Table DR1. Trace element concentrations and calculated crystallisation temperatures of Sudbury zircons. HfO_2 analysed by electron microprobe (2sd uncertainty < 2%). RSP = Relative Stratigraphic Position (i.e., height in stratigraphy), calculated from surface position and dip of the southern limb of the melt sheet.

Lithology	RSP_(m)	Sample	Grain/Spot	HfO2	Th (ppm)	U (ppm)	Th/U	Ti (ppm)	2sd	T (íC)	2sd Basal norite
0	144IBNR	16	0.795	381	465	0.8	30.0	3.4	848	18□	
	19	0.842	479	502	1.0	41.6	3.6	884	16□		
20	0.785	276	291	0.9	36.7	3.7	870	17□			28
0.912	344	366	0.9	28.4	3.6	842	19□			31	0.828
226	277	0.8	30.8	4.4	850	21□			33	0.781	316
384	0.8	32.8	3.7	857	18□			35	0.800	458	469
1.0	30.2	3.5	848	18□			38	0.825	460	462	1.0
36.5	4.0	869	18□			39	0.806	426	433	1.0	31.1
3.6	852	19□			42	0.797	441	485	0.9	32.1	1.6
855	12□			45	0.839	355	364	1.0	35.3	1.8	865
12□Basal norite	98	144BNR	19	0.906	287	224	1.3	33.7	1.4	860	11□
		20	0.888	263	190	1.4	31.8	1.4	854	11□	
	24	0.911	548	536	1.0	37.5	1.5	872	11□		
30	0.851	765	562	1.4	35.8	1.7	867	12□			30B
0.884	330	273	1.2	35.5	1.9	866	12□			31	0.901
357	263	1.4	35.9	1.5	867	11□			34A	0.901	735
705	1.0	30.0	1.2	848	11□			34B	0.808	489	502
1.0	38.6	1.6	876	11□			34C	0.901	347	259	1.3
36.5	2.0	869	13□			45	0.900	416	329	1.3	38.3
1.5	875	11□			45	0.890	516	498	1.0	39.8	2.4
879	13□			46	0.890	254	156	1.6	33.0	1.7	858
12□			46B	0.808	308	301	1.0	29.4	1.7	846	13□
		47	0.911	544	490	1.1	36.4	1.9	869	12□	
	49A	0.904	372	277	1.3	39.8	2.2	879	13□		
49B	0.808	721	620	1.2	33.0	1.8	858	13□			49C
0.841	549	563	1.0	38.7	2.2	876	13□			50A	0.900
628	619	1.0	40.3	1.6	880	11□			50B	0.841	550
526	1.0	37.7	1.6	873	11□			52	0.884	791	787
1.0	36.9	1.4	870	11□			60	0.860	764	590	1.3
33.2	1.9	859	13□			61	0.832	423	400	1.1	31.2
1.7	852	12□			61B	0.832	254	211	1.2	29.2	1.7
845	13□			63	0.828	470	475	1.0	36.0	2.0	868
13□Norite	304	JDSIC0702	1	0.921	257	334	0.8	30.7	2.1	850	14□
		18	0.849	364	620	0.6	31.6	2.2	853	14□	
	2	0.748	179	275	0.7	32.9	2.9	858	16□		
20	0.751	422	761	0.6	32.9	2.2	858	14□			23
0.884	303	383	0.8	35.8	2.5	867	14□			24	0.806
398	733	0.5	32.4	2.2	856	14□			26	0.853	495

915	0.5	38.6	2.7	875	15□			27	0.851	217	361
0.6	29.2	2.0	845	14□			29	0.881	349	600	0.6
32.8	2.3	857	14□			3	0.906	337	484	0.7	32.1
2.2	855	14□			7	0.883	141	150	0.9	32.0	2.2
855	14□Norite	874	JDSIC0701	27	0.957	861	1364	0.6	19.8	1.2	805
12□			28	0.952	951	1451	0.7	16.5	1.0	787	12□
		29	0.957	1101	1475	0.7	23.3	1.5	821	13□	
	33	0.980	909	1199	0.8	21.0	1.6	811	14□		
49	0.965	1284	1744	0.7	20.1	1.1	806	12□			56
0.814	1035	2352	0.4	27.8	1.6	839	12□			74	0.840
2263	3831	0.6	15.6	0.9	782	12□Norite	1070	144NR	39	0.864	751
1349	0.6	26.5	1.2	834	11□			45	0.895	841	1751
0.5	20.7	1.1	809	12□			47	0.893	964	2394	0.4
22.2	1.3	816	12□			5	0.874	1093	2340	0.5	33.7
2.7	860	15□			50	0.940	727	1197	0.6	20.1	1.2
806	12□			51	0.936	780	1543	0.5	15.6	1.0	781
12□			55A	0.862	610	1122	0.5	16.9	1.0	789	12□
		55B	0.862	568	1034	0.5	15.2	0.9	779	11□	
	55C	0.873	673	1268	0.5	15.0	0.9	778	11□		
61	0.985	621	992	0.6	17.0	1.0	790	12□			65
0.901	589	1033	0.6	19.1	1.1	801	12□Norite	1384	144MLNR	19	0.863
564	551	1.0	19.7	2.0	804	16□			22	0.851	686
773	0.9	21.6	2.1	814	16□			28	0.812	969	2052
0.5	25.5	1.4	830	12□			39	1.063	639	975	0.7
14.0	0.9	772	12□			46	1.028	669	906	0.7	12.3
0.8	759	11□			68A	1.001	725	1203	0.6	20.9	1.2
810	12□			68B	0.971	650	1147	0.6	19.4	1.2	803
12□			68C	1.017	490	528	0.9	14.5	0.9	775	11□
		69A	0.955	773	971	0.8	19.9	1.1	805	12□	
	69B	0.979	767	1027	0.7	19.8	1.1	805	11□Norite	1614	JDSIC0708
1	0.927	1080	2069	0.5	16.7	1.6	788	15□			7
1.153	550	852	0.6	9.4	0.8	736	13□			10	1.145
1103	1623	0.7	12.3	1.1	760	14□			18A	1.169	794
781	1.0	12.4	1.4	760	15□			18B	1.169	940	1177
0.8	11.7	1.1	755	14□			31	0.882	1143	2245	0.5
18.9	1.2	800	12□			35	0.848	1020	1920	0.5	17.5
1.6	793	15□			37	0.940	965	1840	0.5	16.6	1.5
788	14□			48A	0.940	1090	2124	0.5	16.1	1.3	785
13□			48B	0.940	888	1297	0.7	16.2	1.2	785	13□
		49	0.940	1226	2404	0.5	16.2	1.2	786	13□	
	50	0.940	1396	2355	0.6	15.4	1.9	781	17□Granophyre	2942	144GRAN1
42	0.694	162	182	0.9	13.3	1.5	766	16□			44
0.764	292	407	0.7	12.0	2.3	757	22□			45	0.750
71	113	0.6	13.5	1.7	768	17□			49	0.739	188
221	0.8	12.1	1.7	758	18□			50A	0.739	254	268
0.9	13.5	1.6	768	17□			50B	0.745	128	184	0.7
17.4	1.6	792	14□			51	0.741	109	163	0.7	19.5

1.7	803	15□			53	0.736	166	201	0.8	16.1	1.7
784	16□			54	0.754	116	147	0.8	13.4	1.7	767
17□			56	0.734	184	218	0.8	14.1	1.8	772	17□
		58	0.735	187	228	0.8	16.2	1.6	786	15□	
	63	0.733	165	189	0.9	15.2	1.7	779	16□		
76	0.744	164	130	1.3	19.4	1.3	803	12□			80
0.746	195	142	1.4	17.2	1.5	791	14□			85	0.761
168	121	1.4	18.7	1.4	799	13□			87	0.778	175
160	1.1	16.3	2.0	786	17□			97	0.740	144	111
1.3	16.4	1.2	786	13□			98	0.711	173	146	1.2
16.5	1.4	787	14□			99A	0.710	200	187	1.1	13.7
1.8	770	18□Granophyre	3300	JDSIC0704	10	1.082	1070	1459	0.7	8.6	1.2
727	17□			13	1.006	4700	4235	1.1	10.5	1.3	746
16□			15	1.058	1787	2151	0.8	7.9	0.7	721	13□
		18	0.990	2851	3022	0.9	7.0	0.9	710	15□	
	20	1.236	507	938	0.5	8.6	0.8	728	13□		
28	0.957	1893	2306	0.8	9.3	0.9	735	14□			29
0.966	1168	1634	0.7	7.0	0.8	710	14□			29	0.966
941	1072	0.9	11.3	2.2	752	22□			30	0.777	2968
2804	1.1	9.6	1.2	737	16□			36	0.784	1689	2013
0.8	7.9	0.9	720	15□			36	0.784	2089	2216	0.9
10.7	1.3	747	16□			37	0.821	2564	2829	0.9	11.0
1.2	750	15□			40	0.921	3351	3375	1.0	7.2	1.9
712	26□			5	0.763	3133	2549	1.2	9.6	1.8	737
21□			66A	0.768	1857	1775	1.0	6.9	1.1	709	18□
		66B	0.722	1431	1298	1.1	9.4	0.9	735	14□	
	67A	0.951	1339	983	1.4	7.7	1.1	719	17□		
67B	0.951	2502	2353	1.1	7.5	1.1	717	17□			8
0.887	1649	1493	1.1	12.7	1.6	762	17□			9	0.812
2374	2944	0.8	6.5	0.7	704	14□			9	0.721	2817
3883	0.7	11.0	1.0	749	14□Granophyre	3800	JDSIC0705	13A	0.806	312	426
0.7	14.8	1.4	777	15□			13B	0.772	311	352	0.9
15.7	1.2	782	13□			13C	0.814	153	112	1.4	15.6
1.2	782	13□			1A	0.763	2381	3823	0.6	8.8	1.2
730	16□			1B	0.763	3222	3964	0.8	8.4	1.6	726
20□			4	0.763	1080	954	1.1	7.2	1.4	713	21□Quartz diorite
	WOQD1	A1a	0.981	1500	662	2.3	10.6	1.2	746	15□	
	A1b	0.958	2055	826	2.5	12.0	1.1	757	14□		
A1c	0.930	3640	1202	3.0	15.1	1.3	778	14□			A7a
0.871	2961	1095	2.7	13.4	0.8	767	11□			A7b	0.871
2103	821	2.6	12.9	1.3	763	15□			B11	1.070	2831
1749	1.6	13.3	1.4	767	15□			B12	0.852	1437	980
1.5	21.5	1.4	813	13□			E8	0.952	1699	727	2.3
16.6	1.4	788	14□			F1	0.820	208	179	1.2	19.8
1.7	805	15□			F2	0.967	452	334	1.4	17.7	1.5
794	14□			E9	0.952	1472	683	2.2	10.9	1.2	749

16			E5	0.862	2523	1015	2.5	12.5	1.4	761	16

Table DR2. Mean zircon rare earth element compositions from studied samples. n = number of analyses

	Basal Norite				Norite								Granophyre				Quartz Diorite	
	IBNR	**1sd**	**BNR**	**1sd**	**JDSIC0701**	**1sd**	**144NR**	**1sd**	**144MLNR**	**1sd**	**JDSIC0708**	**1sd**	**144GRAN1**	**1sd**	**JDSIC0704**	**1sd**	**WOIQD**	**1sd**
La	0.6	0.5	2.0	1.4	3.7	3.3	12.4	4.2	2.0	3.0	0.3	0.2	0.9	1.7	0.7	0.8	5.8	5.3
Ce	27.6	2.0	32.5	6.4	102.9	22.2	175.2	59.9	145.3	79.1	128.7	80.6	13.1	3.7	114.8	64.4	71.7	46.1
Pr	1.2	0.4	1.4	1.1	3.1	2.1	9.3	4.9	2.1	1.3	1.4	0.8	0.7	0.6	1.5	0.7	2.2	1.6
Nd	13.7	2.9	13.6	8.7	31.0	14.3	81.3	39.0	26.5	11.4	24.9	13.9	7.7	3.7	23.5	8.2	17.5	9.9
Sm	17.0	2.9	15.5	6.5	35.7	11.2	70.5	28.2	43.4	21.6	46.4	29.1	10.0	3.3	52.1	19.5	17.2	12.2
Eu	1.6	0.3	0.9	0.6	11.6	9.6	22.3	12.7	4.2	2.2	2.1	1.3	0.8	0.3	1.6	0.7	3.2	1.3
Gd	67.1	11.9	50.4	14.7	106.3	36.9	174.1	74.7	167.3	130.4	169.2	99.9	47.7	16.3	280.3	108.2	75.7	67.8
Tb	19.3	3.4	17.8	4.4	34.5	11.8	47.1	22.2	50.6	35.9	57.6	32.2	13.8	4.3	93.6	35.7	22.9	20.4
Dy	224.3	42.5	216.5	47.5	393.0	130.0	487.0	241.3	553.9	370.6	667.1	349.6	163.4	49.5	1159.0	426.4	271.1	235.6
Ho	75.4	13.9	71.5	14.1	121.2	39.3	142.8	70.7	167.7	109.9	203.8	100.2	55.9	16.5	381.8	137.1	90.5	73.8
Er	316.1	59.6	302.3	55.0	470.2	147.6	532.0	257.2	634.2	399.1	784.8	363.5	234.4	65.7	1542.7	529.7	377.5	290.4
Tm	66.9	11.4	73.3	12.0	107.4	32.5	107.9	50.7	134.3	68.3	171.7	75.6	50.8	13.6	330.8	107.3	82.8	57.8
Yb	596.3	91.5	762.4	113.1	1081.1	313.0	959.0	433.6	1260.9	536.0	1585.0	682.6	458.0	118.8	2824.5	870.6	759.0	473.0
Lu	86.4	14.5	80.0	11.5	99.2	29.2	108.1	45.0	131.8	76.2	159.9	64.9	65.2	15.1	324.6	100.0	108.3	53.7
Hf	9668.0	477.0	8951.0	385.8	5862.0	596.1	10166.0	1354.0	10711.0	1934.0	10090.0	1676.0	8689.0	181.0	11129.0	1707.6	10636.0	668.1
n	14		12		5		10		8		5		12		12		7	