Godawari Irrigation scheme

Coarse loamy, mixed, thermic Anthraquic Eurotrochrepts

Test Pit No	:	P22
Location	:	Godawari Irrigation scheme
Physiography	:	Alluvial Terrace
Topography	:	Gently sloping
Slope	:	5° ↑SE 1° ↓NW
Parent material	:	Alluvium
Drainage	:	Somewhat poorly drained
Ground Water	:	N.S
Permeability	:	Moderate
Moisture	:	Moist
Present land use or vegetation	:	Paddy - Wheat

Horizon	Depth(cm)	Soil Description
Ap1	0-14	10YR 4/3 (dark brown); silt loam; many fine distinct 7.5YR 4/4 mottles; weak medium subangular blocky; friable; many fine fibrous roots; pH 5.8; hardness 18 mm; gradual smooth boundary
Ap2	14-21	10YR 4/4 (dark yellowish brown); silt loam; many fine prominent 5YR 4/6 mottles; moderate medium angular blocky; friable to firm; few fine fibrous roots; few brick pieces; pH 5.8; hardness 18 mm; clear smooth boundary
A1b	21-55	10YR 3/3 (dark brown); loam; strong columnar breaking into coarse angular + subangular blocky; hard; many fine tubular verticle and horizontal pores; few Fe Mn concretions; pH 7.5; hardness 27 mm; gradual smooth boundary
IIB21	55-87	10YR 4/3 (dark brown); clay loam; moderate columnar breaking into medium subangular blocky; firm; many fine tubular verticle and horizontal pores; pH 8.0; hardness 26 mm; clear smooth boundary
IIB22	87-130	10YR 5/6 (yellowish brown); silty clay loam/silty clay; moderate columnar breaking into fine and medium subangular blocky; firm; common Fe Mn concretions; hardness 25 mm; abrupt smooth boundary
IIIC	130+	Stone layer

Pit No.: 22 Scheme: Godawari

Depth (cm)	pH (1:2.5)	E.C. mS/cm (1:2.5)	Total CaCO3 %	Particle size distribution				O.C. %	Total N %	Av. P ppm
				Sand %	Silt %	Clay %	Texture Class			
0-21	5.8	0.055	0.07	37	53	10	SiL	2	0.18	4.2
21-55	7.5	0.125	-	45	45	12	L	-	-	-

Depth (cm)	Exchangeable Cation me/100g				CEC me/100g	B/S %	Soluble Cation and Anions			
	Ca	Mg	K	Na			Ca me/l	Mg me/l	Na ppm	Cl me/l
0-21	7.21	2.06	0.09	0.05	15.32	61.2	0.38	0.18	3.5	0.22
21-55	-	-	-	-	-	-	-	-	-	-

Coarse loamy, mixed, thermic Aeric Endoaquepts

Test Pit No	:	P23
Location	:	Godawari Irrigation scheme
Physiography	:	Lower alluvial terrace
Topography	:	Nearly level to gently sloping
Slope	:	7° ↑E 0.5° ↓W
Parent material	:	Alluvium
Drainage	:	Moderately well drained
Ground Water	:	at 85 cm
Permeability	:	Moderate
Moisture	:	Wet
Present land use or vegetation	:	Paddy - Wheat

Horizon	Depth(cm)	Soil Description
Ap	0-14	10YR 3/3 (dark brown); silt loam; weak fine subangular blocky; friable; many fine fibrous roots; pH 5.8 ; hardness 14 mm; gradual smooth boundary
B21	14-44	10YR 3/4 (dark brown); loam; many fine faint 7.5YR 4/4 mottles; weak fine subangular blocky; friable; many fine tubular verticle and horizontal pores; pH 6.4; hardness 21 mm; gradual smooth boundary
B22	44-74	10YR 5/4 (brown); loam; massive; friable; hardness 17 mm; gradual smooth boundary
BC	74-110	10YR 4/3 (dark brown); loam; massive and wet
C	110-160	10YR 3/2 (very dark greyish brown); loam; massive (grey layer)
CR	160+	Small stone + pebble layer followed by gley

Pit No.: 23 Scheme: Godawari

Depth (cm)	pH (1:2.5)	E.C. mS/cm (1:2.5)	Total CaCO3 %	Particle size distribution				O.C. %	Total N %	Av. P ppm
				Sand %	Silt %	Clay %	Texture Class			
0-14	5.8	0.056	0.07	37	51	12	SiL	3.65	0.19	14.3
14-44	6.4	0.078	-	45	43	12	L	-	-	-

Depth (cm)	Exchangeable Cation me/100g				CEC me/100g	B/S %	Soluble Cation and Anions			
	Ca	Mg	K	Na			Ca me/l	Mg me/l	Na ppm	Cl me/l
0-14	6.7	2.06	0.21	0.05	14.25	62.5	0.33	0.08	3	0.22
14-44	-	-	-	-	-	-	-	-	-	-

Coarse loamy, mixed, thermic Fluventic Eutrochrepts

Test Pit No	:	P24
Location	:	Godawari Irrigation scheme
Physiography	:	Alluvial Terrace
Topography	:	Nearly level
Slope	:	1.5° ↑NE 2° ↓SW
Parent material	:	Alluvium
Drainage	:	Moderately well drained
Ground Water	:	N.S
Permeability	:	Moderate
Moisture	:	Slightly moist
Present land use or vegetation	:	Paddy - Wheat

Horizon	Depth(cm)	Soil Description
Ap1+Ap2	0-17	10YR 4/3 + 4/4 (dark brown + dark yellowish brown); silt loam; common fine faint mottles; weak fine subangular blocky; friable; many fine fibrous roots; pH 6.1; hardness 15 mm
AB	17-28	10YR 5/6 + 4/6 (yellowish brown + dark yellowish brown); loam; common fine faint mottles; slightly platy breaking into weak subangular blocky; firm; many fine tubular verticle and horizontal pores; very few fine roots; hardness 24 mm; gradual smooth bound
BC	28-80	10YR 5/4 (yellowish brown); gravelly loam; weak structure; friable; few fine tubular verticle and horizontal pores; gravels + pebbles 15%; few Fe Mn concretions; pH 6.8; hardness 22 mm; clear smooth boundary
IIB	80-130	10YR 4/6 (dark yellowish brown); loam; massive; friable; few Fe Mn concretions; hardness 26 mm; clear smooth boundary
IIC	130-180	10YR 5/4 (yellowish brown); silty clay loam; massive; many fine Fe Mn concretion

Pit No.: 24 Scheme: Godawari

Depth (cm)	pH (1:2.5)	E.C. mS/cm (1:2.5)	Total CaCO3 %	Particle size distribution				O.C. %	Total N %	Av. P ppm
				Sand %	Silt %	Clay %	Texture Class			
0-17	6.1	0.055	0.07	37	52	11	SiL	2.04	0.19	16.2
28-80	6.8	0.07	-	47	40	13	L	-	-	-

Depth (cm)	Exchangeable Cation me/100g				CEC me/100g	B/S %	Soluble Cation and Anions			
	Ca	Mg	K	Na			Ca me/l	Mg me/l	Na ppm	Cl me/l
0-17	6.7	2.06	0.17	0.05	15.51	57.4	0.44	0.17	3	0.22
28-80	-	-	-	-	-	-	-	-	-	-

Coarse loamy over fine loamy, mixed, thermic Typic Eutrochrepts

Test Pit No	:	P25
Location	:	Godawari Irrigation scheme
Physiography	:	Depressional fan
Topography	:	Very gently sloping
Slope	:	4° ↑E 1° ↓W
Parent material	:	Alluvium fan
Drainage	:	Well drained
Ground Water	:	N.S
Permeability	:	Moderately rapid
Moisture	:	Slightly dry surface and moist subsurface
Present land use or vegetation	:	Paddy - Wheat

Horizon	Depth(cm)	Soil Description
Ap	0-13	10YR (dark yellowish brown); loam; very few fine faint 10YR 4/6 mottles; weak fine subangular blocky; friable; many fine fibrous roots; pH 6.4; hardness 23 mm; gradual smooth boundary
AB	13-35	10YR 4/3 (dark brown); loam; moderate columnar breaking into fine medium subangular blocky; friable; many fine tubular verticle and horizontal pores; few fine roots; hardness 24 mm; clear smooth boundary
B21	35-70	10YR 3/3 (dark brown); loam; strong columnar breaking into medium subangular blocky; friable; pH 6.5; hardness 25 mm; gradual smooth boundary
B22	70-105	5YR 3/3 (dark reddish brown); clay; massive; firm clear smooth boundary
B23	105-155	7.5YR 4/6 (strong brown); silty clay; massive; firm

Pit No.: 25 Scheme: Godawari

Depth (cm)	pH (1:2.5)	E.C. mS/cm (1:2.5)	Total CaCO3 %	Particle size distribution				O.C. %	Total N %	Av. P ppm
				Sand %	Silt %	Clay %	Texture Class			
0-13	6.4	0.055	0.14	47	42	11	L	1.11	0.1	8.1
35-70	6.5	0.055	-	47	40	13	L	-	-	-

Depth (cm)	Exchangeable Cation me/100g				CEC me/100g	B/S %	Soluble Cation and Anions			
	Ca	Mg	K	Na			Ca me/l	Mg me/l	Na ppm	Cl me/l
0-13	9.27	3.09	0.13	0.05	19.35	64.5	0.66	0.15	2.5	0.22
35-70	-	-	-	-	-	-	-	-	-	-

Kotkhu Irrigation scheme

Fine Loamy, mixed, thermic Typic Haplustalfs

Test Pit No	:	P43
Location	:	Kotkhu Irrigation scheme
Physiography	:	Ancient relic terrace
Topography	:	Gently sloping
Slope	:	1.5° ↑S 2.5° ↓N
Parent material	:	Old alluvium
Drainage	:	Moderately well drained
Ground Water	:	N.S.
Permeability	:	Moderate
Moisture	:	moist
Present land use or vegetation	:	Maize + soyabean - mustard

Horizon	Depth(cm)	Soil Description
Ap	0-19	5YR 3/3 (dark reddish brown); loam; moderate medium subangular blocky + granular; friable; many fine fibrous roots; pH 6.4; hardness 14 mm; abrupt smooth boundary
B21t	19-49	5YR 4/4 (reddish brown); clay loam; moderate columnar breaking into medium sub-angular blocky; firm; many fine tubular pores ad cracks; thin clay skins on ped faces (7.5YR 4/2); gradual smooth boundary
B22t	49-100	5YR 5/4 (reddish brown); clay loam; strong fine sub-angular blocky + granular; firm; thin clay cutans along ped faces; few FeMn concretions (strong yellow)
B23	100-125	7.5YR 5/6 (strong brown); clay loam

Pit No.: 43 Scheme: Kotkhu

Depth (cm)	pH (1:2.5)	E.C. mS/cm (1:2.5)	Total CaCO3 %	Particle size distribution				O.C. %	Total N %	Av. P ppm
				Sand %	Silt %	Clay %	Texture Class			
0-19	6.4	0.033	0.14	35	47	18	L	2.05	0.17	80.1
19-49	6.7	0.055	-	37	33	30	CL	-	-	-

Depth (cm)	Exchangeable Cation me/100g				CEC me/100g	B/S %	Soluble Cation and Anions			
	Ca	Mg	K	Na			Ca me/l	Mg me/l	Na ppm	Cl me/l
0-19	10.22	1.96	0.31	0	18.51	65.8	0.89	0.33	1	0.11
19-49	-	-	-	-	-	-	-	-	-	-

Coarse Loamy, mixed, thermic Anthraquic Eutrochrepts

Test Pit No	:	P44
Location	:	Kotkhu Irrigation scheme
Physiography	:	Ancient lake and river terrace
Topography	:	Nearly level
Slope	:	1° ↑S 2° ↓N
Parent material	:	Old alluvium
Drainage	:	Moderately well drained
Ground Water	:	N.S.
Permeability	:	Moderate
Moisture	:	Moist
Present land use or vegetation	:	Paddy-wheat

Horizon	Depth(cm)	Soil Description
Ap	0-16	10YR 5/2 (greyish brown); loam; few fine faint 7.5YR 3/4 mottles; weak fine subangular blocky; friable; many fine fibrous roots; pH 5.6; hardnes 22 mm; abrupt smooth boundary
B21	16-50	10YR 5/3 (brown) + 10YR 3/6 (dark yellowish brown); weak medium subangular blocky; friable to firm; many fine tubular verticle and horizontal pores; few hardness 26 mm; gradual smooth boundary
B22	50-90	10YR 6/4 (light yellowish brown); loam; very weak medium subangular bocky; firm; gradual smooth boundary
B23	90-110	10YR 5/6 (yellowish brown); loam/clay loam; gradual smooth boundary
C	110-125	10YR 5/4 (yellowish brown); silty clay loam

Pit No.: 44 Scheme: Kotkhu

Depth (cm)	pH (1:2.5)	E.C. mS/cm (1:2.5)	Total CaCO3 %	Particle size distribution				O.C. %	Total N %	Av. P ppm
				Sand %	Silt %	Clay %	Texture Class			
0-16	5.6	0.046	0.07	41	43	16	L	1.94	0.17	47.2
16-50	6.2	0.056	-	40	42	18	L	-	-	-

Depth (cm)	Exchangeable Cation me/100g				CEC me/100g	B/S %	Soluble Cation and Anions			
	Ca	Mg	K	Na			Ca me/l	Mg me/l	Na ppm	Cl me/l
0-16	7.18	1.96	0.27	0	16.33	57.1	0.44	0.17	1	0.22
16-50	-	-	-	-	-	-	-	-	-	-

Fine Loamy, mixed, thermic Aquic Eutrochrepts

Test Pit No	:	P45
Location	:	Kotkhu Irrigation scheme
Physiography	:	Upper terrace
Topography	:	Nearly level
Slope	:	0.5° ↑EW 0.5° ↓NE
Parent material	:	Old alluvium
Drainage	:	Somewhat well drained
Ground Water	:	N.S
Permeability	:	Slow
Moisture	:	Moist and wet after 55 cm depth
Present land use or vegetation	:	Paddy - Wheat

Horizon	Depth(cm)	Soil Description
Ap	0-15	10YR 4/2 (dark greyish brown); loam; weak coarse subangular blocky; firm; many fine fibrous roots; abrupt smooth boundary
B21	15-55	10YR 5/2 (greyish brown); clay loam; weak coarse subangular blocky; hard; many fine tubular verticle and horizontal pores; few FeMn concretions; pH 6.6; hardness 22 mm; gradual smooth boundary
B22	55-85	10YR 6/3 (pale brown); silty clay loam; many fine 7.5YR 5/6 mottles; massive; hard; hardness 20 mm; gradual smooth boundary
B23	85-150	10YR6/3 (pale brown); silty clay ; massive; hard; gradual; smooth boundary
C	150-180	10YR 7/3 (very pale brown) + 10YR 6/6 (brownish yellow); silty clay; massive; hard

Pit No.: 45 Scheme: Kotkhu

Depth (cm)	pH (1:2.5)	E.C. mS/cm (1:2.5)	Total CaCO3 %	Particle size distribution				O.C. %	Total N %	Av. P ppm
				Sand %	Silt %	Clay %	Texture Class			
0-15	6.0	0.055	0.21	38	46	16	L	2.09	0.18	4.1
15-55	6.6	0.055	-	40	42	18	L	-	-	-

Depth (cm)	Exchangeable Cation me/100g				CEC me/100g	B/S %	Soluble Cation and Anions			
	Ca	Mg	K	Na			Ca me/l	Mg me/l	Na ppm	Cl me/l
0-15	17.13	3.17	0.17	0.05	24.51	83.3	0.55	0.26	2.2	0.22
15-55	-	-	-	-	-	-	-	-	-	-

Fine Loamy, mixed, thermic Aquic Eutrochrepts

Test Pit No	:	P46
Location	:	Kotkhu Irrigation scheme
Physiography	:	Lower alluvial terrace
Topography	:	Nearly level
Slope	:	0.5° ↑S 0.5° ↓N
Parent material	:	Old alluvium
Drainage	:	Somewhat poorly drained
Ground Water	:	N.S
Permeability	:	Slow
Moisture	:	moist
Present land use or vegetation	:	Paddy - Wheat

Horizon	Depth(cm)	Soil Description
Ap	0-14	10YR 4/2 (dark greyish brown); silty clay loam; weak coarse subangular blocky; friable; many fine fibrous roots; pH 5.7; hardness 17 mm; gradual smooth boundary
B21	14-42	10YR 4/2 + 4/4 (dark greyish brown + dark yellowish brown); silty clay loam; weak medium subangular blocky; firm; thick silt cutans along ped faces and pores; pH 6.4; hardness 20 mm; gradual smooth boundary
B22	42-110	10YR 5/1 (grey) + 7.5YR 3/4 (dark brown); silty clay loam; moderate medium subangular blocky; firm; hardness 20 mm; gradual smooth boundary
BC	110-150	10YR 5/3 (brown); silty clay loam; massive; firm;

Pit No.: 46 Scheme: Kotkhu

Depth (cm)	pH (1:2.5)	E.C. mS/cm (1:2.5)	Total CaCO3 %	Particle size distribution				O.C. %	Total N %	Av. P ppm
				Sand %	Silt %	Clay %	Texture Class			
0-14	5.7	0.033	0.21	18	52	30	SiCL	1.87	0.15	4.2
14-42	6.4	0.07	-	18	52	30	SiCL	-	-	-

Depth (cm)	Exchangeable Cation me/100g				CEC me/100g	B/S %	Soluble Cation and Anions			
	Ca	Mg	K	Na			Ca me/l	Mg me/l	Na ppm	Cl me/l
0-14	15.47	3.05	0.06	0	23.33	79.7	0.66	0.25	1	0
14-42	-	-	-	-	-	-	-	-	-	-

Fine Loamy, mixed, thermic Oxyaquic Udorthents

Test Pit No	:	P61
Location	:	Kotkhu Irrigation scheme
Physiography	:	Low spot in upper terrace (excavated for brick making 4 years earlier)
Topography	:	Nearly level
Slope	:	0.5° ↑S 0.5° ↓N
Parent material	:	Old alluvium
Drainage	:	Somewhat poorly drained
Ground Water	:	N.S.
Permeability	:	Slow
Moisture	:	Moist
Present land use or vegetation	:	Paddy-wheat

Horizon	Depth(cm)	Soil Description
Ap	0-18	10YR 4/3 (dark brown); clay loam; massive with weak clods; friable; many fine fibrous roots; pH 6.4; hardness 13 mm; gradual smooth boundary
BC	18-38	10YR 5/3 + 5/1 + 4/4 (brown + grey + dark yellowish brown); silty clay loam (fragments of different coloured soils); massive chunks; firm; very fine pores; very few fine roots; pH 6.8; hardness 18 mm; abrupt irregular boundary
C1	38-105	10YR 7/1 (light grey); very fine sand; massive; friable; hardness 21 mm; abrupt smooth boundary
C2	105-155	10YR 2/1 (black); silty clay; loam (Kalimati); massive and wet; firm

Pit No.: 61 Scheme: Kotkhu

Depth (cm)	pH (1:2.5)	E.C. mS/cm (1:2.5)	Total CaCO3 %	Particle size distribution				O.C. %	Total N %	Av. P ppm
				Sand %	Silt %	Clay %	Texture Class			
0-18	6.4	0.033	0.14	28	42	30	CL	0.88	0.07	8.3
18-38	6.8	0.055		18	51	31	SiCL	-	-	-

Depth (cm)	Exchangeable Cation me/100g				CEC me/100g	B/S %	Soluble Cation and Anions			
	Ca	Mg	K	Na			Ca me/l	Mg me/l	Na ppm	Cl me/l
0-18	15.77	3.52	0.09	0.1	28.52	68.2	6.88	0.34	4.5	0.22
18-38	-	-	-	-	-	-	-	-	-	-

Lubhu Irrigation schemes

Fine Loamy, mixed, Thermic Typic Plaggepts

Test Pit No	:	P47
Location	:	Tikathali, Lubhu Irrigation scheme
Physiography	:	Lower alluvial terrace
Topography	:	Nearly level
Slope	:	0.5° ↑ W 0.5° ↓ E
Parent material	:	Old alluvium
Drainage	:	Moderately well drained
Ground Water	:	N.S
Permeability	:	Moderately slow
Moisture	:	Moist
Present land use or vegetation	:	Maize + soyabean - mustard

Horizon	Depth(cm)	Soil Description
Ap	0-15	10YR 4/3 (dark brown); clay loam; moderate fine subangular blocky; firm; many fine fibrous roots; pH 5.5; hardness 25 mm; gradual smooth boundary
B21	15-54	10YR 4/3 (dark brown); clay loam; moderate columnar breaking into medium subangular blocky; firm; many fine verticle and horizontal pores; few clay skins on ped faces and pores; pH 6.0; hardness 26 mm; gradual smooth boundary
B22g	54-132	10YR 5/2 (greyish brown) + 10YR 3/4 (dark yellowish brown); silty clay loam; moderate columnar breaking into medium sub-angular blocky; firm; hardness 23 mm; abrupt smooth boundary
C	132-160	10YR 6/6 (brownish yellow); very fine sandy loam; massive friable

Pit No.: 47 Scheme: Lubhu

Depth (cm)	pH (1:2.5)	E.C. mS/cm (1:2.5)	Total CaCO3 %	Particle size distribution				O.C. %	Total N %	Av. P ppm
				Sand %	Silt %	Clay %	Texture Class			
0-15	5.5	0.059	0.14	40	32	28	CL	2.12	0.18	32.3
15-54	6.0	0.056	-	38	34	28	CL	-	-	-

Depth (cm)	Exchangeable Cation me/100g				CEC me/100g	B/S %	Soluble Cation and Anions			
	Ca	Mg	K	Na			Ca me/l	Mg me/l	Na ppm	Cl me/l
0-15	10.5	2.19	0.18	0.1	22.15	58.3	0.66	0.45	4.5	0.22
15-54	-	-	-	-	-	-	-	-	-	-

Coarse Loamy, mixed, Thermic Aeric Endoaquepts

Test Pit No	:	P48
Location	:	Tikathali, Lubhu Irrigation scheme
Physiography	:	Recent flood plain/basin
Topography	:	Nearly level
Slope	:	1° ↑SE 1° ↓NW
Parent material	:	Recent alluvium
Drainage	:	Somewhat poorly drained
Ground Water	:	at 115 cm
Permeability	:	Moderate
Moisture	:	Moist
Present land use or vegetation	:	Paddy - potato/vegetables/wheat

Horizon	Depth(cm)	Soil Description
Ap1	0-15	10YR 4/3 (dark brown); loam; many fine faint 10YR 4/2 mottles; weak subangular blocky; friable; many fine fibrous roots; pH 6.0; hardness 10 mm; clear wavy boundary
Ap2	15-30	10YR 3/3 (dark brown); loam; many fine distinct 7.5YR 4/6 mottles; massive; friable; very porous hardness 16mm; clear wavy boundary
B21	30-115	10YR 5/2 (greyish brown); many fine prominent 5YR 4/4 mottles; massive; friable; very porous; pH 6.4; hardness 15 mm; gradual smooth boundary
B22	115-125	2.5Y 5/2 (greyish brown); loam; common coarse distinct 7.5YR 4/6 mottles; massive; abrupt broken boundary
C	125+	Very gravelly sand; gravels + pebbles layer

Pit No.: 48 Scheme: Lubhu

Depth (cm)	pH (1:2.5)	E.C. mS/cm (1:2.5)	Total CaCO3 %	Particle size distribution				O.C. %	Total N %	Av. P ppm
				Sand %	Silt %	Clay %	Texture Class			
0-15	6.0	0.046	0.07	41	44	15	L	1.37	0.12	32.1
30-115	6.4	0.056	-	40	47	13	L	-	-	-

Depth (cm)	Exchangeable Cation me/100g				CEC me/100g	B/S %	Soluble Cation and Anions			
	Ca	Mg	K	Na			Ca me/l	Mg me/l	Na ppm	Cl me/l
0-15	7.18	2.96	0.19	0.05	16.42	57.2	0.66	0.25	3	0.22
30-115	-	-	-	-	-	-	-	-	-	-

Fine Loamy, mixed, thermic Typic Plaggepts

Test Pit No	:	P49
Location	:	Lubhu, Tikathali
Physiography	:	Lower alluvial terrace
Topography	:	Nearly level
Slope	:	1° ↑SW 2° ↓NE
Parent material	:	Old alluvium
Drainage	:	Moderately well drained
Ground Water	:	at 100 cm, seepage at 60 cm
Permeability	:	Moderate
Moisture	:	Moist
Present land use or vegetation	:	Paddy - Wheat (Yeti Brick Kiln nearby)

Horizon	Depth(cm)	Soil Description
Ap	0-8	10YR 3/3 (dark brown); loam; weak coarse subangular blocky; firm; many fine fibrous roots; pH 6.3; hardness 24 mm; gradual smooth boundary
B	8-43	10YR 4/3 + 4/6 (dark brown + dark yellowish brown); clay loam; moderate columnar breaking into weak coarse subangular blocky; firm; many fine verticle and horizontal pores; abundant "kalimati" pieces of dark yellowish brown colour; pH 6.6; hardness 28 mm;
A1b	43-110	10YR 4/2 (dark greyish brown); clay loam; massive; friable to firm; very porous; few fine and medium roots; hardness 19 mm; abrupt smooth boundary
IIB	110-140	10YR 4/2 (dark greyish brown) + 7.5YR 4/6 (strong brown); silty clay loam; massive; firm

Pit No.: 49 Scheme: Lubhu

Depth (cm)	pH (1:2.5)	E.C. mS/cm (1:2.5)	Total CaCO3 %	Particle size distribution				O.C. %	Total N %	Av. P ppm
				Sand %	Silt %	Clay %	Texture Class			
0-8	6.3	0.055	0.21	40	47	13	L	1.73	0.15	8.5
8-43	6.6	0.055	-	38	34	28	CL	-	-	-

Depth (cm)	Exchangeable Cation me/100g				CEC me/100g	B/S %	Soluble Cation and Anions			
	Ca	Mg	K	Na			Ca me/l	Mg me/l	Na ppm	Cl me/l
0-8	13.81	2.94	0.17	0.05	25.31	67.1	0.55	0.16	4.1	0.22
8-43	-	-	-	-	-	-	-	-	-	-

Fine Loamy, mixed, thermic Aquic Eutrochrepts

Test Pit No	:	P50
Location	:	Lubhu Irrigation scheme
Physiography	:	Ancient lake and river terrace
Topography	:	Nearly level
Slope	:	1° ↑E 1.5° ↓W
Parent material	:	Old alluvium
Drainage	:	Moderately well drained
Ground Water	:	N.S.
Permeability	:	Slow
Moisture	:	Moist
Present land use or vegetation	:	Paddy - wheat/mustard

Horizon	Depth(cm)	Soil Description
Ap	0-10	10YR 5/3 (brown); clay loam; many fine faint 10YR 4/6 mottles; moderate fine subangular blocky roots; pH 5.6; hardness 18 mm; gradual smooth boundary
B21	10-55	10YR 4/2 (dark greyish brown); silty clay loam; many fine distinct 7.5YR 4/4 mottles; moderate columnar breaking into fine and medium subangular blocky; many fine tubular verticle and horizontal pores; few fine roots; thin silt cutans on ped faces and por
B22	55-135	10YR 6/4 (light yellowish brown); silty clay loam; many fine distinct 7.5YR 5/8 mottles; weak moderate medium subangular + angular blocky; many fine tubular verticle and horizontal pores; hardness 23 mm; clear smooth boundary
C	135-160	7.5YR 3/4 (dark brown); clay; massive; hard; many coarse Fe Mn concretions

Pit No.: 50 Scheme: Lubhu

Depth (cm)	pH (1:2.5)	E.C. mS/cm (1:2.5)	Total CaCO3 %	Particle size distribution				O.C. %	Total N %	Av. P ppm
				Sand %	Silt %	Clay %	Texture Class			
0-10	5.6	0.046	0.07	28	43	29	CL	2.48	0.18	7.3
10-55	6.2	0.055		17	51	32	SiCL	-	-	-

Depth (cm)	Exchangeable Cation me/100g				CEC me/100g	B/S %	Soluble Cation and Anions			
	Ca	Mg	K	Na			Ca me/l	Mg me/l	Na ppm	Cl me/l
0-10	11.05	2.4	0.21	0	21.3	63.8	0.33	0.08	1.2	0.11
10-55	-	-	-	-	-	-	-	-	-	-

Mahadev Khola Irrigation scheme

Coarse Loamy over fine loamy, mixed, thermic Anthraquic Entrochrepts

Test Pit No	:	P19
Location	:	Dadhikot, Mahadev Khola Irrigation Project
Physiography	:	Upper alluvial terrace
Topography	:	Nearly level
Slope	:	1° ↑E 1.5° ↓W
Parent material	:	Old alluvium
Drainage	:	Somewhat poorly drained
Ground Water	:	N.S
Permeability	:	Moderately rapid
Moisture	:	Slightly moist
Present land use or vegetation	:	Paddy - Wheat/ mustard

Horizon	Depth(cm)	Soil Description
Ap1+Ap2	0-19	10YR 5/3 (brown); silt loam; many fine faint 10YR 4/6 mottles; weak columnar breaking into fine subangular blocky; friable; many fine fibrous roots; pH 5.6; hardness 18 mm; abrupt broken boundary
AB	19-48	10YR 4/3 (dark brown); loam; many fine distinct 7.5YR 4/6 mottles; moderate medium subangular blocky; friable; many fine tubular verticle and horizontal pores; few fine roots; few Fe Mn concretions; pH 7.6; hardness 26 mm; clear smooth boundary
B1	48-62	10YR 5/4 (yellowish brown); clay loam; many fine distinct 7.5YR 5/8 mottles; moderate columnar breaking into fine and medium subangular blocky; firm; few fine tubular verticle and horizontal pores; hardness 31 mm; clear wavy boundary
B2	62-102	10YR 3/4 (dark yellowish brown); clay loam; strong prismatic breaking into coarse subangular blocky; many Fe Mn concretions; hard; hardness 29 mm; clear wavy boundary
B3g	102-130	10YR 3/3 (dark brown) + 7.5 YR 3/4 (dark brown); silty clay/clay; massive; few Fe Mn concretions hard; hardness 22 mm

Pit No.: 19 Scheme: Mahadev khola

Depth (cm)	pH (1:2.5)	E.C. mS/cm (1:2.5)	Total CaCO3 %	Particle size distribution				O.C. %	Total N %	Av. P ppm
				Sand %	Silt %	Clay %	Texture Class			
0-19	5.6	0.056	0.07	37	53	10	SiL	1.54	0.14	16.2
19-48	7.6	0.125	-	45	43	12	L	-	-	-

Depth (cm)	Exchangeable Cation me/100g				CEC me/100g	B/S %	Soluble Cation and Anions			
	Ca	Mg	K	Na			Ca me/l	Mg me/l	Na ppm	Cl me/l
0-19	5.15	1.03	0.09	0.05	13.45	46.9	0.33	0.18	2.5	0.11
19-48	-	-	-	-	-	-	-	-	-	-

Coarse Loamy, mixed, thermic Anthraquic Entrochrepts

Test Pit No	:	P20
Location	:	Mahadev Khola Irrigation scheme
Physiography	:	Erosional fan, convex slope
Topography	:	Gently sloping
Slope	:	5° ↑E 4° ↓NW
Parent material	:	Fan sediment over old alluvium
Drainage	:	Moderately well
Ground Water	:	N.S
Permeability	:	Moderate
Moisture	:	Slightly moist
Present land use or vegetation	:	Paddy - Wheat/mustard

Horizon	Depth(cm)	Soil Description
Ap1+Ap2	0-20	10YR 5/4 (yellowish brown); silt loam; common fine 7.5YR 4/6 + many fine faint prominent 5YR 4/6 mottles; weak fine subangular blocky; friable; many fine fibrous roots; pH 5.7; hardness 18 mm; clear smooth boundary
B21	20-46	10YR 5/4 (yellowish brown); silty loam; common fine faint 7.5YR 4/4 mottles; moderate columnar breaking into medium subangular blocky; friable; few fine roots; pH 7.4; hardness 17 mm; gradual smooth boundary
B22	46-120	10YR 5/4 (yellowish brown); silt loam; few fine faint 10YR 4/6 mottles; weak subangular + angular blocky; hardness 26 mm.

Pit No.: 20 Scheme: Mahadev Khola

Depth (cm)	pH (1:2.5)	E.C. mS/cm (1:2.5)	Total CaCO3 %	Particle size distribution				O.C. %	Total N %	Av. P ppm
				Sand %	Silt %	Clay %	Texture Class			
0-20	5.7	0.056	0.07	37	53	10	SiL	2.04	0.28	4.4
20-46	7.4	0.056	-	37	51	12	SiL	-	-	-

Depth (cm)	Exchangeable Cation me/100g				CEC me/100g	B/S %	Soluble Cation and Anions			
	Ca	Mg	K	Na			Ca me/l	Mg me/l	Na ppm	Cl me/l
0-20	6.7	1.54	0.08	0.1	16.25	51.6	0.22	0.19	3.7	0.11
20-46	-	-	-	-	-	-	-	-	-	-

Coarse Loamy, mixed, thermic Typic Entrochrepts

Test Pit No	:	P21
Location	:	Mahadev Khola Irrigation scheme
Physiography	:	Recent alluvial plain/basin
Topography	:	Gently sloping
Slope	:	3° ↑N 1° ↓S
Parent material	:	Recent alluvium
Drainage	:	Poorly drained
Ground Water	:	at 110 cm depth
Permeability	:	Moderately slow
Moisture	:	Wet
Present land use or vegetation	:	Paddy - Wheat

Horizon	Depth(cm)	Soil Description
Ap	0-13	10YR 5/2 (greyish brown); silt loam; many fine distinct 7.5YR 4/4 mottles; weak fine subangular blocky; friable; many fine tubular verticle and horizontal pores; many fine fibrous roots; pH 5.7; hardness 19 mm; gradual smooth boundary
AB	13-18	10YR 6/2 (light brownish grey); silty loam; many fine prominent 2.5YR 3/4 mottles; weak medium subangular blocky; few fine roots; hardness 18 mm; gradual wavy boundary
B	18-90	2.5Y 5/2 (greyish brown), silt loam; many fine faint 10YR 4/4 mottles; weak columnar breaking into medium subangular blocky; few fine tubular verticle and horizontal pores; very few fine roots; pH 6.6; hardness 18 mm; clear smooth boundary
A1b	90-110	10YR 4/2 (dark greyish brown) + 10YR 3/4 (dark yellowish brown); silt loam/loam; massive; very porous

Pit No.: 21 Scheme: Mahadev Khola

Depth (cm)	pH (1:2.5)	E.C. mS/cm (1:2.5)	Total CaCO3 %	Particle size distribution				O.C. %	Total N %	Av. P ppm
				Sand %	Silt %	Clay %	Texture Class			
0-13	5.7	0.033	0.07	37	52	11	SiL	1.15	0.1	16.3
18-90	6.6	0.055	-	37	53	10	SiL	-	-	-

Depth (cm)	Exchangeable Cation me/100g				CEC me/100g	B/S %	Soluble Cation and Anions			
	Ca	Mg	K	Na			Ca me/l	Mg me/l	Na ppm	Cl me/l
0-13	6.18	1.03	0.09	0.1	13.45	54.3	0.22	0.19	3.7	0
18-90	-	-	-	-	-	-	-	-	-	-

Coarse Loamy, mixed, thermic Typic Plaggepts

Test Pit No	:	P55
Location	:	Mahadev Khola Irrigation Sub-project
Physiography	:	Lower alluvial Terrace
Topography	:	Nearly level
Slope	:	0.5 ↑ E 0.5 ↓ W
Parent material	:	Old alluvium
Drainage	:	Moderately well drained
Ground Water	:	N.S
Permeability	:	Moderate
Moisture	:	Moist
Present land use or vegetation	:	Paddy - Wheat

Horizon	Depth(cm)	Soil Description
Ap	0-14	10YR 3/3 (dark brown); loam; moderate fine subangular blocky + granular; friable; many fine fibrous roots; hardness 11 mm; gradual smooth boundary
B21	14-28	10YR 3/2 (very dark greyish brown); loam/clay loam; weak columnar breaking into strong medium subangular blocky; friable; many fine tubular verticle and horizontal pores; few fine roots; thin silt cutans on ped faces; gradual smooth boundary
B22	28-120	10YR 4/2 (dark greyish brown) ; clay loam; moderate columnar breaking into moderate coarse subangular blocky; firm; very few fine roots; clear smooth boundary
C	120-140+	C120-140+10YR 5/6 (yellowish brown); silty clay loam; many fine distinct 7.5YR 5/6 mottles; massive; firm

Note : 50% kalimati pieces on Ap, B21 and B22 horizons (0-120 cm depth)

Coarse Loamy, mixed, thermic Aquic Udorthents

Test Pit No	:	P56
Location	:	Mahadev Khola Irrigation scheme
Physiography	:	Terrace side slope scarp
Topography	:	Moderately sloping
Slope	:	16° ↑S 14° ↓N
Parent material	:	Colluvium
Drainage	:	Somewhat poorly drained
Ground Water	:	N.S
Permeability	:	Moderate
Moisture	:	Moist and wet
Present land use or vegetation	:	(a) Paddy - Wheat on level terraces (b) Maize - Mustard on sloping terraces

Horizon	Depth(cm)	Soil Description
Ap1+Ap2	0-20	10YR 5/3 (brown); silt loam; many medium distinct 7.5YR 5/4 mottles; weak medium subangular blocky; friable; many fine fibrous roots; pH 5.6; gradual smooth boundary
BC	20-38	10YR 5/2 (greyish brown); silt loam; common fine prominent 7.5YR 4/4 mottles; very weak structure; friable; many fine verticle and horizontal pores
C1	38-95	10YR 6/3 (pale brown) ; silt loam/ silt; few coarse distinct 7.5YR 5/6 mottles; structure not defined; friable; clear smooth boundary
C2	95-120	10YR 4/2 (dark greyish brown); silty clay loam; massive; friable; abrupt smooth boundary
C3	120-150+	5Y 4/1 (dark grey); silty clay loam; massive; friable; pH 6.6 (Kalimati layer)

Pit No.: 56 Scheme: Mahadev Khola

Depth (cm)	pH (1:2.5)	E.C. mS/cm (1:2.5)	Total CaCO3 %	Particle size distribution				O.C. %	Total N %	Av. P ppm
				Sand %	Silt %	Clay %	Texture Class			
0-20	5.5	0.033	0.07	37	52	11	SiL	1.32	0.14	16.2
20-38	6.2	0.055		38	48	14	L	-	-	-
120-150	6.6	0.056		17	51	32	SiCL	-	-	-

Depth (cm)	Exchangeable Cation me/100g				CEC me/100g	B/S %	Soluble Cation and Anions			
	Ca	Mg	K	Na			Ca me/l	Mg me/l	Na ppm	Cl me/l
0-20	7.46	2.18	0.15	0.05	16.02	61.1	0.44	0.37	3.7	0.22
20-38	-	-	-	-	-	-	-	-	-	-
120-150	-	-	-	-	-	-	-	-	-	-

Coarse Loamy, mixed, thermic Typic Hapludolls

Test Pit No	:	P57
Location	:	Mahadev Khola irrigation Sub-project
Physiography	:	Depressional valley in Terrace
Topography	:	Nearly level
Slope	:	2 ↑ E 1.5 ↓ W
Parent material	:	Old alluvium
Drainage	:	Moderately well drained
Ground Water	:	Not seen
Permeability	:	Moderate
Moisture	:	Moist
Present land use or vegetation	:	Paddy - Wheat

Horizon	Depth(cm)	Soil Description
Ap	0-20	10YR 3/2 (very dark greyish brown); silty loam; moderate fine subangular blocky + granular; friable; many fine verticle and horizontal pores; many fine fibrous roots; hardness 14 mm; gradual smooth boundary
AB	20-38	10YR 3/2 (very dark greyish brown); clay loam; moderate columnar breaking into fine subangular blocky; friable; few fine roots; hardness 22 mm; clear smooth boundary
B2	38-100	10YR 3/3 (dark brown); silty clay loam; many fine faint 10YR 4/4 mottles; strong columnar breaking into moderate fine sub- angular blocky; firm; few fine roots; hardness 24 mm; clear smooth boundary
B3	100-125	10YR 4/2 (dark greyish brown); silty clay loam; massive; firm; gradual smooth boundary
C	125-150	10YR 4/1 (dark grey); silty clay loam; massive; firm

Note : Many kalimatic pieces in Ap, AB, B2 horizon (0-100 cm depth)

Katunje Irrigation scheme

Fine loamy, mixed, thermic Aeric Epiaquepts

Test Pit No	:	P12
Location	:	Katunje Irrigation scheme
Physiography	:	Lower Alluvial Plain
Topography	:	Gently sloping
Slope	:	10° ↑N 2° ↓S
Parent material	:	Alluvium
Drainage	:	Somewhat poorly drained
Ground Water	:	N.S.
Permeability	:	Moderate
Moisture	:	Moist throughout
Present land use or vegetation	:	Paddy - Wheat, bamboo, siris

Horizon	Depth(cm)	Soil Description
Ap	0-11	10YR 4/3 (dark brown); silty clay loam; many fine distinct 10YR 4/6 mottles; weak medium subangular blocky; firm; many fine fibrous roots; pH 5.1; hardness 17 mm; gradual smooth boundary
AB	11-24	2.5YR 5/2 (greyish brown); silty clay loam; many fine distinct 10 YR 4/4 mottles; weak columnar breaking to medium angular blocky; firm; few fine fibrous roots; common tubular verticle pores; hardness 18 mm; clear wavy boundary
B21	24-71	10YR 5/4 (yellowish brown); silty clay loam; many fine faint distinct 10YR 4/6 mottles; moderate prismatic breaking to coarse angular blocky; firm; very few fine roots; many medium tubular verticle + horizontic pores; pH 5.6; hardness 24 mm; clear wavy bo
B22	71-115	10YR 4/3 (dark brown); silty clay; many fine faint 10YR 3/6 mottles; weak prismatic breaking to coarse angular blocky; firm; very few fine roots; many medium; tubular verticle + horizontal pores; hardness 19 mm

Pit No.: 12 Scheme: Katunje

Depth (cm)	pH (1:2.5)	E.C. mS/cm (1:2.5)	Total CaCO3 %	Particle size distribution				O.C. %	Total N %	Av. P ppm
				Sand %	Silt %	Clay %	Texture Class			
0-11	5.1	0.128	Nil	18	53	29	SiCL	1.31	0.11	4.2
24-71	5.6	0.125	-	17	55	28	SiCL	-	-	-

Depth (cm)	Exchangeable Cation me/100g				CEC me/100g	B/S %	Soluble Cation and Anions			
	Ca	Mg	K	Na			Ca me/l	Mg me/l	Na ppm	Cl me/l
0-11	10.3	2.85	0.07	0	20.41	64.7	0.55	0.16	1	0.11
24-71	-	-	-	-	-	-	-	-	-	-

Coarse loamy, mixed, thermic Typic Eutrochrepts

Test Pit No	:	P58
Location	:	Katunje Irrigation scheme
Physiography	:	Upper alluvial terrace
Topography	:	Very gently sloping
Slope	:	2° ↑S 3° ↓N
Parent material	:	Old alluvium
Drainage	:	Moderately well drained
Ground Water	:	at 50 cm
Permeability	:	Moderate
Moisture	:	Wet and saturated
Present land use or vegetation	:	(a) Paddy - wheat on level terraces (b) Maize - mustard on sloping terraces

Horizon	Depth(cm)	Soil Description
Ap1	0-10	7.5YR 4/2 (dark brown); loam; massive and wet; many fine fibrous roots; pH 5.4; gradual smooth boundary
Ap2	10-22	7.5YR 4/2 (dark brown); loam; many fine distinct 5YR 4/3 mottles; massive and wet; very porous hardness 8 mm; clear smooth boundary
B22	22-72	7.5YR 4/2 (dark brown); loam; massive and wet; pH 6.0; hardness 12 mm; clear smooth boundary
B23	72-100	7.5YR 4/2 (dark brown); laom; massive and wet

Pit No.: 58 Scheme: Katunje

Depth (cm)	pH (1:2.5)	E.C. mS/cm (1:2.5)	Total CaCO3 %	Particle size distribution				O.C. %	Total N %	Av. P ppm
				Sand %	Silt %	Clay %	Texture Class			
0-10	5.4	0.059	0.07	41	38	21	L	1.8	0.17	32.1
22-72	6.0	0.069	-	36	37	27	L/SL	-	-	-

Depth (cm)	Exchangeable Cation me/100g				CEC me/100g	B/S %	Soluble Cation and Anions			
	Ca	Mg	K	Na			Ca me/l	Mg me/l	Na ppm	Cl me/l
0-10	7.46	1.68	0.23	0	16.91	55.8	0.44	0.21	1	0.22
22-72	-	-	-	-	-	-	-	-	-	-

Coarse loamy, mixed, thermic Typic Eutrochrepts

Test Pit No	:	P59
Location	:	Katunje Irrigation Sub-project
Physiography	:	Depressional slope on terrace
Topography	:	Gently sloping
Slope	:	6↑S 7↓N
Parent material	:	Recent alluvium
Drainage	:	Moderately well drained
Ground Water	:	N.S.
Permeability	:	Moderate
Moisture	:	Moist
Present land use or vegetation	:	Paddy - wheat

Horizon	Depth(cm)	Soil Description
Ap	0-16	10YR 4/3 (dark brown); loam; few fine faint 10YR 3/6 mottles; weak medium subangular blocky; friable; many fine fibrous roots; hardness 15 mm; gradual smooth boundary
B	16-41	10YR 4/2 (dark greyish brown); loam; many fine distinct 7.5YR 4/4 mottles; moderate; columnar breaking into moderate medium subangular blocky; very fine pores; hardness 20 mm; clear smooth boundary
BC	41-85	10YR 6/2 (light brownish grey); silt loam; disturbed chunks with kalimati (black clay) pieces; abrupt smooth boundary
C	85-125+	10YR 4/3 (very pale brown); fine sand/silt

Fine loamy, mixed, thermic Aeric Haplustalfs

Test Pit No	:	P13
Location	:	Katunje Irrigation scheme
Physiography	:	Hill summit
Topography	:	Slightly undulating
Slope	:	5° ↑S 20° ↓N
Parent material	:	In-situ
Drainage	:	Well drained
Ground Water	:	N.S
Permeability	:	Moderate rapid
Moisture	:	Slightly dry
Present land use or vegetation	:	Maize - Soyabean, bamboo

Horizon	Depth(cm)	Soil Description
Ap	0-15	7.5YR 5/4 (brown); clay loam; moderate fine and medium subangular blocky; friable to firm; many fine fibrous roots; pH 4.8; hardness 21 mm; gradual smooth boundary
B1	15-28	7.5YR 5/4 (brown); loam; moderate fine subangular blocky + granular few fine roots; hardnes 21 mm; gradual smooth boundary
B21t	28-68	7.5YR 5/4 (brown) ; sandy clay loam; moderate coarse subangular blocky; firm; few fine clay skins on ped faces and insect burrows; many fine tubular verticle and horizontal pores pH 5.7; hardness 23 mm; gradual smooth boundary
B22t	68-115	7.5YR 3/4 (dark brown); clay loam; strong columnar breaking into medium and coarse subangular blocky; few fine clay skins on ped faces and insect burrows

Pit No.: 13 Scheme: Katunje

Depth (cm)	pH (1:2.5)	E.C. mS/cm (1:2.5)	Total CaCO3 %	Particle size distribution				O.C. %	Total N %	Av. P ppm
				Sand %	Silt %	Clay %	Texture Class			
0-15	4.8	0.125	Nil	45	40	15	L	1.27	0.11	16.1
28-52	5.7	0.128	-	55	22	23	SCL	-	-	-

Depth (cm)	Exchangeable Cation me/100g				CEC me/100g	B/S %	Soluble Cation and Anions			
	Ca	Mg	K	Na			Ca me/l	Mg me/l	Na ppm	Cl me/l
0-15	3.61	2.06	0.22	0.05	12.25	47.8	0.44	0.17	1	0.11
28-52	-	-	-	-	-	-	-	-	-	-

Dhunge Dhara Irrigation scheme

Fine loamy, mixed, thermic Anthraquic (Ruptic Alfic) Eutrochrepts

Test Pit No	:	P14
Location	:	Dhunge Dhara Irrigation Scheme
Physiography	:	Alluvial terrace
Topography	:	Nearly level
Slope	:	1° ↑N 2° ↓S
Parent material	:	Old alluvium
Drainage	:	Somewhat poorly drained
Ground Water	:	N.S
Permeability	:	Moderately slow
Moisture	:	Slightly moist
Present land use or vegetation	:	Paddy - Wheat, Alnus, bamboo

Horizon	Depth(cm)	Soil Description
Ap	0-14	2.5Y 4/4 (olive brown); silt loam; few faint fine 10YR 4/6 mottles; weak fine subangular blocky; friable; many fine fibrous roots; pH 5.1; hardness 16 mm; gradual smooth boundary
AB	14-28	2.5Y 4/4 (olive brown); silt loam/loam; many fine distinct 7.5YR 4/4 mottles; weak columnar breaking into medium subangular blocky; friable; few fine fibrous roots; hardness 23 mm; clear smooth boundary
B1(tj)	28-44	10YR 4/3 (brown) + 10YR 6/6 (brownish yellow); silt loam; common fine distinct 7.5YR 4/6; weak prismatic breaking into fine and medium subangular blocky; firm; common fine fibrous roots; very few clay skins on ped faces; hardness 26 mm; clear smooth bound
B2(tj)g	44-78	10YR 4/4 (dark yellowish brown) + 7.5YR 5/6 (strong brown); sandy clay loam; many medium prominent 5YR 4/6 mottles; weak prismatic breaking into fine and medium subangular blocky; hard; very few clay skins on ped faces; many medium and coarse Fe Mn concr
BC	78-98	10YR 5/6 (yellowish brown); sandy loam; weak structure; friable; hardness 22 mm; clear smooth boundary
C	98+	10YR 5/4 (yellowish brown); pebbly coarse sandy loam; very friable; pebbles small 60%
Note	:	j = juvenile

Pit No.: 14 Scheme: Dhunge Dhara

Depth (cm)	pH (1:2.5)	E.C. mS/cm (1:2.5)	Total CaCO3 %	Particle size distribution				O.C. %	Total N %	Av. P ppm
				Sand %	Silt %	Clay %	Texture Class			
6-14	5.1	0.078	Nil	37	53	10	Sil	1.54	0.14	48.2
44-78	5.4	0.094	-	56	22	22	SCL	-	-	-

Depth (cm)	Exchangeable Cation me/100g				CEC me/100g	B/S %	Soluble Cation and Anions			
	Ca	Mg	K	Na			Ca me/l	Mg me/l	Na ppm	Cl me/l
6-14	5.15	1.55	0.21	0	10.35	66.2	0.48	0.18	1.1	0.22
44-78	-	-	-	-	-	-	-	-	-	-

Fine loamy, mixed, thermic Anthraquic Eutrochrepts

Test Pit No	:	P15
Location	:	Dhunge Dhara Irrigation scheme
Physiography	:	Ancient lake and river terrace
Topography	:	Nearly level
Slope	:	1° ↑N 1° ↓S
Parent material	:	Old alluvium
Drainage	:	Moderately well drained
Ground Water	:	N.S
Permeability	:	Slow
Moisture	:	Moist
Present land use or vegetation	:	Paddy - Wheat

Horizon	Depth(cm)	Soil Description
Ap1+Ap2	0-18	2.5YR 4/4 (olive brown); loam; many fine distinct 10YR 4/6 mottles; weak medium subangular blocky; friable; many fine fibrous roots; pH 5.4 hardness 18 mm; clear smooth boundary
B	18-38	10YR 5/3 (brown); silty loam/loam; few fine faint 10YR 4/6 mottles; moderate columnar breaking into coarse angular blocky; firm; few fine tubular pores; few fine roots; hardness 24 mm; clear smooth boundary
A1b	38-60	10YR 4/3 (dark brown) clay loam; massive; hard; very few fine roots; many fine and medium tubular pores; pH 5.6; hardness 25 mm; clear smooth boundary
IIB21	60-80	10YR 5/6 + 5/4 (yellowish brown); clay loam; massive; firm; few fine tubular pores; gradual smooth boundary
IIB22	80-105	10YR 5/4 (yellowish brown); silt loam; friable; gradual smooth boundary
IIBC	105-180	10YR 6/3 (pale brown); sandy loam; coarse; gradual smooth boundary
IIC	180-250	10YR 6/3 (pale brown); fine sand; loose

Pit No.: 15 Scheme: Dhunge Dhara

Depth (cm)	pH (1:2.5)	E.C. mS/cm (1:2.5)	Total CaCO3 %	Particle size distribution				O.C. %	Total N %	Av. P ppm
				Sand %	Silt %	Clay %	Texture Class			
0-18	5.4	0.02	Nil	45	43	12	L	1.42	0.12	4.2
38-60	5.6	0.02	-	38	32	30	CL	-	-	-

Depth (cm)	Exchangeable Cation me/100g				CEC me/100g	B/S %	Soluble Cation and Anions			
	Ca	Mg	K	Na			Ca me/l	Mg me/l	Na ppm	Cl me/l
0-18	3.61	1.03	0.18	0	9.15	51.3	0.33	0.08	1.2	0.22
38-60	-	-		-	-	-	-	-	-	-

Kutudhal Irrigation scheme

Coarse loamy, mixed, thermic Anthraquic Eutrochrepts

Test Pit No	:	P16
Location	:	Kutudhal Irrigation scheme
Physiography	:	Lower alluvial terrace
Topography	:	Moderately sloping
Slope	:	13° ↑W 8° ↓E
Parent material	:	Old alluvium
Drainage	:	Somewhat poorly drained
Ground Water	:	N.S
Permeability	:	Moderate
Moisture	:	Moist
Present land use or vegetation	:	Paddy - Wheat/Potato

Horizon	Depth(cm)	Soil Description
Ap1	0-12	2.5YR 4/2 (dark greyish brown); silt loam; many fine distinct 10YR 3/4 mottles; weak medium subangular blocky; friable; many fine fibrous roots; pH 5.2; hardness 16 mm; gradual smooth boundary
Ap2	12-26	2.5YR 4/2 (dark greyish brown); silty loam/loam; many fine distinct 10YR 4/4 mottles; weak medium; subangular blocky; friable; few fine tubular pores; many fine fibrous roots; pH 5.2; hardness 16 mm; gradual wavy boundary
B1	26-48	2.5YR 5/2 (greyish brown); silt loam; many fine distinct 10YR 4/4 mottles; weak columnar breaking into coarse subangular blocky; firm; many fine tubular pores; few fine roots; pH 5.5; hardness 26 mm; gradual wavy boundary
B2	48-140	10YR 6/3 (pale brown); silt loam; few fine faint 10YR 4/4 mottles; moderate columnar breaking into medium subangular blocky; firm; very few fine pores; few fine roots; gradual smooth boundary
B3	140-180	10YR 4/4 (dark yellowish brown); clay loam; massive firm

Pit No.: 16 Scheme: Kutudhal

Depth (cm)	pH (1:2.5)	E.C. mS/cm (1:2.5)	Total CaCO3 %	Particle size distribution				O.C. %	Total N %	Av. P ppm
				Sand %	Silt %	Clay %	Texture Class			
0-26	5.2	0.02	Nil	37	53	10	SiL	0.58	0.06	4.3
26-48	5.5	0.013	37	53	10	37	-	-	-	-

Depth (cm)	Exchangeable Cation me/100g				CEC me/100g	B/S %	Soluble Cation and Anions			
	Ca	Mg	K	Na			Ca me/l	Mg me/l	Na ppm	Cl me/l
0-26	4.12	1.03	0.07	0	10.15	55.6	0.22	0.19	0	0.11
26-48	-	-	-	-	-	-	-	-	-	-

Coarse loamy over sandy, mixed, thermic Aeric Endoaquepts

Test Pit No	:	P17
Location	:	Kutudhal Irrigation scheme
Physiography	:	Lower alluvial terrace
Topography	:	Nearly level
Slope	:	2° ↑N 1.5° ↓S
Parent material	:	Alluvium
Drainage	:	Moderately well drained
Ground Water	:	N.S
Permeability	:	Moderately rapid
Moisture	:	Moist
Present land use or vegetation	:	Paddy - Wheat/Potato

Horizon	Depth(cm)	Soil Description
Ap	0-15	2.5YR 5/2 (greyish brown); silt loam; many weak subangular blocky; friable; many fine fibrous roots; pH 5.2; hardness 15 mm; gradual smooth boundary
B	15-36	2.5YR 4/2 (dark greyish brown); silty loam; many fine faint 10YR 4/6 mottles; weak medium; subangular blocky; friable; few Fe Mn tubular verticle and horizontal pores; very few fine roots; few Fe Mn concretions; pH 5.3; hardness 25 mm; clear smooth bound
BC	36-56	10YR 4/3 (dark brown); loam; many fine faint 10YR 5/4 mottles; weak medium angular blocky; friable to firm; very few fine pores; hardness 22 mm; abrupt wavy boundary
C	56-70	10YR 4/2 (dark greyish brown); loamy sand; single grained very friable; hardness 17 mm; abrupt wavy boundary
C1	70-90	10YR 5/2 (greyish brown); gravelly loamy sand; single grained; stone + pebbles 20%; abrupt wavy boundary
C2	90-105	Gravelly loamy sand; single grained; very friable; abrupt wavy boundary
C3	105+	Sand; loose

Pit No.: 17 Scheme: Kutudhal

Depth (cm)	pH (1:2.5)	E.C. mS/cm (1:2.5)	Total CaCO3 %	Particle size distribution				O.C. %	Total N %	Av. P ppm
				Sand %	Silt %	Clay %	Texture Class			
0-15	5.2	0.02	Nil	37	53	10	SiL	0.5	0.04	4.1
15-36	5.3	0.014	-	33	55	12	SiL	-	-	-

Depth (cm)	Exchangeable Cation me/100g				CEC me/100g	B/S %	Soluble Cation and Anions			
	Ca	Mg	K	Na			Ca me/l	Mg me/l	Na ppm	Cl me/l
0-15	3.09	1.03	0.08	0	9.35	36.7	0.22	0.19	0	0.11
15-36	-	-		-	-	-	-	-	-	-

Coarse loamy, mixed, thermic Anthraquic Eutrochrepts

Test Pit No	:	P18
Location	:	Kutudhal Irrigation scheme
Physiography	:	Alluvial terrace
Topography	:	Nearly level
Slope	:	1° ↑N 2° ↓S
Parent material	:	Alluvium
Drainage	:	Poorly drained
Ground Water	:	Within 2 meter
Permeability	:	Moderate
Moisture	:	Moist
Present land use or vegetation	:	Paddy - Wheat/Potato

Horizon	Depth(cm)	Soil Description
Ap1	0-14	2.5Y 5/2 (greyish brown); silt loam; few fine faint 10YR 4/4; weak fine subangular blocky; friable; few fine roots; pH 5.3; hardness 15 mm; gradual smooth boundary
Ap2	14-22	2.5Y 4/2 (dark greyish brown); silty loam; many fine faint 10YR 4/4 mottles; massive; friable; very few fine pores; pH 5.3; hardness 15 mm; clear smooth boundary
B	22-44	5YR 4/2 (dark greyish brown); silty clay loam; massive; firm; very few fine pores; pH 6.7; hardness 18 mm; clear smooth boundary
C1	44-58	2.5YR 5/2 (greyish brown); loamy sand; massive; very friable; hardness 16mm; clear smooth boundary
C2	58-75+	2.5YR 5/2 (greyish brown); pebbly loam sand; pebbles + stones 60%

Pit No.: 18 Scheme: Kutudhal

Depth (cm)	pH (1:2.5)	E.C. mS/cm (1:2.5)	Total CaCO3 %	Particle size distribution				O.C. %	Total N %	Av. P ppm
				Sand %	Silt %	Clay %	Texture Class			
0-22	5.3	0.139	Nil	33	55	12	SiL	0.81	0.07	4.4

Depth (cm)	Exchangeable Cation me/100g				CEC me/100g	B/S %	Soluble Cation and Anions			
	Ca	Mg	K	Na			Ca me/l	Mg me/l	Na ppm	Cl me/l
0-22	5.15	1.03	0.09	0	12.32	50.9	0.33	0.18	1	0.22

Dhakshinkali Irrigation Scheme

Fine loamy, mixed, thermic Aquic Eutrochrepts

Test Pit No	:	P101
Location	:	Dhakshinkali (Youtiki)
Physiography	:	dissected hill on terrace
Topography	:	Gently sloping
Slope	:	7˚ ↑N E, 4˚ ↓SW
Parent material	:	Ancient lake and river terrace
Drainage	:	somewhat poorly drainage
Ground Water	:	N. S. (not seen)
Permeability	:	
Moisture	:	
Present land use or vegetation	:	paddy - hallow (wheat)

Horizon	Depth(cm)	Soil Description
Ap1	0-15	10YR 5/4 (yellowish brown); SiL (few sand); dry; many fine distinct 7.5YR 5/8 mottles; moderate fine granular; slightly hard; many fine fibrous roots; many fine continuous tubular pores; slightly plastic; slightly sticky; hardness14mm; pH 6.0; clear smooth boundary
Ap2	15-25	10YR 4/3 (brown); SiL; moist; many fine distinct 7.5YR 5/8 mottles; weak coarse subangular blocky (massive); common fine fibrous roots; many fine continuous tubular pores; hardness 32mm; clear wavy boundary
B21	25-38	2.5Y4/2 (dark grayish brown); SiL (few sand); moist; many fine distinct 7.5YR 5/8 mottles; massive; common fine fibrous roots; common fine continuous pores; hardness 32mm; pH 6.3; clear wavy boundary
B22	38-70+	2.5Y 5/3 (grayish brown); SiL (few sand); moist; many fine distinct 7.5YR 5/8 mottles; massive; common fine fibrous roots; common fine continuous pores; hardness 32mm

Pit No.: 101 Scheme: Dhakshinkali

Depth (cm)	pH			Particle size distribution						
				Sand %	Silt %	Clay %	Texture Class			
0-15	6.0									
25-38	6.3									

Fine loamy, mixed, thermic Aquic Eutrochrepts

Test Pit No	:	P102
Location	:	Dhakshinkali
Physiography	:	dissected hill on terrace
Topography	:	Gently to moderately sloping
Slope	:	14˚ ↑N E, 5˚ ↓W
Parent material	:	Ancient lake and river terrace
Drainage	:	somewhat poorly drainage
Ground Water	:	N. S.
Permeability	:	
Moisture	:	
Present land use or vegetation	:	paddy - garden pea

Horizon	Depth(cm)	Soil Description
Ap1	0-15	10YR 6/4 (light yellowish brown); SiL (few sand, size 1mm or more); dry; many fine distinct 10YR 5/8 mottles; strong fine granular; slightly hard; many fine and medium fibrous roots; many fine continuous tubular pores; slightly plastic; slightly sticky; hardness 14mm; pH 6.3; abrupt smooth boundary
Ap2	15-24	10YR 5/4 (yellowish brown); SiL; very few subrounded gravel; moist; common medium 10YR 5/8 mottles; common coarse Fe Mn concretions; friable; many fine and medium fibrous roots; many fine continuous pores; slightly plastic; slightly sticky; hardness 24mm; clear wavy boundary
B21	24-38	2.5Y5/4 (light olive brown); SiL; very few subrounded gravel; moist; common medium 10YR 5/8 mottles; common coarse Fe Mn concretions; friable; common fine fibrous roots; common fine continuous pores; slightly plastic; slightly sticky; hardness 24mm; pH 6.4; gradual wavy boundary
B22	38-85+	2.5Y 4/4 (olive brown); CL; very few subrounded gravel; moist; common medium 10YR 5/8 mottles; common coarse Fe and Mn concretions; massive; friable; common fine fibrous roots; common fine continuous pores; slightly plastic; slightly sticky; hardness 27mm;

Pit No.: 102 Scheme: Dhakshinkali

Depth (cm)	pH			Particle size distribution						
				Sand %	Silt %	Clay %	Texture Class			
0-15	6.3			24	61	15	SiL			
24-38	6.4									

Bidol Irrigation Scheme

Fine loamy, mixed, thermic, Authraquic Eutrochrepts

Test Pit No	:	P103
Location	:	Bidol
Physiography	:	alluvial terrace
Topography	:	Gently to moderately sloping
Slope	:	7˚ ↑SSE, 2˚ ↓NNW
Parent material	:	Old alluvium
Drainage	:	poorly drainage
Ground Water	:	N. S.
Permeability	:	
Moisture	:	
Present land use or vegetation	:	paddy - wheat

Horizon	Depth(cm)	Soil Description
Ap1	0-10	5Y 4/2 (moist, olive gray); L; very few subangular gravel; dry; common fine distinct 10YR 5/6 mottles; weak fine granular; many fine fibrous roots; many fine continuous tubular pores; slightly plastic; slightly sticky; hardness 14mm; pH 5.3; abrupt smooth boundary
Ap2	10-20	5Y 5/3 (olive); SiL; very few subangular gravel; moist; common fine distinct 10YR 5/6 mottles; weak coarse subangular blocky; many fine fibrous roots; many fine continuous pores; slightly plastic; slightly sticky; hardness 24mm; clear smooth boundary
B21	20-27	7.5Y 4/2 (grayish olive) SiL; very few subangular gravel; moist; many fine distinct 10YR 5/6 mottles; few medium Fe Mn concretions (2.5YR 4/4); massive; common fine roots; many fine continuous pores; thin clay cutans on ped faces; hardness 27mm; clear smooth boundary
B22	27-40	7.5 Y 4/2 (grayish olive); SiL; very few subangular gravel; moist; many fine distinct 10YR 5/6 mottles; few medium Fe Mn concretions (2.5YR 4/4); massive; common fine constricted pores; thin clay cutans on ped faces; hardness 24mm; pH 6.0; gradual broken boundary
B23	40-77+	10YR 5/6 (yellowish brown); SiL; very few subangular gravel; moist; many fine distinct 10YR 5/6 mottles; few medium Fe Mn concretions (2.5YR 4/4); massive; common fine constricted pores; thin clay cutans on ped faces; hardness 24mm

Pit No.: 103 Scheme: Bidol

Depth (cm)	pH			Particle size distribution						
				Sand %	Silt %	Clay %	Texture Class			
0-10	5.3									
27-40	6.0			22	51	27	SiL			

Fine loamy, mixed, thermic, Authraquic Eutrochrepts

Test Pit No	:	P104
Location	:	Bidol
Physiography	:	alluvial terrace
Topography	:	nearly level
Slope	:	2˚ ↑E, 1˚ ↓WNW
Parent material	:	Old alluvium
Drainage	:	somewhat poorly drainage
Ground Water	:	N. S. (not seen)
Permeability	:	
Moisture	:	
Present land use or vegetation	:	paddy - wheat

Horizon	Depth(cm)	Soil Description
Ap1	0-12	5Y 6/2 (light olive gray; 5Y 4/2 olive gray, moist); L; dry; many medium distinct 10YR 6/6 mottles; strong medium granular; hard; many fine fibrous roots; many fine continuous tubular pores; slightly plastic; slightly sticky; hardness 15mm; pH 5.9; clear smooth boundary
Ap2	12-25	5Y 6/1 (light gray); L; dry; many medium distinct 10YR 6/6 mottles; many fine fbrous roots; many fine continuous tubular pores; slightly plastic; slightly sticky; hardness 24mm; common crack (width 5 to 7mm, length 20cm approximately); clear smooth boundary
B21	25-41	5Y 5/2 (olive gray); SiL; moist; many medium distinct 10YR 6/6 mottles; massive; common fine roots; many fine continuous pores; hardness 29mm; common crack (width 5 to 7mm, length 20cm approximately); pH 6.3; clear smooth bondary
B22	41-80+	5Y 5/2 (olive gray); CL(SiL); moist; many medium distinct 10YR 6/6 mottles; massive; common fine roots; many fine continuous pores; hardness 30mm; common crack (width 5 to 7mm, length 20cm approximately)

Pit No.: 104 Scheme: Bidol

Depth (cm)	pH			Particle size distribution						
				Sand %	Silt %	Clay %	Texture Class			
0-12	5.9			32	57	11	SiL			
25-41	6.3			20	56	24	SiL			

2.8 Land Suitability

Land suitable evaluation in the irrgation schemes was carried out based upon the Design Manual of DoI[1]. The following land characteristic factors were taken into account and the standards of each factor are given in **Table 2-7**.

- Topsoil texture
- Subsoil Texture
- Rice pan depth
- Effictive soil depth
- Topsoil CEC
- Topsoil pH
- Surface rock / stoniness
- Slope

Land class definition is given in the table below.

Class	Designation	Definition
S1	Highly suitable	Land having no significant limitations to sustained application of a given use, or only minor limitations that will not significantly reduce productivity or benefits and will not raise inputs above an acceptable level
S2	Moderately suitable	Land having limitations which, in aggregate, are moderately severe for sustained application of a given use; and increase required inputs to the extent that the overall advantage to be gained from the use, although still attractive, will be appreciably inferior to that expected on Class S1 land
S3	Marginally suitable	Land having limitations which, in aggregate, are severe for sustained application of a given use and will so reduce productivity or benefits, or so increase required inputs, that such expenditure would be only marginally justified
N1	Currently not suitable	Land having limitations which may be surmountable in time, but which cannot be corrected with existing knowledge at currently acceptable cost; the limitations are so severe as to preclude successful sustained use of the land in the given manner
N2	Permanently not suitable	Land having limitations which appear so severe as to preclude any possibilities of successful sustained use of the land in the given manner

[1]: Design Manuals for Irrigation Projects in Nepal, M.4 Soil and Land Use Manual Volume 1, 1990 Feb.

The results of land evaluation of each irrigation scheme are given in **Table 2-8** and **Fig.2-3**.

2.9 Present Land Use

Present land use in the selected irrigation schemes was checked in the field survey using the existing data. The land in the irrigation schemes is classified broadly into four (4) land categories: agricultural area, settlement area, brick-making plants and others which include road, stream, gully with some bush, etc. The present land use of each irrigation scheme is given in **Fig.2-4**.

Tables

Table 2-1 Generalized Mapping Units of Soil Groups and Physiographic Land Units of Irrigation Schemes lying on Northern Sector of Kathmandu Valley

Land Form	Mapping Unit	Land Unit	Dominant Soils	Dominant Slopes	Dominant Surface Texture	Drainage	Landuse/ Vegetation
Ancient Lake and River Terrace (T) Terrace Remanant (TR)	TR1	Upper	Aquic Dystrochrepts	0.5-2°	SL/L	Moderately well/ Somewhat Poor	Paddy-Wheat/Potato
			Aeric Epiaquepts	1-2°	SL/L	Somewhat Poor	Paddy-Wheat/Potato
	TR2	Lower	Typic/Aeric Endoaquepts	1-2°	SL/L	Somewhat Poor	Paddy-Wheat/Potato
			Aeric Epiaquepts	0.5-2°	Sil	Somewhat Poor	Paddy-Wheat
	TR3	Intermittent	Aeric Endoaquepts	3-5°	L/SL	Somewhat Poor	Paddy-Wheat
			Fluventic Dystrochrepts	4-5°	SiL	Somewhat Poor	Paddy-Wheat
			Aeric Epiaquepts	2-4°	L		Paddy-wheat
Erosional Terrace (TE)	TE1	Summits	Typic (Ruptic Alfic) Dystrochrepts	0.5-2°	SL	Moderately well/ Somewhat Poor	Upland Paddy/Soyabean/ Groundnut
	TE2/3	Sloping Terrace/Scarp	Udorthents + Dystrochrepts	25-28°	L	Moderately well	Forest
Alluvial Plain (P)	P1	River Channel	Sand + Silt				
	P2	Active Flood Plains	Aquic Ustifluvents	0.5-1°	LFS	Well	Paddy-Wheat/Potato
			Typic Fluvaquents	1°	L	Somewhat Poor	Paddy-Wheat/Fallow
	P3	Recent Flood Plain	Typic Endoaquepts	1-2°	L	Poor	Paddy-Wheat/Potato
		/Basin	Typic Fluvaquents	0.5-1°	SL/SiL	Somewhat Poor	Paddy-Wheat/Potato
Alluvial Fans (F)	F1	Erosional Fans	Typic Dystrochrepts	1-1.5°	L	Moderately well	Paddy-Wheat
	F2	Depressional Fans	Typic Endoaquolls	1-3°	L	Moderately Well	Paddy-Potato/Wheat
			Typic Endoaquepts	1-2°	L	Poor	Paddy-Wheat/Potato

Table 2-2 Generalized Mapping Units of Soil Groups and Physiographic Land Units of Irrigation Schemes lying in Southern Sector of the Kathmandu Valley

Land Form	Maping Unit	Land Unit	Dominant Soil	Dominant Slopes	Dominant Surface Texture	Drainage	Landuse/Vegetation
Ancient Lake and River Terrace (T) Terrace Remanant (TR)	TH1	Highest	Typic Haplustalfs	1-3°	CL	Moderately Well/Well	Meize-Mustard
			Aquic Haplustalfs	0.5-1.5°	CL	Moderately Well	Paddy-Lale Lale Bean
			Paralithic Dystrochrepts	1°	L	Well	Maize-Mustard
	TR1	Upper	Typic Eutrochrepts	2-3°	L	Moderately well	Paddy-Wheat/Maize-Mustard
			Aquic Eutrochrepts	0.5-1.5°	L/CL	Somewhat Poor/Poor	Paddy-Wheat
			Anthraquic Eutrochrepts	0.5-2°	SiL/L	Moderately well/ Somewhat poor	Paddy-Wheat
	TR1'	Mid Upper	Typic/Aquic Eutrochrepts	0.5-3°	SiL/L/CL	Moderately Well/Somewhat Poor/Poor	Paddy-Wheat
			Aquic/oxyaquic Udorthents	0.5-1.5°	CL/SiCL	Somewhat Poor	Paddy-Wheat
	TR2	Lower	Aquic/Typic Eutrochrepts	0.5-2°	L/SiL/SiCL	Somewhat Poor	Paddy-Wheat/Mustard
			Aquic/Typic Plaggepts	0.5-2°	L/CL/SiCL	Moderately Well/Somewhat Poor	Paddy Wheat/Meize-Mustard
			Aquic/Typic Endoaquepts	0.5-7°	SiL	Moderately Well	Paddy-Wheat
	TR2'	Mid Lower	Aquic Eutrochrepts	0.5-2°	SiL/L	Somewhat Poor/Poor	Paddy-Lale Lale Bean/Wheat
			Aquic Plaggepts	0.5-1.5°	SiL/SiCL	Somewhat Poor	Paddy-Wheat
	TR2"	Lowest	Typic Eutrochrepts	1-2°	L	Moderately Well	Millet-Mustrad
			Aquic Eutrochrepts	1-2°	SiCL	Somewhat Poor	Paddy-Wheat
			Fluvaquentic Eutrochrepts	2-4°	CL	Somewhat Poor	Paddy-Wheat
	TR3	Gently Sloping Terrace	Anthraquic Eutrochrepts	10-20°	SiL/L	Somewhat Poor	Paddy-Wheat/Mustard or Maize-Mustard
			Fluventic Eutrochrepts	5-7°	L	Moderately Well	Paddy-Wheat
			Typic Hapludolls	1.5-2°	CL	Moderately Well	Paddy-Wheat
Erosional Terrace (TE)	TE1	Summit	Typic Eutrochrepts	1-3°	L	Moderately Well	Maize-Millet
	TE2/3	Sloping Terrace/Scarp	Aquic Udorthents	10-15°	SiL	Somewhat Poor	Paddy-Wheat/Maize-Mustard
Alluvial Plain (P)	P1	River Channel	Sand + Silt				
	P2	Active Flood Plain	Typic Fluvaquents	1°	L	Somewhat Poor	Paddy-Wheat/Fellow
	P3	Recent Flood Plain/Basin	Typic/Aeric Endoaquepts	1-3°	SiL	Poor	Paddy-Wheat/Mustard
			Typic Udiflavents	2-3°	SiL	Moderately Well	Paddy-Wheat/Mustard
Alluvial Fan (F)	F1	Erosional Fan	Anthraqiuc Eutrochrepts	3-5°	SiL	Moderaterly Well	Paddy-Wheat/Mustard
	F2	Depressional Fan	Anthraquic Eutrochrepts	3-8°	SiL	Moderaterly Well	Paddy-Wheat/Mustard
			Typic Eutrochrepts	2-4°	L	Well	Paddy-Wheat
Hill Slope (H)	HS1	Gently Sloping Summit	Typic Haplustalfs	2-5°	L	Well	Meize-Millet
	HS2	Gently Sloping Terrace					
	HS3	Steeply Sloping					

Table 2-3 Soil Arranged according to Soil Family Group for Irrigation Schemes lying in the Northern Sector of the Kathmandu Valley

Irrigation Scheme	Fine Loamy	Coarse Loamy	Coarse Loamy Over Sandy	Sandy
TOKHA	TR2, P27, Aeric Epiaquepts, (1338m)	TR1, P1, Aquic Dystrochrepts, (1370m) TR1, A1, Aquic Dystrochrepts, (1369m) TR3, A2, Fluventic Dystrochrepts, (1348 m) P3, P28, Typic Fluvaquents, (1328m)	TE1, P26, Ruptic Alfic Dystrochrepts, (1362m)	P2, A3, Aquic Ustifluvents, (1325m)
GOKARNA	TR2, P4, Typic Endoaquepts, (1320m)		P3, P2, Umbric Fluvaquents, (1325m) P2, P3, Aeric Fluvaquents, (1325m) P3, A4, Typic Fluvaquents, (1320m) P2, A5, Typic Fluvagments (1318m)	
INDRAYANI	TR1, P5, Aquic Dystrochrepts, (1395m) TR1, A6, Aquic Dystrochrepts, (1392m) TR2, A7, Aquic Endoaquepts	TR3, P6, Aeric Endoaquepts, (1378m)	TE1, P7, Typic Dystrothrepts, (1396m)	
SHALI NADI		TR1, P9, Fluaentic Dystrochrepts, (1390m) TR2, P10, Typic (Fluventic) Dystrochrepts TE3, P11, Typic Dystrochrepts		
BISWAMBHARA	HS1, P52, Oxyaquic Dystrochrepts, (1428m)	TR2, P51 Aeric Epiaquepts (1415m) P3, P53, Typic Endoaquepts, (1388m) TR1, P54, Aeric Epiaquepts, (1395m)		

Table 2-4 Soil Arranged according to Soil Family Groups for Irrigation Schemes lying in the Southern Sector of the Kathmandu Valley

Irrigation Scheme	Fine Clayey	Fine Loamy	Coarse Loamy	Coarse Loamy over Fine Loamy	Coarse Loamy over (pebbly) Fragmental
BOSHAN	TR2, P31, Aquic Eutrochrepts, (1328m) TR2', P32, Aquic (Ruptic Alfic) Eutrochrepts TR3, A10, Ruptic Eutrochrepts, (1360m)	TR1, P29, Aquic (Ruptic Alfic) Eutrochrepts, (1358m) TE1/S, P30, Typic Eutrochrepts, (1345m)			
KHOKANA		TR1, P40, Aquic (Ruptic Alfic) Eutrochrepts, (1307m) TR2, P41, Typic Eutrochrepts, (1272m)	TR3, P39, Anthhraquic Eutrochrepts		TH1, P38, Paralithic (Ruptic Alfic) Dystrochrepts, (1362m)
THIKA BHAIRAW (I) & (II)	TR2, P42, Fluvaquentic Eutrochrepts, (1322m)	TH1 (a), P63, Typic Haplustalfs TH1 (b), P34, Aquic Haplustalfs, (1452m) TR1 (a), P64, Typic Heplustalfs TR3, P36, Anthhraquic Eutrochrepts, (1335m) A11, Aquic Eutrochrepts TR1 (a), P65, Typic Eutrochrepts	P3, P35, Typic Fluvaquents P2, P62, Typic Fluvaquepts	TR1, P33, Aquic Eutrochrepts, (1360m) TR2, P37, Aquid Eutrochrepts, (1360m)	
GODAWARI	TH1, Typic Haplustalfs		TR1, P22, Anthraquic Eutrochrepts, (1460m) TR2, P23, Aeric Endoaquepts, (1454m) TR1, P24, Fluventic Eutrochrepts, (1435m)	F2, P25, Typic Eutrochrepts, (1478m)	
KOTKHU		TH1, P43, Typic Haplustalfs, (1422m) TR1', (a), P45, Aquic Eutrochrepts, (1345m) TR2, P46, Aquic Plaggepts, (1322m) TR1', P61, Oxyaquic Udothents TR1' (b), A14, Aquic Udorthents	TR1, P44, Anthraquic Eutrochrepts TR1, P60, Anthraquic Eutrochrepts		
LUBHU		TR2, P47, Typic Plaggepts, (1322m) TR2, P49, Typic Plaggepts, (1322m) TR1, P50, Aquic Eutrochrepts	P3, P48, Aquic Eudoaquepts, (1310m)		
MAHADEV KHOLA		TR3, P57, Typic Hapludolls	F1, P20, Anthraquic Eutrochrepts, (1372m) P3, P21, Typic Endoaquepts, (1335m) TR2, A13, Aquic Eutrochrepts TR2, A12, P55, Typic Plaggepts, Aquic Plaggepts TE2/3, P56, Aquic Udorthents	TR1, P19, Anthraquic Eutrochrepts, (1872m)	
KATUNJE		TR2, P12, Aeric Epiaquepts, (1335m) TR3, A8, Aeric Epiaquepts (1342m) HS1, P13, Typic Heplustalfs, (1350m)	TR1, P56, Typic Eutrochrepts TR3, P59, Fluvaquentic Eutrochrepts		
DHUNGE DHARA		TR1, P14, Anthraquic (Reptic Alfic) Eutrochrepts, (1385m) TR1, P15, Anthraquic Entrochrepts	F2, A9, Typic Endoquepts		
KUTUDHAL		TR2, P18, Typic Endoaquepts, (1340m)	TR2, P16, Typic Endoaquepts, (1380m)	TR2, P17, Aeric Endoaquepts	

Notes :
Mapping Units - TR1, TR2, TR3, TE1, TE2/3, P2, P3, F1
Soil Test Pits - P1, P2, P3, ... etc
Auger Holes - A1, A2, A3, ... etc
Elevation (m) - (1320m), (1325m), ... etc

Table 2-5 Soil Groups and Physiographic Land Units of the Irrigation Schemes lying in the Northern Sector of the Kathmandu Valley

Irrgation Scheme	Higher Terrace (TR1)	Intermitent Terrace (TR3)	Lower Terrace (TR2)	Summit/Ridges (TE1)	Sloping Terrace Scarp (TE2/3)	Active Flood Plain (P2)
TOKHA	P1, Aquic Dystrochrepts	A2, Fluventic Dystrochrepts	P27, Aeric Epiaquepts	P26, Ruptic Alfic Dystrochrepts	Udorthents + Dystrochrepts	A3, Aquic Ustifluvents
GOKARNA			P4, Typic Endoaquepts			A5, Typic Fluvaquents P2, Aeric Fluvaquents
INDRAYANI	P5, Aquic Dystrochrepts	P6, Aeric Endoaquepts	A7, Aeric Endoaquepts	P7, Typic Dystrochrepts	Udorthents + Dystrochrepts	Typic Fluvaquents
SHALI NADI	P9, Fluventic Dystrochrepts	Aeric Endoaquepts	P10, Typic (Fluvaquentic) Endoaquepts		P11, Udorthents + Dystrochrepts	Typic Fluvaquents
BISWAMBHARA	P54, Aeric Epiaquepts	Aeric Epiaquepts	P51, Aeric Endoaquepts		Udorthents + Dystrochrepts	

Irrgation Scheme	Recent Flood Plain/Basin (P3)	Erosional Fan (F1)	Drpressional Fan (F2)	Hill Slope Terrace (HS1)	Hill Slope Fan/ Depression (HS2)	Hill Slope Ridge (HS3)
TOKHA	P28, Typic Fluvaquents	Typic Dystrochrepts				
GOKARNA	P2, Umbric Fluvaquents A4, Typic Fluvaquents					
INDRAYANI	Typic Endoaquepts	Typic Dystrochrepts				
SHALI NADI	Typic Endoaquepts	Typic Dystrochrepts	P8, Typic Endoaquolls			
BISWAMBHARA	P53, Typic Endoaquepts			P52, Oxyaquic Dystrochrepts	Typic Dystrochrepts	Typic Dystrochrepts

Table 2-6 Soil Groups and Physiographic Land Units of the Irrigation Schemes lying in Southern Sector of the Kathmandu Valley

Irrigation Scheme	Highest Terrace (TH1)	Upper Terrace (TR1)	Mid Upper Terrace (TR1')	Lower Terrace (TR2)	Midlower Terrace (TR2')	Lowest Terrace (TR2")	Intermittent Terrace (TR3)
BOSHAN		P20, Aquic (Ruptic Alfic) Eutrochrepts	Aquic (Ruptic Alfic) Eutrochrepts	P31, Aquic Eutrochrepts	P32, Aquic (Ruptic Alfic) Eutrochrepts	Typic Eutrochrepts	A10, Ruptic Eutrochrepts + Aquic Eutrochrept
KHOKANA	P38, Paralithic (Ruptic Alfic) Dystrochrepts	P40, Aquic (Ruptic Alfic) Eutrochrepts		P41, Typic Eutrochrepts			P39, Anthraquic Eutrochrepts
THIKA BHAIRAW (I) & (II)	(a) P63, P64, Typic Haplustralfs (b) P34, Aquic Haplustalfs	P33, Aquic Eutrochrepts	(a) P65, Typic Eutrochrepts (b) Aquic Eutrochrepts	P37, Aquic Eutrochrepts	Aquic Plaggepts	Fluvaquentic Eutrochrepts Aquic Eutrochrepts	P36, Anthraquic Eutrochrepts
GODAWARI	Typic Haplustalfs	P33, Anthraquic Eutrochrepts P24, Fluventic Eutrochrepts		P23, Aeric Endoaquepts			Typic Eutrochrepts
KOTKHU	P43, Typic Haplustalfs	P44, Anthraquic Eutrochrepts	(a) P45, Aquic Eutrochrepts (b) P61, A14, Oxyaquic Udorthents	P46, Aquic Pleggepts	Aquic Eutrochrepts	Fluvaquentic Eutrochrepts + Aquic Eutrochrepts	Anthraquic Eutrochrepts
LUBHU		P50, Aquic Eutrochrepts		P47, P49, Typic Plaggepts	Aquic Eutrochrepts	Fluvaquentic Eutrochrepts + Aquic Eutrochrepts	Anthraquic Eutrochrepts
MAHADEV KHOLA		P19, Anthraquic Eutrochrepts	Aquic Eutrochrepts	P55, Typic Plaggepts + A12, Aquic Plaggepts	Aquic Eutrochrepts + A13, Aquic Plaggepts	Fluvaquentic Eutrochrepts + Aquic Eutrochrepts	P57, Typic Hapludolls
KATUNJE		P58, Typic Eutrochrepts		P12, Aeric Epiaquepts + Typic Eutrochrepts			P59, Fluventic Eutrochrepts + Aeric Epiaquepts
DHUNGE DHARA & KUTUDHAL		P14, P15, Anthraquic Eutrochrepts		P16, P17, P18, Typic/Aeric Endoaquepts			Aeric Endoaquepts + Aquic Eutrochrepts

Irrigation Schme	Summit/ Settlement (TE1)	Sloping Terrace/Scarp (TE2/3)	Active Flood Plain (P2)	Recent Flood Plain/Basin (P3)	Erosional Fan (F1)	Depressional Fan (F2)	Gently Sloping Summit (HS1)
BOSHAN	P30, Typic Eutrochrepts	Aquic Udorthents	Typic Fluvaquents				
KHOKANA	Typic Eutrochrepts	Aquic Udorthents	Typic Fluvaquents	Typic Udifluvnets + Aeric Endoaquepts			
THIKA BHAIRAW (I) & (II)	Typic Eutrochrepts	Aquic Udorthents + Aeric Udorthents	P62, Typic Fluvaquepts	Typic Udifluvents + Aeric Endoaquepts			
GODAWARI		Aquic Udorthents	Typic Fluvaquents		Typic Eudrochrepts		
KOTKHU	Typic Eutrochrepts	Aquic Udorthents + Aeric Udorthents		Typic Udifluvents Eutrochrepts			
LUBHU	Typic Eutrochrepts	Aquic Udorthents	Typic Fluvaquents	Typic Udifluvgents + P48, Aeric Endoaquepts	Anthraquic Eutrochrepts	Anthraquic Eutrochrepts	
MAHADEV KHOLA	Typic Eutrochrepts	P56, Aquic Udorthents		P20, Typic Endoaquepts	Anthraquic Eutrochrepts	Anthraquic Eutrochrepts	
KATUNJE		Aquic Udorthents	Typic Fluvaquents	Typic Endoaquepts			P13, typic Haplustalfs
DHUNGE DHARA & KUTUDHAL	Typic Eutrochrepts	Aquic Udorthents		Aeric Endoaquepts		A9, Typic Endoaquepts	

Table 2-7 Limiting Values of Land Characteristics

Land Characteristics	Unit	Land Suitability Class				
		S1	S2	S3	N1	N2
Topsoil texture/ structure		Medium fSL, SL, L friable CL	Moderately fine to fine, or moderately coarse. Permeable CL, SCL, SiCL, SC, SiC, C or cSL, LfS and SiL	Coarse, fine or high Si. Moderately permeable to poorly permeable CL, SCL, SiCL, SC, SiC, C or LS or Si	Very coarse or very fine, Impermeable C, S and fresh alluvial (i.e. low OM) Si	Gravels, stones and rocks
Subsoil texture/ structure		Medium to fine fSL, SL, L and finer textures as Class S2 topsoils	Moderately coarse cSL, LfS	As Class S3 and N1 topsoils	-	-
Rice pan depth	cm	No pan, or only very weakly developed	Moderately well developed at between 10 and 15 cm depth, or weakly developed at < 15 cm depth	Moderately well developed at between 5 and 10 cm depth, or strongly developed between 10 and 15 cm	-	-
Effective soil depth	cm	> 100	100 - 75	75 - 50	50 - 25	< 25
Topsoil CEC	me/100g soil	> 15	15 - 10	10 - 5	< 5	-
Topsoil pH		6.0 - 8.3	4.5 - 6.0 or 8.3 - 8.5	4.0 - 4.5 or 8.5 - 9.0	< 4.0 or > 9.0	-
Surface rock/ stoniness	% area	< 3	3 - 15	15 - 50	50 - 75	> 75
Slope	°	≤ 1	1 - 8	8 - 30		≥ 30

Table 2-8 Results of Land Evaluation

Irrigation Scheme	Mapping Unit																
	TH1	TR1	TR1'	TR2	TR2'	TR2"	TR3	TE1	TE2/3	P1	P2	P3	F1	F2	HS1	HS2	HS3
BISWAMBHARA	-	S3	-	S3	-	-	S3	-	S3	-	S2	S3	-	-	S3	S3	S3
SHALI NADI	-	S2	-	S2	-	-	S2	-	S3	-	-	S2	S3	S3	-	-	-
BOSHAN	-	-	S2	S2	S2	-	S2/S3	-	S3	-	-	-	-	-	-	-	-
DHAKSHINKALI	-	-	-	-	-	-	S3	-	S3	-	-	-	-	-	S3	-	-
INDRAYANI	-	S2	-	S2	-	-	S3	S3	S3	-	S2	S2	S3	-	-	-	-
KUTUDHAL	-	-	-	S2	-	-	-	-	S3	-	-	-	-	-	-	-	-
BIDOL	-	-	-	S2	-	-	S2	-	-	-	-	-	-	-	-	-	-
KATUNJE	-	-	-	S2	-	-	S2	-	S3	-	S2	S2	-	-	-	-	-
MAHADEV KHOLA	-	S2	S2	S2	-	-	S2	S2	S3	-	-	S2	-	S2	-	-	-
KOTKHU	-	S2	S2	S2	S2	-	S2	-	S3	-	-	S2	-	-	-	-	-
LUBHU	-	S2	-	S2	S2	-	S2	-	S3	-	S2	-	-	-	-	-	-
THIKA BHAIRAW (I)	S2	S2	S2	S2	-	S2	S3	-	S3	-	S2	S2	-	-	-	-	-
THIKA BHAIRAW (II)	-	S2	-	S2	-	-	S3	-	S3	-	S2	S2	-	-	-	-	-

Figures

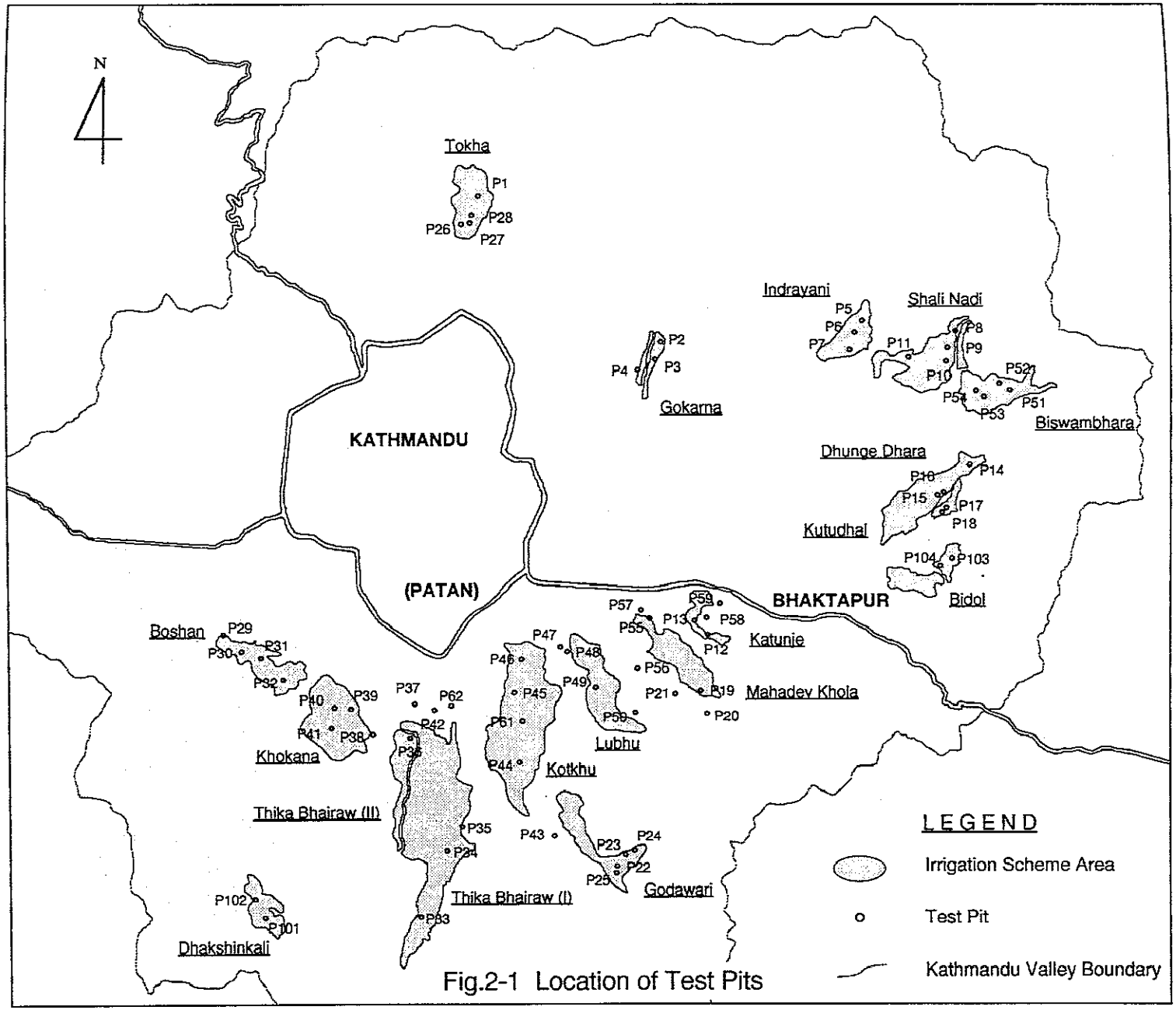
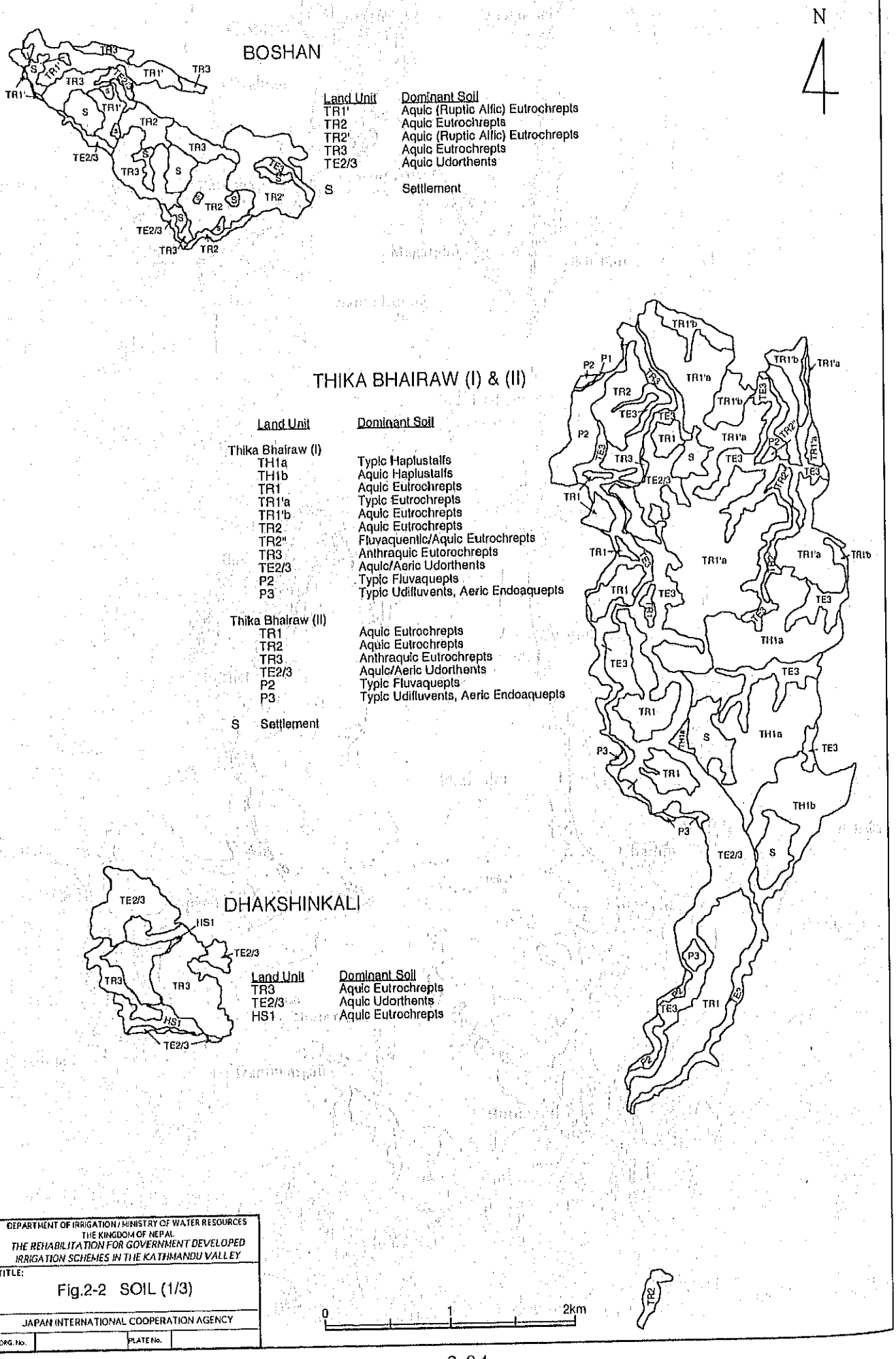
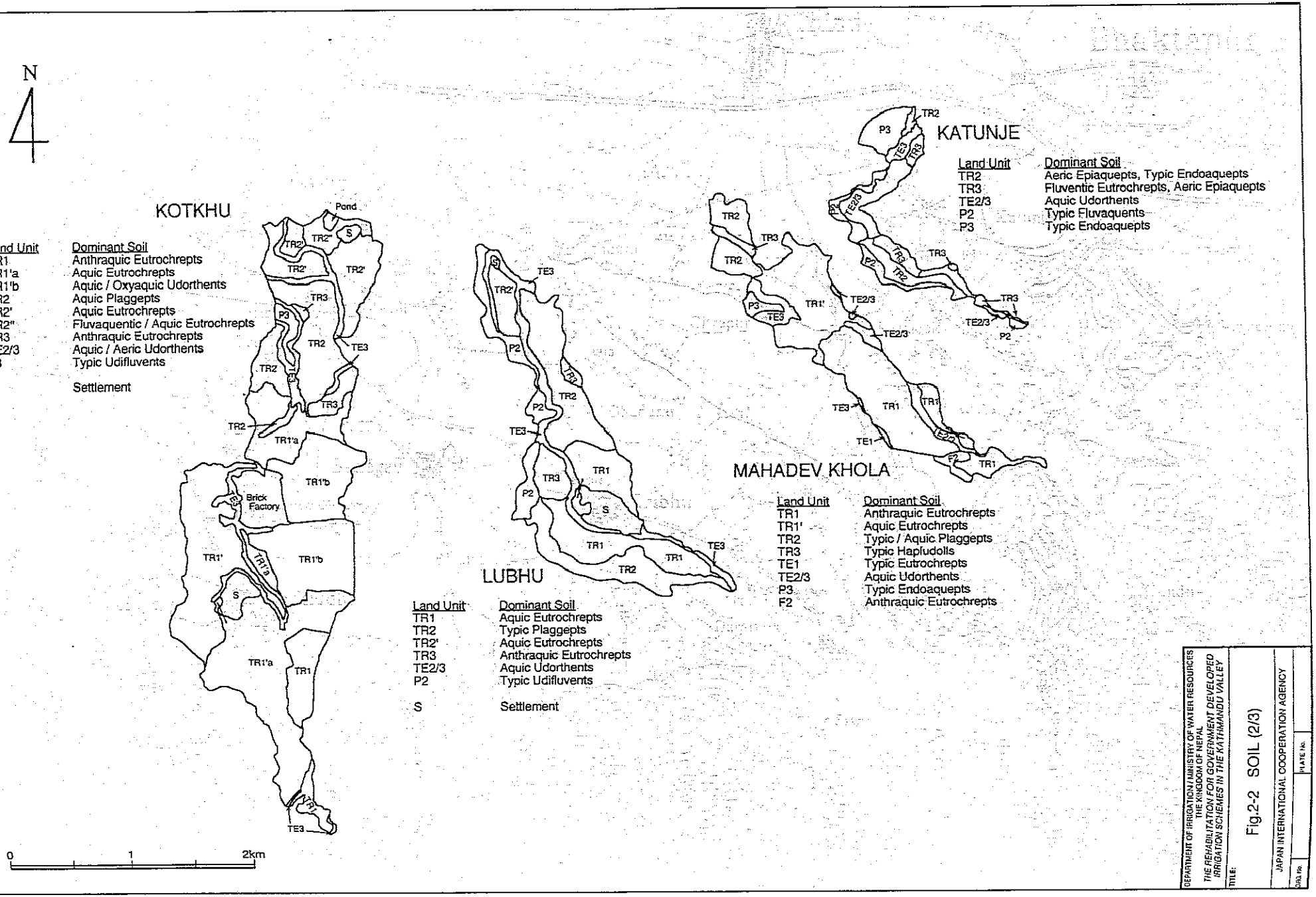


Fig.2-1 Location of Test Pits


N
4
BOSHAN
Land Unit
Dominant Soil
TR1'
Aquic (Ruptic Alfic) Eutrochrepts
TR2
Aquic Eutrochrepts
TR2'
Aquic (Ruptic Alfic) Eutrochrepts
TR3
Aquic Eutrochrepts
TE2/3
Aquic Udorthents
S
Settlement
THIKA BHAIRAW (I) & (II)
Land Unit
Dominant Soil
Thika Bhairaw (I)
TH1a
Typic Haplustalfs
TH1b
Aquic Haplustalfs
TR1
Aquic Eutrochrepts
TR1'a
Typic Eutrochrepts
TR1'b
Aquic Eutrochrepts
TR2
Aquic Eutrochrepts
TR2"
Fluvaquentic/Aquic Eutrochrepts
TR3
Anthraquic Eutorochrepts
TE2/3
Aquic/Aeric Udorthents
P2
Typic Fluvaquepts
P3
Typic Udifluvents, Aeric Endoaquepts
Thika Bhairaw (II)
TR1
Aquic Eutrochrepts
TR2
Aquic Eutrochrepts
TR3
Anthraquic Eutrochrepts
TE2/3
Aquic/Aeric Udorthents
P2
Typic Fluvaquepts
P3
Typic Udifluvents, Aeric Endoaquepts
S
Settlement
DHAKSHINKALI
Land Unit
Dominant Soil
TR3
Aquic Eutrochrepts
TE2/3
Aquic Udorthents
HS1
Aquic Eutrochrepts
0
1
2km
DEPARTMENT OF IRRIGATION / MINISTRY OF WATER RESOURCES
THE KINGDOM OF NEPAL
THE REHABILITATION FOR GOVERNMENT DEVELOPED IRRIGATION SCHEMES IN THE KATHMANDU VALLEY
TITLE:
Fig.2-2 SOIL (1/3)
JAPAN INTERNATIONAL COOPERATION AGENCY
ORG. No.
PLATE No.


N
KOTKHU
Land Unit | Dominant Soil
TR1 | Anthraquic Eutrochrepts
TR1'a | Aquic Eutrochrepts
TR1'b | Aquic / Oxyaquic Udorthents
TR2 | Aquic Plaggepts
TR2' | Aquic Eutrochrepts
TR2" | Fluvaquentic / Aquic Eutrochrepts
TR3 | Anthraquic Eutrochrepts
TE2/3 | Aquic / Aeric Udorthents
P3 | Typic Udifluvents
S | Settlement
Pond
Brick Factory
LUBHU
Land Unit | Dominant Soil
TR1 | Aquic Eutrochrepts
TR2 | Typic Plaggepts
TR2' | Aquic Eutrochrepts
TR3 | Anthraquic Eutrochrepts
TE2/3 | Aquic Udorthents
P2 | Typic Udifluvents
S | Settlement
KATUNJE
Land Unit | Dominant Soil
TR2 | Aeric Epiaquepts, Typic Endoaquepts
TR3 | Fluventic Eutrochrepts, Aeric Epiaquepts
TE2/3 | Aquic Udorthents
P2 | Typic Fluvaquents
P3 | Typic Endoaquepts
MAHADEV KHOLA
Land Unit | Dominant Soil
TR1 | Anthraquic Eutrochrepts
TR1' | Aquic Eutrochrepts
TR2 | Typic / Aquic Plaggepts
TR3 | Typic Hapludolls
TE1 | Typic Eutrochrepts
TE2/3 | Aquic Udorthents
P3 | Typic Endoaquepts
F2 | Anthraquic Eutrochrepts
0
1
2km
DEPARTMENT OF IRRIGATION / MINISTRY OF WATER RESOURCES THE KINGDOM OF NEPAL
THE REHABILITATION FOR GOVERNMENT DEVELOPED IRRIGATION SCHEMES IN THE KATHMANDU VALLEY
TITLE:
Fig.2-2 SOIL (2/3)
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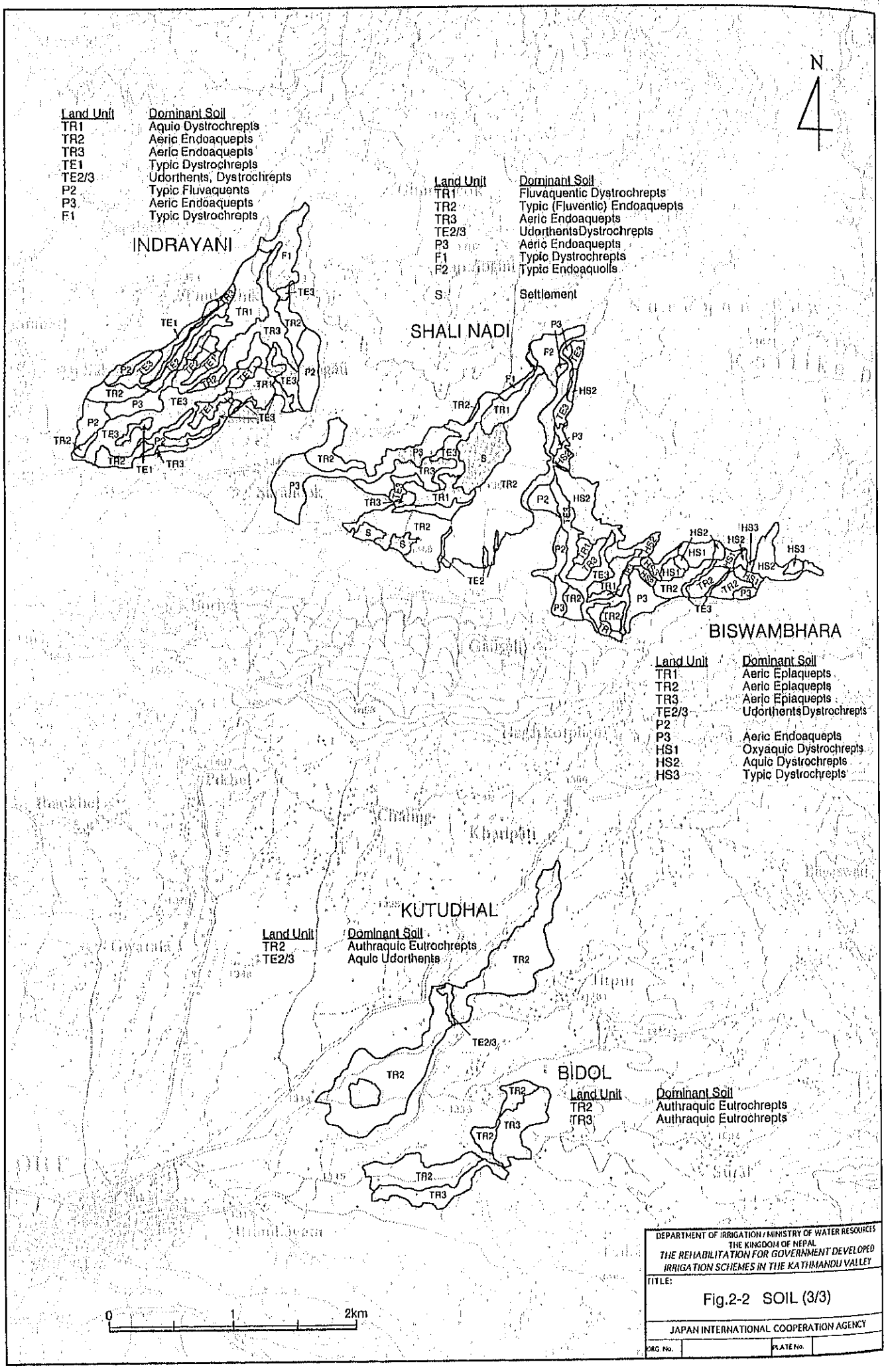
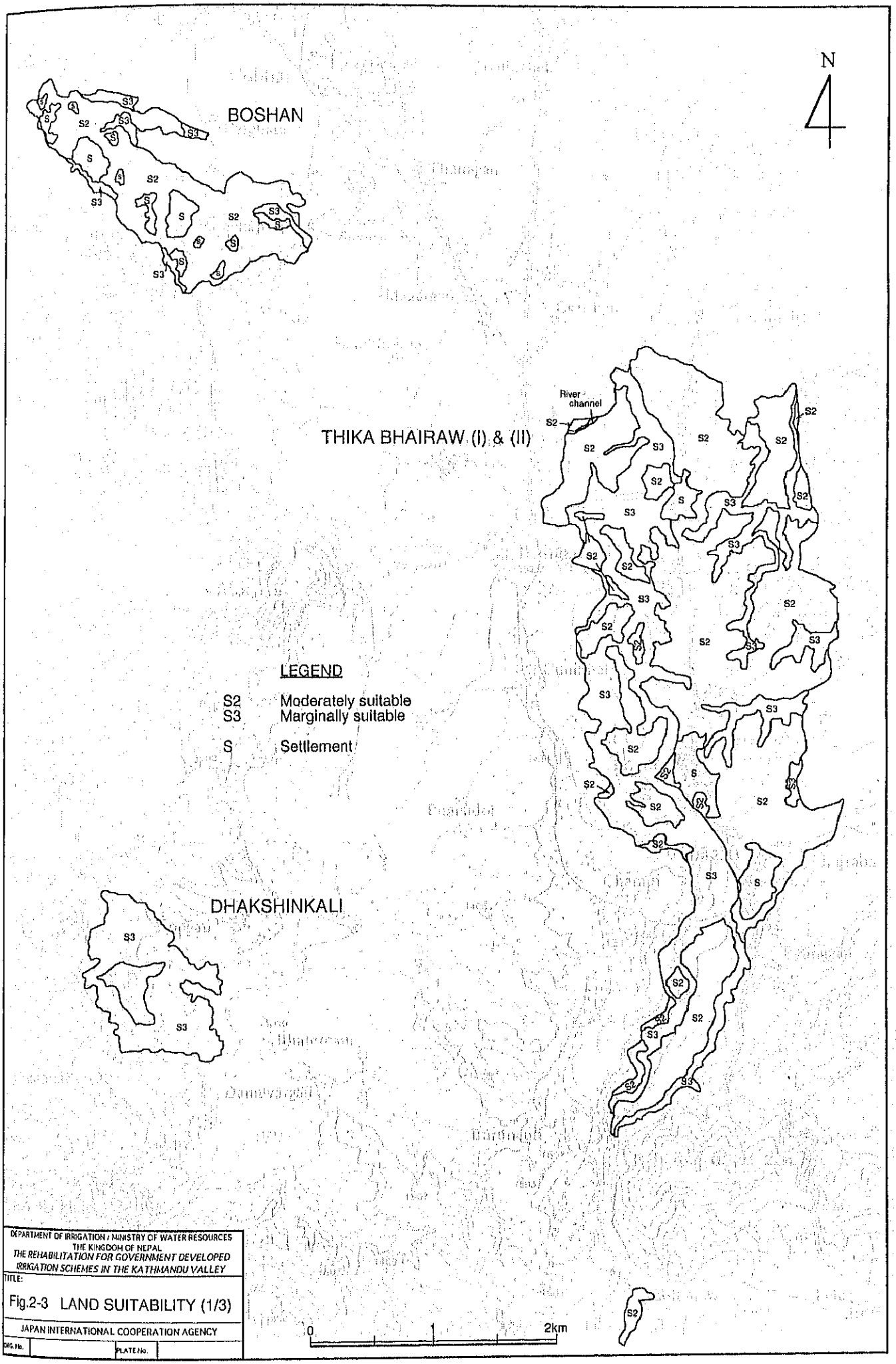

N
4
Land Unit
Dominant Soil
TR1
Aquic Dystrochrepts
TR2
Aeric Endoaquepts
TR3
Aeric Endoaquepts
TE1
Typic Dystrochrepts
TE2/3
Udorthents, Dystrochrepts
P2
Typic Fluvaquents
P3
Aeric Endoaquepts
F1
Typic Dystrochrepts
INDRAYANI
Land Unit
Dominant Soil
TR1
Fluvaquentic Dystrochrepts
TR2
Typic (Fluventic) Endoaquepts
TR3
Aeric Endoaquepts
TE2/3
UdorthentsDystrochrepts
P3
Aeric Endoaquepts
F1
Typic Dystrochrepts
P2
Typic Endoaquolls
S
Settlement
SHALI NADI
Land Unit
Dominant Soil
TR1
Aeric Epiaquepts
TR2
Aeric Epiaquepts
TR3
Aeric Epiaquepts
TE2/3
UdorthentsDystrochrepts
P2
P3
Aeric Endoaquepts
HS1
Oxyaquic Dystrochrepts
HS2
Aquic Dystrochrepts
HS3
Typic Dystrochrepts
BISWAMBHARA
KUTUDHAL
Land Unit
Dominant Soil
TR2
Authraquic Eutrochrepts
TE2/3
Aquic Udorthents
BIDOL
Land Unit
Dominant Soil
TR2
Authraquic Eutrochrepts
TR3
Authraquic Eutrochrepts
0
1
2km
DEPARTMENT OF IRRIGATION / MINISTRY OF WATER RESOURCES
THE KINGDOM OF NEPAL
THE REHABILITATION FOR GOVERNMENT DEVELOPED IRRIGATION SCHEMES IN THE KATHMANDU VALLEY
TITLE:
Fig.2-2 SOIL (3/3)
JAPAN INTERNATIONAL COOPERATION AGENCY
ORG. No.
PLATE No.



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TITLE:

Fig.2-3 LAND SUITABILITY (1/3)

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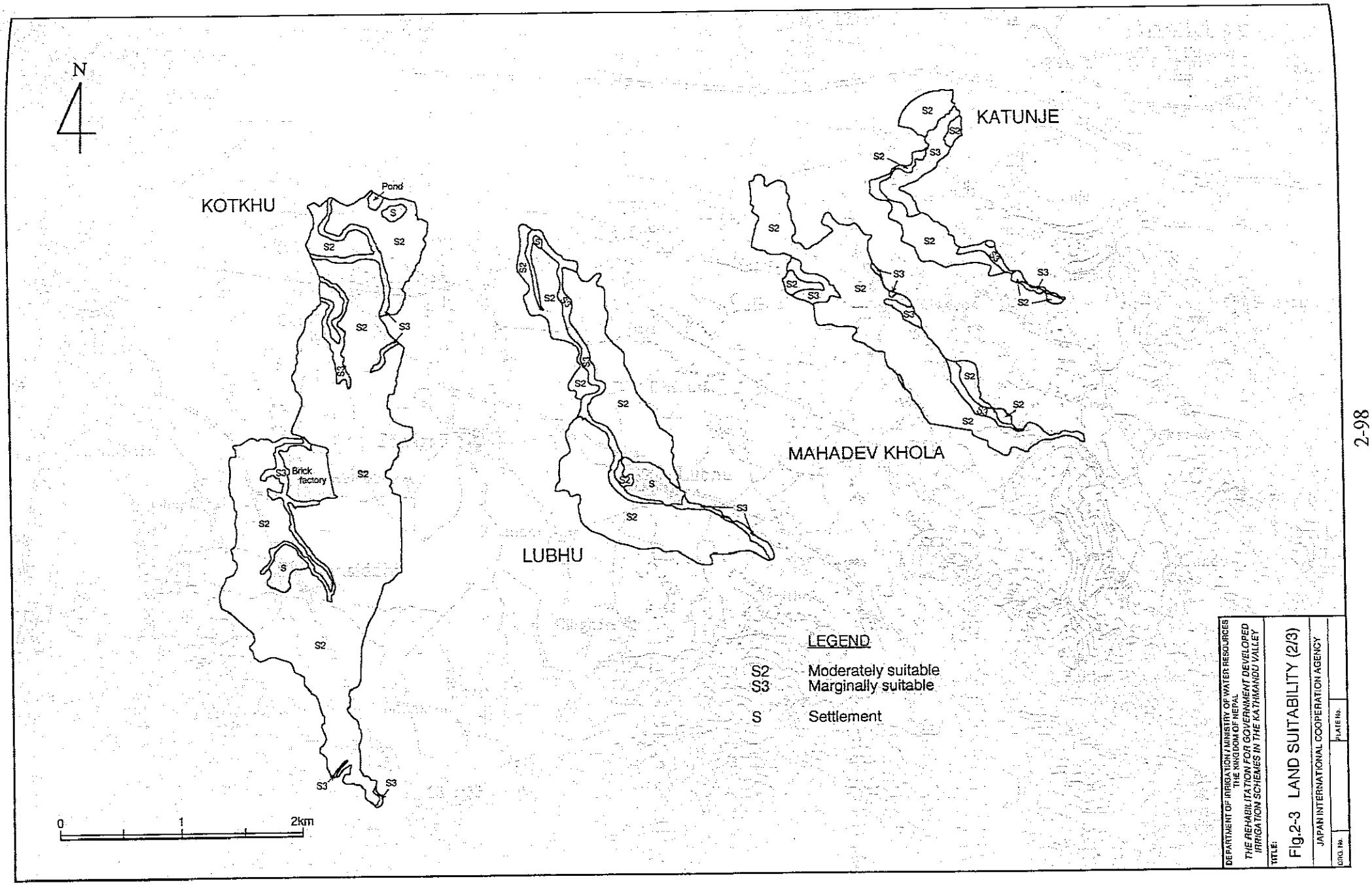
N
KOTKHU
Pond
S
S2
S3
Brick factory
KATUNJE
MAHADEV KHOLA
LUBHU
LEGEND
S2 Moderately suitable
S3 Marginally suitable
S Settlement
0
1
2km
DEPARTMENT OF IRRIGATION / MINISTRY OF WATER RESOURCES
THE KINGDOM OF NEPAL
THE REHABILITATION FOR GOVERNMENT DEVELOPED IRRIGATION SCHEMES IN THE KATHMANDU VALLEY
TITLE:
Fig.2-3 LAND SUITABILITY (2/3)
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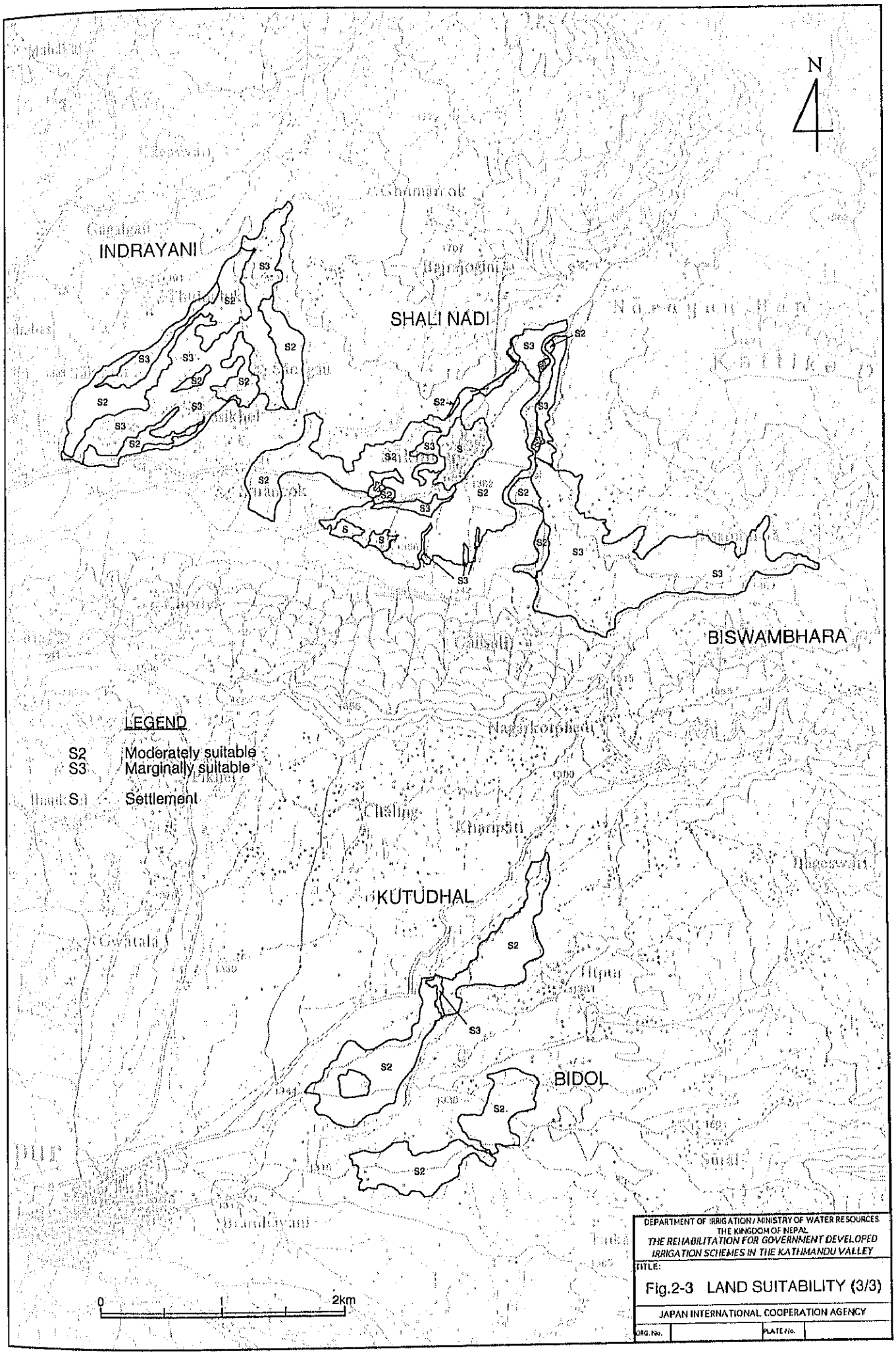

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THE REHABILITATION FOR GOVERNMENT DEVELOPED IRRIGATION SCHEMES IN THE KATHMANDU VALLEY

TITLE:

Fig.2-3 LAND SUITABILITY (3/3)

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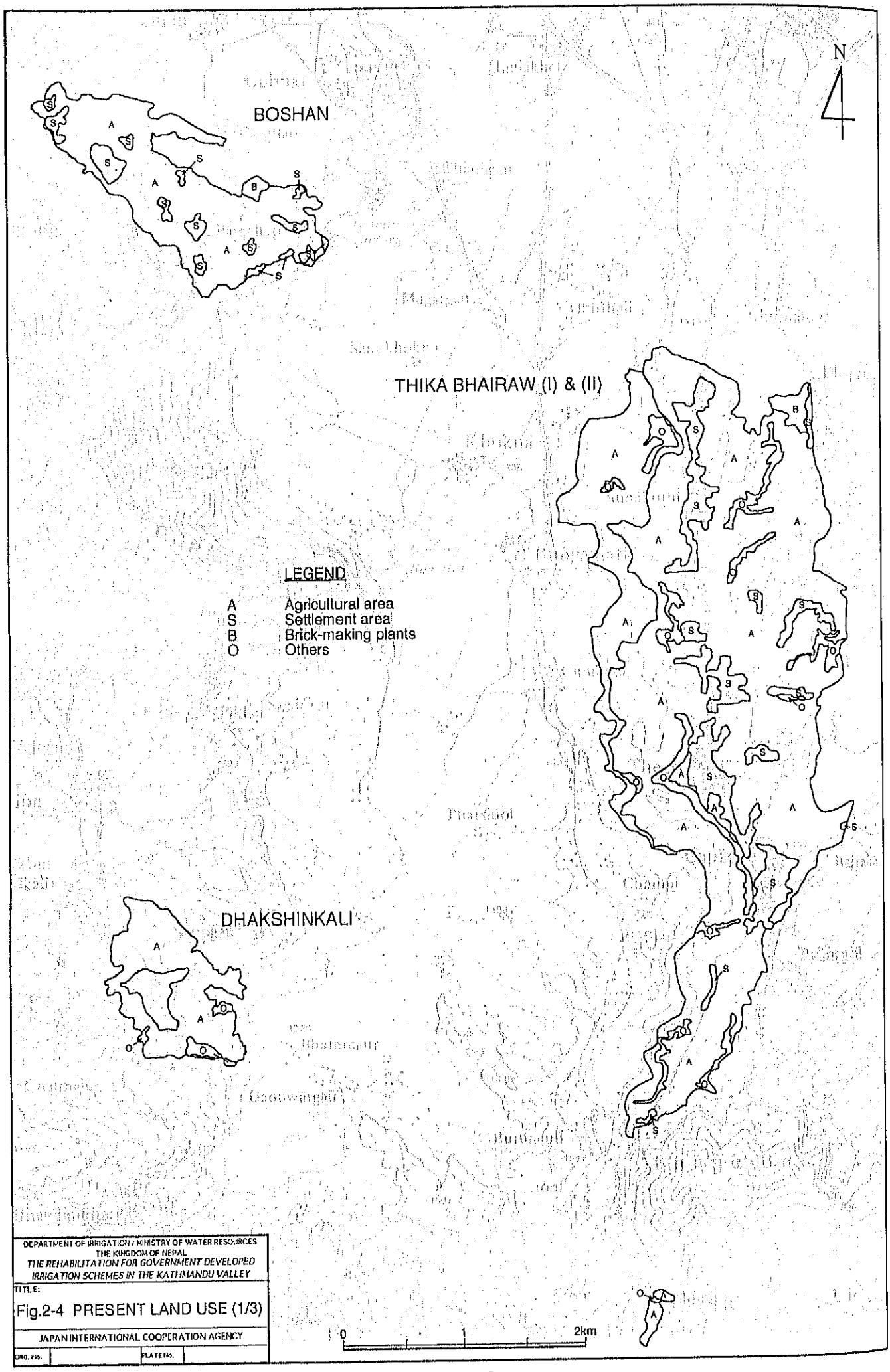
ORG. No. | PLATE No.



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THE REHABILITATION FOR GOVERNMENT DEVELOPED IRRIGATION SCHEMES IN THE KATHMANDU VALLEY

TITLE:

Fig.2-4 PRESENT LAND USE (1/3)

JAPAN INTERNATIONAL COOPERATION AGENCY

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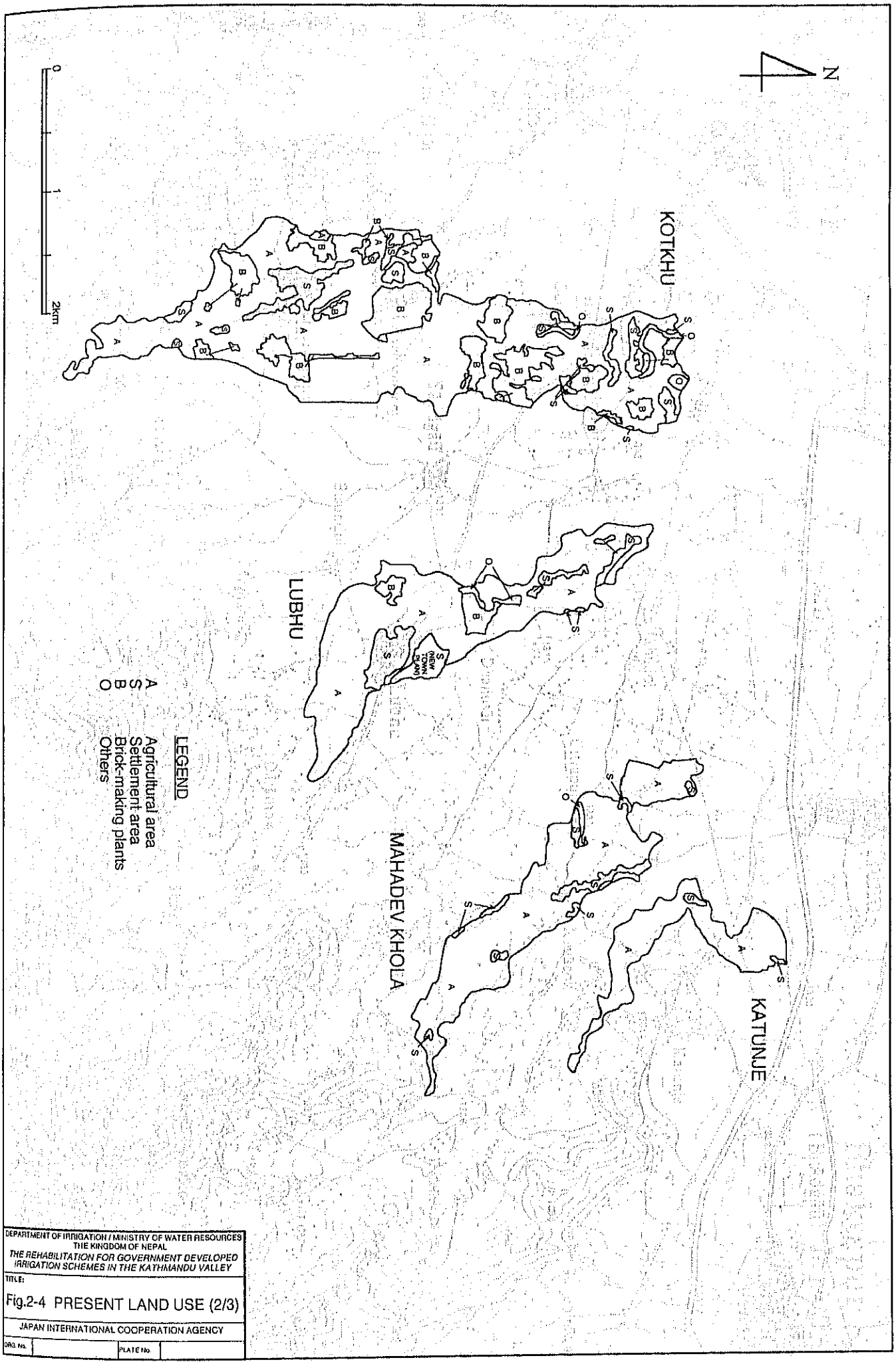

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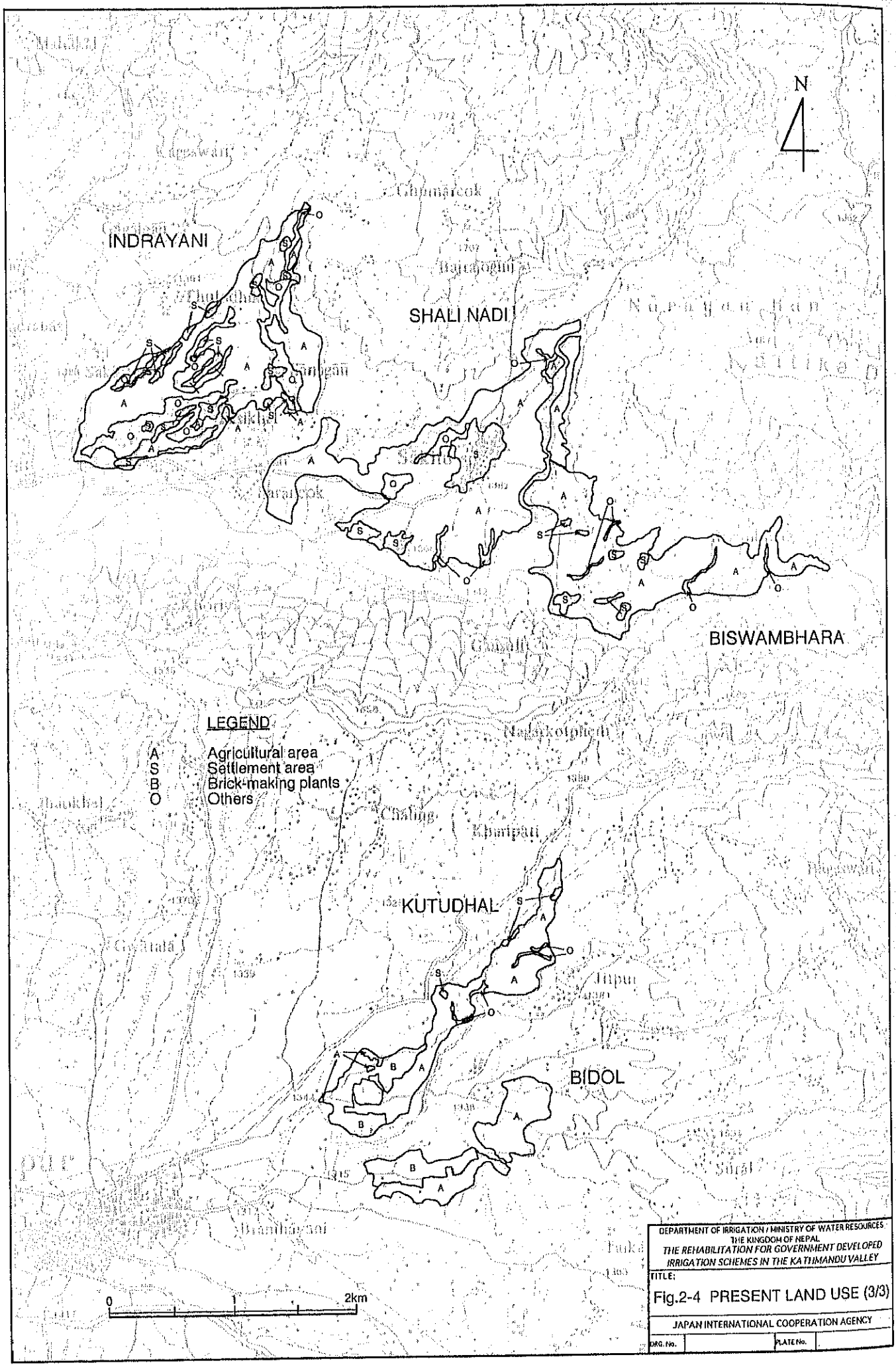
THE KINGDOM OF NEPAL
THE REHABILITATION FOR GOVERNMENT DEVELOPED IRRIGATION SCHEMES IN THE KATHMANDU VALLEY

TITLE:

Fig.2-4 PRESENT LAND USE (2/3)

JAPAN INTERNATIONAL COOPERATION AGENCY

DRG. No. | PLATE No.



DEPARTMENT OF IRRIGATION / MINISTRY OF WATER RESOURCES
THE KINGDOM OF NEPAL
THE REHABILITATION FOR GOVERNMENT DEVELOPED IRRIGATION SCHEMES IN THE KATHMANDU VALLEY

TITLE:
Fig.2-4 PRESENT LAND USE (3/3)

JAPAN INTERNATIONAL COOPERATION AGENCY

ORG. No. | PLATE No.

ANNEX - 3

RESULTS OF THE INVENTORY SURVEY

ANNEX - 3

RESULTS OF THE INVENTORY SURVEY

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Summary Sheet of Inventory Survey / Kathmandu District

No.	Sub No.	Name of Schemes	Project Area (ha.)		Priority by DOI	Involvement by ISP	Remarks	Selection by Study Team
			Originally Informed	Present				
AK-01	K-09	Balaju	60	25			Almost urbanized	Listed
AK-02	K-20	Balambu	20	50		Approved		Listed
AK-03	----	Balkhu	25	25			Almost urbanized, and too small	Listed
AK-04	K-07	Biswambhara	200	92	1/6			Listed
AK-05	K-3	Boshan	260	180	2/6			Listed
AK-06	K-8	Budhanikantha	200	200				Listed
AK-07	K-1	Dakshinkali	100	58				Listed
AK-08	-----	Dallu Kulo	10	----	-----		Almost urbanized, and too small	Omitted
AK-09	K-17	Dhulopuro	25	25		Approved		Listed
AK-10	K-13	Gogal Indrayani Kulo	162	130				Listed
AK-11	-----	Ghatte Khola	15	-----	----	Approved		Omitted
AK-12	K-6	Gokarna	375	75	6/6			Listed
AK-13	K-5	Ichadol	70	35				Listed
AK-14	K-11	Indrayani	145	62	4/6			Listed
AK-15	-----	Itakot	3	-----	-----		Not identified by DOI	Omitted
AK-16	K-4	Kudali Kulo	10	-----	----		Too small	Omitted
AK-17	K-22	Lamabagar	40	----	-----	Implemented		Omitted
AK-18	-----	Lupang	5	----	-----		Not identified by DOI	Omitted
AK-19	K-19	Manamatti	6	-----	-----		Too small	Omitted
AK-20	K-15	Narayan Khola	30	----	----	Implemented		Omitted
AK-21	K-12	Panchmane	60	-----	----	Approved		Omitted
AK-22	-----	Pashupati	75	----	-----		Almost urbanized	Omitted
AK-23	K-16	Patichaur	40	-----	----	Approved		Omitted
AK-24	K-2	Pharping Dhunge Dhara	339	74				Listed
AK-25	K-14	Shali Nadi	600	176	3/6			Listed
AK-26	K-18	Sundarijal	20	35				Listed
AK-27	K-10	Tokha	200	100	5/6			Listed
AK-28	-----	Takucha Rajilulo	30	-----	-----		Almost urbanized	Omitted
		Sub-Total (ha.)	**3,125**	**1,342**			**Sub-Total of Listed Schemes**	**16**

Summary Sheet of Inventory Survey / Bhaktapur District

No.	Sub No.	Name of Schemes	Project Area (ha.)		Priority by DOI	Involvement by ISP	Remarks	Selection by Study Team
			Originally Informed	Present				
AB-01	B-05	Balakhu	60	60				Listed
AB-02	B-07	Bidol	65	31				Listed
AB-03	B-04	Chakhu Khola	100	60				Listed
AB-04	B-10	Dhunge Dhara	520	210	2/4			Listed
AB-05	-----	Dhungre Kulo	28	-----	-----	Approved		Omitted
AB-06	-----	Doke and Triveni	180	-----	-----	Approved		Omitted
AB-07	-----	Ghatte Kulo	350	190				Listed
AB-08	B-08	Hanumante	100	150				Listed
AB-09	-----	Kathuraji Kulo	400	-----	-----		Not identified by DOI	Omitted
AB-10	B-02	Katunje	95	58	4/4			Listed
AB-11	-----	Khasyan Khusung	20	-----	-----	Approved		Omitted
AB-12	B-09	Kutudhal	40	46	3/4			Listed
AB-13	-----	Lapsetar	60	60				Listed
AB-14	B-01	Mahadev Khola	375	220	1/4			Listed
AB-15	-----	Nala Kulo	120	-----	-----		Outside Kathmandu Valley	Omitted
AB-16	-----	Narayanthali	30	-----	-----		Not identified by DOI	Omitted
AB-17	B-11	Nil Barahi	60	60				Listed
AB-18	B-03	Sipadol Katunje	100	100			Water shortage is anticipated in the future	Listed
AB-19	-----	Surya Biyanak	50	-----	-----		Fatal lack of irrigation water	Omitted
AB-20	B-06	Sweety (shishaugari)	23	23				Listed
AB-21	-----	Thimi Manohara Kulo	40	-----	-----		Not identified by DOI	Omitted
AB-22	-----	Walarkhe Kulo	40	-----	-----		Not identified by DOI	Omitted
AB-23	-----	Yogdhara Kulo	400	-----	-----		Not identified by DOI	Omitted
		Sub-Total (ha.)	**3,256**	**1,268**			**Sub-Total of Listed Schemes**	**13**

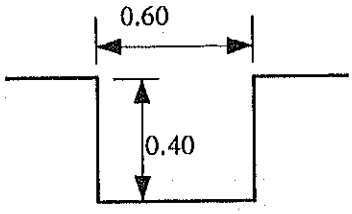
Summary Sheet of Inventory Survey / Lalitpur District

No.	Sub No.	Name of Schemes	Project Area (ha.) Originally Informed	Project Area (ha.) Present	Priority by DOI	Involvement by ISP	Remarks	Selection by Study Team
AL-01	-----	Aphar Kulo	250	-----	-----		Outside Kathmandu Valley	Omitted
AL-02	L-06	Bhorle	50	150		Implemented		**Listed**
AL-03	L-09	Champi	100	100		Implemented		**Listed**
AL-04	-----	Gimdi	20	-----	-----		Outside Kathmandu Valley	Omitted
AL-05	L-03	Godawari	104	175	6/6			**Listed**
AL-06	-----	Ikudhal Kulo	120	-----	-----		Outside Kathmandu Valley	Omitted
AL-07	-----	Kamabhu Kulo	50	-----	-----		Outside Kathmandu Valley	Omitted
AL-08	L-07	Khokana	300	150	5/6			**Listed**
AL-09	-----	Khurmi Khola	15	-----	-----		Outside Kathmandu Valley	Omitted
AL-10	L-04	Kotkhu	100	230	4/6			**Listed**
AL-11	-----	Kumbheswar	50	-----	-----		Outside Kathmandu Valley	Omitted
AL-12	-----	Lele Kulo	25	-----	-----		Outside Kathmandu Valley	Omitted
AL-13	L-05	Lubhu	600	138	3/6			**Listed**
AL-14	-----	Lukani Besi	10	-----	-----		Outside Kathmandu Valley	Omitted
AL-15	-----	Manikhet	40	-----	-----		Outside Kathmandu Valley	Omitted
AL-16	-----	Meltar	10	-----	-----		Outside Kathmandu Valley	Omitted
AL-17	-----	Pyutar	20	-----	-----		Outside Kathmandu Valley	Omitted
AL-18	L-08	Saibu / Makal Kulo, Sara Kulo	50	90		Approved		**Listed**
AL-19	L-01	Thika Bhairaw (1)	400	525	1/6			**Listed**
AL-20	L-02	Thika Bhairaw (2)	300	82	2/6			**Listed**
		Sub-Total (ha.)	**2,614**	**1,640**			**Sub-Total of Listed Schemes**	**9**
		Total (ha.)	**8,995**	**4,250**			**Total of Listed Schemes**	**38**

Survey Items	No. AK-01	Sub-No. K-09	Priority by DOI: Low
Name of Scheme	Balaju		
Location	Kathmandu District		
Water Resources	Drinking Water /		
Catchment Area	----- (km2) at the weir site		
Command Area	Present (Rainy Season) 25 ha.	Present (Dry Season) 20 ha.	
		[Originally Informed] 60 ha.	
Water Quality	Good for irrigation (at weir site)		
Cultivated Crops — Rainy Season	Paddy		
Cultivated Crops — Dry Season	Wheat, Potatoes, Vegetables		
Nos. of Farmers Families	800		
Nos of Administrative Division	Village Development Committee (V.D.C.): 1	Ward: 2	Municipality:
Existence of Benchmark	None		
Land Cost Near the Scheme	Lhak Rs./ropani (0.05ha.)		
Operation & Maintenance	O/M is being conducted by DOI.		
1)Organization	None Nos.	Members	Established in
2)Manpower Assignment	None		
3)Budget Allocation	50,000Rs. in 1990/1991, 25,000Rs. in 1992/1993.		
4)Main Activities	None Times/Year ( )		
Surrounding Conditions	Rapid urbanization is progressing in the area under this scheme and it makes difficult to continue agriculture here in the future. Most farmers have their own lands.		
Problems with the Scheme	The cultivable area under this scheme is decreasing due to rapid urbanization. Unstable water supply for irrigation is another bottleneck of the scheme. The canal is also badly managed and sometimes it is difficult to trace it.		
Farmer's Intention	No aggressive intention to continue agriculture is observed.		
Interviewee			
Involvement by Irrigation Sector Programs (ISP) by ADB	None		
Other Related Projects	None		
1) Project Name			
2) Status			

1 -1/2

Intake Facility	Descriptions	
1) Year constructed	Not known	Year rehabilitated:
2) By Whom?	DOI	
3) Type	Fixed weir, L=3.0(m)	
4) Material	Concrete	
5) Nos. of Gate	None	
6) Gate Dimension	W= (m) / D=. (m)	
7) Discharge	Q= l/s. (Designed)	Q= l/s.(Estimated)
8) Kinds and Nos. of Other Structures	No particular structures to be described.	
9) Availability of Construction Drawings	None	
10) Present Condition	The weir is in good condition.	

Main Canal	Descriptions
1) Location	Near the water tank for drinking water
2) Type	Rectangular
3) Material	Earth
4) Capacity	113 l/sec. (Designed)
5) Length and Slope	1.2 km in total
Sketch of Representative Canal Section (Dimensions are in metres)	
6) Present Condition	This canal is not maintained well. Thus, much deposits in the canal are observed.

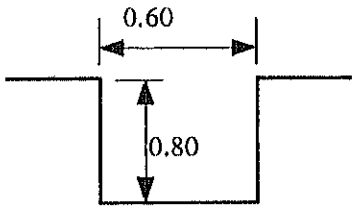
General Geological Feauture	Silty loam soil prevails along the canal.
Evaluation of the Scheme by JICA Study Team	It seems difficult to continue agriculture in the area under this scheme due to rapid urbanization of the area. Accordingly, this scheme can't be taken up as one of the potential rehabilitation schemes.

Date of Field Survey: 4, May., '93 /

1 -2/2

Survey Items	No. AK-02	Sub-No. K-20	Priority by DOI: Low
Name of Scheme	Balambu		
Location	Kathmandu District		
Water Resources	Indrawati Khola /		
Catchment Area	23 (km2) at the weir site		
Command Area	Present (Rainy Season) 50 ha.	Present (Dry Season) 20 ha.	
		[Originally Informed] 20 ha.	
Water Quality	Good, suitable for irrigation		
Cultivated Crops — Rainy Season	Paddy		
Cultivated Crops — Dry Season	Wheat, Potatoes, Vegetables		
Nos. of Farmers Families	1,500		
Nos of Administrative Division	Village Development Committee (V.D.C.): 1	Ward: 2	Municipality: 0
Existence of Benchmark	None		
Land Cost Near the Scheme	2.5 Lhak Rs./ropani (0.05ha.)		
Operation & Maintenance	O/M is being conducted by DOI and WUA.		
1)Organization	WUA 1 Nos.	11 Members	Established in 1990
2)Manpower Assignment	2 Men form WUA		
3)Budget Allocation	Nil		
4)Main Activities	1-2 Times/Year (Desilting and weeding)		
Surrounding Conditions	Urbanization is also observed in the area under this scheme. And it has become difficult to continue agriculture here in the future.		
Problems with the Scheme	The downstream apron of the weir is badly damaged. Also, siltation is observed at the upstream of the weir. The canal also needs rehabilitation.		
Farmer's Intention	No aggressive intention is observed.		
Interviewee			
Involvement by Irrigation Sector Programs (ISP) by ADB	This scheme is under request for ISP.		
Other Related Projects	None		
1) Project Name			
2) Status			

Intake Facility	Descriptions	
1) Year constructed	Very old, not known	**Year rehabilitated:** 1989
2) By Whom?	DOI	
3) Type	Fixed weir with rectangular notch, L=30(m)	
4) Material	Plain concrete	
5) Nos. of Gate	1 Steel-made gate on the left bank canal.	
6) Gate Dimension	**W=** 0.6 (m) / **D=**.0.8 (m)	
7) Discharge	**Q=** **l/s. (Designed)**	**Q=** **l/s.(Estimated)**
8) Kinds and Nos. of Other Structures	No particular structures to be described.	
9) Availability of Construction Drawings	None	
10) Present Condition	This weir was rehabilitated in1989, however, additional rehabilitation will be needed. The gates is in good condition.	

Main Canal	Descriptions	
1) Location	Left bank only.	
2) Type	Almost rectangular	
3) Material	Earth	
4) Capacity	115 l/sec.	
5) Length and Slope	2.0km	
Sketch of Representative Canal Section (Dimensions are in metres)		
6) Present Condition	Siltation with a depth of 20cm in canal is observed.	
General Geological Feauture	Silty loam soil prevails along the canal.	
Evaluation of the Scheme by JICA Study Team	Since this scheme is under request for ISP, it is out of target.	

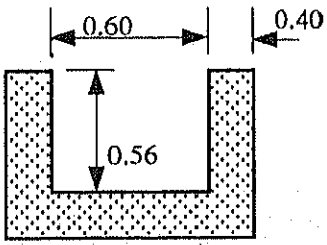
Date of Field Survey: 4, May., '93 /

2 -2/2

Survey Items	No. AK-03	Sub-No. -----	Priority by DOI: Low
Name of Scheme	Balkhu		
Location	Kathmandu District		
Water Resources	/		
Catchment Area	38 (km2) at the weir site		
Command Area	Present (Rainy Season) 25 ha.	Present (Dry Season) ha.	
		[Originally Informed] 25 ha.	
Water Quality	Good for irrigation		
Cultivated Crops — Rainy Season	Paddy		
Cultivated Crops — Dry Season	Wheat, Potatoes		
Nos. of Farmers Families			
Nos of Administrative Division	Village Development Committee (V.D.C.): 1	Ward: 3	Municipality:
Existence of Benchmark	None		
Land Cost Near the Scheme	50 Lhak Rs./ropani (0.05ha.)		
Operation & Maintenance	O/M is being conducted by DOI.		
1)Organization	None Nos.	Members	Established in
2)Manpower Assignment	None		
3)Budget Allocation	Nil		
4)Main Activities	None Times/Year ( )		
Surrounding Conditions	Urbanization in the area under this scheme is remarkable and it has become difficult to continue agriculture there in the future.		
Problems with the Scheme	The canal is maintained badly. O/M activities are very weak here.		
Farmer's Intention	Farmers want to continue agriculture, however, they say, prevailing situation doesn't allow it.		
Interviewee			
Involvement by Irrigation Sector Programs (ISP) by ADB	None		
Other Related Projects	None		
1) Project Name			
2) Status			

3-1/2

Intake Facility	Descriptions	
1) Year constructed	Very old, not known	**Year rehabilitated:**
2) By Whom?	DOI	
3) Type	Fixed weir, L=5.0(m)	
4) Material	Brick masonry	
5) Nos. of Gate	None	
6) Gate Dimension	W= (m) / D=. (m)	
7) Discharge	Q= l/s. (Designed)	Q= l/s.(Estimated)
8) Kinds and Nos. of Other Structures	No particular structures to be described.	
9) Availability of Construction Drawings	None, all lost.	
10) Present Condition	The weir is badly maintained and needs rehabilitation.	

Main Canal	Descriptions
1) Location	Right bank only
2) Type	Rectangular
3) Material	Brick / Earth
4) Capacity	
5) Length and Slope	800m in total
Sketch of Representative Canal Section (Dimensions are in metres)	 100m only for brick-lined portion
6) Present Condition	The canal is badly maintained and siltation in the canal is observed.

General Geological Feauture	Silt soil prevails along the canal.
Evaluation of the Scheme by JICA Study Team	This scheme in not considered as a potential rehabilitation schemes, considering the surrounding conditions which make it difficult to continue agriculture.

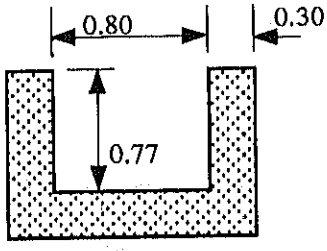
Date of Field Survey: 4, May., '93 /

3 -2/2

Survey Items	No. AK-04	Sub-No. K-07	Priority by DOI: 1/6
Name of Scheme	**Biswambhara**		
Location	Kathmandu District		
Water Resources	Gadedi Khola /		
Catchment Area	5.8 (km2) at the intake site.		
Command Area	Present (Rainy Season) 92 ha.	Present (Dry Season) ha.	
		[Originally Informed] 200 ha.	
Water Quality	Good for irrigation		
Cultivated Crops — Rainy Season	Paddy		
Cultivated Crops — Dry Season	Wheat, Potatoes, Vegetables		
Nos. of Farmers Families	237		
Nos of Administrative Division	Village Development Committee (V.D.C.): 2	Ward: 17	Municipality: 0
Existence of Benchmark	None		
Land Cost Near the Scheme	0.5 Lhak Rs./ropani (0.05ha.)		
Operation & Maintenance	O/M had been carried out by DIO, and now WUA is taking care of it.		
1)Organization	WUA (Not registered) 1 Nos.	11 Members	Established in 1993
2)Manpower Assignment	2 Men are attached to the scheme.		
3)Budget Allocation	14,000 Rs. in 1990/1991, 75,000Rs. in 1992/1993 and 25,000 Rs. for 1994.		
4)Main Activities	2 Times/Year (Desilting and weeding)		
Surrounding Conditions	The area under this scheme is suitable for agriculture and no urbanization is in progress.		
Problems with the Scheme	The weir is relatively well-maintained. The canal systems are also relatively well-maintained except lower portion of the systems, where much water leakage is observed. Lack of road maintenance hinders transportation of agricultural products to markets, leading them to discouragement in vegetable cultivation by farmers.		
Farmer's Intention	Farmers in charge of O/M for the scheme want to reinforce manpower for O/M. Farmers' intention to continue agriculture is strong here. They want that maintenance of roads be strengthened to improve above-mentioned situation.		
Interviewee			
Involvement by Irrigation Sector Programs (ISP) by ADB	None		
Other Related Projects	None		
1) Project Name			
2) Status			

4-1/2

Intake Facility	Descriptions	
1) Year constructed	1975	Year rehabilitated:
2) By Whom?	Central Regional Irrigation Directorate	
3) Type	Fixed weir, L=20(m)	
4) Material	Concrete	
5) Nos. of Gate	1 wooden gate on the right bank canal	
6) Gate Dimension	W= 0.63 (m) / D=0.8 (m)	
7) Discharge	Q= 436 l/s. (Designed)	Q= ### l/s.(Estimated)
8) Kinds and Nos. of Other Structures	4 escapes, 7 cross drainages and 3 drop structures.	
9) Availability of Construction Drawings	None	
10) Present Condition	Relatively good, and with minor rehabilitation, the function of the weir will be much improved.	

Main Canal	Descriptions
1) Location	Right bank only.
2) Type	Rectangular
3) Material	Stone masonry / Earth
4) Capacity	436 l/sec (Designed)
5) Length and Slope	4.0 km in total, S=1/400
Sketch of Representative Canal Section (Dimensions are in metres)	
6) Present Condition	Generally good, except lower portion of the canal, where much water leakage from the canal is observed. Landslides are observed along the canal.
General Geological Feauture	Sandy loam soil prevails along the canal.
Evaluation of the Scheme by JICA Study Team	Since the area under this scheme is suitable for agriculture, it should be reserved as agricultural area through rehabilitation of the weir including its canal systems. This scheme may be considered as one of the potential irrigation schemes to be rehabilitated.

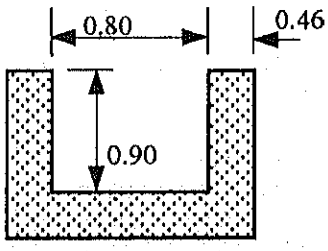
Date of Field Survey: 25, Apr., '94 /

4 -2/2

Survey Items	No. AK-05	Sub-No. K-3	Priority by DOI: 2/6
Name of Scheme	**Boshan**		
Location	Kathmandu District		
Water Resources	Boshan Khola /		
Catchment Area	6.8 (km2) at the intake site.		
Command Area	Present (Rainy Season) 180 ha.	Present (Dry Season) ha.	
		[Originally Informed] 260 ha.	
Water Quality	Suitable for irrigation		
Cultivated Crops — Rainy Season	Paddy		
Cultivated Crops — Dry Season	Wheat, Potatoes, Vegetables		
Nos. of Farmers Families	851		
Nos of Administrative Division	Village Development Committee (V.D.C.): 7	Ward: 19	Municipality: 0
Existence of Benchmark	None		
Land Cost Near the Scheme	1.0 Lhak Rs./ropani (0.05ha.)		
Operation & Maintenance	O/M is being conducted by DIO and WUA.		
1)Organization	WUA (Registered) 1 Nos.	9 Members	Established in
2)Manpower Assignment	2 Men are attached to the scheme.		
3)Budget Allocation	10,000 Rs. in 1990/1991 and 32,000 Rs. for the year of 1994.		
4)Main Activities	4 Times/Year (Desilting and weeding)		
Surrounding Conditions	The area under this scheme is suitable for agriculture and no urbanization is in progress.		
Problems with the Scheme	This scheme has very complicated canal systems consisting of 4 schemes (No.2 to No.5 schemes). And each scheme is relatively old and needs rehabilitation. However, river discharge at No.2 and No.4 intakes is being reinforced by the water from the springs located on the left bank of the river. Accordingly, river discharge seems to be relatively stable even in dry seasons.		
Farmer's Intention	Generally speaking, farmer's intention to continue agriculture is observed to be strong. Also, they have intention to take part in O/M of the irrigation facilities if the canal systems fully rehabilitated under the project.		
Interviewee			
Involvement by Irrigation Sector Programs (ISP) by ADB	None		
Other Related Projects	None		
1) Project Name			
2) Status			

5 -1/2

Intake Facility	Descriptions	
1) Year constructed	1958 / 1965	**Year rehabilitated:** 1985 / 1986
2) By Whom?	Indian Government	
3) Type	Fixed weir at No.2 intake (L=20 m) and Fixed weir at No.4 Intake(L=7 m)	
4) Material	Stone / Brick	
5) Nos. of Gate	None	
6) Gate Dimension	W= (m) / D= (m)	
7) Discharge	Q= l/s. (Designed)	Q= ### l/s.(Estimated)
8) Kinds and Nos. of Other Structures	No particular structures to be described.	
9) Availability of Construction Drawings	None	
10) Present Condition	This scheme was badly damaged by the floods in 1980 and temporary intake facilities were constructed in 1985 and 1986 by DOI. Accordingly, all structures at each intake site should be replaced with new one.	

Main Canal	Descriptions
1) Location	Left bank for the upstream intake
2) Type	Rectangular
3) Material	Stone masonry / Earth
4) Capacity	
5) Length and Slope	8.54 km in total, S=1/500
Sketch of Representative Canal Section (Dimensions are in metres)	 (3.0km, for stone masonry portion)
6) Present Condition	All the canal systems under each scheme are badly damaged and much water leakage from the canals is observed. Local landslides are also observed along the canals.

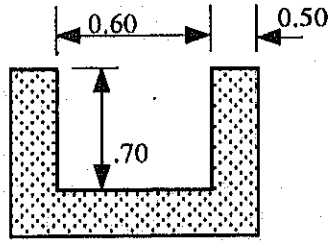
General Geological Feauture	Sandy loam soil prevails along the canals.
Evaluation of the Scheme by JICA Study Team	Since this scheme is maintained by temporary facilities, rehabilitation of the weir and canals is urgently required. River discharge at each intake site seems to be stable even in dry seasons compared to the other schemes due to additional water supply by springs located on the left bank of the river. This scheme may be considered as one of the potential schemes to be rehabilitated.

Date of Field Survey: 1, May., '94 / 5 -2/2

Survey Items	No. AK-06	Sub-No. K-8	Priority by DOI: Low
Name of Scheme	Budhanikantha		
Location	Kathmandu District		
Water Resources	Bisnumati Khola /		
Catchment Area	3.5 (km2) at the weir site		
Command Area	Present (Rainy Season) 200 ha.	Present (Dry Season) 150 ha.	
		[Originally Informed] 200 ha.	
Water Quality	Suitable for irrigation		
Cultivated Crops — Rainy Season	Paddy		
Cultivated Crops — Dry Season	Wheat, Potatoes, Vegetables		
Nos. of Farmers Families	Not known		
Nos of Administrative Division	Village Development Committee (V.D.C.): 1	Ward: 1	Municipality: 0
Existence of Benchmark	None		
Land Cost Near the Scheme	2.5 Lhak Rs./ropani (0.05ha.)		
Operation & Maintenance	O/M is being conducted by DIO.		
1)Organization	None Nos.	Members	Established in
2)Manpower Assignment			
3)Budget Allocation			
4)Main Activities	1 Times/Year (Desilting)		
Surrounding Conditions	Urbanization is progressing along main road in the area especially at the downstream (south) part of the area, and difficult to continue agriculture in the area. The school yard is neighboring the intake weir.		
Problems with the Scheme	The cultivated area under this scheme is decreasing due to rapid urbanization. Main canal passes through school yard (total length is 700m) located just downstream of the intake site. It makes difficult to maintain the canal.		
Farmer's Intention			
Interviewee			
Involvement by Irrigation Sector Programs (ISP) by ADB	None		
Other Related Projects	None		
1) Project Name			
2) Status			

6-1/2

Intake Facility	Descriptions	
1) Year constructed	Not known, very old	Year rehabilitated:
2) By Whom?	Originally constructed by farmer and rehabilitated by DIO	
3) Type	Fixed weir, L=3.8(m)	
4) Material	Stone masonry	
5) Nos. of Gate	None	
6) Gate Dimension	W= (m) / D=. (m)	
7) Discharge	Q= l/s. (Designed)	Q= l/s.(Estimated)
8) Kinds and Nos. of Other Structures	No particular structures to be described.	
9) Availability of Construction Drawings	None	
10) Present Condition	May need rehabilitation to keep irrigation water supply stable. Downstream portion of the weir is rehabilitated/protected by gabion.	

Main Canal	Descriptions
1) Location	Left bank only
2) Type	Rectangular
3) Material	Masonry / Earth
4) Capacity	142 l/sec.
5) Length and Slope	4.2 km
Sketch of Representative Canal Section (Dimensions are in metres)	 (40m, for stone masonry portion)
6) Present Condition	Though road crossing work is rehabilitated, canals are not maintained well. So that it is difficult to trace the route of canals. It seems that canals are not used well for agriculture.

General Geological Feauture	Silty loam soil prevails along the canal.
Evaluation of the Scheme by JICA Study Team	It seems difficult to continue agriculture especially at the downstream part of the area. And cultivable area is also limited at the upstream part of the area. Accordingly, this scheme has low potential for the rehabilitation schemes.

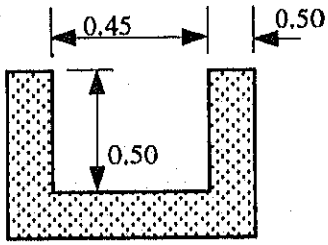
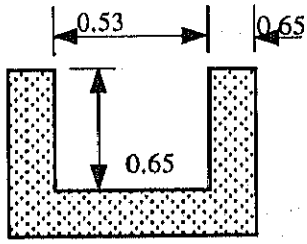
Date of Field Survey: 27, Apr., '93 /

6-2/2

Survey Items	No. AK-07	Sub-No. K-1	Priority by DOI: Low
Name of Scheme	**Dakshinkali**		
Location	Kathmandu District		
Water Resources	Karpa Khola / Hundu Khola /		
Catchment Area	10.0 (km2) at the upper intake site.		
Command Area	Present (Rainy Season) 58 ha.	Present (Dry Season) ha.	
		[Originally Informed] 100 ha.	
Water Quality	Good, suitable for irrigaiton.		
Cultivated Crops — Rainy Season	Paddy		
Cultivated Crops — Dry Season	Wheat, Potatoes, Vegetables		
Nos. of Farmers Families	400		
Nos of Administrative Division	Village Development Committee (V.D.C.): 1	Ward: 7	Municipality: 0
Existence of Benchmark	None		
Land Cost Near the Scheme	0.7 Lhak Rs./ropani (0.05ha.)		
Operation & Maintenance	O/M is being conducted by DIO.		
1)Organization	None 0 Nos.	0 Members	Established in
2)Manpower Assignment	3 Men are attached to the scheme		
3)Budget Allocation	20,000Rs. in 1990/1991 and 25,000 Rs. for the year of 1994.		
4)Main Activities	3 Times/Year (Desilting and weeding)		
Surrounding Conditions	This scheme has two intake facilities, i.e., (upper) and (lower) intake facilities. Upper facility is a temporary gabion weir and lower one is a permanent weir made of reinforced concrete. Both intake facilities are located near the old temple.		
Problems with the Scheme	The canal systems under lower intake facility are badly damaged and sometimes canals can not be traced.		
Farmer's Intention	No aggressive intention to continue agriculture is observed.		
Interviewee			
Involvement by Irrigation Sector Programs (ISP) by ADB	None		
Other Related Projects	None		
1) Project Name			
2) Status			

7-1/2

Intake Facility	Descriptions	
1) Year constructed	1973-1979	Year rehabilitated:
2) By Whom?	DOI / DOI	
3) Type	Temporary weir (upper), Fixed weir (lower)	
4) Material	Gabion (upper), Reinforced concrete (lower)	
5) Nos. of Gate	1 Steel-made slide gate for each intake facility.	
6) Gate Dimension	W= 0.45(u), 1.1(d) (m) / D= 0.45(u), 0.9(d) (m)	
7) Discharge	Q= 140 l/s. (Designed)	Q= ### l/s.(Estimated)
8) Kinds and Nos. of Other Structures	No particular structures except 2 intake structures.	
9) Availability of Construction Drawings	None	
10) Present Condition	The upper weir is a temporary gabion weir with a length of 6m and it needs rehabilitation. And the lower weir is a permanent weir with a length of 12m and is well maintained.	

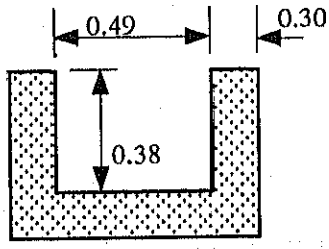
Main Canal	Descriptions	
1) Location	Left bank for upper intake and also left bank for lower intake.	
2) Type	Rectangular (Upper)	Rectangular (Lower)
3) Material	Stone masonry / Earth	Brick / Earth
4) Capacity	140 l/sec.	
5) Length and Slope	5.2km	1.8km
Sketch of Representative Canal Section (Dimensions are in metres)	 (Upper intake canal)	 (Lower intake canal)
6) Present Condition	(Upper in take) Maintenance and desilting are done well. And no siltation is observed in the canal. (Lower intake) Downstream portion of the canal is badly damaged and needs rehabilitation.	

General Geological Feauture	Soil, containing gravels prevails along the canal.
Evaluation of the Scheme by JICA Study Team	The scheme is surrounded by the area where a historical temple exists. In addition, there exists a crematorial place just downstream of of lower intake. Since lower intake is relatively in good condition, rehabilitation only for upper weir and the canal systems under lower intake may be considered, depending on further study.

Date of Field Survey: 27, Apr., '95 / 7 -2/2

Survey Items	No. AK-09	Sub-No. K-17	Priority by DOI: Low
Name of Scheme	Dhulopuro		
Location	Kathmandu District		
Water Resources	Amaleko Khahare /		
Catchment Area	0.3 (km2) at the weir site		
Command Area	Present (Rainy Season) 25 ha.	Present (Dry Season) ha.	
		[Originally Informed] 25 ha.	
Water Quality	Not good, but can be used for irrigation.		
Cultivated Crops — Rainy Season	Paddy		
Cultivated Crops — Dry Season	Wheat, Potatoes, Vegetables		
Nos. of Farmers Families	1,500		
Nos of Administrative Division	Village Development Committee (V.D.C.): 1	Ward: 1	Municipality: 0
Existence of Benchmark	None		
Land Cost Near the Scheme	1.5 Lhak Rs./ropani (0.05ha.)		
Operation & Maintenance	Previously O/M was conducted by DOI and now it is being carried out by WUA.		
1)Organization	W.U.A 1 Nos.	22 Members	Established in 1991
2)Manpower Assignment	1 Man is attached to the scheme.		
3)Budget Allocation	Nil		
4)Main Activities	2 Times/Year (Desilting and weeding)		
Surrounding Conditions	The area under this scheme is good for agriculture and no urbanization is observed. Access to the scheme is difficult.		
Problems with the Scheme	Both the intake and canal need rehabilitation.		
Farmer's Intention	Farmers want to go for early rehabilitation of the scheme by ISP.		
Interviewee	*Nabi Raj Bhandary*		
Involvement by Irrigation Sector Programs (ISP) by ADB	This scheme is under request for ISP		
Other Related Projects	Drinking water project		
1) Project Name	Not known		
2) Status			

Intake Facility	Descriptions	
1) Year constructed	Not known	**Year rehabilitated:** 1991
2) By Whom?	DOI	
3) Type	Fixed weir, L=5(m)	
4) Material	Stone masonry protected with gabion	
5) Nos. of Gate	1 Steel-made gate on the left bank of canal.	
6) Gate Dimension	W= 0.6 (m) / D=0.6 (m)	
7) Discharge	Q= l/s. (Designed)	Q= 4.5 l/s.(Estimated)
8) Kinds and Nos. of Other Structures	1 nos. of siphon.	
9) Availability of Construction Drawings	None	
10) Present Condition	The weir is generally in good condition at present.	

Main Canal	Descriptions
1) Location	Left bank only
2) Type	Rectangular
3) Material	Stone masonry / Earth
4) Capacity	22 l/sec.
5) Length and Slope	1.4 km in total
Sketch of Representative Canal Section (Dimensions are in metres)	 80m only for stone masonry portion
6) Present Condition	This canal is badly damaged 6 months ago and needs rehabilitation.

General Geological Feauture	Sandy loam soil prevails along the canal.
Evaluation of the Scheme by JICA Study Team	This scheme is under request for ISP, accordingly, it should be dropped from the rehabilitation schemes.

Date of Field Survey: 28, Apr., '93 /

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