Habitats Directive Assessment on the River Leith

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Environment Agency Science Group

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hanks to:

Katie Wilson and Chris Jackson

Jane Atkins, Steve Fletcher, Simon Gebbett, Andrew Hughes, David Johnson, Majdi Mansour, Keith Seymour, Paul Shaw, Andrew Spink and Mark Whiteman

Excel - IGARF_1.4_IaW101.xls

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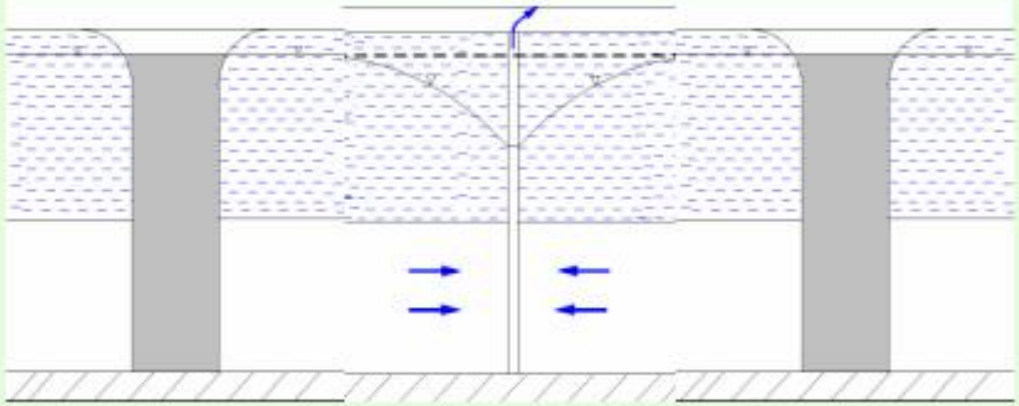
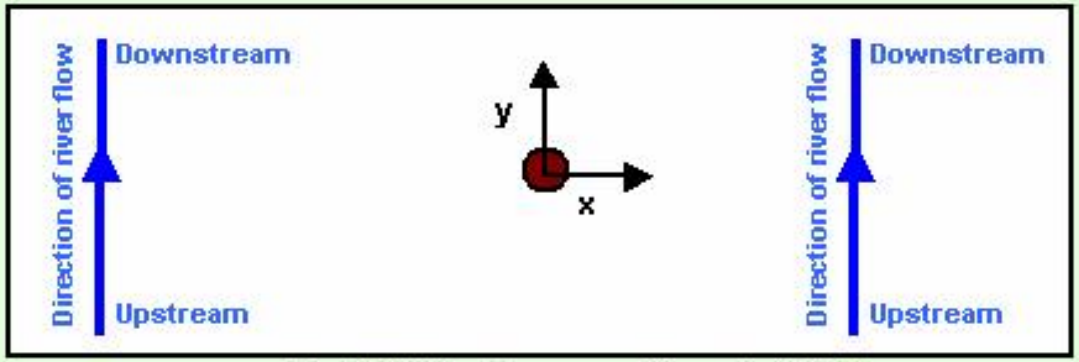
River (Theis) | Well | River (Theis)



River Name
West River

River Name
East River

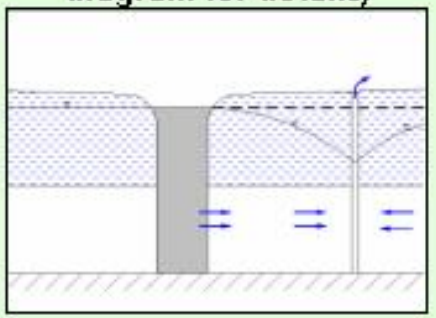


The Well is always positioned at (0,0)

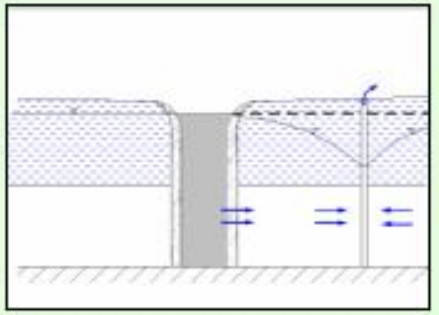
This is a two river system using the Theis solution for the River East River and the Theis solution for the River West River. Click on the Idealised River pictures for further information on the selected river solutions.

Idealised River Description (click diagram for details)

Theis



Hantush



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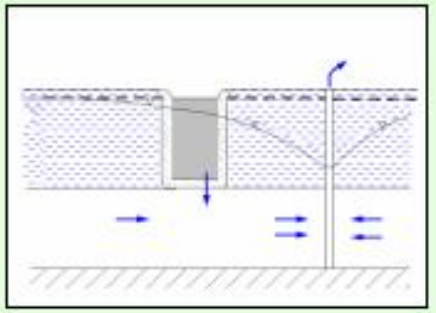
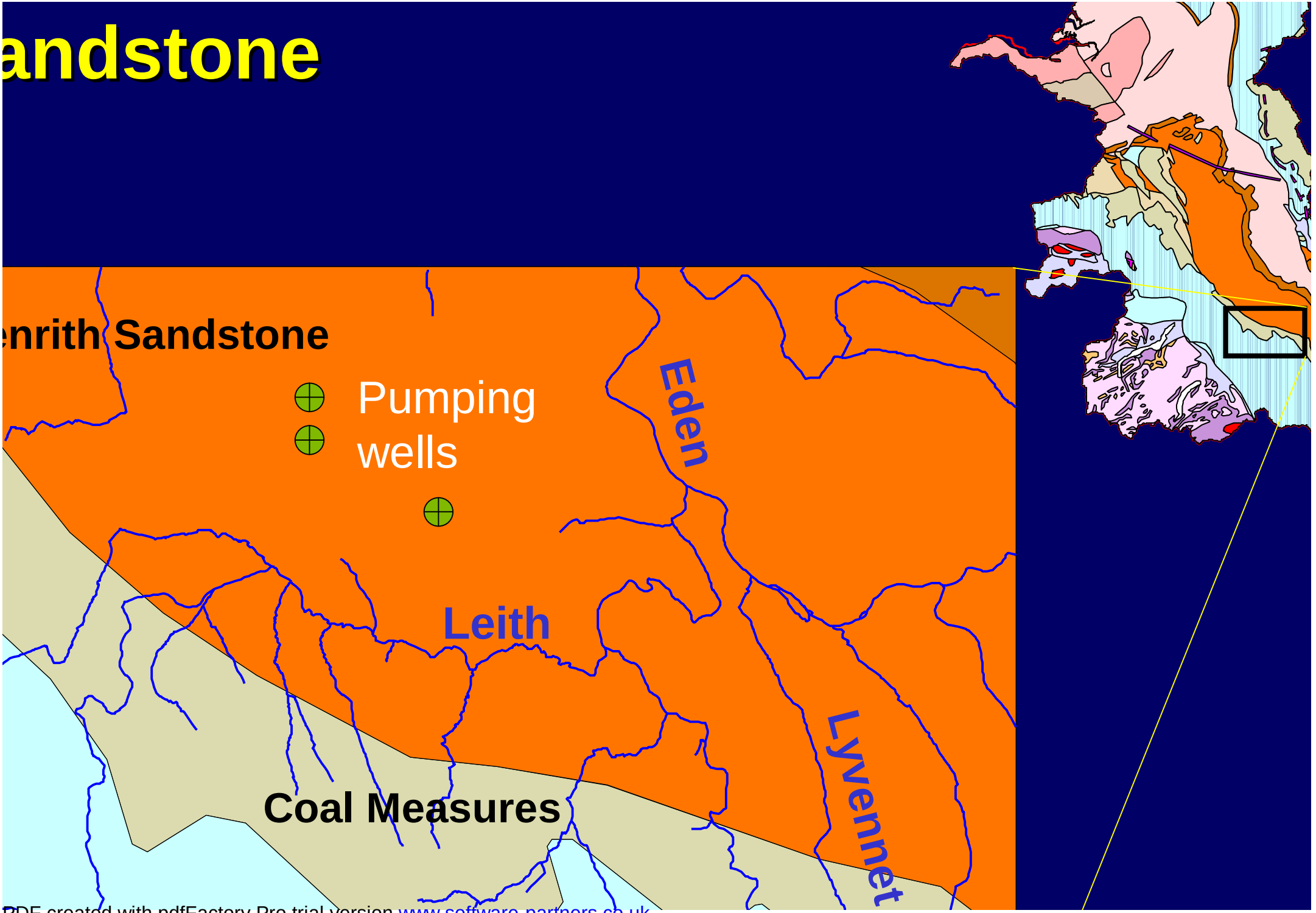


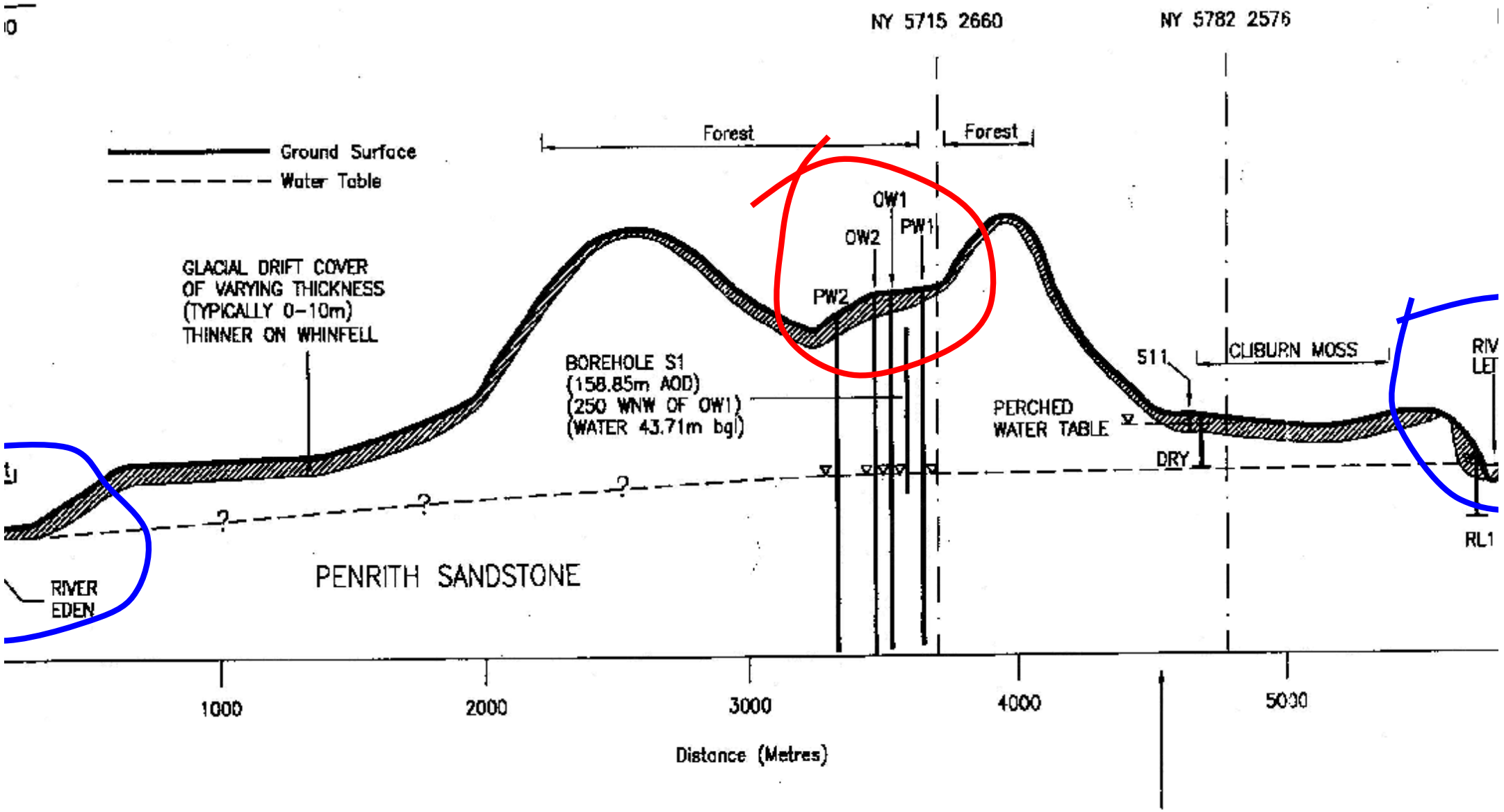
ENVIRONMENT AGENCY

nclusions from BGS/EA study

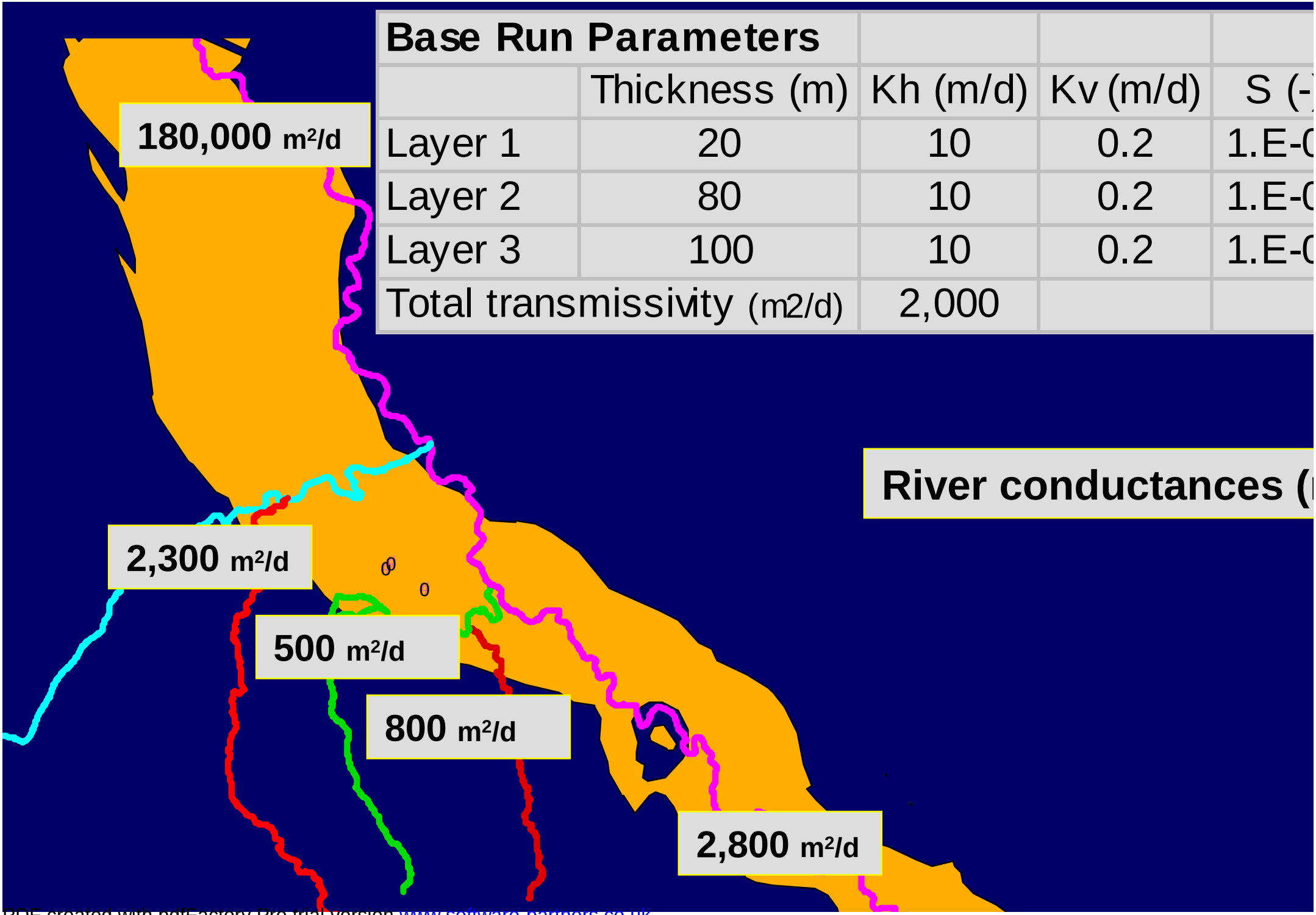
- mportant to include adjacent rivers & the rrect river length
- Recharge is not a crucial mechanism, unless the system is non-linear
  - Dry or perched river cells
  - Transmissivity varies with groundwater head

Habitats Directive Assessment



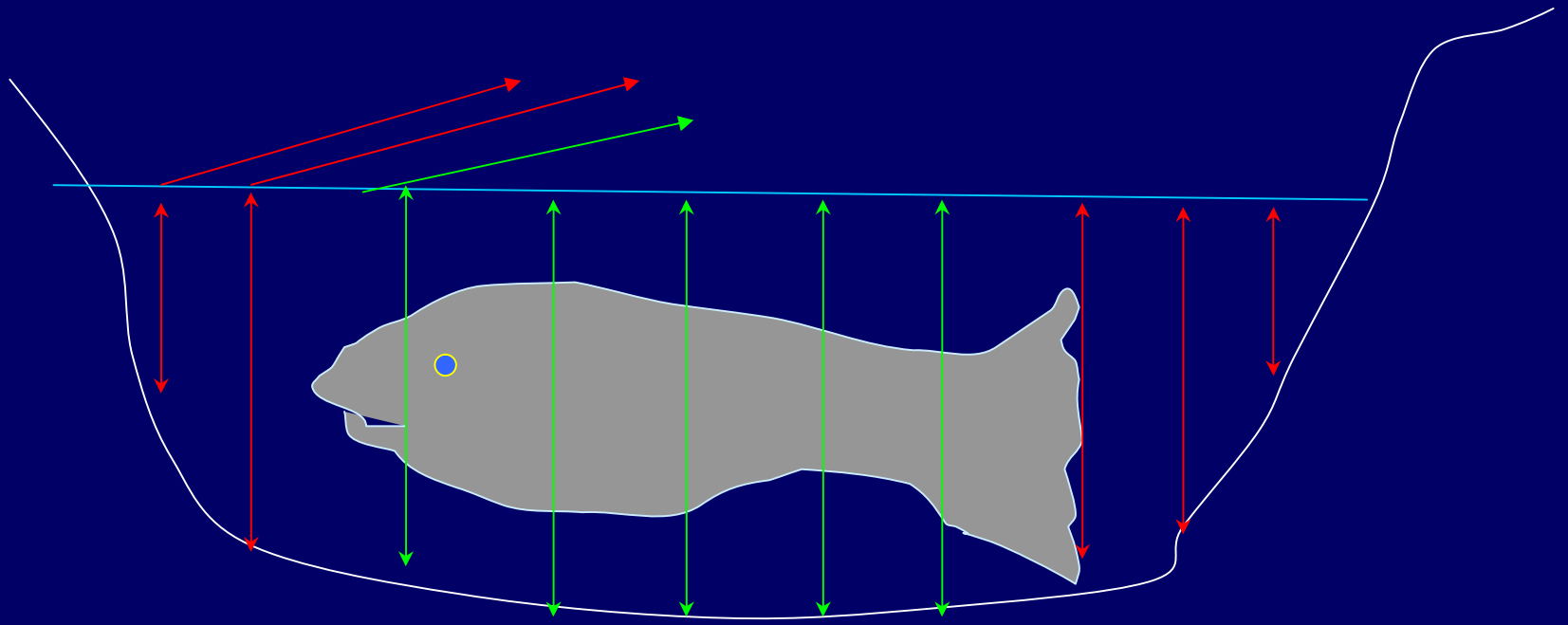


RIVER/ BOREHOLE	WATER LEVEL (m A.O.D.)	BOREHOLE DEPTH (m)
River Leith	116.2	–
RL1	116.2	18
[illegible]	[illegible]	[illegible]



	% of abstraction
Lowest impact (low Criv) (low Criv & high Kh L1)	~10%
Highest impact (high river conductances) (low T)	~50%

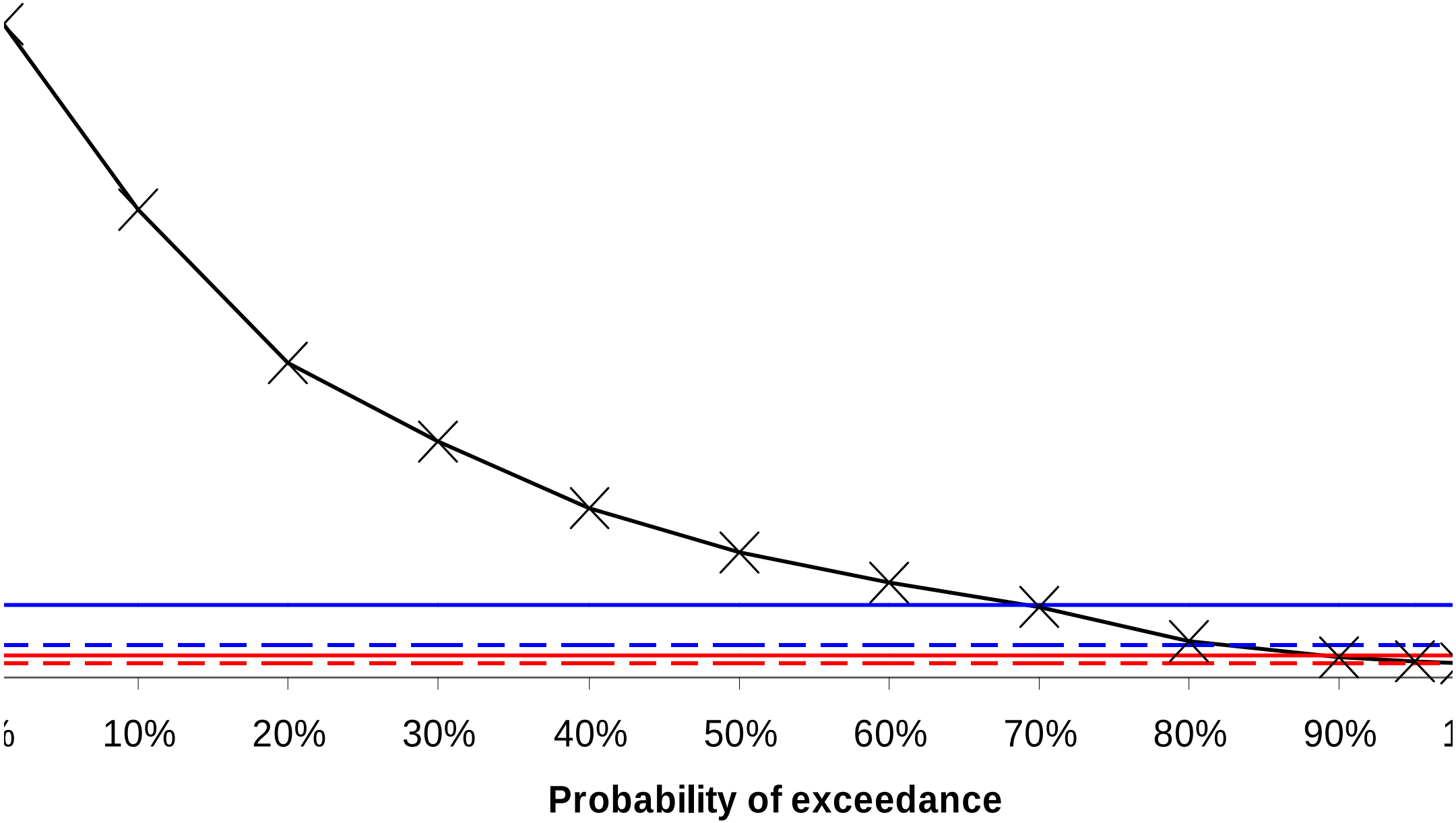
0% Habitat Guideline

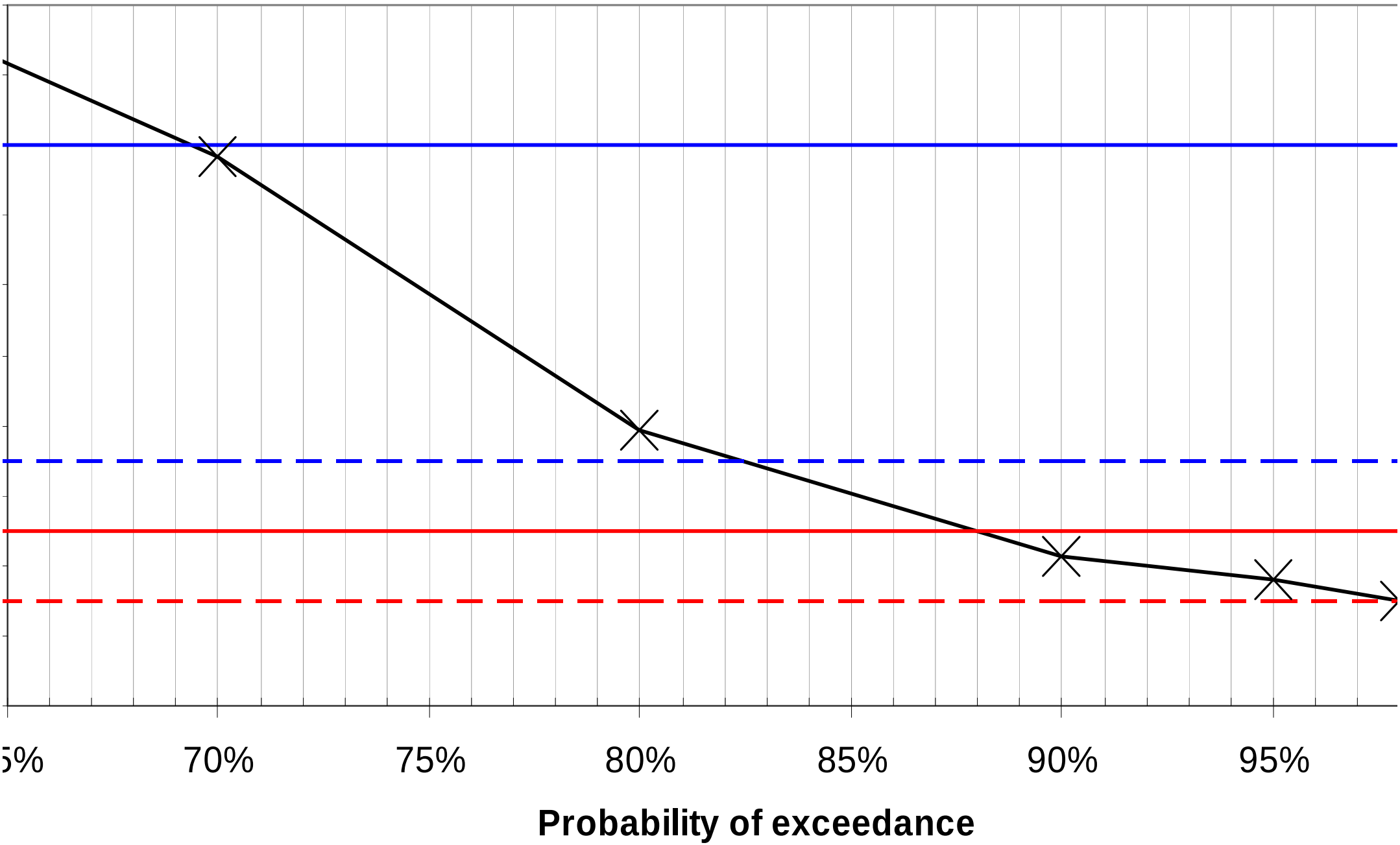


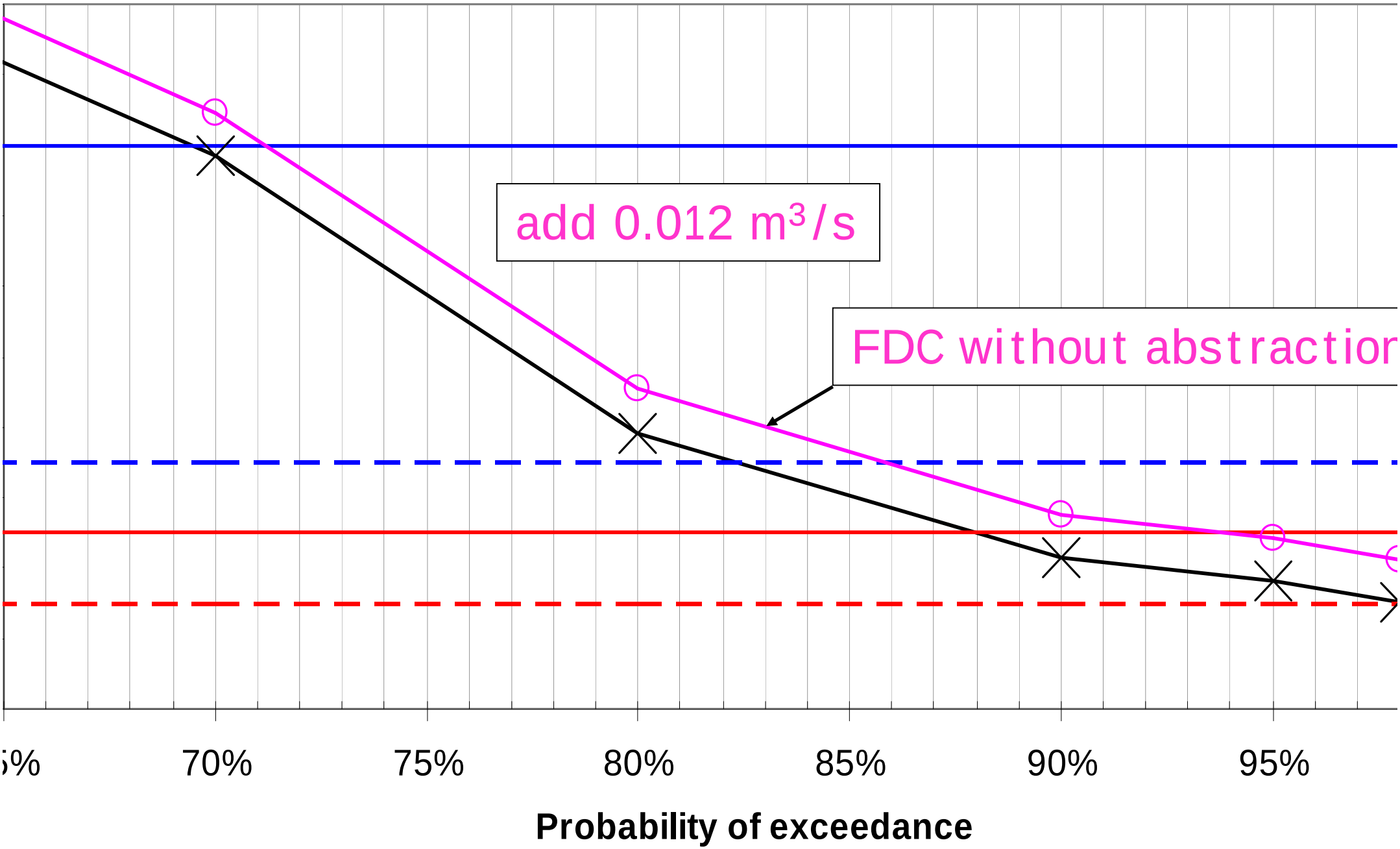
Depth 0.1 m

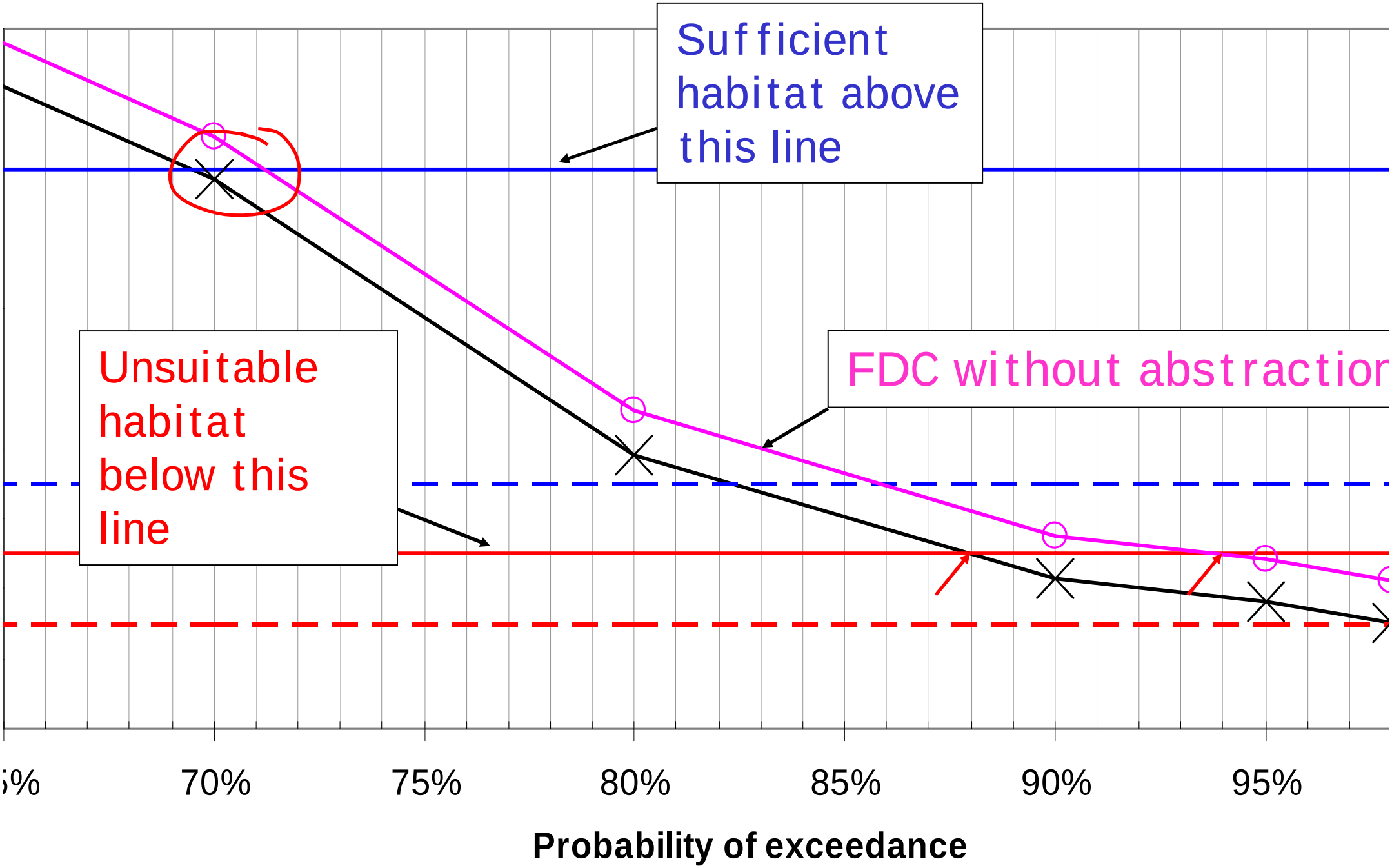
- Flow providing 50% habitat at all four sites (0.16 m^3/s)
- Flow providing 50% habitat for at least <u>one</u> of the four sites (0.07 m^3/s)
- Flow providing sub-optimal habitat at all four sites (0.05 m^3/s)
- Flow providing sub-optimal habitat for at least <u>one</u> of the four sites (0.03 m^3/s)

ological thresholds









essons learned

- A simple, uncalibrated impact model can produce a useful range of predictions for the depletion of river flows
- It was quick - less than 25 days
- It allowed rapid engagement between ecologists and hydrogeologists