Dŵr Cymru Welsh Water

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WINEP / NEP – Reduction of sanitary parameters IAP response

1 April 2019

Contents

1. IAP CHALLENGE 3
2. SUMMARY OF OUR RESPONSE TO THE INITIAL ASSESSMENT BY OFWAT 3
3. MODELS REVIEW 3

1. IAP challenge

Ofwat have assessed expenditure for meeting the reduction in sanitary parameters consents in the NEP and WINEP using two industry cost models. The average result of the two models (exponential and power functions) has been used to determine the allowance for each company.

2. Summary of our response to the Initial Assessment by Ofwat

Whilst the industry cost models provide helpful information we believe that the results of the cost modelling demonstrate that Model 1 don't adequately address the issue of scale in managing and investing in small treatment works.

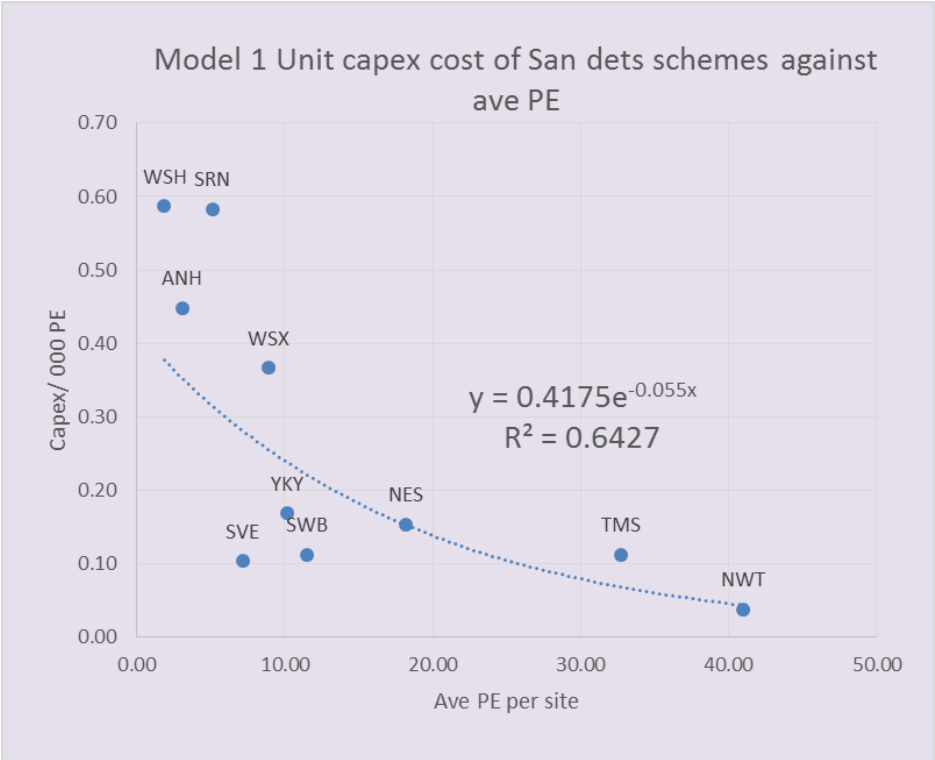
We included as an Appendix to our response the Oxera report[1] prepared for Ofwat in November 2006 which also identified the high unit cost associated with small works. We do not believe that the issue of scale has changed in the intervening years.

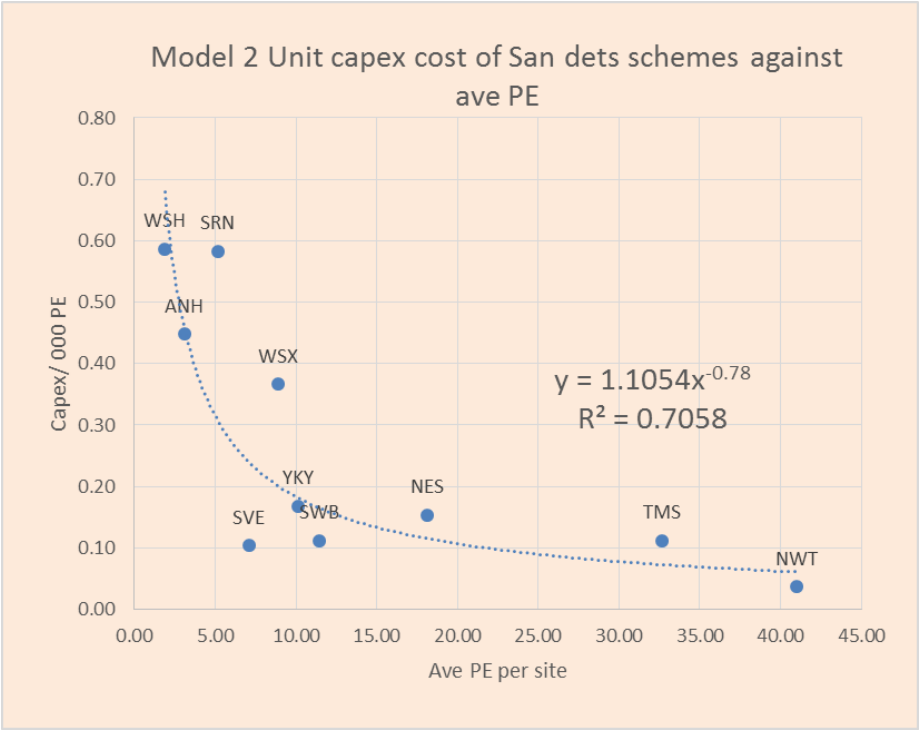
3. Models review

The charts below, reproduced from Ofwat's 'Reduction of sanitary parameters enhancement feeder model' demonstrate that Model 2 is a better fit to the data.

Model 1 does not account well for the investment planned by Anglian, Southern and Welsh Water. All three companies have a significant proportion of small wastewater treatment works and have broadly similar unit costs.

[1] https://www.ofwat.gov.uk/wp-content/uploads/2015/11/rpt_com_oxera080107.pdf





3.1. Ofwat analysis of relationship between unit cost and size of works

Previous studies, including the report included in Appendix 1, and other work such as the preliminary cost effectiveness analysis (pCEA) for implementation of the Water Framework Directive, demonstrate the relatively high unit cost of small treatment works. This is because the investment in the process units and the required level of process to meet even the most

relaxed of consent parameters is the most expensive element and the difference in scale makes very little impact.

The report led by Ofwat analysed the costs associated with improvements at wastewater treatment works for sanitary determinands and considered the relationship with between the size of the works and the unit cost. The report finds that the cost of improvements at small works are disproportionately expensive on a unit cost basis.

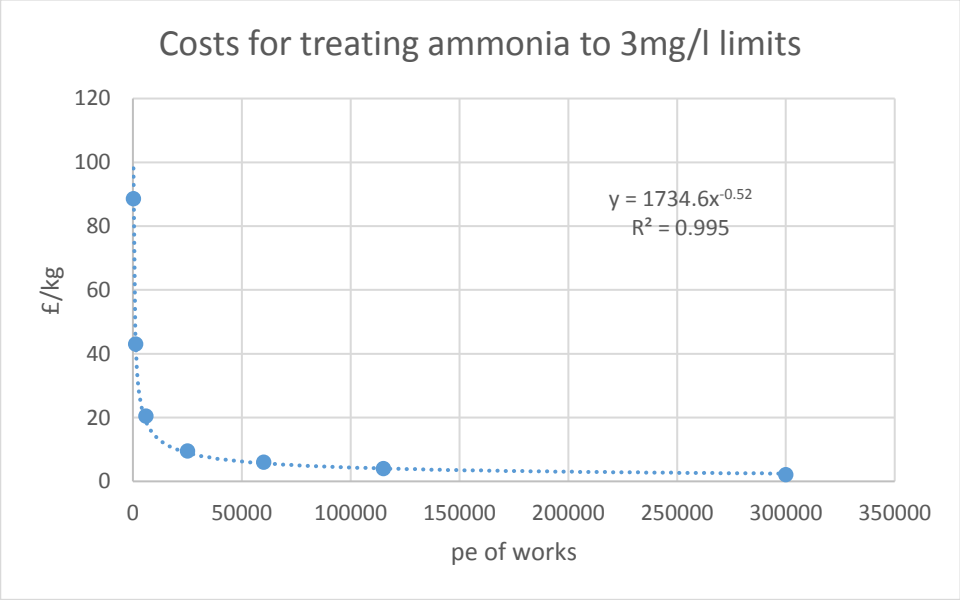
An excerpt from this report has been reproduced below.

Table 5.2 Ammonia: unit EAC per kg of load removed (£/kg)

	3mg/l			5 mg/l			10 mg/l		
Works size	2.5% lower bound	Central estimate	2.5% upper bound	2.5% lower bound	Central estimate	2.5% upper bound	2.5% lower bound	Central estimate	2.5% upper bound
pe<500	76.2	88.6	103.0	64.1	73.1	83.4	48.0	56.4	66.3
500<=pe<2,000	38.6	43.1	48.0	32.4	35.6	39.0	23.8	27.4	31.6
2,000<=pe<10,000	18.9	20.5	22.2	15.7	16.9	18.2	11.3	13.1	15.0
10,000<=pe<40,000	8.8	9.6	10.5	7.2	7.9	8.7	5.2	6.1	7.2
40,000<=pe<80,000	5.5	6.1	6.8	4.5	5.1	5.7	3.3	3.9	4.7
80,000<=pe<150,000	3.6	4.1	4.6	2.9	3.3	3.8	2.1	2.6	3.2
pe>=150,000	1.8	2.1	2.5	1.4	1.7	2.1	1.1	1.3	1.7

Note: pe, population equivalent. For each consent level the central column presents the estimated value with the left- and right-hand columns being the lower and upper bounds of the 95% confidence interval respectively.
Source: Oxera.

A graph of the data for 3mg/l ammonia consents illustrates the scale of the disproportionate costs for small works.



3.2. DCWW analysis of relationship between unit cost and size of works

Within DCWW operating area there are 835 WwTW, the majority of these being below 250 pe (51%). Of those works, 67% of those works (286 No.) are less than 100 pe.

An assessment of a selection of capital intervention expenditure at a range of small sites in the DCWW operating area during AMP6 has been undertaken and concludes that the unit cost below 100pe is significantly more expensive and the table below mirrors previous studies.

Site	PE	Capex Cost, £k	Unit cost, £k/pe
Dinorwic Chapel	27	0.625	23.1
Seion No 2	35	1.044	29.8
Llanbedr	114	1.390	12.2
Llanfaethlu	260	2.521	9.8
Clarbeston	294	2.510	8.5
Crymych	683	3.531	5.2
Llanpumpsaint	735	2.439	3.4
Hirwaun	900	6.111	6.8
Reynolston	1353	4.612	3.4