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The Director
Board for Actuarial Standards
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Dear Sirs

Response to Consultation Document - Modelling TAS Consultation Paper

The Association of Consulting Actuaries (ACA) welcomes the opportunity to respond to the Modelling Consultation paper issued by the Board for Actuarial Standards in November 2008. Members of the ACA provide advice to thousands of pension schemes, including most of the country's largest schemes.

Members of the Association are all qualified actuaries, subject to the code of professional conduct of the Faculty and Institute of Actuaries. The FRC is responsible for the independent oversight of the UK Actuarial Profession and the setting of actuarial technical standards. Advice given to clients is independent and impartial. ACA members include the scheme actuaries to schemes covering the majority of members of defined benefit pension schemes.

The ACA is the representative body for consulting actuaries, whilst the Faculty and Institute of Actuaries are the professional bodies.

I would first wish to make a general point before leaving the full response to the indicated questions to be addressed in the appendix to this letter.

The definition of a model confirmed in B3 is an abstract and simplified representation of some aspect of the real world consisting of a set of mathematical formulae and algorithms seems to imply to the reader that this TAS applies to stochastic or similar modelling of an aspect of actuarial work as one may encounter in asset/liability modelling (where probability distributions are assigned to variables) or solvency tests on insurance companies (where one is trying to determine the 1 in 200 year event).

However, the descriptions in 2.16, 2.17 and 2.18 and the reference in 2.21 to models of pension scheme funding seem to imply that an actuary would be quite wrong in believing that a deterministic calculation of a contribution rate required under a pension scheme or the calculation of the value of liabilities is merely a calculation and not a model and the modelling TAS does not apply.

Indeed it is hard to think of any calculation undertaken or advice provided which does not fall within this wider definition of model. Because the value of pension liabilities for a scheme or

indeed a member are dependent upon making assumptions around the future, they are merely models of the future outcomes.

This observation does create some difficulties and not least extra costs to the users of actuarial information as the full rigours of the documentation and testing need to be achieved to and communicated to the reader. Furthermore as determining a contribution rate to a pension scheme depends upon assumptions on mortality and financial assumptions, both (or all!) of these being models themselves does run the risk of requiring the actuary to put in so many caveats and limitations (as envisaged in 7.36) that we truly believe the value of the advice or indeed employing the actuary will be viewed by the user as worthless. Yet the BAS does not accept the argument, believing actuaries are capable of conveying the message to the reader. We would just question the BAS's optimism on this point.

We would therefore request that the BAS considers a tighter definition of situations to which the TAS is intended to apply and indeed gives examples of what it considers "good" and "less good" practice.

We now cover the specific questions in the appendix.

If you have any queries or wish clarification on any aspect of our submission please do not hesitate to contact us.

Yours faithfully

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Chairman
Consulting Practice Committee
Association of Consulting Actuaries

Appendix – ACA response to Modelling TAS Consultation Paper

We address our response to the specific questions posed in the Consultation Paper:

1. *Will the proposed purpose of the modelling TAS as set out in paragraph 2.9 help to ensure that users of actuarial information can place a high degree of reliance on its relevance, transparency of assumptions, completeness and comprehensibility?*

The purposes set out in 2.9 will help users to place a high degree of reliance on the information. However the expertise of the actuary is in exercising his professional judgement and training in determining what is an appropriate model and how to communicate the "results" to the user. We have therefore some difficulty in knowing whether the modelling TAS actually has any impact say on how an actuary models a pension scheme. Does the TAS merely confirm the actions of the actuary which have been undertaken automatically by his training? For example over the years pension calculation programs have been developed which input data (member details), assumptions (financial and demographic) and produce output (liability values and contribution rates). They have been developed to be fit for purpose and in utilising these programs actuaries do have regard to their limitations (may not cope with career average schemes correctly) and also materiality (do we include allowances for ill health and other decrements). One senses the entire model (program) would need to address the TAS and then for an individual scheme the actuary need not reiterate the process provided he has regard as to whether the scheme is one that fits the program developed?.

Clarification is required here we believe.

2. *Will the definition of a model given in paragraph 2.13 encompass the full range of models that contribute to actuarial information?*

2.13 includes a very wide definition and 2.16, 2.17 and 2.18 reiterate its wide interpretation. A complicated Monte Carlo simulation of outcomes of financial situations would clearly be covered. However so does the calculation of an individual transfer value for a member leaving a pension scheme. Is this intended?

3. *Do respondents have any comments on the proposals in section 3, especially those in paragraphs 3.15, 3.22 and 3.27?*

We have no issues with the matters set out in sections 3.15, 3.22 or 3.27. Particularly 3.22 seems to recognise that we exist in a practical world and need to create a proper balance in the work we do and how it is carried out and documented.

4. *Do respondents have any views on the definition of materiality that is proposed in paragraph 3.5?*

One cannot argue with the principles set out in 3.5. What is difficult to judge and which needs to be discussed with the user is actually "what should influence the decisions to be taken". One cannot judge this in isolation and this aspect is confirmed in 3.7. One may therefore be left in the silly situation, particularly around documentation, that omission of information may be material but one only knows if one consults with the user. Having done so the information has been provided and the departure has not happened!

5. *Should the modelling TAS include principles concerning the need for documentation as discussed in paragraphs 3.9 to 3.18?*

We confirm that this should be included. We suspect that the issue of documentation is currently being met in the reports which are, or were, required under the various Guidance Notes but are not necessarily easily recognisable in the language of modelling.

6. *Do respondents have any comments on the proposals concerning relevance and parsimony that are presented in section 4, especially those in paragraphs 4.12 and 4.17?*

One cannot argue with the principles set out in Section 4. It would do them an injustice to merely describe as "common sense". Nevertheless real life is never as forgiving, as is said, and actuaries are left to calculate future outcomes with little more than a rear view mirror to assist. To bring this into context relates back to question 4. If the user believes that a small deviation is so material that his actions would be dramatically affected then one can actually advise what factors could result in such a deviation. The modelling of these extreme events is at best unreliable and is recognised in 4.10. This is a great limitation of models and whilst users are more than happy when considering the more likely outcomes they rarely appreciate the tails of experience until they become reality.

7. *Do respondents have any comments on the proposals concerning inputs and outputs that are presented in section 5, especially those in paragraphs 5.17, 5.28, 5.29, 5.35, 5.42 and 5.51?*

We have no comments and agree with the principles set out in 5.17, 5.28, 5.29, 5.35 and 5.51.

The principle in 5.42 is recognised but statistical definitions may not be understood by users and need to be documented.

8. *Should the modelling TAS include:*

- a. *any requirements relating to the disclosure of known or suspected shortcomings in data, over and above those expected to be included in the reporting TAS?*
- b. *requirements to provide an estimate of the effects of any data shortcomings, and that any compensating adjustments should avoid bias?*

This question addresses the approach taken by the BAS in constructing the various actuarial standards and how they interact. There will certainly be repetition of the data and modelling TAS's required documentation. If the purpose of the reporting TAS governs the presentation of and reporting of actuarial information, that is in our opinion where the requirements of disclosure should be set out. The modelling TAS may nevertheless require the actuary to consider whether they are instances requiring him/her to consider the requirements to disclose under the Reporting TAS; but the requirement to disclose should not be contained in the modelling TAS.

9. *Should the modelling TAS include a requirement that, if data is grouped, the effects of the grouping should be quantified?*

We believe the effect, if any, should be justified and estimated.

10. *Do respondents agree that best estimates (and other similar estimates) should be independent of the use to which they will be put?*

The pure theoretical answer has to be "yes" since there can only be one best estimate. However, it must be recognised that there is extreme difficulty in obtaining 'best estimates' for many future events. An example is the rate of future longevity improvements. Different actuaries will have genuine differences of opinion and this may cause concern to users of actuarial information. This clearly also impacts on whether a particular estimate is 'prudent' and the quantification of the level of prudence.

11. *Do respondents have any views on:*

- a. *whether biased estimates such as those concerning prudence depend on context?*
- b. *the practicality or otherwise of requiring that the equivalent best estimate be presented alongside every prudent estimate, and the benefits to users of actuarial information of doing so?*

Prudence is required in the setting of assumptions for determining pension costs in defined benefit schemes. What is meant by prudence does depend here on the context since it is clearly determined by the Pensions Regulator as a biased situation making the likelihood of "default" less likely. Indeed as the financial climate has worsened the Regulator has required Trustees to incorporate greater prudence in their setting of assumptions. Thus whilst in theory one could try to set prudence independent of context, current practices, particularly of Regulations, dictate otherwise.

Best estimates can be both helpful and a hindrance. If one described best estimate having an equal likelihood of experience being better or worse, then Trustees and Companies would regard this as the true cost. Indeed adopting a best estimate approach could be described as prudent in that it is not relying on "out performance". It is helpful in showing to users the degree of prudence being taken. Where it can be unhelpful is that users can take this as the "best case" without properly reflecting on the relative impact of adverse experience against favourable experience. For instance if one was wanting to drive over a ravine and the best estimate of the required take off speed was 60mph, a relevant factor in setting one's course of action would be the certainty of death if the speed were too low. Thus whilst we have no concerns in quoting best estimate they need to be set fully in context otherwise they will be blindly followed.

Although knowing the best estimate corresponding to each prudent estimate may be helpful in some circumstances, we do not feel it should be a disclosure requirement and indeed could give rise to spurious precision given the underlying uncertainty of the best estimate.

12. *Do respondents have any views on the practicality or otherwise of requiring the use of a range in conjunction with every single point estimate?*

This requirement does give us some issues in terms of presentation. Each assumption input into some models are single point estimates of other models and if we are not careful we shall merely become a profession recognised by saying I cannot tell you what the answer is, but I know it is likely to be between X and Y.

Indeed your pension scheme may be in deficit or surplus, and you may need to increase or decrease your contributions. **Proper** advice should be left to professionals and we should not constrain presentation in every context provided the limitations are required to be fully disclosed. We are certainly against ranges being required for every single point estimate.

13. *Do respondents have any comments on the proposals concerning the fitness for purpose of models that are presented in section 6, especially those in paragraphs 6.8, 6.12, 6.20, 6.28 and 6.33?*

In regard to 6.8 if for example a computer program has been constructed to calculate transfer values which has been thoroughly checked, there is absolutely no need to provide independent checks in respect of every output from this model, otherwise why further develop such models. Similarly whilst one may check the liability value for a single member of a pension scheme which has been provided as output from a (tested) valuation program there should be no other requirement to provide a set of checks to ensure the model continues to work. This is totally impractical. However, we can accept the need to check fitness for purpose of a particular model to a different situation for which it was **not specifically** designed.

We cannot argue with the BAS that the checking of models is vital as outlined in 6.12 and being able to reproduce the outputs is part of that process. Whether this specific principle needs to be brought out in the TAS is debateable.

One struggles with the concept of 6.20 in the widest sense of a model. The BAS are presumably not requiring such a treatise to be provided for each and every transfer value calculation. For the more complex situations one can perhaps accept the position.

6.28 refers to documentation of data inputs which one would have thought should be more directed to the Reporting IAS. Here again we see needless repetition caused by trying to fulfil one purpose within 2 TAS's.

Similarly in regard to 6.33 it is debatable what should be part of the Reporting TAS and what should be covered here. It is difficult to understand what is meant by "outliers which are erroneous". If they are errors then we would not describe them as outliers. Outliers to our mind are genuine values at the extreme of a range of outputs from a model. We then agree to the reasons for their treatment being documented.

14. *Are there any types of model that cannot be implemented in such a way that they exhibit reproducibility?*

We are not aware of any such models within normal actuarial work, especially with the power of computers allowing step by step checking of processes.

15. *Should the modelling TAS include a principle concerning back testing?*

- a. *Are there any models for which back testing is impossible?*
- b. *Are there any practical difficulties that might arise if back testing were to be a requirement?*

The subject of back testing relates to what we mean by a model. If a model is used to predict future inflation by looking at past data or by considering the differences between inflation and non inflation linked securities then such a model can and

should be back tested. Otherwise the model is little more than a guess as to future occurrences. Where however a model is merely a computation, say of a transfer value then back testing is neither useful nor practical. Therefore depending on the purpose of the model back testing may or may not be appropriate.

It is often the case that limited previous data are available for the economic models that underlie actuarial advice. Back-testing is of limited use if it is only possible to test a small number of truly independent past circumstances. We therefore believe that a blanket requirement for back-testing is inappropriate.

16. *Would it be desirable and practical for users of external models to document the judgements they make, the checks that they perform and other relevant matters, and include explanations of the inputs, outputs and limitations in the same way as they would for models that they themselves have developed? Respondents who believe that this would not be practical should suggest alternative ways in which the objective set out in paragraph 2.9 could be met by users of external models.*

To the extent that an actuary uses a model to replace a part of the process which he would otherwise have to develop himself then it is incumbent upon him/her to ensure it is fit for purpose and perform the necessary checks to satisfy himself or herself of this. Indeed frequently user groups are set up to log the inevitable bugs which are present in all models and which the BAS must recognise. This aspect relates to the previous point on checking of output. If anyone ever prescribed that outputs from a model must be exactly correct and tie in exactly with the results from another model, then we believe that with the complex models which are in use today they are being totally unrealistic. Models will be tested for all the likely scenarios / designs and areas will be reproducible **within acceptable tolerances**.

There is concern that the documentation process could be onerous and would prefer this to be replaced with a general requirement that the actuary must be able to justify the choice of model without having to produce detailed documentation each time it is used.

17. *Do respondents agree that requirements for robustness and reasonableness would not be enforceable and could have undesirable consequences?*

This point reiterates much of what is said in the answer to 16. We consider the BAS is correct in not including principles on robustness.

18. *Do respondents have any comments on the proposals concerning the limitations of models that are presented in section 7, especially those in paragraphs 7.29 and 7.41?*

In relation to sensitivity testing we believe the correct place to tackle this is in the Pensions TAS, Life Insurance TAS, or General Insurance TAS where we would expect there to be an overall requirement for the actuary to provide sensitivity analyses to the user of Actuarial Information. The model is merely the means of quantifying that sensitivity.

In relation to 7.41 we run into the same issue in that the user of Actuarial Information could not care less what model, if any, is used. He rightly expects the assumptions, the limitations of the advice and the sensitivity of the results to be fully communicated to him/her. Again this would be more correctly addressed in the Reporting TAS.

19. *Does the discussion in paragraphs 7.7 to 7.24 include all the major sources of limitations in models?*

The discussion is useful to assist actuaries to ensure they appreciate the limitations of any model. To the extent that the list is exhaustive is not important and can be added to with experience.

20. *Do respondents have any comments on the advantages and disadvantages of the options set out in paragraphs 7.38 to 7.42?*

As given in our answer to 18, we would favour the third option.

21. *Should the modelling TAS identify specific types of limitation that should be explained in actuarial information?*

If there is an area of limitation to which the actuary would not necessarily be alert to in complying with the Reporting TAS then we would agree. However we need to be convinced of this.

22. *Are there any matters not covered in this consultation paper that should be addressed in the BAS's modelling TAS?*

The TAS is already a very full document and rather than adding to this we would suggest attention should rather be directed to making the TAS more concise.

Produced by the Association of Consulting Actuaries

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