July 2007 Monthly Flow and Rainfall Report

General

July 2007 weather was quite a contrast to that of June 2007. While the cold remained and in fact intensified, the wind and rain disappeared for most of the month.

July began with an unsettled 5-day period which culminated in a snowfall to low levels along the east coast again. This weather system did not bring windy conditions but did spread an area of cold air over the lower South Island that persisted until about 21 July. Between 5-21 July, a few weak fronts affected coastal areas but mainly fine, very cold, frosty conditions prevailed. Inland areas were subjected to very frosty conditions accompanied by extensive areas of low cloud/fog and these resulted severe hoar frosts in much of the region. Snow which had fallen in late June, persisted in the Ida Valley and a few other areas through to 21 July adding to the very cold conditions. Creeks and streams froze, rivers had rafts of ice floating on them, water pipes burst, stock water systems froze, treacherous driving conditions occurred in much of the region, temperatures remained below freezing throughout the day and spectacular scenery resulted in some areas through this cold frosty period.

A weather change on 21 July finally cleared the cold air away and westerly conditions to late in the month ensured higher temperatures during the day and an easing of the freezing conditions. A large active depression late in the month brought heavy rain to the east coast with falls decreasing with distance inland. Some flooding occurred in some of the East Coast rivers.

North Otago

Most of this area recorded well above average rainfall totals for July, largely due to the heavy rain at the end of the month. Inland parts of this area did not receive the same falls at the end of the month. Total falls at the indicator sites (average monthly totals in brackets) included:

Omarama	18.7mm (32.0mm)	42% below average
Waikoura	122.5mm (45.0mm)	172% above average
Oamaru Airport	105.8mm (50.0mm)	112% above average
Kauru the Dasher	161.6mm (67.0mm)	141% above average
Islay Downs	120.6mm (58.2mm)	107% above average
Palmerston	148.3mm (56.7mm)	162% above average

Significant falls during the month included: on 2 July, Waikoura 21.5mm, Oamaru Airport 19.6mm, Islay Downs 16.4mm; and on 29/30 July, Waikoura 86.5mm, Oamaru Airport 63.8mm, The Dasher 161.5mm, Islay Downs 80.8mm, Palmerston 121.5mm.

River flows were below average for most of the month and it was only when the heavy rain occurred at the end of the month that the rivers rose. On 30 July, the Kakanui River at Clifton Falls rose about 3m and the Shag and the Grange rose about 2.5m. Flooding of low-lying areas close to the river occurred but no major problems resulted.

Farmers report a very cold frosty month with improving conditions towards the end of it although the heavy rain at the end of the month had made the ground very wet. The

positive side is that the heavy rain has improved soil moisture at a good time of the year in time for spring growth for September.

Central Otago

Some rainfall stations reported below average falls while others reported above average falls with the common denominator being that they all experienced extremely cold, frosty, foggy/cloudy conditions for about 18 consecutive days during the month. Such conditions had not been seen to this extent since about 1995. Total rainfalls at the indicator sites (average monthly totals in brackets) included:

Lindis Crossing	29.5mm (30.3mm)	2% below average
Cromwell	24.3mm (26.0mm)	7% below average
Alexandra	32.7mm (18.0mm)	82% above average
Hills Creek	40.0mm (28.0mm)	43% above average
Ranfurly	34.9mm (28.0mm)	25% above average
Tima	40.0mm (49.9mm)	20% below average

Significant falls included: on 4 July, Alexandra 11.1mm; on 5 July, Hills Creek 11.0mm; on 30 July, Alexandra 10.0mm, Hills Creek 13.5mm, Ranfurly 12.2mm.

Rivers closer to the East Coast had good flows in them for the first half of the month due to rain and snowmelt but those further inland remained low but about usual for this time of the year. No flooding occurred in any of these rivers and streams.

Farmers report a very cold spell for the first 3 weeks of July but the westerly quarter winds late in the month saw temperatures rise and improving conditions. All are hoping for improving weather and some rain in August so soil moistures are good by September when temperatures should begin to warm up.

Lakes Wanaka, Wakatipu and Hawea and Surrounding Areas

There was wide variation in rainfall totals and in the comparisons with average throughout this area for July. Total rainfalls at the indicator sites (average monthly totals in brackets) included:

Makarora Station	98.2mm (167.0mm)	41% below average
Hunter Valley Station	59.2mm (81.0mm)	27% below average
Glenfinnan	102.2mm (160mm)	36% below average
Hawea Flat	30.5mm (51.5mm)	41% below average
Routeburn Station	168.1mm (159mm)	6% above average
Queenstown	52.0mm (56.6mm)	8% below average

Significant falls included: on 4/5 July, Makarora Station 39.8mm; on 4 July, Hunter Valley Station 37.8mm, Routeburn Station 50mm, on 25 July, Routeburn Station 22.2mm, Queenstown 25mm.

At all sites, all of the rain fell in the first 5 and last 8 days of the month. No rain was recorded anywhere between 6 – 23 July.

River flows were generally below their longterm averages through most of the month. No particularly high or low flows occurred.

Lakes Wanaka and Wakatipu began the month at 277.26m and 309.81m, 0.4m and 0.1m above average respectively. They rose briefly over the first few days of July and then slowly fell. They ended the month at 0.1m below average and average levels respectively.

Lake Hawea fell 1.4m during July to end the month at 339.49m, 1.5m above the minimum level as Contact Energy continued to use water from this lake for power generation.

Farmers report a colder than usual month with some cloudy/foggy periods and many frosts. The last week of the month had much better weather.

Strath Taieri, Lower Taieri and Dunedin

July 2007 was a wet month in this area although 60-70% of the month's rain fell in the last 3 days of July. Rain was recorded from time to time in this area throughout the month except in inland areas where little rain was recorded between 6 July and 24 July. Total rainfalls at the indicator sites (average monthly totals in brackets) included:

Garthmyl Middlemarch	84.1mm (28.0mm)	200% above average
Musselburgh Dunedin	121.6mm (59.0mm)	106% above average
Lee Flat	68.9mm (54.0mm)	28% above average
Maungatua	124.0mm (59.9mm)	107% above average
Dunedin Airport	109.6mm (44.0mm)	149% above average
Pine Hill	179.0mm (75.0mm)	139% above average
Sullivans Dam	211mm (105.0mm)	107% above average

Other raingauge totals in this area included Southern Reservoir 160.8mm, Ross Creek 194.8mm.

Significant falls included: Garthmyl 15.6mm on 2 July and 12.3mm on 4 July; and on 29/30 July, Garthmyl 49.1mm, Musselburgh 90mm, Dunedin Airport 83mm, Lee Flat 45.8mm, Maungatua 90.3mm, Pine Hill 132.5mm.

Average monthly river flows were generally good with the Taieri River recording good flows throughout the month and the others recording low to average flows at times, flows which are usual for this time of the year.

Flooding occurred at the end of the month with significant rises in all of the rivers. The Taieri at Outram rose about 5.5m, the Silverstream at Riccarton Road about 3m, the Nenthorn at Mt Stoker about 5m, Deep Stream at SH 87 about 2m. Roads and farmland flooded but there were no major stock losses.

Farmers inland report a cold, settled month with many frosts but the recent rain has seen soil moistures improve significantly. Towards the coast, farmers report a cold, damp month with many frosts but the last week of the month was much better. Soil moistures have improved significantly in coastal areas as well.

South and West Otago

The more southern parts of this area received less rainfall than the more northern and eastern parts with the easterly quarter rainstorm on 29/30 July being the difference. The

more southern parts received less rain from this storm than the rest of the region. Significant flooding occurred in the Tokomairiro River on 30/31 July as a result of this rainstorm.

Rainfall totals at the indicator sites (average monthly totals in brackets) included:

Tuapeka Mouth		
Balclutha	92.5mm (49.0mm)	87% above average
Waikoikoi	44.5mm (65.0mm)	32% below average
Slopedown	65.8mm (117mm)	44% below average
Clarks Flat	55.5mm (47.0mm)	18% above average
Moa Flat	58.0mm (41.0mm)	41% above average.

Significant falls during the month included: on 2 July, Moa Flat 13.5mm; on 23 July, Slopedown 11.0mm; and on 29/30 July, Balclutha 69.5mm, Slopedown 18.4mm, Clarks Flat 22mm.

Average monthly river flows were close to their longterm averages. All rivers began the month at above average flows due to rain and snow at the end of June and early July. All then steadily declined as the month progressed and little rain was recorded between 6 and 21 July. Flows began rising again in the last 10 days of the month and the heavier period of rain at the end of the month saw some rivers rise especially those about and north of Balclutha including the Waitahuna. On 31 July, the Clutha at Balclutha rose 1m, the Waitahuna at Tweeds Bridge rose 3m, and the Tokomairiro North and West Branches rose significantly causing extensive flooding in and around Milton including causing State Highway 1 to be closed. While flooding did occur elsewhere, no significant problems arose from it.

Farmers report particularly cold conditions for the first 3 weeks of July with a series of frosts for about 14 days in succession. The weather in the last week of July was much better and a green tinge was beginning to show on the paddocks as the temperatures warmed up a little.

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* Data sources – Private individuals, Dunedin City Council, Otago Regional Council, NIWA