Appendix 6-3: Dublin Airport Demand Model Summary

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1.1. Introduction

The Dublin Airport Future Demand Tool is a spreadsheet tool to forecast future year landside airport related demand. The tool has been developed to forecast future year hourly demand, by arrival transport mode for an airport summer peak, 'busy day'.

In order to output an informed indication for future year demand, data inputs are required, including the proposed future year daily flight schedule, which informs the hourly passenger arrival and departure profiles over the day, and the extent of airport passenger growth compared to the baseline. The proposed transport mode share for last mode of travel for both passenger travel and staff travel is also required.

Utilising a series of data and informed assumptions, including pre-flight passenger turn up profiles and passenger travel group size, the demand tool undertakes a series of calculations to profile the passenger demand based on arrival at terminal (for departing demand) or exit from terminal (for arriving demand), this is disaggregated to access mode / airport product and hourly total vehicle demand is calculated for each of; private vehicle driver not flying, taxi and airport car parking products. Public transport (bus) demand remains as total passenger demand.

The passenger demand is supplemented by staff demand; informed by staff car parks data, and additional airport demand including goods vehicles; informed by count data, which allows for campus highway volumes to be assessed.

The model outputs provide a high level indication of future year highway traffic volumes at a total airport level, supporting understanding of future forecast changes at the airport. Outputs can be used to inform:

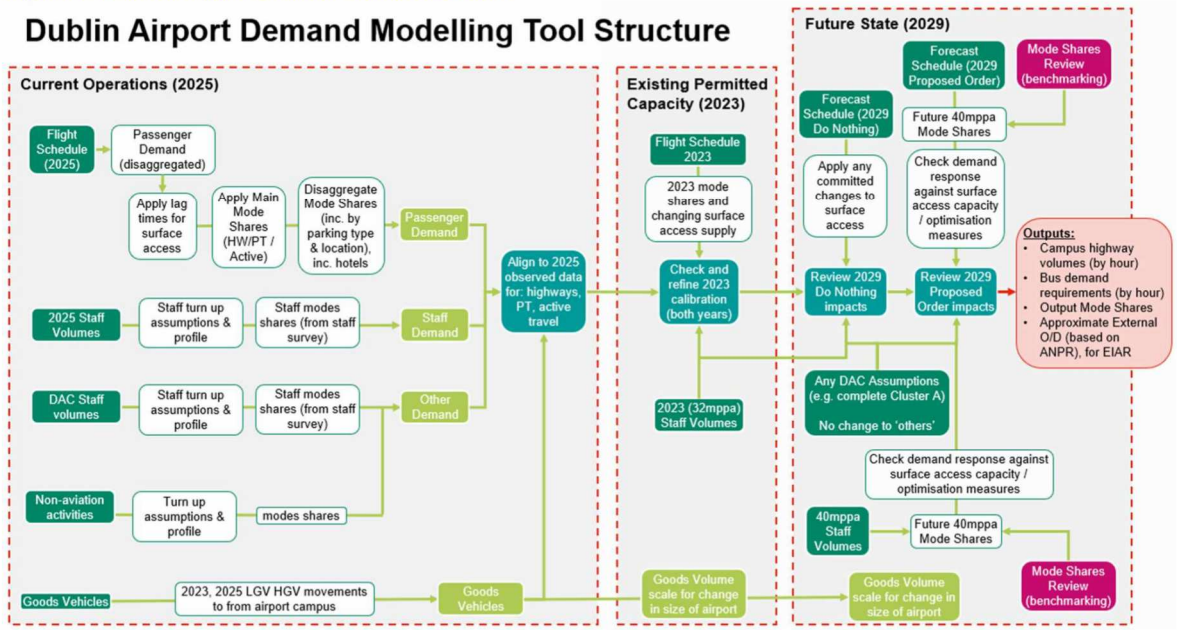
- Future year campus highway volumes;
- Future year bus demand requirements;
- Mode share targets; and
- Approximate external origin and destination factors.

1.2. Model Structure

The demand model structure is summarised in **Figure 1**. A Current Operations, October 2025 scenario was primarily developed; as assessment of the outputs was undertaken to align with observed data recorded during October 2025, providing reassurance that outputs reflect real world patterns.

By undertaking the required input updates, Future State (2029) scenarios and an Existing Permitted Capacity,2023 scenario have been produced for airport summer peak, 'busy day'.

Figure 1. Dublin Airport Demand Model Structure



1.3. Data Inputs

The demand model requires two types of data input; the variable data inputs which are required for each scenario, and the fixed baseline data inputs which remain constant across scenarios.

Demand model variable data inputs include:

- Daily flight schedule for arrivals and departures;
- Passenger mode share (or forecast passenger mode share);
- Car parking product split;
- Staff mode share (or forecast passenger mode share); and
- Forecast staff growth.

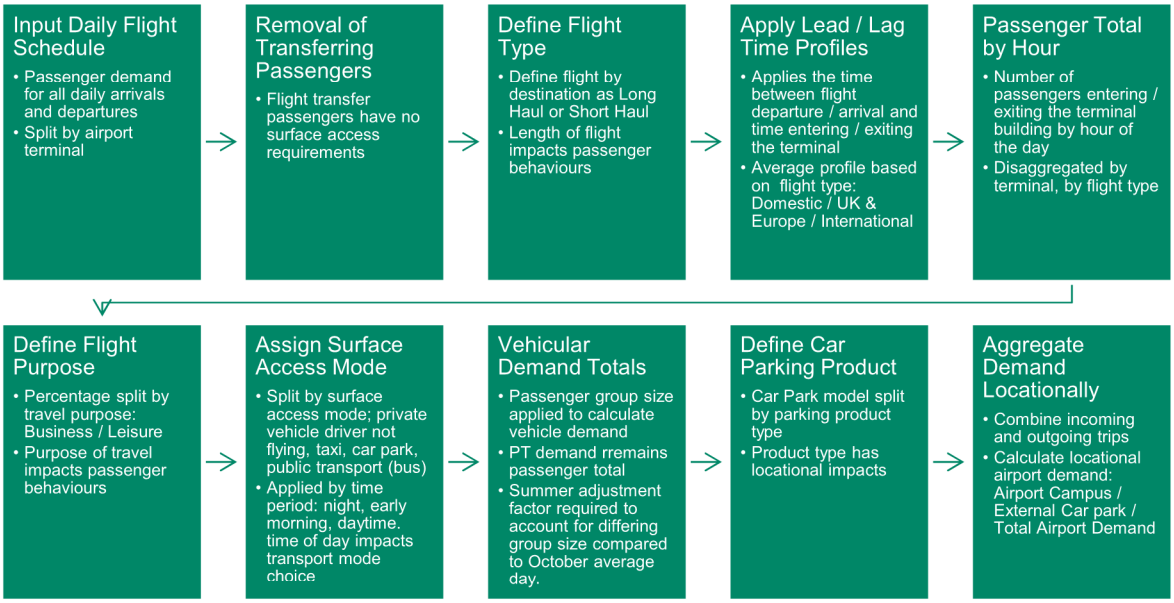
Demand model fixed data inputs include:

- Flight type and haulage by destination: Long Haul or Short Haul;
- Pre departure show up profiles;
- Flight arrival to terminal exit profiles;
- Purpose of travel split: Business or Leisure, source State Airport Passenger Survey 2023 – Dublin;
- Group size factor, source State Airport Passenger Survey 2023 – Dublin;
- Percentage of private vehicle pick up trips made from the terminal kerbside, assumption;
- Total airport staff split; Daa, Aer Lingus, Ryanair, other and DAC; and
- Staff car parks arrival and departure profiles, from staff car park data.

1.4. Passenger Demand Modelling

The passenger demand modelling process is outline in **Figure 2**.

Figure 2. Passenger Demand Calculation Process



Due to data availability a number of assumptions have been applied to the demand model:

- Percentage split for purpose of travel: Business/ Leisure remains constant across long haul and short haul flights;
- Modal split between remains constant across long haul and short haul flights and for business and leisure trips;
- Time of day impacts travel choices and behaviours, three periods have been used; early morning 06:00 – 09:00, daytime 09:00 – 20:00, nighttime 20:00 – 06:00; and
- 15% of total private vehicle pick up occur from the terminal kerbside.

The demand model outputs provide hourly passenger demand by access mode, in total passenger numbers and in total vehicular demand for private car trips and taxi trips. Public transport demand is output as passenger totals.

1.5. Staff Demand Modelling

The airport employee demand modelling process is outline in **Figure 3**.

Figure 3. Employee Demand Calculation Process



Assumptions applied to calculating staff demand:

- 20,000 total of all employees on campus October 2025; and

- Daily parking space utilisation by employer group; Daa 1.2 vehicle use per day, Aer Lingus 2 vehicle use per day, Ryanair 2 vehicle use per day, and DAC 1 use per day.

The demand model outputs hourly total vehicle demand for staff trips by employer type.

1.6. Additional Airport Demands

Traffic count data has been utilised to inform the airport goods vehicle demand. The hourly total light goods vehicle (LGV) and heavy good vehicle (HGV) demand accessing the airport campus has been assumed to be solely airport related. The level of airport goods vehicle demand increases in line with airport growth.

1.7. Model Outputs Vs Observed Data

To ensure the model outputs can be considered reflective of real time traffic behaviours and flow patterns an assessment between model output and observed data has been undertaken.

This assessment was undertaken using observed data for Wednesday 15th October 2025. This data includes observed automatic traffic counts (ATC), active travel observed counts, public transport passenger boarding and alighting totals from IDASO traffic survey undertaken on behalf of Dublin Airport October 2025. In addition, Dublin airport fixed traffic count data, was used, and staff car park barrier data was supplied by Daa.

Where required, adjustments were made to mode share within each daily time period for passenger and employee trips to reflect the varying model share choice between early morning, daytime and nighttime travel.

This assessment was undertaken for inbound and outbound trips for airport campus highway totals and public transport passenger demand, with a focus on the hours of 08:00 – 09:00 and 17:00 – 18:00.

Figure 4 and **Figure 5** graphically display the calibration results, showing the hourly demand model outputs against the observed data for both inbound direction and outbound direction over the day.

Figure 4. Airport Campus Demand; Demand Model Output vs Observed Count Data

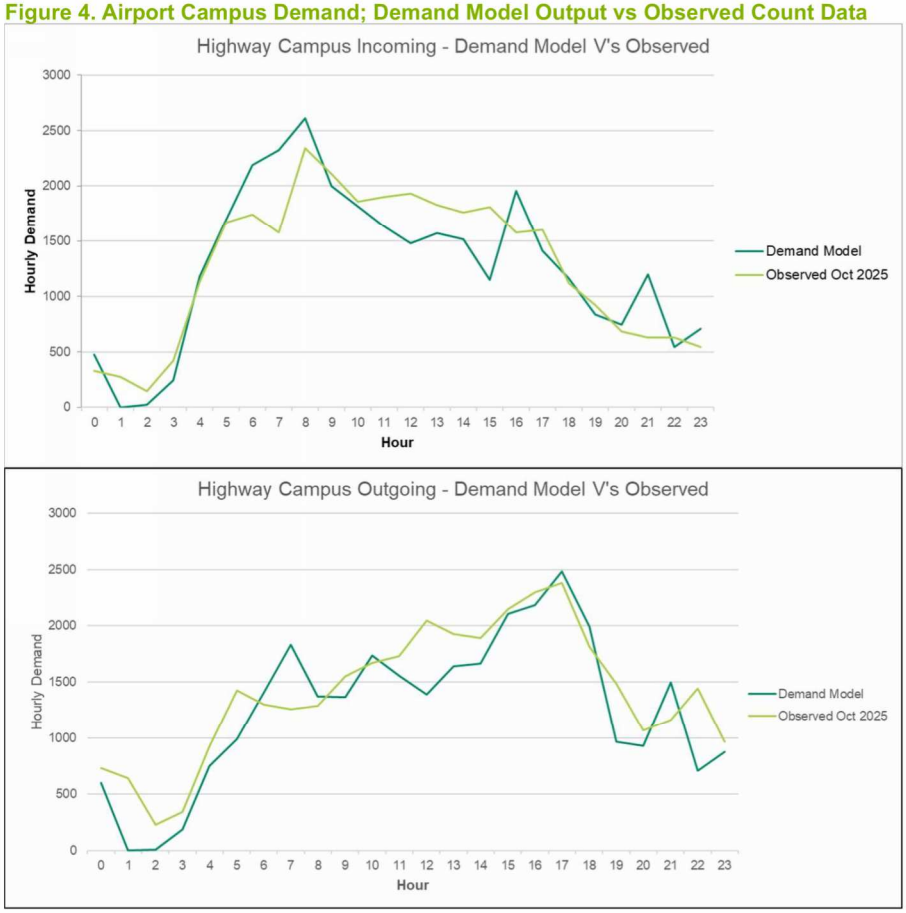
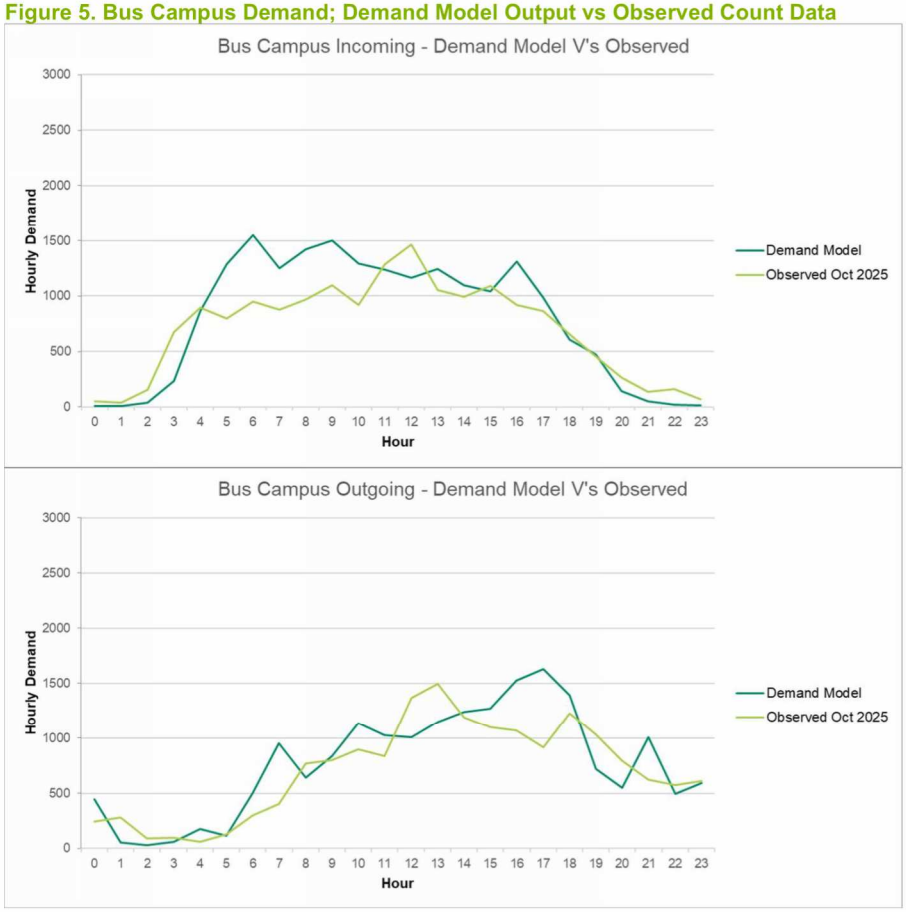


Figure 5. Bus Campus Demand; Demand Model Output vs Observed Count Data



Across the daily profiles both highway (car only) demand and public transport demand outputs from the demand model follow generally the same pattern as the observed data. In all cases the demand model is producing worst case scenario results for peak demand.

1.8. Summer (Busy day) Modelling

A review of the suitability for the tool to reflect summer peak day demand was undertaken using the Dublin Airport fixed traffic count data for a summer peak day, Friday 25th July 2025. To ensure the outputs reflect summer daily demand adjustment factors are required to reflect that during summer peak travel periods there is an increased percentage of leisure trips, which typically have travel behavioural differences and increased group size compared to nonpeak travel periods, and the impacts on working patterns with typically higher percentages of employee taking periods of annual leave during summer.

1.9. Demand Model Outputs

The tool will be used to inform assessments of the surface access impacts for the following scenarios:

1. 'Baseline Existing Permitted Capacity' (2023);
2. 'Current State of the Environment' (2025);
3. 'Future State of the Environment Do Nothing' (2029); and
4. 'Future State of the Environment Proposed Order' (2029).

The model outputs allow for comparison between highway volumes under each scenario and inform total passenger public transport demand. These outputs are used to inform future year bus requirements, air quality and noise quality assessments, to monitor growth thresholds and to inform further traffic modelling, including microsimulation modelling.

1.10. Summary

The Dublin Airport Demand Modelling Tool has been developed to provide a high level indication of future year highway traffic volumes at a total airport level. The tool has been developed to align to October 2025 observed data and an assessment has been undertaken to ensure the outputs reflects summer demand patterns at Dublin Airport. The tool can be considered as suitable for use to inform future year airport demand considerations.