Annex: Details of lakes identified as critical or 'potentially dangerous'

For details of the data sources and inventory studies see Chapter 2.

Table A1: **Potentially dangerous glacial lakes (tsho) of Bhutan identified in the 2001 inventory and recommended for further investigation and field survey**

Lake No.	Name	Latitude (N)	Longitude (E)	Altitude (masl)	Length (m)	Area (sq.km)
Mo Chu Sub-basin						
Mo_gl 200	Kab	28° 04′ 00.00″	89° 35′ 05.50″	4280	285	0.052
Mo_gl 201		28° 06′ 15.60″	89° 36′ 55.60″	4080	325	0.031
Mo_gl 202		28° 07′ 44.40″	89° 36′ 31.60″	4380	325	0.034
Mo_gl 234	Setang Burgi	28° 10′ 06.00″	89° 51′ 21.10″	4480	795	0.233
Mo_gl 235		28° 08′ 35.40″	89° 50′ 43.00″	4960	565	0.150
Pho Chu Sub-basin						
Pho_gl 84		27° 56′ 48.53″	89° 55′ 14.03″	5040	660	0.214
Pho_gl 148		27° 58′ 09.42″	89° 56′ 16.69″	4880	1285	0.455
Pho_gl 163		28° 06′ 06.43″	89° 54′ 11.83″	4280	1200	0.370
Pho_gl 164	Tarina	28° 06′ 37.22″	89° 54′ 37.81″	4320	1095	0.281
Pho_gl 209	Raphstreng	28° 06′ 43.56″	90° 14′ 03.65″	4360	550	0.146
Pho_gl 210	Luggye	28° 05′ 00.34″	90° 18′ 28.58″	4600	1980	0.770
Pho_gl 211		28° 05′ 40.45″	90° 19′ 11.95″	4710	650	0.142
Pho_gl 313		27° 59′ 58.72″	90° 07′ 18.86″	5030	205	0.222
Mangde Chu Sub-basin						
Mang_gl 99		27° 54′ 22.13″	90° 16′ 45.88″	4960	605	0.193
Mang_gl 106		27° 53′ 19.45″	90° 17′ 33.94″	5040	1480	0.868
Mang_gl 270		27° 58′ 09.32″	90° 20′ 06.98″	5280	850	0.240
Mang_gl 285		28° 00′ 20.90″	90° 19′ 50.77″	5390	795	0.341
Mang_gl 307		28° 02′ 21.01″	90° 21′ 58.87″	5240	1800	0.767
Mang_gl 310		27° 58′ 49.87″	90° 23′ 05.53″	5200	575	0.201
Mang_gl 385		27° 58′ 58.53″	90° 26′ 21.90″	5086	535	0.466
Chamkar Chu Sub-basin						
Cham_gl 198		27° 56′ 22.27″	90° 32′ 15.91″	5046	1495	0.625
Cham_gl 232		27° 59′ 11.33″	90° 30′ 31.42″	5200	565	0.205
Cham_gl 383		28° 01′ 25.91″	90° 42′ 31.77″	4840	2645	1.035
Kuri Chu Sub-basin						
Kuri_gl 172		27° 55′ 47.56″	91°18′ 08.77″		850	0.162

Source: Mool et al. (2001b)

Table A2: **Potentially dangerous glacial lakes in Himachal Pradesh, India based on inventory study of 2004**

Lake No.	Latitude N	Longitude E	Length (m)	Area (sq.km)
beas_gl 39	31°55′01.49″	77°31′51.84″	237.1	0.02
beas_gl 42	31°54′57.44″	77°31′08.62″	178.2	0.02
beas_gl 51	31°40′11.08″	77°37′13.93″	449.8	0.04
beas_gl 54	31°40′15.43″	77°35′57.62″	410.5	0.02
beas_gl 55	31°40′16.02″	77°35′31.67″	311.2	0.03
Satluj_gl 7	31°45′44.73″	78°06′44.25″	262.1	0.03
Satluj_gl 10	32°00′37.86″	78°23′24.62″	384.6	0.06
Satluj_gl 13	32°15′57.63″	78°23′03.14″	325.9	0.03
Ravi_gl 13	32°15′40.69″	76°44′24.84″	278.5	0.06
chenab_gl 7	32°50′05.82″	77°09′17.65″	318.0	0.03
chenab_gl 14	32°34′58.10″	77°11′15.66″	1461.7	0.60
chenab_gl 19	32°33′03.81″	77°31′26.00″	2029.1	0.91
chenab_gl 22	32°47′33.36″	77°22′32.24″	534.2	0.12
chenab_gl 25	32°47′31.43″	77°20′49.55″	429.2	0.12
Sub-basin2 1	32°12′31.98″	78°27′16.29″	513.8	0.05
Sub-basin2 2	32°13′05.47″	78°26′01.32″	414.7	0.05

Source: Bhagat et al. (2004)

Table A3: **Potentially dangerous glacial lakes identified in the inventory study of 2003 and recommended for further investigation and field survey in the Tista river basin, Sikkim Himalayas, India**

Lake No.	Latitude N	Longitude E	Class	Area (sq.km)	Remark
21	27° 32′01.48″	88°05′15.33″	Moraine-dammed	0.29	Thin lateral moraine, supra-glacial lakes, possibility of ice core, two mother hanging glaciers
54	27°49′08.11″	88°15′47.65″	Blocked	0.13	Seems past GLOF event, steep hanging glacier, one side is bounded by rock other by moraine
55	27°49′34.76″	88°15′22.96″	Moraine-dammed	0.10	Thin lateral moraine, supra-glacial lakes side by side
63	27°51′14.76″	88°14′40.23″	Moraine-dammed	0.15	Thin lateral moraine, supra-glacial lakes side by side
70	27°53′44.32″	88°11′33.33″	Moraine-dammed	0.12	High elevation, contact with steep hanging mother glacier
71	27°54′53.26″	88°12′04.89″ 88°09′51.43″	Moraine-dammed	0.59	Seems past GLOF event, high chances of dead ice, clean and debris glacier is in contact with lake
72	27°55′15.53″	88°29′50.13″	Moraine-dammed	0.40	Seems past GLOF event, high chances of dead ice, clean glacier is in contact with lake
109	28°00′26.98″		Moraine-dammed	0.35	Thin lateral moraine and steep hanging glacier
120	28°00′32.65″	88°34′33.65″	Valley	0.27	Around 400m downstream of gl 121
121	28°00′59.42″	88°33′56.00″	Moraine-dammed	0.20	Thin lateral moraine and steep hanging glacier
127	27°59′34.95″	88°49′18.78″	Moraine-dammed	1.59	3km and 600m wide, associated with supra-glacial lakes at the toe and valley glacier
142	28°01′35.08″	88°42′58.63″	Moraine-dammed	1.07	Around 600m downstream of gl 143
143	28°00′34.46″	88°42′16.28″	Blocked	0.65	Blocked by glacier moraine and the distance of the glacier is less than 200m
195	27°51′56.13″	88°52′12.84″	Moraine-dammed	0.11	Attached with steep hanging glacier

Source: Mool et al. (2003).

Table A4: **Potentially dangerous glacial lakes of Nepal identified from the inventory and recommended for further investigation and field survey in 2001**

Lake No	Lake name	Latitude N	Longitude E	Altitude (masl)	Length (m)	Area (sq.km)	Remarks
Tamor Sub-basin							
Ktr_gl 192 (A)	Nagma Pokhari	27° 52.10′	87° 52.02′	4,907	210	0.150	Burst on 23 June 1980
Ktr_gl 146 (B)	Unnamed	27° 48.83′	87° 45.09′	4,876	830	0.181	
Arun Sub-basin							
(C)	Lower Barun	27° 45.31′	87° 06.31′	4,550	1,100	0.666	
Dudh Koshi Sub-basin							
Kdu_gl 28 (D)	Lumding Tsho	27° 46.51′	86° 37.53′	4,846	625	0.105	
Kdu_gl 350 (E)	Imja Tsho	27° 54.00′	86° 55.40′	5,023	410	0.049	
Kdu_gl 399 (F)	Tam Pokhari	27° 44.33′	86° 50.76′	4,431	515	0.139	GLOF, 3 Sept 1998
Kdu_gl 422 (G)	Dudh Pokhari	27° 41.21′	86° 51.68′	4,760	1,120	0.274	
Kdu_gl 442 (H)	Unnamed	27° 47.70′	86° 54.81′	5,266	840	0.134	
Kdu_gl 444 (I)	Unnamed	27° 48.23′	86° 56.61′	5,056	420	0.112	
Kdu_gl 449 (J)	Hungu	27° 50.17′	86° 56.26′	5,181	875	0.199	
Kdu_gl 459 (K)	East Hungu 1	27° 47.92′	86° 57.95′	5,379	465	0.079	
Kdu_gl 462 (L)	East Hungu 2	27° 48.30′	86° 58.65′	5,483	640	0.212	
Kdu_gl 464 (M)	Unnamed	27° 46.86′	86° 57.22′	5,205	1,100	0.349	
Kdu_gl 466 (N)	West Chamjang	27° 45.24′	86° 57.33′	4,983	125	0.006	Kdu-gl 465 to 469 merged into one
Kdu_gl 55 (O)	Dig Tsho	27° 52.41′	86° 36.61′	4,364	605	0.143	GLOF, 4 Aug 1985
Tamakoshi Sub-basin							
Kta_gl 26 (P)	Tsho Rolpa	27° 52.03′	86° 28.41′	4,556	1,070	0.232	Kta_gl 26 to 32 merged
Budhi Gandaki Sub-basin							
Gbu_gl 9 (Q)	Unnamed	28° 35.79′	84° 38.09′	3,590	230	0.082	
Marsyangdi River Sub-basin							
Gmar_gl 70 (R)	Thulagi	28° 29.69′	84° 29.01′	3,825	420	0.223	
Kali Gandaki Sub-basin							
Gka_gl 38 (S)	Unnamed	29° 2.76′	83° 40.52′	5,419	600	0.149	
Gka_gl 67 (T)	Unnamed	29° 12.79′	83° 41.79′	5,452	3,610	1.013	

Source: Mool et al. (2001a)

Table A5: **Prioritisation of potentially dangerous glacial lakes of Nepal identified in 2009 study**

Name	ID No., in 2001 study	ID No. 2009 study	Category
Tsho Rolpa	kta_gl_26	kota_gl_0009	I
Lower Barun		koar_gl_0009	I
Imja	kdu_gl_350	kodu_gl_0184	I
Lumding	kdu_gl_28	kodu_gl_0036	I
West Chamjang	kdu_gl_467	kodu_gl_0242	I
Thulagi (Dona)	gmar_gl_70	gamar_gl_0018	I
Nagma	ktr_gl_192	kotr_gl_0133	II
Hungu	kdu_gl_464	kodu_gl_0241	II
Tam Pokhari	kdu_gl_399	kodu_gl_0193	II
Hungu	kdu_gl_449	kodu_gl_0229	II
*		kotr_gl_0191	III
*		gaka_gl_0004	III
Barun*	kar_gl_29	koar_gl_0012	III
*	kdu_gl_460	kodu_gl_0238	III
(Q)	gbu_gl_9	gabu_gl_0009	III
(H)	kdu_gl_442	kodu_gl_0220	III
*	kar_gl_30	koar_gl_0016	III
(S)	gka_gl_38	gaka_gl_0008	III
(B)	ktr_gl_146	kotr_gl_0111	III
East Hungu 2	kdu_gl_462	kodu_gl_0239	III
Kaligandaki (T)	gka_gl_67	gaka_gl_0022	III

Source: ICIMOD 2009, unpublished
*Not listed as potentially dangerous in the 2001 inventory

Table A6: **Potentially dangerous glacial lakes in the Indus Basin, Pakistan, identified from the inventory survey in 2002-2005**

Lake type	Lake No.	Total Area (sq.km)	Associated Glacier	Distance to glacier (m)	Remarks
End Moraine	Swat_gl28	0.22	Swat_gr21	-	In contact with large glacier source
End Moraine	Swat_gl189	0.27	-	-	Near massive glacier source
End Moraine	Chitr_gl61	0.05	Chitr_gr108	-	In contact with mountain glacier
End Moraine	Gil_gl550	0.10	Gil_gr191	464	Followed by large glacier source
End Moraine	Gil_gl590	0.19	Gil_gr366	-	In contact with large hanging glacier
End Moraine	Gil_gl505	0.21	Gil_gr79	820	Massive hanging glacier source
End Moraine	Gil_gl336	0.21	Gil_gr22	225	Near to hanging glacier source
End Moraine	Gil_gl469	0.27	-	375	Near massive mountain glacier
End Moraine	Gil_gl399	0.73	Gil_gr28	-	In contact with hanging glaciers
Valley	Gil_gl589	0.20	-	412	Near several hanging glaciers
Valley	Gil_gl611	0.29	-	159	Near several hanging glaciers
End Moraine	Hunza_gl6	0.12	Hunza_gr119	175	Associated glacier Passu with area of 62.9 sq.km
End Moraine	Shyk_gl60	0.08	Shyk_gr345	-	In contact with hanging glacier
End Moraine	Shyk_gl62	0.09	Shyk_gr355	-	In contact with large glacier
End Moraine	Shyk_gl45	0.13	Shyk_gr293	-	In contact with large glacier
End Moraine	Shyk_gl65	0.21	Shyk_gr361	-	Large glacier source
Valley	Shyk_gl64	0.11	Shyk_gr360	432	Preceded by a lake and large glacier

Table A6 Con...

Lake type	Lake No.	Total Area (sq.km)	Associated Glacier	Distance to glacier (m)	Remarks
Valley	Shyk_gl51	0.17	Shyk_gr305	435	Large glacier source
Cirque	Ind_gl125	0.14	Ind_gr213	-	In contact with hanging glacier
Cirque	Ind_gl502	0.15	-	-	Near hanging ice mass
Cirque	Ind_gl519	0.17	Ind_gr928	-	Large lake near hanging glacier
Cirque	Ind_gl162	0.27	Ind_gr313	-	In contact with hanging glacier
End Moraine	Ind_gl394	0.03	Ind_gr656	-	In contact with larger glacier
End Moraine	Ind_gl444	0.04	Ind_gr878	-	In contact with hanging glacier
End Moraine	Ind_gl457	0.06	Ind_gr886	177	Near hanging glacier
End Moraine	Ind_gl47	0.11	Ind_gr166	-	Near hanging glacier
End Moraine	Ind_gl160	0.12	Ind_gr311	-	Near hanging glacier
End Moraine	Ind_gl290	0.13	Ind_gr470	-	In contact with hanging glacier
End Moraine	Ind_gl351	0.14	-	-	Snow avalanche source
End Moraine	Ind_gl41	0.17	Ind_gr165	505	Large lake near hanging glacier
End Moraine	Ind_gl135	0.24	Ind_gr263	450	Near hanging glacier
End Moraine	Ind_gl147	0.28	Ind_gr295	388	Near hanging glacier
Valley	Ind_gl130	0.11	Ind_gr245	472	Near hanging glacier
Cirque	Shin_gl75	0.25	Shin_gr85	-	In contact with hanging glacier
End Moraine	Shin_gl115	0.13	Shin_gr89	180	Near hanging glacier
End Moraine	Shin_gl167	0.07	Shin_gr118	-	In contact with hanging glacier
End Moraine	Shin_gl220	0.05	Shin_gr151	-	Lake in contact with hanging glacier
Valley	Shin_gl227	0.08	Shin_gr157	200	Near hanging glacier source
Cirque	Astor_gl36	0.05	Astor_gr199	-	Hanging glacier source
Cirque	Astor_gl48	0.07	Astor_gr250	-	Snow avalanche source
Cirque	Astor_gl51	0.11	Astor_gr254	-	Hanging glacier source
Cirque	Astor_gl25	0.14	Astor_gr163	-	In contact with hanging glacier
Cirque	Astor_gl40	0.16	Astor_gr218	-	Hanging glacier source
End Moraine	Astor_gl53	0.08	Astor_gr254	75	Close to large glacier
End Moraine	Astor_gl121	0.09	Astor_gr564	-	At active glacier tongue
End Moraine	Astor_gl108	0.16	Astor_gr445	-	In contact with large glacier
Valley	Astor_gl50	0.31	Astor_gr252	125	Situated in hanging valley, dangerous glacial lake 300m upstream
Cirque	Jhe_gl97	0.20	-	-	In contact with large glacier
Cirque	Jhe_gl113	0.12	Jhe_gr200	-	In contact with hanging glacier
Cirque	Jhe_gl134	0.24	Jhe_gr315	-	Snow avalanche source
End Moraine	Jhe_gl131	0.71	Jhe_gr300	153	Near hanging glacier
End Moraine	Jhe_gl140	0.12	-	-	In contact with hanging glacier

Source: Roohi et al. 2005