

**Decision on Summer 2020 Coordination
Parameters at Dublin Airport**

Commission Paper 7/2019

26 September 2019

Commission for Aviation Regulation

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1. Executive Summary

- 1.1 The Commission for Aviation Regulation is the authority charged with declaring coordination parameters at coordinated Irish Airports. In this paper we set out our Decision on the Dublin Airport parameters for the Summer 2020 season. The full set of coordination parameters is set out in the Appendix.
- 1.2 Our Decision on the Summer 2020 parameters is as follows:
- Relative to the Summer 2019 runway limits, increase the Total movement cap by 1 in the hours 0800, 1100, 1400, and 1500, and 1800 hours and reduce the Total movement cap by 1 in the 0700 hour.¹ This is a net increase of 4 Totals.
 - Increase the Departures limit by 1 in the 1400 hour
 - Maintain the 10 minute runway limits from Summer 2019.
 - Maintain the Terminal limits from Summer 2019.
 - Maintain the existing hard parameter on stands, and referral parameters on Terminal 2 Check-in desks and US Preclearance.
- 1.3 This is in line with the Draft Decision we published on 4 September. We received seven responses to that Draft Decision.
- 1.4 Of these responses, six of them opposed the proposed adjustments to the hourly runway limits, while Dublin Airport supported them. No respondent opposed any of the other proposed parameters. We did not receive new arguments or evidence to change our view that the parameters we proposed at that time are appropriate, having regard to our objectives in this process. In order that it can be read as a standalone paper, we have incorporated much of the analysis and text from the Draft Decision paper into this document and subsequently addressed the points raised in responses.
- 1.5 In arriving at our Decision, we examined and relied on a large body of evidence. We commissioned fast time simulation modelling of the airfield to assess the scenario relating to potential adjustments to the runway limits. This work was carried out by Helios Technology Ltd (Helios). The assessment takes the form of a comparison of a range of airfield metrics. The results from this assessment were shared with the Coordination Committee and published on our website alongside the Draft Decision.
- 1.6 We considered other evidence with which we have been presented, or which we sought. This evidence includes modelling work conducted by Dublin Airport, and its consultants NATS and ARUP. It also includes evidence on current performance metrics of various parts of the airfield

¹ All references to times or hours are in UTC 24 hour format. Where a reference is made to a particular hour, such as the 0500 hour, this refers to the time period one hour in length commencing from the stated time. To give an example, the 0500 hour spans from 5 am to 6 am UTC. In each hour, a requested departure slot must not breach the hourly Departures limit or the hourly Totals limit, while a requested arrival slot must not breach the hourly Arrivals limit or the hourly Totals limit.

provided by Dublin Airport.

- 1.7 This Decision follows an extensive iterative process of engagement over the past number of months between stakeholders. This includes consultation between the Commission, Helios, and the Coordination Committee on the fast time simulation modelling conducted.
- 1.8 The Coordination Committee comprises Dublin Airport, the Irish Aviation Authority (as Air Service Navigation Provider), and is open to all airlines operating at Dublin Airport.

2. Background

Legislation

- 2.1 Section 8(1) of the Aviation Regulation Act, 2001, states that the Commission is the competent authority in Ireland for the purposes of Council Regulation (EEC) No. 95/93, as amended by Regulation (EC) No 793/2004 (“the Slot Allocation Regulations”). The Commission is therefore responsible for:
- The designation of the Coordination status of Irish airports.
 - Appointing a qualified schedules facilitator or coordinator, as appropriate, at airports which have been designated as Schedules Facilitated or Coordinated.
 - The declaration of coordination parameters at Coordinated airports, taking into account relevant technical, operational and environmental constraints.
 - Deciding whether to approve Local Guidelines proposed by the Coordination Committee.
- 2.2 Dublin Airport is designated as Coordinated by the Commission; Airport Coordination Limited (ACL) is the appointed coordinator. No other airport in Ireland has been designated as either Schedules Facilitated or Coordinated.
- 2.3 Under Regulation No. 95/93, one of the roles of the Coordination Committee is to advise on appropriate coordination parameters.
- 2.4 Article 6(3) of the Slot Allocation Regulations details the required interaction between the Commission and the Coordination Committee:
- “The determination of the parameters and the methodology used as well as any changes thereto shall be discussed in detail within the coordination Committee with a view to increasing the capacity and number of slots available for allocation, before a final decision on the parameters for slot allocation is taken. All relevant documents shall be made available on request to interested parties.”*
- 2.5 Subsequent sections of this paper detail how this requirement was met by the Commission.

Stakeholder Engagement Process

- 2.6 To inform the decision on the parameters, we engaged Helios to carry out an assessment using the Commission’s fast time simulation airfield model, previously developed by Helios, which has been used for the last number of seasons.
- 2.7 In May 2019, Helios contacted Coordination Committee members, setting out a proposed approach and seeking comment. Helios then re-validated the model; this involves simulating the flight schedule on a particular day and comparing the simulated airfield metrics (such as taxi time durations) with actual observed metrics on the same day. If necessary, adjustments are made to the model and the process is repeated until a satisfactory result is obtained.
- 2.8 Airlines were asked to submit growth plans for Summer 2020 to Airport Coordination Limited (ACL). Analysis carried out by ACL indicated that significant increases in the runway limits

would be required to ensure that these plans could be fully facilitated.

- 2.9 Dublin Airport proposed a number of changes to the hourly runway limits, informed by the analysis carried out by ACL, but reduced in scope. The net impact of these changes was an increase of 4 Totals. This set of changes, summarised in Table 2.1, was termed the Summer 2020 Wishlist.

Table 2.1: Summer 2020 Wishlist

UTC Hour	Departures	Arrivals	Totals
0700			-1
0800			+1
1100			+1
1400	+1		+1
1500			+1
1800			+1
Total	+1		+4

- 2.10 Dublin Airport commissioned NATS to estimate the effect of changes to the runway limits on runway holding delay, with reference to whether a 10 minute runway holding delay criterion is exceeded. It also commissioned ARUP to carry out airfield simulation modelling.
- 2.11 Information provided by airlines was used to help construct a potential flight schedule on a busy day in Summer 2020, “the S20 Schedule”. The S20 Schedule was based on the merging of several busy days from Summer 2019, with expected growth in Summer 2020 then added in. The schedule allowed us to test out the likely impact of implementing the Summer 2020 Wishlist, should the demand materialise as expected.
- 2.12 The S20 Schedule was used by both Helios and ARUP for the airfield modelling. To isolate the effect of our decision, the Commission instructed Helios to coordinate the S20 Schedule according to both the proposed Summer 2020 Wishlist runway limits, and alternatively the current Summer 2019 runway limits. Helios then simulated both scenarios using the airfield model and compared the results, in order to identify the effect of implementing the S20 Wishlist. Comparisons were provided between simulated taxi times, ground delay and runway holding delay. No changes were made to the current minimum aircraft separations in the Helios model.
- 2.13 No other changes were proposed relative to the Summer 2019 limits on terminals or referral limits (except updating the stand count to reflect changes since Summer 2019).
- 2.14 The initial meeting of the Coordination Committee took place on 7 August 2019. Ahead of the initial meeting, Helios circulated the simulation modelling results. Dublin Airport also circulated various pieces of analysis and modelling results to Committee members ahead of the initial meeting, namely:
- The results of simulation modelling carried out for Dublin Airport by NATS in relation to runway holding delay with the proposed S20 Wishlist limits.
 - Simulation modelling carried out for Dublin Airport by ARUP.

- An update on actual airfield performance during Summer 2019, prospective projects expected to be delivered for Summer 2020, and potential operational improvements which may be in place for Summer 2020.
- An update from ACL containing an overview of Summer 2019 to date and details of the full collated wishlist demand for Summer 2020.
- Proposed coordination parameters for Summer 2020.

2.15 The Coordination Committee met again on 21 August to arrive at its advice for the Commission.

Coordination Committee Vote

2.16 Following the presentation of all materials circulated by the respective parties, Coordination Committee members voted on the proposed parameters. Voting rights for Committee members are set out in the Coordination Committee Constitution. A set number of votes are allocated to Dublin Airport and the IAA ANSP, with the rest allocated to airlines based on the number of movements flown at Dublin in the preceding year. Only those present can vote. The formal advice from the Committee is published alongside this paper.

Table 2.2: Coordination Committee votes on proposed changes to hourly runway limits*

Member	Votes	0700	0800	1100	1400	1500	1800
Aer Lingus	283	✓	✓	X	X	X	X
Air France	23	X	X	X	X	X	X
BA City Flyer	24	✓	✓	X	X	X	X
British Airways	33	✓	✓	X	X	X	X
CityJet	25	✓	✓	X	X	X	X
Daa	40	✓	✓	✓	✓	✓	✓
Emirates	16	-	-	X	X	X	X
IAA	20	X	X	X	X	X	X
Iberia Express	13	-	-	-	-	-	-
Lufthansa	29	-	-	-	-	-	-
Ryanair	352	X	X	X	X	X	X
Stobart	96	X	X	X	X	X	X
TUI	14	-	-	X	X	X	X
Turkish Airlines	16	-	-	-	-	-	-
United Airlines	17	-	-	✓	✓	✓	✓
For		404	404	57	57	57	57
Against		490	490	885	885	885	885
Abstain		106	106	58	58	58	58

Source: Coordination Committee. Totals may not tally exactly due to rounding of voting rights.

*The 1400 hour includes both the additional Total and additional Departure

2.17 The advice of the Committee is therefore to not implement any aspect of Dublin Airport's proposal, instead rolling forward the Summer 2019 runway limits.

2.18 The Committee then voted on Dublin Airport's proposal to roll forward the Summer 2019 Terminal, Stand, and Referral limits.

Table 2.4: Coordination Committee votes on proposed Terminal, Stand, and Referral limits

Member	Votes	Terminal	Stands	Check-In	Preclearance
Aer Lingus	283	✓	✓	✓	✓
Air France	23	✓	✓	✓	✓
BA City Flyer	24	✓	✓	✓	✓
British Airways	33	✓	✓	✓	✓
CityJet	25	✓	✓	✓	✓
Daa	40	✓	✓	✓	✓
Emirates	16	✓	✓	✓	✓
IAA	20	✓	✓	✓	✓
Iberia Express	13	✓	✓	✓	✓
Lufthansa	29	-	-	-	-
Ryanair	352	✓	✓	✓	✓
Stobart	96	✓	✓	✓	✓
TUI	14	-	-	-	-
Turkish Airlines	16	✓	✓	✓	✓
United Airlines	17	✓	✓	✓	✓
For		957	957	957	957
Against		0	0	0	0
Abstain		43	43	43	43

Source: Coordination Committee

2.19 The advice from the Coordination Committee is therefore to implement the terminal, referral and stand limits proposed by Dublin Airport.

Draft Decision

2.20 The final opportunity for input was a two week public consultation carried out by the Commission, in which we sought responses to our Draft Decision. The Draft Decision was published on 4 September 2019, with the deadline for responses on 18 September 2019.

3. Airfield Coordination Parameters

- 3.1 The Commission’s Decision is to implement the S20 Wishlist adjustments to the hourly runway limits, as set out in Table 3.1. We have made this Decision having objectively studied the evidence, which suggests that there is no overall material impact likely to result from implementing the proposed adjustments. On the other hand, the adjusted limits will better accommodate the expected demand in Summer 2020. Given that our role under the Slot Regulation requires us to balance these two factors, it is clear that implementing these adjustments is the appropriate decision.
- 3.2 We note that, other than Dublin Airport, respondents were not supportive of these adjustments. However, these responses did not provide new evidence or arguments which would lead us to conclude that we should revise our Draft Decision, having regard to our role and objectives in this process. We discuss these responses in detail below.
- 3.3 This Decision is made in the context of our role under the Slot Regulation. As always, we make this decision subject to Dublin Airport satisfying all requirements of the IAA SRD as safety regulator.

Table 3.1: Changes to runway limits from Summer 2019

UTC Hour	Departures	Arrivals	Totals
0700			-1
0800			+1
1100			+1
1400	+1		+1
1500			+1
1800			+1
Total	+1		+4

- 3.4 We retain the stand parameter as a hard constraint given the continued excess demand for stands at certain times. Where demand for stands exceeds supply, movements are referred to Dublin Airport for detailed assessment. If the issue cannot be resolved, a slot will not be allocated.
- 3.5 We do not make any changes to the 10 minute runway limits. These are necessary to ensure that the traffic profile remains relatively smooth across the hours, avoiding excessive bunching which leads to increased ground delay.

Helios Airfield Modelling

- 3.6 The model validation process involves simulating the operation of a given flight schedule and comparing the results against the actual operation of the flight schedule. The day used was the 31 May 2019, as on this day 100% of operations used Runway 28. Therefore, the benefit of dual runway departures during the first wave would not be implicitly built into the modelling.
- 3.7 The simulated metrics (taxi out times, runway throughput, counts of aircraft coming on block, off block, lifting off and touching down) show a close match with the actual data both in

magnitude and daily profile. Across the day, the difference between the average simulated and average real taxi out time is 28 seconds, with the simulation generating slightly higher taxi times than were observed in reality. This again demonstrated the ability of the model to accurately replicate the real operation of a given flight schedule.

- 3.8 Efficient towing of aircraft occurs in the model. Taxiway, towing, runway, and runway exit usage restrictions and patterns have been implemented in the model. Given the close match in the model validation outputs, it is our view that no significant airfield capacity affecting element has been omitted from the model.
- 3.9 For the purposes of Helios modelling of the S20 Schedule, taxi out time measures the time elapsed from the aircraft coming off blocks until it crosses the runway stopbar to begin its take-off roll. Departure ground delay is the accumulation of all delay experienced in the same period, i.e. all components of taxi-out time other than unimpeded taxi-time. The estimated effect of proposed airfield capacity increases on these two closely related metrics is, in our view, the best way to assess the physical and operational ability of the airfield to deliver the flight schedule.
- 3.10 There are 14 new movements in the forecast S20 Schedule. Most of these movements could be accommodated at the times requested without any changes to the runway limits. To isolate the effect of a decision to implement the Summer 2020 Wishlist relative to maintaining the Summer 2019 limits, we asked Helios to simulate the S20 Schedule coordinated according to the S20 Wishlist scenario and separately according to a baseline scenario in which no changes are made to the limits. This process isolates the effect of a decision to increase the parameters.
- 3.11 The S20 Schedule implies a 1.8% growth in peak summer movements relative to the Summer 2019 busy day. Most of these movements could occur at the scheduled time under the S19 limits scenario, with the exception of 2 arrivals and 3 departures. We have observed a general pattern whereby airlines accept sub-optimal slots (whether in relation to timing, schedule fragmentation, or both) in order to meet demand for an operation. In order to capture this trend, our baseline scenario assumes that this redistribution effect occurs, with these new services operating at the nearest available time in the simulation.
- 3.12 Table 3.2 summarises the results of the simulations overall and in terms of local averages across various parts of the day. Further details are set out in the Helios report where the daily profile under the respective limits is set out.

Table 3.2: Taxi out Duration

Time (UTC)	S20 Wishlist scenario	S19 limits scenario	Difference
Average (0500-0730)	00:19:11	00:19:09	+ 00:00:02
Average (0730-1400)	00:16:46	00:16:49	- 00:00:03
Average (1400-1900)	00:15:43	00:16:03	- 00:00:20
Average (1900-2359)	00:12:44	00:12:52	-00:00:08
Daily average	00:16:26	00:16:34	- 00:00:08
Peak average	00:26:18	00:25:59	+ 00:00:19

Source: Helios.

Average times are based on a rolling 10 minute window. Peak times refer to the window with the highest average value. Values

are in hours, minutes and seconds.

- 3.13 In summary, relative to maintaining the Summer 2019 limits, the S20 Wishlist is expected to lead to:
- No material impact on taxi-out times on average across the day.
 - No material impact on first wave departures, and consequently no material impact on the peak daily taxi-out time.
 - Increased taxi-out time in the 1500 hour, with the difference peaking at 2 minutes within that hour.
 - A reduced redistribution effect; i.e. with the newly available Totals we expect that this will reduce the pressure on adjoining hours to a certain extent. In the simulation, this can be observed in particular in the 1400 and 1900 hours.
 - No significant changes for arriving aircraft.

Other Modelling

- 3.14 As has occurred in previous seasons, Dublin Airport commissioned NATS to assess the impact of the proposed changes in runway parameters. NATS assesses whether the runway alone is capable of delivering a theoretical schedule, whereby the traffic in each hour fills the proposed runway limits, without breaching a 10-minute runway holding delay criterion. The Helios and ARUP modelling includes the runway, taxiways and apron whereas NATS assesses the runway only. However, there are a number of methodological differences between ARUP and Helios. Most notably, ARUP take taxi speeds directly from ground radar data as opposed to Helios' use of standard taxi speeds (adjusted if necessary through the validation process), and Helios' modelling of the Terminal Manoeuvring Area (TMA) and Point Merge generates a degree of arrival airborne delay.
- 3.15 NATS modelled the S20 Wishlist parameters and the 10-minute delay criterion was not breached. A 10-minute delay criterion, off Runway 28, was previously agreed among the Coordination Committee as the cut-off point beyond which further capacity increases should not be implemented.
- 3.16 ARUP compared the S20 Schedule with the S19 Schedule, estimating a substantial difference in the late afternoon which peaked at around 5 minutes at 1700. This is a year-on-year comparison, rather than an estimate of the effect of adjusting the runway limits as carried out by Helios. Subsequently, ARUP simulated the S20 Schedule against the same baseline as Helios. In this comparison, in the afternoon period there is a substantial difference in the absolute taxi-out values despite simulating the same schedules.
- 3.17 Given that both models produce similar results during the morning departures peak when there are very few arrivals, we believe that this difference is primarily due to Helios' modelling of the TMA and Point Merge generating arrival airborne delay, which in turn can allow for departures to be served more flexibly. On the other hand, while there is a difference in the taxi-time values between ARUP and Helios, there is little difference in the comparative values across the two scenarios, as it is present in both simulations and consequently nets off. Ultimately, the ARUP simulation showed a similarly small impact from implementing the S20

Wishlist relative to rolling forward the S19 limits.

Taxi Out times, delay minutes and On Time Performance (OTP) in Summer 2019

- 3.18 It is important to also consider recent observed taxi time and OTP trends, together with the reasons underlying these trends. Table 3.3 shows average taxi times for runway 28 operations in Summer 2018 and Summer 2019.

Table 3.3: Average Taxi Times in Summer 2019 and Summer 2018, Runway 28

	Taxi out		Taxi in	
	Summer 2018	Summer 2019	Summer 2018	Summer 2019
Overall	15:21	16:04	07:42	08:20
Pier 1	15:46	16:26	06:47	07:20
Triangle	13:48	14:37	04:49	05:00
5G	13:35	13:31	07:13	07:44
Pier 2	14:58	15:13	06:35	07:00
Pier 3	15:18	16:02	09:26	09:53
Pier 4	15:21	16:32	09:56	10:47
South Apron	16:57	17:13	08:54	10:50
Central Apron (118R – 120C)	14:29	15:41	05:44	06:14

Source: Dublin Airport.

Data in minutes and seconds, collected from 1 April - 21 August

- 3.19 Average taxi-out times to Runway 28 in Summer 2019 have increased by 43 seconds. Average taxi-in time from runway 28 has increased by 38 seconds from Summer 2018.
- 3.20 Taxi out times to runway 10 are typically 4-5 minutes higher than runway 28, while taxi in times are lower. Relative to Summer 2018, in Summer 2019 an increase of 47 seconds has been observed for aircraft taxiing out to Runway 10.
- 3.21 Table 3.4 shows OTP overall and by pier/apron area for Summer 2018 and Summer 2019 to end August.

Table 3.4: On Time Performance by Pier at Dublin Airport

	Summer 2018	Summer 2019
Overall*	67.7%	66.7%
Pier 1	63.0%	65.3%
Triangle	76.2%	69.5%
Apron 5G	69.5%	70.4%
Pier 2	69.9%	68.0%
Pier 3	69.1%	68.1%
Pier 4	68.0%	63.7%
South Apron	76.4%	69.8%

Source: Dublin Airport.

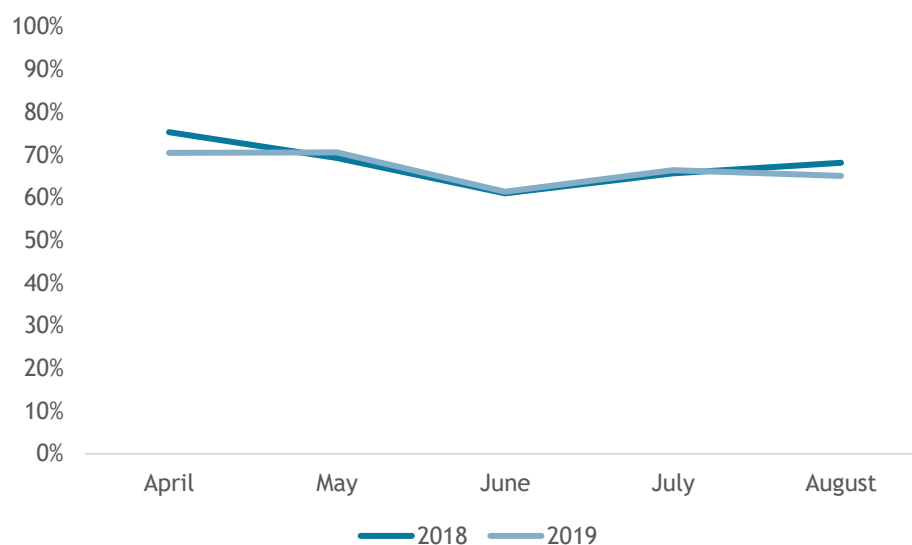
Calculated from April to August

*Includes MRO and West Apron

- 3.22 Following on from a notable fall between Summer 2017 and Summer 2018, there has been a 1% decline in OTP in Summer 2019. This has been driven by a fall in April and August, which

was partially counterbalanced by a marginal improvement in May, June, and July.

Chart 3.1: OTP by Month in Summer 2018 and Summer 2019



- 3.23 OTP is driven by a wide range of factors controlled by a number of stakeholders, including the airport, airlines, ground handlers and air traffic control. Furthermore, OTP does not consider the extent of or reason for a delay; if a movement comes on/off blocks within 15 minutes of schedule it is considered on time, whereas any time outside this window is considered not on time regardless of the cause, or whether the delay was 16 minutes or several hours. Thus, in isolation, OTP is not a particularly reliable indicator of the ability of the airfield to deliver a given schedule. To consider this further we look at total delay minutes relating to movements to/from Dublin Airport, and the reason for the delay as per the IATA standard delay codes.²
- 3.24 Overall, the total number of delay minutes relating to movements to/from Dublin Airport has broadly held steady at Summer 2018 levels, with a 2% reduction in arrival delay minutes being balanced out by a 2% increase in departure delay minutes.
- 3.25 En-route Air Traffic Control and Rotational delay continue to be by far the most significant causes of delay, although there has been a notable reduction in the quantum of delay caused by en-route ATC. In terms of the counterbalancing increases since Summer 2018, there has been a significant increase in delay attributable to Code 89 (Departure Airport Restrictions including Air Traffic Flow Management), and Code 16 (Passenger Convenience), for both departures and arrivals. Table 3.6 sets out the change in delay minutes directly attributable to operational or infrastructural issues at Dublin Airport.

²<https://www.eurocontrol.int/sites/default/files/content/documents/official-documents/facts-and-figures/coda-reports/standard-iata-delay-codes-ahm730.pdf>

Table 3.6: Dublin Airport Related Delay Minutes

	Departures*		Arrivals**	
	Delay minutes	% of Total delay	Delay minutes	% of Total delay
Summer 2018	94,463	10.7%	35,433	5.2%
Summer 2019	114,525	12.7%	29,956	4.5%
Change	+ 21%		-15%	

Source: Dublin Airport. Calculated from April to end August for comparability between both seasons.

*Codes: 87 (airport facilities) and 89 (restrictions at airport of departure).

** Codes: 83 (ATC restriction at destination), 84 (ATC restriction due to weather at destination), 87 (airport facilities) and 88 (restrictions at airport of destination). Codes 83, 84, 88 are included to match code 89 for departure delay.

- 3.26 In absolute terms, there has been an increase in Dublin Airport related delay minutes for departures. This is generated solely by Code 89 delay referenced above; in fact there has been a marginal decrease in Code 87 delay (Airport Facilities) for departures. In terms of the proportionate contribution to overall delay for departures, the increase in Code 89 has caused this to increase from 10.7% to 12.7%.
- 3.27 In absolute terms, there has been a decrease in Dublin Airport related delay minutes for arrivals. This is driven by a combination of reductions in codes 87 and 83 for arriving aircraft. In terms of the proportionate contribution to overall delay for arriving aircraft, this has driven a reduction from 5.2% in Summer 2018 to 4.5% in Summer 2019.
- 3.28 It should be noted that total delay minutes will increase if there are more movements, unless there is a proportionately larger decrease in delay minutes per movement. At a per movement level, given the 2.6% increase in movements, departure delay minutes per movement has decreased very slightly, while arrival delay minutes per movement has fallen from 12.7 to 12.2 minutes.

Infrastructural developments

- 3.29 There are a number of infrastructural developments which are expected to be completed ahead of Summer 2020, specifically:
- RW 16/34 surface crossing for vehicle access to the West Apron.
 - Pier 2 Vehicle underpass.
 - West Apron redesign to provide additional stands.
 - Redevelopment of the MRO stands, Hangar 1/Hangar 2 stands, and stand 137 on the North Apron.
 - Decommissioning of remaining Aircraft Park Charlie stands due to construction of the North Runway (expected April 2020).
- 3.30 Where relevant (i.e. where they relate to aircraft movements as opposed to vehicle traffic), these changes have been implemented in the Helios simulations.
- 3.31 There are a number of other airfield projects which are expected to be on-site during Summer 2020. In general, we do not expect that these projects would have a material impact on the airfield metrics discussed above, either due to the works being relatively minor and/or can be

easily phased around the flight schedule, or being distant from heavily trafficked areas. We see two potential exceptions, namely:

- Phases 2 and 3 of the RW 16/34 overlay and associated works.
- The PACE taxiway works (including the extension and dualling of Taxiway F, realignment of A, extension of Links 3 and 6).

- 3.32 Dublin Airport has developed a phased plan for the RW 16/34 overlay and associated works. Phase 2 encompasses, on a further phased basis, the rehabilitation of RW 16/34 between Taxiway P1 and Taxiway H1, as well as Taxiways P1, W2, and W3. Dual runway departures will remain available during Phase 2 in the Summer 2020 season (i.e. March and April). These works are set to commence in November 2019 and be completed in April 2020, therefore we do not expect Phase 2 to impact operations during the peak summer. We did not close any of these taxiways in the Helios model on the basis that the individual closures will last a number of weeks and consequently should not be built into the modelling to inform a decision on the runway parameters across the whole season.
- 3.33 Phase 3, which is intended to last from May to September, will have a significant impact on first wave departure taxi-out times as dual runway operations will be unavailable. We do not model operations from Runway 34 to ensure that no benefit from dual operations could implicitly be built into the modelled taxi-out times to Runway 28. On this occasion, the model validation was carried out on a day where 100% of operations used Runway 28.
- 3.34 Dublin Airport intends to close taxiways M1, H1, and W1 one-by-one on a 24 hour basis, for up to four weeks each, during Phase 3. Again, we did not close these taxiways in the model on the basis that they will last only a number of weeks each. The runway narrowing element of Phase 3 is intended to be carried out at times where operations will not be impacted. RW 16/34 south of Taxiway P1 will remain available as a key taxiway during Phase 3, as this pavement will have already been rehabbed during phases 1 and 2.
- 3.35 The detailed phasing plan of the PACE taxiway works has yet to be completed. As it has done for the RW 16/34 works, in the event that these airfield works could have an impact on operations during Summer 2020, we expect Dublin Airport to carefully phase these works to minimise disruption. In this context we note the successful phasing of the RW 10/28 overlay.

Operational Developments

- 3.36 There are initiatives ongoing to reduce aircraft separations on the runway, both Departure-Departure and Arrival-Departure-Arrival separations. These changes would lead to more efficient use of the existing infrastructure. However, given that none of these improvements are confirmed to be in place, we did not rely on them either for the modelling carried out by Helios or in the Draft Decision. Should there be any reduction(s) in place during Summer 2020, this will provide resilience and improve airfield performance rather than providing increased capacity.
- 3.37 Airport Collaborative Decision Making (A-CDM) has been live since January 2019. This process is intended to allow for improved real-time decision making among airport stakeholders, leading to improved efficiency and flow on the airfield. As the Helios model was validated against a day on which A-CDM was live, the impact of A-CDM was implicitly considered as part of the validation process. However, the modelling does not assume any improvements due to

A-CDM related assumptions.

Draft decision - Airfield

- 3.38 The Commission's Draft Decision was to amend the hourly runway limits in accordance with the S20 Wishlist, while leaving the other limits unchanged. We based this Draft Decision on the points made in this subsection.
- 3.39 In assessing the capacity of airport infrastructure, it is necessary to examine the capacity of that infrastructure when it is operated efficiently. The decision should not take account of inefficient practices which can be changed but which may be constraining the use of the infrastructure. Nor should it take account of factors largely unrelated to the infrastructure in question, such as delay caused by en-route air traffic control or rotational delay. To do so would require making assumptions which would artificially constrain the achievable capacity of the airport. The IATA World Slot Guidelines state that when assessing the capacity of airport facilities, "the analysis should assume that the airport facilities are being managed efficiently and are fully staffed."³
- 3.40 The modelling carried out by Helios implements this approach. We are satisfied that it appropriately takes account of all relevant infrastructural and operational constraints. It clearly indicates that the direct effect of implementing the S20 Wishlist limits, in terms of taxi times and ground delay across the day, is expected to be minimal. There are other factors which we can expect to affect taxi times in Summer 2020, in particular general traffic growth within the existing limits and the unavailability of Runway 34 for dual departures. There remain pockets of capacity within the existing capacity limits which we expect to continue to be filled. For example, ahead of Summer 2019 we released an additional 0.6% in Totals, however movements in Summer 2019 have increased by 2.6% as airlines make use of suboptimal slots to satisfy demand. On the other hand, A-CDM and reduced aircraft separations may mitigate any increase in taxi times.
- 3.41 Ahead of previous seasons we implemented proposals which were expected to lead to material increases in the peak taxi-out time. In the absence of such an expectation, a consistent approach to the output of the modelling work suggested that we should implement this proposal. We also noted that the proposed limits do not breach the 10 minute delay criterion, as modelled by NATS.
- 3.42 Clearly, the output of the various modelling exercises should not be viewed in isolation from actual performance in Summer 2019. This evidence similarly suggests that there is scope for a further limited and targeted capacity release. Actual taxi-times have increased by less than a minute relative to Summer 2019; when looking at July/August, this difference remains below 1 minute. There has been a marginal fall in OTP but with total delay minutes remaining flat, meaning that there has been a marginal decrease in delay minutes per movement. The largest fall in OTP occurred in April, the month with the least movements, while OTP in May, June, and July marginally improved.
- 3.43 Dublin Airport related delay minutes for departures has increased from 10.7% to 12.7%, however this is entirely due to an increase in Code 89 delay (Restrictions at Airport of Departure, including Air Traffic Flow Management) rather than Code 87 delay (Airport

³ The World Slot Guidelines are the rules and guidelines established by the air transport industry worldwide and referred to in article 8(5) of the Slot Allocation Regulations.

Infrastructure). We would suggest that viewing this data holistically suggests that these changes may be partly driven by A-CDM. Aircraft may be held on stand longer than would have been the case previously, impacting OTP, but as part of a system which is overall more efficient.

- 3.44 ACL identified that an additional 17 Totals were required to satisfy the slot demand as submitted by airlines. Seeking to satisfy 4 of these additional Totals, the S20 Wishlist is lower than what was proposed this time last year for Summer 2019 (10 Totals, or 1%). It is specifically targeted to avoid any increases in the first wave or the afternoon peak, with a 0.4% increase in available Totals spread across hours which do not exceed the 1600 hour Totals limit of 48 movements. We agree with the need to protect the first wave departures peak given the unavailability of dual runway departures; in this regard we noted that the rebalancing from the 0700 hour to the 0800 hour better protects what is currently a relative firebreak in the schedule following on from the first wave departures.
- 3.45 We stated that the Draft Decision struck an appropriate balance between allowing for continued growth and competition in the form of more useful slots, without incurring extra congestion on the airfield.
- 3.46 We noted that our Draft Decision is not in line with the Committee's advice. However, we also noted that the Committee's advice was not based on its previous criteria that a 10-minute runway holding delay limit is an appropriate threshold beyond which capacity should not be released (as Dublin Airport's proposal does not breach this limit). Nor was it clear how it directly related to the outputs of the airfield simulations, which we have applied in a way which is consistent with previous seasons and in consultation with Committee members. Recent performance on the airfield does not suggest a significant airport-wide deterioration in OTP or taxi times. Finally, we invited stakeholders to provide us with evidence supporting their position which we would consider before arriving at a Final Decision.

Submissions on Draft Decision

- 3.47 Aer Lingus opposes the changes to the runway parameters. It states that we have ignored the guidance of the Coordination Committee, which was based on the concerns of stakeholders in relation to the proposed increases.
- 3.48 Aer Lingus makes the following statements:
- One third of departing flights in Summer 2019 are operating with a delay
 - Average taxi times for departures have increased by 13% over the last three years, a figure which it states has been calculated from Dublin Airport runway performance reports.
 - ARUP modelling indicates a 17% increase in taxi-out times in the 1400 hour from the increased slots.
 - Helios' modelling incorrectly makes the assumption that 'slots are moved around within the existing summer 2019 limits to satisfy the wishlist demand in summer 2020'. It states that ACL has confirmed that there is 'zero capacity in the baseline on many of the days where those changes were simulated in the model'.
- 3.49 Aer Lingus points out that the quote we referenced in the Draft Decision in relation to

assuming that the airport facilities are being managed efficiently and are fully staffed is no longer included in the more recent revisions to the World Slot Guidelines (WSG). Aer Lingus states that we must objectively consider any infrastructural, operational, or environmental constraints that prevent demand being satisfied.

- 3.50 Aer Lingus does not believe that Dublin Airport infrastructure is being used as efficiently as possible, and states that there is no concrete evidence that Dublin Airport is pro-actively taking steps to achieve optimal efficiency.
- 3.51 The Dublin Airport Operators Committee (AOC) advises that the majority of its members oppose the Draft Decision based on ongoing deterioration of operational performance due to infrastructure deficits, delays in the provision of additional stand capacity, and operational disruption from wider capital projects such as Hold Baggage Screening (HBS).
- 3.52 British Airways opposes the Draft Decision in relation to runway capacity, stating that the premise that increased delay is acceptable is not reasonable. It states that it will have to increase block times by five minutes in the 1400 hour and 1800/1900 hours.
- 3.53 Dublin Airport restates its support for the proposed adjustments to the runway parameters, and for maintaining the stand parameter as a hard constraint. It sets out the process through which it arrived at the proposed limits and sets out the infrastructure projects that are expected to be either delivered or on site in 2020.
- 3.54 Dublin Airport states that, relative to Summer 2018, movements in 2019 increased by 2.6% while there was a minimal impact on key performance indicators on the airfield.
- 3.55 The IAA ANSP opposes the Draft Decision in relation to the runway limits, on the basis of potential difficulty and complexity in accommodating additional traffic demand, particularly in the context of construction expected to be on site during Summer 2020.
- 3.56 The IAA ANSP states that there is limited resilience to deal with disruption and consequently efficiency gains should be used for contingency rather than increased slots. It states that the evaluation process was flawed as it did not take sufficient consideration of the impact of construction works.
- 3.57 Ryanair objects to the proposed changes to the runway limits on the grounds that they may lead to operational delays. It also states that there is 'ample' room for growth within the current parameters.
- 3.58 Stobart Air disagrees with any increase at this time in the runway limits and total movements at Dublin Airport. It states that any over-declaration of capacity will risk operational disruption, which impacts Stobart adversely in key areas of its operation. Stobart Air provides data on its own observed OTP variances between Summer 2018 and Summer 2019.
- 3.59 Stobart Air states that it has observed a 279% increase in the number of delays coded to Airport Facilities, though also noting that it has seen a 34.2% reduction in the monthly average number of delays coded to Restrictions at Airport of Departures. It states that the combined effect of these delay codes is a monthly average increase of 18.7% in airport congestion related delay.
- 3.60 Stobart states that when dual runway operations are available, there is a marked

improvement in OTP. Dual operations is most frequent during peak summer, however it will not be available during this period in Summer 2020. It states that increases in traffic growth within the existing limits, together with the proposed increases, at a time when this infrastructure is unavailable is likely to have a significant detrimental impact.

3.61 Stobart Air supports the Draft Decision in relation to the stand parameter.

Final Decision

3.62 We have not received evidence or new arguments which have caused us to change our view that the adjustments to the runway limits are an appropriate balance of our objectives in this process. The specific points raised are addressed below.

Simulation Modelling

3.63 In the counterfactual ‘Summer 2019 limits’ scenario where no changes are made to the runway limits, Helios’ modelling makes the assumption that where demand cannot be fully satisfied, airlines accept sub-optimal slots (whether in relation to timing, fragmentation, or both) in order to meet demand for an operation. This is based on observed reality and is aligned with Aer Lingus’ own previous statements. We do not assume that any ‘slots are moved around’; there is no requirement for the assumed re-times to be available across the season in order for this scenario to be a valid counterfactual. It would not be sensible to unnecessarily re-time these flights to either very early in the morning or into the evening for the counterfactual scenario.

3.64 Although in the counterfactual scenario there would likely be no lined up daily slots available during the core operating hours across the season, there remains pockets of available capacity within these hours at different times across the season, even within the peak week. We are modelling a single day of operations; on that day, the re-times we implemented were possible within the Summer 2019 limits. Even if we consider other days where the implemented re-times would not have been possible, the lack of available capacity means that there are already at least as many operations in that hour as is the case in our counterfactual scenario. Therefore, the difference between our counterfactual scenario and the scenario with Dublin Airport’s proposed Summer 2020 limits is simply the additional movement facilitated by the newly available slot in the hour in question. Thus, we are satisfied that this assumption is appropriate and reject Aer Lingus’ statement that it is incorrect.

3.65 The ARUP modelling referenced by Aer Lingus compares taxi-out times in the Summer 2019 busy day with taxi-out times in the Summer 2020 flight schedule. Thus, we do not consider this to be a causative effect from the changes to the runway parameters. Helios estimate the causative effect of the increases in the 1400/1500 hours as peaking at two minutes in the 1500 hour. When ARUP simulated the same counterfactual as Helios, it obtained similar results in terms of the gap between the two scenarios.

3.66 In relation to modelling the impact of works expected to be on site during Summer 2020, we are satisfied that we have taken account of this appropriately in the simulations as we described in detail above in the Draft Decision. Where we have opted not to close certain taxiways in the simulations due to limited duration of works combined with phased planning, this is the case for both scenarios. Any disruption caused by such a closure therefore does not appear in either scenario. We were careful to ensure that no benefits from dual operations were implicitly built into the taxi times through the model validation process, given that dual

operations will not be available.

Taxi-times

- 3.67 We are aware that taxi times have increased relative to three years ago; Aer Lingus state that this increase is 13%. This is largely due to increases in the number of aircraft operating at Dublin, which has increased by 12% from Summer 2016 to Summer 2019. Over the same period the cumulative Total runway capacity released was 1.4%. We consider that the number of movements operating at Dublin Airport has remained predominantly demand driven over the period, with the capacity releases having no more than a relatively minor impact. We expect this to remain the case in Summer 2020. We would restate that taxi times have remained broadly flat in Summer 2019 relative to Summer 2018.
- 3.68 More generally, it should not be expected that taxi-times will substantially improve in advance of the North Runway becoming operational.
- 3.69 Overall, there has not been any significant operational deterioration related to this key airfield metric despite growth in aircraft movements of 2.6%.
- 3.70 The Summer 2020 runway parameters do not exceed the highest limits in other hours for Departures, Arrivals, or Totals which were in place for Summer 2019.
- 3.71 As noted above, any decision we make as competent authority for the purposes of the Slot Regulation is subject to Dublin Airport satisfying all requirements of the IAA SRD as safety regulator.

OTP and delay minutes

- 3.72 We would restate that OTP is driven by a wide range of factors controlled by a number of stakeholders, including the airport, airlines, ground handlers and air traffic control.
- 3.73 Relative to Summer 2019, overall there has not been any significant deterioration in this metric despite growth in aircraft movements of 2.6%. The most significant deterioration was observed in April, while there were improvements in May, June, and July. Equally, in April, there were notably fewer aircraft movements than in May, June, or July. We note that Stobart observed deterioration in OTP during 1800-2300; this is a period when there are considerably fewer operations. At an absolute level, OTP in April and May was the same despite the total number of movements in May being 8% higher.
- 3.74 Therefore, not only do we not see evidence that the proposed runway parameter increases are likely to impact OTP, we do not even see evidence that broader increases in traffic, within the bounds of 2018/2019 growth levels and differences across hours and months, are substantially driving OTP.
- 3.75 As described by Stobart, we note that OTP for operations to/from the Triangle has declined. In Summer 2018, along with the South Apron it was the best performing apron area; in Summer 2019 it remained above average although less so than before. In setting the runway capacity for the whole airport, however, we must consider metrics as they relate to the whole airport.
- 3.76 As set out above in the Draft Decision, we prefer to consider overall delay minutes rather than

a count of coded delay incidents as provided by Stobart. This captures not just the number of delay incidents, but also their magnitude. We set out in our Draft Decision that overall, total delay minutes have stayed flat between Summer 2018 and Summer 2019. Delay minutes which we consider attributable to Dublin Airport have risen by 2% for departures; code 89 delay (Airport of Departure) has increased, while others have decreased. This is the opposite of the effect identified by Stobart within its own operation in relation to the count of delay incidents associated with Airport Facilities. We noted that overall delay minutes per departure have decreased very slightly, while delay minutes per arrival have fallen from 12.7 to 12.2 minutes.

Infrastructure projects

- 3.77 We set out in the Draft Decision that we expect there to be increases in taxi-out times during the first wave departures peak in Summer 2020 due to the unavailability of dual runway operations. If anything, the adjustments we have implemented better protect the first wave due to the rebalancing out of the 0700 hour. This Decision does not adversely impact first wave departures. We agree with Dublin Airport that any increase in the first wave departures peak are not appropriate for Summer 2020; had this been proposed we would not have allowed for it.
- 3.78 Terminal projects such as HBS are not relevant for the runway limits, nor is the delay in the provision of stands provided for under PACE. The hard limit on stands remains in place; if excess stand demand cannot be resolved, a slot will not be allocated.

World Slot Guidelines and efficient use of infrastructure

- 3.79 We acknowledge Aer Lingus' point that the above quote in paragraph 3.39, which we included in the Draft Decision, no longer features in the WSG.
- 3.80 To be clear, Helios' modelling does not assume that the airfield infrastructure is being used as efficiently as possible. It assumes that operations occur efficiently within the bounds of current infrastructural, operational, and environmental constraints. It does not build in inefficiencies largely unrelated to these factors, such as, for example, rotational delay. The key goal of the validation process is to ensure that the model is replicating the actual operation, i.e. the current level of efficiency, as closely as possible.
- 3.81 With regard to Aer Lingus' statement that there is no concrete evidence of Dublin Airport seeking to achieve 'optimal efficiency', we would note that initiatives are ongoing in relation to improving runway throughput through reduced minimum required separations. Jacobs Engineering Group, on behalf of Dublin Airport, are also carrying out a review of the Stand Allocation Rules. We understand that any changes arising from this review are expected to be implemented by the end of October, following consultation.

Conclusion

- 3.82 The WSG requires that we objectively consider the ability of the airport infrastructure to accommodate expected demand in Summer 2020, taking into account all relevant infrastructural, operational, and environmental constraints. An objective review of the evidence suggests that implementing these adjustments to the runway limits will not have any significant impact on the airfield metrics. Contrary to the stated views of a number of stakeholders, there has not been broad, significant deterioration in any of the airfield metrics

relative to Summer 2018. This further supports the position that there is scope for a relatively minor, carefully targeted capacity release, which is designed to better accommodate demand.

- 3.83 It is therefore clear that implementing the proposed changes to the runway limits is the appropriate decision given our role under the Slot Regulation.

4. Terminal Parameters

- 4.1 Our Decision is to roll forward the Summer 2019 limits, which are set out in Table 4.1. We also maintain the load factor assumptions of 95% for scheduled services and 100% for charter services, and the referral parameters in relation to Terminal 2 check-in desks and US Preclearance.

Table 4.1: Hourly Terminal Limits - Draft Decision

	Summer 2020- PTB Draft Limits	
	Departures	Arrivals
Terminal 1	4,130	3,960
Terminal 2	4,130	3,400

Hourly limit rolled every 10 minutes

Proposed Parameters – Dublin Airport

- 4.2 Dublin Airport proposed rolling forward the Summer 2019 terminal limits. These proposed limits were supported by the Coordination Committee.

Proposed Referral Limits – Dublin Airport

- 4.3 Referral limits are not hard coordination parameters. If a proposed operation hits a referral limit, it is referred to the airport to attempt to find a workable solution.
- 4.4 The airport proposed retaining the referral parameter for Terminal 2 check-in desks 1-28 (Terminal 2 operators excluding Aer Lingus) – where demand exceeds 28 desks. It also recommended retaining the referral for US Preclearance, which applies to any new flights, or time changes to pre-existing flights, intending to use this facility.
- 4.5 The proposed referral parameters were supported by the Coordination Committee.

Dublin Airport Terminal Capacity- Draft Decision

- 4.6 As part of our decision on the Summer 2018 limits, the Commission assessed the processing capacity of the different PTB processors with reference to the proposed Summer 2018 limits, and determined that the proposals were feasible.⁴ In our Draft Decision for Summer 2020 we proposed to maintain the effective capacity at the Summer 2018 and Summer 2019 levels.
- 4.7 In March 2018, we published a report which we commissioned from Helios which fully assessed the capacity of Dublin Airport.⁵ It contains detailed analysis of the overall Passenger Terminal Building (PTB) capacity. In broad terms, it can be concluded from the Helios report that:
- For Terminal 2, the current limits are appropriate.

⁴ [https://www.aviationreg.ie/fileupload/s18/Decision%20Summer%202018%20Coordination%20Parameters\(1\).pdf](https://www.aviationreg.ie/fileupload/s18/Decision%20Summer%202018%20Coordination%20Parameters(1).pdf)

⁵ [http://www.aviationreg.ie/fileupload/Helios%20capacity%20assessment%20workstream%202/P2410D008_Final_Report_v1_5_1%20\(clean\).pdf](http://www.aviationreg.ie/fileupload/Helios%20capacity%20assessment%20workstream%202/P2410D008_Final_Report_v1_5_1%20(clean).pdf)

- For Terminal 1, the processing ability of the facilities could allow for higher limits to be declared.
- The referral limits relating to US Preclearance and Terminal 2 check-in desks should be maintained.

4.8 However, given that no Committee member sought or proposed a higher level of declared capacity, and the terminal limits are likely to be minimally constraining relative to the runway limits, we saw no reason to adjust the parameters and proposed to roll forward the Summer 2019 limits.

Submissions on Draft Decision

4.9 Aer Lingus, Dublin Airport, and Stobart Air supported the proposed Terminal capacity, while other respondents did not address it. We therefore have no reason to consider changing our view in the Final Decision.

Appendix: Coordination Parameters at Dublin Airport for IATA Summer 2020 Season

The Commission for Aviation Regulation has determined the following limits for the Summer 2020 season.

Runway Scheduling Parameters:

Runway Hourly Limits			
Time UTC	Arrivals Limit	Departures Limit	Total Limit
0000	23	25	32
0100	23	25	32
0200	23	25	32
0300	23	25	32
0400	23	25	32
0500	23	36	40
0600	20	31	42
0700	25	25	<u>41</u>
0800	25	25	<u>45</u>
0900	25	24	44
1000	27	27	45
1100	27	28	<u>48</u>
1200	23	27	46
1300	27	24	46
1400	23	<u>27</u>	<u>45</u>
1500	26	25	<u>47</u>
1600	25	29	48
1700	23	27	45
1800	23	26	<u>40</u>
1900	23	22	39
2000	25	22	38
2100	30	25	36
2200	28	25	32
2300	23	25	32
Totals	586	<u>625</u>	<u>959</u>

Maximum number of movements per 10 minute period	
Maximum Total	9
Maximum Arrivals	6
Maximum Departures	6*
*Exception – Maximum Departure Limit is 7 movements at 0500, 0510, 0520, 0530, 0540, 0550 UTC.	

Passenger Terminal Parameters:

	Departures Hourly Limit	Arrivals Hourly Limit
Terminal 1	4,130	3,960
Terminal 2	4,130	3,400

Notes:

- 1) The hourly limit for passengers is rolled every 10 minutes.
- 2) Load factors of 95% are applied to Scheduled and Charter services.

Stand Parameters:

	GA		Non-Turnaround		Turnaround Stands								All
	LAB	APC	W.A.	Total	5G	P1	P2	P3	P4	S.A	Triangle	Total	Total
Contact						22	10	11	19			62	62
Remote	12	0	20	32	15	4			2	9	5	35	67
All	12	0	20	32	15	26	10	11	21	9	5	97	129

Note: Stands defined based on ICAO Code B and C size.

Area	Constraint
Stands	Where demand for stands exceeds supply based on coordination allocation, flights to be referred to Dublin Airport for detailed assessment.

Referral Parameters:

Area	Flag
T2 Check-in Desks 1-28 (T2 Operators excluding EI)	Demand exceeds 28 desks
US Preclearance	New flights and schedule changes