Building the future of Dublin Airport

‘As an island, the effectiveness of our airport and port connections to our nearest neighbours in the UK, the EU and the wider global context is vital to our survival, our competitiveness and our prospects’ (NPF 2041, 2018).

Dublin Airport is a key component of this effectiveness and over the past decade has seen significant growth. The airport has ambitious plans for the future and recently submitted its next Capital investment Programme to the Commission for Aviation Regulation, which it developed as part of an update to its long term strategic planning process.

Year on year growth

With 31.5 million passengers per annum (mppa) moving through Dublin Airport it was ranked the 11th largest airport in the European Union last year. It was also the fastest-growing large airport in Europe between 2014 and 2018. As Vincent Harrison, the Managing Director of Dublin Airport, noted “Dublin Airport has grown in recent years to become a significant player in the European aviation market, this added scale is good news for the economy throughout the island, as it enables Dublin Airport to compete at a higher level with other major airports to win new business and boost Ireland’s overall connectivity. It is a testament to the strength of the Irish economy, the success of our airline partners, and Dublin Airport’s importance as a critical link that Ireland is now the most connected country in Europe relative to GDP.”

A History of Planning for the Future

Accommodating this rapid growth has been a challenge but one which the Airport has been well set to address, not least because the Airport has always maintained a clear vision for the future. Dublin Airport has a proud history of carefully planned development, which coordinates critical land use
and just-in-time investments in major capacity expansion as part of coordinated implementation with local and national agencies, strategies and policies.

This forward thinking has ensured that Dublin has had the capacity to grow and adapt in line with the evolving demands of the dynamic aviation market.

**Taking the long-term view – Dublin Airport Masterplan**

Today Dublin Airport maintains this long-term view through the development and periodic updating of its Masterplan. The Masterplan is a balanced long-term plan for Dublin Airport that positions the airport to respond to future capacity requirements while maintaining levels of customer service and securing the Airport’s role as a regional and national driver of economic growth.

In 2017 Dublin Airport commenced the process of updating its Masterplan; to a 55mppa design horizon to from its current 31.5mppa and aligning it to national policies and the changing trends in the aviation market.

The development of the Masterplan was an extensive process which considered all aspects of the airport including, but by no means limited to, terminal capacities, access to the airport, long term airfield and commercial opportunity.

Critically, the Masterplan was developed to facilitate alternative development routes which allow for flexible and scalable development to ensure that the business can evolve to meet its operational and business needs, while keeping a view to the ultimate airport build out. In this way ensuring that safe, cost-effective airport services are delivered to international standards.

As outlined below, Dublin Airport recently made its Capital Investment Program 2020+ submission to the Commission for Aviation Regulation and it is envisaged that an update to the Masterplan will be completed in tandem with that process. The key defining features of the evolving Masterplan, are:
• Northern Parallel Runway - In the 1960’s and 70’s Dublin commenced the process of acquiring lands for the development of parallel runways north and south of the airport. In 1985 Dublin Airport delivered the first of these runways, the Southern Runway. Since then, operated as the main runway of Dublin Airport. But this Runway is reaching capacity and in February 2019 the Airport turned the first sod on construction of the second parallel runway, to the north of the airport. The Northern Runway Development is subject to planning conditions which will limited operations between 11pm and 7am. The long-term growth of the airport as set out in national aviation plan and acknowledged in the National Planning Frame work, requires that this restriction be removed to achieve the airports potential.

• Terminal Capacity - Continued development of terminal capacity through extension and development of the two existing airport terminals, T1 and T2. Considerable effort was given to understanding whether development of a third terminal is appropriate. This analysis came to a number of key conclusions: that improved and consolidated of access to existing terminals presents the most efficient development path as it draws on the existing road / public transport capacities and the proposed Metrolink; that development of the existing terminals allows capacity to develop in line with demand (unlike a new terminal which represents a step change in capacity, which would result in undersupply in the short term and oversupply in the medium term); that development of the existing terminals minimises the transfer passenger journey (a key strategic area of growth) and it provides the most efficient airline model by keeping operations collocated.

• The Crosswind runway - Dublin Airport currently has two runways (and the norther runway represents the third), the oldest of which is the crosswind runway. This runway runs north west- south east thought the airport and its principally used as a taxiway, and during extreme weather events as a runway. Given its location, crossing in front of the existing terminals, the future of this key asset is critical to defining the development pathway of the airport.

As part of the master planning process the airport undertook extensive analysis of historic and future use of this runway, which identified that it is currently used for 5% of runway operations and that it is likely, with the opening of the third runway, that this will drop to less than 2%.

As a result the airline community, regulators and the airport foresaw that in the medium term the runway is required. In the long-term this need is less certain and it will be revisited as part of future Masterplans.

To accommodate this uncertainty the Masterplan update is being developed such that the first development step is common to both development pathways (with and without the runway). This first step includes development of an under pass and phased development
west of runway, initially with aircraft stands, then a remote pier and ultimately development of support facilities.

- Access to the airport - Dublin Airport is already Irelands busiest public transport hub. The masterplan sees this capacity growing in the future and proposes the development of a Ground Transport Centre (GTC) around the future Metrolink stop. This future GTC will also include increased bus provision, new drop off kerbs, parking and customers service pavilions and hotels.

Recognised that the M1 and M50 are reaching their capacity and that future access to the airport will be driven by Public transport, the Masterplan took an in-depth look at access arrangements to the airport. It recognised that Dublin Airport services a wide variety of customers and needs to continue to develop access such that it caters for all users including the private vehicle users. To do this it identified that in addition to the GTC there is a need to upgrade the existing Airport Roundabout and provide a new corridor to the airport from the city via the Ballymun interchange on the M50.

The updated masterplan will provide a clear long-term plan for the development of the airport..

**Capital Investment programme 2020+**

Since 2011 Dublin Airport is a regulated entity, required to periodically submit its proposals for capital investment to the Commission for Aviation Regulation (CAR). In February of this year it did just that, submitting its plans for investment to commence the next stage of the airports development and look to safeguard development to 40mppa.

This Program which was framed by the national policy and the evolving Masterplan, was developed following extensive formal and informal consultation with airport stakeholders on capacity requirements and other essential capital investment requirements required for the day-to-day running of the airport.
Strategic Objectives

The development of the Capital Investment Plan 2020+ was framed by a series of key strategic objectives and national policies:

- The National Aviation Policy for Ireland (NAP) and National Planning Framework (NPF) - recognise that the major increase in the numbers of transfer passengers in recent years has significant benefits to the broader economy and that ‘an opportunity now exists to develop Dublin as a vibrant secondary hub, competing effectively with the UK and other European airports for the expanding global aviation services market’ (NAP)

Dublin Airport has a number of features which makes it attractive to air carriers, including its geographic location on the North Atlantic Trans-Continental route, US Pre-clearance, single terminal transfers, and its location near the national capital city with its significant catchment area. These features offer passengers who need to make a connection a unique opportunity to avail of a transfer product that reduces the overall journey time compared with other connecting opportunities.

- Intercontinental destinations - With continued growth in east to west travel a number of new players have recently entered the Dublin Market including Hainan and Singapore airlines, this has also been complemented by increasing traffic on existing middle eastern routes. Building on this Dublin has a strategic objective to develop routes to the top five Chinese cities, Korea, Japan, Thailand and Malaysia, the Indian sub-continent, Mexico South/Latin America and the Caribbean and Sub Saharan Africa.

- Transfers - Building on the National Aviation Strategy and the strategic goals of developing further intercontinental routes Dublin Airport has set itself the strategic goal of developing the transfer market, including accelerated development of Dublin as an international hub, grow depth, coverage and choice on the transatlantic network, double transfer traffic to approximately 10% of total traffic and maximise the scale and usage of the United states Preclearance facility

These transfer strategies are aligned to the recent emerging market dynamics, with Aer Lingus have almost doubling their long-haul fleet since 2014 and Ryanair increasingly focusing on flying to primary airports and a signalling interest in transferring passengers in Dublin. Overall transfer numbers have grown significantly year on year over the past decade and now represent 5.5% of passengers using Dublin Airport.

Transfer traffic is predominantly Europe to US, with Dublin now the sixth largest airport in Europe for traffic to north America. Which is likely to be further accelerated by the next generation of smaller more efficient and quiet aircraft with the capacity to reach the east coast of America from Dublin.
• Consumer choice and competition: In 2010, over 30% of Dublin Airport’s passengers travelled on routes operated by a single carrier. By 2017, this figure had dropped to less than 19% and is on course to reduce further, as airlines offer new choices on existing services, which can lead to lower prices, improved schedule timings, greater flexibility, improved connections and ultimately, higher quality services for consumers.

Converting Strategy into action

Defining demand

To understand what infrastructure the airport requires to achieve its strategic goals, the initial step was the translation of these strategic goals into demands. Unsurprisingly this is principally driven by the schedule of arriving and departing aircraft. The Airport developed this future schedule based on the airport’s strategy, the current schedule and emerging market trends. The schedule represents a snapshot of the current and anticipated traffic at the airport. As can be seen in Figure XX this schedule indicates significant uplift in numbers of passengers across the day.

Defining the required facilities

However, this demand in itself is not the driver of infrastructure requirements but rather how this demand transposes onto the relevant airport components or ‘processors’ defines the required facilities.

To provide an example departing US bound passengers typically arrive at Terminal 2 drop off kerbs 2-3 hours in advance of their flight, which means that the peak demand for the roads and drop off kerbs, is 2-3 hours before the departure time. However, for the early morning T1 passenger, in the morning wave they are typically departing to a European destination, for which the security requirements are less, the implications of missing the flight are less and with smaller aircraft the overall process of loading aircraft is quicker. The result of this is passengers typically arrive at the kerb 1-2 hours before the flight. For the early morning departure wave (the largest departure wave) these kerb demand peaks partially overlap which directly translates into the demand for linear meters of kerb for passengers to pull up and drop ff.

This simplified example illustrates the nature of the demand, which is repeated for each processor in each direction (Arrivals and Departures). As the passenger makes there way through the airport a whole range of factors are applied to understand the required facilities, be it the number of trays
passengers use at security (and how long it takes to scan them), the typical dwell time in duty free and its commercial implications, through to impact of taxi times, runway slots, or the impact of off schedule flights etc. The net result of this is a complex picture which required detailed analysis to develop demand profiles for each processor and ultimately produce a set of facility requirements to meet the demand.

**Scenario planning**
With the required quantum of facilities understood, the airport developed a series of scenarios. Each scenario achieving the required quantum of facilities but configured these in differing manners.

Each of these which were then consulted on and evaluated from a number of perspectives including:

- **Passenger experience**: To understand the potential implications of development scenarios on the passenger experience the airport team developed a series of persona’s who reflected a broad spectrum of airport users. The persona’s covered the spectrum of airport users, examples of which are ‘Hank & Linda’ an elderly American couple departing from T2 to the states and ‘Hallie and her family’ from Swords who representing the single adult with young family moving through Terminal 1 on their way to a sun holiday.
For each of these personas their journey through the airport was tracked to understand how they would experience the airport and what particular stress points arose and what measures could be taken to reduce this stress and improve the overall passenger experience.

Airline Needs: Addressing the airlines needs in Dublin is complex. If you take London’s airports as peer examples, you could say that Stansted is primarily a low-cost point-to-point airport, Heathrow and Gatwick are primarily inter-continental, large aircraft focused. Whereas Dublin has to cater for myriad of competing needs. The Airport has a successful low-cost point-to-point business, a growing transatlantic business, a hub business, a transfer business, a suite of 5-star airlines and we serve charter airlines, cargo airlines, general aviation, and a sizeable maintenance business.
Throughout 2018 Dublin Airport heavily engaged with airlines to understand how the various development scenarios reflected their business needs and fed this into the overall selection and refinement process.

- An evolving business: Layered onto this is the constantly evolving nature of the airport business. The airport is constantly striving to harness the benefits of technology to maximise throughput, limit impact and provide for the most effective and most sustainable outcomes. A simple example of this is shift to online check in over the past 5 years, which has resulted in airlines seeing up to 70% of passengers moving directly to security and by passing the check in process; or the evolution of long-range smaller aircraft which can operate on either European or US routes, maximising flexibility and reducing pressure for large wide body aircraft stands in the airfield.

Of the three development scenarios Dublin Airport proposed, Scenario 3 emerged as the preferred scenario. While all three scenarios support airport growth, Scenario 3 combined emerging technologies with the best passenger experience while addressing airline needs, and in doing so providing the greatest all-round balance of development.

**CIP 2020+ Dublin Airports Development pathway to safeguard for 40 million passengers per annum**

The Capital Investment program 2020+ submitted to the Commission for Aviation Regulation in February 2019 sets a pathway to the development to 40mppa. The proposal is extensive and detailed, but its key components are:

- Continued development of capacity within the existing terminals. Embracing evolving technologies allows Dublin Airport to achieve significant uplift in passenger numbers through the existing terminals. In both terminals this will result in security equipment moving to the C3 (MRI like) technology, which significantly reduces requirement for passengers to remove items from bags (and therefore increasing processing speed). In T1 a new security facility will be established, moving security to the level above where it is currently located.
• Outside of the terminals, it’s proposed to provide additional drop off kerb space for Terminal 1, these kerbs will be developed at the back of the existing Multi-storey Car parks putting them at the heart of a proposed Ground transportation Centre identified in the Masterplan.
• Dublin Airport will continue to develop and grow as a hub airport. To achieve this, it will expand the current US pre-clearance facility and develop a new pier to the east of the Terminal 2. Developing this new pier in close proximity to the existing T2 pier, will allow for rapid connection between European and US flights via the preclearance facility.
• Continued development of north apron to accommodate point to point operations. The most northerly Pier (Pier 1), has been a significant success since it was developed. It is proposed to continue this success with the first phase of extension of the pier eastward (where some of the oldest, smaller hangars are located today) plus the addition of a Pre Boarding Zone.
• Developing the west side of the cross-wind runway, through the addition of 17 stands and connectivity from the terminals via an underpass. This both increases the overnight parking capacity of the airport and safeguards for the future growth of the airport, as it represents the first and critical step of phased western development.
Delivering on the vision

Dublin Airport submitted its Capital Investment Plan to the Commission for Aviation Regulation in February 2019 and anticipates a draft decision in late April 2019, followed by a final decision in September 2019.

Delivering the infrastructure this vision represents is a major challenge. This Capital Investment Program coupled with ongoing works at the airport represents one of the largest single site investments in the history of the state.

A key challenge is the infrastructure delivery capacities in the market. The airport is actively engaged with the Irish and European market to build awareness of the Programme and identify required capacities, partnerships and modalities.

Ireland has long and strong history of rising to infrastructural challenges and we believe that with the assistance of Irish engineering sector Dublin Airport has the capacity to deliver this ambitious vision.