Europe Economics

Opex and commercial revenue model user guide

March 2026

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Contents

1 Introduction

This guide explains how to use the roll-forward model that produces forecasts of operating expenditure (opex), commercial revenue (comrev) and Other Regulated Charges (ORCs) for Heathrow Airport Limited from 2024 to 2031. The model starts from an efficient 2024 baseline and projects annual values for each line item using passenger forecasts, volume drivers, real price effects (RPEs) and efficiency assumptions. The model is populated with raw data from the HAL business plan tables, together with a set of assumptions.

The default values reflect those developed in the Europe Economics and York Aviation report. Users may amend assumptions and inputs to explore alternative scenarios, but any changes should be made with due caution and informed by economic and sector-specific judgement.

The guide describes:

- how the workbook is structured across input, calculation and results sheets;
- how the main drivers feed through to annual opex, comrev and ORC forecasts; and
- which cells users should change to run scenarios, and which sheets are "read only".

The remainder of this guide is structured as follows:

Chapter 2 provides an overview of the model's inputs, calculation logic and results. It also explains how baseline data are rolled forward using traffic, inflation and efficiency assumptions.

Chapter 3 sets out the steps required to interact with the model and alter any assumptions or passenger scenarios.

2 Model Overview

This chapter explains how the roll-forward model works and how the outputs shown in the "Summary" sheet are derived. It follows the calculation logic step by step to show how the user's selected assumptions contribute to the final opex and comrev forecasts produced by the model.

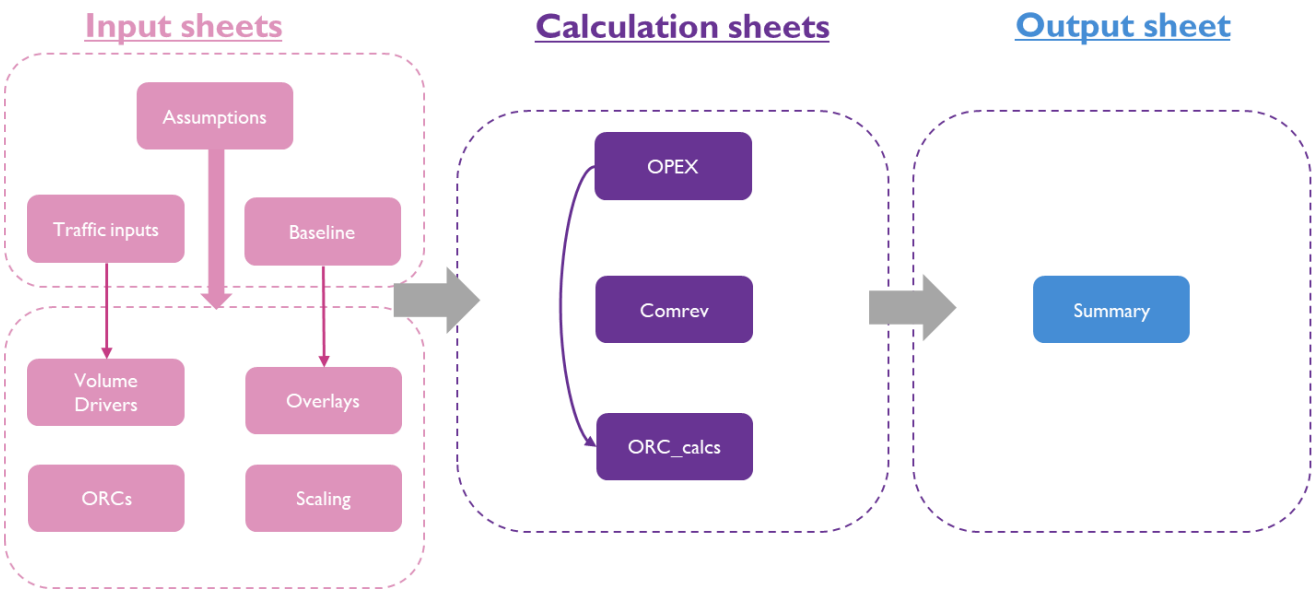
The model is structured across input, calculation and results sheets, with inputs defining the drivers applied to the 2024 baseline and the calculation sheets translating these into annual forecasts.

2.1 FAST guidelines

The model has been developed in line with established good-practice modelling standards, drawing from the FAST methodology. The core FAST principles are that a model should be flexible, appropriate, structured and transparent. In practice this means using clearly separated inputs, calculation and outputs sheets, maintaining consistent time structures, applying short and readable formulas, and constructing calculations through modular calculation blocks. These principles act as a guide rather than a rigid rulebook and may be adapted where strict adherence would reduce clarity or introduce unnecessary complexity.

The figure below summarises the links between the various sheets within the model. The sections below then describe how the input sheets feed into the calculation sheets.

Figure 2.1 Diagram of sheet interdependencies.



2.2 Inputs

These sheets hold raw forecast data that are not typically adjusted by the user but are used for translating the baseline figures into annual opex and comrev projections.

The model draws on two broad categories of inputs.

- First, assumptions that determine how costs and revenues evolve, including efficiency factors, RPE indices and driver elasticities.
- Second, raw data inputs contained in dedicated driver sheets.

2.2.1 Assumptions

The Assumptions sheet is the control sheet for all driver inputs to the model. The volume drivers, RPE indices and traffic inputs are selected from a discrete set of options, listed at the top of the sheet. The user first selects the traffic inputs by choosing the data source in cell C58 and the passenger scenario in cell C60. The frontier shift assumption for the H8 period (2027 to 2031) is then set in cell C64. The H7 frontier shift is fixed, so this cell should not be adjusted.

For each cost or revenue line, the volume driver and its associated elasticity, as well as the RPE index, are then selected. The TRUE or FALSE designation is used to indicate whether the frontier shift assumption applies to each cost line. Management stretch is applied to each revenue line individually. These input assumptions are set in the corresponding opex table (cells B69:I104) and commercial revenue table (cells B108:I158).

The model is populated with a default set of assumptions, with the underlying rationale described in the preliminary conclusions report. Section 3 explains where the model has flexibility to adjust these assumptions and the limitations of that functionality.

2.2.2 Traffic inputs

Forecasts of total passenger numbers from 2024 to 2031 are provided for three sources, HAL, the CAA and the airline submission. Each source includes three scenarios, low, base and high, giving a total of nine passenger forecast scenarios. The model allows the user to choose both the scenario and the source of the traffic forecast. This selection is made in the Assumptions sheet, where all other variable inputs are also specified. The sheet also includes a spare table that allows users to input additional passenger forecasts or bespoke scenarios, which can be selected in the Assumptions sheet for use within the model.

2.2.3 Baseline

The baseline consists of the figures that establish the 2024 starting point for operating expenditure and commercial revenues. These begin with HAL's reported 2024 outturn figures at the same level of granularity as its business plan response.

The reported baseline is first adjusted for efficiency, drawing on the bottom-up assessment of costs and revenues conducted by Europe Economics and York Aviation, to produce the intermediate stage labelled "Adjusted opex/comrev (excluding rigidity)". This reflects the efficiency improvements that are theoretically achievable from 2024 but does not yet incorporate those that HAL cannot realise until certain short-run contractual or operational rigidities fall away. A further set of adjustments is then applied to capture the additional efficiencies expected to become achievable by the start of H8. Together, these steps generate the final output, the "Adjusted baseline opex/comrev", which forms the starting point for the model's operating expenditure and commercial revenue forecasts. This figure therefore represents the efficient 2024 baseline that the model rolls forward.

Where adjustments apply at a higher category level, such as where item-level efficiency information is unavailable or not practicable, the adjusted totals are allocated across the category on a pro rata basis, using the shares observed in HAL's 2024 data. This assumes that the efficiency adjustment is distributed proportionally across all relevant cost or revenue items.

2.2.4 ORCs

Outturn ORCs are divided into fixed costs (allocated and annuity) and variable (direct) ORC costs. Fixed ORC costs are held constant across all forecast years. Each specified facility is reported separately, using data

split between airline and non-airline users. The direct ORC component for each facility forms the basis for calculating the variable share that is applied to forecast opex in later years.

2.2.5 Volume drivers

This sheet records the volume drivers used in the model and derives an annual growth rate for each. Total passenger numbers are taken directly from the "Traffic inputs" sheet and reflect the traffic source and scenario selected on the "Assumptions" sheet. These total passenger forecasts feed into the passenger-related drivers, which are defined as shares.

The mode shares themselves are treated as volume invariant. For example, the share of passengers using Heathrow Express does not change with total passenger volume. However, the number of passengers associated with each mode will vary with total passenger forecasts. The 'Growth rates (Year-on-year)' table converts the forecast mode shares into implied year-on-year growth rates in passenger numbers for each mode. For instance, the Parking/Rental pax mode share represents the expected proportion of origin and destination (OD) passengers using this mode across the forecast years. The growth rates shown in the table below for Parking/Rental pax reflect the change in total passengers using this mode year by year, and therefore vary according to the selected traffic source and scenario.

The table below shows the annual growth rates the model calculates for parking and rental passengers across H8 under the default specification, which uses the CAA base passenger forecast.

Figure 2.2: Parking/Rental Pax growth rate calculation inputs.

Volume driver	Units	Category	2024	2025	2026	2027	2028	2029	2030	2031
Total Pax	number	Total	83,907,050	84,441,508	85,519,856	85,861,364	86,727,556	87,680,096	88,608,470	89,403,296
O&D	%	Share	79.0%	79.2%	78.9%	79.0%	79.2%	79.3%	79.4%	79.5%
Parking/Rental Pax	%	Mode share	30.6%	31.0%	30.7%	30.9%	30.9%	30.9%	30.9%	30.9%
Parking/Rental Pax	%	Growth rate		2.5%	-0.3%	2.1%	1.2%	1.3%	1.2%	1.1%

Source: HAL BP data tables; Europe Economics/YAL judgement.

Raw data from HAL's business plan submission is included in pink-shaded cells. These can be updated directly if underlying assumptions or reported values change.

The growth rate for each opex and commercial revenue line item is then derived from the growth rate of its assigned driver in the Assumptions sheet. This, together with the associated elasticity, determines the annual change in the cost or revenue linked to forecast changes in the volume of that driver.

2.2.6 Scaling

The "Scaling" sheet sets out the RPE indices together with the frontier shift and management stretch assumptions. It contains the price index growth forecasts applied across the relevant cost and revenue lines. The 'Inflation drivers' table lists all indexation options that can be selected for an item, including CPI, RPI and forecast average earnings, which are sourced from the OBR.

The sheet also provides a set of bespoke blended indices. These are used for cost categories, particularly within facilities and maintenance and other operating expenditure, which combine multiple types of inputs. The blended indices therefore capture input price inflation arising from, for example, both labour inputs and CPI-linked inputs. A blended index is also provided for contracts that are indexed partly to RPI and partly to CPI.

The underlying independent forecasts for CPI, RPI and average earnings may be updated as new OBR forecasts are released.[1] Caution should, however, be taken when updating the blended RPE indices, since these involve formulas that weight several inflation components. Any cells shaded purple contain formulas and should not be modified without clear intention and any updates to the formula should be reflected in the index title and inflation index list in the assumptions sheet. The nominal growth rates are then converted to real terms in the following table, which is used by the calculation sheets and the wider model. This ensures that all model calculations are undertaken on a real-terms basis.

2.2.7 Overlays

The overlays sheet sets out adjustments to operating expenditure and commercial revenues that arise in specific years but are not captured by the standard model drivers. These overlays are entered as additive items that sit outside the main roll forward model. A single combined opex and commercial revenue overlay feeds into the totals for each year, but it does not influence any calculations in subsequent years. The overlays also remain distinct from the underlying line items they relate to, and are ultimately incorporated within the broader 'other opex' category.

There is no functionality to add additional opex overlays beyond those already included. These include the operational cost impacts associated with replacing the multi-storey car park at Terminal 4 (MSCP4), the expected increase in the share of passengers with reduced mobility (PRM), and the assumption that efficiency improvements associated with enhanced screening technology, reducing security staffing costs, continue into H8.

Existing overlays can be overwritten, although users should take care when doing so for the PRM and staff security overlays, since these rely on logic that operates elsewhere in the model. The multi-story car park at Terminal 4 (MSCP4) commercial revenue overlay line could be altered if required. In the current model specification, the HAL submission for this overlay is accepted in full. The total opex and total commercial revenue overlays feed directly into the model's calculations.

The MSPC4 opex overlay is included within the total additive overlays, with the calculation of this overlay set out in a dedicated calculation block below. HAL's MSPC4 submission includes £10 million of PRM related costs and £17 million of other costs over the period 2027 to 2029. These components are separated, with the PRM element pro rated to reflect the baseline efficiency adjustment before being incorporated into the overlay totals.

2.3 Calculations

2.3.1 Forecasts using roll forward approach

Following the input sheets, the model builds up the forecasts by applying the selected drivers, indices and assumptions to each operating expenditure and commercial revenue line. The equations below set out the calculation logic used to generate year-on-year outputs for each cost and revenue line separately. The model applies real-terms RPE adjustments, frontier shift or management stretch assumptions, volume driver elasticities and overlays to produce the annual forecasts.

OPEX:

$$Output_{t+1} = Output_t \cdot (1 + \varepsilon \cdot \Delta V_{t+1}) \cdot (1 + RPE_{t+1}) \cdot (1 - FS_{t+1}) + Overlay_{t+1}$$

Commercial Revenues:

$$Output_{t+1} = Output_t \cdot (1 + \varepsilon \cdot \Delta V_{t+1}) \cdot (1 + RPE_{t+1}) \cdot (1 + MS_{t+1}) + Overlay_{t+1}$$

[1] The latest version of the model uses inputs from the November 2025 release [link]

Where:

- RPE is the real price effect
- FS is frontier shift
- MS is management stretch
- ΔV_{t+1} is the growth rate of the relevant volume driver
- ε is the cost/ revenue elasticity associated with the volume driver

Each driver is shown in its own calculation table as a series of year-on-year growth rates. In line with modelling standards, each contribution to the final calculation is set out separately so that the effect of the RPE, frontier shift or management stretch assumptions, volume drivers and overlays can be clearly traced. These driver tables feed directly into an output table, which forecasts each cost or revenue line in turn using the equations set out above. Additive overlays are handled separately from the driver calculations. They appear as distinct line items in both opex and commercial revenues, ensuring they sit outside the core driver-based model logic and are applied as simple additive adjustments to the forecast totals.

The table below illustrates the driver inputs for a single opex cost line and how these are applied to produce the forecast from its adjusted 2024 baseline value.

Table 2.1: Security staff driver inputs and forecast, 2024 to 2031.

Cost item	Units	Price base & Index	Driver/ total	2024	2025	2026	2027	2028	2029	2030	2031
Security staff	%	*2024 CPI Prices*	*Volume impact*		0.2%	0.4%	0.1%	0.3%	0.3%	0.3%	0.3%
Security staff	%	*2024 CPI Prices*	*Real Price Effect*		1.66%	0.83%	0.23%	0.06%	0.16%	0.31%	0.31%
Security staff	%	*2024 CPI Prices*	*Frontier shift*		-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%
Security staff	*£ millions*	*2024 CPI Prices*	*Item total*	173.6	175.1	175.4	174.3	173.2	172.3	171.6	170.9

Source: HAL BP data, EE/YAL analysis.

We then calculate the cumulative monetary contributions of each driver to the annual change in outputs, both at the item level and for total operating expenditure and commercial revenue. As the calculation formula is multiplicative, the contributions are not strictly additive, since interactions arise between drivers. To approximate these contributions, we apply each driver cumulatively in turn. The resulting estimates depend on the ordering of the drivers. We adopt the sequence of (1) volume impacts, (2) RPEs and (3) frontier shift or management stretch.

Additive overlays are excluded from this sequence because they sit outside the multiplicative driver logic and are already applied directly as additive adjustments in the initial calculations.

2.3.2 Forecasts informed by bottom-up methodology

The model includes a separate calculation sheet for cost and revenue lines that are forecast using a bottom-up methodology rather than the standard roll forward approach. For commercial revenues, terminal drop-off charges (TDOC) and cargo revenues are forecast using bottom-up parameters. These forecasts continue to draw on the model's volume inputs, but unit prices are specified externally and no efficiency adjustment is applied. Within operating expenditure, business rates are forecast separately using a starting point of HAL's submission, with an adjustment applied by the CAA.

TDOC revenues are estimated as the product of TDOC passengers, drawn from the volume drivers sheet, vehicles per passenger, the on-time payment rate and the tariff per vehicle. The assumptions for vehicles per passenger and the on-time payment rate are taken from HAL's submission and are held constant over the period. We assume that the charge remains constant in nominal terms at £7 across H8. While it is possible to vary the unit charge per vehicle, we would caution against doing so without considering the implications for the mode share assumptions, which are forecast on the basis of a constant price per vehicle.

Cargo revenues are also forecast using a bottom-up methodology rather than the standard roll forward calculations. This reflects material differences in average unit revenues between cargo air traffic movements (ATMs) and other non-passenger ATMs. Under this approach, revenues are forecast by applying the 2024 average yield to the forecast number of movements for each category separately, rather than scaling from the aggregate baseline. The average revenue per movement is assumed constant in real terms across the H8 period.

Business rates forecasts are included as a bottom-up calculation separate to the additive lines, reflecting the CAA's regulatory position. This overlay adopts HAL's business rates forecast as the starting point, with a deduction applied to account for the logged-up amount from H7. This is due to the CAA allowing materially more for business rates at H7 than was ultimately required, reflecting uncertainty at the time around rateable values and policy settings. Consistent with the CAA's stated approach, this over allowance is addressed through a deduction in the H8 business rates submission rather than being removed from the baseline or as a separate overlay.

2.3.3 ORC calculations

ORCs are calculated separately in the "ORC_calcs" sheet. The forecasting approach assigns the 2024 share of ORCs, excluding fixed costs, to the forecast opex (excl. business rates) in each subsequent year. To derive the 2024 share used for this allocation, an adjusted total is taken as the measure of direct ORC costs rather than the sum reported in the BP submission. An efficiency adjustment is then applied, proportional to the model baseline adjustment applied to opex (excl. business rates). The share of direct ORC costs as a proportion of total opex, excluding business rates and TDOC related costs, is then calculated.

Using this share, forecasts of total variable ORC costs are generated for all years of the model. The table below outlines the calculation stages for total ORC costs, with values reflecting the default specification of the model. Variable ORC costs are allocated across the specified facilities according to each facility's share of variable costs in the 2024 outturn ORCs. Final ORC forecasts are produced once fixed ORC costs and additional additive adjustments are applied to the total forecast across all facilities.

Table 2.2: ORC cost forecasts

Item	Units	2024	2027	2028	2029	2030	2031
Total outturn direct costs	£ millions	263.3					
Baseline efficiency adjustment	%	95.7%					
Efficient direct ORC costs	£ millions	251.9					
Total efficient opex (excl. rates and TDOC cost)	£ millions	1403.3	1396.7	1388.5	1380.6	1368.4	1360.7
Direct ORC cost share of forecast opex (excl. rates)	%	17.9	17.9	17.9	17.9	17.9	17.9
ORC direct costs	£ millions		250.7	249.2	247.8	245.6	244.2
ORC fixed costs	£ millions		9.91	9.91	9.91	9.91	9.91
ORC adjustment	£ millions		3.34	3.91	3.91	4.51	4.51
Total ORC costs	£ millions		263.9	263.0	261.6	260.0	258.6

Source: HAL BP data tables; CAA methodology.

2.4 Results

The results of the forecast given a set of inputs are presented directly after the guide sheet. The model outputs generated from any selected set of inputs are presented on the sheet immediately following the guide. This sheet first displays the driver inputs currently in use, as defined in the "Assumptions" sheet. All calculations are undertaken in 2024 CPI terms, and the results are also presented in nominal terms and in 2024 CPIH terms.

The results sheet provides:

- Opex and commercial revenue forecasts by item
- ORC forecasts by specified facility
- Category totals for opex and commercial revenues

Results in nominal and CPIH terms are presented beneath the real-terms outputs and follow the same structure. Charts comparing the forecast opex and comrev are in a separate workbook, with a link included at the top of the sheet.

An alternative set of category level results is provided in the 'Alternative summary' sheet. This presentation separates out noise and vortex costs from the relevant categories, specifically £0.4 million from other operational staff and £10.2 million from other opex in the 2024 baseline. The same proportional adjustment is applied across the forecast period, removing the share of each category attributable to noise and vortex costs in each year. These adjusted category totals are intended to facilitate clearer comparison with HAL's forecast, in which noise and vortex costs are excluded.

3 How to Use and Update the Model

The model is designed to allow users to explore how different assumptions about passenger numbers and other drivers affect the resulting forecasts. As these assumptions are user-defined and their rationale sits outside the model, it is essential that any scenario is subject to a general sense check. Users should consider whether assumptions are reasonable both individually and in combination, particularly as the model does not include safeguards to prevent the use of inconsistent or unrealistic inputs.

The model can be used to:

- Select the passenger scenario (low, base or high) and forecast source (CAA, HAL or airlines).
- Adjust modelling assumptions, including volume drivers and their elasticities, the RPE index for each cost and revenue item, and the frontier shift and management stretch assumptions.
- Observe how the estimated opex and commercial revenues change in response.

All changes are controlled from a single sheet: **Sheet name: "Assumptions".**

Inputs for individual opex and commercial revenue items can be altered in the relevant tables in columns B to I, and any changes made within this sheet will update the model automatically. The resulting forecasts can then be viewed in the "Summary" sheet.

Drivers and RPE indices must be selected from the lists at the top of the sheet, since these are linked to discrete sets of drivers and indices held in the corresponding input sheets.

The frontier shift assumption is set above the driver table in cell C63 and should be entered as an annual percentage. Whether the frontier shift applies to a particular cost or revenue line is controlled in column I, where the user sets the value to "TRUE" or "FALSE".

Management stretch is set separately for each commercial revenue item. The value should be entered as an annual percentage in column I of the commercial revenue table.

The source of passenger forecasts is set in cell C58 from the options provided in the traffic input section, reflecting the CAA, HAL or airline projections, while the traffic scenario (low, base or high) is selected in cell C60.

3.1 Changing the assumptions or inputs

Some assumptions can be adjusted directly by overwriting the default values, while others must be selected from a discrete list as defined in the driver input sheet.

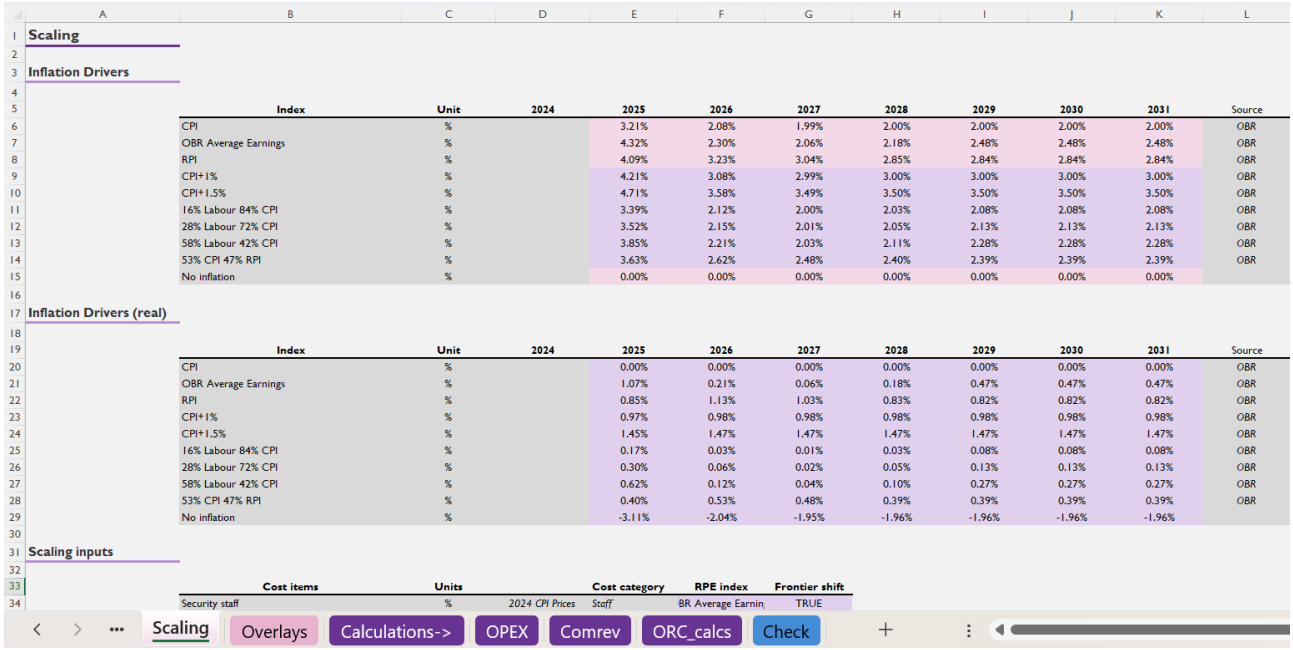
The list of **volume drivers** is fixed and cannot be expanded or amended. Only a mode share can be replaced or overwritten by another with equivalent calculation logic, as described in section 2.1.5. The raw forecast data for the existing drivers can be updated or replaced, although caution should be applied to ensure that the units of each driver remain consistent with those used in the model. The elasticity associated with each driver can be adjusted by overwriting the selected value in the Assumptions sheet. For opex, these elasticities are located in cells G70:G104, and for commercial revenue they are in cells G109:G158. Though there is a "Spare" table on the 'Traffic inputs' sheet to enter an additional total passenger scenario, as described in section 2.1.2, which them may be selected as the source input.

Similarly, the list of **RPEs** available for selection is defined in the Scaling sheet and represents the full set of drivers that can be chosen. Forecasts for CPI, RPI and labour cost growth may be updated by overwriting the existing values. New RPE indices cannot be added, although unused indices (other than CPI, which is

required for generating real growth rates) may be edited. Caution is needed when adjusting blended rates to ensure they remain consistent across all years.

The **Inflation Drivers** (real) table should not be edited, as it is calculated directly from the nominal table above. If any forecasts are overwritten in the nominal Inflation Drivers table, care must be taken to ensure that the values entered are nominal growth rates.

The image below shows the layout of the two tables. The second table provides the real inflation inputs to the model, converting the nominal growth rates to real terms using the CPI forecasts. The index titles in the real table must therefore match the corresponding entries in the nominal table.



Scaling

Inflation Drivers

Index	Unit	2024	2025	2026	2027	2028	2029	2030	2031	Source
CPI	%		3.21%	2.08%	1.99%	2.00%	2.00%	2.00%	2.00%	OBR
OBR Average Earnings	%		4.32%	2.30%	2.06%	2.18%	2.48%	2.48%	2.48%	OBR
RPI	%		4.09%	3.23%	3.04%	2.85%	2.84%	2.84%	2.84%	OBR
CPI+1%	%		4.21%	3.08%	2.99%	3.00%	3.00%	3.00%	3.00%	OBR
CPI+1.5%	%		4.71%	3.58%	3.49%	3.50%	3.50%	3.50%	3.50%	OBR
16% Labour 84% CPI	%		3.39%	2.12%	2.00%	2.03%	2.08%	2.08%	2.08%	OBR
28% Labour 72% CPI	%		3.52%	2.15%	2.01%	2.05%	2.13%	2.13%	2.13%	OBR
58% Labour 42% CPI	%		3.85%	2.21%	2.03%	2.11%	2.28%	2.28%	2.28%	OBR
53% CPI 47% RPI	%		3.63%	2.62%	2.48%	2.40%	2.39%	2.39%	2.39%	OBR
No inflation	%		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	

Inflation Drivers (real)

Index	Unit	2024	2025	2026	2027	2028	2029	2030	2031	Source
CPI	%		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	OBR
OBR Average Earnings	%		1.07%	0.21%	0.06%	0.18%	0.47%	0.47%	0.47%	OBR
RPI	%		0.85%	1.13%	1.03%	0.83%	0.82%	0.82%	0.82%	OBR
CPI+1%	%		0.97%	0.98%	0.98%	0.98%	0.98%	0.98%	0.98%	OBR
CPI+1.5%	%		1.45%	1.47%	1.47%	1.47%	1.47%	1.47%	1.47%	OBR
16% Labour 84% CPI	%		0.17%	0.03%	0.01%	0.03%	0.08%	0.08%	0.08%	OBR
28% Labour 72% CPI	%		0.30%	0.06%	0.02%	0.05%	0.13%	0.13%	0.13%	OBR
58% Labour 42% CPI	%		0.62%	0.12%	0.04%	0.10%	0.27%	0.27%	0.27%	OBR
53% CPI 47% RPI	%		0.40%	0.53%	0.48%	0.39%	0.39%	0.39%	0.39%	OBR
No inflation	%		-3.11%	-2.04%	-1.95%	-1.96%	-1.96%	-1.96%	-1.96%	

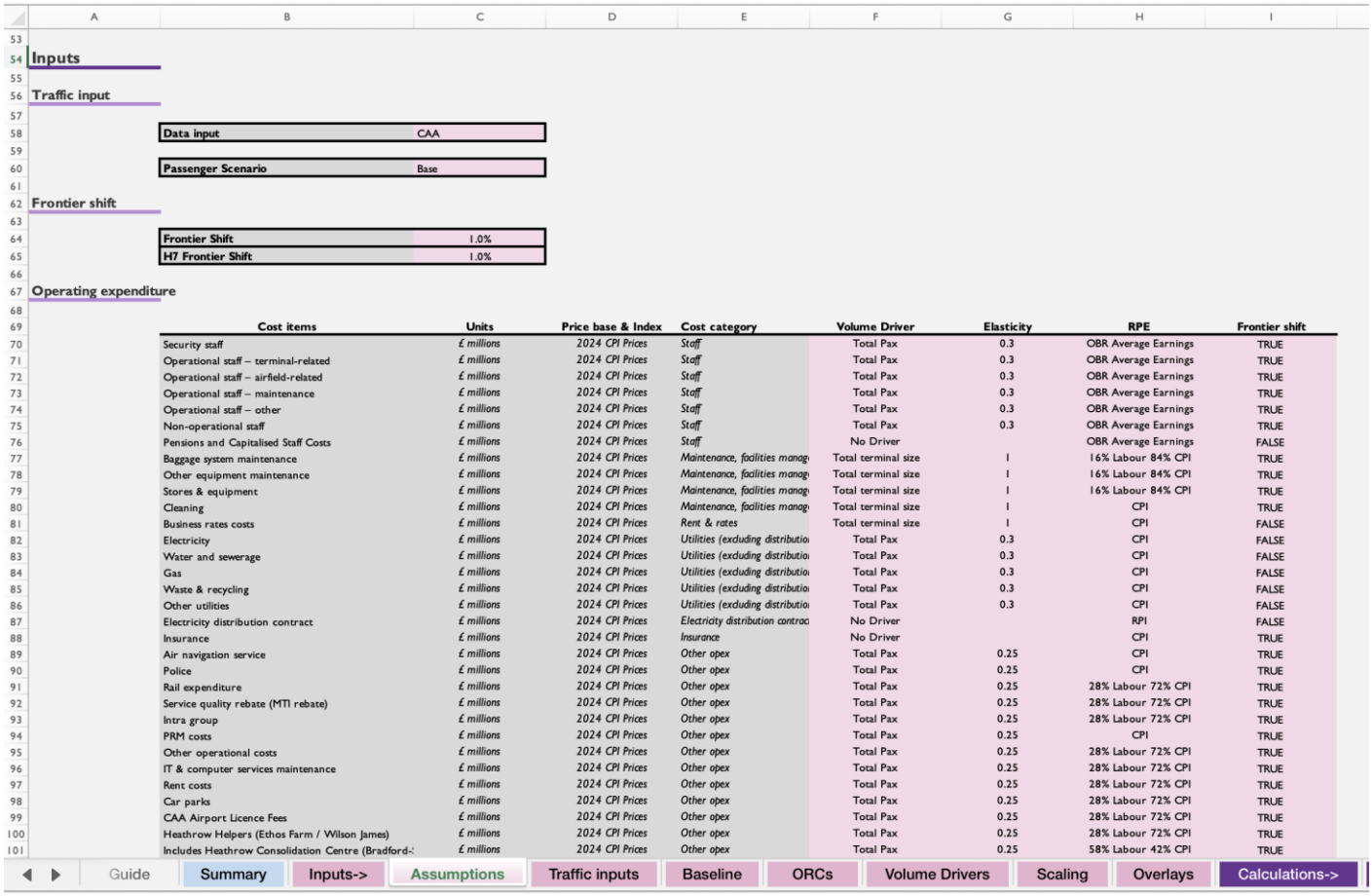
Scaling inputs

Cost items	Units		Cost category	RPE index	Frontier shift
Security staff	%	*2024 CPI Prices*	*Staff*	BR Average Earnin	TRUE

Scaling | Overlays | Calculations-> | OPEX | Comrev | ORC_calcs | Check

Frontier shift may be edited to test the model's sensitivity to alternative assumptions. This is done by overwriting the default frontier shift value in cell C64 of the Assumptions sheet. It is also possible to adjust the items to which this efficiency assumption applies by changing the TRUE or FALSE entry in the corresponding table.

For **management stretch**, an assumed value is specified for each item individually. To amend the current set of assumptions, the value for each item in the table can be overwritten. The image below shows the Assumptions sheet, where the drivers and data sources are specified.



Inputs

Traffic input

Data input	CAA
Passenger Scenario	Base

Frontier shift

Frontier Shift	1.0%
H7 Frontier Shift	1.0%

Operating expenditure

Cost items	Units	Price base & Index	Cost category	Volume Driver	Elasticity	RPE	Frontier shift
Security staff	£ millions	2024 CPI Prices	Staff	Total Pax	0.3	OBR Average Earnings	TRUE
Operational staff – terminal-related	£ millions	2024 CPI Prices	Staff	Total Pax	0.3	OBR Average Earnings	TRUE
Operational staff – airfield-related	£ millions	2024 CPI Prices	Staff	Total Pax	0.3	OBR Average Earnings	TRUE
Operational staff – maintenance	£ millions	2024 CPI Prices	Staff	Total Pax	0.3	OBR Average Earnings	TRUE
Operational staff – other	£ millions	2024 CPI Prices	Staff	Total Pax	0.3	OBR Average Earnings	TRUE
Non-operational staff	£ millions	2024 CPI Prices	Staff	Total Pax	0.3	OBR Average Earnings	TRUE
Pensions and Capitalised Staff Costs	£ millions	2024 CPI Prices	Staff	No Driver		OBR Average Earnings	FALSE
Baggage system maintenance	£ millions	2024 CPI Prices	Maintenance, facilities manag	Total terminal size	1	16% Labour 84% CPI	TRUE
Other equipment maintenance	£ millions	2024 CPI Prices	Maintenance, facilities manag	Total terminal size	1	16% Labour 84% CPI	TRUE
Stores & equipment	£ millions	2024 CPI Prices	Maintenance, facilities manag	Total terminal size	1	16% Labour 84% CPI	TRUE
Cleaning	£ millions	2024 CPI Prices	Maintenance, facilities manag	Total terminal size	1	CPI	TRUE
Business rates costs	£ millions	2024 CPI Prices	Rent & rates	Total terminal size	1	CPI	FALSE
Electricity	£ millions	2024 CPI Prices	Utilities (excluding distributio	Total Pax	0.3	CPI	FALSE
Water and sewerage	£ millions	2024 CPI Prices	Utilities (excluding distributio	Total Pax	0.3	CPI	FALSE
Gas	£ millions	2024 CPI Prices	Utilities (excluding distributio	Total Pax	0.3	CPI	FALSE
Waste & recycling	£ millions	2024 CPI Prices	Utilities (excluding distributio	Total Pax	0.3	CPI	FALSE
Other utilities	£ millions	2024 CPI Prices	Utilities (excluding distributio	Total Pax	0.3	CPI	FALSE
Electricity distribution contract	£ millions	2024 CPI Prices	Electricity distribution contrac	No Driver		RPI	FALSE
Insurance	£ millions	2024 CPI Prices	Insurance	No Driver		CPI	TRUE
Air navigation service	£ millions	2024 CPI Prices	Other opex	Total Pax	0.25	CPI	TRUE
Police	£ millions	2024 CPI Prices	Other opex	Total Pax	0.25	CPI	TRUE
Rail expenditure	£ millions	2024 CPI Prices	Other opex	Total Pax	0.25	28% Labour 72% CPI	TRUE
Service quality rebate (MTI rebate)	£ millions	2024 CPI Prices	Other opex	Total Pax	0.25	28% Labour 72% CPI	TRUE
Intra group	£ millions	2024 CPI Prices	Other opex	Total Pax	0.25	28% Labour 72% CPI	TRUE
PRM costs	£ millions	2024 CPI Prices	Other opex	Total Pax	0.25	CPI	TRUE
Other operational costs	£ millions	2024 CPI Prices	Other opex	Total Pax	0.25	28% Labour 72% CPI	TRUE
IT & computer services maintenance	£ millions	2024 CPI Prices	Other opex	Total Pax	0.25	28% Labour 72% CPI	TRUE
Rent costs	£ millions	2024 CPI Prices	Other opex	Total Pax	0.25	28% Labour 72% CPI	TRUE
Car parks	£ millions	2024 CPI Prices	Other opex	Total Pax	0.25	28% Labour 72% CPI	TRUE
CAA Airport Licence Fees	£ millions	2024 CPI Prices	Other opex	Total Pax	0.25	28% Labour 72% CPI	TRUE
Heathrow Helpers (Ethos Farm / Wilson James)	£ millions	2024 CPI Prices	Other opex	Total Pax	0.25	28% Labour 72% CPI	TRUE
Includes Heathrow Consolidation Centre (Bradford-	£ millions	2024 CPI Prices	Other opex	Total Pax	0.25	58% Labour 42% CPI	TRUE

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The bottom-up forecasts also include a degree of flexibility when it comes to model inputs.

It is possible to alter the **inputs to the TDOC forecast**, with vehicles per passenger, on time payment rate and tariff per vehicle included as inputs external to the model. Any changes to the mode share would have to be conducted within the 'Volume drivers' sheet and any changes will have to be matched by equivalent alterations to other mode share lines. It should be noted that the current methodology reduces the mode share of TDOC by 3 percentage points when a price rise from £7 to £10 (incl. VAT) is predicted. Therefore, if the price change is assumed to change in a different year (the model input has this occurring in 2029) or price we would recommend altering the mode share assumption as well.

For **cargo revenues**, the bottom up forecasts can be adjusted by modifying either the cargo ATM or other non passenger ATM forecasts in the 'Volume inputs' sheet, or by changing the assumed unit price, defined as the yield per movement. Any changes to unit prices should be entered in 2024 CPI prices to ensure consistency with the rest of the model.

Business rates assumptions should not be adjusted within the model. The underlying inputs to HAL's business rates submission are not observable, and there are therefore no internal model parameters available to amend. The deduction for the logged-up amount is determined externally by the CAA and is included in the model as a fixed input rather than as an adjustable assumption.