Anglian's Reply to Main Parties' comments on PDs' base cost modelling position

Anglian comments below (within the required page-limit) on other Main Parties' responses to the PDs on base cost modelling.[1]

1. Areas of agreement between the Main Parties

All Main Parties identify flaws with the PDs' base modelling in at least one of the following areas:

- the choice of LASSO as an appropriate tool for determining base cost allowances for the England and Wales water sector
- the way the PDs implement LASSO
- the credibility of the resulting allowances.[2]

No DCs endorse the PDs' modelling or agree that it is superior to Ofwat's.[3] Neither does any third-party response that considers the PDs LASSO methodology.[4]

All DC responses imply that the allowances published in the PD cannot be allowed to stand. While Ofwat says that the CMA should continue to use its (corrected) LASSO models for its FD, this view is at odds with the numerous material concerns Ofwat identifies in their use, including (amongst others) that they are "*likely to be unsuitable for sector-wide applications*", result in "*complex*" models that "*reduce transparency, risk overfitting and include coefficients that lack economic intuition*" and "*may embed company-specific inefficiencies*" (OW PDs Response ("**PDR**"), pg 9-10).

WSX, which benefits from the modelling outcome, offers no detailed analysis of the PDs approach. In the responses of the other four DCs ('other DCs') there are a number of consensus areas:

Basis for base cost modelling

The preference of all other DCs is to revert to Ofwat's models as the basis of the cost assessment, with appropriate treatment of their own company-specific issues. Those that consider continued use of the LASSO models do so only as a fall-back option and only with heavy modification.[5]

Treatment of real price effects

Energy – All other DCs criticise the PDs models' approach to energy costs. For example, the energy index fails to properly control for energy costs not captured by CPIH (SEW PDR¶ 2.20; NWL PDR¶81-84; Anglian PDR¶120) – which is evidenced by, for example, LASSO selecting it even when energy expenditure is removed from modelled costs (NWL PDR ¶129; Anglian PDR¶120). Ofwat confirms CEPA advised against the PDs' approach due to spurious correlation risk (OW PDR, page 10). SRN notes that the PDs' treatment of energy does not address the specific issue raised in its SoC (SRN PDR¶3.45). Anglian, SRN, SEW and NWL all criticise the lack of an ex-post true-up mechanism.[6]

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[1] Anglian's response addresses base cost modelling issues only (and is without prejudice to its comments on wider base costs or other issues). The "**Main Parties**" are referenced as follows: Ofwat (OW or Ofwat), Southern (SRN), South East (SEW), Northumbria (NWL), Wessex (WSX), Anglian (Anglian or ANH).

[2] SRN PDR ¶1.32: WSX PDR, ¶4.13-4.17; SEW PDR ¶2.25-2.36; NWL PDR ¶12-13.

[3] SRN PDR ¶1.17; WSX PDR ¶4.15; SEW PDR ¶1.24; NWL PDR ¶4.

[4] Non-confidential versions shared by the CMA with Anglian on 14 November 2025.

[5] SRN PDR¶3.5-3.6; SEW PDR¶2.42; NWL PDR ¶139.

[6] SRN PDR¶1.50; SEW PDR, ¶2.55; NWL PDR¶1.19.

Wages – multiple concerns are raised on the wage index, including the counterintuitive economic effect in some models,[7] the flaws in interacting with scale variables (SEW PDR ¶2.20, NWL PDR¶81), the wages variables used (NWL PDR¶135), the forecasts used (NWL PDR¶126) and the counterintuition of the inconsistent selection of the wages index between the TWD model (selected) and water resources plus or wastewater (not selected – see NWL PDR ¶116-118). Ofwat said that "*if the CMA considers that a regional wage adjustment is needed, this should be applied consistently to all cost areas"* (OW, page 24).

SEW's view summarises well the position on RPEs: "*our conclusion is that the CMA's attempt to control and allow for input price inflation within its models has not been a success"* (SEW PDR¶2.21).

The Lambda error

All Main Parties (including Ofwat and WSX) recognise the Lambda 1se calculation error,[8] which materially impacts allowances. The resulting allowances, once corrected, are even less justified at both Anglian and industry-level, further illustrating that the PDs LASSO models are inadequate.

Cost Adjustment Claims

The CMA aimed to address the concerns in two CACs proposed by DCs (SRN's regional wages and SEW's small works claims) in the LASSO framework. This was unsuccessful. As above, the regional wage variable is in only one of three PD models (TWD) and the small works variable used had a counter-intuitive sign, opposite to the effect which SEW expected (ANH PDR¶129, 145).

Outside the models, DCs – like Anglian - also reiterate their cases for company specific CACs (SRN, PDR¶1.49), (WSX PDR¶2.1), (NWL, PDR¶ 3.2.1). Detailed CAC assessments are - consistent with the IWC's findings[9] - critical, given Ofwat and the CMA's reliance on econometric benchmarking, not least given the PDs' further reduction of allowances on the basis of significantly less robust modelling than Ofwat's.

2. <u>Areas of disagreement with Ofwat</u>

Ofwat raises material concerns with the PDs models that are aligned with Anglian's position. However, it also raises points in support of the PDs approach which are erroneous or unsupported by evidence, as addressed below.

Ofwat asserts without evidence, and contrary to its own FD, that the CMA's base allowance is sufficient for an efficient company to maintain long-term asset health while delivering against performance commitment levels

Ofwat makes the following claims in its response (OW PDR¶2.2).

i. That the PDs base allowances, '*if applied across the sector, would be broadly aligned with [its] final determinations, albeit around £4bn (3.8%) lower*.'

[7] SRN PDR ¶3.13, 4.9, 4.12; NWL PDR ¶81.
[8] See SEW submission of Economic Insight Paper on behalf of DCs on 30 October 2025. See also OW PDR, page 10; SRN PDR¶3.10; WSX PDR¶4.16; NWL PDR¶113).
[9] IWC Final Report para 4.17 (here) finds Ofwat has relied too heavily on data-driven econometrics without sufficient account of company-specific factors and challenges.

ii. That '*there is no evidence that all companies are currently underspending'*.

iii. That as a consequence of (ii), Ofwat considers that '*the proposed allowances are sufficient for an efficient company to maintain long-term asset health while delivering against performance commitment levels'*.

First, it is unclear how Ofwat's statement that the FD and PDs are '*broadly aligned'* can hold (and this is both before and after the lambda error correction – which Ofwat itself identifies would result in "*materially different … outputs*" from the PDs (OW PDR, page 10)). Anglian finds a gap between the CMA's industry modelled base allowance (pre-Frontier Shift) and FD of at least 4.9%, likely at least 6.3% depending on how the CMA corrects its estimate of lambda. For context, the £200m+ (corrected, pre-Frontier Shift) reduction in modelled allowances vs. the FD for Anglian is equivalent to twice Anglian's maintenance budget for all drinking water supply assets.

Second, Ofwat's assessment disregards the PD impact on individual companies, with some facing double-digit modelled cost gaps - including of up to c. 20%. Anglian disagrees that this can be classed as 'broadly aligned' with Ofwat's FD.

Third, Ofwat deems the PDs base allowances acceptable on the grounds that (i) while they are lower than those allowed in the FD, they remain in line with the industry's current level of spending; and (ii) there is no evidence that companies are under-spending against the levels necessary to maintain asset health and meet stretching performance commitment levels (OW PDR¶1.3, 2.2). This defence is at odds with the regulator's own Road Map project, which acknowledges the risk that current spending levels and allowances in the FD are insufficient to maintain asset health at acceptable levels. The project contemplates allowing companies to make cost adjustments during the 2025-30 period for asset condition issues or to accelerate into the 2025-30 period capital maintenance spending planned for the 2025-30 period. The CMA has relied on this work, including the associated cost change process, in opting to deprioritise the claims that all DCs made in their SOCs for increased asset health funding.

There is extensive evidence that Ofwat's FD underfunds asset health. A CMA FD that further reduces funding will exacerbate this. At a minimum, Anglian would expect the CMA to clarify its view on how its decision to set different allowances for base costs, relative to the Ofwat FD, affects the implicit allowance for asset health expenditure.

Ofwat erroneously claims that the PDs approach removes 'the risk associated with companies individually or collectively arguing for models which provide them with larger allowances at the expense of other companies or customers'

The CMA has only considered a subset of two DCs' claims as potential variables, in addition to those in Ofwat's FD base cost models. By design, this approach will tend to develop models that provide those companies larger allowances at the expense of the rest of the industry observations (including other DCs) whose candidate variables are not included. It is unclear how this therefore removes the risk of feedback – nor why removing feedback would be beneficial to producing robust outputs that reflect engineering and operational reality.

Anglian further strongly disagrees with Ofwat's view that it is "understandable" to use a limited variable set given Anglian's submissions on selectivity and the principles of good regulation in its PDs Response (AW PDR¶180-194).

Ofwat wrongly claims LASSO 'alleviates the risk… coefficients capture multiple effects'

This claim is at odds with the position taken in the academic literature with respect to the impact of LASSO, [10] and as set out in Professor Kumbhakar's and Anglian's responses to the PDs, the LASSO will tend to drop variables that are correlated to others—even if each is capturing a different effect. Ofwat's position is also contrary to how the CMA describes LASSO: "*the LASSO tends to drop variables […] that are highly correlated with other variables that have high explanatory power*" (PD¶4.36).

When Ofwat sets out that LASSO "*alleviates the risk that coefficients capture multiple effects*", it is unclear whether it is claiming that it will alleviate the risk relative to Ofwat's own FD models or some other benchmark. Regardless, the LASSO approach is in fact *designed* to select for models where coefficients capture multiple effects, contrary to Ofwat's claim.

Ofwat erroneously claims that LASSO 'reduces the influence of outlier companies'

In principle, the PDs LASSO approach should mitigate against the influence of outlier observations. The penalty parameter is based on a cross-validation procedure that trains model performance on a randomly selected sample of 90% of the data (or 9 'folds'). When run a large number of times, as the CMA has done, this ought to support a model specification that is not overfitted, or overly influenced by outlier observations.

However, the CMA has not accounted for the data's panel structure in its folds, and so drops random company-year observations. Very few of the folds tested will drop all observations from a single company. As the majority of the variance in the dataset is cross-sectional, this means the CMA's approach does not mitigate against the influence of outlier companies.

This is shown in Anglian's response to the PDs, where Anglian show that dropping Thames Water from the wastewater modelling leads to a halving of its model prediction.

The above comments, which are shown to be erroneous, together with a view that the choice "*may be pragmatic given time constraints*" (OW PDR, page 9) form foundations of Ofwat's support for use of the PDs' modelling at FD. Combined with the material concerns Ofwat identifies with the PDs models (see page 1 above), Ofwat's submission therefore provides neither true econometric, operational nor engineering support for proceeding with LASSO.

3. The way forward

While all parties criticise the PDs models, different solutions are presented.

Party	Solution
ANH (¶198-199)	- **Primary: Use Ofwat FD models, fully assess CACs** - If LASSO retained, use only to inform SRN / SEW CAC assessment, subject to robustness tests.
NWL (¶142-144)	- **Primary: Use Ofwat models (with decisions on DC issues). Apply RPEs to all models, use OBR for real-wage forecasts, improve regional wage mix.** - If LASSO retained: (i) adjust UQ to median; (ii) revise energy cost approach or use Ofwat's.

[10] See Zhou H and Hastie T (2003), 'Regularization and Variable Selection via the Elastic Net', 5 December, pp.2 – 3 (here).

Party	Solution
SEW (¶1.24, 2.48-2.49)	- **Primary: Use Ofwat models with SEW's SoC changes. Revert to standalone RPE allowance.** - If LASSO retained: (i) amend cost-driver selection; (ii) refine long list; (iii) operationally assess cost relationships; (iv) validate models; (v) triangulate model.
WSX (¶4.6a, 4.11-4.17)	- **Primary: Set base funds that properly address past industry underfunding. Retain RPEs in CACs/unmodelled costs, compare indices inflation for RPE true-up, reassess catch-up efficiency.**
SRN (¶3.68, 3.69, 3.85, 3.121)	- **Primary: Use SRN SoC request largely based on targeted improvement to Ofwat's models. Apply annual energy true-up.** - If LASSO retained, strengthen by: (i) using appropriate UQ consistent with Ofwat rationale; (ii) removing APH as candidate variable; (iii) assessing WTW economies of scale as CAC; (iv) reinstating Ofwat energy adjustment or using energy intensity variable. - Cross-check results with: (i) SRN's SoC models; or (ii) removing poor performers / those in CM trough from catch-up challenge (or triangulate between).
OW (¶1.3, page 24)	- **Primary: Retain LASSO with coding error corrections. A regional wage adjustment, if needed, should be applied consistently to all cost areas.**

Anglian does not provide detailed comments given the space available on the alternative approaches proposed. However, several points should be noted.

First, all DCs proposing specific alternative models (SEW, NWL, SRN), advance fundamental changes to the PDs' LASSO approach, and all prefer solutions using Ofwat's models as the base.

Second, certain DCs dispute APH as a candidate variable based on data-quality. Anglian has already detailed why APH should be the only typography variable, given its stronger relationship with energy consumption (a key typography driver) relative to booster pumping stations per main length (PS/L), and data robustness, and has also advocated for the use of booster pumping station capacity as a superior variable to PS/L.[11]

Third, Anglian agrees that consultation and technical input is essential (including on points such as APH that are not suited to resolution via broader page-limited submissions).[12]

Finally, having considered the responses, Anglian's firm view remains that returning to the Ofwat models and assessing CACs is the only appropriate solution. This is a clearly more robust mechanism of attaining the "pragmatism" Ofwat identifies, in view of the limited time-periods, input and the severity of concerns around the PDs models' ability to determine efficient base allowances that are consistent with operational realities.

Stepping back, Anglian agrees with WSX that sense-checking if the PDs model outcomes are evidenced when considering the weight of concerns around asset health is essential (WSX PDR ¶4.15). The CMA must articulate - whichever modelling approach is taken - why the outcome in Anglian's FD is right for Anglian and its customers in light of all evidence received rather than purely the result of a (selective) econometric framework.

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[11] Anglian's Reply to Other Disputing Companies SoCs, page 5-7 (see here).

[12] See NWL¶145-146, SEW¶2.56-2.57, SRN¶3.3. See also ANH¶176-179.