# **A5 Changes to Model Input**

Notice Reference:	A5, A4.1, A5.2, A5.3, A5.4
Notice Req.	A5 Confirm that the only changes made to the modelled figures are as follows:
	<b>A5.1</b> changing forecast values to actual values for the period 1 July 2020 to 31 Dec 2021;
	<b>A5.2</b> making any necessary structural changes to the model in order to process input data from 1 July 2020 to 31 December 2021, where all changes made are to be documented with justification for each change and an assurance from <b>Chorus</b> that no change to the overall answer resulted from the changes;
	A5.3 the changes described in clause A4; and
	A5.4 that no other changes to the modelled figures for the entire financial loss period have been made.
Response	
A5 Confirm that the only changes made to the modelled figures are as follows:	
A5.1 changing	forecast values to actual values for the period 1 July 2020 to 31 Dec 2021;
We have used actual data (ie rather than a forecast) in the period 1 July 2020 to 31 Dec 2021. This changes	
• FA	R data
• De	mand and revenue data
• Op	ex inputs from the GL and data supporting the allocation of the GL data to service
• IA\ chi • Lea	/ inputs including so-called sharing inputs such as route overlaps, traffic statistics, and anges to the CIP funding data for FY21 and 2021H2 ases and tax adjustments data
A consequence of this change (using real data) is that within the IAV model the Post2012Actual timeframe has been extended to include the period 1 July 2020-31 Dec 2021 and there is as a result no longer data for the so-called post2012Forecast timeframe in the model. This changes the estimated 2021H2 RABEOP (NBV) and estimated remaining lifetimes of the Post2012Actual timeframe and in turn changes the estimated future depreciation in the MAR model (replacing previous estimates of the unallocated 2021H2 RABEOP and estimated remaining lifetime for the previous Post2012Actuals and Post2012Forecasts timeframes).	
We have sought to avoid changing the forecasts beyond FY22 except where these are inevitably	

changed by the data that has been updated (e.g. those affected by FY22 inputs, or items such as demand at the end of 2021H2). Accordingly in cases where the forecasts were previously driven by

the "latest available data" we have changed the approach such that the FY23 and future values are not changed from the December 2021 decision model values.

### A5.2

making any necessary structural changes to the model in order to process input data from 1 July 2020 to 31 December 2021, where all changes made are to be documented with justification for each change and an assurance from Chorus that no change to the overall answer resulted from the changes;

Change to explicit half years

#### IAV model

We have made a simplifying change to the IAV model and its inputs, to use explicit half years for FY22. This means we can use one IAV model and one opex model rather than a matched pair of models for each scenario(using "pre-implementation" (normal) and "post-implementation" or "MODIFIED" versions) with the two IAV models both linked to by the MAR model. This change allows us to significantly simplify the links between the models. Although the previous approach within the IAV and MAR models did work, it was complex and time consuming to operate in practice, requiring parallel changes to matched copies of the capex forecasts, opex forecasts, and IAV and opex models.

Changing to explicit half years was not intended to change the results but does lead to fractionally different calculations of a small number of quantities arising in those half years (e.g. in allocation of forecast capex across geographies, the calculation was based on FY quantities such as ratios of AOP subscribers, and these ratios are slightly different in the two half years of FY22).

We have demonstrated that the differences arising from this change are immaterial by using a version of the model with this change (i.e. with explicit half years) and using the same input data as the December 2021 decision model (incorporating the inputs reflecting the required half year for FY22, in the same way as was assumed by the December 2021 model). In the small number of cases where there were immaterial differences arising from this change we have allowed the model approach (ie formulas) to persist such that the new explicit half year result in the IAV model can be slightly different to the previous estimate i.e. we have not sought to modify the approach to replicate the original result, because the resulting changes were immaterial.

While making this simplifying change to use explicit half years for FY22, we also extended the number of columns in the IAV model (as adding columns is very time consuming given the use of array formulas in the model, when making this change we added more columns than could be needed in case there were to be other changes in future). This change has no effect on the IAV result.

Due to using explicit half years, we had to reformulate some of the IAV calculations on the capital contributions sheet(e.g. regarding how revenue treated for tax purposes as being spread over ten years is calculated). These reformulations have an immaterial effect on the result.

There were also a number of other trivial reformulations required within the IAV model with no impact on the overall result (e.g. we relaced formulas in cases where we had used arithmetic on year numbers to find the relevant column).

Demand and revenue model

The Demand and revenue model was also changed to provide the required half year outputs in FY22 needed by the now modified IAV model. This change does not cause a material change to the demand and revenue results.

### Opex model

The opex model has been changed to use half years throughout from the start of FY22 (ie unlike the IAV model and demand and revenue model it now uses half years also in FY23, FY24 etc); the opex model outputs use this half year granularity to provide the granularity required by the new IAV models (FY to FY21, 2021H2, 2022H1, FY23 onwards). We note that for the calculation of the "future benefit" allocation driver in the opex model, we have deliberately reproduced the existing calculation in financial year terms pre-implementation in order that there are minimal changes to the opex pre-implementation if using the existing demand and revenue forecasts. This change (calculating from 2021H2 in half year granularity) does not cause a material change to the results.

Changes other than the introduction of explicit half years

Other than this simplifying change regarding explicit half years for FY22 in the IAV and demand and revenue model and for FY22 and future years in the opex model, all other changes made to the models were restricted to those absolutely necessary to enable the replacement of forecast values for the subset of the financial loss period which was 1 July 2020 to 31 December 2021. These changes included the addition of additional asset classes, required by:

- the nature of some of the capital expenditure in the period 1 July 2020-31Dec 2021 (including some expenditure funded by government grant which has been treated as if it was RBI expenditure). This required adding three new asset classes:
  - 'C1 Duct and Manholes RBI',
  - 'C1 Fibre Cable RBI', and
  - 'Shared IFRS15 5'.
- the adjustments to the value of the IFRS16 leases that occurred in December 2021. We have dealt with this by adding yet another asset class, "Lease adjustments". This is similar to the capital contributions asset classes in that it has negative book value and negative depreciation.

To create the space needed to add these new asset classes, we have extended the capacity of the model to use a longer list of asset classes (100 in each geography and asset purchase timeframe). This use of an extended list of possible asset classes (1612 rows) does not itself cause any change to the IAV results.

## A5.3

#### the changes described in clause A4;

To meet the Commission's requirements we have provided two complete sets of files, each of which has one IAV model, one opex model, and one demand and revenue model.

We note that each scenario can use the same demand and revenue model (as its results are the same in either scenario), but the same is not true of the opex model or IAV model (both have different inputs in the different scenarios).

These sets of files correspond to:

- Overall scenario O10: using the property space allocators consistent with the Commission's December 2021 decision, i.e. retaining a 50% cut to the property space FFLAS allocation factors in all modelled years
- Overall scenario O11: the alternative scenario requested by the Commission, with no cut applied to the property space FFLAS allocation factors in any modelled years

and

A5.4

#### that no other changes to the modelled figures for the entire financial loss period have been made.

Other than as described above, the information used is unchanged from the information previously supplied to and used by Analysys Mason to establish the Initial Asset Valuation model, with the following exceptions or special cases noted here:

- 1. Note that changes to the FAR input data (data from 1 July 2020 to 31 Dec 2021) can and do cause small changes to the calculated "UFB Fraction" for some asset classes in the FAR processing. This changed UFB fraction then leads to a few very small differences in the FAR processing results (asset class capex(VCA), NBV, and depreciation etc) in the period FY12-FY20. These differences arise because the UFB fraction has to be a single value for each asset class that is constant over time, but that single value is estimated from the fraction of the asset class settled to UFB items over the entire period of available data (ie adding new data requires us to recalculate the UFB fraction for each asset class). Again the net effect is immaterial, though note that these changes to e.g. capex or RABSOP can also cause secondary immaterial changes in other items too e.g. in the totex allocator used to allocate certain opex.
- 2. Note that changes to the demand and revenue in FY21 and 2021H2 naturally lead to changes in the "future benefit" allocation driver in the opex model from FY17-FY22, as that allocation driver "looks forwards" 5 years. This "future benefit" then also has small second-order effects on a small number of other allocation drivers in the opex model. This difference in the opex model outputs in FY17-FY20 therefore does not imply that there has been any other change in the opex model inputs as regards FY12-FY20.

This paragraph relates to RP1 rather than the financial loss period but is included here for clarity. Note that in the true-up model the capex forecast and the opex forecast values for the (post-implementation) second half of FY22 ("2022H1" ie 1 Jan 2022-30 June 2022) use half of the previous FY22 forecast, which is what was used for 2022H1 in the December 2021 decision MAR model. We note that this is different to the 5YP forecast for the relevant half year (a level of granularity that could not be accommodated in the December 2021 decision models, but which could potentially be accommodated now that we have an explicit calculation by half year). Our rationale for keeping the previous values (ie half of FY22 in each case) is to stay as close as possible to the previously used forecast data for RP1.