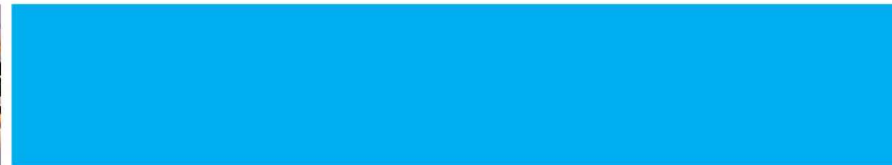


Maximising Southland transfer capability

19 August 2008

TRANSPower

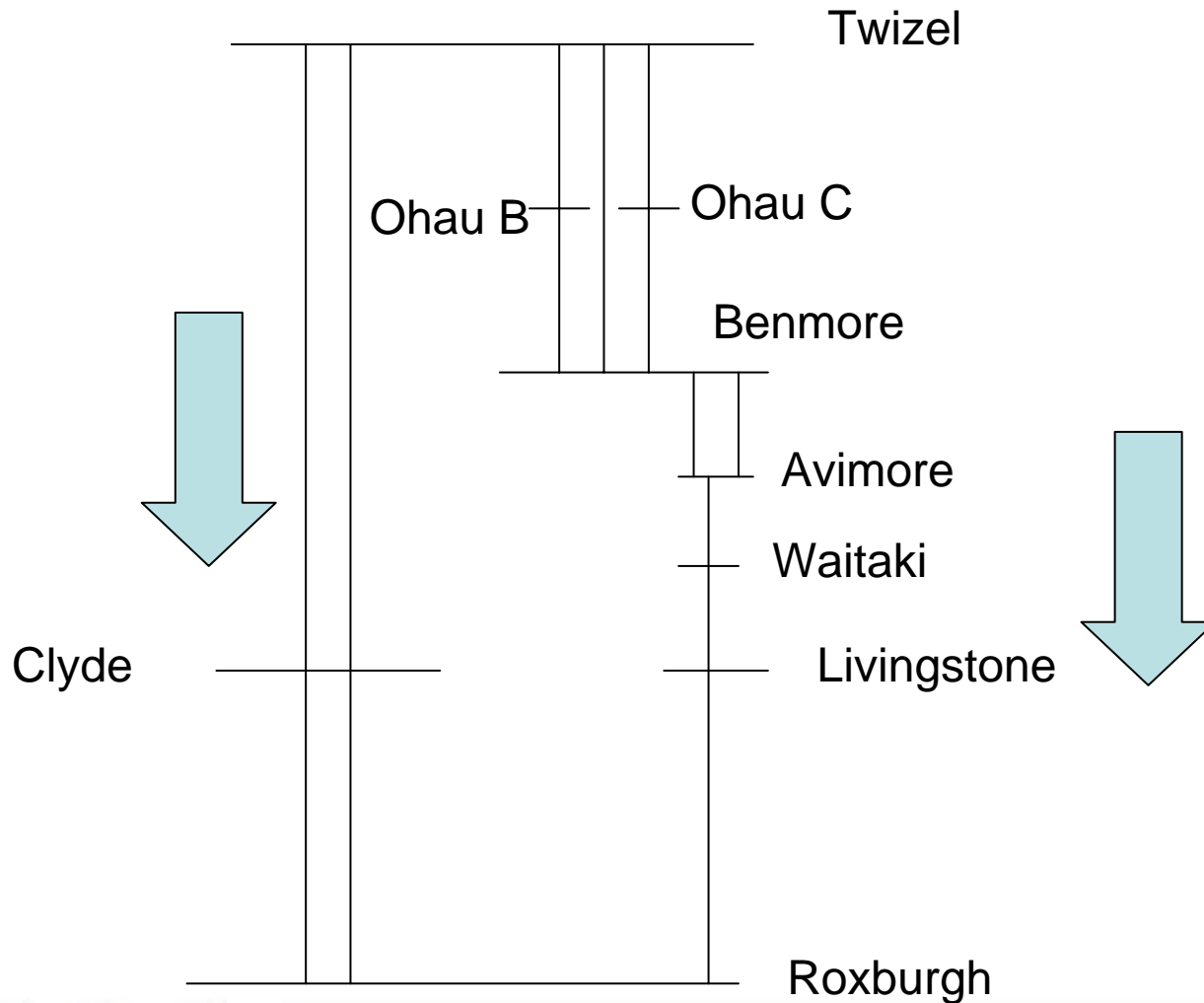


Background

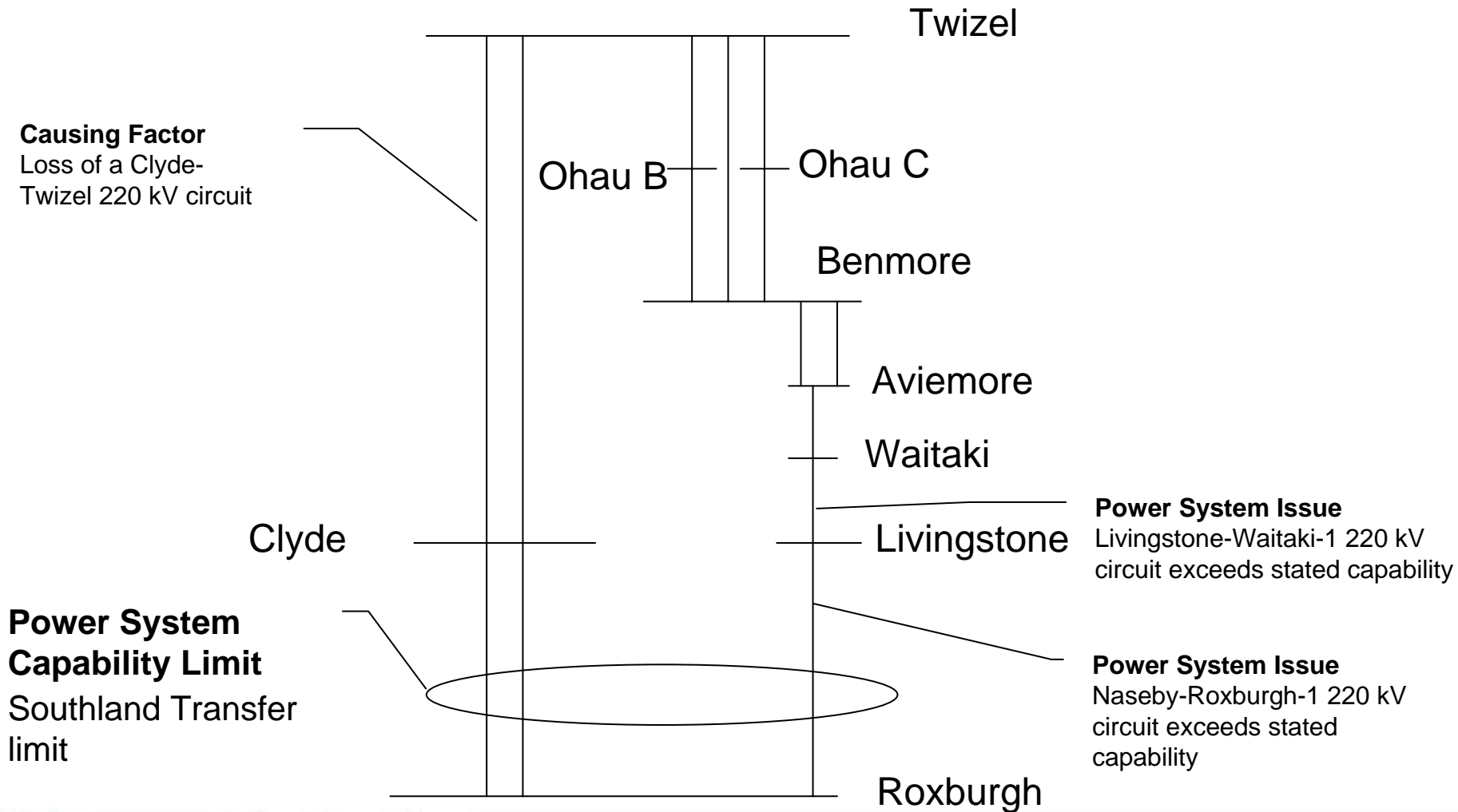
- 2008 dry year situation
 - Large amounts of transfer from North to South island
 - Low Southland hydro storage
- SO looking at measures for increasing system capacity for south transfer
 - System reconfiguration: e.g. Mangamaire split
 - Reschedule outages that constrain transfer or thermal generation
 - Increased reserves providers in South Island to facilitate higher HVDC pole 2 transfer
 - Waitaki area 220 kV grid reconfiguration
- Southland transfer
 - Transfer from Waitaki Valley into the bottom of the South Island (Gos Zone 14)



Transfer into Southland



Power system under south transfer

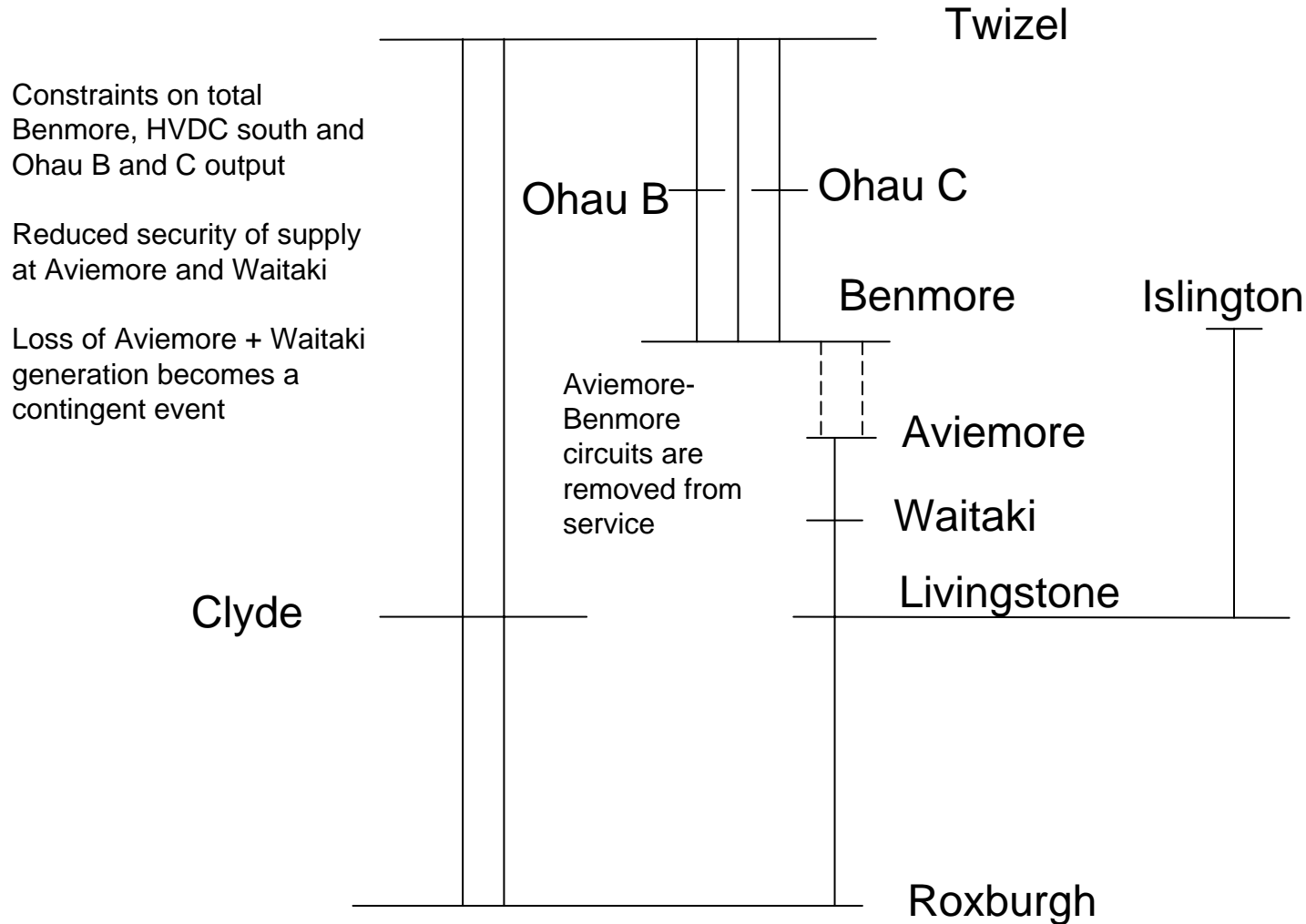


Southland generation

- Southland generation makes up difference between Southland load and power transferred from Waitaki Valley
- Raising the constraints on transfer into Southland requires less southland generation (saves southland hydro storage) to meet southland load
- One option is grid reconfiguration between Benmore and Livingstone



Aviemore-Benmore split



Aviemore-Benmore split

- Not optimal for Southland transfer – some power goes to Islington on Islington-Livingstone circuit
- Split Islington-Livingstone circuit
 - At times when USI load can be supplied through three circuits
 - Open only one end to provide some reactive support



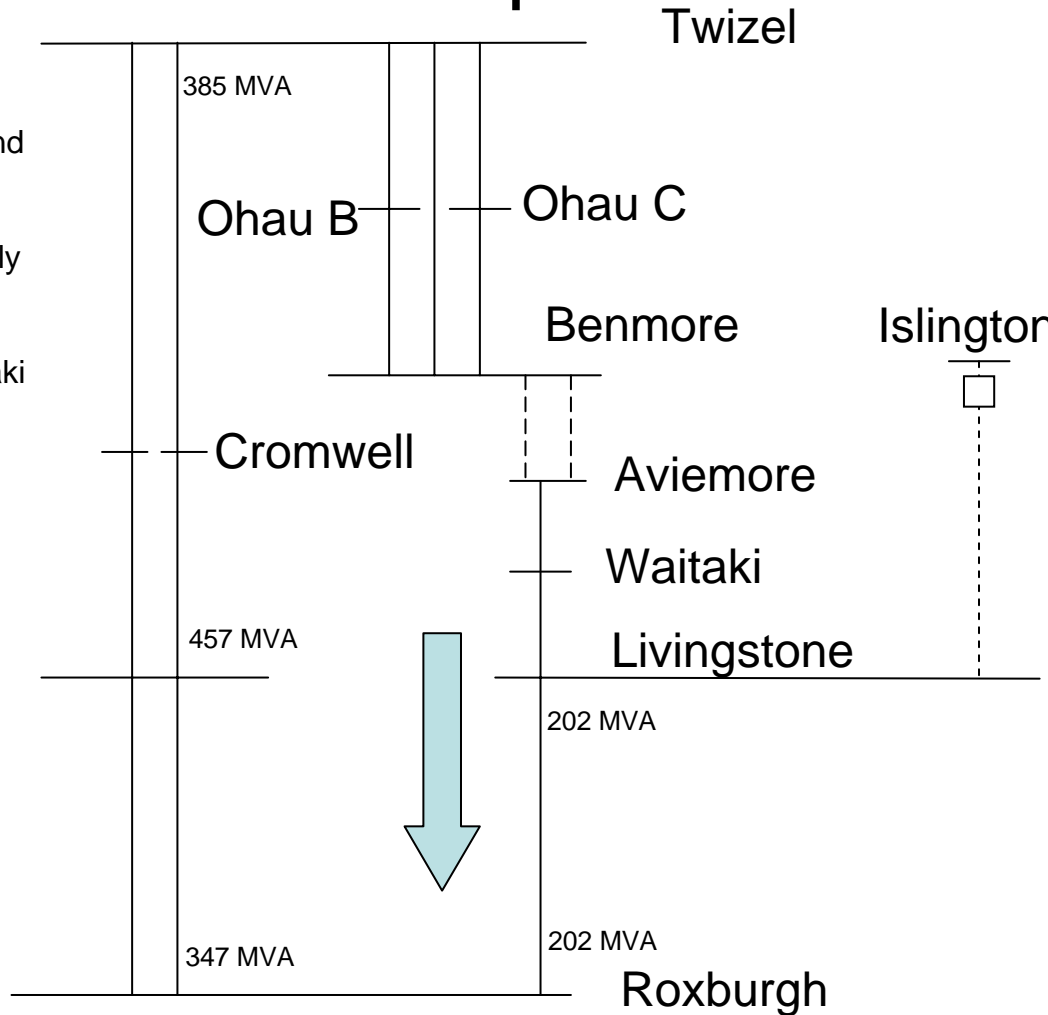
Aviemore-Benmore/Islington-Livingstone split

Constraints on total Benmore, HVDC south and Ohau B and C output

Reduced security of supply at Aviemore and Waitaki

Loss of Aviemore + Waitaki Generation becomes a contingent event

Clyde



Twizel

385 MVA

Ohau B

Ohau C

Benmore

Islington

Cromwell

Aviemore

Islington-Livingstone opened at Islington end

Waitaki

Implemented at low USI load times

Livingstone

457 MVA

202 MVA

347 MVA

202 MVA

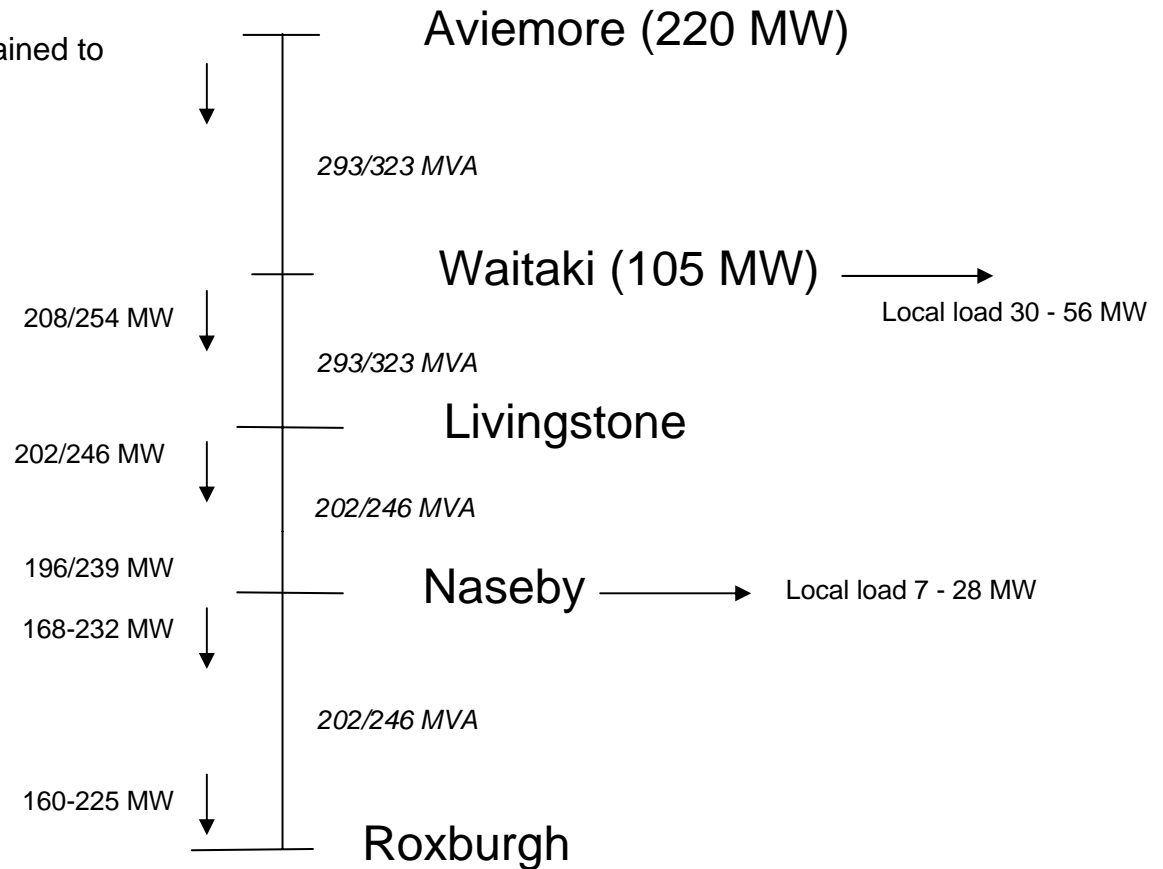
Roxburgh



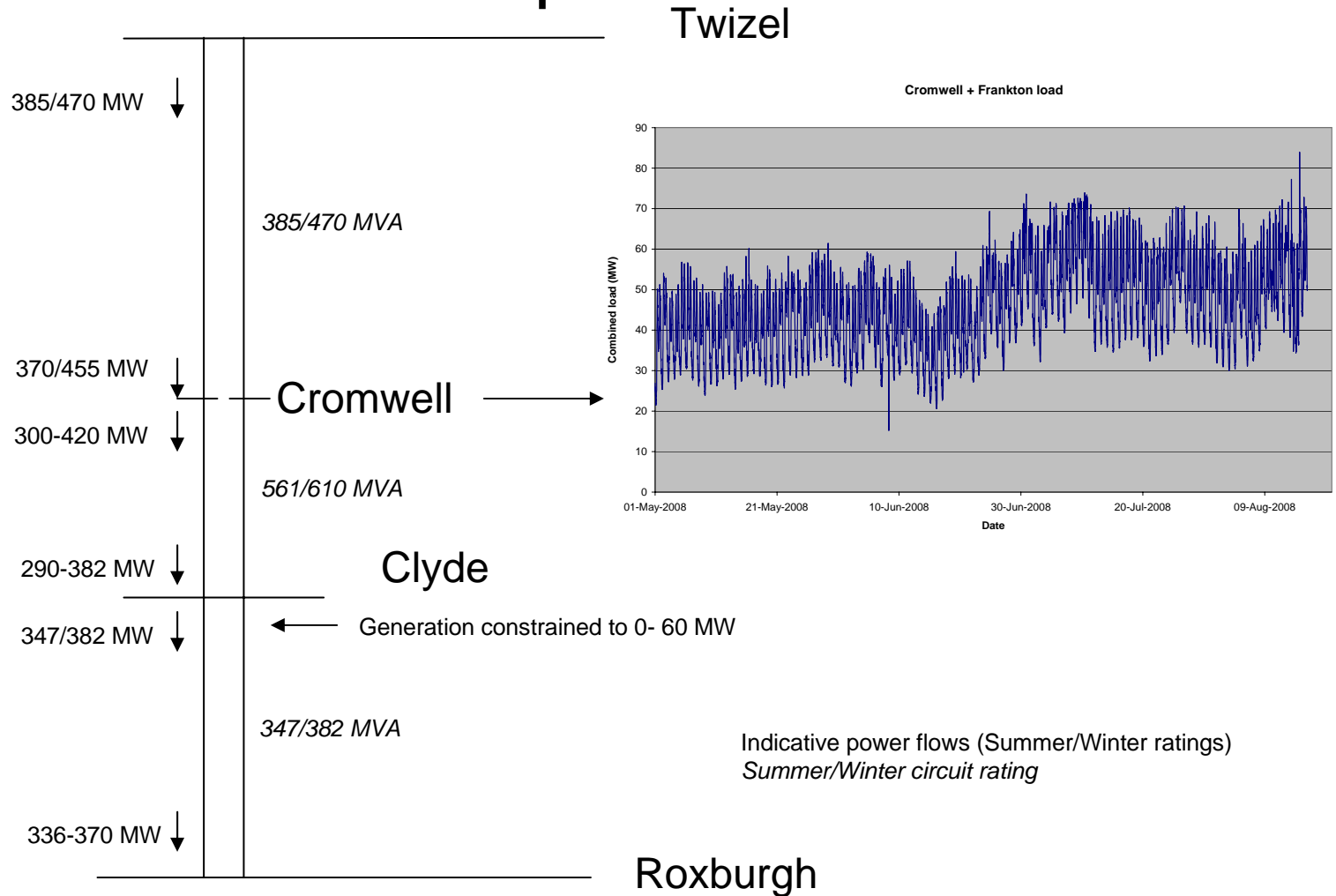
Aviemore-Benmore/Islington-Livingstone split

Aviemore and Waitaki generation constrained to 240-310 MW.

Indicative power flows (Summer/Winter ratings)
Summer/Winter circuit rating

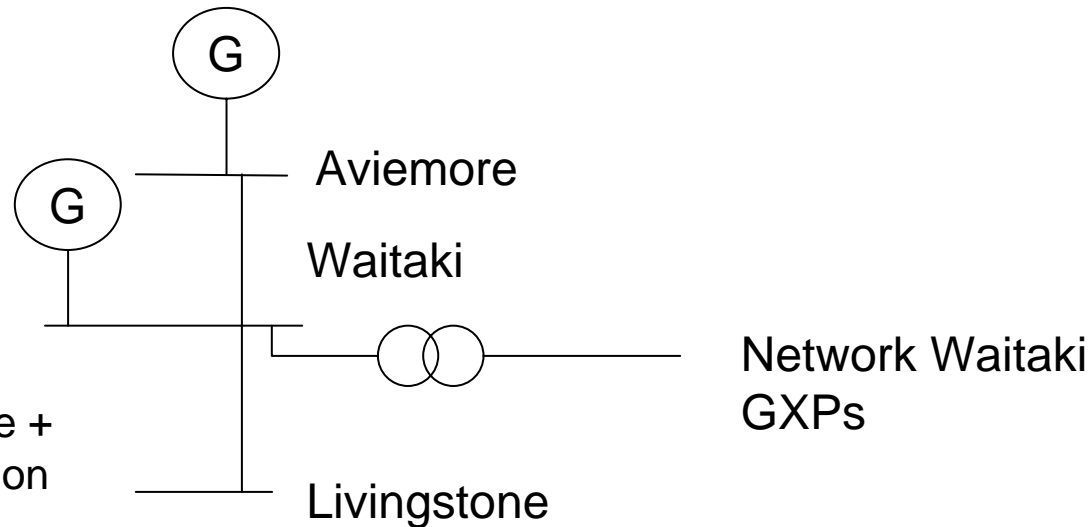


Aviemore-Benmore/Islington-Livingstone split



Reduced security

Benmore-Aviemore split in place

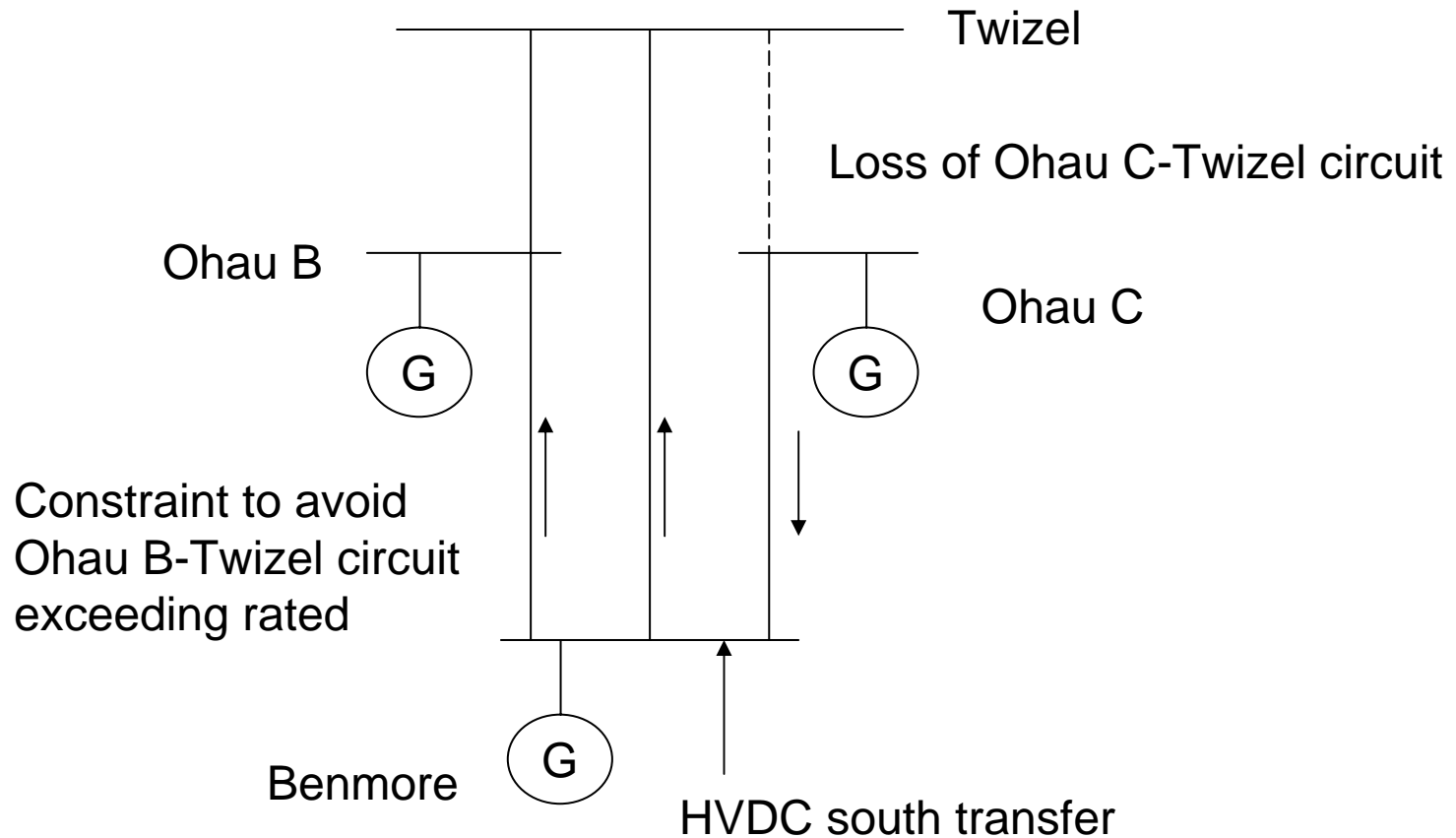


Loss of Aviemore +
Waitaki Generation
becomes a
contingent event

Reduced security to Aviemore,
Waitaki and Network Waitaki



Waitaki valley Generation Constraints



Indicative: Sum of Ohau B + Ohau C + Benmore + HVDC south < 1200-1290 MW

