

**Indicator:** Annual mean reactive phosphorus (P) concentration

**Technical** definition tied to phosphomolybdenum blue colorimetric method after filtration at 0.45 µm

**Ecological status class boundaries:** Predicted from diatom and macrophyte assessments for these classes. Class boundaries set at the midpoints between the medians of the confidence intervals of the reactive P predictions for adjacent classes.

**Choices** that are justified, but **could have been made and justified differently**

**Reference reactive P concentrations:** Predicted from alkalinity and elevation at reference sites

Critiqued for generating overly relaxed standard in cases where alkalinity is elevated by sewage, industrial effluent or agricultural runoff – **The idea of what reference conditions mean for specific sites cannot procedurally be separated from human influence**

**Reference sites:** "were only minimally impacted, using environmental predictors" – **Requires interpretation**

**Post hoc adjustments:** Reference conditions <7 µg reactive P/L adjusted to 7 µg/L; alkalinity adjusted to 2-250 mg CaCO<sub>3</sub>/L; elevation adjusted to ≤355 mamsl

Without adjustment some reference concentrations would have been close to the analytical detection limit –

**Technical fix; the reference condition is what can be analytically detected**

Or misclassifications with the biological quality elements for low alkalinity rivers would have occurred –

**Conceptual fix; the P reference condition is what biological criteria say it should be**

**R<sup>2</sup>=0.45:** typical level of imperfection for these kinds of analysis, so accepted

**But at odds with the notion of certainty inherent in the naturalised reference conditions concept**