

IAA RESPONSE SUBMISSION

Consultation on Capacity Assessment at Dublin Airport – Helios Report

17 November 2017

Introduction

The Irish Aviation Authority¹ ('the IAA') welcomes the opportunity to respond to the Commission for Aviation Regulation ('the CAR') consultation on the Capacity Assessment at Dublin Airport. We have reviewed the report prepared by Helios Technologies Ltd ('the Helios Report') for the CAR and prepared our comments in response to the key issues arising from this detailed report.

Our response is structured as follows:

- In Section 1, we have outlined a set of general comments. These reflect our views in relation to the overall conclusions of the analysis carried out by Helios and what actions should be taken, considering these conclusions.
- In Section 2, we have outlined some specific comments in relation to the Helios report. These comments address specific statements in the Helios Report.

The Helios Report is a comprehensive and detailed body of work. It provides a useful "point-in-time" analysis of the constraints and limiting factors in relation to capacity at Dublin Airport. Its overall conclusions are concerning, if not unexpected; in effect the report confirms that **Dublin Airport is already operating at full capacity for long periods of the day, with little opportunity to relieve this situation in the short term.**

The IAA welcomes the CAR's initiative in commissioning this report. It is important now that the knowledge gained from this report and its underlying analysis is put to good use for the benefit of all stakeholders at Dublin airport and in particular travelling passengers. We look forward to seeing the CAR's conclusions post consultation. The IAA proposes that it is important that an action plan is put in place by the Dublin Airport Authority (daa), supported by or with input from the CAR to identify and resolve the identified constraints. This action plan should be developed in consultation with each of the operational stakeholders (as relevant) and be designed to release additional capacity in the short term, without additional aerodrome complexity.

This submission has been prepared by the IAA Air Navigation Services Provider (ANSP), which is responsible for the provision of safe, efficient and environmentally conscious air traffic management services (ATM) at Dublin Airport.

¹ The IAA is responsible for the provision of air traffic management services in Irish controlled airspace, safety regulation of civil aviation in Ireland and oversight of civil aviation security in Ireland. Full details available on www.iaa.ie

Section 1: IAA General Comments

- 1.1 The Helios Study is a significant and important piece of work. The IAA ANSP notes and agrees with many of the observations outlined in the report and many of the conclusions set out in Sections 9 and 10. The Report is further confirmation of the known congestion at Dublin Airport and provides further evidence that Dublin Airport is effectively operating a maximum capacity for extended periods of the day.
- 1.2 The Study has attempted to quantify the extent of the available capacity (or lack thereof) in each of the key components of airside and terminal operations (runway, taxiway, stand and passenger terminal capacity). This is a useful approach as it allows the CAR and other key operational stakeholders to determine which areas need to be considered priority for investments and which areas are operating efficiently, with capacity to spare at present.
- 1.3 The IAA ANSP welcomes the positive comments in the report with regard to airspace capacity and air traffic management operations at Dublin Airport. This is clear affirmation of the significant effort that the IAA has put in to ensure safe and efficient ATM operations at Dublin. We agree that airspace and ATM operations are not a limiting factor at Dublin Airport; yet the IAA as service provider to the aerodrome is significantly constrained in its operations by deficiencies and capacity deficits in other areas.
- 1.4 We note that the purpose of the report is to assist the CAR in determining Slot Coordination parameters at Dublin Airport for future seasons, in line with the CAR's statutory remit in this area. While this is important, we are also of the view that the key conclusions of the Helios analysis should be used more extensively, as it is now the most up to date analysis on all aspects of the airport system at Dublin (airside and passenger terminal operations).
- 1.5 With regard to the key results and conclusions of the report (in particular Sections 9 and 10), an urgent programme of work must be put in place by the daa, with support from the CAR to deliver the necessary infrastructure enhancements and modifications that will release additional capacity at peak times at Dublin Airport. This programme of work should include in particular work to relieve taxiway congestion, including Link 4 – junction of taxiways H1, F-inner, F-outer and F3. In addition the Helios Report has identified that *“the simplest short-term solution would be the construction of a new taxiway joining Link 6 with Runway 16-34...., and the construction of a new taxiway parallel to the existing TWY F”*. We also support Helios conclusion that *“it will be necessary to construct new stands to cope with increasing demand for narrow-body, wide-body and contingency stands.”*
- 1.6 The IAA strongly supports these recommendations. Any new taxiway infrastructure should aim to reduce taxiway complexity at Dublin Airport and simplify/ reduce restrictions. This is an important consideration when designing and developing new infrastructure. Consultation and discussion with key stakeholders such as the IAA and airline operators will ensure that the needs of users are fully considered.

- 1.7 As well as slot coordination at Dublin Airport, the CAR is also responsible for regulating airport charges and setting the price cap for Dublin Airport. Accordingly, it has an important role to play in ensuring that the daa delivers the necessary investments and infrastructure enhancements identified in the Helios Report to reduce the capacity constraints. The IAA is of the view that the CAR must be willing to provide a positive review (subject to appropriate regulatory analysis) of the daa's capex plans² for the next Dublin Airport price control, where those plans are designed to meet an identified deficiency from the Helios Report and facilitate improvements in capacity. Indeed the necessary programme of work should identify those priority investments which cannot wait until the full outcome of the CAR's price review. These areas should be reviewed in advance of the next price review, with clarity provided around investment profile and recovery. This should be designed to release additional capacity for Summer 2019 season, but must be planned and delivered in a manner which has minimal impact on operations at Dublin Airport.
- 1.8 The latest (September 2017) EUROCONTROL STATFOR analysis forecasts that terminal service units will grow at Dublin airport by on average 3.9% per annum between 2017 and 2023. Indeed, for 2018 alone, 6% growth is forecast. The IAA is of the view that these forecasts represent the potential growth based on demand, but that in reality there is little scope for real growth as a result of the capacity constraints clearly identified in the Helios Report. Therefore these STATFOR forecasts indicate the loss of traffic/ traffic foregone (and therefore passengers "lost") which will result from the failure to invest in capacity at Dublin Airport in recent years. Not only does this impact on the daa, but it also impacts on Irish business and exports, limits connectivity and passenger choice and risks an increase in air ticket costs, as demand exceeds supply.
- 1.9 The need for the parallel runway (North Runway) has been clearly made by the daa and plans remain in place to have this new runway (and associated taxiways) operational by 2021. However, there is a risk of delays to this project (legal challenges, noise regulations, construction delays) and therefore it cannot be assumed that aerodrome capacity problems will be resolved in 2021, by the proposed new runway.
- 1.10 Accordingly without investment in enhancements to the existing infrastructure and bearing in mind the forecast level of the demand growth, it is inevitable that one or a combination of the two outcomes below will occur (and indeed may already be occurring):
- (i) growth will be further constrained at Dublin Airport, particularly at peak times when demand is highest and passengers want to travel;

² Capex which facilitates improvements in safety must always be given first priority in our view. The purpose of the Helios Report was not to examine areas where safety improvements could be made. Accordingly there may be other priority investments which need to be given due consideration ahead of those investments which are designed to release additional capacity.

- (ii) delays will increase significantly if slots are allocated beyond capacity limits. This will lead to frustrations for all stakeholders but most particularly for passengers who suffer these delays. As well as leading to an increase in costs (delay costs), airline operators will move growth plans from Dublin to competitor locations, where capacity is available.

It is our view that these negative outcomes can be avoided or mitigated against with priority investment and enhancement to existing infrastructure.

- 1.11 There may an opportunity to deliver small levels of additional capacity through the implementation of A-CDM (Airport Collaborative Decision Making), a transition to 5-minute scheduling periods (as discussed in the Helios Report) and through divergent standard instrument departures off runway 28. However, in reality, these solutions will not solve the capacity shortages at Dublin Airport and do not hide the urgent need for infrastructure investment in taxiway and stand facilities in particular.
- 1.12 The IAA notes that the Helios Report has been careful to simply identify capacity deficits and not to necessarily be critical of existing infrastructure or the failure to adequately address infrastructure deficiencies to date. The IAA as service provider to the airport is well qualified to identify the core infrastructure deficiencies and the solutions which would relieve congestion and provide for improved through-put of traffic. We request that all key stakeholders at Dublin Airport have a full input into any action plans or investment plans which arise out of this analysis.
- 1.13 In conclusion, the Helios Report is further confirmation of known infrastructure deficiencies and capacity shortages at Dublin Airport. This situation cannot be allowed to continue any further. Urgent action must now be taken by the daa, supported by the CAR and in consultation with operational stakeholders at Dublin Airport to put in place a programme of action and key investments to release additional capacity and resolve current infrastructure deficiencies.

Section 2: Detailed Comments

This section sets out the IAA ANSP detailed comments on the Helios Report and references to relevant pages are included where appropriate.

2.1 EXECUTIVE SUMMARY - SPECIFIC IAA ANSP COMMENTS

Page iii – Approach to Study

Helios analysed capacity through the use of airside and passenger terminal building fast time simulation models and was based on the assumption that all elements of the airport system are dependent on each other, and the evaluation of available capacity therefore encompasses the interactions between all elements of the airport's infrastructure and services.

IAA ANSP Comment:

It is our view that this approach does not measure the effectiveness of airside operations - which are the only elements, which the IAA is responsible for.

Page iv – Runway and Airspace Capacity

Airspace capacity has not been quantified in detail, but the analysis undertaken identified that the structure of the airspace around Dublin does not accentuate airport delays. With the Point-Merge system in place the Dublin TMA is likely to be able to handle increases in traffic in the next few years.

IAA ANSP Comment:

The Point Merge System (PMS) has consistently proved its worth in the ability to accommodate arrival traffic over the past five years and it is reassuring that the Helios simulations consider that PMS will continue to be effective for the next five years.

Page iv - Taxiway and stand capacity

With the exception of peak periods, the taxiways can serve the traffic without delay.

IAA ANSP Comment:

The taxiway infrastructure had already been identified as a severe constraint. Therefore a general statement that no delay are caused 'except during peak period' is not sufficiently defined and can easily be challenged. Even a poor taxiway system will be able to handle low volumes of traffic; however, the key problem with the taxiway system at Dublin Airport is that there are a number of bottlenecks/ "hot-spots" which cause restrictions and limitations on overall efficiency. These restrictions might be mitigated to an extent through improved design, modifications and investment in new/ enhanced taxiways.

As this recent Summer (2017) has shown, peaks and troughs of operations are being replaced by high peaks and less-high peaks. Any one delay in any of these periods will impact subsequent slots and possibly across the day. The taxiway system is in need of significant improvement regardless of peak-time and off-peak volumes.

Page v - Scheduling limits and criteria

Runway holding delay, whilst the main source of airfield departure delay, does not capture all sources of delay that occur to aircraft on departure from Dublin. We have proposed that a broader additional departure taxi-time metric be adopted that includes all delays from pushback to runway entry.

IAA ANSP Comment:

This is a significant change to the metrics used by the operators and the daa - they use (reported manually or via ACARS) pushback to airborne as their departure taxi-time (AXOT) metric. We would agree with the Helios definition and this is a metric that we measure directly from the Ops Analyser module of the A-SMGCS - of course, the AXOT obtained is shorter than that stated (and reported to EUROCONTROL) by the airport.

As a general comment, it is important that consistent metrics are applied across the aviation system. Different metrics used to measure the same (or similar) areas of performance can lead to confusion and reduce the value of all of the metrics. We would welcome further discussion with the daa and airline operators around the appropriate metrics to use, while separately we are in discussion with EUROCONTROL around the appropriate metrics for the Single European Sky (SES) performance scheme reference period 3 (2020 – 2024).

Page v - Firebreaks

There are currently two firebreaks at Dublin Airport. A short third fire-break should be considered within one hour in the afternoon period between 1400 and 1900 UTC. The need for and protection of fire-breaks should be discussed with stakeholders and formalised in the capacity declaration.

IAA ANSP Comment:

The IAA ANSP agrees with the Helios analysis and considers that fire-breaks are an important measure for ensuring efficient use of the aerodrome infrastructure and potentially avoiding the risk of delays from peak periods extending across the full day.

If the existing schedules are maintained, the third firebreak could only be accommodated at approx. 19:00 UTC. In addition, the IAA is of the view that an arrival fire-break should also be considered for the morning peak period.

2.2 MAIN BODY OF DOCUMENT - SPECIFIC IAA ANSP COMMENTS

Page 12 – 1.1 General

Following the Summer 2017 Dublin Airport Coordination Committee meeting, during which all airline participants voted against the proposed capacity increases.....

IAA ANSP Comment:

As a point of clarification, the IAA ANSP (and the daa) in fact voted FOR the proposed increase as it was considered the runway and airspace could accommodate the 37ph departure rate.

Page 14 – 1.2 Scope

- Assess capacity implications when coordinating to 5-minute periods.

IAA ANSP Comment:

Reduction in the co-ordination period naturally results in reduction in potential for crowding at the end of a particular demand period.

Page 16– 2.2 Modelling Approach

Both (simulation) models were calibrated against available historic records and offered for review to all stakeholders.

IAA ANSP Comment:

Helios did consult with the IAA ANSP during this process and the IAA was broadly satisfied with the tools used.

Page 16– 2.2 Modelling Approach

Development of S18 forecast model. For the purpose of assessing the impact of the additional services forecast for S18, the S17 flight schedule was enlarged by an extra 37 flights.

IAA ANSP Comment:

These 37 'extra' flights were already part of the S2017 determination but were not taken up by the operators in 2017 - therefore, the forecast carried out by Helios would reflect the most comprehensive demand.

Page 21 – 3.1 General

Runway 16-34 is used during cross-wind conditions and occasionally during the morning peak periods of runway 10-28 operations

IAA ANSP Comment:

Dual runway operations (RWY28/34) is actually in place for over 50% of the (monthly, annually) morning peaks. If dual runway operations was not put in place by the IAA or was in some way restricted, then the ability to efficiently meet demand would be compromised in certain scenarios.

Page 23 – Figure 2 (Maximum Runway capacity based on S17 and S18 Fleet Mix)

IAA ANSP Comment:

The 'interesting bit' is the point at which departures are introduced and the arrival rate consequently falls - If the departures had been put on the y-axis it would have made the effect of increasing arrivals during the morning departure peak easier to assess.

Page 23 – Runway 10/28 capacity analysis

Figure 3 and Table 5 below show the impact of an increased share of heavy aircraft in the fleet mix. The decrease in capacity is clearly visible up to the point where heavy aircraft account for 30% of the fleet mix.

IAA ANSP Comment:

This analysis is noted.

Page 26 – Runway 28 sensitivity to changes in peak period

Different patterns of activity can arise on different days of the week but the number of movements in the first morning wave is (almost) always close to or at the scheduling limits.

IAA ANSP Comment:

True - the morning departure wave remains largely unchanged by day (or even month). This is an indication of the consistent/ continued high level of passenger and airline demand at peak times. Dublin airport is constrained at peak times which is a loss to the daa, the Irish economy and restricts choice for travelling passengers.

Page 27 – Figure 7 – Sensitivity of R28 departure ground delay.....

IAA ANSP Comment:

Note the Column 'Runway delay' shows the delay experienced while the aircraft is queueing for runway entry, rather than delay on the runway.

Page 30 – Airspace Capacity

It can therefore be concluded that the airspace structures around Dublin do not pose a significant capacity constraint and thanks to the Point Merge system should be able to efficiently handle potential increases in traffic.

IAA ANSP Comment:

Agreed that the Point Merge System is a key element is efficiently sequencing arrivals.

Page 32 – 4.2 Taxiway Capacity

A key operational concern is the taxiway congestion experienced by arrivals flights in the early morning peak (0600-0800 hours UTC) as these are impeded by aircraft queuing at the line up points. This applies both to operations on R28 and R10. Further congestion can be introduced by early arrivals, which often have to wait on a taxiway or other hold position before a stand becomes vacant.

Another specific operational factor at Dublin Airport relates to the number and direction of tows in the morning period. This can slow down the traffic taxiing for departure and complicates the flow of traffic on the ground as the towed aircraft are moving in the opposite direction to those aircraft taxiing for departure.

Moreover, aircraft waiting outside the cul-de-sac area complicate the flow of other traffic, limiting access to the runway.

Taxiway capacity is a difficult metric to measure and cannot be quantified by a single figure.

IAA ANSP Comment:

These issues are a very significant cause of delays and congestion but the IAA ANSP is already very aware of the associated taxiway infrastructure limitations. The factors contributing to these delays and congestion are complex and difficult to forecast (e.g. weather, location of NAT tracks, efficiency of departures, airline operator, and contribution of neighbouring ANSPs). This can mean it is difficult to estimate the actual capacity deficiency; however, it is clear that additional taxiway and stand infrastructure would assist in resolving the problem.

Page 33 – Consideration of options to improve capacity

IAA ANSP Comment:

All of the options shown here are already being developed in conjunction with the stakeholders through such fora as the DAOPG, RPIG and LRST and are part of CAPEX submissions to CAR. The important thing now (and noting the conclusions of the Helios Report) is that capex investments are approved and the process to deliver additional capacity and reduce constraints can be accelerated.

Page 41 – 5.1 - Analysis of fire-breaks - general

There are no formally defined fire-breaks in the Capacity Declaration of Dublin Airport. As such, nothing in the runway parameters prevent operators filling all hours in the declaration to the maximum applicable limits.

IAA ANSP Comment:

Firebreaks are 'by chance' at the moment and generally follow the first, second and third rotations. The IAA ANSP supports the development of strategic fire-breaks.

Page 46 – 6.4- Summary

Decrease in delays is likely to improve OTP performance (departure-defined)

IAA ANSP Comment:

Future change from OTP to OTA (arrival-defined) plus A-CDM may have a significant effect on this.

2.3 ASSESSMENT OF RESULTS - SPECIFIC IAA ANSP COMMENTS

Page 70 - Implications for Dublin capacity - Airfield and airspace

The assessment of the capacity of the various elements of airside infrastructure revealed these key points:

The maximum achievable runway throughput on runway 10-28 is 24 arrivals in arrivals mode, 41 departures in departures mode and 48 flights in mixed mode. These limits are sensitive to operating fleet mix and reduce by approximately 2 movements (in mixed mode) for every 15% increase in the share of heavy (Code E/F) aircraft in the fleet mix.

IAA ANSP Comment:

Noted – the taxiway infrastructure is the defining capacity constraint. The IAA notes that the runway throughput itself (and hence capacity) could be enhanced by developing diverging standard instrument departures (SIDs) which would enable shorter departure intervals to be achieved. The IAA understands that this approach is not favoured at this time by the daa due to potential concerns around the impact on local communities (noise). Notwithstanding this, the IAA is of the view that this should be explored in further detail, considering the ICAO balanced approach to noise management.

The arrivals capacity declaration in some hours (notably the evening peak) exceeds the simulated runway throughput envelope. This does not mean the present declaration is incorrect, it just indicates that arrivals above the maximum arrivals throughput will be accommodated with delay.

All declared departures limits in the capacity declaration are within the simulated runway throughput envelope. However, adding extra flights into hours which are at, or close to the declared limits will incur extra delay for flights operating in these hours. Sensitivity analysis with the morning departures wave indicates that adding a flight into this period will lead to an increase in departure ground delays of between two and three and half minutes, depending on whether the added flight is an arrival or departure and whether it is narrow body or wide body aircraft.

IAA ANSP Comment:

Noted and agreed. This is further evidence that Dublin Airport has effectively reached full capacity.

With the exception of peak periods, the taxiways can serve the traffic without causing delays. During the morning peak period on Runway 28 operations, queues of departing aircraft may complicate traffic flow around Pier 3 South and Pier 4.

IAA ANSP Comment:

The taxiway infrastructure is sub-optimal and congestion can and does occur outside 'peak' hours. An improved taxiway system would facilitate faster access to the runway and reduced taxi-out times as well as giving controllers improved options for managing traffic at all times.

A simplification of taxiways/ reduction in taxiway restrictions would be of benefit to all stakeholders at the airport (as long as this is designed to ensure no compromise to safety).

Cul-de-sac stand arrangements add delay to arriving aircraft when another aircraft is departing from cul-de-sac area. The arriving aircraft, which is waiting outside the cul-de-sac also complicates taxiing of other aircraft.

IAA ANSP Comment:

Noted and agreed.

Overall stand capacity is at its limits during the morning peak period. Although additional flights could be accommodated in this period, it would result in either a reduced number of resilience stands, or increased towing.

IAA ANSP Comment:

Noted. This is further evidence that Dublin Airport is effectively operating at maximum capacity for extended periods of the day.

The number of wide body contact stands is close to the capacity limits during the morning wide body peak period. Additional flights could be accommodated, but would result in increased towing. As these aircraft will have to be towed north, in a direction opposite to the direction of aircraft taxiing for departure, extra towing operations are likely to complicate ground movements and possibly add to the overall ground delays.

IAA ANSP Comment:

Noted and agreed. The option of increased towing would in effect be a “sticky-plaster” solution to an identified problem.

The structure of the airspace around Dublin does not accentuate airport delays. Thanks to the Point-Merge arrangements, the Dublin TMA is likely to be able to handle any desired increases in traffic in the next few years.

IAA ANSP Comment:

Noted and agreed.

ENDS