TMS-DD-109 PR24 WINEP EC supporting evidence phosphorus stretch targets

Phosphorus Programme – stretch targets

Overview - Approach

In the unconstrained – constrained options development and preferred option selection process for our Low P programme, aligned with the Environment Agency WINEP guidance documents, we have considered the asset base required to meet an existing permit or, when a site doesn't currently have a P permit, the existing asset base. Based upon the required new discharge concentration to meet ecologic quality standards, we have developed the new scope based upon the technology strategies presented in tables 1 and 2 below.

Table 1: Technology strategy for sites <1,000PE or >1,000PE with trickling filters.

New permit	Option 1	Option 2	Option 3
P≥3mg/l	1pt Chemical dosing	Integrated constructed wetland	
3mg/l>P≥1.5mg/l	1pt Chemical dosing	Reed beds with chemical dosing	
1.5mg/l>P>0.7mg/l	1pt Chemical dosing and tertiary solids removal	Nereda where new build required with 1pt chemical dosing and tertiary solids removal	
0.7mg/l≥P≥0.25mg/l	2pt Chemical dosing and tertiary solids removal	Nereda where new build required with 1pt chemical dosing and tertiary solids removal	Transfer

Table 2: Technology strategy for sites >1,000PE with activated sludge plants.

New permit	Option 1	Option 2
P≥1.5mg/l	1pt Chemical dosing	Reed beds with chemical dosing
1.5mg/l>P>0.7mg/l	1pt Chemical dosing	Bio P and tertiary solids removal (>50k PE)
0.7mg/l≥P≥0.25mg/l	2pt Chemical dosing and tertiary solids removal	Bio P and tertiary solids removal (>50k PE)

Additionally, for stretched targets below 0.20mg/l we have considered specific proprietary technologies for the tertiary solids removal. When a tertiary solids removal exists at a site, the new limit would require the replacement of the units with the specific proprietary technologies.

The technology strategies above are based upon the outcomes of the CIP2 P-TAL trials.

Ofwat have modelled the costs required assuming that a variation in permit limits would translate in a linear proportional increase in costs according to the tightness of the limits. However, when we have agreed a stretch target below the recognised technology achievable limit of 0.25mg/l, we are therefore required to resort to the specific proprietary technologies mentioned above. For these cases, a marginal reduction in the limit equates to a significant non-linear step-change increase in costs.

For example, for WINEP action 08TW100879a at Broadwell STW, we originally developed a solution to meet a 0.25mg/l limit, costing £6.769m (CapEx only). In agreement with the

Environment Agency, and in an attempt to further optimising our programme by finding alternative options to the catchment solutions we originally proposed, we developed and have submitted a solution to achieve a stretch target of 0.10mg/l, costing £14.319m (CapEx only). As there is no existing permit at the site, Ofwat assessment would consider £6.769m to achieve a reduction in permit of 5.75mg/l and the residual £7.550m for the marginal 0.15mg/l.