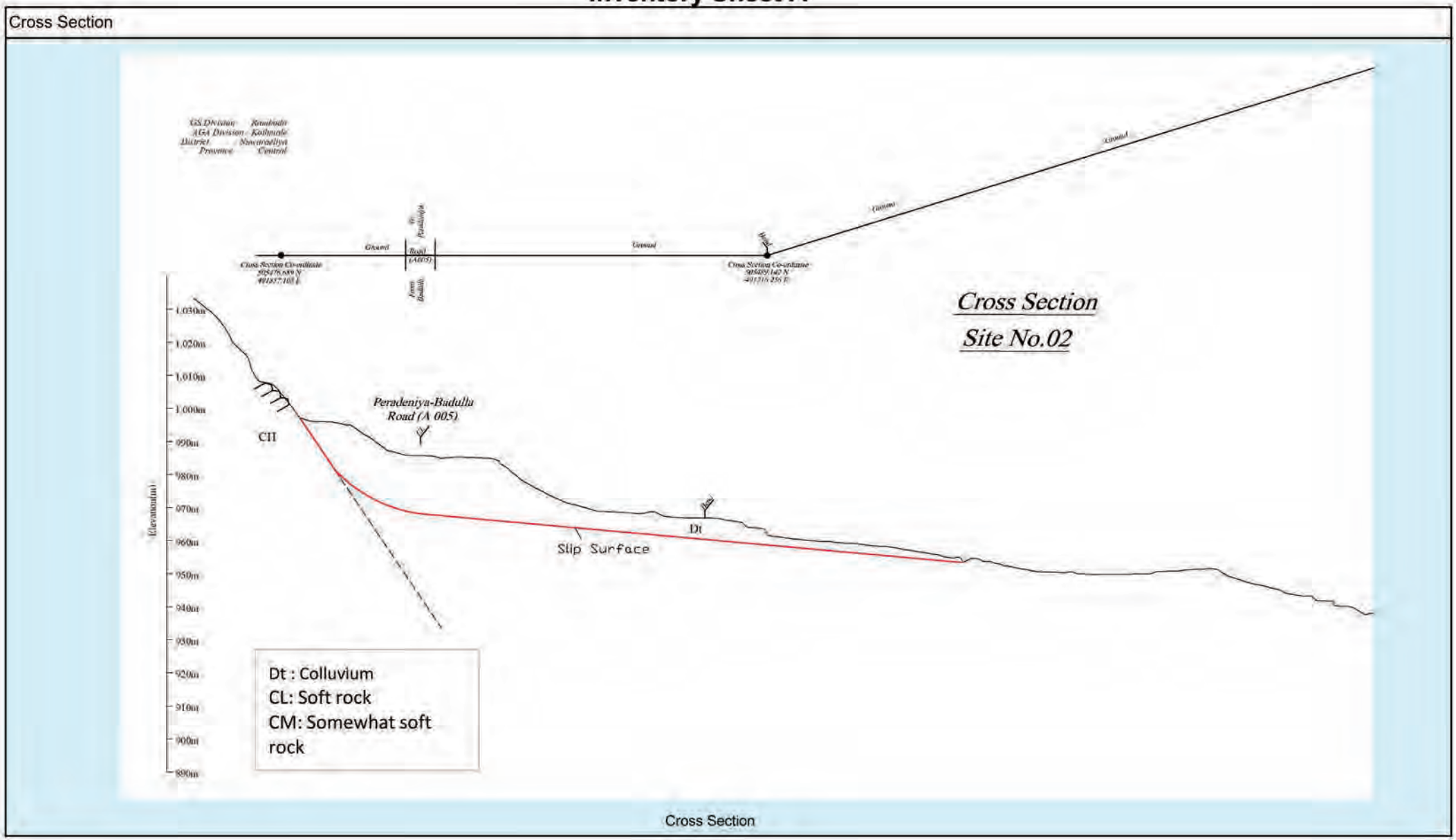
District	Nuwara Eliya		Management office	Nuwara Eliya		Road No	A-005		Road Name	Peradeniya - Badulla - Chenkaladi road									
Site No.	2		Disaster Type	Landslide		Location	*Start*	46/2		End	46/3		latitude	7°02'57.7"N		longitude	80°41'57.8"E		
Main body	Both		Traffic control			Hourly		mm	Traffic volume	*Week day*	4442/12h		holiday			Bus route			Detour	
Topo map/Sketch																			



Plan

Inventory Sheet A

Cross Section



Cross Section

Site No.	2

Inventory Sheet B

(Landslide)

Checked by	Yang Pucai
Organization	JICA Survey Team

[Factor] (A)

Item	Check Point		check	score
Landslide Topography	A scarp, hilly topography or gentle slope, disorder of contour lines, bulge on river bank is observed.	Clear	30	15
		Fairly clear	15	(30)
		Unclear	7	
Geological conditions	Geological structure	Fault, shered zone	18	18
		Volcanic alteration zone	18	
		Dip slope	14	
		Opposite dip slope	7	
		Intrusive structure, Cap rock structure	3	
		Others	0	(18)
	Geological meterial	Mesozoic/palaeozonic formations	7	0
		Tertiary formation (sedimendary rocks)	7	
		Quarternary formation (mudstone, etc)	3	
		Others (Volcamic rock, Igneous rock)	0	(7)
	Spring Water	Present	5	5
		Absent	0	(5)
	Total			38

[History] (B)

Item	Check Point		check	score
Landslide history	Record (documental or patrimony)	Present	100	100
		Absent	0	(100)
Landslide deformation	Scarp in slope, Bulge and depression, Subsidence, Upheaval and cracks on road surface, Deformation of countermeasure works	Clear	100	75
		Fairly clear	75	
		Unclear	0	(100)
	Total		(B)	100

(C)=MAX(A,B)

Score evaluated from cause	(A)	38
Score evaluated from history	(B)	100
Among (B)&(C), large one.	(C)=MAX(A,B)	100

[Countermeasure] (D) = (c) + α or (c) x 0

Category		point (α)	check
No countermeasure		±0	✓
Effectiveness of countermeasure	No effect	±0	
	Slight effect	-30	
	High effect	x0	
Total		(D)	**100**

[Description]

Steep slope consisting of relatively fresh rock are observed in section of 10 to 25 meters from the road. Talus deposits are distributed with thickness 3 to 15 meters between steep slope and the road. Debris likely moves toward the road in case of heavy rainfall.

Site No.	2	**Inventory Sheet C**	Date	June 26, 2019

P1 Cracks across the road due pressumably to landslide movement

P2 Cracks across the road

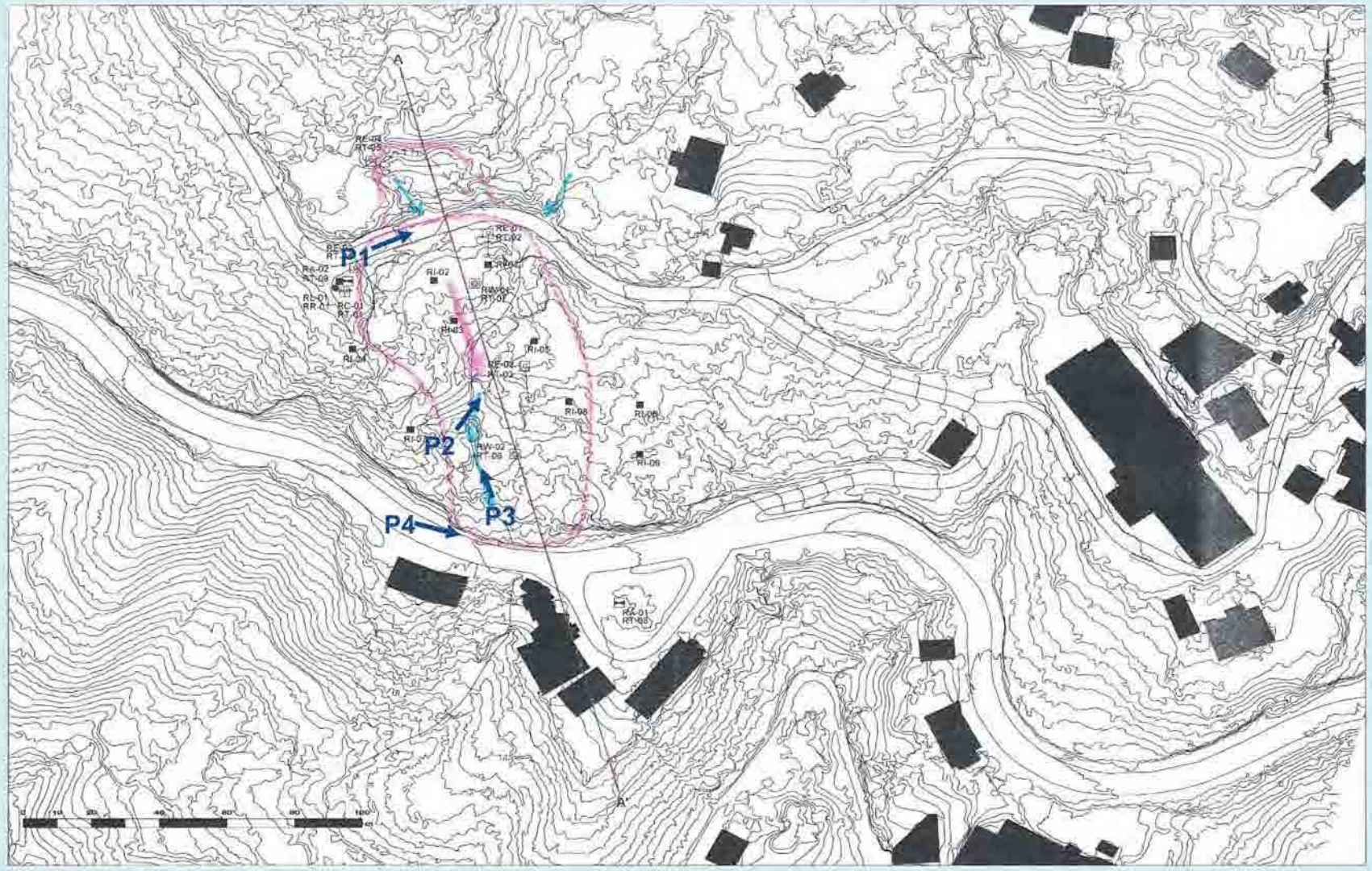
P3 The lower slope the landslide below the road

P4 A public restaurant within the landslide

Inventory Sheet A

District	Ratnapura		Management office	Ratnapura		Road No	B-391		Road Name	Ratnapura - Wewalwatta Road									
Site No.	4			Disaster Type	Landslide		Location	Start	11.9 km	End	12.0 km		latitude	6° 42' 23.7"N		longitude	80° 28' 2.2"E		
Main body	Mountain side		Traffic control		Hourly		mm	Traffic volume		Week day	2333/12h		holiday			Bus route		Detour		

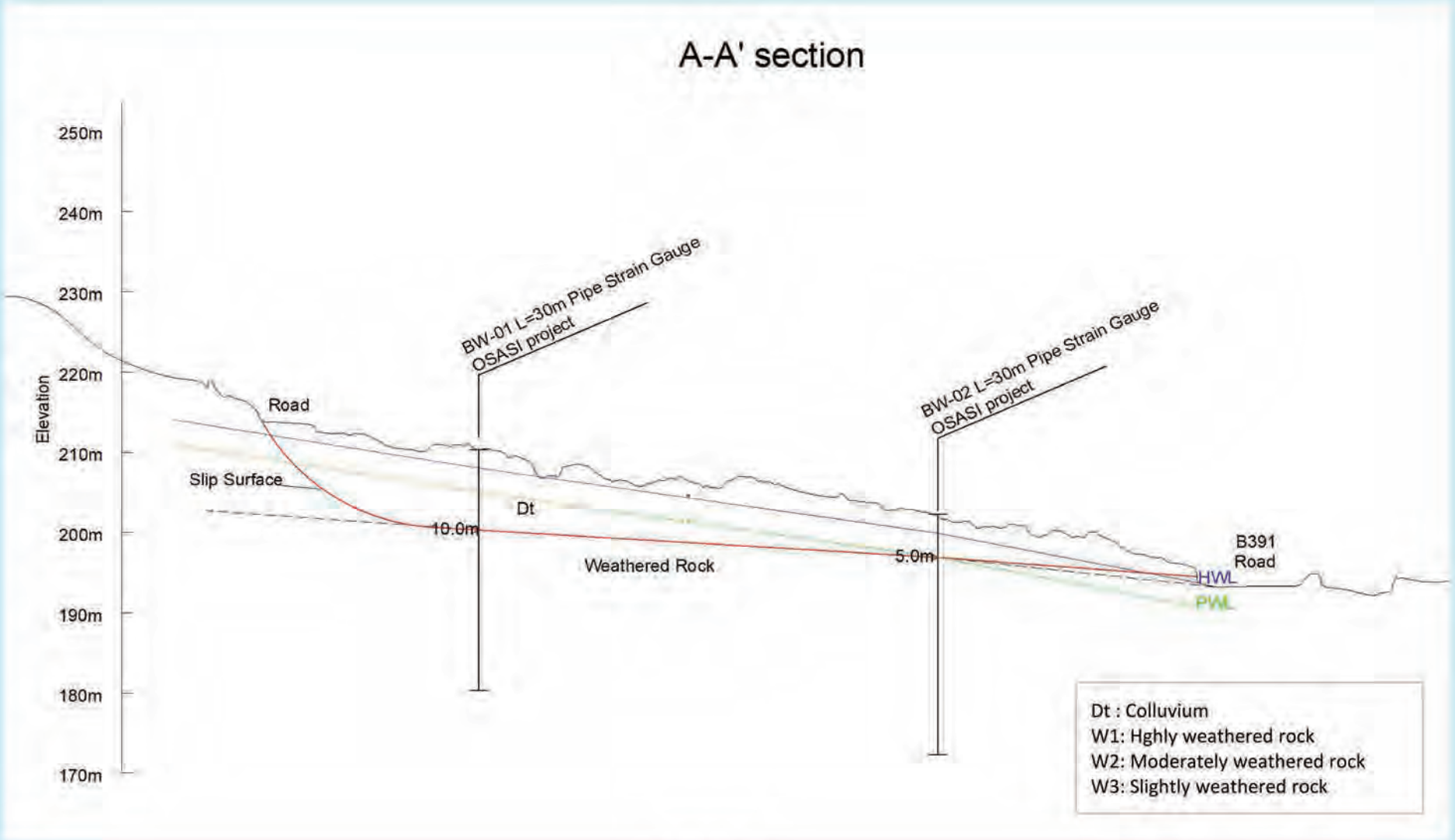
Topo map/Sketch



Plan

Inventory Sheet A

Cross Section



Cross Section

Site No.	4

Inventory Sheet B

(Landslide)

Checked by	Yang Pucai
Organization	JICA Survey Team

[Factor] (A)

Item	Check Point		check	score
Landslide Topography	A scarp, hilly topography or gentle slope, disorder of contour lines, bulge on river bank is observed.	Clear	30	30
		Fairly clear	15	
		Unclear	7	(30)
Geological conditions	Geological structure	Fault, shered zone	18	18
		Volcanic alteration zone	18	
		Dip slope	14	
		Opposite dip slope	7	
		Intrusive structure, Cap rock structure	3	
		Others	0	(18)
	Geological meterial	Mesozoic/palaeozonic formations	7	7
		Tertiary formation (sedimendary rocks)	7	
		Quarternary formation (mudstone, etc)	3	
		Others (Volcamic rock, Igneous rock)	0	(7)
	Spring Water	Present	5	5
		Absent	0	(5)
	Total			60

[History] (B)

Item	Check Point		check	score
Landslide history	Record (documental or patrimony)	Present	100	100
		Absent	0	(100)
Landslide deformation	Scarp in slope, Bulge and depression, Subsidence, Upheaval and cracks on road surface, Deformation of countermeasure works	Clear	100	100
		Fairly clear	75	
		Unclear	0	(100)
	Total		(B) 100	

(C)=MAX(A,B)

Score evaluated from cause	(A) 60
Score evaluated from history	(B) 100
Among (B)&(C), large one.	(C)=MAX(A,B) 100

[Countermeasure] (D) = (c) + α or (c) x 0

Category		point (α)	check
No countermeasure		±0	✓
Effectiveness of countermeasure	No effect	±0	
	Slight effect	-30	
	High effect	x0	
Total		(D) 100	

[Description]

Dimension of landslide is 50m in width and 100m long.. Observation instruments of extentin meteras well as inclinometers are installed to monitor the movement of slide.

Site No.	4	Inventory Sheet C	Date	July 4, 2019

P1 The deformed situation of the village road on the upper slope of the landslide

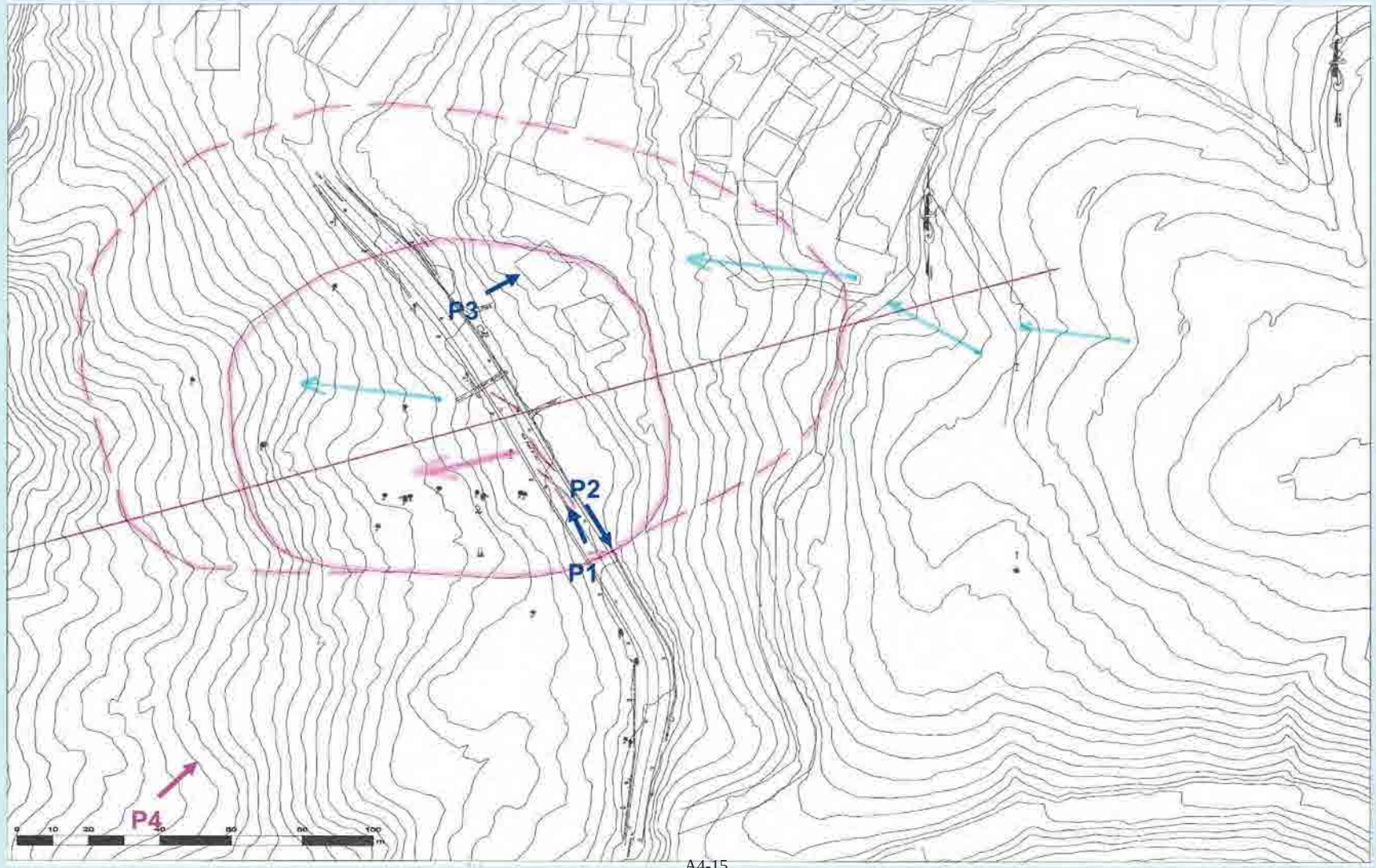
P2 Planned location of horizaontal drain boreholes

P3 The erosion condition of a mountain stream within the landslide

P4 The landslide toe along the road side ditch

Inventory Sheet A

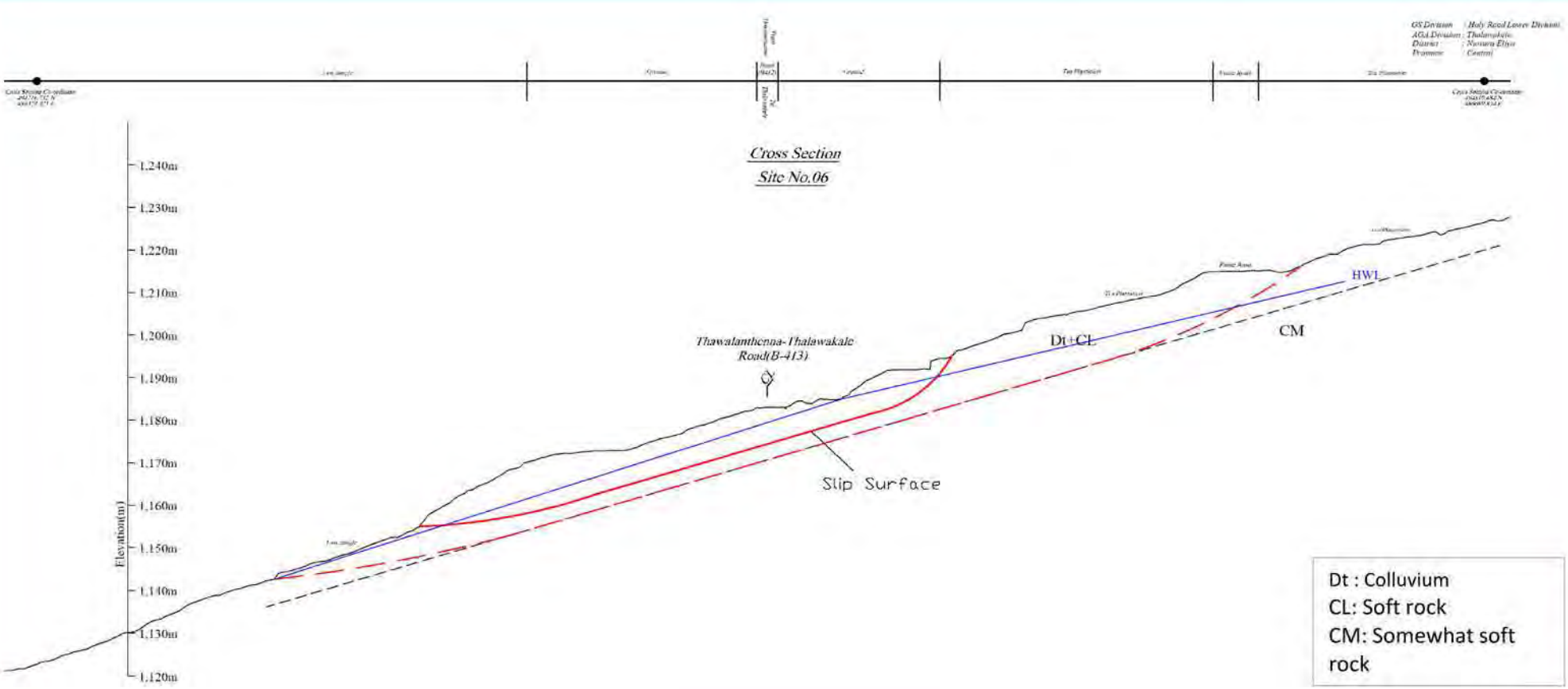
District	Nuwara Eliya	Management office	Nuwara Eliya	Road No	B-412	Road Name	Tawalanthenna-Thalawakele road										
Site No.	6	Disaster Type	Landslide	Location	Start	30/9	End	30/11	latitude	6°57'12/0"N	longitude	80°39'6.9"E					
Main body	Both	Traffic control		Hourly		mm	Traffic volume	Week day	1774/12h	holiday		Bus route		Detour			
Topo map/Sketch																	



Plan

Inventory Sheet A

Cross Section



Cross Section

Site No.	6

Inventory Sheet B

(Landslide)

Checked by	Yang Pucai
Organization	JICA Survey Team

[Factor] (A)

Item	Check Point		check	score
Landslide Topography	A scarp, hilly topography or gentle slope, disorder of contour lines, bulge on river bank is observed.	Clear	30	30
		Fairly clear	15	
		Unclear	7	(30)
Geological conditions	Geological structure	Fault, shered zone	18	14
		Volcanic alteration zone	18	
		Dip slope	14	
		Opposite dip slope	7	
		Intrusive structure, Cap rock structure	3	
		Others	0	(18)
	Geological meterial	Mesozoic/palaeozonic formations	7	7
		Tertiary formation (sedimendary rocks)	7	
		Quarternary formation (mudstone, etc)	3	
		Others (Volcamic rock, Igneous rock)	0	(7)
	Spring Water	Present	5	5
		Absent	0	(5)
	Total			56

[History] (B)

Item	Check Point		check	score
Landslide history	Record (documental or patrimony)	Present	100	100
		Absent	0	(100)
Landslide deformation	Scarp in slope, Bulge and depression, Subsidence, Upheaval and cracks on road surface, Deformation of countermeasure works	Clear	100	100
		Fairly clear	75	
		Unclear	0	(100)
	Total		(B) 100	

(C)=MAX(A,B)

Score evaluated from cause	(A) 56
Score evaluated from history	(B) 100
Among (B)&(C), large one.	(C)=MAX(A,B) 100

[Countermeasure] (D) = (c) + α or (c) x 0

Category		point (α)	check
No countermeasure		±0	✓
Effectiveness of countermeasure	No effect	±0	
	Slight effect	-30	
	High effect	x0	
Total		(D)	

[Description]

Abnormalities of subsidences were observed at places along the road. Scars due to failures are also observed upper side of the road. Slopes were cultivated for tea plantation around the site.

Site No.	6	**Inventory Sheet C**	Date	

P1 The deformation situation of the road surface due to landslide moement

P2 Crack and subsidence across the road, showing the landslide boundary

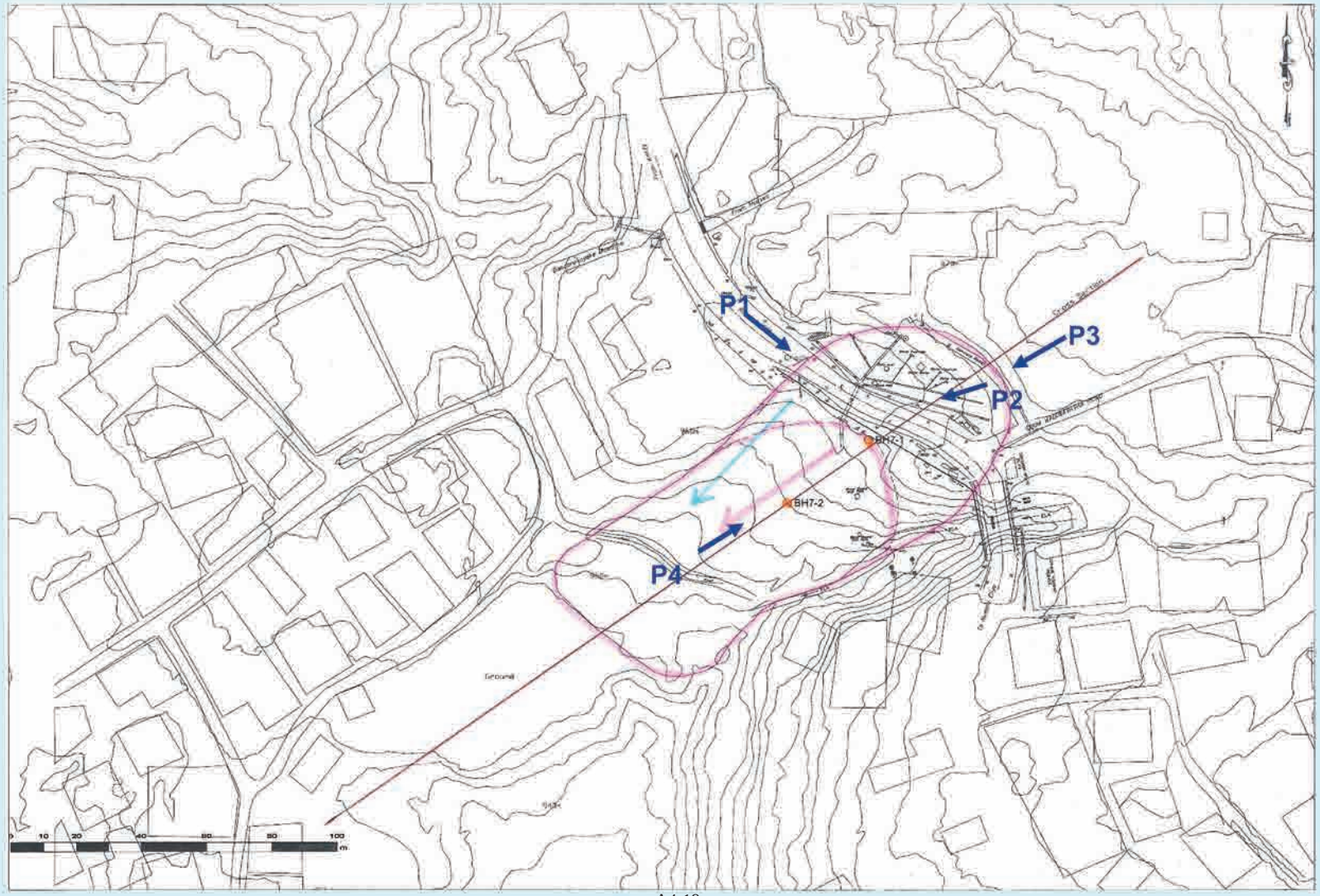
P3 A residential house damaged by landslide movement

P4 Whole view of the landslide slope looking from the opposite bank

Inventory Sheet A

District	Kandy		Management office	Kadugannawa		Road No	A-005		Road Name	Peradeniya - Badulla - Chenkaladi road									
Site No.	7			Disaster Type	Landslide		Location	Start	30/9	End	30/11		latitude	7° 6'22.60"N		longitude	80°38'13.50"E		
Main body	Both		Traffic control		Hourly		mm	Traffic volume		Week day	4442/12h		holiday			Bus route		Detour	

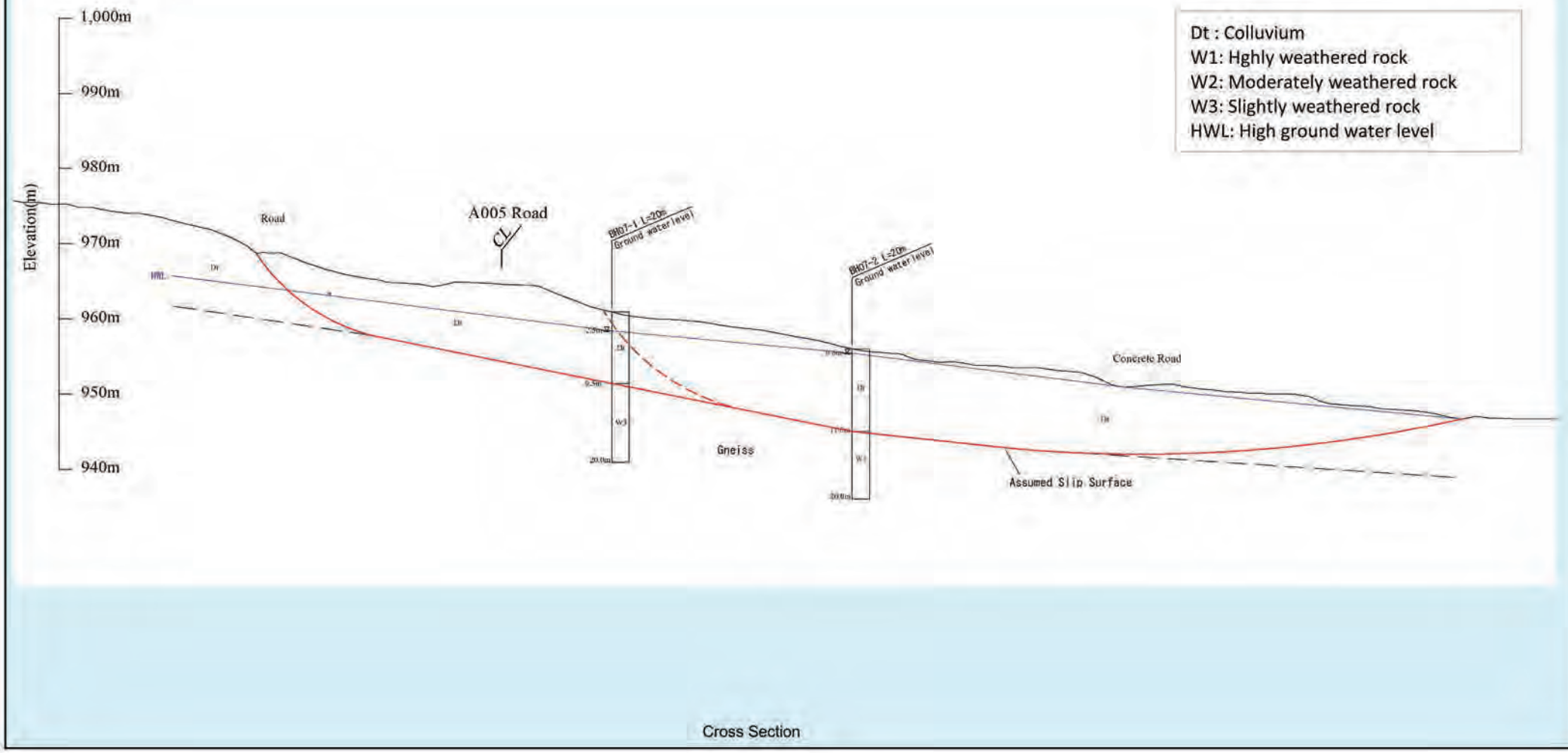
Topo map/Sketch



Plan

Inventory Sheet A

Cross Section



Cross Section

Site No.	7

Inventory Sheet B

(Landslide)

Checked by	Yang Pucai
Organization	JICA Survey Team

[Factor] (A)

Item	Check Point		check	score
Landslide Topography	A scarp, hilly topography or gentle slope, disorder of contour lines, bulge on river bank is observed.	Clear	30	30
		Fairly clear	15	
		Unclear	7	(30)
Geological conditions	Geological structure	Fault, shered zone	18	18
		Volcanic alteration zone	18	
		Dip slope	14	
		Opposite dip slope	7	
		Intrusive structure, Cap rock structure	3	
		Others	0	(18)
	Geological meterial	Mesozoic/palaeozonic formations	7	7
		Tertiary formation (sedimendary rocks)	7	
		Quarternary formation (mudstone, etc)	3	
		Others (Volcamic rock, Igneous rock)	0	(7)
	Spring Water	Present	5	5
		Absent	0	(5)
	Total			60

[History] (B)

Item	Check Point		check	score
Landslide history	Record (documental or patrimony)	Present	100	100
		Absent	0	(100)
Landslide deformation	Scarp in slope, Bulge and depression, Subsidence, Upheaval and cracks on road surface, Deformation of countermeasure works	Clear	100	100
		Fairly clear	75	
		Unclear	0	(100)
	Total		(B)	100

(C)=MAX(A,B)

Score evaluated from cause	(A)	60
Score evaluated from history	(B)	100
Among (B)&(C), large one.	(C)=MAX(A,B)	100

[Countermeasure] (D) = (c) + α or (c) x 0

Category		point (α)	check
No countermeasure		±0	
Effectiveness of countermeasure	No effect	±0	
	Slight effect	-30	✓
	High effect	x0	
Total		(D)	70

[Description]

Abnormalities of subsidences were observed at places around the road and properties belong to church. Holes for groundwater treatment were drilled by NBRO and monitoered from time to time. .

Site No.	7	**Inventory Sheet C**	Date	

P1 Subsidence and deformation of the road due to landslide movement

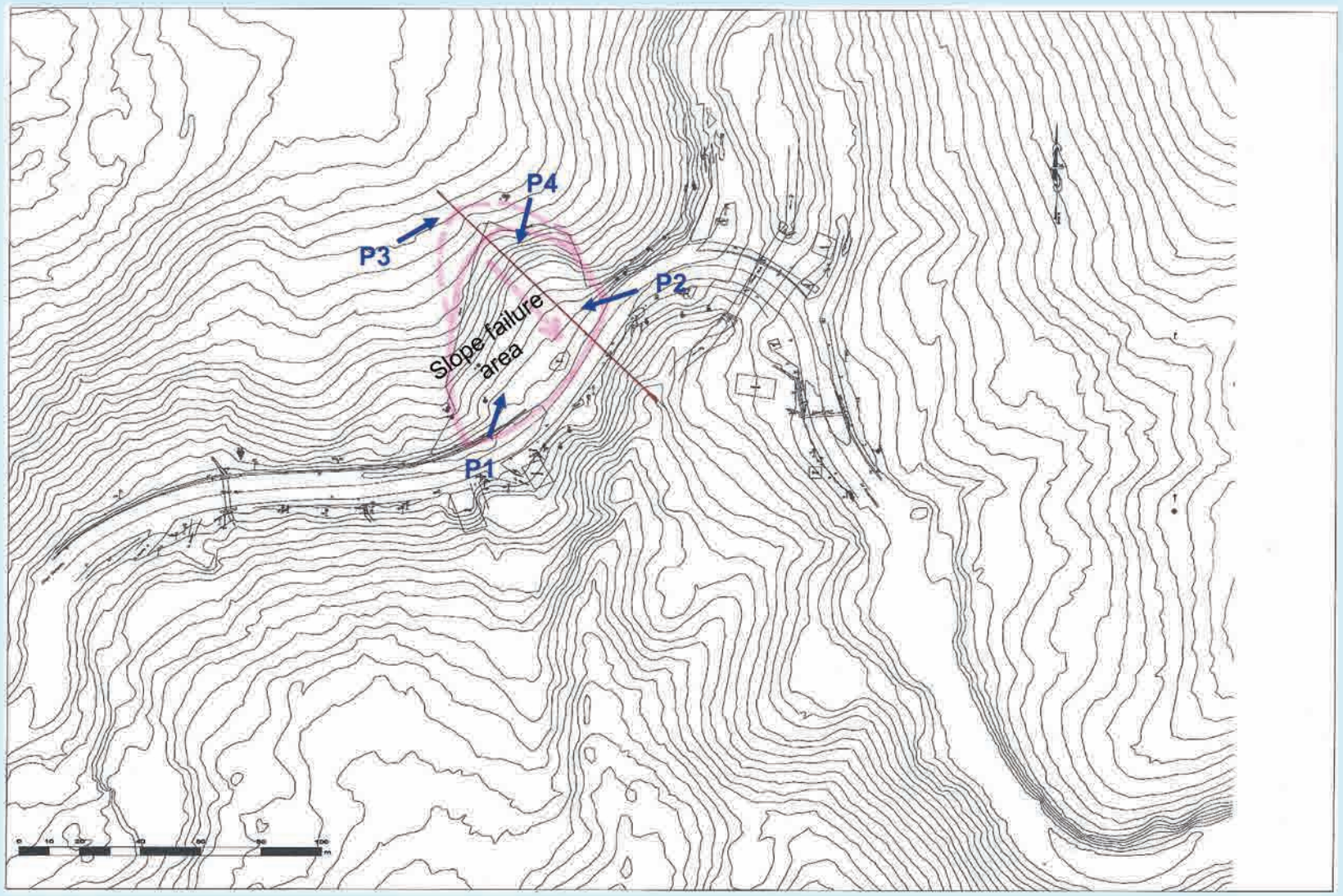
P2 Depression occurring on the upper slope of the landslide area

P3 Whole view of the landslide area looking from upper slope.

P4 Whole view of landslide area looking upper slope from down slope

Inventory Sheet A

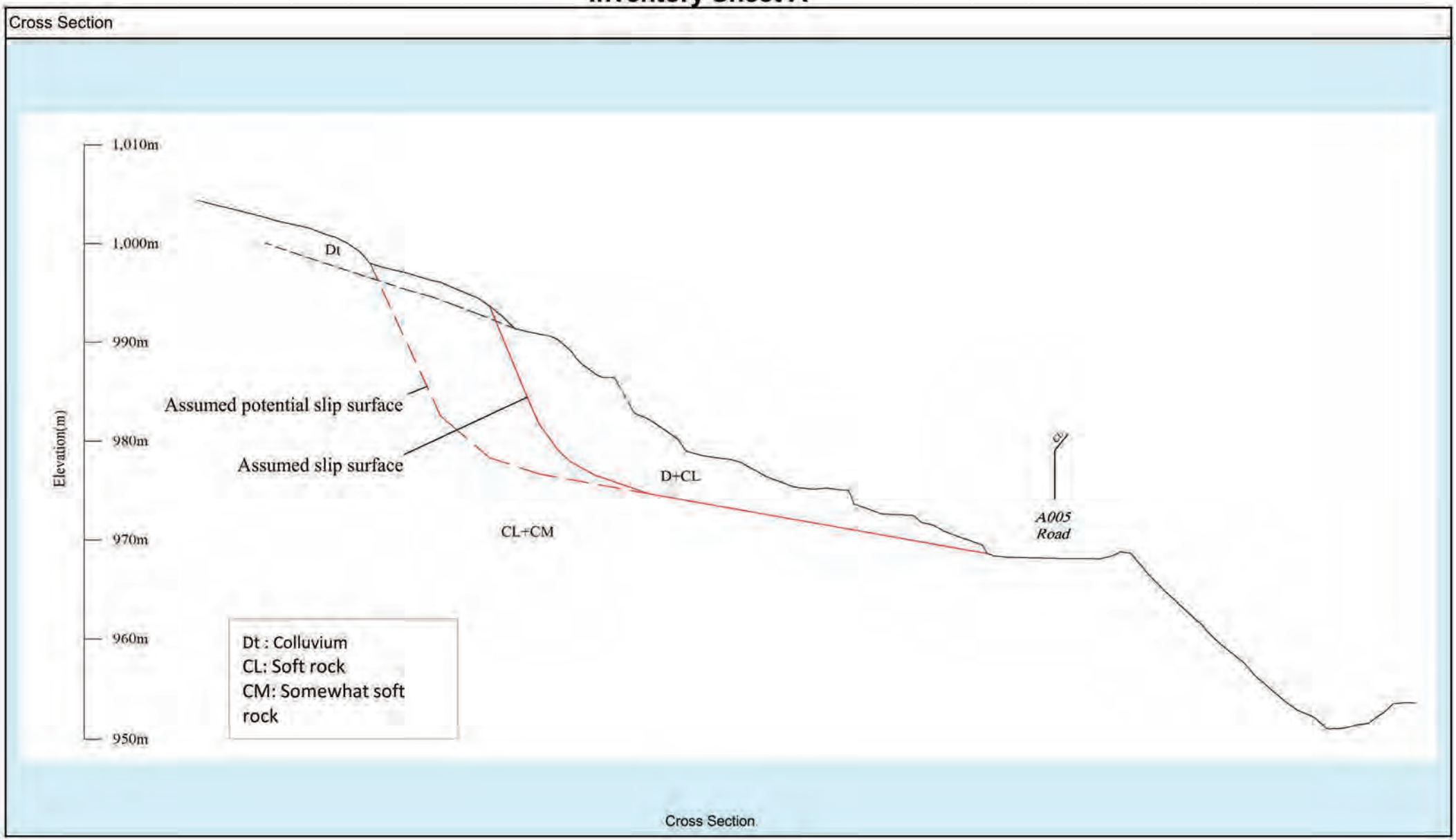
District	Kandy		Management office	Kadugannawa		Road No	A005		Road Name	Peradeniya - Badulla - Chenkaladi road									
Site No.	8		Disaster Type	Landslide		Location	Start	28/4		End	28/6		latitude	7° 7' 2.8"N		longitude	80° 37' 52.1"E		
Main body			Traffic control			Hourly		mm	Traffic volume		Week day			holiday			Bus route			Detour	
Topo map/Sketch																			



Plan

Inventory Sheet A

Cross Section



Cross Section

Site No.	8

Inventory Sheet B

(Landslide)

Checked by	Yang Pucai
Organization	JICA Survey Team

[Factor] (A)

Item	Check Point		check	score
Landslide Topography	A scarp, hilly topography or gentle slope, disorder of contour lines, bulge on river bank is observed.	Clear	30	30
		Fairly clear	15	
		Unclear	7	(30)
Geological conditions	Geological structure	Fault, shered zone	18	18
		Volcanic alteration zone	18	
		Dip slope	14	
		Opposite dip slope	7	
		Intrusive structure, Cap rock structure	3	
		Others	0	(18)
	Geological meterial	Mesozoic/palaeozonic formations	7	0
		Tertiary formation (sedimendary rocks)	7	
		Quarternary formation (mudstone, etc)	3	
		Others (Volcamic rock, Igneous rock)	0	(7)
	Spring Water	Present	5	0
		Absent	0	(5)
	sum			48

[History] (B)

Item	Check Point		check	score
Landslide history	Record (documental or patrimony)	Present	100	0
		Absent	0	(100)
Landslide deformation	Scarp in slope, Bulge and depression, Subsidence, Upheaval and cracks on road surface, Deformation of countermeasure works	Clear	100	75
		Fairly clear	75	
		Unclear	0	(100)
	sum		(B)	75

(C)=MAX(A,B)

Score evaluated from cause	(A)	48
Score evaluated from history	(B)	75
Among (B)&(C), large one.	(C)=MAX(A,B)	75

[Countermeasure] (D) = (c) + α or (c) x 0

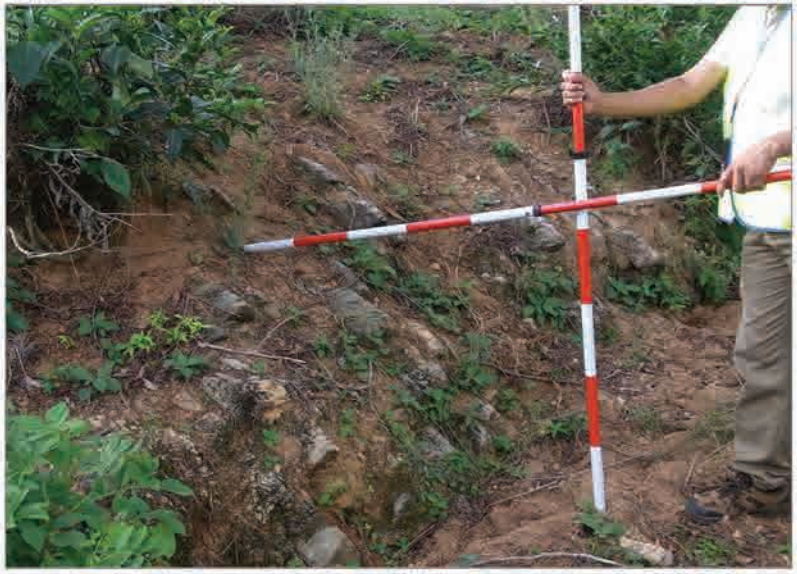
Category		point (α)	check
No countermeasure		±0	✓
Effectiveness of countermeasure	No effect	±0	
	Slight effect	-30	
	High effect	x0	
sum total		(D)	75

[Description]

Site No.	8	Inventory Sheet C	Date	

P1 Landslide occurring along road cut slope, due presumble to road excavation

P2 Same as that in P1



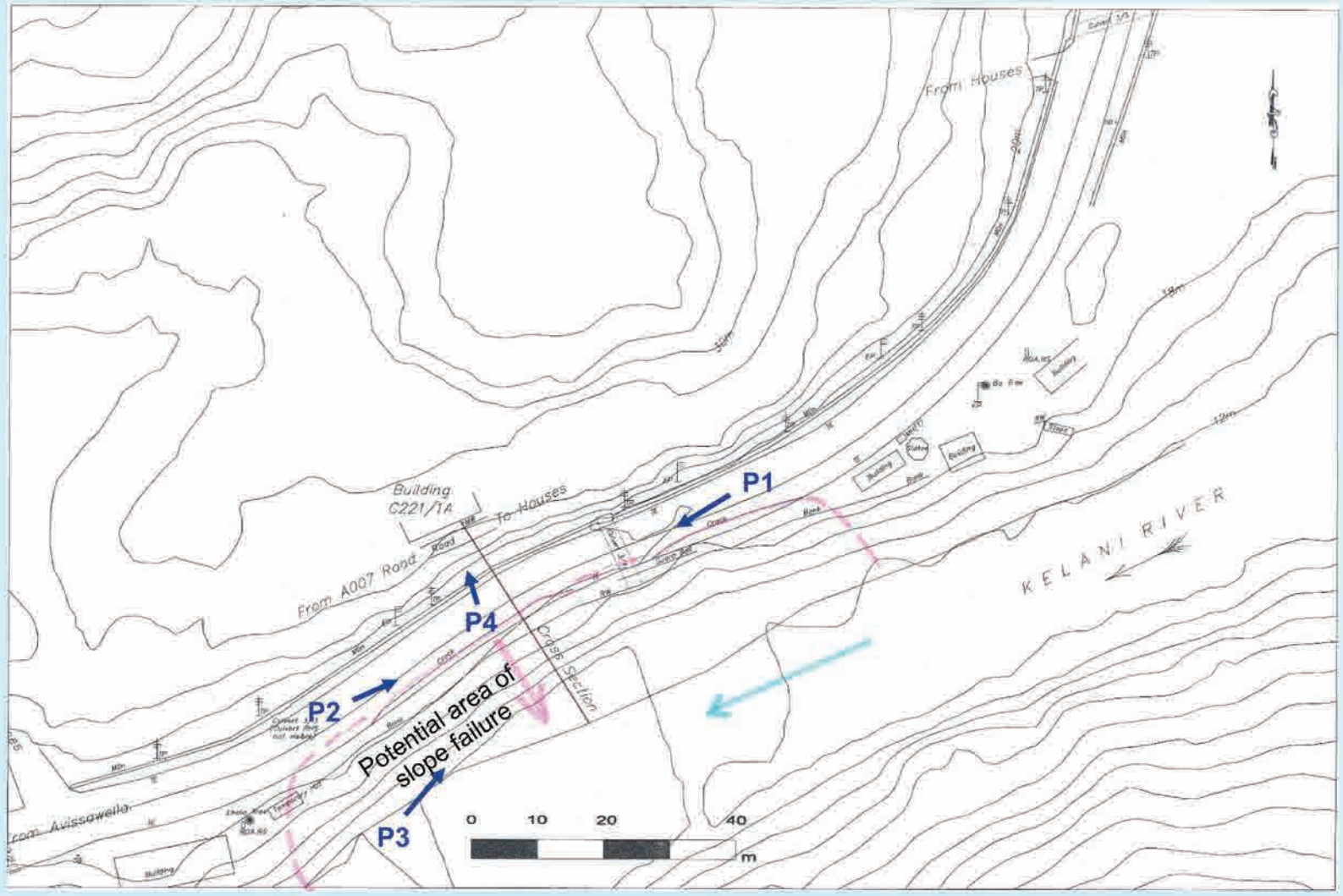
P3 Topographic gap observed above the landslide area

P4 Whole view of the landslide area looking downslope from the landslide head

Inventory Sheet A

District	Kegalle	Management office	Ruwanwella	Road No	A-007	Road Name	Avissawella - Hatton - Nuwaraeliya										
Site No.	9	Disaster Type	Slope Failure	Location	Start	3/3	End	3/5	latitude	6°57'31.6"N	longitude	80°13'40.1"E					
Main body	Vally side	Traffic control		Hourly		mm	Traffic volume	Week day	7718/12h	holiday		Bus route		Detour			

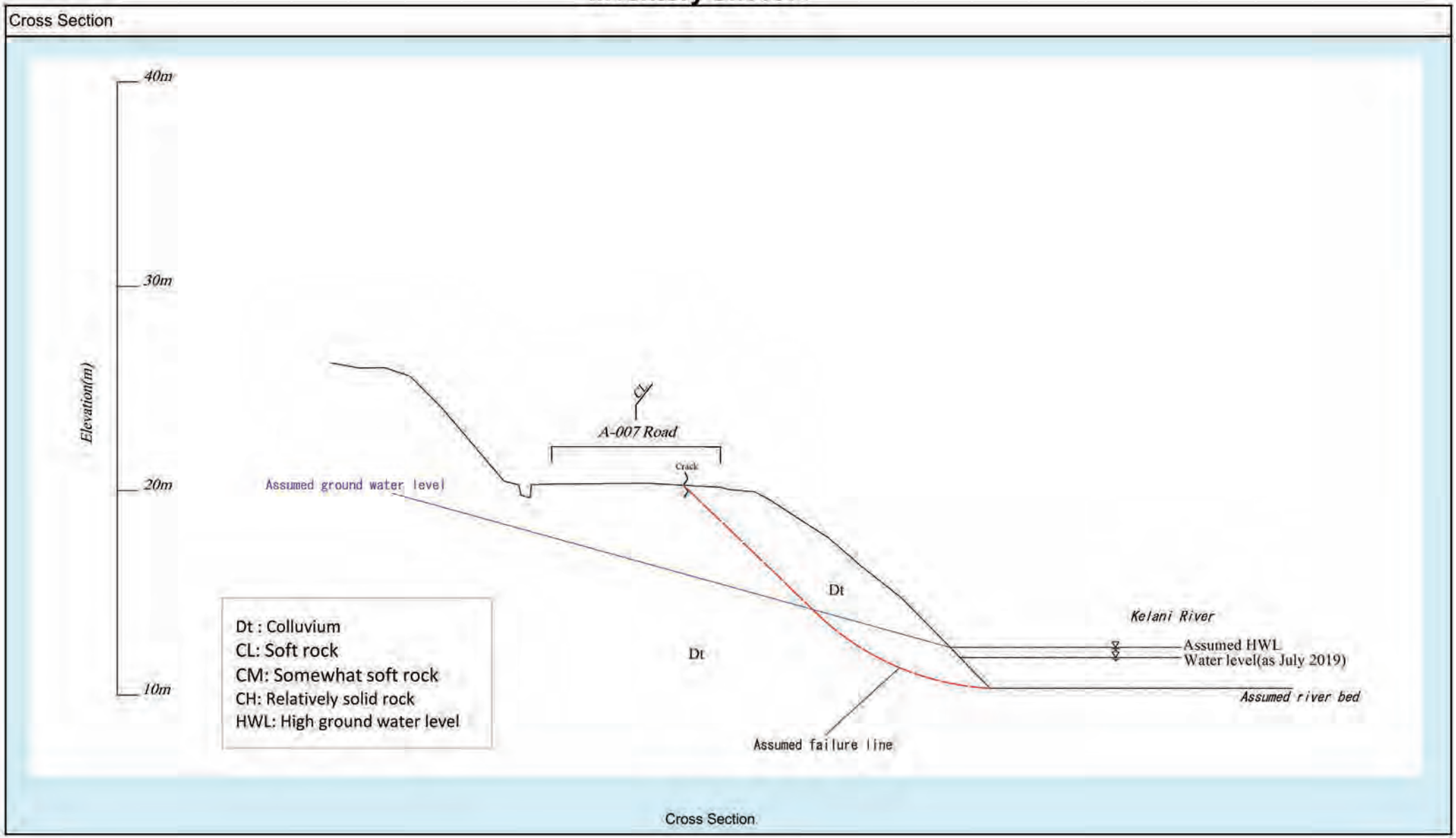
Topo map/Sketch



Plan

Inventory Sheet A

Cross Section



Cross Section

Site No.	9

Inventory Sheet B

(Slope Failure) Rock Fall)

Checked by	Yang Pucai
Organization	JICA Survey Team

[Cause] (Ai)

Item		Cause	Classification	Point	score
Topography	Topography with factor of	G1 : Talus slope G2 : Collapsed slope, Clear knick line G3 : Terrace scarp, Overhung slope Catachment slope, debris flow deposit	G1	3	5 (6)
			Not G1	0	
			G2 and G3	3	
			G2 or G3	2	
			No G2 and G3	0	
Geological conditions	Soil property	Erodable soil (Mainly arenaceous soil) Silty sand, silty clay, clay Cobble , pebble	Conspicuous	8	8 (8)
			Slightly consequenous	4	
			None	0	
	Rock character	Jointed rock, rocks that are weak against erosion and weathering.	Conspicuous	12	0 (12)
			Slight conspicuous	6	
			None	0	
	Geological Structure	Dip slope (bedding, weak plane)	Conspicuous	8	6 (14)
			None	0	
		Soft soil coverline baserock, Hard rock overlies weak rock, Others	Conspicuous	6	
			Slightly conspicuous	4	
			None	0	
Surface codition		Surface soil, boulder, rock	Unstable	12	12 (12)
			Slightly unstable	6	
			Stabel	0	
		Spring water	Natural water spring	8	4 (8)
			Water seepage scar	4	
			Nil	0	
		Vegetation	No-vegitation, Grassland	5	3 (5)
			Complex (grass, structure)	3	
			Structure	1	
Geometry		Height (H), gradient (i)	soil: H>30m	18	15 (18)
			soil: H<30, i > 30°	15	
			soil: i < 30°, 15<H<30m	10	
			soil: i <30°, H<15m	5	
			rock: H>50m	18	
			rock: 30<H<50m	16	
			rock: 15<H<30m	12	
			rock: H<15m	10	
Deformation		Deformation of the survey slope (small soil and rock falls, gully erosion, scouring, depression, bulge, fallen tree, cracks, etc.)	More than one clear evidences	12	12 (18)
			Obscure evidence	8	
			No evidence	0	
		Deformation of the adjacent slope (Rock fall, collapse, cracks, bulge, and other deformation)	More than one clear evidences	5	0 (5)
			Obscure evidence	3	
			No evidence	0	
		Total		(A) 59	

[Countermeasure] (B) = (A) +α or (A) ×0

Well effective against the potential slope failure and rock fall.	×0	
Effective but not completely against the potential rock fall and slope failure.	−20	
Not completely protected from the potential slope failure and rock fall.	−10	
No countermeasure was constructed, or the existing countermeasure cannot be expected effective.	±0	✓

Total	(B) 59

[History] (C)

Disaster history	point	check
The disaster has caused a traffic disturbance or closure after the recent implementation of countermeasures.	100	
No traffic disturbance has occurred but there is a record of comparatively serious rock falls and slope failures that reached to the road.	70	
There is a record of rock falls and slope failures on a small scale that that did not reach to the road.	40	✓
No disaster records	0	
	(C)	40

(D) =MAX (B,C)

Score from cause	(B) 59
Score from history	(c) 40
Among (B)&(C), large one.	(D)=MAX(B,C) **59**

[Description]

Relatively steep slope of 3 to 5m in heighet are observed along the road and slope failures of 5 to 15m in width confirmed at places in this sectionof the road. Total height of slope is less than 10m in almost all section of the road.. The river of 15 to 20m wide flows around 10m below the road level along the road.

Site No.	9	**Inventory Sheet C**	Date	

P1 The deformation situation of the road surface on the valley side of the road

P2 Crack and deformation observed on the road surface

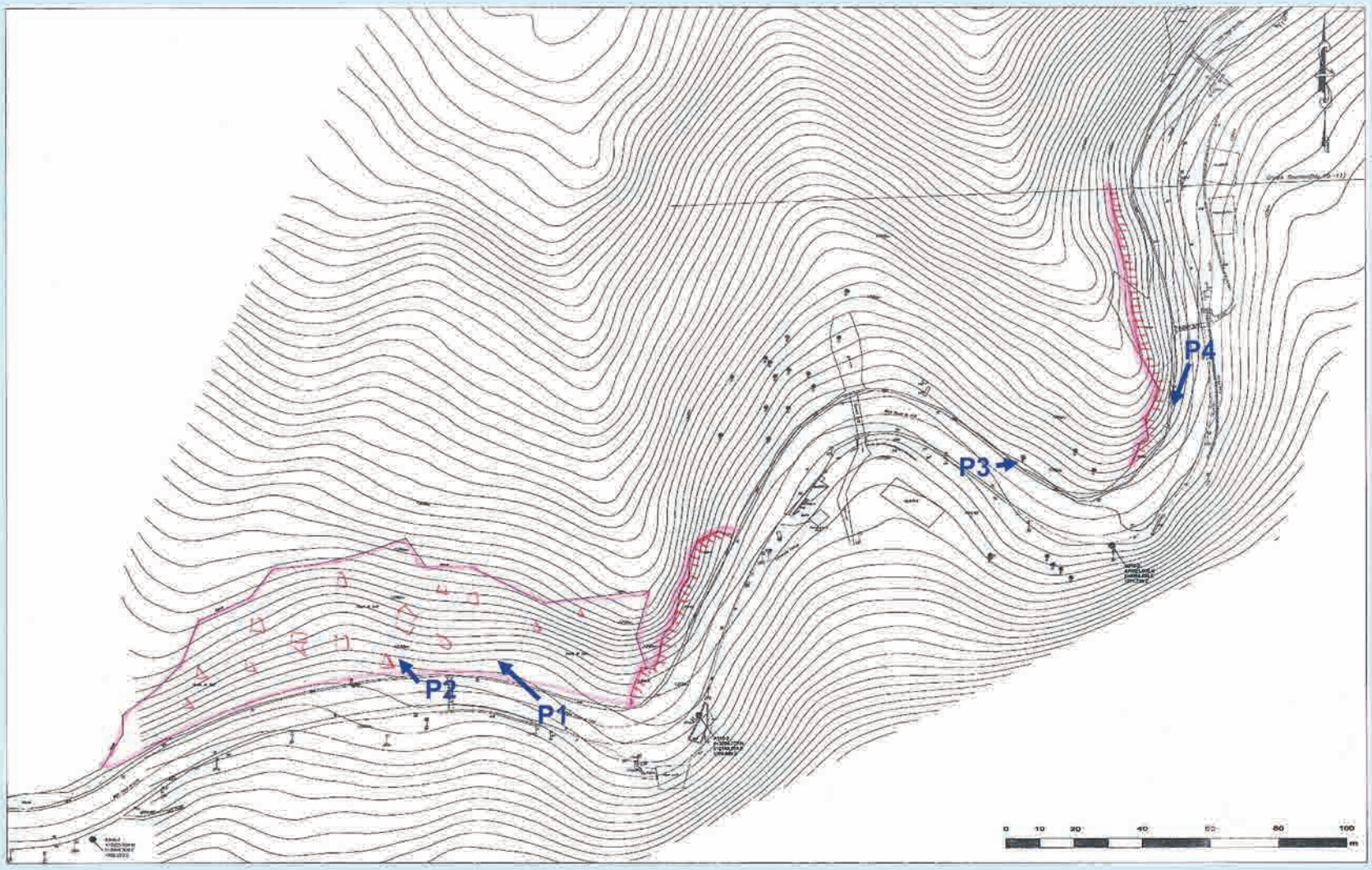
P3 Slope failure on the valley side, due presumably to the river erosion

P4 Road cut slope and its slope geology

Inventory Sheet A

District	Badulla	Management office	Bandarawela	Road No	A016	Road Name	Beragala - Haliela Road										
Site No.	10	Disaster Type	Rock fall	Location	Start	3.85km	End	4.2km	latitude	6°45'33.9"N	longitude	80°56'49.1"E					
Main body	Mountain side	Traffic control		Hourly		mm	Traffic volume	Week day	6200/12h	holiday		Bus route		Detour			

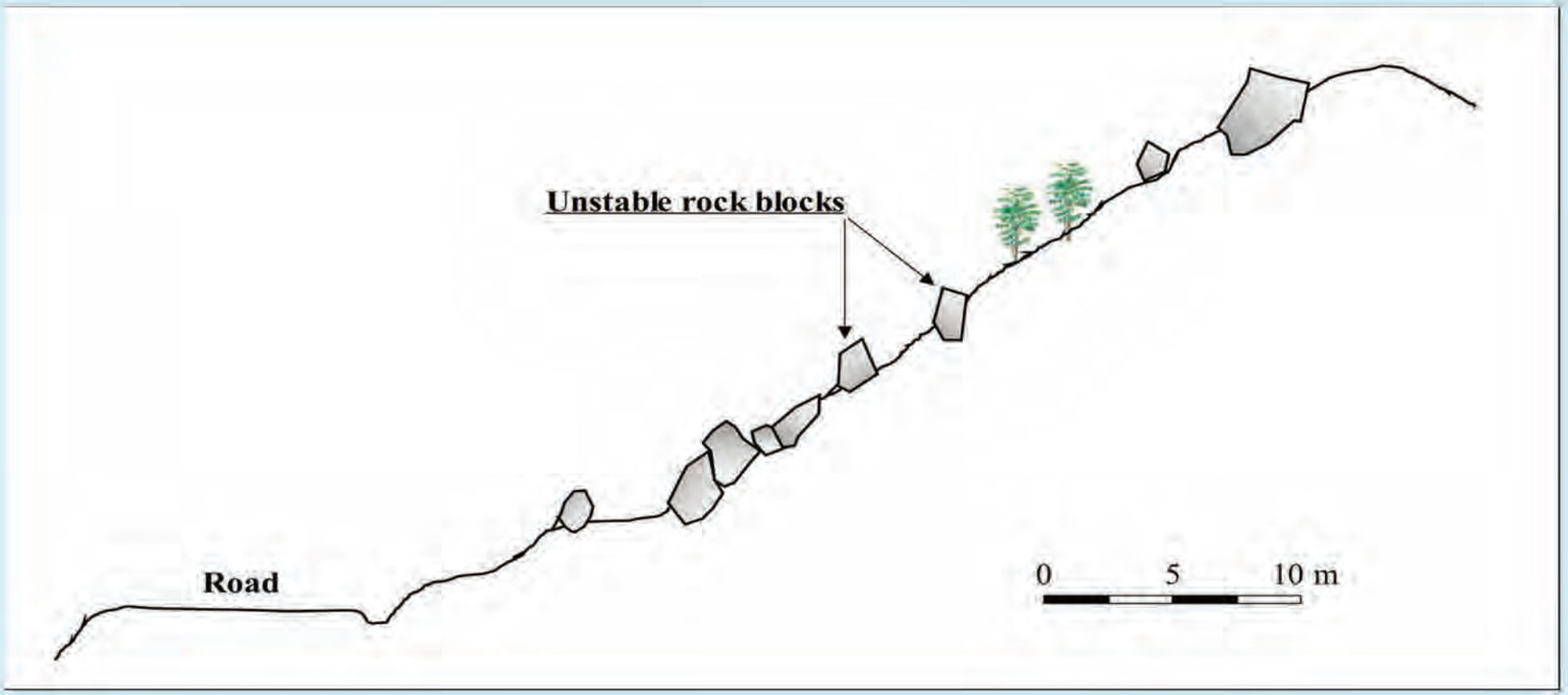
Topo map/Sketch



Plan

Inventory Sheet A

Cross Section



Cross Section

Site No.	10

Inventory Sheet B

(Slope Failure • Rock Fall)

Checked by	Yang Pucai
Organization	JICA Survey Team

[Cause] (Ai)

Item		Cause	Classification		Point	score
Topography	Topography with factor of	G1 : Talus slope G2 : Collapsed slope, Clear knick line G3 : Terrace scarp, Overhung slope Catachment slope, debris flow deposit	G1		3	6 (6)
			Not G1		0	
			G2 and G3		3	
			G2 or G3		2	
			No G2 and G3		0	
Geological conditions	Soil property	Erodable soil (Mainly arenaceous soil) Silty sand, silty clay, clay Cobble , pebble	Conspicuous		8	8 (8)
			Slightly consequenous		4	
			None		0	
	Rock character	Jointed rock, rocks that are weak against erosion and weathering.	Conspicuous		12	12 (12)
			Slight conspicuous		6	
			None		0	
	Geological Structure	Dip slope (bedding, weak plane)	Conspicuous		8	14 (14)
			None		0	
		Soft soil coverline baserock, Hard rock overlies weak rock, Others	Conspicuous		6	
			Slightly conspicuous		4	
			None		0	
Surface codition		Surface soil, boulder, rock	Unstable		12	12 (12)
			Slightly unstable		6	
			Stabel		0	
		Spring water	Natural water spring		8	4 (8)
			Water seepage scar		4	
			Nil		0	
		Vegetation	No-vegitation, Grassland		5	3 (5)
			Complex (grass, structure)		3	
			Structure		1	
Geometry		Height (H), gradient (i)	soil	H>30m	18	15 (18)
				H<30, i > 30°	15	
				i < 30°, 15<H<30m	10	
				i <30°, H<15m	5	
			rock	H>50m	18	
				30<H<50m	16	
				15<H<30m	12	
				H<15m	10	
Deformation		Deformation of the survey slope (small soil and rock falls, gully erosion, scouring, depression, bulge, fallen tree, cracks, etc.)	More than one clear evidences		12	12 (18)
			Obscure evidence		8	
			No evidence		0	
		Deformation of the adjacent slope (Rock fall, collapse, cracks, bulge, and other deformation)	More than one clear evidences		5	3 (5)
			Obscure evidence		3	
			No evidence		0	
			Total		(A) 75	

[Countermeasure] (B) = (A) +α or (A) ×0

Well effective against the potential slope failure and rock fall.	×0	
Effective but not completely against the potential rock fall and slope failure.	−20	
Not completely protected from the potential slope failure and rock fall.	−10	
No countermeasure was constructed, or the existing countermeasure cannot be expected effective.	±0	✓

Total	(B) 75

[History] (C)

Disaster history	point	check
The disaster has caused a traffic disturbance or closure after the recent implementation of countermeasures.	100	
No traffic disturbance has occurred but there is a record of comparatively serious rock falls and slope failures that reached to the road.	70	✓
There is a record of rock falls and slope failures on a small scale that that did not reach to the road.	40	
No disaster records	0	
	(C)	70

(D) =MAX (B,C)

Score from cause	(B) 75
Score from history	(c) 70
Among (B)&(C), large one.	(D)=MAX(B,C) 75

[Description]

Steep to relatively steep slope consisting of relatively fresh rock are observed 20 to 35 meters from the road. Talus deposits are distributed thinly on gentler slopes. Bolders of diameter less than one meter are confirmed at places along the road. .Bolders of diameter more than one meter are also confirmed some places. along and below the road.

Site No.	10	Inventory Sheet C	Date	June 25, 2019

P1 Many unstable huge rock blocks and boulders observed on the slope above the road

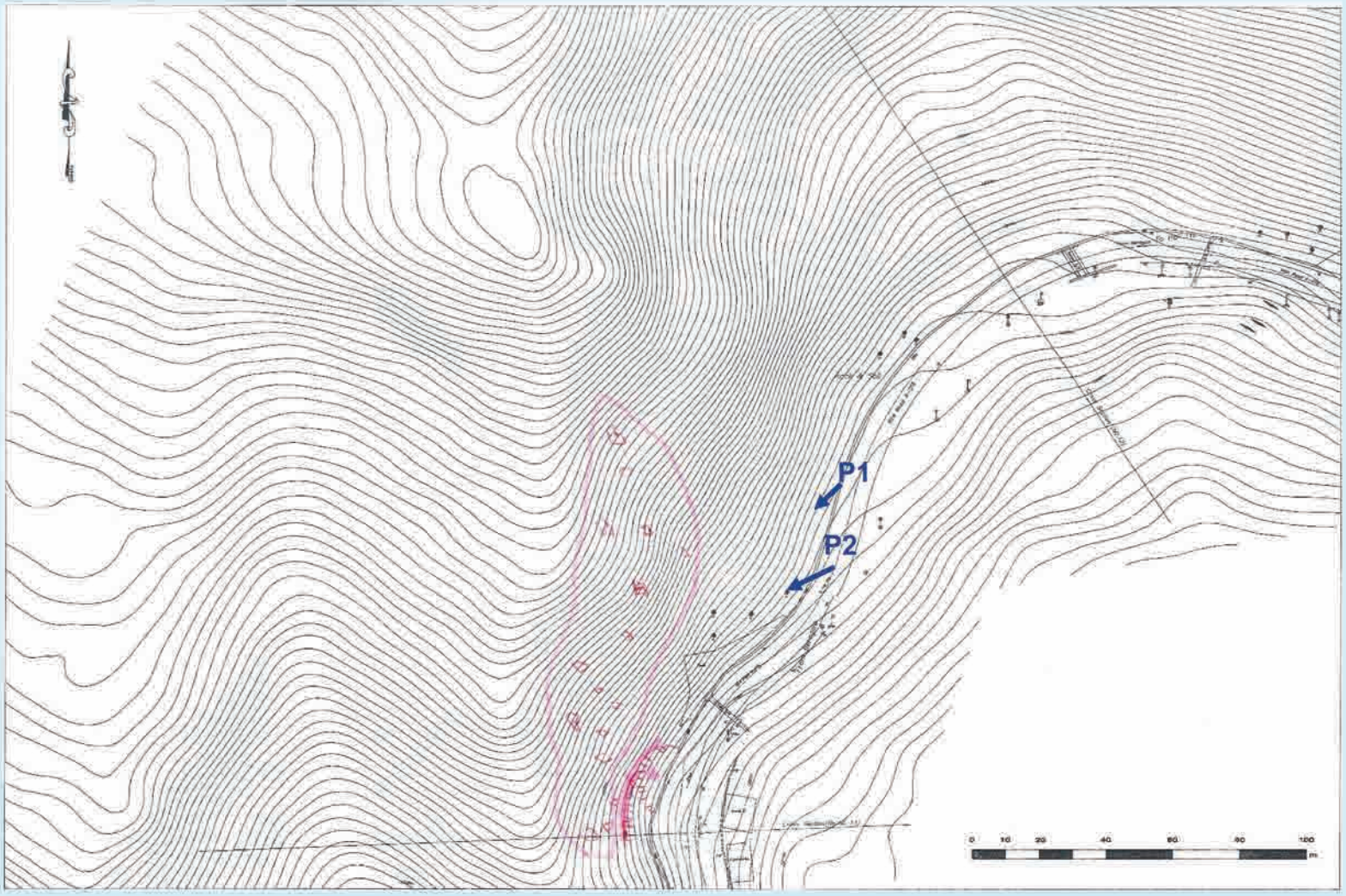
P3 Geology of the slope above the road consisting of colluvium and the underlying bedrock in which major joints dip out of the cut slope

P2 Close vies of P1, showing unstable huge rock blocks

P4 Local shallow failure occurring on the cut slope above the road

Inventory Sheet A

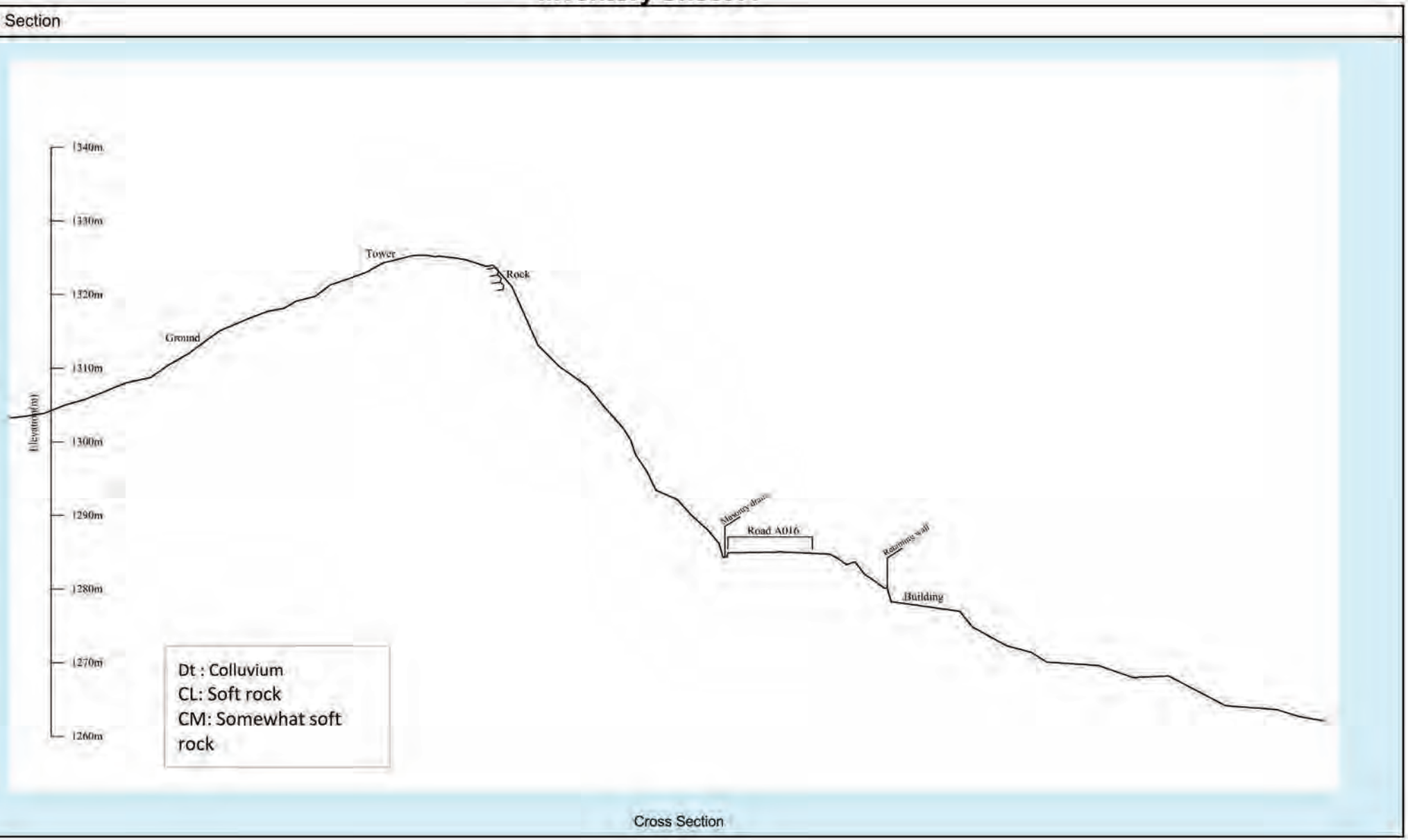
District	Badulla		Management office	Bandarawela		Road No	A-016		Road Name	Beragala - Haliela Road									
Site No.	11			Disaster Type	Rock fall		Location	Start	5/3	End	5/4		latitude	6°45'39.8"N		longitude	80°56'54.2"E		
Main body	Mountain side		Traffic control		Hourly		mm	Traffic volume		Week day	6200/12h		holiday			Bus route		Detour	
Topo map/Sketch																			



Plan

Inventory Sheet A

Cross Section



Cross Section

Site No.	11

Inventory Sheet B

(Slope Failure • Rock Fall)

Checked by	Yang Pucai
Organization	JICA Survey Team

[Cause] (Ai)

Item		Cause	Classification	Point	score
Topography	Topography with factor of	G1 : Talus slope G2 : Collapsed slope, Clear knick line G3 : Terrace scarp, Overhung slope Catachment slope, debris flow deposit	G1	3	6
			Not G1	0	
			G2 and G3	3	
			G2 or G3	2	
			No G2 and G3	0	(6)
Geological conditions	Soil property	Erodable soil (Mainly arenaceous soil) Silty sand, silty clay, clay Cobble , pebble	Conspicuous	8	8
			Slightly consequenous	4	
			None	0	(8)
	Rock character	Jointed rock, rocks that are weak against erosion and weathering.	Conspicuous	12	12
			Slight conspicuous	6	
			None	0	(12)
	Geological Structure	Dip slope (bedding, weak plane)	Conspicuous	8	14
			None	0	
		Soft soil coverline baserock, Hard rock overlies weak rock, Others	Conspicuous	6	
			Slightly conspicuous	4	
			None	0	(14)
Surface codition		Surface soil, boulder, rock	Unstable	12	12
			Slightly unstable	6	
			Stabel	0	(12)
		Spring water	Natural water spring	8	4
			Water seepage scar	4	
			Nil	0	(8)
		Vegetation	No-vegitation, Grassland	5	3
			Complex (grass, structure)	3	
			Structure	1	(5)
Geometry		Height (H), gradient (i)	soil: H>30m	18	15
			soil: H<30, i > 30°	15	
			soil: i < 30°, 15<H<30m	10	
			soil: i <30°, H<15m	5	
			rock: H>50m	18	
			rock: 30<H<50m	16	
			rock: 15<H<30m	12	
			rock: H<15m	10	(18)
Deformation		Deformation of the survey slope (small soil and rock falls, gully erosion, scouring, depression, bulge, fallen tree, cracks, etc.)	More than one clear evidences	12	12
			Obscure evidence	8	
			No evidence	0	(18)
		Deformation of the adjacent slope (Rock fall, collapse, cracks, bulge, and other deformation)	More than one clear evidences	5	3
			Obscure evidence	3	
			No evidence	0	(5)
			Total	(A) 75	

[Countermeasure] (B) = (A) +α or (A) ×0

Well effective against the potential slope failure and rock fall.	×0	
Effective but not completely against the potential rock fall and slope failure.	−20	
Not completely protected from the potential slope failure and rock fall.	−10	
No countermeasure was constructed, or the existing countermeasure cannot be expected effective.	±0	✓
Total	(B)	75

[History] (C)

Disaster history	point	check
The disaster has caused a traffic disturbance or closure after the recent implementation of countermeasures.	100	
No traffic disturbance has occurred but there is a record of comparatively serious rock falls and slope failures that reached to the road.	70	✓
There is a record of rock falls and slope failures on a small scale that that did not reach to the road.	40	
No disaster records	0	
	(C)	70

(D) =MAX (B,C)

Score from cause	(B) 75
Score from history	(c) 70
Among (B)&(C), large one.	(D)=MAX(B,C) 75

[Description]

Steep to relatively steep slope consisting of relatively fresh rock are observed 20 to 35 meters from the road. Talus deposits are distributed thinly on gentler slopes. Bolders of diameter less than one meter are confirmed at places along the road. .Bolders of diameter more than one meter are also confirmed some places. along and below the road.

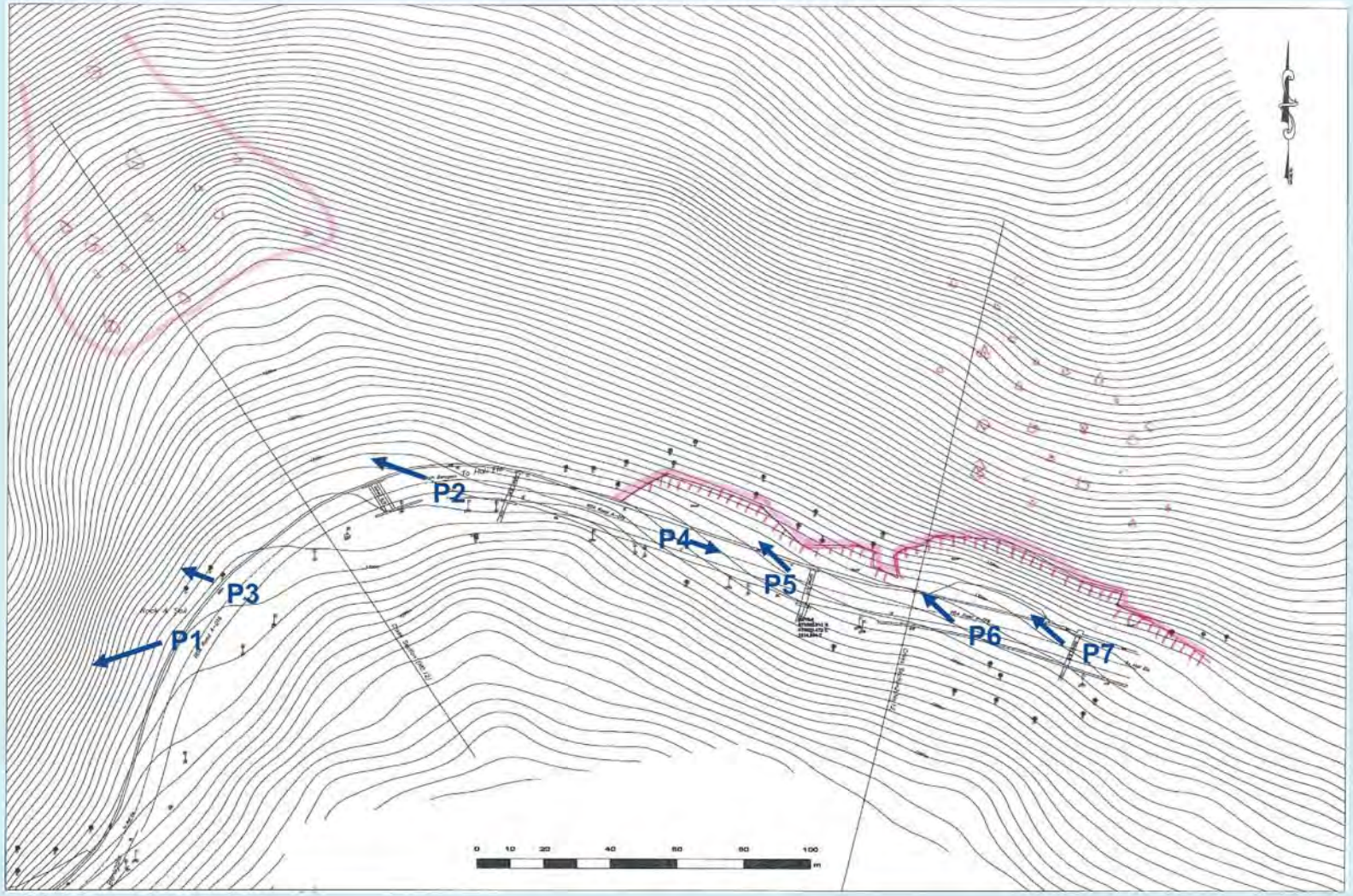
Site No.	11	**Inventory Sheet C**	Date	June 25, 2019

P1 Shallow failure on the cut slope above the road and some individual huge rock blocks on its upper natural slope

P2 Close view of P1, showing that shallow failure would contribute to potential for falling of huge rock block on its upper natual slope

Inventory Sheet A

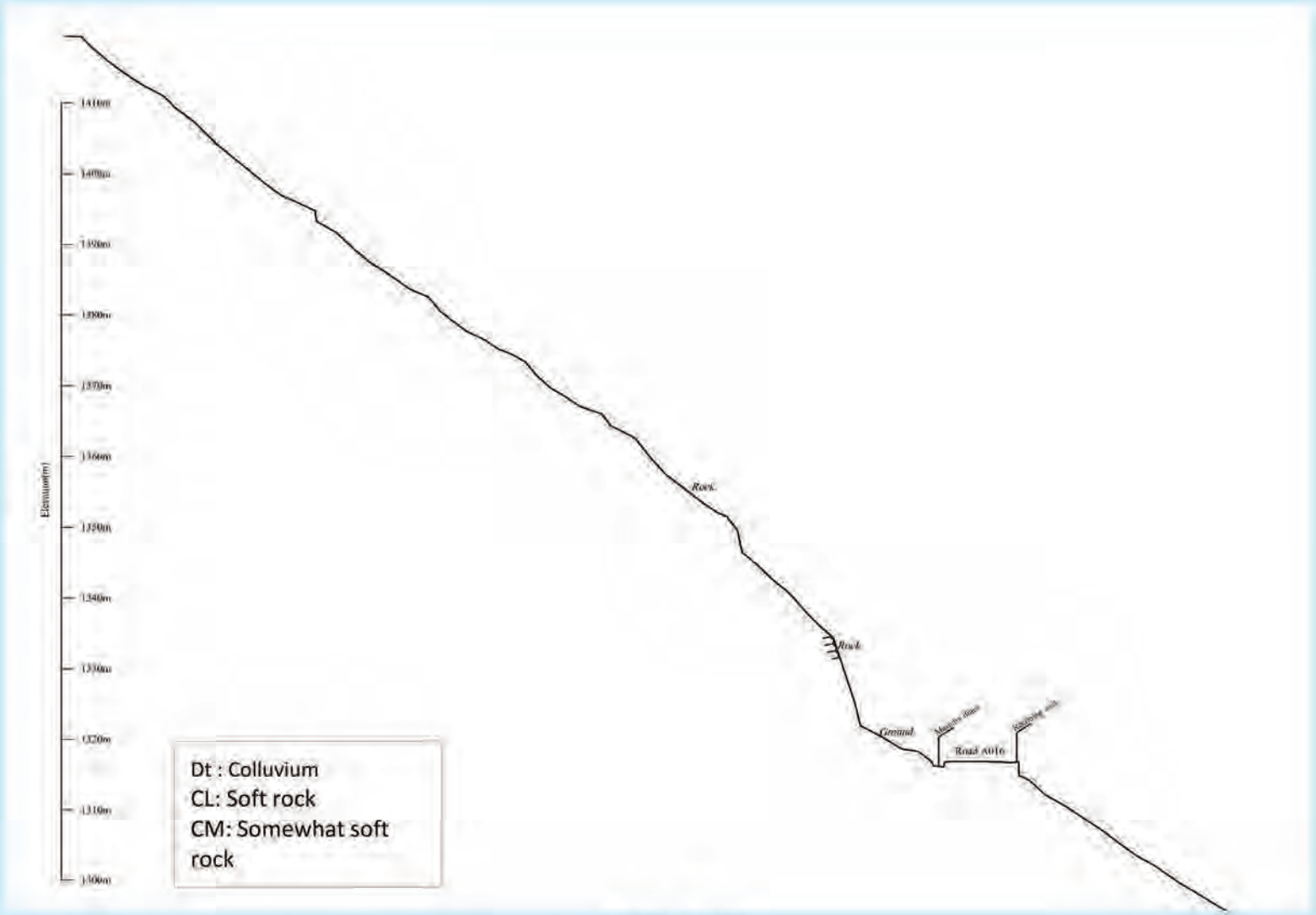
District	Badulla	Management office	Bandarawela	Road No	A-016	Road Name	Beragala - Haliela Road										
Site No.	12	Disaster Type	Rock fall	Location	Start	5/6	End	5/8	latitude	6°45'42.9"N	longitude	80°57'01.3"E					
Main body	Mountain side	Traffic control		Hourly		mm	Traffic volume	Week day	6200/12h	holiday		Bus route		Detour			
Topo map/Sketch																	



Plan

Inventory Sheet A

Cross Section



Cross Section

Site No.	12

Inventory Sheet B

(Slope Failure • Rock Fall)

Checked by	Yang Pucai
Organization	JICA Survey Team

[Cause] (Ai)

Item		Cause	Classification		Point	score
Topography	Topography with factor of	G1 : Talus slope G2 : Collapsed slope, Clear knick line G3 : Terrace scarp, Overhung slope Catachment slope, debris flow deposit	G1		3	6 (6)
			Not G1		0	
			G2 and G3		3	
			G2 or G3		2	
			No G2 and G3		0	
Geological conditions	Soil property	Erodable soil (Mainly arenaceous soil) Silty sand, silty clay, clay Cobble , pebble	Conspicuous		8	8 (8)
			Slightly consequenous		4	
			None		0	
	Rock character	Jointed rock, rocks that are weak against erosion and weathering.	Conspicuous		12	12 (12)
			Slight conspicuous		6	
			None		0	
	Geological Structure	Dip slope (bedding, weak plane)	Conspicuous		8	14 (14)
			None		0	
		Soft soil coverline baserock, Hard rock overlies weak rock, Others	Conspicuous		6	
			Slightly conspicuous		4	
			None		0	
Surface codition		Surface soil, boulder, rock	Unstable		12	12 (12)
			Slightly unstable		6	
			Stabel		0	
		Spring water	Natural water spring		8	4 (8)
			Water seepage scar		4	
			Nil		0	
		Vegetation	No-vegitation, Grassland		5	3 (5)
			Complex (grass, structure)		3	
			Structure		1	
Geometry		Height (H), gradient (i)	soil	H>30m	18	15 (18)
				H<30, i > 30°	15	
				i < 30°, 15<H<30m	10	
				i <30°, H<15m	5	
			rock	H>50m	18	
				30<H<50m	16	
				15<H<30m	12	
				H<15m	10	
Deformation		Deformation of the survey slope (small soil and rock falls, gully erosion, scouring, depression, bulge, fallen tree, cracks, etc.)	More than one clear evidences		12	12 (18)
			Obscure evidence		8	
			No evidence		0	
		Deformation of the adjacent slope (Rock fall, collapse, cracks, bulge, and other deformation)	More than one clear evidences		5	3 (5)
			Obscure evidence		3	
			No evidence		0	
			Total		(A) 75	

[Countermeasure] (B) = (A) +α or (A) ×0

Well effective against the potential slope failure and rock fall.	×0	
Effective but not completely against the potential rock fall and slope failure.	−20	
Not completely protected from the potential slope failure and rock fall.	−10	
No countermeasure was constructed, or the existing countermeasure cannot be expected effective.	±0	✓

Total	(B) 75

[History] (C)

Disaster history	point	check
The disaster has caused a traffic disturbance or closure after the recent implementation of countermeasures.	100	
No traffic disturbance has occurred but there is a record of comparatively serious rock falls and slope failures that reached to the road.	70	✓
There is a record of rock falls and slope failures on a small scale that that did not reach to the road.	40	
No disaster records	0	
	(C)	70

(D) =MAX (B,C)

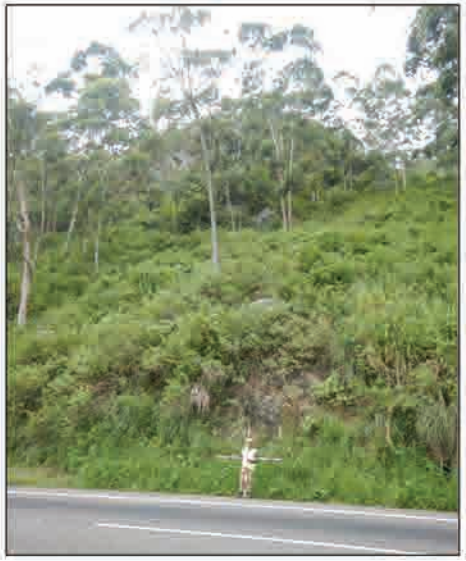
Score from cause	(B) 75
Score from history	(c) 70
Among (B)&(C), large one.	(D)=MAX(B,C) **75**

[Description]

Next to the slope of site No. 11. Steep slope consisting mainly of weathered rock and overburden of debris are distributed along the road. Large boulders are scattered on the slope. .

Site No.	12	Inventory Sheet C	Date	June 25, 2019

P1 Unstable rock blocks and buoulders on the natural slope above the road, showing soure of further rockfalls



P3 Rock cut slope and its upper natural slope, showning fractured rock mass on the cut slope and unstable rock blocks on the upper natural slope

P2 Huge boulders dominated along the mountain stream

P4 A huge boulder falling and reaching the road (size: about 1 m in diameter)

Site No.	12	Inventory Sheet C	Date	June 25, 2019

P5 : The surface failure of cut slope

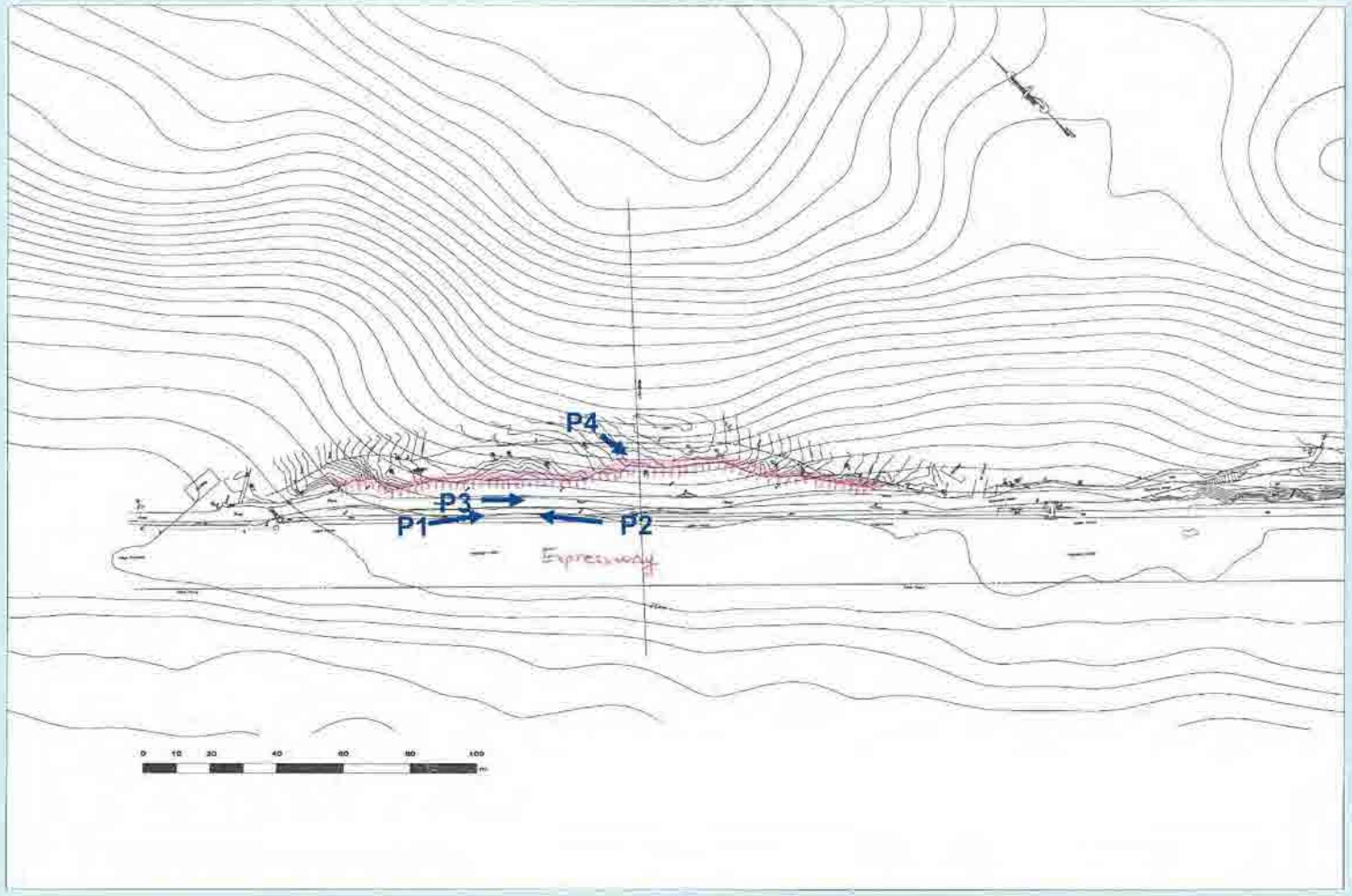
P7 : Recognize unsteady stones in patches

P6 : The cut slope of bedrock

Inventory Sheet A

District	Galle	Management office	Nuwara Eliya	Road No	E-001	Road Name	Kottawa - Godagama Section								
Site No.	19	Disaster Type	Rock fall	Location	Start	66.7km	End	77.2km	latitude	6°12'11.8"N	longitude	80°10'49.0"E			
Main body	Mountain side	Traffic control		Hourly		mm	Traffic volume	Week day	-- /12h	holiday		Bus route		Detour	

Topo map/Sketch

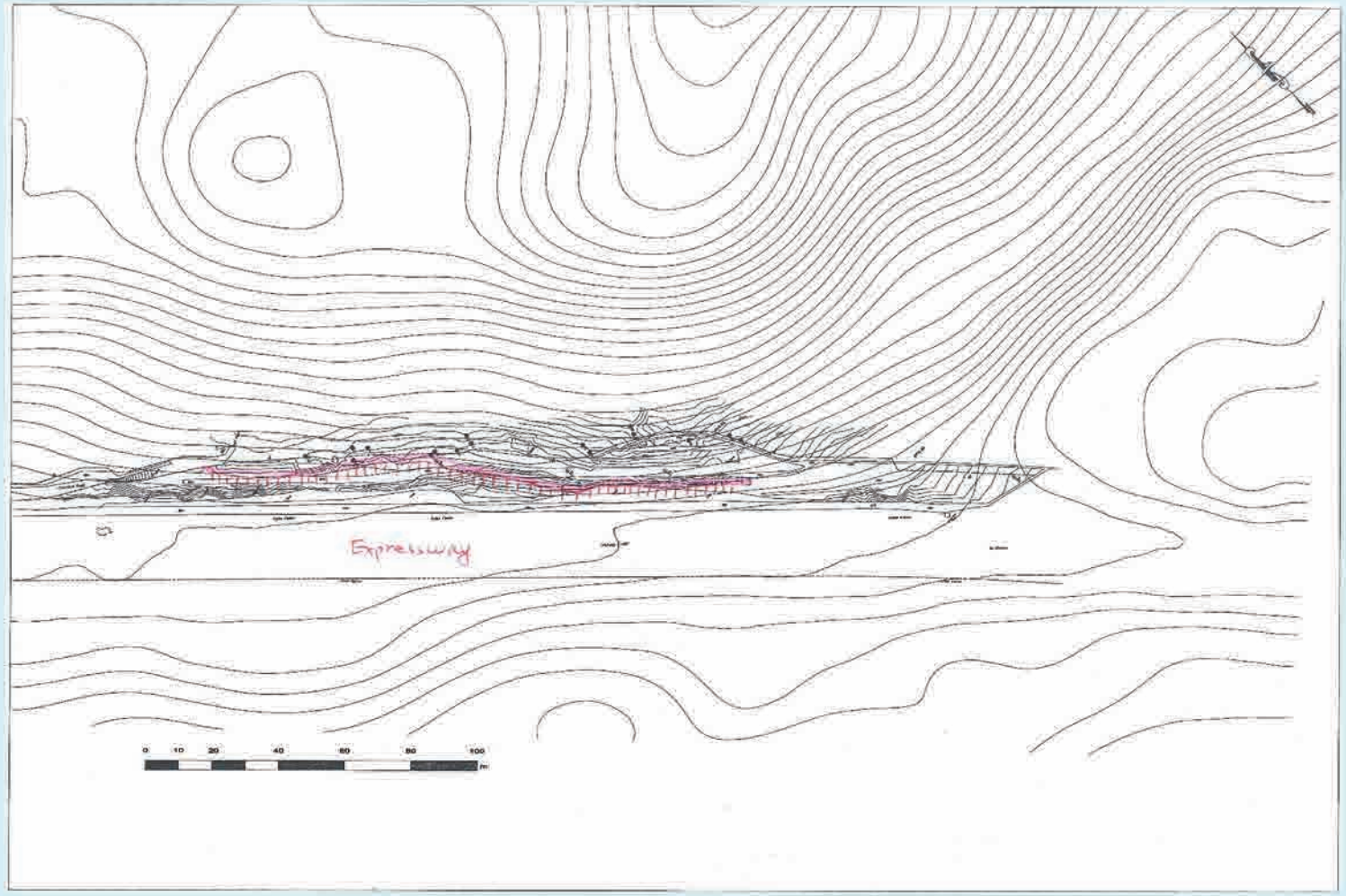


plan

Inventory Sheet A

District	Galle	Management office	Nuwara Eliya	Road No	E-001	Road Name	Kottawa - Godagama Section								
Site No.	19	Disaster Type	Rock fall	Location	Start	66.7km	End	77.2km	latitude	6°12'11.8"N	longitude	80°10'49.0"E			
Main body	Mountain side	Traffic control		Hourly		mm	Traffic volume	Week day	-- /12h	holiday		Bus route		Detour	

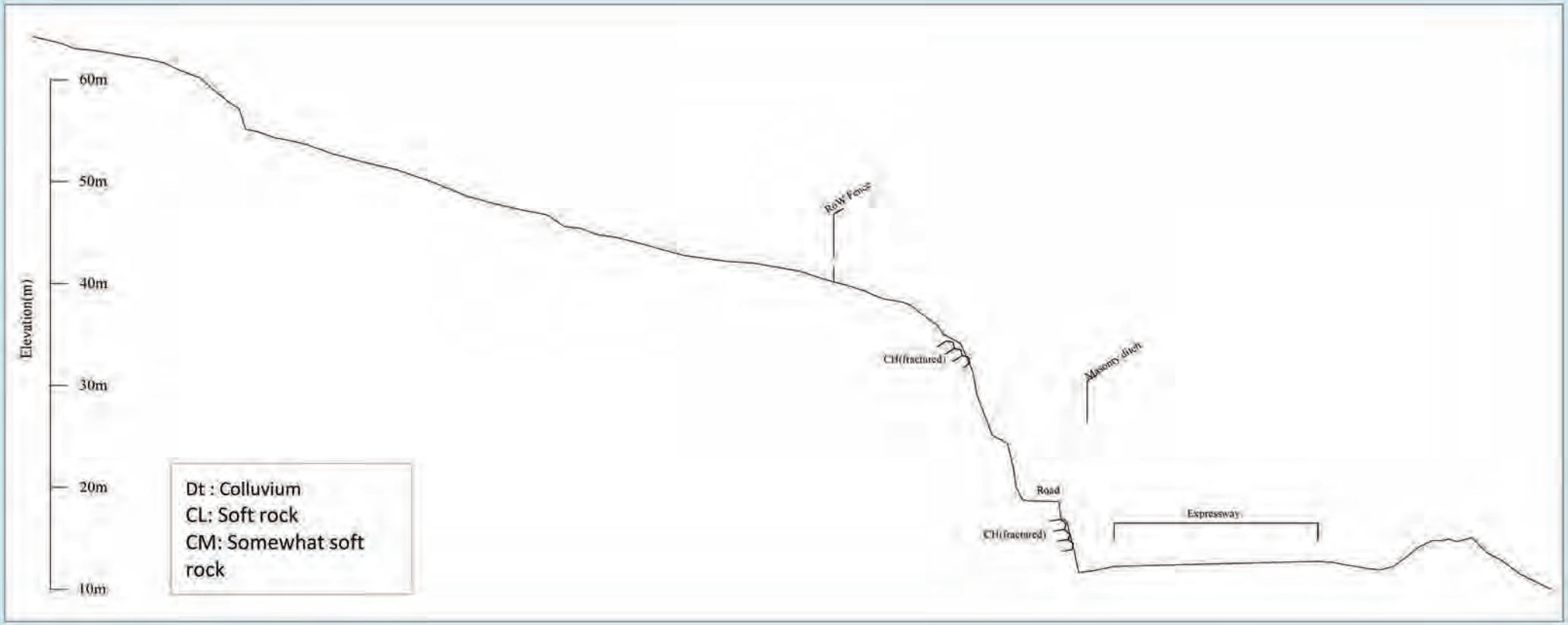
Topo map/Sketch



plan

Inventory Sheet A

Cross Section



Cross Section

Site No.	19	**Inventory Sheet B**	Checked by	Yang Pucai
		(Slope Failure • Rock Fall)	Organization	JICA Survey Team

[Cause] (Ai)

Item		Cause	Classification		Point	score
Topography	Topography with factor of deposit	G1 : Talus slope G2 : Collapsed slope, Clear knick line G3 : Terrace scarp, Overhung slope Catachment slope, debris flow	G1		3	2 (6)
			Not G1		0	
			G2 and G3		3	
			G2 or G3		2	
			No G2 and G3		0	
Geological conditions	Soil property	Erodable soil (Mainly arenaceous soil) Silty sand, silty clay, clay Cobble , pebble	Conspicuous		8	0 (8)
			Slightly consequenous		4	
			None		0	
	Rock character	Jointed rock, rocks that are weak against erosion and weathering.	Conspicuous		12	12 (12)
			Slight conspicuous		6	
			None		0	
	Geological Structure	Dip slope (bedding, weak plane)	Conspicuous		8	14 (14)
			None		0	
		Soft soil coverline baserock, Hard rock overlies weak rock, Others	Conspicuous		6	
			Slightly conspicuous		4	
			None		0	
Surface codition		Surface soil, boulder, rock	Unstable		12	6 (12)
			Slightly unstable		6	
			Stabel		0	
		Spring water	Natural water spring		8	4 (8)
			Water seepage scar		4	
			Nil		0	
		Vegetation	No-vegitation, Grassland		5	3 (5)
			Complex (grass, structure)		3	
			Structure		1	
Geometry		Height (H), gradient (i)	soil	H>30m	18	12 (18)
				H<30, i > 30°	15	
				i < 30°, 15<H<30m	10	
				i <30°, H<15m	5	
			rock	H>50m	18	
				30<H<50m	16	
				15<H<30m	12	
				H<15m	10	
Deformation		Deformation of the survey slope (small soil and rock falls, gully erosion, scouring, depression, bulge, fallen tree, cracks, etc.)	More than one clear evidences		12	12 (18)
			Obscure evidence		6	
			No evidence		0	
		Deformation of the adjacent slope (Rock fall, collapse, cracks, bulge, and other deformation)	More than one clear evidences		5	3 (5)
			Obscure evidence		3	
			No evidence		0	
			Total		(A) 54	

[Countermeasure] (B) = (A) +α or (A) ×0

Well effective against the potential slope failure and rock fall.	×0	
Effective but not completely against the potential rock fall and slope failure.	−20	
Not completely protected from the potential slope failure and rock fall.	−10	
No countermeasure was constructed, or the existing countermeasure cannot be expected effective.	±0	✓
Total	(B)	54

[History] (C)

Disaster history	point	check
The disaster has caused a traffic disturbance or closure after the recent implementation of countermeasures.	100	
No traffic disturbance has occurred but there is a record of comparatively serious rock falls and slope failures that reached to the road.	70	
There is a record of rock falls and slope failures on a small scale that that did not reach to the road.	40	✓
No disaster records	0	
	(C)	40

(D) =MAX (B,C)

Score from cause	(B) 54
Score from history	(c) 40
Among (B)&(C), large one.	(D)=MAX(B,C) **54**

[Description]

Steep slope consisting of relatively fresh rock are observed 2.5 to 5.0 meters from the road. Boulders of diameter less than 1.0m are observed near the road. Tress pass for local residents is built by cutting the slope with placement of concrete.

Site No.	19	Inventory Sheet C	Date	July 9, 2019

P1 Huge rock blocks falling due to wedge rock failure on the rock cut slope

P3 A village road at the middle of rock cut slope, showing well-developed dip slope

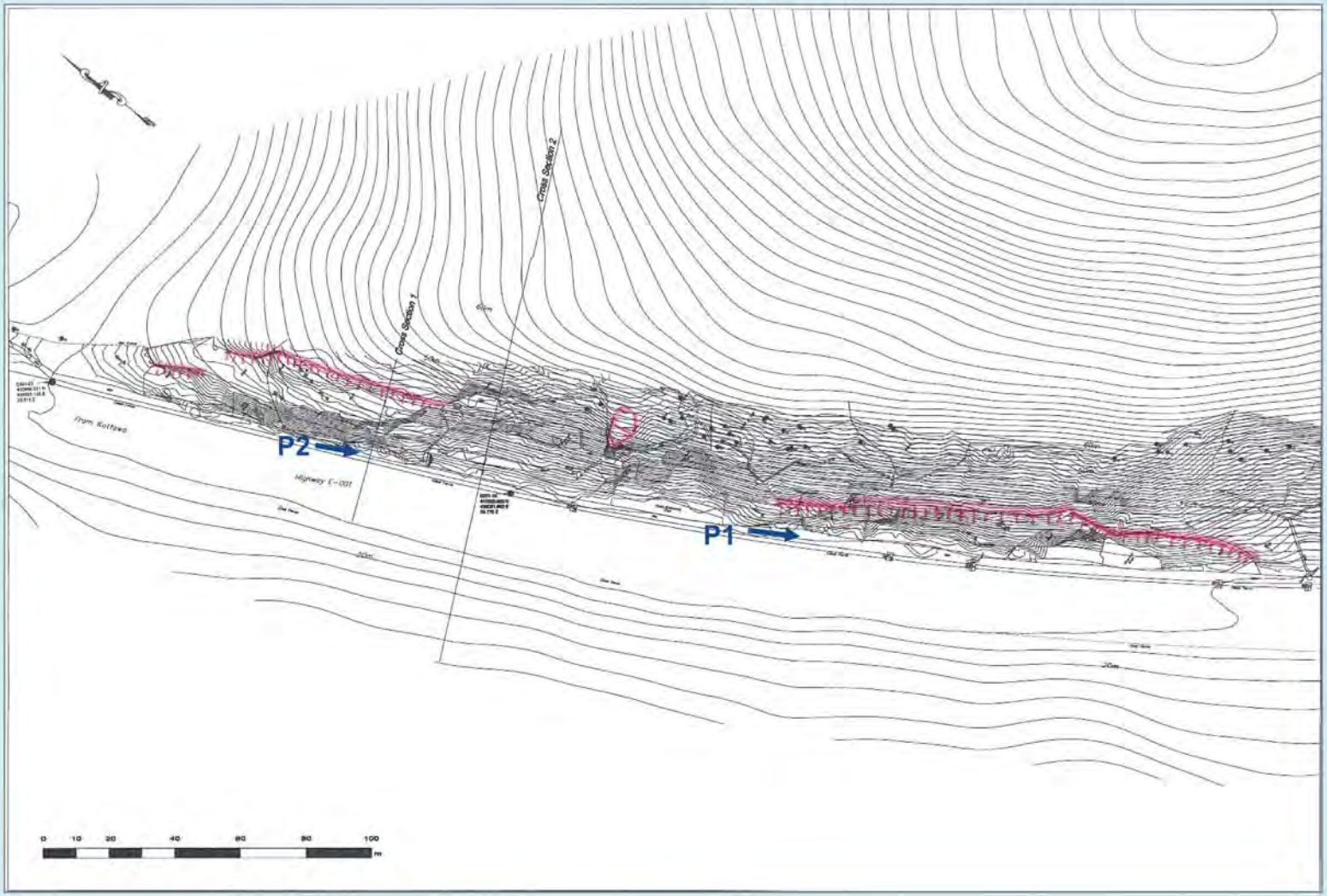
P2 Major joints dipping adversely out of the cut slope, showing high potential for rockfall

P4 Unstable stones (at max size, φ20×50×80cm), distributed around the ROW boundary fences of RDA

Inventory Sheet A

District	Galle	Management office	Nuwara Eliya	Road No	E-001	Road Name	Kottawa - Godagama Section										
Site No.	20	Disaster Type	Rock fall	Location	Start	77.9km	End	79.0km	latitude	6°11'40.6"N	longitude	80°11'11.2"E					
Main body	Mountain side	Traffic control		Hourly		mm	Traffic volume	Week day	-- /12h	holiday		Bus route		Detour			

Topo map/Sketch

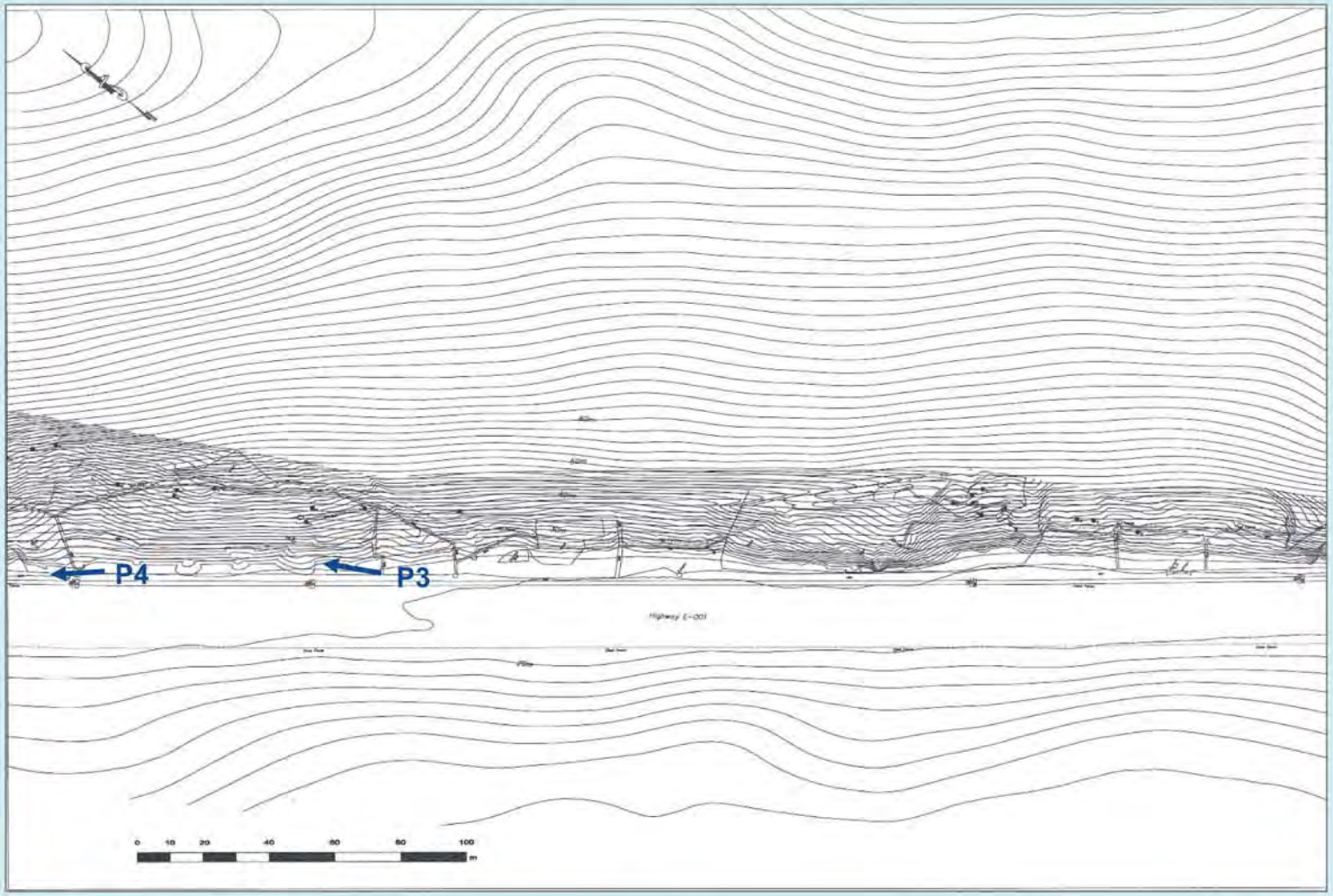


Plan

Inventory Sheet A

District	Galle		Management office	Nuwara Eliya		Road No	E-001	Road Name	Kottawa - Godagama Section										
Site No.	20		Disaster Type	Rock fall		Location	Start	77.9km	End	79.0km	latitude	6°11'40.6"N		longitude	80°11'11.2"E				
Main body	Mountain side		Traffic control			Hourly		mm	Traffic volume		Week day	-- /12h	holiday			Bus route			Detour	

Topo map/Sketch

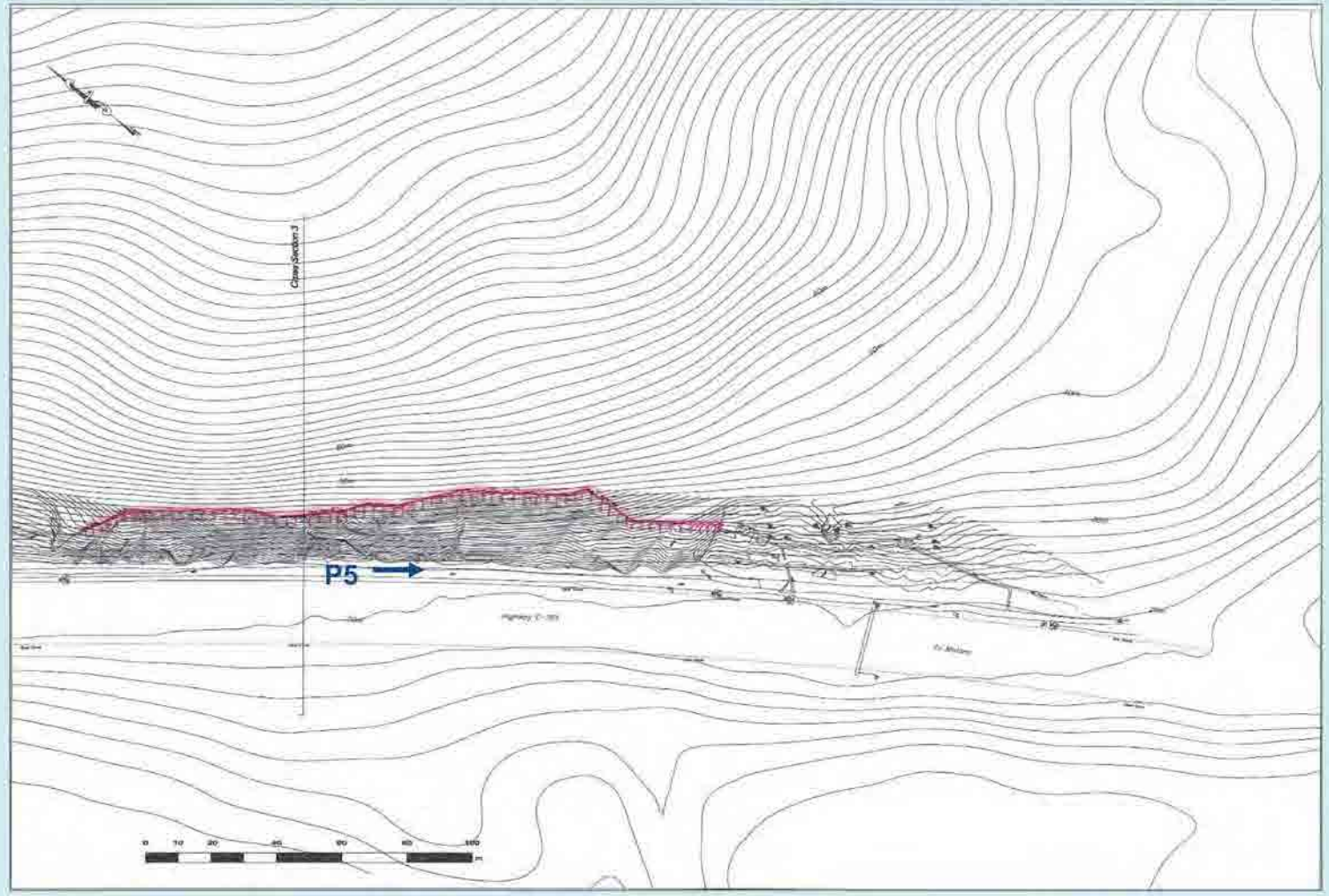


Plan

Inventory Sheet A

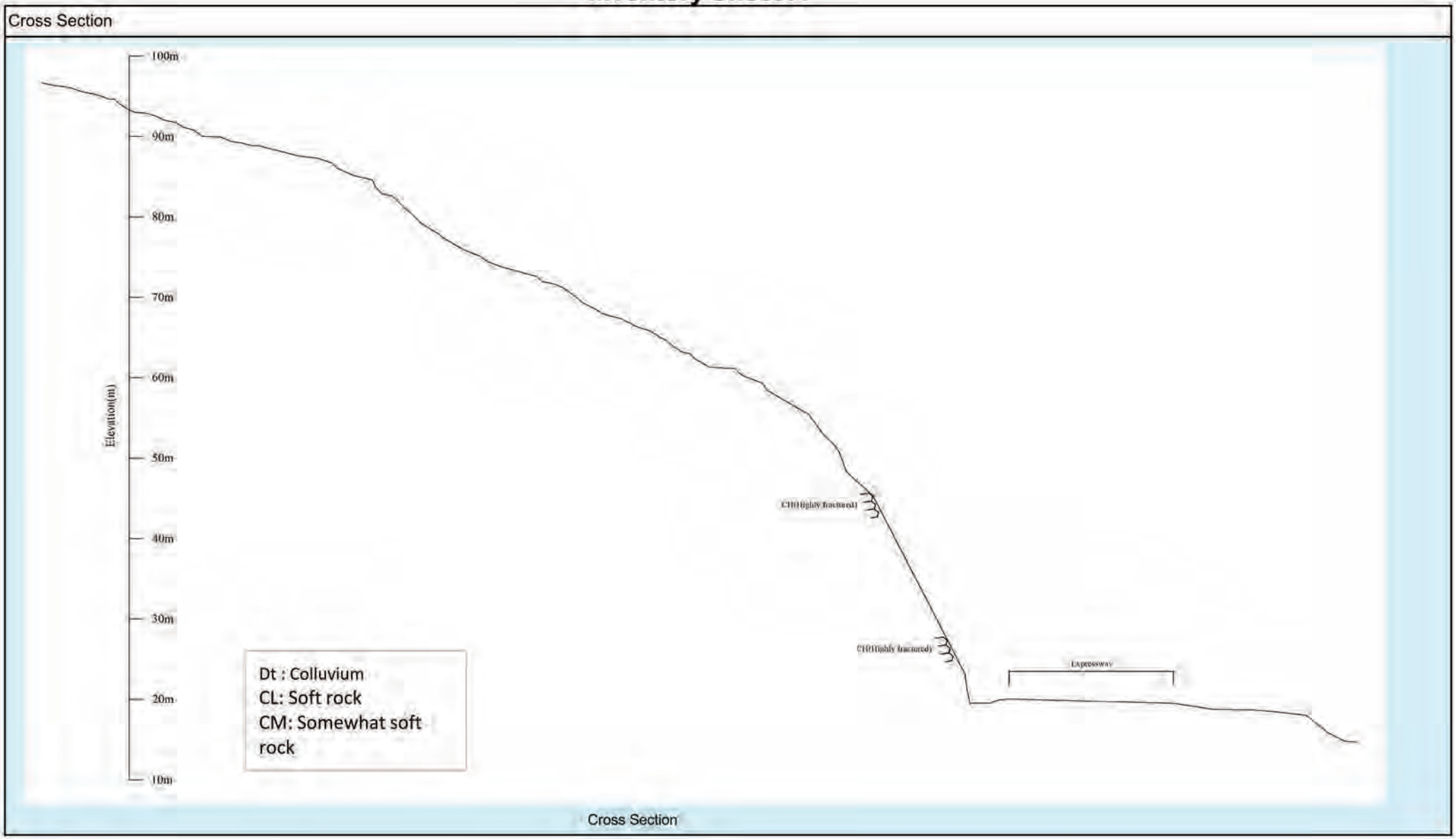
District	Galle	Management office	Nuwara Eliya	Road No	E-001	Road Name	Kottawa - Godagama Section								
Site No.	20	Disaster Type	Rock fall	Location	Start	77.9km	End	79.0km	latitude	6°11'40.6"N	longitude	80°11'11.2"E			
Main body	Mountain side	Traffic control		Hourly		mm	Traffic volume	Week day	-- /12h	holiday		Bus route		Detour	

Topo map/Sketch



Plan

Inventory Sheet A



Site No.	20

Inventory Sheet B

(Slope Failure • Rock Fall)

Checked by	Yang Pucai
Organization	JICA Survey Team

[Cause] (Ai)

Item		Cause	Classification		Point	score
Topography	Topography with factor of	G1 : Talus slope G2 : Collapsed slope, Clear knick line G3 : Terrace scarp, Overhung slope Catachment slope, debris flow deposit	G1		3	2 (6)
			Not G1		0	
			G2 and G3		3	
			G2 or G3		2	
			No G2 and G3		0	
Geological conditions	Soil property	Erodable soil (Mainly arenaceous soil) Silty sand, silty clay, clay Cobble , pebble	Conspicuous		8	0 (8)
			Slightly consequenous		4	
			None		0	
	Rock character	Jointed rock. rocks that are weak against erosion and weathering.	Conspicuous		12	12 (12)
			Slight conspicuous		6	
			None		0	
	Geological Structure	Dip slope (bedding, weak plane)	Conspicuous		8	8 (14)
			None		0	
		Soft soil coverline baserock, Hard rock overlies weak rock, Others	Conspicuous		6	
			Slightly conspicuous		4	
			None		0	
Surface codition		Surface soil, boulder, rock	Unstable		12	6 (12)
			Slightly unstable		6	
			Stabel		0	
		Spring water	Natural water spring		8	4 (8)
			Water seepage scar		4	
			Nil		0	
		Vegetation	No-vegitation, Grassland		5	5 (5)
			Complex (grass, structure)		3	
			Structure		1	
Geometry		Height (H), gradient (I)	soil	H>30m	18	12 (18)
				H<30, i > 30°	15	
				i < 30°, 15<H<30m	10	
				i <30°, H<15m	5	
			rock	H>50m	18	
				30<H<50m	16	
				15<H<30m	12	
				H<15m	10	
Deformation		Deformation of the survey slope (small soil and rock falls, gully erosion, scouring, depression, bulge, fallen tree, cracks, etc.)	More than one clear evidences		12	8 (18)
			Obscure evidence		8	
			No evidence		0	
		Deformation of the adjacent slope (Rock fall, collapse, cracks, bulge, and other deformation)	More than one clear evidences		5	3 (5)
			Obscure evidence		3	
			No evidence		0	
			Total score		(A) 52	

[Countermeasure] (B) = (A) +α or (A) ×0

Well effective against the potential slope failure and rock fall.	×0	
Effective but not completely against the potential rock fall and slope failure.	−20	
Not completely protected from the potential slope failure and rock fall.	−10	✓
No countermeasure was constructed, or the existing countermeasure cannot be expected effective.	±0	
sum total	(B)	42

[History] (C)

Disaster history	point	check
The disaster has caused a traffic disturbance or closure after the recent implementation of countermeasures.	100	
No traffic disturbance has occurred but there is a record of comparatively serious rock falls and slope failures that reached to the road.	70	
There is a record of rock falls and slope failures on a small scale that that did not reach to the road.	40	✓
No disaster records	0	
	(C)	40

(D) =MAX (B,C)

Score from cause	(B) 42
Score from history	(c) 40
Among (B)&(C), large one.	(D)=MAX(B,C) **42**

[Description]

Steep slope of more than 10m in height without step cutting is observed in this setion. Shot creting as well as net are placed in a limited area. Boulders of less than 50cm are scattered at limited place. Slopes consisting of weathered rock are also observed in some section.

Site No.	20	Inventory Sheet C	Date	July 9, 2019

P1 Near-vertical rock cut slope, showing a dip slope formed by foliation joints

P3 Steep cut slope, showing strongly weathered rocks anddraingage channel installed on the cut slop

P2 Rockfalls with boulder size of about φ50㎝, occurring on the rock cut slope, and emergency nets installed by RDA

P4 Rock block of φ60㎝, falling down from the road cut slope or its upper natural slope

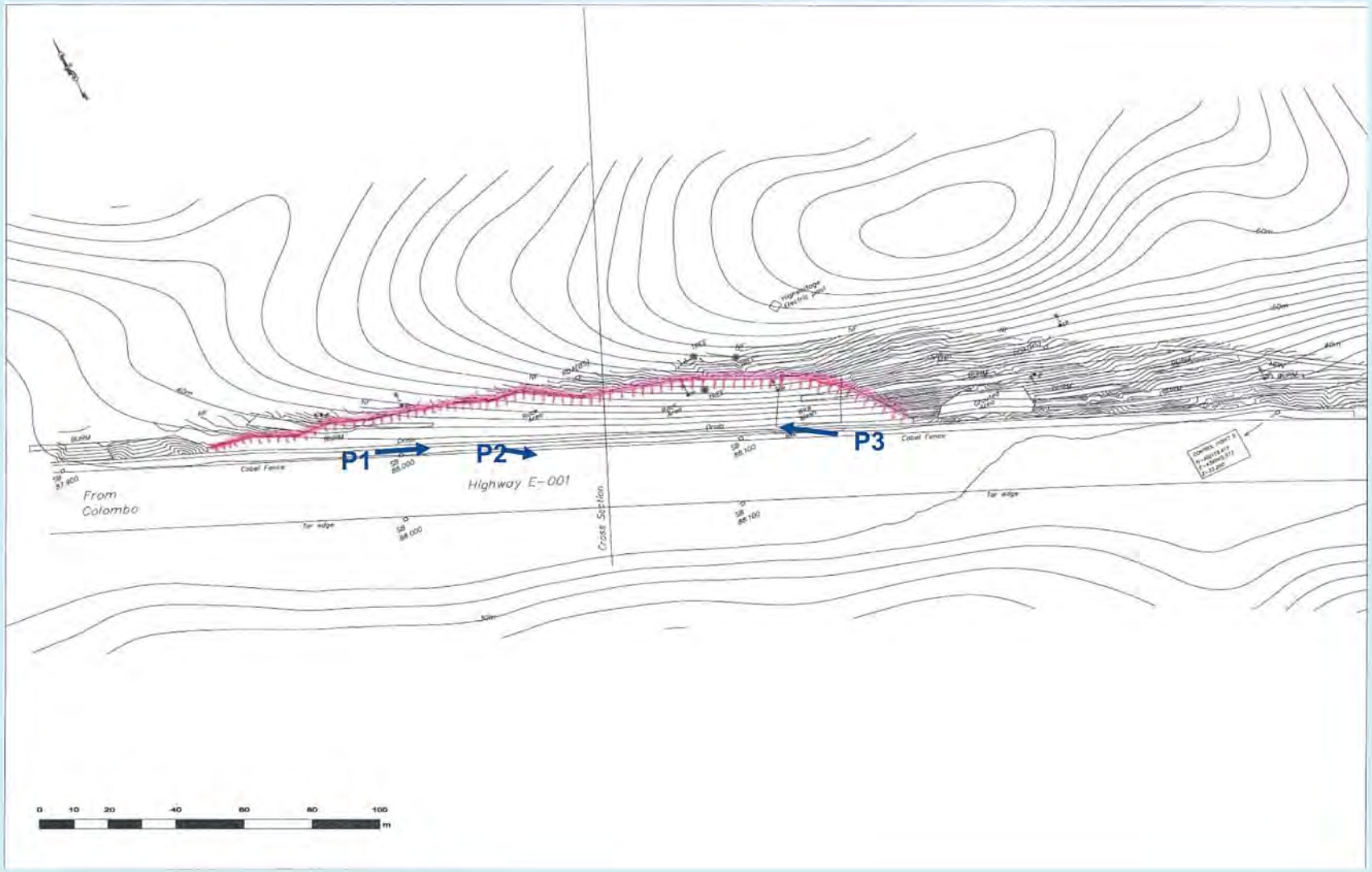
Site No.	20	Inventory Sheet C	Date	July 9, 2019

P5 Highly fractured rock mass and emergency nets installed by RAD

Inventory Sheet A

District	Galle		Management office	Nuwara Eliya		Road No	E-001	Road Name	Kottawa - Godagama Section								
Site No.	22		Disaster Type	Rock fall		Location	Start	87.8km	End	88.8km	latitude	6°06'57.3"N		longitude	80°13'18.5"E		
Main body	Mountain side	Traffic control		Hourly		mm	Traffic volume	Week day	1000/12h	holiday	1000/12h	Bus route		Detour			

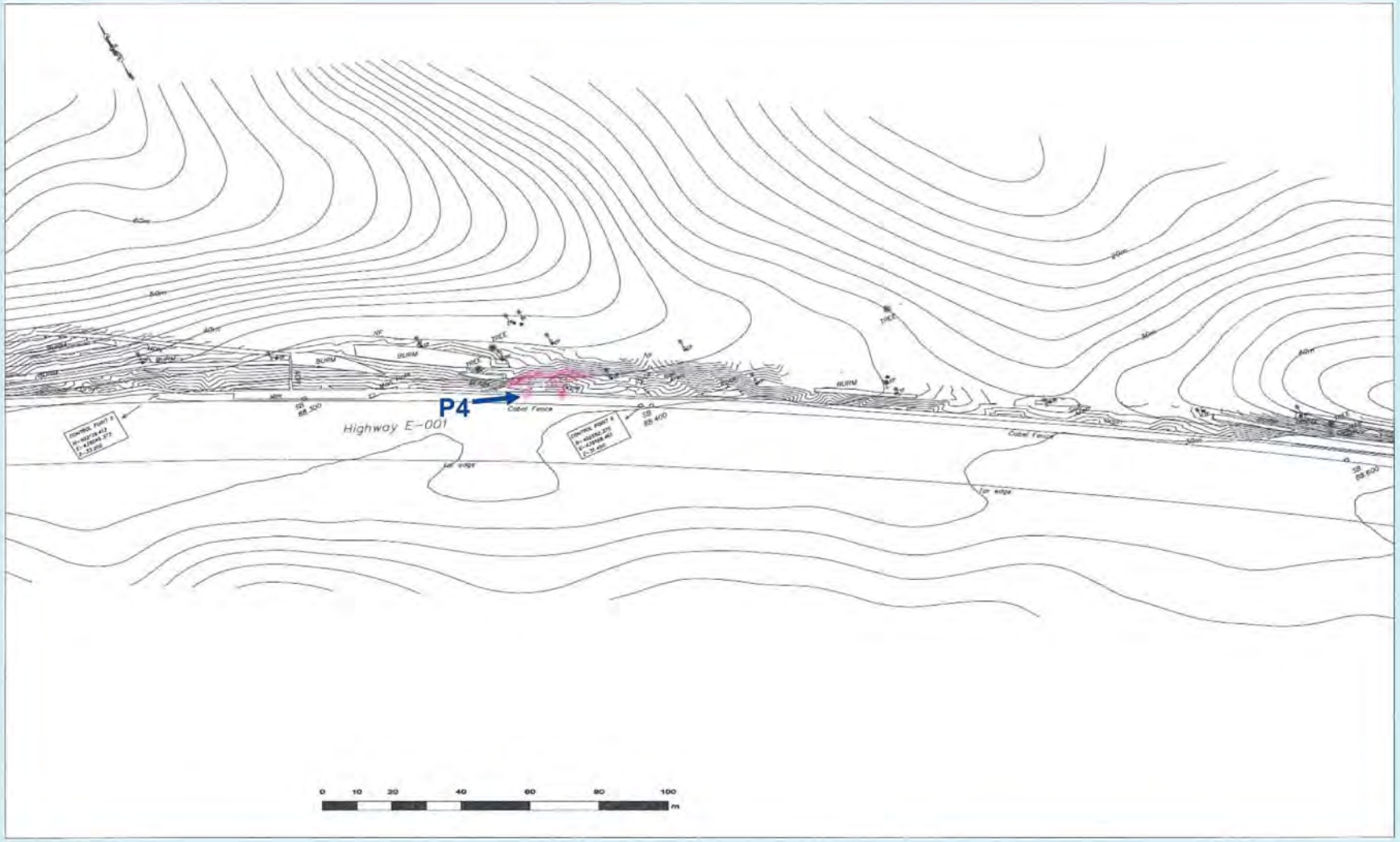
Topo map/Sketch



Inventory Sheet A

District	Galle	Management office	Nuwara Eliya	Road No	E-001	Road Name	Kottawa - Godagama Section										
Site No.	22	Disaster Type	Rock fall	Location	Start	87.8km	End	88.8km	latitude	6°06'57.3"N	longitude	80°13'18.5"E					
Main body	Mountain side	Traffic control		Hourly		mm	Traffic volume	Week day	1000/12h	holiday	1000/12h	Bus route		Detour			

Topo map/Sketch



Inventory Sheet A

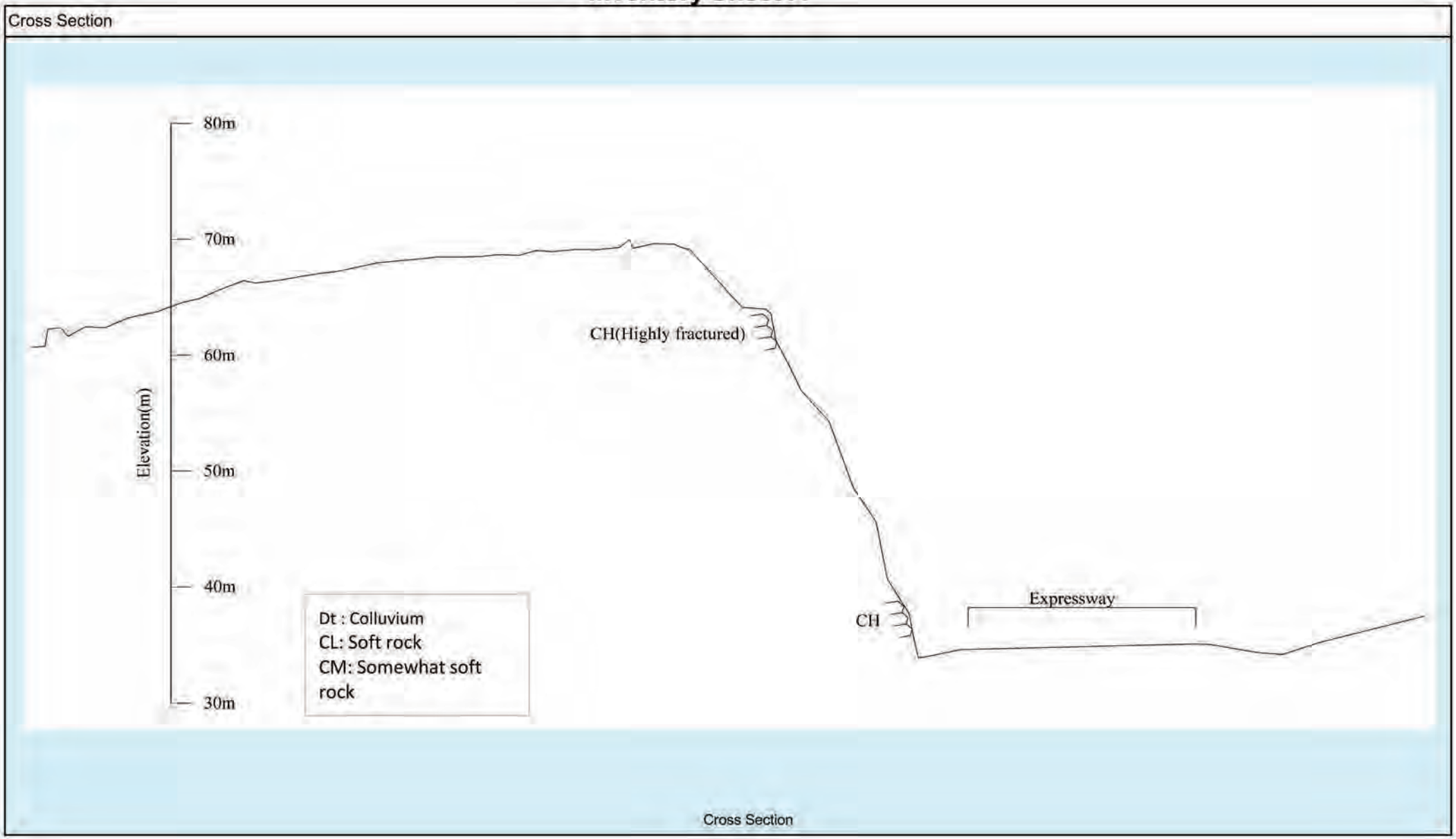
District	Galle	Management office	Nuwara Eliya	Road No	E-001	Road Name	Kottawa - Godagama Section										
Site No.	22	Disaster Type	Rock fall	Location	Start	87.8km	End	88.8km	latitude	6°06'57.3"N	longitude	80°13'18.5"E					
Main body	Mountain side	Traffic control		Hourly		mm	Traffic volume	Week day	1000/12h	holiday	1000/12h	Bus route		Detour			

Topo map/Sketch

Plan

Inventory Sheet A

Cross Section



Cross Section

Site No.	22

Inventory Sheet B

(Slope Failure • Rock Fall)

Checked by	Yang Pucai
Organization	JICA Survey Team

[Cause] (Ai)

Item		Cause	Classification		Point	score
Topography	Topography with factor of	G1 : Talus slope G2 ; Collapsed slope, Clear knick line G3 : Terrace scarp, Overhung slope Catachment slope, debris flow deposit	G1		3	2 (6)
			Not G1		0	
			G2 and G3		3	
			G2 or G3		2	
			No G2 and G3		0	
Geological conditions	Soil property	Erodable soil (Mainly arenaceous soil) Silty sand, silty clay, clay Cobble , pebble	Conspicuous		8	0 (8)
			Slightly consequenous		4	
			None		0	
	Rock character	Jointed rock, rocks that are weak against erosion and weathering.	Conspicuous		12	12 (12)
			Slight conspicuous		6	
			None		0	
	Geological Structure	Dip slope (bedding, weak plane)	Conspicuous		8	8 (14)
			None		0	
		Soft soil coverline baserock, Hard rock overlies weak rock, Others	Conspicuous		6	
			Slightly conspicuous		4	
			None		0	
Surface codition		Surface soil, boulder, rock	Unstable		12	6 (12)
			Slightly unstable		6	
			Stabel		0	
		Spring water	Natural water spring		8	8 (8)
			Water seepage scar		4	
			Nil		0	
		Vegetation	No-vegitation, Grassland		5	3 (5)
			Complex (grass, structure)		3	
			Structure		1	
Geometry		Height (H), gradient (i)	soil	H>30m	18	12 (18)
				H<30, i > 30°	15	
				i < 30°, 15<H<30m	10	
				i <30°, H< 15m	5	
			rock	H>50m	18	
				30<H<50m	16	
				15<H<30m	12	
				H<15m	10	
Deformation		Deformation of the survey slope (small soil and rock falls, gully erosion, scouring, depression, bulge, fallen tree, cracks, etc.)	More than one clear evidences		12	8 (18)
			Obscure evidence		8	
			No evidence		0	
		Deformation of the adjacent slope (Rock fall, collapse, cracks, bulge, and other deformation)	More than one clear evidences		5	3 (5)
			Obscure evidence		3	
			No evidence		0	
			Total		(A) 54	

[Countermeasure] (B) = (A) +α or (A) ×0

Well effective against the potential slope failure and rock fall.	×0	
Effective but not completely against the potential rock fall and slope failure.	−20	
Not completely protected from the potential slope failure and rock fall.	−10	✓
No countermeasure was constructed, or the existing countermeasure cannot be expected effective.	±0	
Total	(B)	44

[History] (C)

Disaster history	point	check
The disaster has caused a traffic disturbance or closure after the recent implementation of countermeasures.	100	
No traffic disturbance has occurred but there is a record of comparatively serious rock falls and slope failures that reached to the road.	70	
There is a record of rock falls and slope failures on a small scale that that did not reach to the road.	40	✓
No disaster records	0	
	(C)	40

(D) =MAX (B,C)

Score from cause	(B) 44
Score from history	(c) 40
Among (B)&(C), large one.	(D)=MAX(B,C) 44

[Description]

Steep slope of more than 10m in height without step cutting is observed in this setion.
Slope consists of relatively fresh rock in general.

Site No.	22	Inventory Sheet C	Date	July 17, 2019

P1 Steep road cut slope of highly fractured rocks, showing dip slope, RDA installed emergency nets after rockfalls

P3 Installed mortar spraying method for protecting shallow slope failure, of estimated depth of about 2m

P2 Damaged condition of road surface by rockfall, showing rockfall reached the road

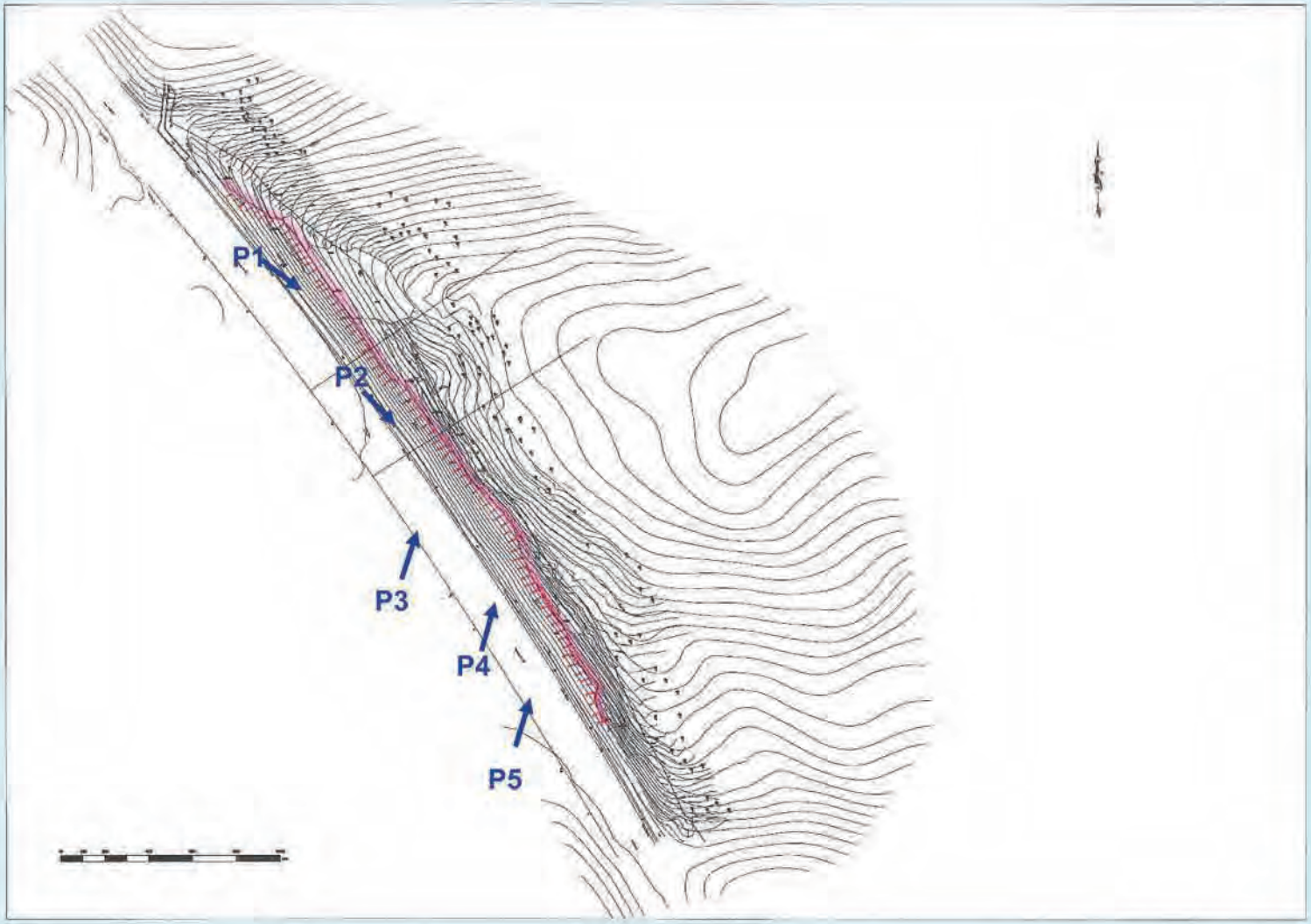
P4 Shallow slope failure occurring on strongly weathered with a dip slope

Site No.	22	Inventory Sheet C	Date	July 17, 2019

P5 Fractured rock slope, showing a dip slope - high potential for further rockfalls

Inventory Sheet A

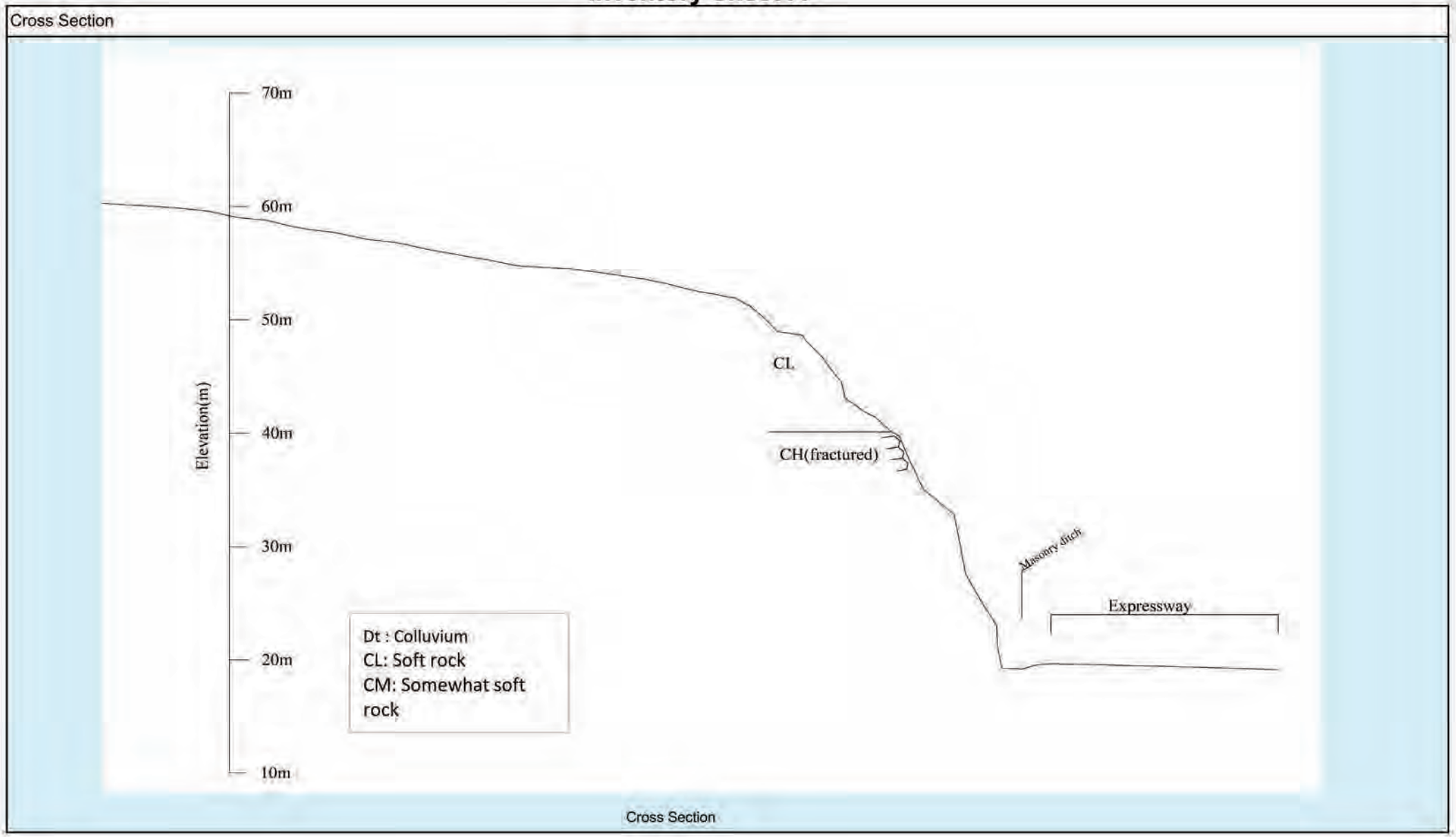
District	Galle		Management office	Nuwara Eliya		Road No	E-001	Road Name	Kottawa - Godagama Section								
Site No.	23		Disaster Type	Rock fall		Location	Start	89.3km	End	89.6km	latitude	6°06'33.0"N		longitude	80°13'50.1"E		
Main body	Mountain side	Traffic control		Hourly		mm	Traffic volume	Week day	-- /12h	holiday		Bus route		Detour			
Topo map/Sketch																	



Plan

Inventory Sheet A

Cross Section



Cross Section

Site No.	23

Inventory Sheet B

(Slope Failure • Rock Fall)

Checked by	Yang Pucai
Organization	JICA Survey Team

[Cause] (Ai)

Item		Cause	Classification		Point	score
Geological conditions	Topography	Topography with factor of	G1 : Talus slope G2 : Collapsed slope, Clear knick line G3 : Terrace scarp, Overhung slope Catachment slope, debris flow deposit	G1	3	2 (6)
				Not G1	0	
				G2 and G3	3	
				G2 or G3	2	
				No G2 and G3	0	
	Soil property		Erodable soil (Mainly arenaceous soil) Silty sand, silty clay, clay Cobble , pebble	Conspicuous	8	0 (8)
				Slightly consequenous	4	
				None	0	
	Rock character		Jointed rock, rocks that are weak against erosion and weathering.	Conspicuous	12	12 (12)
				Slight conspicuous	6	
				None	0	
	Geological Structure		Dip slope (bedding, weak plane)	Conspicuous	8	8 (14)
				None	0	
			Soft soil coverline baserock, Hard rock overlies weak rock, Others	Conspicuous	6	
				Slightly conspicuous	4	
				None	0	
Surface codition			Surface soil, boulder, rock	Unstable	12	0 (12)
				Slightly unstable	6	
				Stabel	0	
			Spring water	Natural water spring	8	4 (8)
				Water seepage scar	4	
				Nil	0	
			Vegetation	No-vegitation, Grassland	5	3 (5)
				Complex (grass, structure)	3	
				Structure	1	
Geometry			Height (H), gradient (i)	soil H>30m	18	12 (18)
				soil H<30, i > 30°	15	
				soil i < 30°, 15<H<30m	10	
				soil i <30°, H<15m	5	
				rock H>50m	18	
				rock 30<H<50m	16	
				rock 15<H<30m	12	
				rock H<15m	10	
Deformation			Deformation of the survey slope (small soil and rock falls, gully erosion, scouring, depression, bulge, fallen tree, cracks, etc.)	More than one clear evidences	12	12 (18)
				Obscure evidence	8	
				No evidence	0	
			Deformation of the adjacent slope (Rock fall, collapse, cracks, bulge, and other deformation)	More than one clear evidences	5	5 (5)
				Obscure evidence	3	
				No evidence	0	
				Total	(A) 50	

[Countermeasure] (B) = (A) +α or (A) ×0

Well effective against the potential slope failure and rock fall.	×0	
Effective but not completely against the potential rock fall and slope failure.	−20	
Not completely protected from the potential slope failure and rock fall.	−10	✓
No countermeasure was constructed, or the existing countermeasure cannot be expected effective.	±0	
Total	(B)	40

[History] (C)

Disaster history	point	check
The disaster has caused a traffic disturbance or closure after the recent implementation of countermeasures.	100	
No traffic disturbance has occurred but there is a record of comparatively serious rock falls and slope failures that reached to the road.	70	
There is a record of rock falls and slope failures on a small scale that that did not reach to the road.	40	✓
No disaster records	0	
	(C)	40

(D) =MAX (B,C)

Score from cause	(B) 40
Score from history	(c) 40
Among (B)&(C), large one.	(D)=MAX(B,C) **40**

[Description]

Steep slope of less than 20m in height is observed along the highway. Relatively fresh rocks are distributed, however masonry is placed in a limited area. Small boulders of less than 50cm in diameter are scattered at some places.

Site No.	23	Inventory Sheet C	Date	July 9, 2019

P1 Rock slope failure or rockfall occurring slopne major joints, likewise, indicating further rockalls along the joint surfaces

P2 About φ40㎝ of rock block falling down by rockfall

P3 High road cut slope of fresh rocks, showing potential wegde rock failure along two sets of joints

P4 Road cut slope of strongly and slightly weathered rocks, showing shallow slope failure on the strongly weathered rocks locally protected with mortar spraying method

Site No.	23	Inventory Sheet C	Date	July 9, 2019

P5 Similar to that in P4, showning major joints dipping out of the cut slope in the slightly weathered rocks, further indicating a hight potential for rockfalls

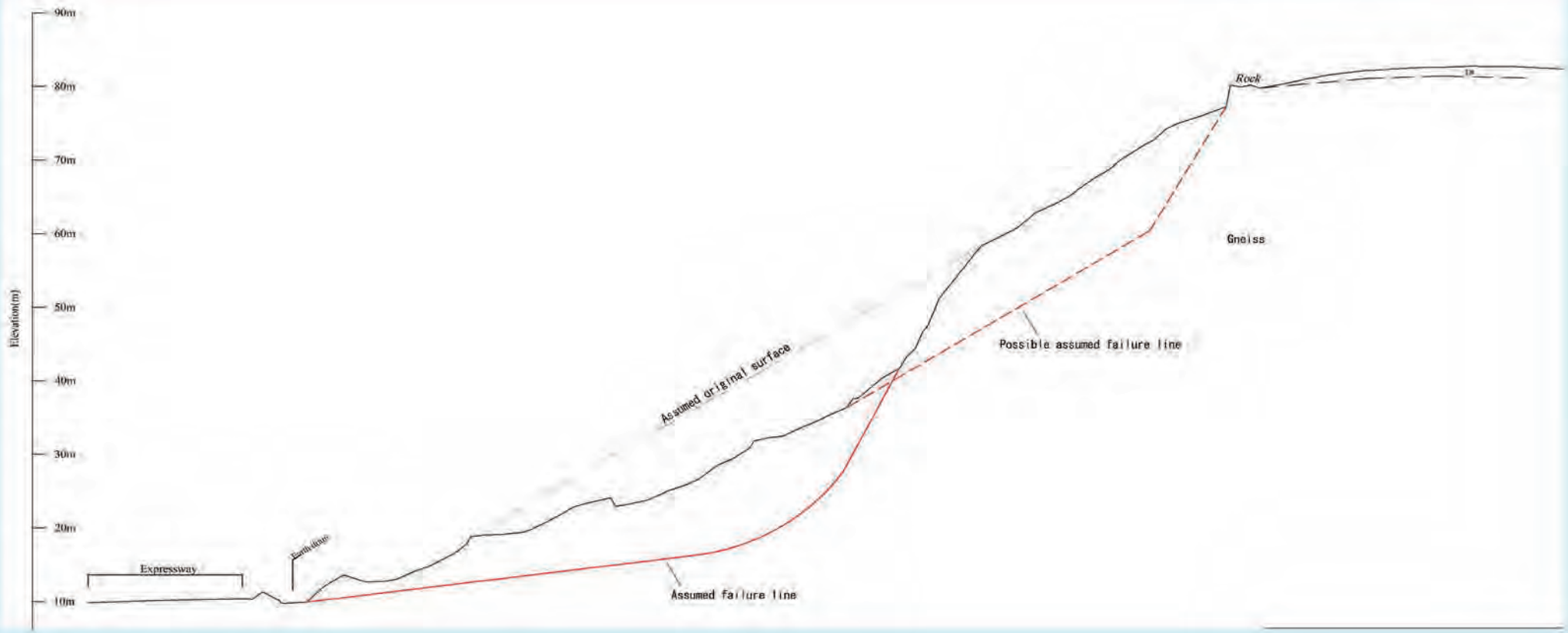
Inventory Sheet A

District	Galle		Management office	Nuwara Eliya		Road No	E-001		Road Name	Kottawa - Godagama Section									
Site No.	25			Disaster Type	Slope Failure		Location	Start	101.3km	End	101.7km	latitude	6°02'40.9"N		longitude	80°18'48.1"E			
Main body	Both		Traffic control		Hourly		mm	Traffic volume		Week day	-- /12h	holiday			Bus route			Detour	
Topo map/Sketch																			

Plan

Inventory Sheet A

Cross Section



Cross Section

Site No.	25

Inventory Sheet B

(Slope Failure) Rock Fall)

Checked by	Yang Pucai
Organization	JICA Survey Team

[Cause] (Ai)

Item		Cause	Classification		Point	score
Topography	Topography with factor of	G1 : Talus slope G2 : Collapsed slope, Clear knick line G3 : Terrace scarp, Overhung slope Catachment slope, debris flow deposit	G1		3	5 (5)
			Not G1		0	
			G2 and G3		3	
			G2 or G3		2	
			No G2 and G3		0	
Geological conditions	Soil property	Erodable soil (Mainly arenaceous soil) Silty sand, silty clay, clay Cobble , pebble	Conspicuous		8	8 (8)
			Slightly consequenous		4	
			None		0	
	Rock character	Jointed rock, rocks that are weak against erosion and weathering.	Conspicuous		12	6 (6)
			Slight conspicuous		6	
			None		0	
	Geological Structure	Dip slope (bedding, weak plane)	Conspicuous		8	4 (4)
			None		0	
		Soft soil coverline baserock, Hard rock overlies weak rock, Others	Conspicuous		6	
			Slightly conspicuous		4	
			None		0	
Surface codition		Surface soil, boulder, rock	Unstable		12	12 (12)
			Slightly unstable		6	
			Stabel		0	
		Spring water	Natural water spring		8	8 (8)
			Water seepage scar		4	
			Nil		0	
		Vegetation	No-vegitation, Grassland		5	3 (3)
			Complex (grass, structure)		3	
			Structure		1	
Geometry		Height (H), gradient (i)	soil	H>30m	18	17 (17)
				H<30, i > 30°	15	
				i < 30°, 15<H<30m	10	
				i <30°, H<15m	5	
			rock	H>50m	18	
				30<H<50m	16	
				15<H<30m	12	
				H<15m	10	
Deformation		Deformation of the survey slope (small soil and rock falls, gully erosion, scouring, depression, bulge, fallen tree, cracks, etc.)	More than one clear evidences		12	12 (12)
			Obscure evidence		8	
			No evidence		0	
		Deformation of the adjacent slope (Rock fall, collapse, cracks, bulge, and other deformation)	More than one clear evidences		5	3 (3)
			Obscure evidence		3	
			No evidence		0	
			Total score		(A) 74	

[Countermeasure] (B) = (A) +α or (A) ×0

Well effective against the potential slope failure and rock fall.	×0	
Effective but not completely against the potential rock fall and slope failure.	−20	
Not completely protected from the potential slope failure and rock fall.	−10	
No countermeasure was constructed, or the existing countermeasure cannot be expected effective.	±0	✓

sum total	(B) 74

[History] (C)

Disaster history	point	check
The disaster has caused a traffic disturbance or closure after the recent implementation of countermeasures.	100	
No traffic disturbance has occurred but there is a record of comparatively serious rock falls and slope failures that reached to the road.	70	
There is a record of rock falls and slope failures on a small scale that that did not reach to the road.	40	✓
No disaster records	0	
	(C)	40

(D) =MAX (B,C)

Score from cause	(B) 74
Score from history	(c) 40
Among (B)&(C), large one.	(D)=MAX(B,C) **74**

[Description]

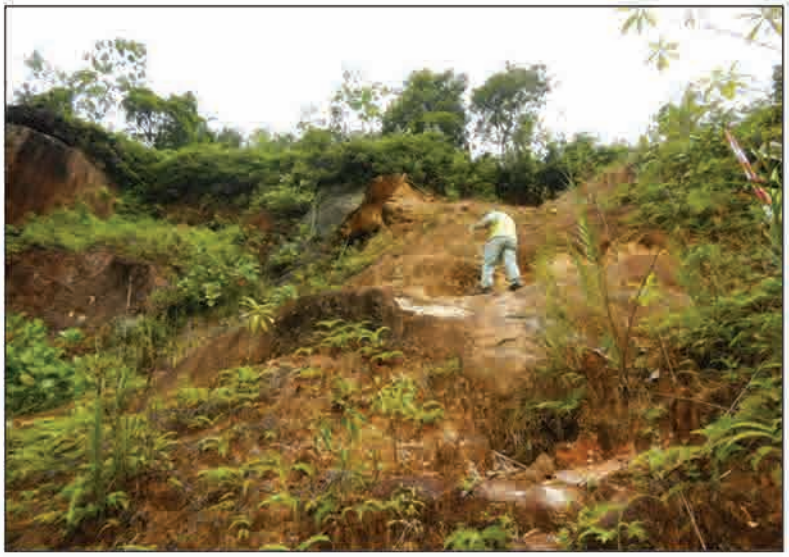
Slopes are relatively gentle and consist of moderately to highly weathered rocks. Talus deposits and sediments of debris are distributed both sides of the road. A failure of around 40m in width is observed at 139km point. The site is in the tea plantation area.

Site No.	25	Inventory Sheet C	Date	July 17, 2017

P1 Whole view of the slope failure, the collapsed materials were partially removed and partially flatted on the toe of cut slopes

P3 The installed gabion retaining wall near the slope failure

P2 Road cut slope of the strongly weathered rocks next to the slope failure



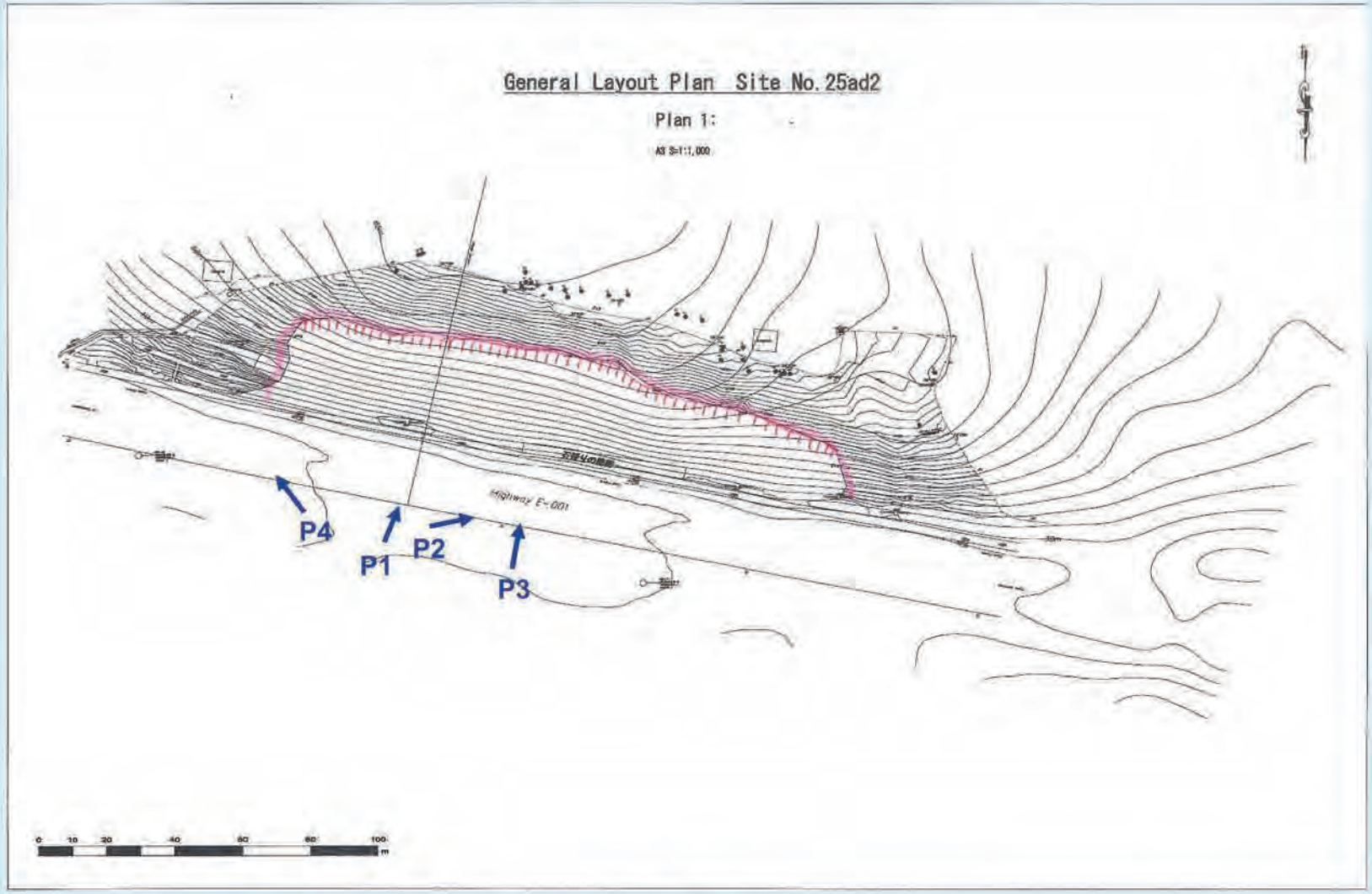
P4 Main scarp of the slope failure, showing the strongly weathered rocks

Site No.	25	Inventory Sheet C	Date	July 17, 2017

P5 Whole view of the slope failure looking upslope from the road

Inventory Sheet A

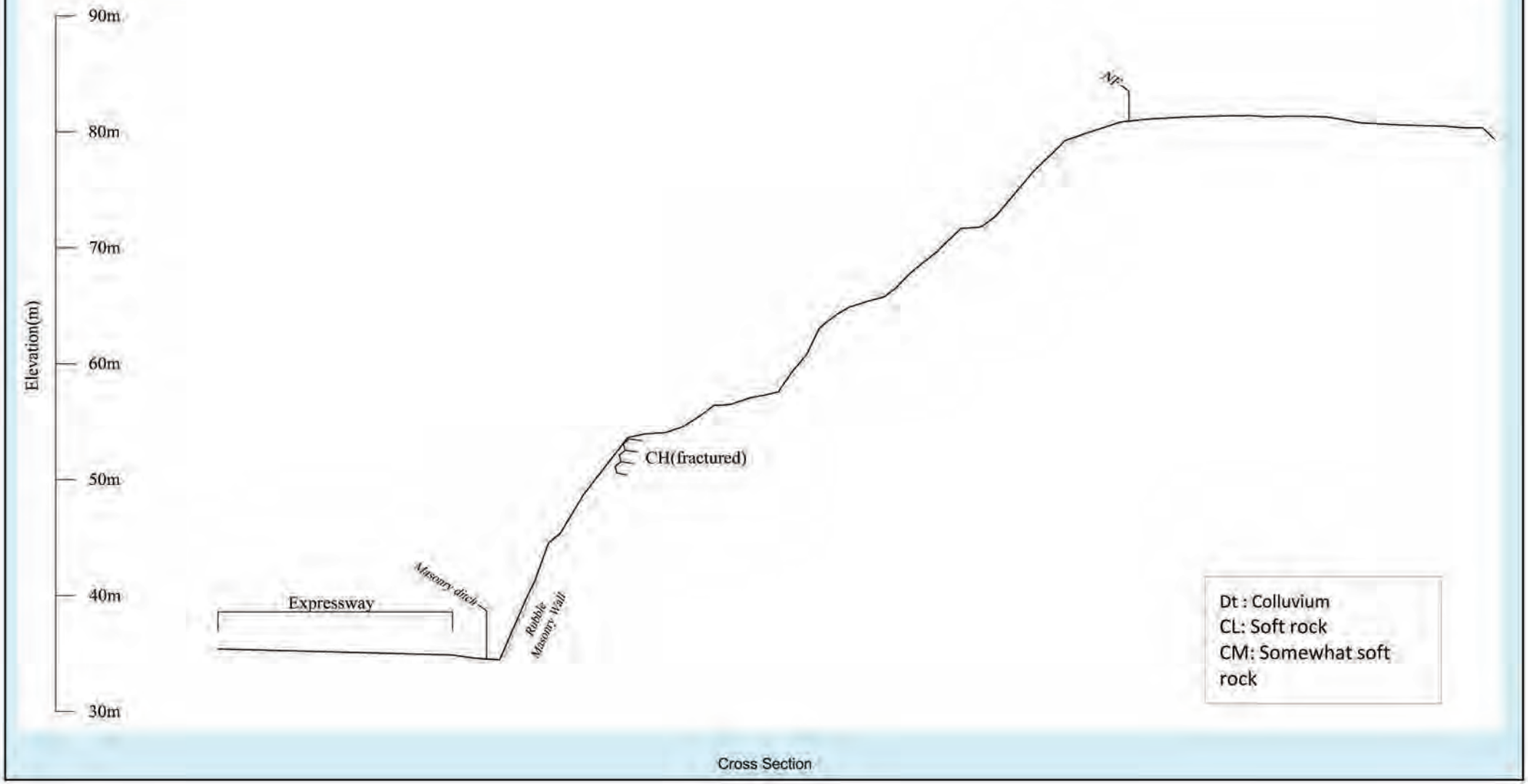
District	Galle		Management office	Nuwara Eliya		Road No	E-001	Road Name	Kottawa - Godagama Section										
Site No.	25 - ad2		Disaster Type	Rock fall		Location	Start	108.6km	End	108.7km	latitude	6°01'57.6"N		longitude	80°22'30.7"E				
Main body	Mountain side	Traffic control		Hourly		mm	Traffic volume	Week day	-- /12h	holiday			Bus route			Detour			
Topo map/Sketch																			



Plan

Inventory Sheet A

Cross Section



Cross Section

Site No.	25 - ad2

Inventory Sheet B

(Slope Failure • Rock Fall)

Checked by	Yang Pucai
Organization	JICA Survey Team

[Cause] (Ai)

Item		Cause	Classification		Point	score
Topography	Topography with factor of	G1 : Talus slope G2 : Collapsed slope, Clear knick line G3 : Terrace scarp, Overhung slope Catachment slope, debris flow deposit	G1		3	2 (6)
			Not G1		0	
			G2 and G3		3	
			G2 oe G3		2	
			No G2 and G3		0	
Geological conditions	Soil property	Erodable soil (Mainly arenaceous soil) Silty sand, silty clay, clay Cobble , pebble	Conspicuous		8	4 (8)
			Slightly consequenous		4	
			None		0	
	Rock character	Jointed rock, rocks that are weak against erosion and weathering.	Conspicuous		12	6 (12)
			Slight conspicuous		6	
			None		0	
	Geological Structure	Dip slope (bedding, weak plane)	Conspicuous		8	8 (14)
			None		0	
		Soft soil coverline baserock, Hard rock overlies weak rock, Others	Conspicuous		6	
			Slightly conspicuous		4	
			None		0	
Surface codition		Surface soil, boulder, rock	Unstable		12	6 (12)
			Slightly unstable		6	
			Stabel		0	
		Spring water	Natural water spring		8	4 (8)
			Water seepage scar		4	
			Nil		0	
		Vegetation	No-vegitation, Grassland		5	3 (5)
			Complex (grass, structure)		3	
			Structure		1	
Geometry		Height (H), gradient (i)	soil	H>30m	18	12 (18)
				H<30, i > 30°	15	
				i < 30°, 15<H<30m	10	
				i <30°, H<15m	5	
			rock	H>50m	18	
				30<H<50m	16	
				15<H<30m	12	
				H<15m	10	
Deformation		Deformation of the survey slope (small soil and rock falls, gully erosion, scouring, depression, bulge, fallen tree, cracks, etc.)	More than one clear evidences		12	8 (18)
			Obscure evidence		8	
			No evidence		0	
		Deformation of the adjacent slope (Rock fall, collapse, cracks, bulge, and other deformation)	More than one clear evidences		5	3 (5)
			Obscure evidence		3	
			No evidence		0	
			Total		(A) 48	

[Countermeasure] (B) = (A) +α or (A) ×0

Well effective against the potential slope failure and rock fall.	×0	
Effective but not completely against the potential rock fall and slope failure.	−20	
Not completely protected from the potential slope failure and rock fall.	−10	✓
No countermeasure was constructed, or the existing countermeasure cannot be expected effective.	±0	
Total	(B)	38

[History] (C)

Disaster history	point	check
The disaster has caused a traffic disturbance or closure after the recent implementation of countermeasures.	100	
No traffic disturbance has occurred but there is a record of comparatively serious rock falls and slope failures that reached to the road.	70	
There is a record of rock falls and slope failures on a small scale that that did not reach to the road.	40	✓
No disaster records	0	
	(C)	40

(D) =MAX (B,C)

Score from cause	(B) 38
Score from history	(c) 40
Among (B)&(C), large one.	(D)=MAX(B,C) **40**

[Description]

The road seems to be stable and relatively high cliff are seen near the road section. The slope consists mainly of fresh to relatively fresh rock with some vegetation. Large to small seepage water are seen along the cliff.

Site No.	25 - ad2	Inventory Sheet C	Date	July 9, 2019

P1 Road cut slope of the highly fractured rocks, showning major joints dipping into the cut slope, Stone pitching was installed to prevent rock slope faillure in the fractured rocks

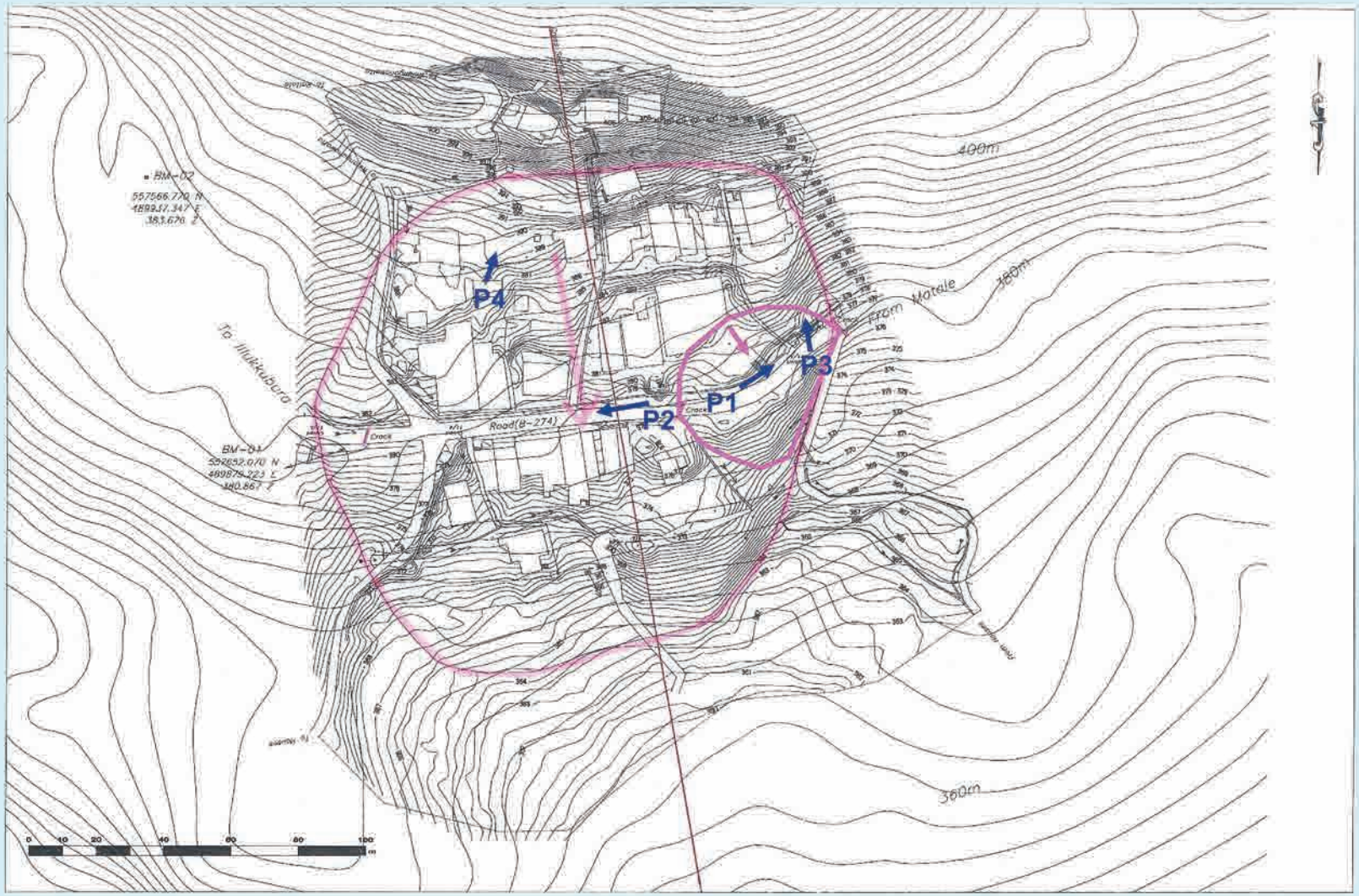
P3 Same as that in P2

P2 Unstable huge rock blocks and boulders predimante on the top surface of the rock slope

P4 Road cut slope of the strongly weathered rocks, surface drainage was installed on the cut slope

Inventory Sheet A

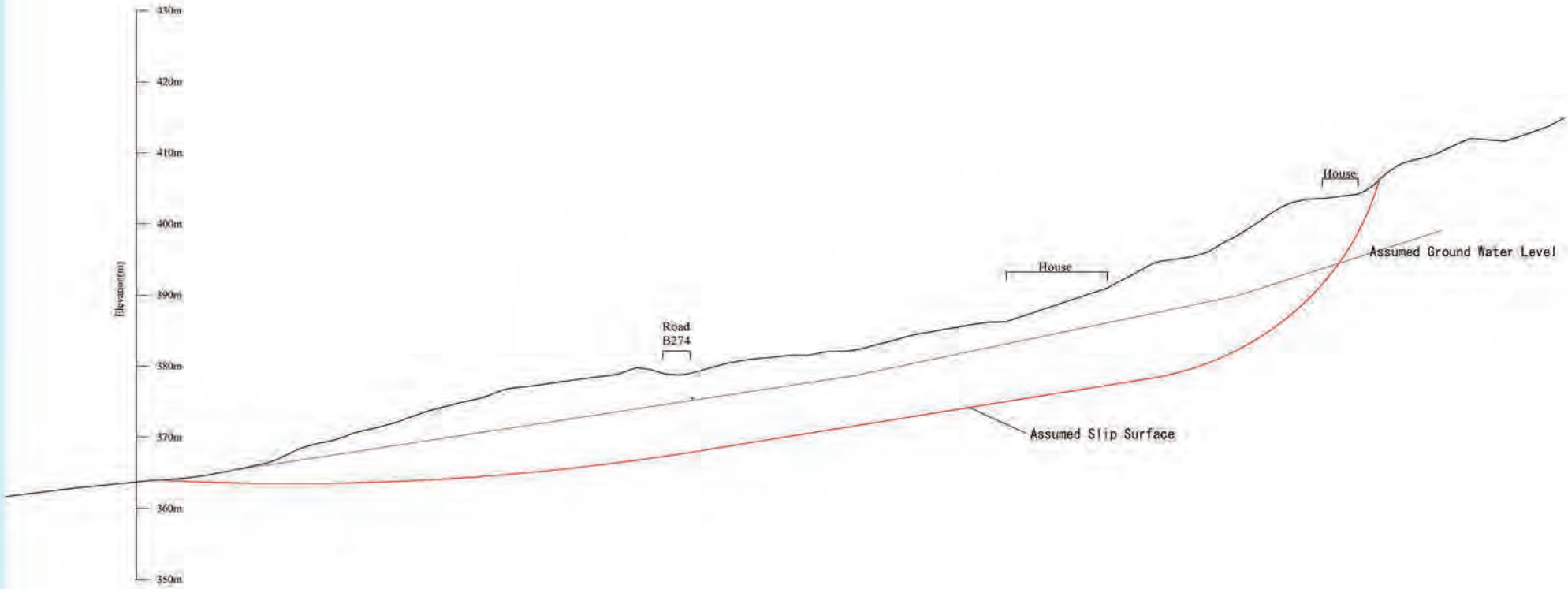
District	Matale		Management office	Matale		Road No	B-274	Road Name	Matale-Illukkumbura-Laggala road										
Site No.	26		Disaster Type	Landslide		Location	Start	11/2	End	11/4	latitude	7°31'18.8"N		longitude	80°40'52.9"E				
Main body	Both		Traffic control		Hourly		mm	Traffic volume	Week day	1631/12h	holiday			Bus route			Detour		
Topo map/Sketch																			



Plan

Inventory Sheet A

Cross Section



Cross Section

Site No.	26

Inventory Sheet B

(Landslide)

Checked by	Yang Pucai
Organization	JICA Survey Team

[Factor] (A)

Item	Check Point		check	score
Landslide Topography	A scarp, hilly topography or gentle slope, disorder of contour lines, bulge on river bank is observed.	Clear	30	30
		Fairly clear	15	
		Unclear	7	(30)
Geological conditions	Geological structure	Fault, shered zone	18	18
		Volcanic alteration zone	18	
		Dip slope	14	
		Opposite dip slope	7	
		Intrusive structure, Cap rock structure	3	
		Others	0	(18)
	Geological meterial	Mesozoic/palaeozonic formations	7	7
		Tertiary formation (sedimendary rocks)	7	
		Quarternary formation (mudstone, etc)	3	
		Others (Volcamic rock, Igneous rock)	0	(7)
	Spring Water	Present	5	5
		Absent	0	(5)
	Total			60

[History] (B)

Item	Check Point		check	score
Landslide history	Record (documental or patrimony)	Present	100	100
		Absent	0	(100)
Landslide deformation	Scarp in slope, Bulge and depression, Subsidence, Upheaval and cracks on road surface, Deformation of countermeasure works	Clear	100	100
		Fairly clear	75	
		Unclear	0	(100)
	Total		(B)	100

(C)=MAX(A,B)

Score evaluated from cause	(A)	60
Score evaluated from history	(B)	100
Among (B)&(C), large one.	(C)=MAX(A,B)	100

[Countermeasure] (D) = (c) + α or (c) x 0

Category		point (α)	check
No countermeasure		±0	
Effectiveness of countermeasure	No effect	±0	
	Slight effect	-30	✓
	High effect	x0	
Total		(D)	70

[Description]

Abnormalities, might becaused by landslide, are observed along the road, and around the area. Land subsidence and tilted walls and gabbions are observed in the area. Rehabilitation works have been carried out by NBRO.

Site No.	26	Inventory Sheet C	Date	July 3, 2019

P1 The subsidence of the road surface and the deformation of masonry retaining wall within the landslide

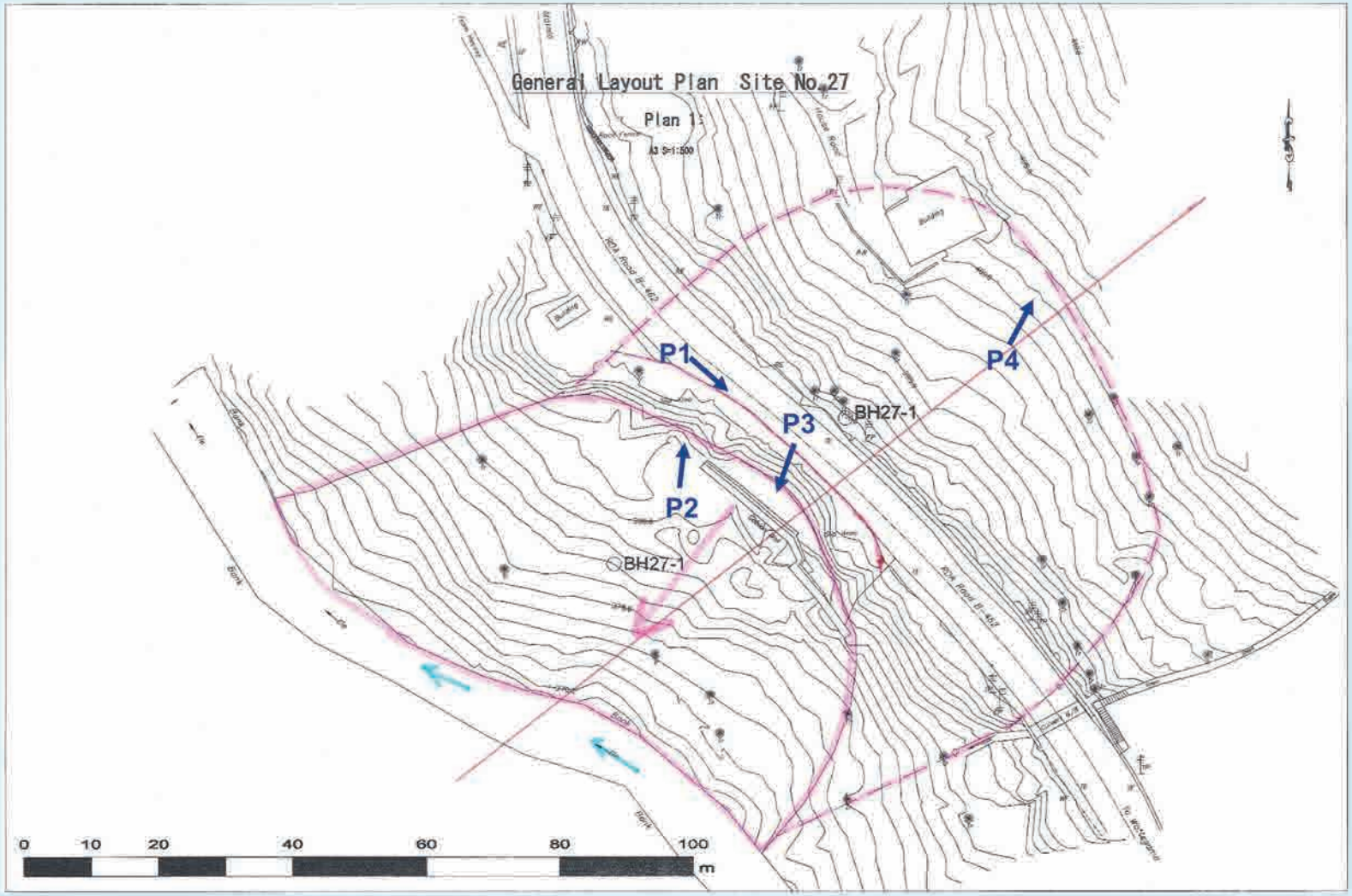
P3 Cracks occurring on the retaining wall within the landslide

P2 The deformation situation of the road that pass alpng the middle part of landslide

P4 The slope condition of the planned drainage well location

Inventory Sheet A

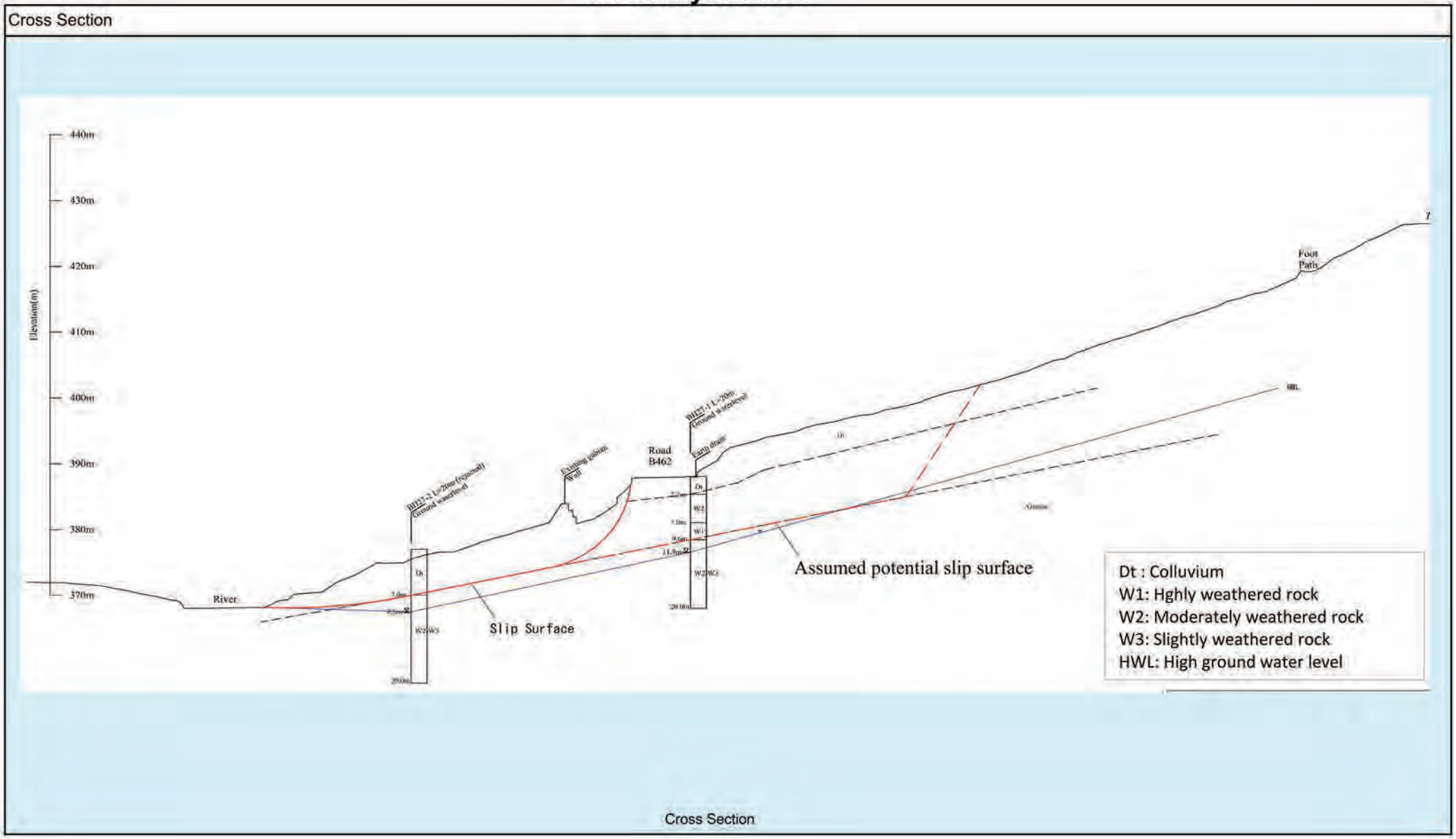
District	Matale	Management office	Matale	Road No	B-463	Road Name	Wattegama - Matale road										
Site No.	27	Disaster Type	Landslide	Location	Start	6+030	End	6+100	latitude	7°23'34.9"N	longitude	80°39'37.4"E					
Main body	Both	Traffic control		Hourly		mm	Traffic volume	Week day	5600/12h	holiday		Bus route		Detour			
Topo map/Sketch																	



Plan

Inventory Sheet A

Cross Section



Cross Section

Site No.	27

Inventory Sheet B

(Landslide)

Checked by	Yang Pucai
Organization	JICA Survey Team

[Factor] (A)

Item	Check Point		check	score
Landslide Topography	A scarp, hilly topography or gentle slope, disorder of contour lines, bulge on river bank is observed.	Clear	30	30
		Fairly clear	15	
		Unclear	7	(30)
Geological conditions	Geological structure	Fault, shered zone	18	0
		Volcanic alteration zone	18	
		Dip slope	14	
		Opposite dip slope	7	
		Intrusive structure, Cap rock structure	3	
		Others	0	(18)
	Geological meterial	Mesozoic/palaeozonic formations	7	0
		Tertiary formation (sedimendary rocks)	7	
		Quarternary formation (mudstone, etc)	3	
		Others (Volcamic rock, Igneous rock)	0	(7)
	Spring Water	Present	5	5
		Absent	0	(5)
	Total			35

[History] (B)

Item	Check Point		check	score
Landslide history	Record (documental or patrimony)	Present	100	100
		Absent	0	(100)
Landslide deformation	Scarp in slope, Bulge and depression, Subsidence, Upheaval and cracks on road surface, Deformation of countermeasure works	Clear	100	100
		Fairly clear	75	
		Unclear	0	(100)
	Total		(B) 100	

(C)=MAX(A,B)

Score evaluated from cause	(A) 35
Score evaluated from history	(B) 100
Among (B)&(C), large one.	(C)=MAX(A,B) 100

[Countermeasure] (D) = (c) + α or (c) x 0

Category		point (α)	check
No countermeasure		±0	
Effectiveness of countermeasure	No effect	±0	✓
	Slight effect	-30	
	High effect	x0	
Total		(D) 100	

[Description]

Slopes of relatively gently gradient are observed both sides of the road.
Damages spposed to be caused by heavy rainfall are seen at places.

Site No.	27	Inventory Sheet C	Date	July 3, 2019

P1 Cracks occurring due to landslide movement on the road shoulder

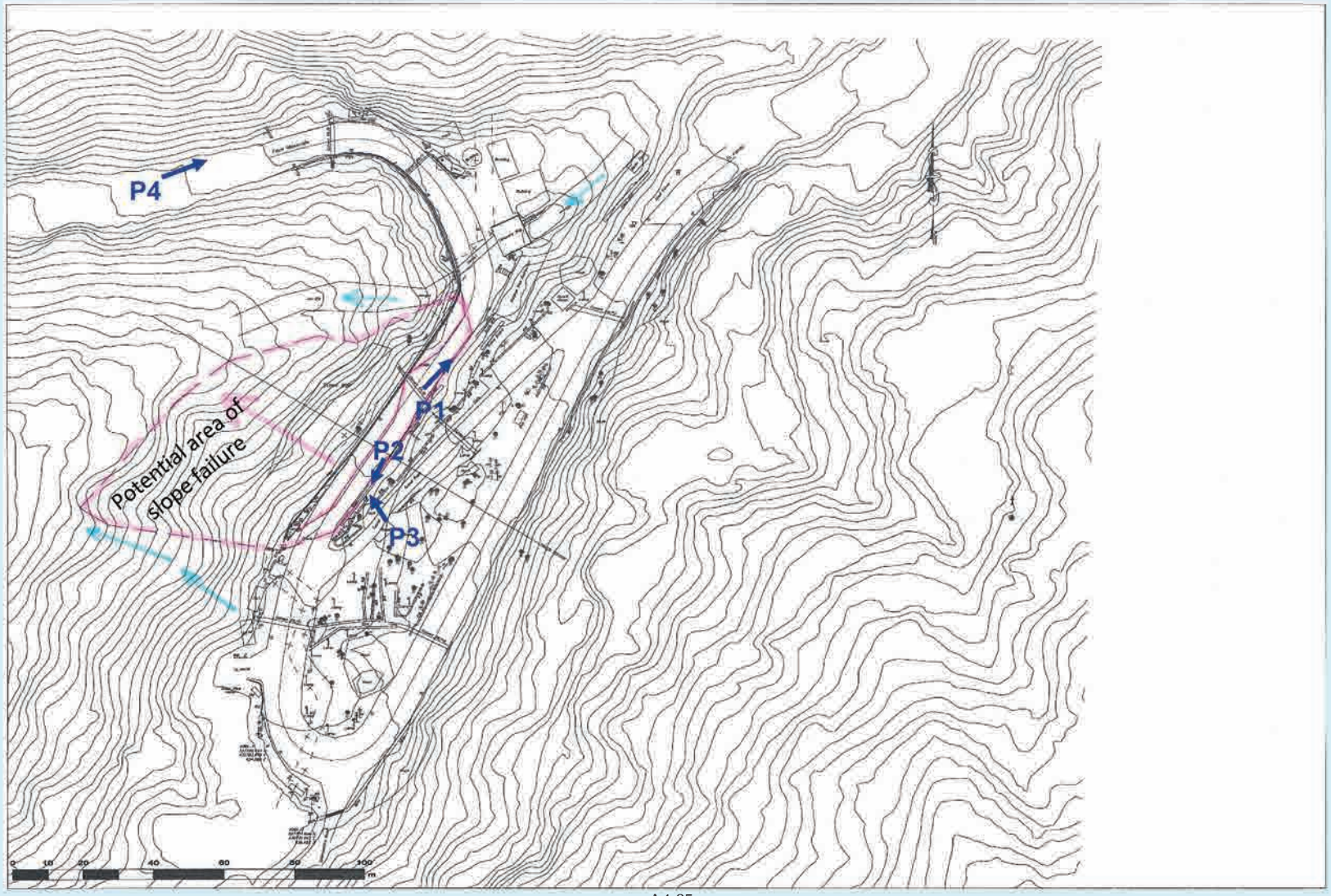
P3 Main scarp on the valley side of the road with max height of about 7m

P2 Whole view of the lower landslide looking downslope from the road

P4 Stepped landform on the upper slope of the road, showing a potential scarp

Inventory Sheet A

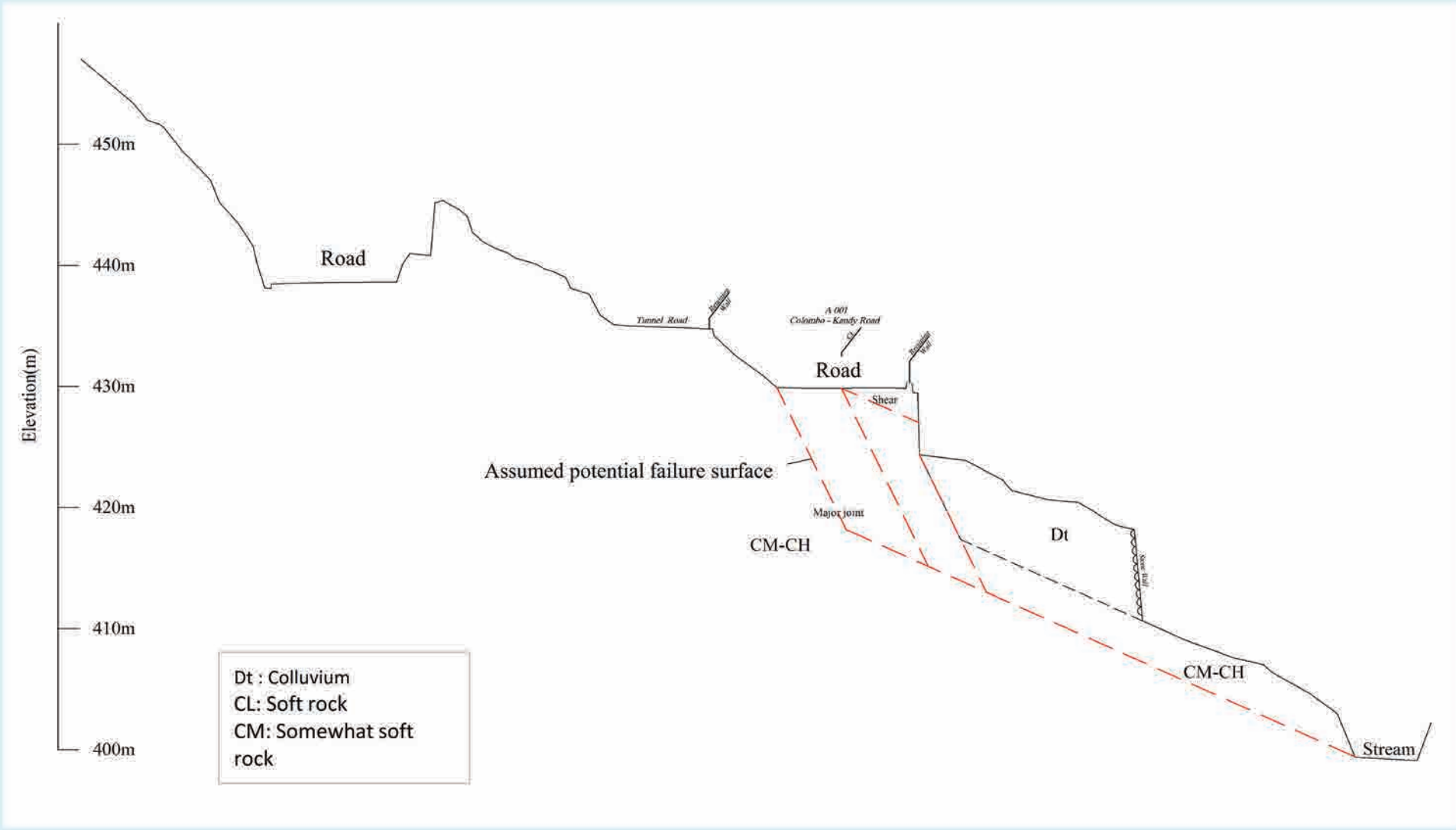
District	Kegalla		Management office	Kegalla		Road No	A-001	Road Name	Colombo - Kandy road								
Site No.	31		Disaster Type	Slope Failure		Location	Start	99/8	End	99km		latitude	7°15'07.8"N		longitude	80°30'32.9"E	
Main body	Vally side		Traffic control		Hourly		mm	Traffic volume	Week day	23594/12h		holiday			Bus route		Detour	
Topo map/Sketch																	



Plan

Inventory Sheet A

Cross Section



Cross Section

Site No.	31

Inventory Sheet B

(Slope Failure・Rock Fall)

Checked by	Yang Pucal
Organization	JICA Survey Team

[Cause] (Ai)

Item		Cause	Classification		Point	score
Topography	Topography with factor of	G1 : Talus slope G2 : Collapsed slope, Clear knick line G3 : Terrace scarp, Overhung slope Catachment slope, debris flow deposit	G1		3	5 (6)
			Not G1		0	
			G2 and G3		3	
			G2 or G3		2	
			No G2 and G3		0	
Geological conditions	Soil property	Erodable soil (Mainly arenaceous soil) Silty sand, silty clay, clay Cobble , pebble	Conspicuous		8	8 (8)
			Slightly consequenous		4	
			None		0	
	Rock character	Jointed rock, rocks that are weak against erosion and weathering.	Conspicuous		12	(12)
			Slight conspicuous		6	
			None		0	
	Geological Structure	Dip slope (bedding, weak plane)	Conspicuous		8	4 (14)
			None		0	
		Soft soil coverline baserock, Hard rock overlies weak rock, Others	Conspicuous		6	
			Slightly conspicuous		4	
			None		0	
Surface codition		Surface soil, boulder, rock	Unstable		12	12 (12)
			Slightly unstable		6	
			Stabel		0	
		Spring water	Natural water spring		8	4 (8)
			Water seepage scar		4	
			Nil		0	
		Vegetation	No-vegitation, Grassland		5	3 (5)
			Complex (grass, structure)		3	
			Structure		1	
Geometry		Height (H), gradient (i)	soil	H>30m	18	15 (18)
				H<30, i > 30°	15	
				i < 30°, 15<H<30m	10	
				i <30°, H<15m	5	
			rock	H>50m	18	
				30<H<50m	16	
				15<H<30m	12	
				H<15m	10	
Deformation		Deformation of the survey slope (small soil and rock falls, gully erosion, scouring, depression, bulge, fallen tree, cracks, etc.)	More than one clear evidences		12	8 (18)
			Obscure evidence		8	
			No evidence		0	
		Deformation of the adjacent slope (Rock fall, collapse, cracks, bulge, and other deformation)	More than one clear evidences		5	0 (5)
			Obscure evidence		3	
			No evidence		0	
			Total score		(A) 55	

[Countermeasure] (B) = (A) +α or (A) ×0

Well effective against the potential slope failure and rock fall.	×0	
Effective but not completely against the potential rock fall and slope failure.	−20	
Not completely protected from the potential slope failure and rock fall.	−10	✓
No countermeasure was constructed, or the existing countermeasure cannot be expected effective.	±0	

sum total	(B) 45

[History] (C)

Disaster history	point	check
The disaster has caused a traffic disturbance or closure after the recent implementation of countermeasures.	100	
No traffic disturbance has occurred but there is a record of comparatively serious rock falls and slope failures that reached to the road.	70	
There is a record of rock falls and slope failures on a small scale that that did not reach to the road.	40	✓
No disaster records	0	
	(C)	40

(D) =MAX (B,C)

Score from cause	(B) 45
Score from history	(c) 40
Among (B)&(C), large one.	(D)=MAX(B,C) **45**

[Description]

Slopes of this site is close to the valley of the river and Colombo-Kandy road of A01change the route after crossing the valley around the site. Surface flow might concentrate to this valley on the basis of interpretation of airial photos and topographic maps, therefore both surface and groundwater flow appear to cause many sorts of failures in this site.. Scurs of failures are confirmed at places in and around this site.

Site No.	31	Inventory Sheet C	Date	

P1 Deformation situation of the road surface on the valley side of the road

P2 Deformed concrete wall due presumably to movement on the valley side of the road

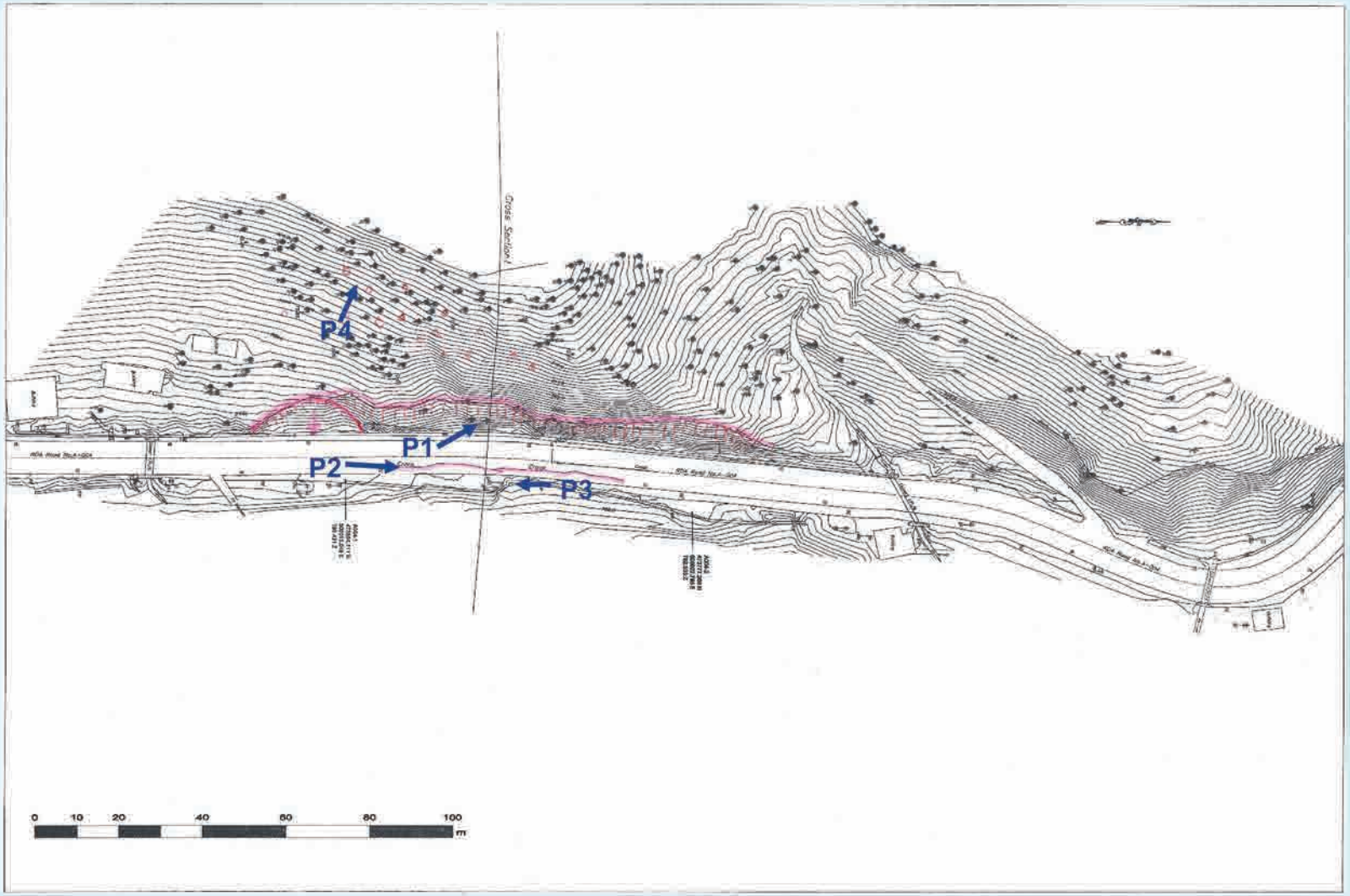
P3 Open cracks observed below the road

P4 Foliation joints dipping adversely out of the slope.

Inventory Sheet A

District	Badulla		Management office	Bandarawela		Road No	A-004	Road Name	Colombo-Ratnapura-Wellawaya-Batticaloa road										
Site No.	33		Disaster Type	Rock fall		Location	Start	171/5	End	172/2	latitude	6°45'47.1"N		longitude	80°50'46.1"E				
Main body	Both		Traffic control			Hourly		mm	Traffic volume		Week day	9057/12h		holiday			Bus route		Detour	

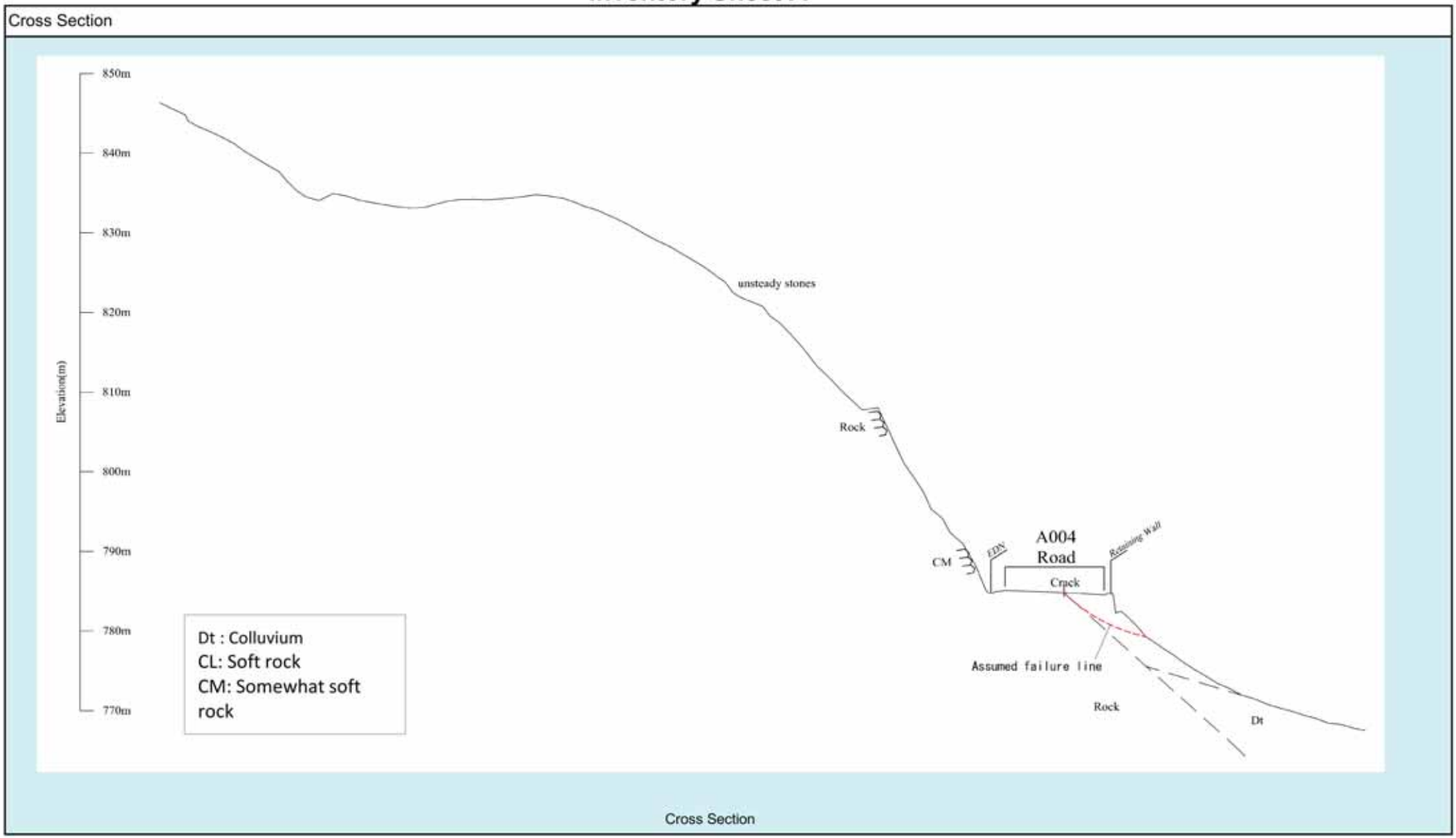
Topo map/Sketch



Plan

Inventory Sheet A

Cross Section



Cross Section

Site No.	33

Inventory Sheet B

(Slope Failure • Rock Fall)

Checked by	Yang Pucai
Organization	JICA Survey Team

[Cause] (Ai)

Item		Cause	Classification		Point	score
Topography	Topography with factor of	G1 : Talus slope G2 : Collapsed slope, Clear knick line G3 : Terrace scarp, Overhung slope Catachment slope, debris flow deposit	G1		3	5 (6)
			Not G1		0	
			G2 and G3		3	
			G2 or G3		2	
			No G2 and G3		0	
Geological conditions	Soil property	Erodable soil (Mainly arenaceous soil) Silty sand, silty clay, clay Cobble , pebble	Conspicuous		8	8 (8)
			Slightly consequenous		4	
			None		0	
	Rock character	Jointed rock, rocks that are weak against erosion and weathering.	Conspicuous		12	12 (12)
			Slight conspicuous		6	
			None		0	
	Geological Structure	Dip slope (bedding, weak plane)	Conspicuous		8	4 (14)
			None		0	
		Soft soil coverline baserock, Hard rock overlies weak rock, Others	Conspicuous		6	
			Slightly conspicuous		4	
			None		0	
Surface codition		Surface soil, boulder, rock	Unstable		12	6 (12)
			Slightly unstable		6	
			Stabel		0	
		Spring water	Natural water spring		8	4 (8)
			Water seepage scar		4	
			Nil		0	
		Vegetation	No-vegitation, Grassland		5	3 (5)
			Complex (grass, structure)		3	
			Structure		1	
Geometry		Height (H), gradient (i)	soil	H>30m	18	15 (18)
				H<30, i > 30°	15	
				i < 30°, 15<H<30m	10	
				i <30°, H<15m	5	
			rock	H>50m	18	
				30<H<50m	16	
				15<H<30m	12	
				H<15m	10	
Deformation		Deformation of the survey slope (small soil and rock falls, gully erosion, scouring, depression, bulge, fallen tree, cracks, etc.)	More than one clear evidences		12	8 (18)
			Obscure evidence		8	
			No evidence		0	
		Deformation of the adjacent slope (Rock fall, collapse, cracks, bulge, and other deformation)	More than one clear evidences		5	0 (5)
			Obscure evidence		3	
			No evidence		0	
			Total		(A) 61	

[Countermeasure] (B) = (A) +α or (A) ×0

Well effective against the potential slope failure and rock fall.	×0	
Effective but not completely against the potential rock fall and slope failure.	−20	
Not completely protected from the potential slope failure and rock fall.	−10	
No countermeasure was constructed, or the existing countermeasure cannot be expected effective.	±0	✓

Total	(B) 61

[History] (C)

Disaster history	point	check
The disaster has caused a traffic disturbance or closure after the recent implementation of countermeasures.	100	
No traffic disturbance has occurred but there is a record of comparatively serious rock falls and slope failures that reached to the road.	70	
There is a record of rock falls and slope failures on a small scale that that did not reach to the road.	40	✓
No disaster records	0	
	(C)	40

(D) =MAX (B,C)

Score from cause	(B) 61
Score from history	(c) 40
Among (B)&(C), large one.	(D)=MAX(B,C) **61**

[Description]

Slopes of this site consisting of relatively to moderately weathered rocks with relatively thin overburden of debris are observed both sides of the road. Small size of scurs are observed at limited places. Houses of thirteen (13) were damaged due to slope disasters in 1989 next to this site.

Site No.	33	Inventory Sheet C	Date	June 25, 2019

P1 The cut slope situation of the target section

P3 Cracks occurring on the block wall on the valley side of the road

P2 Cracks and deformation situation of the road surface

P4 Numerious boulders distributed on the upper slope of the road cut slope (diameter 60㎝)