Helios responses to feedback received both during the Coordination Committee pre-meeting held on 17 August 2017 and post-meeting

1.1 List of changes

As a result of the feedback received during and after the pre-meeting we have implemented following changes into our model:

- A-D-A separation has been decreased from 6NM to 5.5NM
- All flights from S18 forecast have been implemented into the model
- An extra arrival at 2200 UTC has been added into the flight schedule
- Distribution of use of runway exits by various aircraft types has been updated taking into account distributions based on historic data (previous season)

1.2 A-CDM assumptions

Comment:

"We note that the Helios modelling has been done with the ATOPS software, which is primarily used as a tool to evaluate A-CDM. We therefore question whether the modelling assumes A-CDM has been implemented? It would … be unrealistic to factor in A-CDM to any modelling assumptions for S18."

Response:

We are not familiar with ATOPS software. The software used for Dublin airside modelling is called AirTOp, which has a wide range of applications. While AirTOp could possibly be used to evaluate A-CDM, it has not been developed as an A-CDM evaluation tool. In any case, we confirm that no A-CDM assumptions have been factored into the simulation.

1.3 Load factors

Comment:

"The daa has highlighted a recent trend for increases in load factors. If Helios has … used the 85% assumption then the passengers modelled throughout will be understated, particularly when the airport is at peak capacity."

Response:

We would like to confirm we have used 100% load factor for each and every flight used in the simulation. However, it should be noted that these load factors propagate themselves only in PTB modelling but not in airside modelling. For airside modelling it has been assumed that load factors do not influence each airlines ability to operate to their stated schedule.

1.4 Comparison with NATS model

Comment:

"NATS assumes that all capacity will be allocated. However, Helios is adding additional capacity and has not either limited or assumed other capacity will be taken. …Helios is understating the potential impact should all slots be fully allocated and operated."

"The NATS and Helios output is inconsistent with regards to delays. The NATS report clearly demonstrates that the modelled capacity changes breach the ten-minute delay, whereas the Helios report does not indicate this."

Response:

As we highlighted during the meeting, NATS and Helios model differ in their fundamental approach to capacity modelling as they have been developed for different purposes. The NATS model is focussed entirely on runway holding delay and assumes standard taxi times and the fact that all aircraft are at any point able to use the runway. Thus it does not assess the impact of taxi delays or infrastructure on overall performance. Our model calculates and uses dynamic taxi times for every flight in the simulation, taking into account the actual traffic situation on taxiways/aprons. Helios model does not assume all aircraft are readily available to use the runway, therefore, we do not assume 100% OTP of flights in the simulation. We model both runway delay and taxi holding delay reflecting a more holistic representation of total delays in operating from Dublin.

With regard to the schedule, NATS upscaled the total traffic to the declaration limits. Following the Coordination Committee pre-meeting and the feedback received during it, we updated our model so that it now uses S17 traffic increased by 37 extra services forecast for S18. Should we follow NATS methodology, we would have to add to the simulation an additional 219 flights across the day (or at least an extra 73 flights (on top of 37 wishlist flights) when focussing on the period 0500 to 2259 UTC). It would not be possible to accommodate such significant increase in movements without major changes in airport infrastructure. The airfield cannot accommodate this many flights at present. In the coordination process all of these flights would be unlikely to receive slots due to stand limitations.

We would like to note that the reason why it is possible to run this increased traffic sample through NATS model, is that it assumes no infrastructure (stand, apron, taxiway) constraints. This should not be considered a criticism of the NATS model, it has been developed with a different objective to our overall airport capacity model.

Our approach to modelling the S18 scenario is now based on the best current information as to what the S18 schedule will look like with the 37 forecast services included. This approach is now more in line with the daa approach to modelling the S18 traffic forecast.

1.5 CBP, immigration and check-in limits

Comment:

"The coordinator capacity parameter referral limits for CBP, immigration and check-in have been omitted from the Helios modelling"

Response:

The aim of our modelling was not to model referral limits as such. The aim of our S18 modelling was to assess whether the existing terminal building(s) can process the passengers related to proposed new S18 services. Please note we have modelled CBP, immigration and check-in processes in a level of detail that allows us to objectively assess the maximum capacity of each terminal building as well as the maximum capacity of each process within these buildings. Based on the results from terminal building simulations, the only constrained process is the TSA security check. The S18 demand is forecast to exceed TSA process capacity between 0840 and 0940 UTC.

1.6 Single design day not representative of the whole season

Comment:

"The modelling has been carried out on a single design day, which we do not believe to be representative."

Response:

We acknowledge that modelling of a single design day is not necessarily representative of the range of conditions experienced across the whole season. However, the key points of interest are the changes from design days from one season to the next, and these changes are likely to be representative of changes from one season to the next given that the same day is being assessed. Modelling a single design day for the purpose of evaluation of capacity and delays is common industry practice, as noted by the IATA Airport Development Reference Manual (ADRM) section F4.1 which states that:

Determining airport capacity and requirements largely depends on predicting the impact of projected airline schedules on the various airport facilities. Requirements, capacity and level of service are based not only on operating conditions and rules, but also upon the particular demand profiles created by the mix of flights and flight sectors ***for a typical busy day.***

1.7 Document check-in process

Comment:

"At the request of Homeland Security all other EU carriers have been asked to introduce a document check-in process in October 2017… The Helios modelling does not consider the impact of this capacity constraint."

Response:

The effect of this is not fully known, and while the processing times will increase, in our view the increase will not be of a magnitude which would cause the check-process to become a limiting factor in the terminal systems.

1.8 Number of opened resources and staffing assumptions

Comment:

"There is also a modelling assumption that all desks are always manned, which is unrealistic."

"… assumption that all facilities are available. It's unlikely to happen in reality…"

Response:

The aim of this study is to assess the maximum capacity the terminal building can handle. Thus, we have assumed that check in desks, as well as other elements of terminal infrastructure, will be fully open and staffed. We do not believe it would be appropriate to assume reduced levels of staffing of terminal facilities when setting coordination parameters given that this information is not yet known, and that staffing should be tailored to match demand as it materialises across the season. See IATA Worldwide Slot Guidelines (8th edition, effective 01/01/2017), section 6.1.2 which states:

The analysis should objectively consider the ability of the airport infrastructure to accommodate demand at desired levels of service, such as queue times, levels of congestion or delay. The analysis should assume that the airport facilities are being managed efficiently ***and are fully staffed****.*

1.9 Baggage processing

Comment:

"There are currently significant operational issues in the baggage make-up area and there is no infrastructure for handling additional volumes of transfer bags….Helios modelling does not consider the impact of this capacity constraint."

Response:

After in-situ observations and spreadsheet analysis of capacity of the T2 baggage hall it was concluded that maximum technical capacity of this area is sufficient to meet the forecast increase in S18 traffic. Stakeholder discussions revealed some past intermittent inefficiencies (such as transition to the new software) however, these were few in numbers and as therefore, it was decided there was no need to model this area using FTS.

1.10 CBP facility

Comment:

"The CBP facility is too small due to the concentration of flights during the peak transatlantic flight times. There are severe constraints on the security and TSA processes in the CBP facility, evidenced by the significant increases in queue lengths and passenger processing time during the S17 season to date. …. The Helios modelling does not consider the impact of this capacity constraint."

Response:

Please note our modelling does take into account all US processes, be it TSA check, DVO or CBP/Triage. As mentioned during the meeting, the version of the model presented during the meeting did not assume any extra flights to the US will take place during S18. This resulted in no changes in performance of US processes which in turn led to no graphs being presented.

Please note that the most recent version of the model includes three extra departures to the US and graphs showing impact on all processes in the CBP facility are provided. Our conclusion is that TSA process is the most limiting element to the capacity of the US Pre-clearance area and any additional flights to the US should be assessed individually.

1.11 Towing

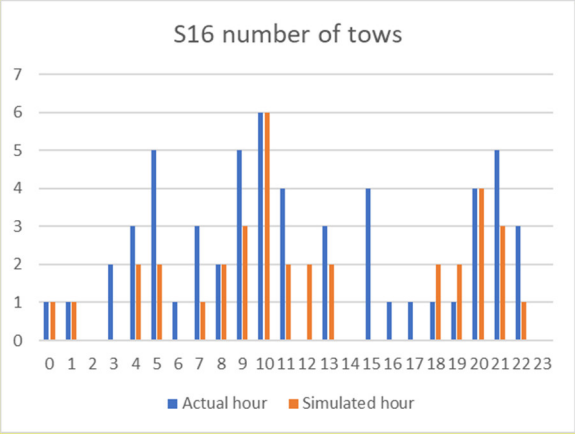
Comment:

"Towing is not represented fully in the Helios modelling."

"How many towing movements occur during 1st wave?"

Response:

As the core focus of this analysis is not on towing operations, towing is represented in the model to the extent that allows us to capture its negative impact on taxi times of other traffic. Comparison of actual hourly number of tows against simulated number of tows per hour (in our S16 baseline model) make us believe the model is fit for purpose with regards to impact of towing operations. It should be also noted that "fit for purpose" in context of fast time simulation has a different meaning to "indistinguishable from reality". Comparison of actual and simulated number of tows in S16 baseline model is provided in the graph below



Hourly number of tows simulated in S18 model is provided in the table below:

Hour UTC (S18)	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	Total
Number of tows (S18)	4	1	2	1	3	5	3	3	1	3	5	0	1	1	1	1	35

1.12 Bussing

Comment:

"Bussing activity is not represented fully in the Helios modelling"

Response:

Busses must give way to crossing aircraft and as such have no impact on aircraft taxi times, and therefore we do not believe that it is necessary to model bussing as part of this exercise. We understand that a bus which gets delayed due to a crossing aircraft may deliver passengers to the flight late, possibly causing late departure, however, this is an operational planning issue rather than airside capacity issue.

1.13 Stand allocation rules

Comment:

"…random scattering of aircraft stand allocations reduce productivity and increase costs. In addition, the stand allocations tend to 'go out of the window' during the operational day with frequent gate changes causing further disruption that is not transparent in the Helios modelling…"

Response:

Stand allocation rules in our model follow guidelines from the Stand Guide combined with statistical use of each stand based on historic data (full S16). The latest version of the airside model uses those parking positions actually used during the S17 design day.

For allocation of any new S18 services we use a ruleset with high level airline preferences for pier/terminal, however, these are subject to stand availability and are used in the model on a tactical basis rather than for strategic planning purposes. The model therefore provides a good match between allocated stands and those actually used in practice.

Taxi times

Comment:

1) *"Taxi time by apron area: 5G, South Apron etc are missing"*

2) *"The modelling output of taxi times shows an overall increase but a reduction on Piers 3 and 4. This does not seem possible without infrastructure changes on South Apron."*
3) *"I would expect to see a spike in the arrival taxi time between 0500 – 0700 as arriving aircraft end up joining the departure queue"*
4) *"Can you explain how the unimpeded taxi-time has been generated?"*

Response:

1) Please see slides 17 and 27 of the attached slidedeck.
2) The previous version of the presentation included stands grouped by Pier. The most recent version includes parking positions grouped by their respective location (e.g. Pier 1 North, Pier 3 South etc.). With the exception of stands around Pier 2, all other stand groups show an increase in average taxi out times between S17 and S18. We would like to note that calculation of taxi out times based on one day of operations (moreover broken down by stand groups) will necessarily lead in some cases to use of small samples of flights which are not significant enough to draw strong conclusions about taxi out times from each group of stands.
3) Slides 14 and 24 of the attached presentation show arrival taxi in times. Although the spike in the morning period is not sharp, a certain increase in taxi in times is visible compared to previous hours.
4) Unimpeded taxi time has been calculated as total taxi time minus runway delay minus other delays (incl. pushback delay, towing delay, pulling delay etc.)

1.14 PBZ stands/gates

Comment:

"Helios to confirm the detailed modelling assumptions for PBZ gates and stands. For example, how many stands are utilised for departures and arrivals throughout the day and to what extent has full utilisation been considered?"

Response:

PBZ stands are not being used in S17 design day but they are available during the S18 design day. Aircraft size restrictions apply where possible, but essentially any airline in the model can use the PBZ stands. 7 departures were simulated from PBZ stands during the S18 scenario.

1.15 S18 schedule

Comment:

"How has the forecast schedule been used?"

Response:

Flight schedule for the S18 model consists of the original S17 design day flight schedule increased by 36 services from the S18 forecast and one additional arrival in the 2200 UTC. S18 traffic profile has not been upscaled to hourly capacity declaration limits, but in periods where S18 schedule exceeded declared capacity a minimum number of flights have been moved to adjacent hours. The hourly profile for S17 and S18 arrivals and departures is shown in the revised slidedeck.

1.16 Runway delay

Comment:

"I would expect the runway delay to be closer to 20 minutes around the 0630 mark. Runway delay seems reasonable at the other periods."

Response:

Please see slides 11 and 21 of the attached slidedeck.

1.17 A-D-A separation

Comment:

"What A-D-A separation has been used in the model? "

Response:

The model has been updated to use 5.5NM A-D-A separation (previously running with 6.0 NM separation). This change allowed us to achieve maximum runway throughput of 48 movements per hour.