

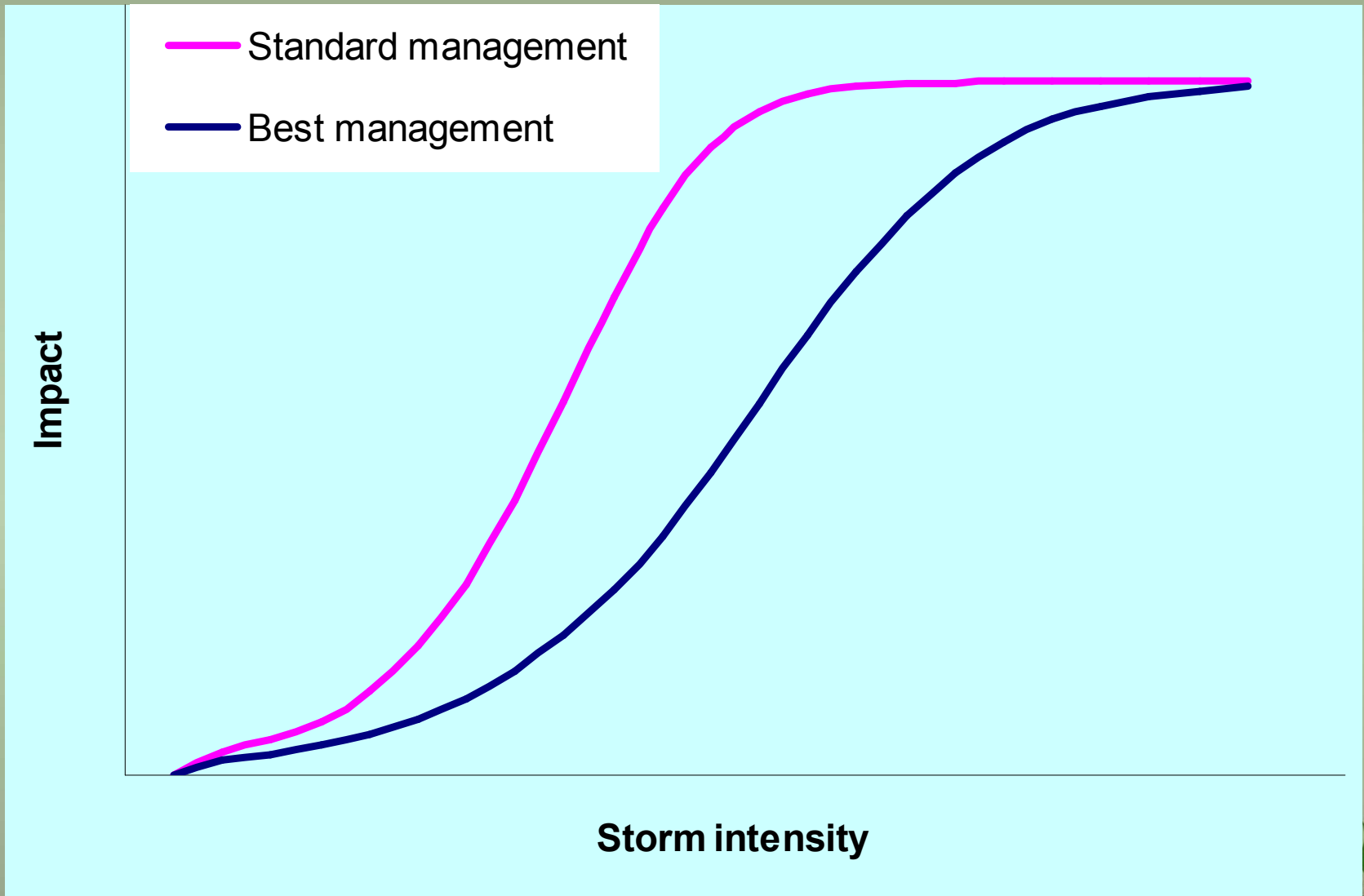


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Landcare Research

Populating management curves

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Hypothesised curves

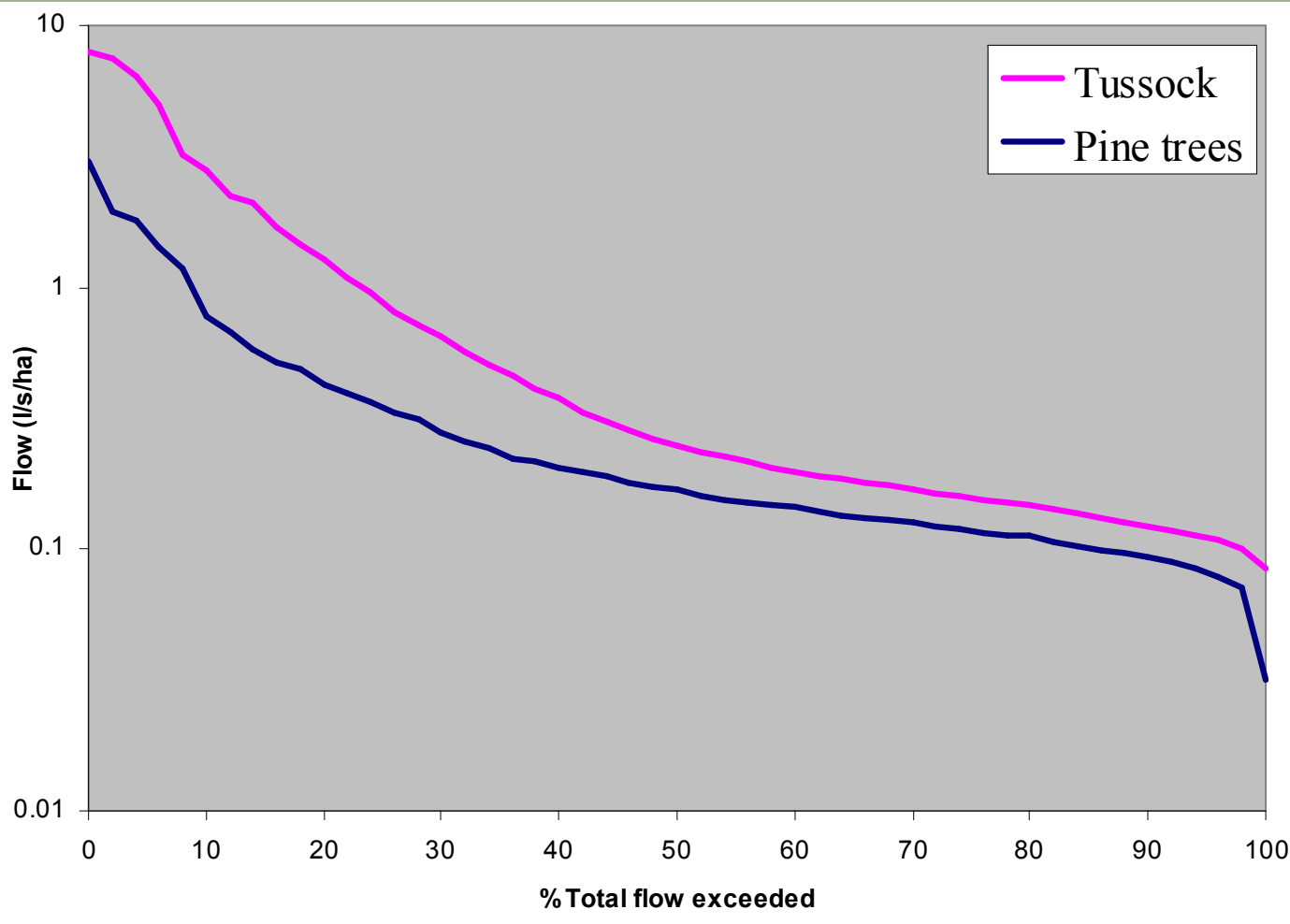


Populating management curve

- Simplified management cases
- Water yield
 - Amount of water from a study catchment under snow tussock and another under forest
 - Glendhu, near Lawrence in Otago
 - In water yield terms could argue that tussock is “best management” and forest is “standard” or not so good management
- Sediment yield
 - Sediment yield from a series of storms (1997-2005)
 - Pakuratahi, Hawke’s Bay
 - One forested (“best management”)
 - One pasture (“standard management”)



Flow duration curve

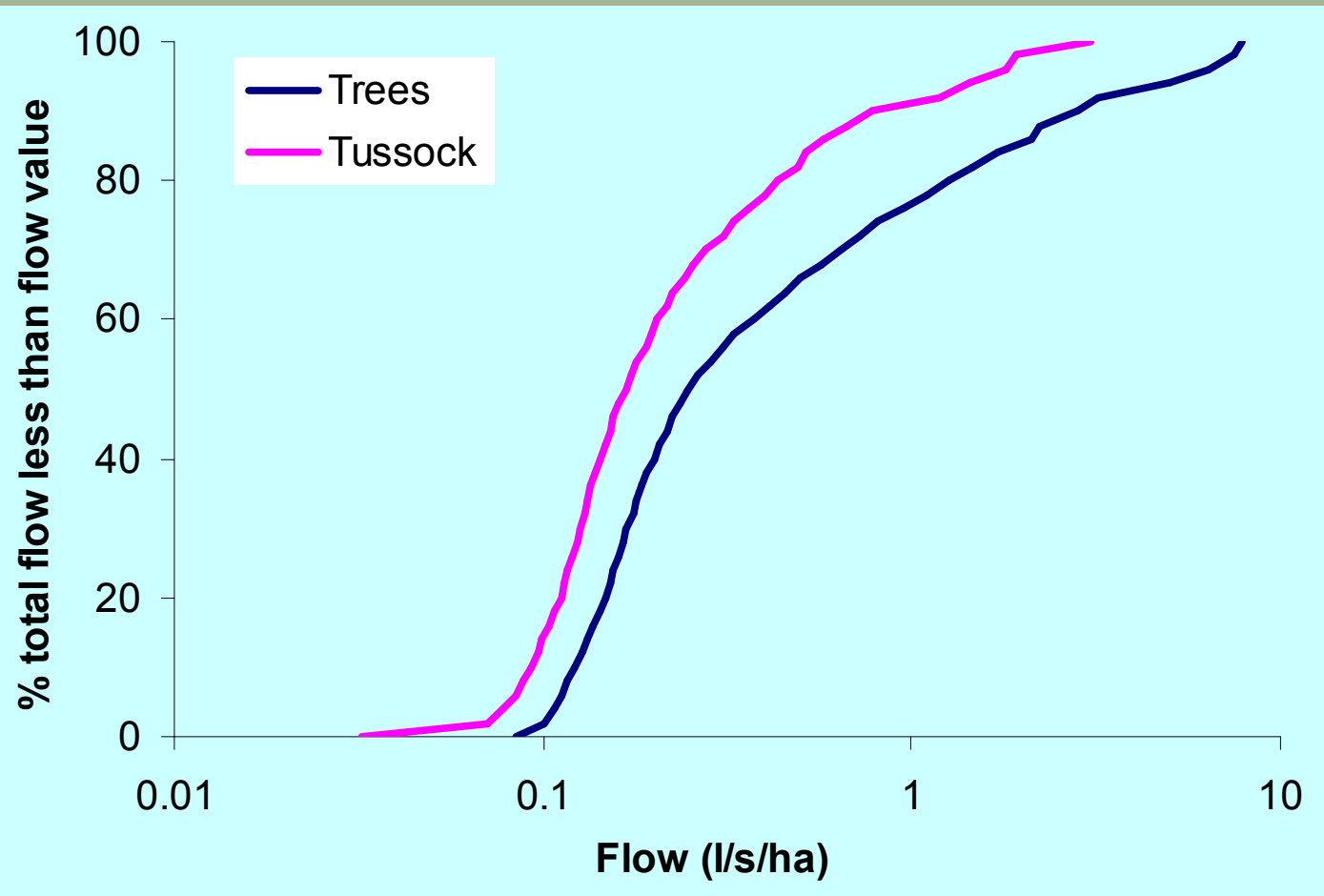


N.B. This is % of total flow in 5 years – normal flow duration curve is % of time

Largest change is in the high flows

Next page shows curve put into management curve context

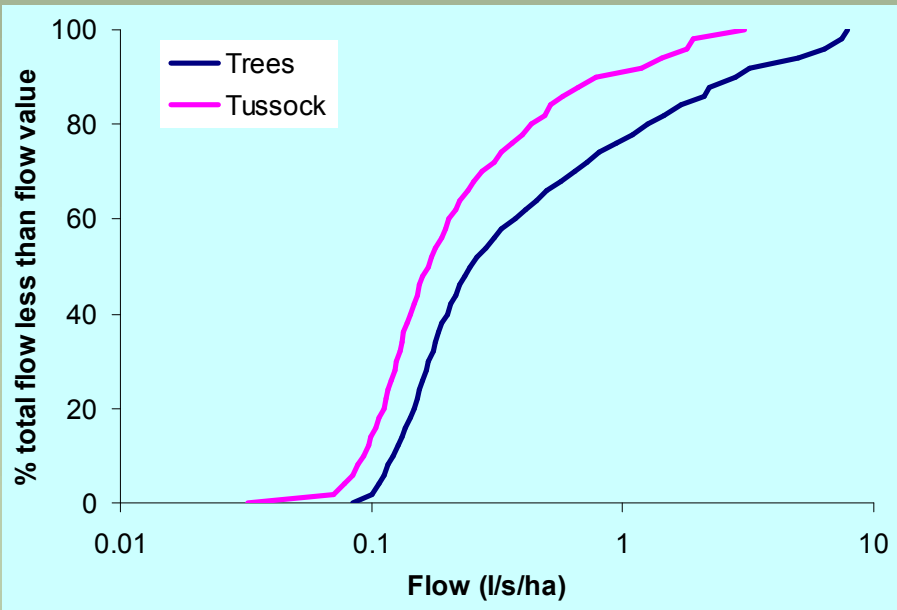
Water yield curve



Same as previous but axes changed for similarity to previous format

Not as easy to see the difference getting larger at high flows

Water yield curve discussion



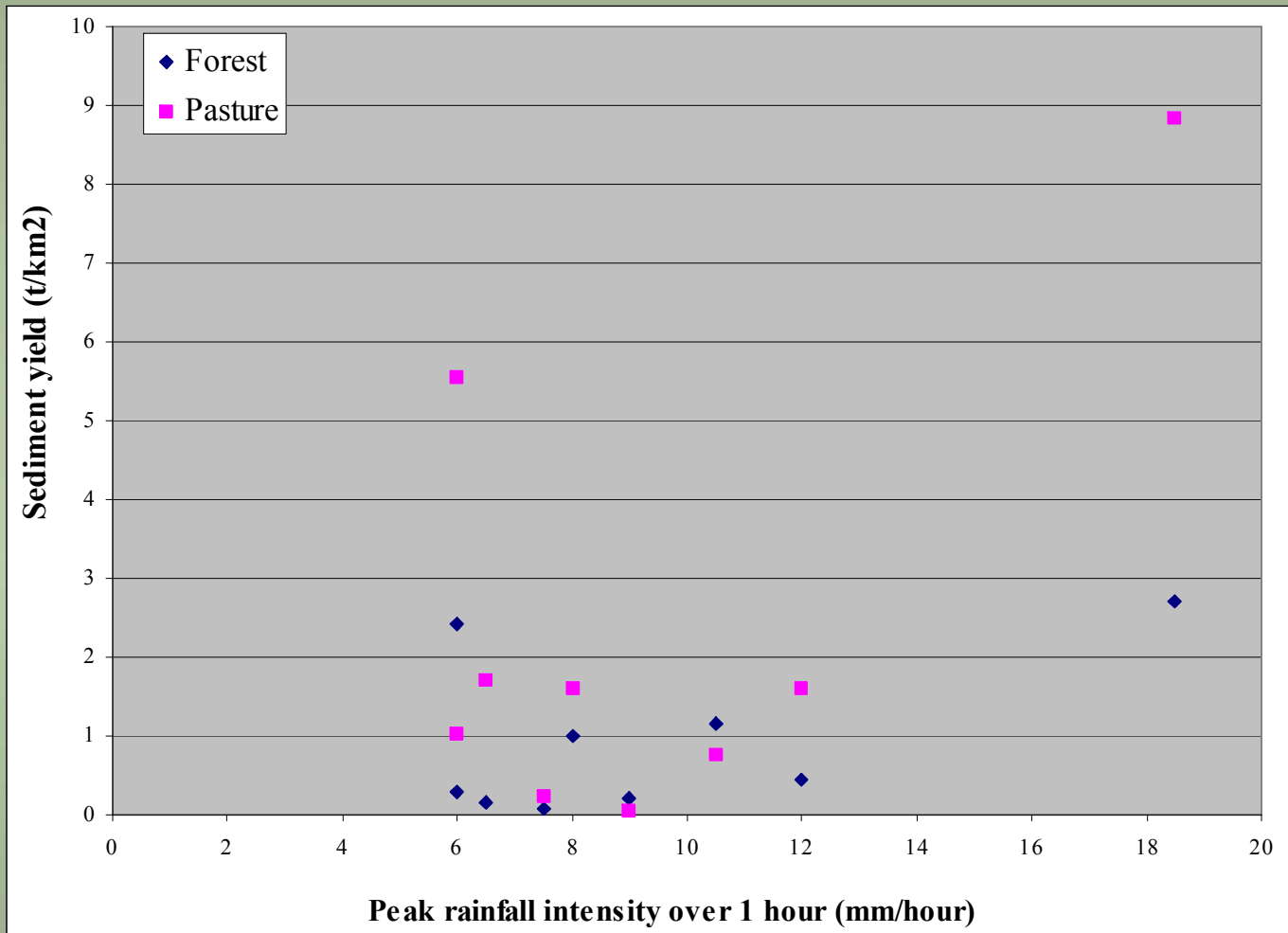
Could be read as tussock being best management (yields more water) but not necessarily so.

The largest impact of the trees is in the high water yields (i.e. flood events)

The curves don't come back together again – or do they?

I had expected they would return together at the very high flows.

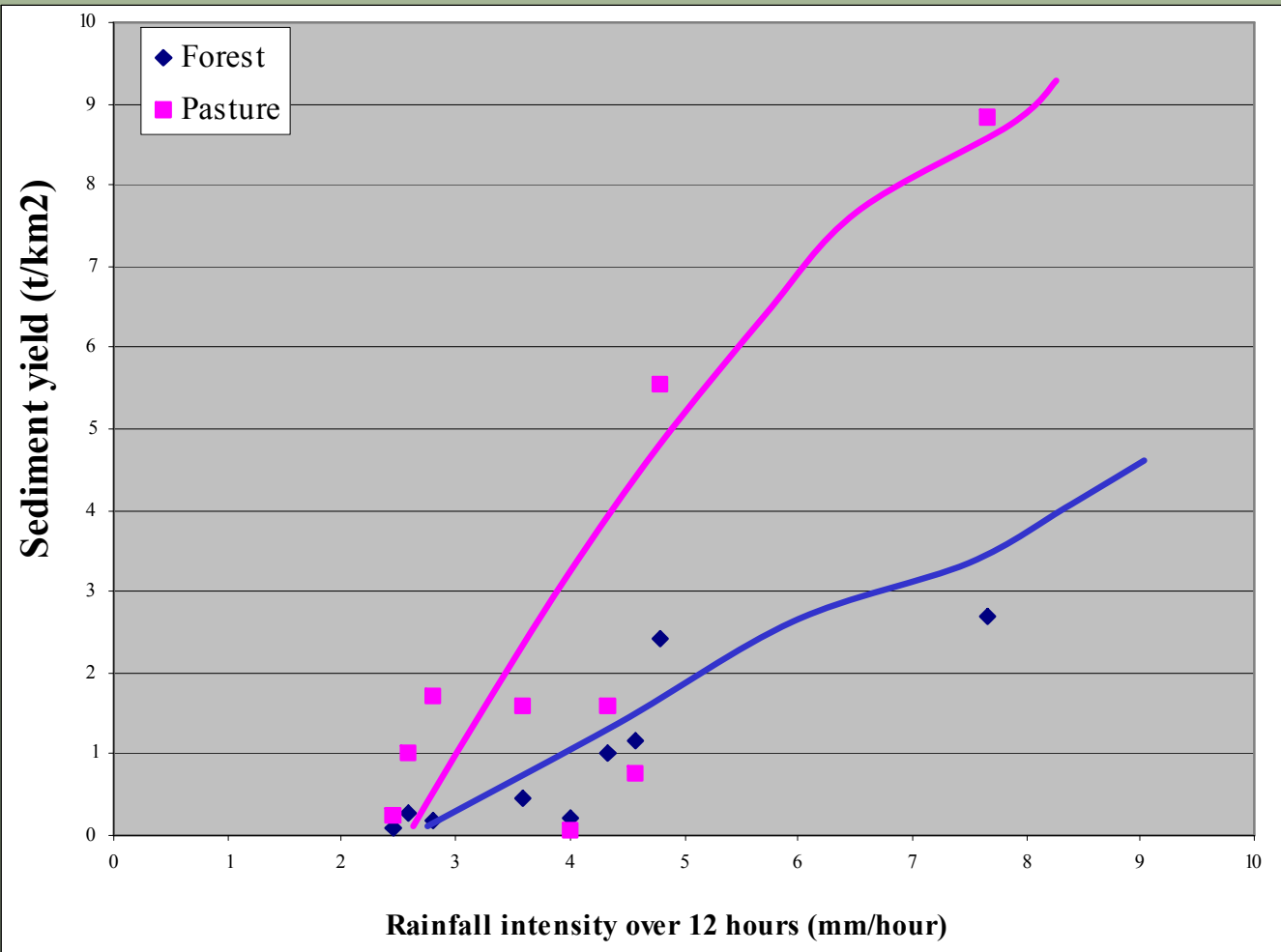
Sediment yield curve 1



Choosing what measure of storm intensity is difficult

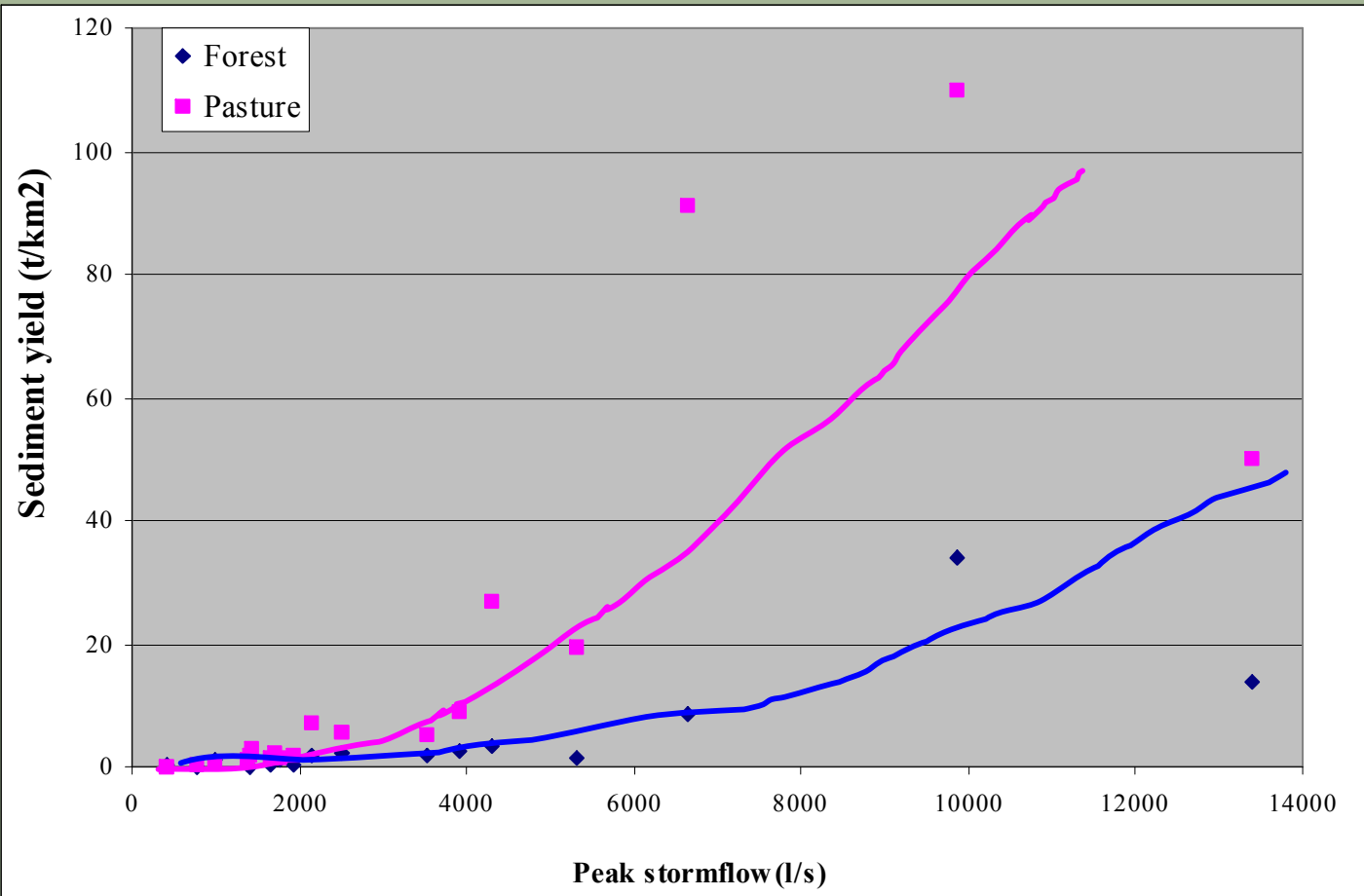
No particular discernible pattern at peak rainfall intensity

Sediment yield curve 2



Perhaps some pattern when 12 hour rainfall intensity is calculated

Sediment yield curve 3



Peak stormflow

Largest storm was a lot of rain over a long time

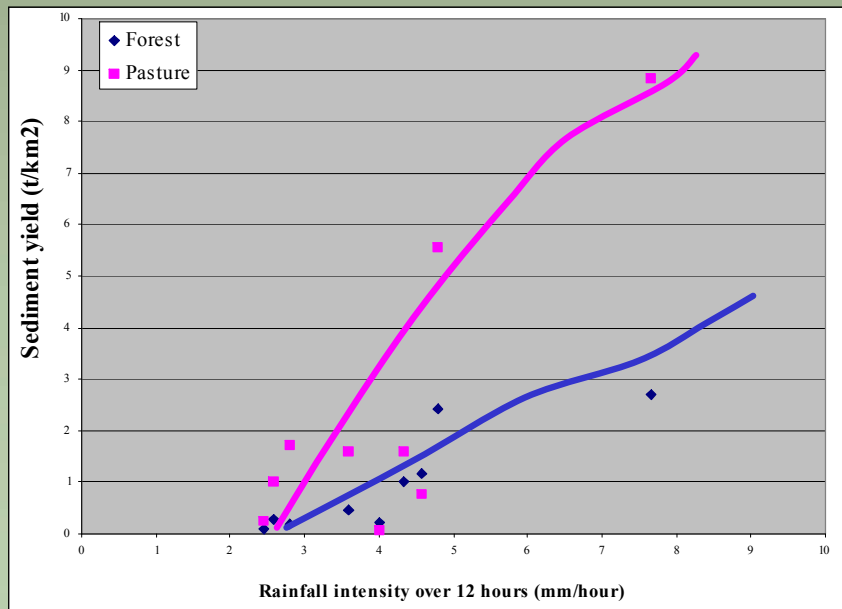
1 year average recurrence interval (ARI) \approx 5200 l/s

5 year ARI \approx 9800 l/s

This includes period with re-established forest cover



Sediment yield curves discussion

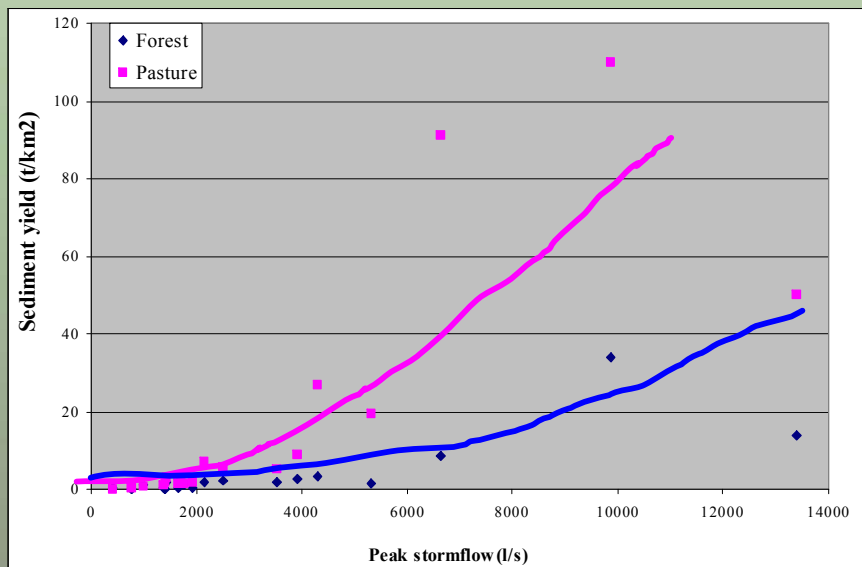


The curves never come together again.

This makes sense in sediment yield terms (doesn't it?), how does it affect management curve?

Is it because this isn't an "impact" as such, it is a measure of what may be causing the impact.

In terms of impact perhaps a value of 3 is the maximum impact (i.e. any sediment yield values above this cause the same impact so both curves flatten off).



Points for discussion?

- Link between impact and measure of cause of impact
 - Is sediment yield the best measure?
 - How do we equate sediment yield with impact?
- Curves joining back together
 - Should they join back together?
 - Maybe it is another impact vs measure of cause of impact
- Further work
 - Should we write this up?
 - Bringing knowledge from sediment literature and this group into the management literature?

