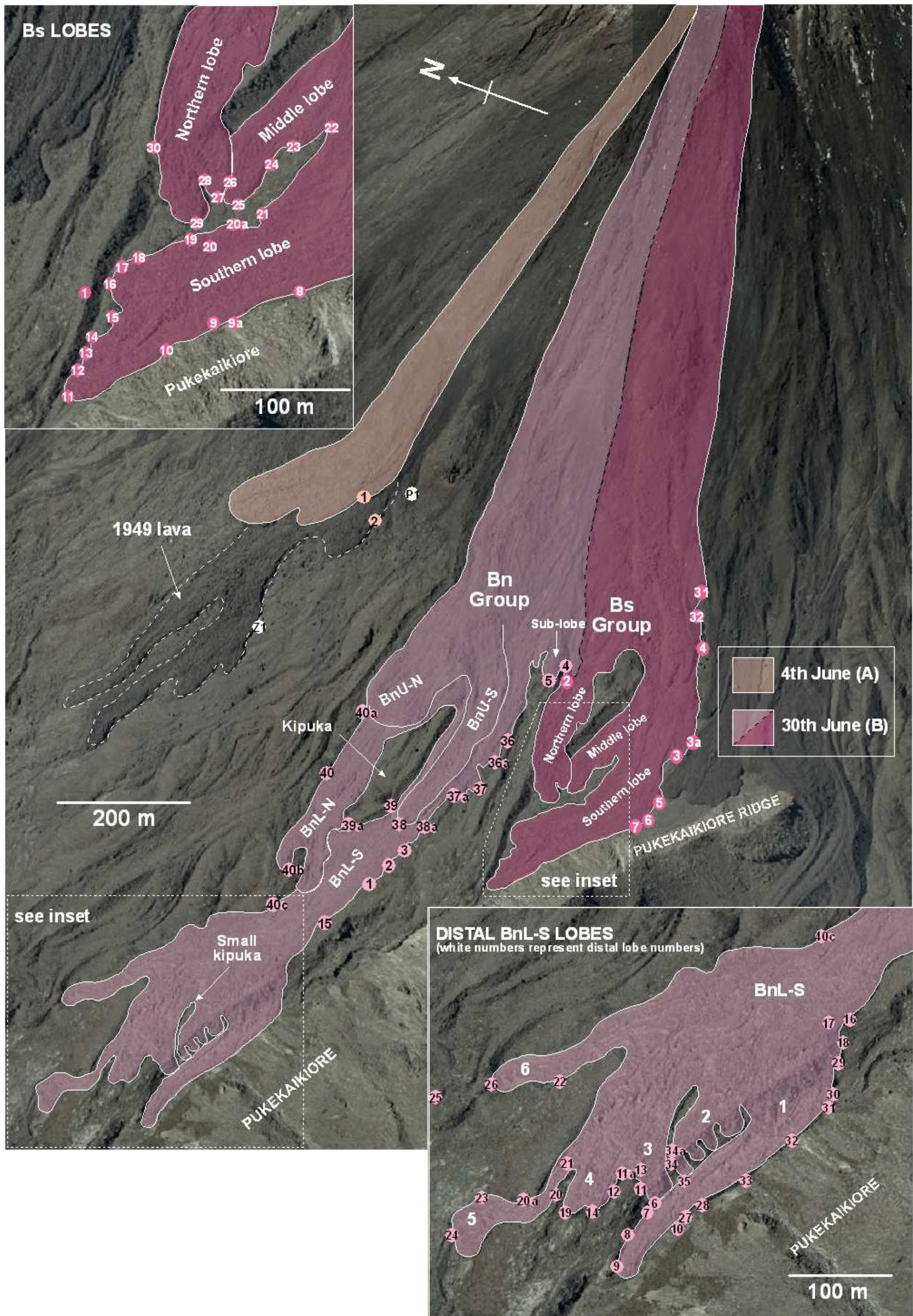
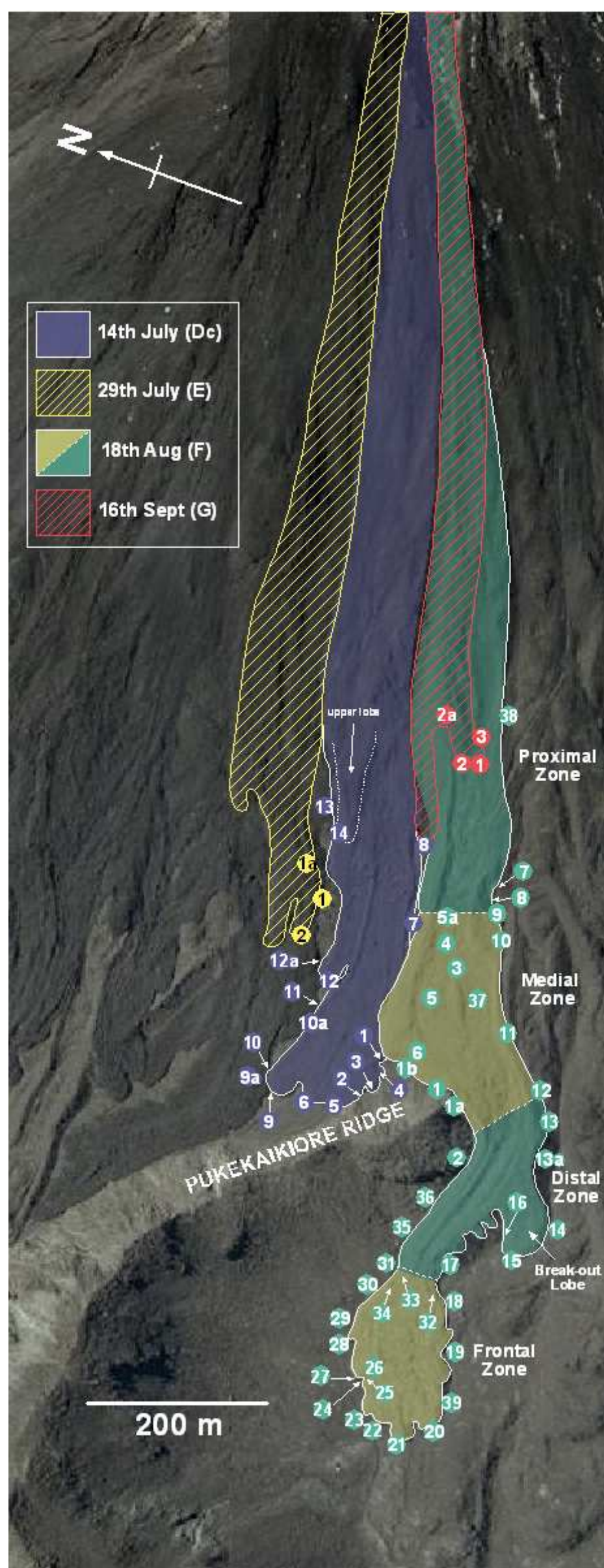


### D.1.1 FIELD LOCATION MAP: 4<sup>TH</sup> JUNE (A) and 30<sup>TH</sup> JUNE (B) LAVAS





## D.1.2 FIELD LOCATION MAP: 14<sup>TH</sup> JULY (Dc), 29<sup>TH</sup> JULY (E), 18<sup>TH</sup> AUGUST (F) and 16<sup>TH</sup> SEPTEMBER (G) LAVAS



D.1.3 LIST OF FIELD SITE LOCATIONS, GPS COORDINATES & DESCRIPTIONS

Flow Deposit	Site No.	Location	Co-ordinates	GPS		Flow Margin Height (m)	Flow Margin Slope Angle (°)	Clast Size Range (Average) (cm)	Description
				Elevation (m)	Accuracy (m)				
4th June	A1	Southern margin	E2736593 N6224694	1,666	5	3	45		Flow appears to overlie 1949 flow deposit
	A2	Southern margin	E2736557 N6224698	1,643	6	1.5			Lobe extends southward out from main flow path & possibly underlying A flow- ? 1949 flow deposit
Block & Ash	P1	Adjacent to southern margin A flow	E2736651 N6224623	1,703	6	0.5		2-50 (~5)	Heterogeneous mix of sub-rounded, hydrothermally altered clasts & angular, dense blocks
1949	Z1	Southern margin	E2736322 N6224925	1,518	6	3.5			Known section of 1949 flow deposit downflow from 4 <sup>th</sup> June flow front
30th June	Bn1	Southern margin BnL-S lobe				3	44	20-100 (40)	
	Bn2	Southern margin BnL-S lobe				2.5	40	5-60 (30)	Local underlying slope angle increases from 10-24°-associated spinose clast morphologies on flow surface (~1-2 m size)
	Bn3	Southern margin BnL-S lobe				3 to 4			Outer, south-facing margin wall low (3-4 m); deep flow channel. Front of thick overlying lobe within channel (BnU-S)
	Bn4	Southern margin Bm lobe	E2736319 N6224407	1,605	11	1-2	45	20-200 (~80)	Small lobe between Bn & Bs lobe groups. Southern margin appears to extend from northern margin of northern Bs lobe
	Bn5	Lobe front Bm lobe				2		20-200 (~100)	Front of lobe rests on top of old ridge end with some overspill down ridge-end slope
	Bn6	Northern margin BnL-S-1 lobe	E2735678 N6225044	1,369	8	4	42	<5-200	Long, narrow lobe infilling stream valley. Heterogeneous mix of clast sizes. BnL-S-3 lobe meets northern margin with no overlap
	Bn7	Northern margin BnL-S-1 lobe				2	24	<5-200	
	Bn8	Northern margin BnL-S-1 lobe				1.5-2		<5-200	
	Bn9	BnL-S-1 lobe front				2-3.5	40	100-150	Large boulders on flow surface and at flow front margin. Lobe rests on gentle (~4-5° slope-steepens to ~40° at flow front)
	Bn10	Southern margin BnL-S-1 lobe				0.3-0.5	5		
	Bn11	Western margin BnL-S-3 lobe				0.5-1	22	<5-300	Lobe overspilled onto underlying ridge slope (42°). No flow channel. Front of lobe meets northern margin BnL-S-1. No overlap
	Bn11a	Western margin BnL-S-3 lobe				1.5-2		5-300	At top of underlying ridge. BnL-S-3 diverted down ridge slope by local high. BnL-S-4 continues along ridge top.
	Bn12	Southern margin BnL-S-4 lobe				5 - 5.5	44	10-200 (50)	Lobe continues along top of underlying ridge. Large (1-2 m) boulders on flow surface and at base of flow margin.
	Bn13	BnL-S-4 lobe flow channel	Poor weather			1-1.5		10-300 (90)	Shallow flow channel bounded by low-elevation levees before lobe spills down ridge slope. Large boulders (1-3 m) dominate.
	Bn14	BnL-S-4 lobe front	Poor weather			3-4	42		Front of lobe rests on gentle underlying slope angle (~10°)
	Bn15	Southern margin BnL-S lobe				0.5-2	44	2-150 (40)	Deep flow channel. Inner, north-facing levee wall height = 1.8 m, increases upflow. ? flow margin onlaps underlying ridge. Large boulders (1-2 m) in flow channel
	Bn16	Southern margin BnL-S lobe	E2735865 N6224857	1,452	6	1.5	28	2-150 (40)	Flow widens and spills south-westwards down ridge slope. Spinose boulders on flow surface as slope angle increases
	Bn17	BnL-S lobe flow channel edge				N/A	N/A	N/A	Giant boulder (~5 m) within channel near southern margin. Knobbly, irregular morphology. Dense inner, very vesicular outer zone but not like other ballistic bombs observed.
	Bn18	Southern margin BnL-S lobe				0.4-1.3	24	30-100 (60)	Lobe spills down underlying ridge slope (~42°) into stream valley at base of ridge. Thin veneer of lava. Spinose clast morphologies on flow surface
	Bn19	BnL-S-4 lobe front	E2735662 N6225120	1,386	6	4-5	42	5-150 (30)	Flow channel behind flow front, forks upstream with crest of lava separating channel. Several large boulders (0.8-1 m) within shallow flow channel
	Bn20	Southern margin BnL-S-5 lobe				0.9-2.2	32-42		Lobe emplaced down north-facing underlying ridge slope. Outer, south-facing levee wall lower (~1 m)& shallower slope angle than inner, north-facing levee wall (2.2 m). Shallow flow channel.
	Bn20a	Northern margin BnL-S-5 lobe				1.6-2	40-42	5-70	Large boulders (1-1.5 m) on top of flow margin surface
	Bn21	Flow channel BnL-S-4 lobe	E2735762 N6225091	1,393	15	N/A	N/A	N/A	Relatively deep (~3 m), narrow (~1-1.5 m) flow channel with steep inner-facing levee walls. Large (3-7 m), dense boulders in central flow channel but not blocking flow path. Scoriaceous carapace.
	Bn22	Southern margin BnL-S-6 lobe				2.9	38	3-40 (20)	Lobe emplaced down north-facing slope of underlying ridge.
	Bn23	Northern margin BnL-S-5 lobe				1.5	38	30-60	At base of sudden increase in local underlying slope angle to 38°. Large (~3 m) split boulder at base. Underlying lobe decreases to ~10°
	Bn24	BnL-S-5 lobe front	E2735640 N6225241	1,356	6	3.5	42	8-150 (30)	Large blocks at flow front
	Bn25	North-west of BnL-S-6 lobe front				N/A	N/A	N/A	View of surface morphology of BnL-S-6. Appears to have at least 2 flow channels separated by raised central section of flow.
	Bn26	BnL-S-6 lobe front	E2735786 N6225201	1,339	5	3	45	10-150 (70)	Distal lobe end emplaced in shallow depression between two low-elevation ridges at base of main ridge slope. Series of lateral 'humps' on flow surface behind flow front. Underlying slope before depression = 38°; in depression = 12°; flow front emplaced on other side of depression where slope angle increases to 38°
	Bn27	Southern margin BnL-S-1 lobe	E2735673 N6224971	1,384	6	3.7	36	5-150 (80-100)	Underlying slope ~18°. Flow margin height decreases downflow as underlying slope decreases to ~12°. Flow margin not quite in contact with base of Pukekaikiore
	Bn28	Southern margin BnL-S-1 lobe	E2735697 N6224941	1,381	5	2.3	40	5-100	High ridge (~4 m) within flow channel near southern margin. Large clasts (~2-3 m) on top of levee
	Bn29	Southern margin BnL-S-1 lobe	E2735820 N6224843	1,433	6	3	32	2-90 (20/80)	Near Bn18. Underlying slope ~42°. Crude, wide levee at flow margin. Shallow flow channel upstream near ridge top. Giant snowball boulder in flow channel resting on steep slope (4 x 6.5 x 4.5 m). Very dense interior with layered vesicular carapace.
	Bn30	Southern margin BnL-S-1 lobe				1.7	28		Lobe diverted westward into stream valley adjacent to Pukekaikiore. Margin abuts base of Pukekaikiore. Large boulders (1-2 m) at margin
	Bn31	Southern margin BnL-S-1 lobe				< 0.5			Margin height increases (~ 2.5 m) a few meters downflow where deposit confined by low-elevation pre-existing ridge

## Field Site Location Maps & Descriptions

Flow Deposit	Site No.	Location	Co-ordinates	GPS		Flow Margin Height (m)	Flow Margin Slope Angle (°)	Clast Size Range (Average) (cm)	Description
				Elevation (m)	Accuracy (m)				
30 <sup>th</sup> June	Bn32	Southern margin BnL-S-1 lobe				2-3	40-48		Flow margin overtops pre-existing ridge. Inner, north-facing margin wall = 3.8 m height
	Bn33	Southern margin BnL-S-1 lobe	E2735712 N6224992	1,394	5	1.5-2			Flow margin height reduced from ~4 m upstream. Possibly at distal end of pre-existing ridge
	Bn34	Western margin BnL-S-2 lobe	E2735742 N6224992	1,404	7	<0.5		30-60	Lobe spills down underlying ridge slope (32°). Large boulder (5 x 3 m) resting near top of slope
	Bn34a	Southern margin BnL-S-4 lobe				1.5			BnL-S-2 & BnL-S-3 divided by low-elevation kipuka on ridge top
	Bn35	Western margin BnL-S-2 lobe				2.9	38	30-60	Distal end of lobe at ridge base. Meets northern margin of BnL-S-1 lobe but no contact between two deposits
	Bn36	Southern margin BnL-S lobe	E2736175 N6224502	1,576	4	2-4	40		Two levees at flow margin with shallow channel between levees
	Bn36a	Southern margin BnL-S lobe				3-4			Front of small lobe on southern margin of main flow deposit-double levees upstream behind lobe front
	Bn37	Southern margin BnL-S lobe	E2736130 N6224541	1,555	5	2.5	50		Double-toed lobe on southern margin of main flow deposit. Lobes possibly associated with local topographic features-slope and obstacles
	Bn37a	Southern margin BnL-S lobe							Western toe of double-toed lobe (see above)
	Bn38a	Southern margin BnL-S lobe				2			Adjacent to BnU-S lobe front. Outer, south-facing levee wall low height. Very deep flow channel
	Bn38	BnU-S lobe front				9	44		Numerous large boulders (3-6 m size) at base of flow front and scattered on flow front face. BnU-S lobe infills deep channel of BnL-S lobe
	Bn39	Northern margin BnL-S lobe				2			Numerous large boulders (3-6 m) at BnL-S flow margin and between inner margin & BnU-S northern margin. Southern face of kipuka confines both lobe margins
	Bn39a	Northern margin BnL-S lobe	E2736224 N6224733	1,540	6	2-3			Western end of kipuka. Elevation reduces & BnL-N overlaps onto BnL-S flow surface
	Bn40a	BnU-N lobe front				9			BnU-N infills BnL-N flow channel. Numerous large boulders (3-5 m size) on lobe front face & at base of lobe front
	Bn40	Northern margin BnL-N	E2736123 N6224810	1,515	5	2.8	44		Flow margin confined by low-elevation pre-existing ridge. Giant snowball boulder (~ 5 m) on flow margin
	Bn40b	BnL-N lobe front				2.5			BnL-N lobe front forked, possibly due to distal end of underlying ridge. Southern fork emplaced over BnL-S lobe surface
	Bn40c	Northern margin BnL-S lobe				2			Local increase in underlying slope to ~ 35°. At base of slope flow deposit widens markedly
30 <sup>th</sup> June	Bs1	Top of old ridge overlooking Bs lobe group							Division of Bs lobes appear to reflect topographic obstacles. Southern Bs lobe rests on gentle underlying slope. Broad multi-toed lobe front terminating at base of high-elevation pre-existing ridge
	Bs2	Northern margin, northern Bs lobe	E2736319 N6224407	1,605	11			20-60	Shallow flow channel bound by low-elevation levees (1-1.5 m). Short lobe overlies flow channel and stops a few meters downstream from this location. 1-2 m boulders on top of levee. Large ballistic boulders (4-5 m size) in flow channel
	Bs3	Southern margin, southern Bs lobe	E2736162 N6224249	1,590	6	3	44	5-100	Small lobe on flow margin. Low elevation pre-existing ridges evident at lobe front. Flow margin downflow from lobe front not confined by ridges
	Bs3a	Southern margin, southern Bs lobe							Flow margin meets northern margin 14 <sup>th</sup> July (Dc) flow deposit (1 <sup>st</sup> contact). Minimal contact between two flow margins at base of flow deposits. Underlying surface visible in places.
	Bs4	Southern margin, southern Bs lobe	E2736302 N6224198	1,619	5	2-2.2	40	10-100	Flow margin spreads southwards for ~3 m. Unclear if this is 30 <sup>th</sup> June Bs lobe or overlying 29 <sup>th</sup> July (E) flow deposit
	Bs5	Southern margin, southern Bs lobe	E2736092 N6224264	1,575	4	2.5	42	5-90 (70)	Immediately downflow 2 <sup>nd</sup> contact from 14 <sup>th</sup> July (Dc) flow deposit. Gentle underlying slope angle (~9°). Flow margin partially confined by very low-elevation pre-existing ridges. Numerous spinose boulders on flow surface
	Bs6	Southern margin, southern Bs lobe				1-1.6		5-90 (70)	Flow margin fully confined by pre-existing ridge (~1-1.5 m high), with some onlapping onto facing ridge slope. No clear flow channel on flow surface. Lots of shallow troughs and low-elevation ridges randomly orientated on flow surface
	Bs7	Southern margin, southern Bs lobe	E2736067 N6224296	1,563	5	2-3.5	38	5-150 (5-30)	Flow direction changes northwards as flow margin meets base of Pukekaikiore-no onlapping or confinement noted
	Bs8	Southern margin, southern Bs lobe	E2736043 N6224339	1,566	5	2	34	2-150 (~10)	Large (80-100 cm) clasts also common. No central flow channel but several variable depth troughs within flow deposit. Flow margin follows base of Pukekaikiore but no contact
	Bs9a	Southern margin, southern Bs lobe	E2736018 N6224422	1,557	9	0.5 - 0.7	18		Flow margin alongside, but no contact with base of Pukekaikiore
	Bs9	Southern margin, southern Bs lobe				1.8		80-200	Flow margin fully abuts base of Pukekaikiore. Outer, south-facing wall obscured. Numerous large boulders on flow surface & possibly some lateral ridges & associated troughs on flow surface
	Bs10	Southern margin, southern Bs lobe				2.9	38		Inner, north-facing levee wall dimensions given. Outer wall of flow margin obscured by Pukekaikiore slopes. Contact with Pukekaikiore ends ~ 2 m downflow from this location
	Bs11	Southern Bs lobe front, western end	E2735966 N6224525	1,532	5	3-3.5	42	5-80 (30)	1 <sup>st</sup> toe of lobe front. Large boulders (1-3 m size) on flow surface and on flow front face. Rests on gentle underlying slope ~ 10°. Meets base of pre-existing ridge. Minimal contact
	Bs12	Southern Bs lobe front	E2735985 N6224517	1,536	8	2.5-3	42		2 <sup>nd</sup> toe of lobe front. Meets base of pre-existing ridge. Minimal contact
	Bs13	Southern Bs lobe front	E2736018 N6224498	1,540	7	3.5-4	42	8-150 (15)	East side of 2 <sup>nd</sup> toe of lobe front. Clasts 80-100 cm size common
	Bs14	Southern Bs lobe front				3.5	40	8-150 (15)	3 <sup>rd</sup> toe of lobe front. Terminates ~ 3-4 m before reaching ridge base. Clasts 80-100 cm size common
	Bs15	Southern Bs lobe front	E2736038 N6224490	1,537	7	3.5	38	10-150 (30)	4 <sup>th</sup> toe of lobe front. Terminates ~ 5 m before reaching ridge base
	Bs16	Southern Bs lobe front, eastern end	E2736067 N6224487	1,544	6	3.7	38	5-100 (80)	5 <sup>th</sup> toe of lobe front. Terminates ~ 0.5 m before ridge base.
	Bs17	Southern Bs lobe front, eastern end				3.3	40	5-100 (90)	Eastern side of 5 <sup>th</sup> toe. Large boulders (1-4 m size) on lobe margin face
	Bs18	Southern Bs lobe front, eastern end	E2736082 N6224450	1,540	5	3.5	22	20-150	Small lobe on northern margin of southern Bs lobe just behind flow front. Margin confined by low-elevation pre-existing ridge
	Bs19	Northern margin, southern Bs lobe				3-4.6	42	1-100 (30)	Flow margin height increases after emplacement over local increase in slope angle to ~18°. Large (2-5 m) size boulders on flow surface

Flow Deposit	Site No.	Location	Co-ordinates	GPS Elevation (m)	Accuracy (m)	Flow Margin Height (m)	Flow Margin Slope Angle (°)	Clast Size Range (Average) (cm)	Description
30 <sup>th</sup> June	Bs20	Northern margin, southern Bs lobe	E2736103 N6224376	1,560	4	2	38		
	Bs20a	Northern margin, southern Bs lobe				3	40	30-100	
	Bs21	Northern margin, southern Bs lobe				2.5			Large (3-4 m size) snowball boulder on top of flow margin. Very dense inner core. Scoreaceous outer carapace
	Bs22	Northern margin, southern Bs lobe				3.5	38	30-100	Southern and middle lobes divide on top of ridge. Southern lobe continues westward & middle lobe emplaced down north-facing ridge slope
	Bs23	Southern margin, middle Bs lobe				0.8	32	20-100	Underlying slope relatively steep (~28-30°), reduces downflow. Large (~5-6 m size) snowball boulder on flow surface close to margin & resting on steep underlying slope
	Bs24	Southern margin, middle Bs lobe	E2736120 N6224394	1,556	6	3.7	40	5-80 (20)	Flow margin height increases as underlying slope decreases
	Bs25	Lobe front, middle Bs lobe				3.2	40	7-100 (70)	Lobe front partially overlain by northern Bs lobe front. Lobe terminates on gentle (~6-8°) slope. Clast sizes relatively uniform
	Bs26	Southern margin, northern Bs lobe				~1			Just behind lobe front. Lobe overlies middle Bs lobe and is ~ 1 m higher than middle Bs lobe flow surface
	Bs27	Lobe front, northern Bs lobe				3-3.5	40	5-100 (50)	Southern of two toes at lobe front. This toe mostly overlies middle Bs lobe but northern margin of toe directly on ground surface
	Bs28	Lobe front, northern Bs lobe				4			At point of division between two lobe front toes. Meandering channel on flow surface between lobe toes
	Bs29	Lobe front, northern Bs lobe	E2736114 N6224417	1,556	5	4-6	32	8-120 (40)	Front of northern of two lobe front toes. Large spinose/irregular boulders on flow surface
	Bs30	Northern margin, northern Bs lobe	Poor weather			2	35	50-100 (80)	Flow margin confined by low-elevation ridge slope
	Bs31	Southern margin, southern Bs lobe				2			Overlain by 29th July lava and block and ash deposit, also close to 14th July (Dc) margin so this section of flow unknown. Deposit appears lighter in colour at this location than other 1954 flow deposits
	Bs32	Southern margin, southern Bs lobe				1.5			Dark coloured lobe overlying light coloured section (Bs31). Also underlies block & ash flow deposit. ? 30 <sup>th</sup> June or 29 <sup>th</sup> July (E)
14th July	Dc1	Southern margin	E2736133 N6224136	1,581	5	6	44	60-150 (80)	Small lobe immediately downflow from contact with northern margin of 18 <sup>th</sup> August flow deposit
	Dc2	Flow front				6		5-15 (10)	Southern section of toe 3 of multi-toed flow front. Front of toe abuts the base of Pukekaikiore. Spinose boulders on flow surface.
	Dc3	Flow front				4.5	44	5-100	Front of toe 2 of multi-toed flow front. Toe front terminates 0.5 m before base of Pukekaikiore. Rests on gentle slope ~9°.
	Dc4	Southern margin	E2736116 N6224151	1,595	5	3	44	5-150 (90)	Southern margin of toe 2. Large boulders dominant. Non-uniform clast sizes at this location but more uniform within a few metres either side
	Dc5	Flow front				4.8	40	5-40 (20)	Middle section of toe 3. Toe front ceases to abut base of Pukekaikiore at this location. Uniform clast sizes
	Dc6	Flow front				4.5	40	5-150 (10)	Northern section of toe 3. Terminates ~20 m from base of Pukekaikiore. Gentle underlying slope ~9°. Very large boulders on lobe front face and at base of lobe front
	Dc7	Southern margin	E2736309 N6224093	1,624	10	2-3.8	32		Possible low-elevation levee and shallow flow channel. Outer, south-facing margin wall=3.8 m high. Inner, north-facing margin wall=2 m high. Broad (~4 m) levee top. Several large ballistic boulders (3-6 m size) on flow margin surface, within flow channel and between this and 18 <sup>th</sup> August flow deposit. Distinctive fractured boulder on flow margin surface.
	Dc8	Southern margin	E2736412 N6224075	1,661	5	2-3			Small lobe emplaced between 14th July and 18th August flow deposits-no clear flow margins upflow
	Dc9	Flow front	E2736116 N6224252	1,579	5	3.5	35		Front of toe 4 of multi-toed flow front. Terminates ~ 30 m from base of Pukekaikiore. Minimal contact with southern margin, southern Bs lobe, but no overlap
	Dc9a	Northern margin							Northern section of toe 4. Intermittent contact with southern margin, southern Bs lobe at base of both flow deposits only. Underlying surface visible in places.
	Dc10	Northern margin				2-5	40	5-30 (25)	Eastern side of contact with southern margin, southern Bs lobe. Flow emplaced over low-elevation (~1.5 m) underlying ridge. Flow depth ~ 2 m before ridge, increasing to ~ 5 m at base of ridge at contact with Bs flow deposit. Underlying ridge slope angle ~30°
	Dc10a	Northern margin	E2736162 N6224249	1,590	6	4	42	5-100 (80)	Contact with base of southern margin, southern Bs lobe, no overlap, contact minimal. Underlying surface visible in places.
	Dc11	Northern margin	E2736225 N6224192	1,603	5	2-3	40	5-80	Snowball boulder (~ 2 m size) on flow margin. Dense interior, vesicular outer carapace. Low-elevation ridges & shallow toughs noted on flow channel surface
	Dc12	Northern margin				6	42	5-100 (10)	Front of sub-lobe extending along northern margin, low-elevation levee (~ 2 m high) between southern margin of sub-lobe and northern margin of main flow deposit. Shallow flow channel evident within main flow deposit. Northern margin of lobe front contacts with southern margin, southern Bs lobe
	Dc12a	Northern margin				2	40	5-100 (10)	Eastern side of contact with southern margin, southern Bs lobe, no overlap, contact minimal. Lobe emplaced over low-elevation (~2-3 m) underlying ridge slope (~20°) Flow depth ~ 2m before ridge slope, increases to ~ 6 m at ridge slope base where lobe terminates
29th July	E1	Southern margin	E2736302 N6224198	1,619	5	5	40	5-100	Flow deposit overlies 30th June Bs flow deposit. Both flow margins merged with no distinct contact between flow surfaces. Therefore flow depth may reflect joint flow depth
	E1a	Southern margin							Flow surface overlain by distinct block and ash flow deposit
	E2	Flow front	E2736281 N6224429	1,617	5	4.8	45	10-150	Flow front forked into two angular toes. Southern toe front veers slightly northward over underlying 30 <sup>th</sup> June Bs flow deposit. Flow margins clearly delineated at this location due to change in flow path direction. Large (~1-2 m size) boulders at flow front



***Field Site Location Maps & Descriptions***

Flow Deposit	Site No.	Location	Co-ordinates	GPS		Flow Margin Height (m)	Flow Margin Slope Angle (°)	Clast Size Range (Average) (cm)	Description	
				Elevation (m)	Accuracy (m)					
18th August	F1	Northern margin	E2736116 N6224058	1,598	11	5	40	50-70 (20)	Flow margin abuts tightly against Pukekaikioire ridge. Location part way up slope of ridge	
	F1a	Northern margin				6	40	10-200 (20)	At approximate end of Pukekaikioire ridge. Large (~1-2 m size) boulders on top of flow margin	
	F1b	Northern margin				10-12	40	10-60 (20)	Very high flow margin immediately before flow reaches base of Pukekaikioire ridge. Uniform clast sizes	
	F2	Northern margin				7	40	5-200 (20-30)	Flow extends around western side of Pukekaikioire ridge. Secondary levees (~1-2 m higher) inside outer levees on both flow margins. Narrow central flow channel between two inner levees. Inward-facing secondary levee walls steep slopes (~50°)	
	F3	Central flow channel	E2736259 N6224055	1,703	5	N/A	N/A	5-70 (15)	Flow deposit widening. Marked central flow channel bound by lateral levees. Flow channel drained upstream from this locale. High (~4 m), lens-shaped crest (53 m long, 20 m wide) within the middle of the flow channel immediately downflow with folded flow surfaces either side of crest	
	F4	Central flow channel	E2736277 N6224039	1,621	6	N/A	N/A	N/A	Flow channel drained at this location. Large (~ 2-4 m size) ballistic boulders within flow channel	
	F5	Central flow channel	E2736140 N6224076	1,607	5	N/A	N/A	5-90 (30)	Northern side of central crest. Series of fairly regularly spaced surface folds & associated troughs from eastern end of crest downflow to just beyond western end of crest where flow meets Pukekaikioire ridge	
	F5a	Central flow channel				N/A	N/A	N/A	Narrow flow channel before deposit widens downflow. Inward-facing levee walls ~ 2-3 m height. Drained flow channel	
	F6	Northern margin				5-150 (15)	Top surface of northern levee. Broad, flat levee top. Large (1-2 m size) boulders dominate top of levee			
	F7	Southern margin				5	30	20-100	Flow emplaced down the slope (44°) of the distal end of a pre-existing ridge. Double levees form at ridge base & extend for a short distance downstream	
	F8	Southern margin				3	34	20-100	~ 5 m downflow from F7. Levee height reduced as underlying slope relatively flat at this section of the flow	
	F9	Southern margin	E2736291 N6224004	1,626	8	1.5-3	36	10-100	~ 10 m downflow from F8. Levee height reduced. Inner levee ~ 1.5 m higher than outer levee	
	F10	Southern margin	E2736151 N6223980 E2736062 N6223934	1,596	5	2.8	36	3-90 (10)	Flow margin follows path of adjacent pre-existing ridge-no contact at this location. Underlying slope angle ~28°. Single levee at flow margin	
	F11	Southern margin				3.5	36	3-90 (10)	Western end of pre-existing ridge. No contact with flow margin. Underlying slope angle increases to ~ 32° as flow emplaced down another pre-existing ridge slope	
	F12	Southern margin				7.5	38	20-150	Outer, south-facing slope of flow margin partially emplaced on south-facing slope (35°) of pre-existing ridge. Thin veneer of lava on slope in places. Possibly partial failure of flow margin as flow emplaced along path of an underlying ridge top.	
	F13	Southern margin				5.5	36		Underlying slope angle decreases markedly (9-5°). Flow margin complete ly covers south-facing slope of pre-existing ridge	
	F13a	Southern margin	E2735934 N6223999	1,533	8	5	38	5-200 (30)	Approximately 50 m downflow from F13 local underlying slope increases (~ 26°). Large (1.5-2.5 m size) boulders on top of levee and on south-facing levee wall	
	F14	Southern margin				6	36	20-150	Flow margin curves northwards at base of local steep slope	
	F15	Southern margin				6	33	20-200	Front of small lobe extending southward from main flow deposit. Main southern levee curves slightly to the north and continues westward along top of underlying ridge (also appears to curve northward). Lobe appears to have spilled down south-facing slope of underlying ridge as flow direction changes	
	F16	Southern margin				6	40	20-200	Northern margin of break-out lobe. Lobe emplaced down south-facing slope of underlying ridge and terminates on relatively flat underlying surface	
	F17	Southern margin	E2735803 N6224056 E2735740 N6224079	1,502	6	5.5	38	5-200	Main southern flow margin emplaced along the top of an underlying ridge with some overspill down ridge slope in places. Underlying ridge abruptly terminates at this location	
	F18	Southern margin				2	38	5-100	Flow margin height reduced at terminal end of underlying ridge. No further evidence of marginal levee or central flow channel. Deposit rests on gentle slope ~9°	
	F19	Southern margin				5.5	40	5-80	Base of low-elevation (~2 m) underlying ridge. Flow depth slightly increased from F18	
	F20	Flow front				3.8	38	10-150	Distal end of flow broad and multiple toes formed. Front of southern-most toe at this location. Rests on ~20° slope of underlying ridge. Large (1-2 m size) boulders on flow surface and on lobe front face	
	F21	Flow front	E2735725 N6224134	1,490	5	5	36	2-300 (25)	Front of second toe (towards north). Rests on gentle underlying slope ~9°. Lar ge boulders (1-2.5 m size) resting on lobe front face	
	F22	Flow front	E2735743 N6224134	1,492	6	5	34	5-200 (10)	Southern side of third toe (towards north). Smaller average clast sizes, more uniform. Large (~1.5-5.5 m size) boulders on lobe front face	
	F23	Flow front	E2735813 N6224166	1,500	5	5.5	38	5-200	Northern side of third toe.	
	F24	Northern margin				3-4.5	40	5-100	At division of third and fourth toe (towards north). This toe behind flow front. Toe 3 height = 4.5 m, Toe 4 height = 3.5 m. Height at division = 2.9 m	
	F25	Northern margin				7	40		Depression within flow deposit behind point where toes 3 and 4 divide.	
	F26	Northern margin					40		High (~ 2m) ridge of lava immediately upflow from depression (F25) before toes 3 and 4 divide. Numerous large (~1-3 m size) boulders on flow surface	
	F27	Northern margin	E2735912 N6224122	1,518	6	3.6	40	3-70 (15)	Front of toe 4 = small lobe on northern margin behind broader flow front	
	F28	Northern margin				7	40	5-100	Very small lobe on northern margin emplaced down north-facing slope of low-elevation (~0.5-1 m) underlying slope	
	F29	Northern margin				3-4	30	1-70 (10)	Flow margin height variable	
	F30	Northern margin				2.5-3.5	38	10-150	Flow margin height increases markedly immediately upflow from this location. Appears to be the western end of the same underlying ridge that southern flow margin emplaced on up to location F18	
	F31	Northern margin	E2735912 N6224122	1,518	6	6	42		At point where ? underlying ridge ends. Northern levee from upflow reduces markedly in height and disappears as flow continues downstream. Southern levee also markedly reduced at same place	
	F32	Flow channel				50-350	50-350		Within flow channel adjacent to F18. No clearly defined flow channel. Numerous shallow troughs generally orientated downflow. Large (2-3.5 m size) boulders scattered over flow surface	
	F33	Flow channel							Within flow channel adjacent to F31. Shallow channels (~ 0.5-1 m deep) and low-elevation ridges (~1-2 m) evident on flow surface.	

Flow Deposit	Site No.	Location	GPS			Flow Margin Height (m)	Flow Margin Slope Angle (°)	Clast Size Range (Average) (cm)	Description
			Co-ordinates	Elevation (m)	Accuracy (m)				
18th August	F34	Flow channel	E2736595 N6223989 E2735776 N6224059	1,753	5	3.5	40	20-250	Northern, outer levee appears to continue as a low-elevation ridge on flow surface ~ 2-5 m from northern flow margin downflow from western end of underlying ridge
	F35	Northern margin							Upflow from underlying ridge end. Secondary levees on both flow margins (as F2). No evidence of overspill on underlying ridge slope (as with southern margin. Numerous large (1-2.5 m size) boulders on outer, north-facing flow margin slope
	F36	Northern margin							Midway between F35 & F2. Underlying slope angle increased to ~20°
	F37	Central flow channel							Southern side of central crest. Series of ridges and troughs on flow surface similar to F5. Ridges end a few metres beyond western end of central crest
	F38	Southern margin							Most upflow location where southern margin clearly identifiable. Sample site 1 of statistical vesicularity analysis
	F39	Southern margin							Behind flow front before division into multiple toes. Sample site 2 of statistical vesicularity analysis
16th Sept	G1	Flow front	E2736477 N6224032	1,703	5	~6	40	5-50	Distal end of flow emplaced down the inner, south-facing wall of the 18th August northern levee. Terminates within drained central flow channel of 18 <sup>th</sup> August flow on ~28° slope. Uniform clast sizes-no large boulders at flow front
	G2	Flow front							Northern side of flow front where flow emplaced down 18 <sup>th</sup> August levee wall. No clear delineation between G and F flow surfaces or margins
	G2a	Flow surface							No evidence of levees or central flow channel
	G3	Southern margin							Shallow depression then low-elevation ridge adjacent to southern margin and within central flow channel of 18 <sup>th</sup> August flow. Some possibly recent lava clasts deposited on ridge. ? 18 <sup>th</sup> August or 16 <sup>th</sup> September origin