

18 December 2018

Mr Simon Lawrence  
Manager, Analytics & Reporting  
Accident Compensation Corporation  
PO Box 242  
Wellington 6011

Dear Simon

## **MODEL TEST PROCEDURES – ENGAGEMENT MODEL DECISION ENGINE**

Accident Compensation Corporation (**ACC** or **Client**) has developed a prototype version of the 'Engagement Model Decision' engine (the **Model**), to allocate claims that meet certain criteria to the appropriate case management stream based on business rules.

Prior to the implementation of the Model into a live production environment, ACC has requested that Deloitte undertake certain test procedures on the model development and testing processes, data sourcing processes, validation test plan and model documentation. This is the **Purpose** of this engagement.

### **Findings**

**All issues raised during the course of our engagement have been accepted by ACC.**

As part of this engagement, we completed the test procedures set out below on the Model. All issues identified by the process described below were presented to ACC, and where relevant, we discussed the rationale behind our conclusions. ACC has reviewed each issues raised, which have been resolved in one of the following ways:

- The Model has been updated in response to the issue raised; or
- Further clarification has been provided and the issue is considered resolved; or
- The Model Documentation has been updated to resolve the issue; or
- ACC acknowledges the issue and intends to incorporate the finding in the production version of the Model; or
- ACC considers that the issue raised relates to a matter of modelling practice or possible process improvement but considers the issue has no material impact on the Model outputs and that no change to the Model is required. ACC considers that issues in this category are not material.

We consider that all of the issues raised during the course of our engagement have been resolved in one of the ways described above.

## Scope

Our scope of work related to a prototype version of the Model (developed in SAS). We note that there is also an Excel based test environment as well as the live production environment.

The Production version of the Model is incomplete at the date of this report and is outside of the scope of this engagement. As a number of issues have been resolved on the basis that ACC intends to incorporate the finding into the Production version, ACC should consider additional testing prior to the implementation of the Production version of the Model.

Outputs from a number of other predictive models feed into the EMD Model. This scope of work does not include testing these models or processes.

## Our Approach

Our engagement was conducted in accordance with the scope and terms set out in our consultancy service order agreed with you.

### (1) Procedures completed on the Test Version

We completed the following test procedures (the **Procedures**) on the Test Version:

1. Reviewed the Model Development and Testing Processes  
We discussed the approach that ACC has adopted to the model development process, including the extent of model validation testing undertaken.
2. Reviewed data sourcing processes  
We reviewed the data sourcing and transformation processes that support the Model, including any data cleansing processes, and any internal controls in place to support data quality.
3. Reviewed the validation test plan  
We reviewed the model validation testing undertaken by ACC and commented on any gaps identified.
4. Reviewed any changes made as a result of the issues noted  
Where ACC made changes to the model logic, data or the Model Documentation, we discussed the proposed action by ACC.
5. Reviewed the selected development methodology.  
We commented on factual advantages or disadvantages of other possible forecasting approaches.
6. Reviewed quality and completeness of the Model Documentation  
We reviewed the coverage and completeness of the model documentation (including process documentation, user guidance and business rules).

### (2) Documentation Relied Upon

We have relied upon the Model Documentation provided to us to support our work. This has included the business rules, model development documentation and process documentation as well as explanations provided by ACC.

## **Our Responsibility**

Our responsibility is to report factual findings obtained from conducting the Procedures agreed.

The Procedures do not constitute either a reasonable assurance (audit) or limited assurance (review) engagement in accordance with the New Zealand Accounting Standards Board (NZASB) standards, and as such, we do not express any conclusion and provide no assurance on the Model outputs as part of this work. Had we performed additional procedures or had we performed a reasonable or limited assurance engagement in accordance with NZASB standards, other matters might have come to our attention that would have been reported to you.

We have not verified and do not provide any opinion on the accuracy or reasonableness of the assumptions explicitly or implicitly contained in the Model and all Model assumptions remain the responsibility of ACC.

## **Restrictions**

The Procedures undertaken in this report are subject to the terms set out in our consultancy service order, including the following restrictions:

- The Procedures undertaken did not include a review of the formulae or calculations contained within any model.
- The Procedures undertaken are limited to the extent of the Documentation provided. Where the Model Documentation was incomplete, unclear or lacking in detail, this may have limited the effectiveness of the Procedures.
- We did not check any of the inputs back to source documents.
- The Procedures set out above were performed on the static base case of the Model. We did not review any scenarios, undertake any sensitivity analysis or flex the value of any input assumptions.
- We considered and carried out our test Procedures on the Model on a standalone basis and treated external links to other models as input assumptions.

## **Restrictions on Distribution and Use of the Report**

This report is intended solely for the use of the addressee for the Purpose. As the intended user of our report, it is for you to assess both the scope of the Procedures and our factual findings to determine whether they provide, in combination with any other information you have obtained, a reasonable basis for any conclusions which you wish to draw on the Model. Accordingly, we expressly disclaim and do not accept any responsibility or liability to any party other than the addressee for any consequences of reliance on this report for any purpose.

## Limitations

Our Procedures were performed solely in respect of the Model using the base case assumptions. Consequently, and having regard to the various limitations that any model will have, additional or different issues may arise if the Procedures were to be applied to a Model under a different set of assumptions.

There will usually be differences between the forecast and actual results, because events and circumstances frequently do not occur as expected.

We have no responsibility to update this report for events and circumstances occurring after the date of this report. We have no responsibility for changes made to the Model.

Please contact us if you wish to discuss any aspect of this report in further detail or if we can be of any further assistance.

Yours sincerely

A handwritten signature in black ink, appearing to read 'John Tan', with a stylized flourish at the end.

John Tan  
Partner  
for Deloitte Limited (as trustee for the Deloitte Trading Trust)