



"We use average channel bed gradient of the depleted reach as a simple measure to collectively describe the location of a depleted reach within a catchment and its likely hydrological and geomorphological characteristics. It is calculated by dividing the difference in elevation between the points of abstraction and discharge by the length of the river channel to provide an average channel gradient for the depleted reach."

$$\text{Average gradient of depleted reach (\%)} = \frac{278 - 158}{1700} = \frac{120\text{m}}{1700\text{m}} = 0.0706 \times 100 = 7.1\%$$

Zone 3 - Upper catchment streams and rivers - gradient 10% or greater

These are sites that do not fall within Zone 1 but where the average gradient of the flow depleted river reach is 10% or greater. These are typically steep gradient, upland catchments. Hydropower developments in Zone 3 are likely to have a limited spatial impact on river ecosystem structure and function and present a low risk of disrupting ecological connectivity within a catchment.

For hydropower schemes in Zone 3 the following abstraction rates apply:

Table 4. Abstraction rates for Zone 3 sites with depleted reach		
Low flow protection (Hands off Flow)	% take of available flow	Maximum abstraction rate
Minimum of Q95	70%	Qmean

- A Zone 2 scheme with bed gradient less than 10% may be re-assessed as a Zone 3 scheme where it can be shown that the site has the hydrological and geomorphological characteristics of a steep upland catchment and will not disrupt ecosystem connectivity.

